

ISPR7-0012
Geriatrics - Dementia

RELATIONSHIP BETWEEN JAPANESE VERSION OF MONTREAL COGNITIVE ASSESSMENT (MOCA-J) AND ADL/IADL ABILITY: A PILOT STUDY

S. Hisano¹

¹*Fukuoka, Japan*

Introduction/Background

It has been reported to be associated with the older people cognitive level and ADL/IADL ability based on child development. However, previous studies that used the Japanese Version of Montreal Cognitive Assessment (MoCA-J) as an indicator of cognitive level has not been reported. This study was intended to examine the relationship between the MoCA-J and ADL/IADL ability based on child development in the older people.

Material and Methods

Thirty people over 65 years of age, including those who live in welfare facilities for the older people and who use day service centers, were studied. An analysis was made of the relationship between the MoCA-J and functional age. Pearson correlation coefficient test and single regression analysis were performed.

Results

A considerably strong correlation was observed between the MoCA-J and functional age ($r = .833$, $p < .001$). The relationships between the two variables can be simply expressed as follows: $\text{functional age (year)} = 0.37 * \text{MoCA-J (score)} + 2.38$ ($R^2 = .679$).

Conclusion

Relationships between the MoCA-J and functional age were found, that is, the results demonstrated a decrease in the ADL/IADL ability of the older people with decreasing cognitive function in the reverse order of child development. The MoCA-J and functional age are predictable from each other, showing that it is easily possible to set a practically attainable ADL/IADL ability from information regarding cognitive function, and vice versa. Therefore, rehabilitation goal setting to meet realistic functional levels can be performed easily using cognitive information.

No conflict of interest

ISPR7-0470
Geriatrics - Dementia

**AWARENESS AND THE BURDEN OF CAREGIVER FOR THE DEMENTIA IN OUT-PATIENTS
REHABILITATION CLINIC**

A. Osawa¹, S. Maeshima², I. Ueda¹, M. Kamiya¹, I. Kondo¹

¹National Center for Geriatrics Gerontology, Department of Rehabilitation Medicine, Obu, Japan

²Fujita Health University, Department of Rehabilitation Medicine II, Tsu, Japan

Introduction/Background

In the dementia patients, there are a lot of problems caused by the decline of recognition ability about the clinical status. However there are few reports about the relationship between unawareness and caregiver burden in the patients with dementia. In this study, we investigate the relation between self-cognition of patient's memory/executive function and caregiver burden in out-patient dementia rehabilitation clinic.

Material and Methods

Subject were 36 dementia patients(age 71.5±7.2, 18 male and 18 female) and their caregiver(36 people). Patients and their family assessed the clinical status about memory loss and dysexecutive function of the patients with Everyday Memory Checklist(EMC) in Rivermead Behavioural Memory Test and a Questionnaire DEX. After then we calculated the difference of the score between patients and family and we investigated the relation between such difference and caregiver burden with the Zarit Burden interview.

Results

The difference of the score in EMC and the DEX between patient and family increased with increasing dementia severity. Such difference of the score in EMC and the DEX between patient and family was positively correlated with the score of caregiver burden.

Conclusion

Progression of dementia causes the unawareness of their memory loss and dysexecutive function. This decline of recognition ability may be one of the factors that increase caregiver burden.

No conflict of interest

ISPR7-0689
Geriatrics - Dementia

COGNITIVE FACTORS AFFECTING DECLINE IN ACTIVITIES OF DAILY LIVING LEVEL IN ALZHEIMER'S DISEASE

M. Kamiya¹

¹National Center for Geriatrics and Gerontology, Rehabilitation, Obu city, Japan

Introduction/Background

The principal aims of this study were to elucidate the influence of activities of daily living (ADL) on cognitive function, and search for methods to provide appropriate rehabilitation to maintain and improve ADL.

Material and Methods

The subjects were 1384 outpatients with mild AD. We used the Mini-Mental State Examination (MMSE) and Barthel Index (BI) as an indicator of basic ADL (BADL) and the Lawton Index (LI) as an indicator of instrumental ADL (IADL). We then performed a logistic regression analysis using the BI sub-items as dependent variables and MMSE sub-items as independent variables and calculated the odds ratios (ORs).

Results

For almost all BI and LI sub-items, significantly high ORs were noted in MMSE "Copy the design shown" (e.g., Dressing OR = 3.66, Toilet use OR = 3.60, and Transfers OR = 2.80) and "Write a sentence" (e.g., Ability to Use Telephone OR = 5.24, Laundry OR = 2.60, and Grooming OR = 2.50) ($p < 0.05$).

Conclusion

Cognitive function, which influenced BADL and IADL the most, was associated with visuospatial cognition. Furthermore, the sub-items with minimal effect on the decrease of the BADL and IADL differed. Therefore, it appears that specific activities have little effect on the maintenance of ADL and IADL and that determining residual cognitive function and utilizing this as a means of compensating for decreased ADL is a useful strategy.

No conflict of interest

ISPR7-0175
Geriatrics - Frailty

**EFFECTIVENESS OF BALANCE ASSIST EXERCISE ROBOT (BEAR) FOR PEOPLE WITH
FRAILTY AS COMPARED TO EXERCISE CLASS AND AMINO ACID SUPPLEMENT**

*I. Kondo¹, K. Ozaki², T. Tanioku², D. Taguchi², K. Sato², K. Ito², E. Takano¹, S. Satake³,
K. Kinoshita⁴, H. Matsuo², A. Ohsawa¹, N. Itoh², S. Hirano⁵, H. Kagaya⁵, E. Saitoh⁵, K. Shintani⁶*

¹National Center for Geriatrics and Gerontology,

Center of Assistive Robotics and Rehabilitation for Longevity and Good Health, Obu, Japan

²National Center for Geriatrics and Gerontology, Department of Rehabilitation Medicine, Obu, Japan

³National Center for Geriatrics and Gerontology, Department of Frailty Research, Obu, Japan

⁴National Center for Geriatrics and Gerontology, Department of Nutrition, Obu, Japan

⁵Fujita Health University, Department of Rehabilitation Medicine I, Toyotake, Japan

⁶Toyota Motor Corporation, Department of Partner Robot, Toyota, Japan

Introduction/Background

Fall is one of the aggravating factors of frailty. This time, we are going to define effectiveness of Balance Exercise Assist Robot (BEAR) as compared to the class for health education to prevent frailty and supplement.

Material and Methods

Participants were recruited from the community dwelling older adults who attended the class for longevity and health. The number of the participants was 23 (11 male and 12 female) and their average age was 79.0 (SD=6.00). We performed threefold intervention; class for health and exercise (control), exercise with using BEAR, and nutritional approach with commercially available supplement of amino acid (Abound). The experimental design was the cross-over and the order of intervention was randomized. Total duration of the study was 24 weeks and three groups were allocated to different intervention for each eight weeks. Outcome measures were Timed Up and Go test(TUG), Equi Test with BalanceMaster, and several other indicators for balance and muscle strength.

Results

In the results of TUG, there were significant interaction between BEAR and both nutritional approach and control. The significant statistical difference was also observed in the result of Motor Control Test (MCT) in Equi-test for large anterior perturbation between BEAR and nutritional approach.

Conclusion

The BEAR was effective in the improvement of dynamic balance ability as compared to educational class and supplement. In the future, it is necessary to define the preventive effect for frailty in the setting of care prevention activities performed by rural communities.

Conflict of interest

Disclosure statement:

Grant form Toyota motor corporation

ISPR7-0257
Geriatrics - Frailty

THE ASSOCIATION OF FRAILITY AND LEVELS OF EXERCISE IN CHINESE HOSPITALIZED GERIATRIC PATIENTS

Q. Hao¹, M. Yang¹, L. Luo¹, X. Ding¹, B. Dong¹

¹West China Hospital of Sichuan University, The center of Gerontology and Geriatrics, Chengdu, China

Introduction/Background

Less is known about the relationship between frailty and levels of exercise in Chinese hospitalized geriatric patients. This study was conducted to detect it using inpatients in three Chinese geriatric wards.

Material and Methods

In the present cross-sectional study, we observed the association of frailty with different levels of exercise among Chinese geriatric inpatients aged 60 years or above. A frailty index (FI) was calculated as the sum of deficits present, divided by the 38 health-related deficits considered. FI scores are classified as frail (>0.25), pre-frail ($0.25-0.12$), and robust (<0.12). Levels of exercise is defined as the total time of the exercise per day.

Results

The population included 419 unrelated Chinese old people (29.6% women, mean age 79.0 ± 7.8 years). The FI was significantly correlated with levels of the exercise ($R = -0.240$, $p < 0.001$). Subjects with higher levels of exercise seems had significantly lower prevalence of frailty than those with lower levels of exercise ($p < 0.001$). After adjust for age, gender, educational levels, we found that higher levels of exercise had a significant odds ratio (OR=0.51 95% CI (0.31, 0.85) $P = 0.09$ for 2+ hours/day and OR=0.30 95% CI (0.18, 0.48) $P < 0.001$ for 1+ hours/day) for frailty. However, the lower levels of exercise (<0.5 hours/day) did not have a significant odds ratio for frailty in this sample (OR=0.71 95% CI (0.41, 1.23) $P = 0.218$).

Conclusion

In summary, high levels of exercise (1+ hours/day) might be a protective factor for frailty among Chinese hospitalized geriatric patients.

No conflict of interest

ISPR7-0791
Geriatrics - Frailty

THE EFFECT OF ADDING WHOLE-BODY VIBRATION TO A STRENGTH AND BALANCE EXERCISE PROGRAM ON PHYSICAL FUNCTION IN INSTITUTIONALIZED OLDER ADULTS: A RANDOMIZED CONTROLLED TRIAL

F. Lam¹, P. Chan², L.R. Liao³, J. Woo⁴, E. Hui⁴, C. Lai², T. Kwok⁵, M. Pang¹

¹Hong Kong Polytechnic University, Department of Rehabilitation Sciences, Kowloon, Hong Kong S.A.R.

²Shatin Hospital, Physiotherapy Department, Shatin, Hong Kong S.A.R.

³Guangdong Provincial Work Injury Rehabilitation Hospital, Department of Physiotherapy, Guangzhou, China

⁴Shatin Hospital, Medical and Geriatric Unit, Shatin, Hong Kong S.A.R.

⁵The Chinese University of Hong Kong, Department of Medicine and Therapeutics, Shatin, Hong Kong S.A.R.

Introduction/Background

The use of whole-body vibration (WBV) becomes increasingly common in clinical settings. The aim of this randomized controlled trial was to investigate whether WBV had additional therapeutic effect in improving physical function among institutionalized older adults when implemented in conjunction with a comprehensive exercise program.

Material and Methods

Seventy-three institutionalized older adults (40 women; mean age: 82.3±7.3 years) were randomly allocated to one of the three training groups: comprehensive strength and balance training program combined with WBV; comprehensive strength and balance training program without WBV; and social and recreational activities involving arm exercises only. All participants completed 3 training sessions per week for 8 weeks. Measured outcomes included assessment of: Timed-up-and-go test, Berg balance test, five-times-sit-to-stand test, six-minute walk test, and Activities-specific Balance Confidence (ABC) scale. Outcomes were measured pre- and post-intervention. Incidences of falls requiring medical attention were recorded for 1 year after the end of the training session.

Results

A significant time × group interaction was found for the five-times-sit-to-stand test ($p=0.048$). Post-hoc analysis showed that the interaction effect was attributable to the improvement in five-times-sit-to-stand test for the exercise group without WBV, compared to a decline in performance among controls ($p=0.030$). The exercise with WBV group had significantly better gain in ABC score than the exercise only group ($p=0.033$). No significant effect was detected in other outcome measures.

Conclusion

The comprehensive exercise program was effective in improving lower limb strength among institutionalized older adults, but adding WBV did not enhance its effect. WBV may induce a placebo effect on balance confidence.

Conflict of interest

Disclosure statement:

Lam was granted a full-time research scholarship by the Hong Kong Polytechnic University (RTSF). Pang was provided with a research grant by the Hong Kong Polytechnic University (G-YJ41). The vibration device was provided by SOOST Ltd. The funder had no role in the study design, data collection, data analysis, interpretation of data, or preparation of the manuscript. The authors declare that they have no conflict of interest.

ISPR7-0893
Geriatrics - Frailty

DAILY LIVING AIDS REQUIREMENTS IN ELDERLY ACCORDING TO AREAS OF GREATER FUNCTIONAL IMPAIRMENT IN BASIC DAILY LIVING ACTIVITIES.

S. Caroca Astudillo¹

¹Instituto Nacional de Geriatria, Hospital de Dia, Santiago, Chile

Introduction/Background

Functionality is an indicator of health in elderly. Technical Aids-adaptations are elements required to protect, support or replace functions and activities, thus allowing maintenance of functional Independence. Thus is important to identify areas of the Basic Daily Living Activities largely altered in the elderly, to objectify the needs of technical aids and / or adaptations.

Material and Methods

Cross-sectional descriptive study, applying Barthel Index and Funcional Independence Measure (FIM) to measure functionality in a sample of 102 patients treated at the Geriatric Day Hospital in National Institute of Geriatrics, during the first quarter of 2015. Data processed with SPSS.

Results

68.6% of the sample are women, average age is 80.7 years, with 85.3% of adults over 75 years. 74,5% moderate dependence (Barthel Index). No relation to age ($p=0.579$). Admission diagnoses: Disorder of Gait 25,5%, Painful shoulder syndrome 15,7 %, Osteoarthritis 14,7%, Stroke 6,9 %.

Deficit areas according to Barthel Index: stairs (86,3%), ambulation (65,7%), transfers (55,9%), wash up (48%), dressing (27,5%), eating (22,5%), grooming (13,7%), toilet (19,6%). Deficit areas according to FIM: Tub/shower (42,2%), stairs (41,2%), walk/wheelchair (31,4%), dressing lower body (30,4%), transfers (27,5%), eating (22,5%), bathing(24,5%).

Conclusion

The largest losses functional areas were found in stairs, ambulation, transfers and clothing inferior, with a match between the two applied test and the evidence reviewed, thus the needs of technical aids and / or adaptations for the implementation of activities of daily living are related to this areas, resulting adjustments are necessary in national policies acquisition of technical aids, considering adapted furniture, shoe horns, among others.

No conflict of interest

ISPR7-0008

Geriatrics - Other Geriatric Conditions

INDOOR GERIATRIC EARLY REHABILITATION; A RANDOMISED OUTCOME STUDY OF 2.579 PATIENTS

C. Angleitner¹, P. Heise², P. Golmayer¹, S. Traussnigg¹, I. Reiter², U. Ewerth¹

¹Hospital of the Sisters of Charity Ried, Department of Geriatrics and Remobilisation, Ried, Austria

²Hospital of the Sisters of Charity Ried, Institute of Physical Medicine and Rehabilitation, Ried, Austria

Introduction/Background

Indoor geriatric early rehabilitation is very well implemented and sufficiently standardized in many countries. But is indoor geriatric early rehabilitation sufficiently in functional outcome for patients from all assigning specialist departments?

Is it possible to reach for all indoor geriatric early rehabilitation patients no matter from which department they come from a sufficient therapeutic progress in functional outcome?

Material and Methods

The retrospective study includes all the patients from 2008 to 2015 which our department of Geriatrics and Remobilisation took over from the neurologic, traumatologic, orthopaedic and internal/cardiological departments. The development was measured with the FIM (functional independence measure). The take over FIM was taken inside 72 hours after arriving and the discharge FIM was taken inside the last 48 hours before leaving.

Results

The study contains 2.579 patients, 848 orthopaedic patients with an average age of 77,67 years, a residence time from 17,79 days and a FIM development from 98 to 113 points; 736 traumatological patients with an average age of 81,75 years, a residence time from 19,02 days and a FIM development from 84 to 103 points; 695 neurological patients with an average age of 77,20 years, a residence time from 20,66 days and a FIM development from 74 to 90 points as well as 300 cardiological/internal patients with an average age of 80,78 years a residence time from 18,18 days and a FIM development from 76 to 96 points. The FIM development of all patient groups is 1,20 (+/- 0,15 points) per therapeutic day. The recommended aim value of the American Rehabilitation Counselling Association (ARCA) amounts to 1 FIM point per therapeutic day.

Conclusion

It is possible to obtain a sufficient functional progress for all patients in indoor early geriatric rehabilitation independently from which specialist department they were overtaken from.

No conflict of interest

ISPR7-0032

Geriatrics - Other Geriatric Conditions

THE CHANGES OF CORTICAL ACTIVATION IN SWALLOWING AFTER APPLICATION OF HIGH FREQUENCY RTMS IN OLDER ADULTS

J.W. Park¹, B.S. Kwon¹, H.J. Kim¹

¹Dongguk University Ilsan Hospital, Physical Medicine and Rehabilitation, Goyang, Republic of Korea

Introduction/Background

Presbyphagia refers to characteristic changes in the swallowing mechanism of healthy older adults. With age, the area of cortical activation was reduced and becoming more symmetrical. On the other hand, non-invasive cortical stimulation could modulate cortical activity and give the improvement in swallowing function. Therefore, we wondered if the high frequency rTMS can make the changes of activity in swallowing cortical area in older adults and stop the functional decrement of swallowing.

Material and Methods

Ten healthy elderly volunteers with right handedness were attended and 18F-labelled FDG-PET scans were obtained in all subjects on three separate occasions (rest, swallowing and swallowing after rTMS). During swallowing study, water was infused orally via a fluid delivery catheter connected to a fluid reservoir at a rate of 600mL/h and subjects swallowed following every 20 sec light flash for 30 min. During rest study, the light source was active but subjects were requested not to swallow. 5Hz rTMS was applied on right pharyngeal motor hot spot for 10 min every weekday for 2 weeks. The intensity of stimulation was set at 90% of the thenar motor threshold of the same hemisphere. The differences between each patient's active image and the control images (t statistic for $p < 0.05$) on a voxel-by-voxel basis were examined to find significant increases in metabolism using Statistical Parametric Mapping (SPM99).

Results

The cortical areas activated by swallowing before rTMS included the bilateral sensorimotor cortex (Brodmann's areas 3, 4) and showed symmetry. The cortical areas activated by swallowing after rTMS were same as the area before rTMS. There was no statistical difference between two swallowing activation areas.

Conclusion

High frequency rTMS did not affect the activation in swallowing sensorimotor cortex in elderly people. It seemed to be impossible to change the aging process related to swallowing.

No conflict of interest

ISPR7-0205

Geriatrics - Other Geriatric Conditions

PHYSICAL ACTIVITY PROMOTION IN OLDER ADULTS: A SCOPING REVIEW OF THE RESEARCH EVIDENCE

S. Mehrabi¹

¹, *Bad Salzuffen, Germany*

Introduction/Background

Population ageing is a global phenomenon resulting in increasing chronic diseases. Despite proven benefits of physical activity (PA) in healthy ageing, very low percentages of elderly are sufficiently active; therefore, addressing physical inactivity and promoting active lifestyles in this population are important. This novel scoping review is conducted to explore and assess nature and extent of evidence relevant to PA promotion among older population as well as to map out key characteristics of single studies included in systematic reviews.

Material and Methods

This scoping review is carried out based on the Arksey and O'Malley framework. An extensive literature search strategy was performed by exploring six databases including PubMed, Scopus, Sport Discus, PsycInfo, ERIC, and IBSS with no limitation concerning search terms, time frame and description of "old" was set up.

Results

The search strategy yielded 16 systematic reviews and 171 primary studies on PA promotion in ageing adults. Researches remained after duplicates and triplicates removal were categorized into: date of publication (mostly between 2001 and 2005), country of study (mainly in North America), trial design (largely RCTs / cluster RCTs), intervention population (mostly people with chronic diseases), sample size (mainly 50 or less participants) and mean age (the most common mean age ranged from 71 to 80.99 years old).

Conclusion

The findings highlight the importance of conducting more interventions specifically in Asia and Africa, embracing multiple methods, recruiting larger sample sizes and conducting interventions tailored to oldest-old people as well as remaining objective and unbiased when conducting systematic reviews.

No conflict of interest

ISPR7-0318

Geriatrics - Other Geriatric Conditions

THE COBS PLATFORM AS A TOOL TO IMPROVE MOBILITY DISORDERS IN THE ELDERLY

V. Cisneros Perdomo¹, C.F. Beatriz¹, P.M. Pedro Luis¹, S.C. Yamile¹

¹Hospital de Rehabilitación Julio Díaz- Centro de Referencia Nacional, Vice-Dirección de rehabilitación, Municipio Boyeros, Cuba

Introduction/Background

Background: Cuba is considered one of the most aged (18.3%) in the Americas, mobility disorders carry the old man falls that they bring about disability and mortality.

Material and Methods

Objective: To evaluate the effectiveness of COBS platform as a tool to improve mobility disorders in older adults.

Methodology: clinical trial applied to all elderly patients admitted to service geriatric rehabilitation, hospital Julio Díaz, period October 2015 to October 2016 sample of 60 patients, a control group and one study, 30 patients each were conducted, using simple random method. action protocol control group and study group service training platform was applied COBS, 20 sessions were added. Tinetti scales used, try "stand up and walk," Romberg and timed leg balance assessment. All patients were assessed before and after treatment in COBS platform.

Results

Results: 100% of patients (60) were diagnosed with impaired mobility both clinical methods and by platform. After treatment platform 40 patients (66.7%) were diagnosed with a disorder I, being those in the control group, the study group a lower prevalence of disorders was obtained after treatment with statistical significance ($p = 0.05$). Platform diagnosis with disorders predominated sitting balance, standing and tilting of the upper body and according to clinical method predominated leg balance test and get up and walk. The study completed treatment group improved 60% and 40% Control group, the Platform was more sensitive in diagnosis 66.6% compared to 45% clinical methods and greater efficiency 46.7% compared to 23.3 exercises %.

Conclusion

Conclusions / Recommendations: COBS Platform shows efficacy in the diagnosis and treatment elderly with impaired mobility.

No conflict of interest

ISPR7-0356

Geriatrics - Other Geriatric Conditions

FORK TEST: A NEW SIMPLE AND RELIABLE CONSISTENCY MEASUREMENT FOR THE DYSPHAGIA DIET

B.S. Kwon¹, J.W. Park¹

¹Dongguk University Ilsan Hospital, Physical Medicine and Rehabilitation, Goyang, Republic of Korea

Introduction/Background

Fork test is a simple tool to assess the consistency of food in dysphagia diet based on the flow of food between the tines of fork and the amount of food that remains on the fork. The objective of this study was to validate fork test by comparing its results to those obtained with a viscometer.

Material and Methods

A total of 27 water and thickener mixtures with different consistencies were prepared and their consistencies were measured with a viscometer. These measures were then compared to those obtained with fork test to evaluate the validity of fork test. In addition, 9 types of consistency-altering products were selected and classified using the fork test. The inter-observer and intra-observer reliabilities of the fork test were assessed with an intra-class correlation coefficient (ICC).

Results

The viscometer was used to obtain reference values for three categories (0 to 300 centipoise (cP), 300 to 10000 cP, and > 10000 cP) in order to categorize water and thickener mixtures into grade 1, grade 2, or grade 3 according to the results of fork test. In the fork test, mayonnaise, mango pudding, and mashed boiled pumpkin were classified as grade 1, Yogurt, honey, and tomato ketchup were classified as grade 2, while tomato juice, yogurt beverage, and diluted barium solution were classified as grade 3. Our results revealed that the fork test showed excellent validity ($r = -0.889$, $p < 0.05$), intra-observer reliability, and inter-observer reliability.

Conclusion

Therefore, fork test may be used as a practical tool to assess food consistency.

No conflict of interest

ISPR7-0377

Geriatrics - Other Geriatric Conditions

SOCIAL SECURITY HOME-BASED CARE PROGRAM IN LIMA, PERU (PADOMI): AN OPPORTUNITY FOR COMMUNITY-BASED REHABILITATION IN THE ELDERLY

G. Camacho¹, *T. Nakazato*², *A. Bendezu*¹, *F. Ravello*¹, *R. Echevarria*¹, *F. Farias*³, *J. Camacho*⁴

¹*Essalud, Padomi, Lima, Peru*

²*Cedomuh, Pain, Lima, Peru*

³*Clinica Internacional, Odontologia, Lima, Peru*

⁴*Camacho Farias, Odontomovil, Lima, Peru*

Introduction/Background

BACKGROUND: PADOMI is an acronym for a program that focus in a comprehensive home-based treatment of elderly patients with stable diseases. Patients who belong to Peruvian Social Security can be enrolled if derived by his/her health center and are ≥ 75 years-old (or younger if suffer sequelae of diseases). They receive a monthly medical visit, the physician in charge treat the patients, prescribes evaluations by other medical specialties, request image studies (X-rays or ultrasonography), laboratory analysis, or visit of nurses, physical therapists, nutritionists, psychologists or social workers.

Material and Methods

METHODS: Descriptive, observational.

Results

RESULTS: PADOMI Lima currently have 25316 patients (3% of total social security population). The program has 112 primary-care physicians, 77 medical specialists, 56 nurses, 99 physical therapists, 11 psychologists, 6 nutritionists, 5 social workers. At initial evaluation patients are classified as independents, partial or total dependents. Most common diagnosis are: Hypertension, osteoarthritis, Parkinson disease, walking impairment, stroke, COPD, dementia. Medical specialties with more demand are physiatry, cardiology, urology, neurology. Psychiatrists evaluate patients for impairments and disabilities, and prescribe physical therapy. Patients receive a physical therapist for treatment once a week for three months. Main rehabilitation objectives are: Prevent bedridden complications, functional recovery of orthopedics and neurologic patients, breathing support in respiratory diseases. Patients, their family or caregivers receive teaching and training for patient's care and to modify adverse environment.

Conclusion

CONCLUSION: PADOMI provides home-based care to stable patients, and it helps reduce hospital burdens. It is a great opportunity for a community-based rehabilitation program that should be strengthened and expanded.

No conflict of interest

ISPR7-0379

Geriatrics - Other Geriatric Conditions

WELCOME TO A NEW SUB-SPECIALTY? COMMUNITY-BASED REHABILITATION IN THE ELDERLY IN A PERUVIAN SOCIAL SECURITY HOME-BASED CARE PROGRAM

G. Camacho¹, T. Nakazato¹, A. Bendezu², F. Farias³, F. Ravello², R. Echevarria², J. Camacho⁴

¹*Cedomuh, Pain, Lima, Peru*

²*Essalud, Padomi, Lima, Peru*

³*Clinica Internacional, Odontologia, Lima, Peru*

⁴*Camacho Farias, Odontomovil, Lima, Peru*

Introduction/Background

BACKGROUND AND AIM: With the rise of life expectancy, it leads to an increased number of older patients, with a subsequent growth of age-related diseases and the sequelae of them. These require improvements in their quality of life and architectural barriers in their homes. That is why there is a growing interest in home-based rehabilitation services. In Peru, there is a social security home-base care program (PADOMI) that includes physical medicine and rehabilitation programs. Our aim is to systematize the psychiatric evaluation and treatment of our patients.

Material and Methods

METHODS: Observational, descriptive.

Results

RESULTS: We use a systematic evaluation of patients. Initial evaluation includes higher mental functions, asking the patient for names, age, number and identification of offspring, and description of previous diseases. Patients without cognitive deficit receive physical therapy based on functional recovery or maintenance depending on the etiology of the disease (orthopedic, neurologic, respiratory, rheumatologic among others) with short term objectives and psychiatric evaluations every 1-2 months. Patients with severe cognitive deficit and disabilities receive treatment to prevention complications (pressure ulcers, respiratory infections, postural impairments), with re-evaluations every 6 months. Patients with intermediate cognitive deficit and disabilities the intervention prioritize functioning, balance, proprioception, enhance breathing and swallowing and avoid bedridden, with re-evaluation every 3 months. Teaching/training of primary caregivers/patient's family is an essential part of the program.

Conclusion

CONCLUSION: There is an increasing demand of community-based rehabilitation treatment in the elderly and the causes are multifactorial. There is a need to establish psychiatric guides for evaluation and treatment with clear rehabilitation goals.

No conflict of interest

ISPR7-0408

Geriatrics - Other Geriatric Conditions

CROSS-CULTURAL ADAPTATION OF MEASURES FOR DRIVING RELATED FUNCTIONS IN OLDER DRIVERS

M.S. Lee¹, J.Y. Kim², Y.K. Kang¹, Y.R. Cha³, B.K. Jung³

¹Soonchunhyang University, ICT Convergence Rehabilitation Engineering, Asan, Republic of Korea

²Soonchunhyang University, Medical Science, Asan, Republic of Korea

³Soonchunhyang University, Occupational Therapy, Asan, Republic of Korea

Introduction/Background

Although functions in older drivers need evaluating, availability of assessment tools are limited in the Republic of Korea. Related research suggests physical, motor, visual, and cognitive functions are predictors of at fault crashes and they can be assessed with measures such as Rapid pace walk, Recall test, Trail Making Test, Motor-free Visual Perception Test and Useful Filed of View. Therefore, the aim of this study was to achieve cross-cultural adaptation of instructions of the measures for assessing driving functions in older drivers living in the Republic of Korea.

Material and Methods

Translation of instructions for measurement administration was completed according to Translation and Cultural Adaptation of Patient Reported Outcomes measures – Principles of Good Practice. The measures were then examined in terms of test-retest reliability, and criterion-referenced validity were completed by comparing the measures with Landolt "C" translucent, clock drawing test, Korean color word stroop test, and foot tap test. Total 30 older adults who are over 65 entered this study.

Results

Since the original instructions were thoroughly produced to allow self-administration without assistance, translation of the instructions were completed with plain language trying to avoid medical terms. Test-retest analysis confirmed that the tool were reliable as the results of test and retest were highly associated. In addition, comparison of tools showed that they were significantly correlated.

Conclusion

It is crucial to make measures for assessing driving related functions available. The translated instructions of the measures enable both driver rehabilitation specialist and older drivers to examine driving related functions.

No conflict of interest

ISPR7-0421

Geriatrics - Other Geriatric Conditions

MALNUTRITION-SARCOPENIA SYNDROME: A NEW VALUABLE PREDICTOR OF MORTALITY IN HOSPITALIZED ELDERLY PATIENTS

M. Yang¹, J. Jiaojiao², H. Qiukui¹, D. Birong¹

¹West China Hospital of Sichuan University, The Center of Gerontology and Geriatrics, Chengdu, China

²West China Hospital of Sichuan University, The Center of Rehabilitation, Chengdu, China

Introduction/Background

Malnutrition-sarcopenia syndrome (MSS) refers to the clinical presentation of both malnutrition and sarcopenia. This study aimed to investigate the association between MSS and long-term mortality in elderly inpatients.

Material and Methods

We conducted a prospective study in acute geriatric wards of two local hospitals in China. Malnutrition and malnutrition risk were defined by the Mini Nutritional Assessment (MNA). Sarcopenia was defined according to the diagnostic algorithm of the Asian Working Group for Sarcopenia (AWGS). The survival status was determined by telephone interviews.

Results

Of the 453 participants (aged ≥ 60 years), 14 (3.1%) had sarcopenia with normal nutrition, 139 (30.7%) had malnutrition risk without sarcopenia, 48 (10.6%) had malnutrition risk with sarcopenia, 25 (5.5%) had malnutrition without sarcopenia, and 22 (4.9%) had MSS at baseline. During the 3-year follow-up, 79 participants (19.1%) died. Compared with non-sarcopenic subjects with normal nutrition, subjects with MSS and subjects with malnutrition risk and sarcopenia were more than four times more likely to die (hazard ratio [HR], 4.78; 95% confidence interval [CI], 2.09-10.97; and HR, 4.25; 95% CI, 2.22-8.12, respectively); non-sarcopenic subjects with malnutrition risk were more than two times more likely to die (HR, 2.41; 95% CI, 1.32-4.39); non-sarcopenic subjects with malnutrition also had a higher risk of death, but the difference was not statistically significant (HR, 2.62; 95% CI 0.98-7.04); and sarcopenic subjects with normal nutritional status had no significantly higher risk of death (HR, 1.66; 95% CI, 0.48-5.72).

Conclusion

MSS may serve as a prognostic factor in the management of hospitalized elderly patients.

No conflict of interest

ISPR7-0423

Geriatrics - Other Geriatric Conditions

BOTH SELF-REPORTED ADL AND IADL DISABILITIES PREDICT MORTALITY AMONG ELDERLY RESIDENTS IN LONG-TERM CARE

J. Jiang¹, Y. Ming², H. Qiuku²

¹West China Hospital of Sichuan University, The Center of Rehabilitation, Chengdu, China

²West China Hospital of Sichuan University, The Center of Gerontology and Geriatrics, Chengdu, China

Introduction/Background

Little is known about the predictive value of self-reported disability for mortality among elderly residents in long-term care. This study aimed to investigate the associations between mortality and self-reported activities of daily living (ADL) disability and instrumental activities of daily living (IADL) disability in a population of elderly residents in long-term care.

Material and Methods

We conducted a prospective observational study in two long-term care institutions in Chengdu, China. Subjects aged 70 years or older were followed for 12 months. Face-to-face interviews were performed at baseline. ADL and IADL disabilities were measured using the physical self-maintenance scale (PSMS) and Lawton-Brody IADL scale, respectively. Nutritional status, cognitive function, and comorbidities were also assessed. Cox proportional hazards models and Kaplan-Meier curves were calculated for all-cause mortality.

Results

Totally, 287 individuals (mean age: 82.7 ± 6.4 years) were included. At baseline, the prevalence of ADL and IADL disability were 34.8% and 71.8%, respectively. During the follow-up period, 110 individuals (38.3%) died. The mortality was significantly higher in the individuals with ADL disability compared with those without ADL disability (51.0% vs. 31.9%, $p=0.001$). Similarly, the mortality was significantly higher in the IADL disability group compared with the non-IADL disability group (43.7% vs. 22.7%, $p=0.004$). After adjusting for potential confounders, both ADL disability (adjusted hazard ratio [HR] 2.56; 95% confidential interval [CI]: 1.15-5.92) and IADL disability (adjusted HR: 1.72; 95% CI 1.17-3.81) were independent predictors of mortality.

Conclusion

Both self-reported ADL and IADL disabilities can predict all-cause mortality among elderly residents in long-term care.

No conflict of interest

ISPR7-0566

Geriatrics - Other Geriatric Conditions

CARDIAC AUTONOMIC ADJUSTMENTS DURING RESISTIVE EXERCISE RECOVERY IN ELDERLY: IMPACT OF AGEING

C. Italiano Monteiro¹, *R. Gonçalves Mendes*², *É. Zavaglia Kabbach*², *F. Cristina Rossi Caruso*², *A. Borghi-Silva*², *R. Cabiddu*²

¹, Sao Carlos, Brazil

²Federal University of Sao Carlos, Physiotherapy Department, Sao Carlos, Brazil

Introduction/Background

During physical exercise performance and recovery physiological adjustments occur for metabolic demand supply. Recovery of the heart rate (HR) after exercise is a function of autonomic modulation, which is impaired in elderly people. However cardiovascular adjustments during recovery after resistive exercise (RE) in the elderly have not been investigated yet. Our aim was to analyze the response of a sympathetic modulation index (LF) and heart rate recovery (HRR) to RE during the recovery period in elderly and young subjects.

Material and Methods

16 elderly (66.3±4.5 years) and 17 young men (25.7±3.6 years) performed the exercise on the Leg Press 45° device at an intensity of 90% of 1 repetition maximum (RM) until exhaustion. The HR signal was recorded during 6 minutes of recovery (Polar® S810i). The signal power in the low frequency (LF) band was computed. The HRR index was calculated by subtracting the first minute HR from the maximal HR (HRR-1). Two-way ANOVA was performed (SigmaPlot, significance: p<0.05) to assess statistical differences.

Results

Significant differences were found between elderly and young subjects during the recovery period at 90% in the LF index (0.31±0.12 n.u. vs. 0.27±0.08 n.u., respectively) and in HRR-1 (25.7± 6.5 bpm vs. 34.7±9.8 bpm).

Conclusion

The LF index, which is predominantly influenced by the sympathetic modulation, was higher in the elderly subjects during recovery. This pattern is in agreement with the lower HRR we observed in the elderly group. These results support that the cardiovascular adjustments investigated through HRR are attenuated in the elderly when compared to younger people.

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No conflict of interest

ISPR7-0592

Geriatrics - Other Geriatric Conditions

DELIRIUM SCREENING PREDICTING TRANSFER TO ACUTE CARE HOSPITAL FROM INPATIENT REHABILITATION FACILITY

M. Oh-Park¹, B. So²

¹Kessler Institute for Rehabilitation, Physical Medicine and Rehabilitation, West Orange, USA

²Rutgers New Jersey Medical School, Physical Medicine and Rehabilitation, Newark, USA

Introduction/Background

Transfer of patients back to the acute care hospital (Acute care transfer: ACT) from inpatient rehabilitation facility (IRF) interferes rehabilitation process and is also a tremendous stress to the patients. The rate of ACT is used as a quality indicator of rehabilitation facility and it is important to identify risk factors for ACT. The objective of this study is to examine whether screening for delirium at admission will predict ACT among patients at IRF.

Material and Methods

Delirium screening was performed with Confusion Assessment Method (CAM) for all patients at admission in one IRF for 3 months. The result of the CAM was recorded as positive, negative, or unscorable. Outcome variable was ACT (yes, no). Logistic regression analysis was used to examine whether positive or unscorable results would be a predictor for ACT.

Results

Among 406 patients screened, and 41 patients (10.0%) were positive for delirium and 7 were unscorable due to various reasons (e.g. coma, aphasia). Among those with positive or unscorable on CAM, 9 (18.3%) had ACT compared to 20 (5.6%) among those with negative CAM. The odds ratio (OR) of CAM positive or unscorable group for TAC was 2.7 (95% CI, 1.1-7.0) after adjusting for age and motor FIM score at admission.

Conclusion

The results of delirium screening at admission in IRF independently predict ACT. Vigilant medical evaluation and intervention for this high risk population should be taken into account for reduction of ACT at IRF.

No conflict of interest

ISPR7-0620

Geriatrics - Other Geriatric Conditions

A UNIQUE, COMMUNITY-BASED, ADULT DAY, SLOW-STREAM REHABILITATION PROGRAM FOR OLDER ADULTS TRANSITIONING FROM HOSPITAL TO HOME.

V. Dal Bello-Haas¹, O. Virag¹, M. Maximos¹, S. Seng-iad¹, S. Kaasalainen²

¹*McMaster University, School of Rehabilitation Science, Hamilton, Canada*

²*McMaster University, School of Nursing, Hamilton, Canada*

Introduction/Background

With the burden of care for older adults moving from hospital to community-based informal and formal care, and an increase in post-acute care services use, unique models of care may be beneficial for older adults transitioning from hospital to home. The purpose of this presentation is to provide an overview of Goldies-2-Home (G2H, Shalom Village, Hamilton, Ontario), a community-based, adult day, slow-stream rehabilitation.

Material and Methods

Document analysis, a research method comprised of analyzing and interpreting data generated from the examination of documents and records, was initially conducted. Interviews and focus groups, using a semi-structured interview guide, were completed with G2H administrative, therapy and other staff, Continuing Care Access Centers (CCAC) staff, and past participants and their caregivers. Interviews and focus groups were audio-recorded, transcribed, and thematically analyzed. Last, data from the G2H database were descriptively analyzed.

Results

Goldies-2-Home began in 2007 in partnership with CCACs, Hamilton Health Sciences, St. Joseph's Healthcare and Hamilton Convalescent Care Programs. Stated G2H program goals include: facilitating timely discharge from hospital, building older adults' confidence to 'ease back' into home life setting with supports as needed, and connecting G2H participants with community supports as needed. G2H and CCAC staff, and past participants of G2H and their caregivers identified numerous individual-level benefits including improved emotional, psychological and physical status. G2H participants were comprised of 63% females, with a mean age of 77.5 (SD = 14.4). More than half of the participants were receiving CCAC services prior to admission. Admitting diagnoses were varied and included fractures, stroke, falls, deconditioning, and multiple morbidities and exacerbation of chronic conditions. Program services include nursing, therapy, personal care assistance, a bathing program, and community pharmacy support.

Conclusion

As a model of care, G2H is a unique program aimed at reducing the current treatment gap and affords several benefits, for older adults transitioning from hospital to home.

No conflict of interest

ISPR7-0841

Geriatrics - Other Geriatric Conditions

ANALYSIS OF FACTORS RELATED TO PHYSICAL CONDITIONS OF THE COMMUNITY-DWELLING OLDER ADULTS IN CHINA

Y. Song¹, Y. Cai¹

¹Wuhan University, School of Health Sciences, Wuhan, China

Introduction/Background

The objective of this study is to identify the physical conditions and the correlated factors of community-dwelling older adults in China.

Material and Methods

80 adults over 55-year-old were selected by convenience sampling in community. They were tested with Center for Epidemiologic Studies Depression Scale (CES-D), Mini-Mental State Examination (MMSE) and Activities of Daily Living (ADL). Physical conditions were measured by researchers in grip strength, timed "up and go" test (TUG test), five-times-sit-to-stand test (FTSST) and modified Clinical Test of Sensory Interaction and Balance (mCTSIB).

Results

The mean age of the participants is (66.09±6.80). There are 27(33.75%) males and 52(66.25%) females. There are 41(51.25%) people with cognitive impairment, 9(11.25%) people with depress symptoms, 9(11.25%) people with trouble in activity of daily living. The grip strength of the participants was (27.46±9.66) kg; the time of TUG test was (9.05±3.47)s; the time of FTSST was (11.58±4.03)s; there was 1 participant observed with an impairment in mCTSIB. Pearson correlation analysis showed that grip strength was related with gender, education level, ADL and MMSE ($r=-0.680, -0.265, -0.302, 0.259, P<0.05$); TUG test was related to education level, income and ADL ($r=-0.348, 0.231, 0.460, P<0.05$); FISST was related to gender, education level, income and ADL ($r=0.278, -0.254, -0.222, 0.458, P<0.05$); mCTSIB was related to marital status and ADL ($r=0.268, 0.316, P<0.05$). Regression analysis showed that grip strength was related with gender ($\beta =-0.615, P<0.01$), and TUG test, FTSST and mCTSIB was related with the ability of daily living ($\beta =0.413, 0.423, 0.260, P<0.05$).

Conclusion

The physical conditions of older adults living in community were related to their activities of daily living.

No conflict of interest

ISPR7-0043

Geriatrics - Risk of Falls in the Elderly

THE EFFECTS OF TREADMILL-PERTURBATION TRAINING ON DYNAMIC STABILITY CONTROL AND FALL REDUCTION IN OLDER ADULTS

Y. Wang¹, X. Liu¹, S. Wang¹, A. Lee¹, C. Paj¹

¹University Of Illinois At Chicago, Physical Therapy, Chicago, Usa

Introduction/Background

Perturbation training could improve older adults' resilience to falls. The purpose of this study was to investigate whether treadmill-perturbation training could also improve their control of stability and thus reduce their risk of falls upon encountering an unannounced, novel slip during overground walking.

Material and Methods

122 community-living older adults experienced 40 slip-like disturbances while walking on a computer-controlled treadmill, and 120 older adults had the same length of time walking on the same treadmill without experiencing any disturbance. Both groups walked on an overground walkway multiple times before being exposed to an unannounced, novel, single slip. Their results were also contrasted with existing data collected on identical overground walkway from 73 older adults who received training with 24-slips and another 75 older adults, without treadmill walking, who were exposed only to the same single slip.

Results

Treadmill-perturbation training significantly improved older adults' control of stability, and reduced their risk of falls upon their novel overground slip (13.5% versus 41.7%, $p < 0.05$ between treadmill walkers with and without disturbances), while treadmill walking in itself was insufficient to reduce falls (41.7% versus 45.3%, $p > 0.05$ between treadmill walkers and overground walkers). The improvement in the reactive control of stability from treadmill-perturbation training was only 40% of that from overground-perturbation training ($p < 0.05$), however, resulted in a greater risk of falls (13.5% versus 0%, $p < 0.05$).

Conclusion

The improvements in the control of stability resulted from treadmill-perturbation training could still significantly reduce older adults' fall-risk.

No conflict of interest

ISPR7-0501

Geriatrics - Risk of Falls in the Elderly

COMPARISON OF THE ACCEPTABILITY OF THE WII AND A POSTUROGRAPHY SYSTEM AMONG THE GERIATRIC POPULATION

A. Burstin¹, H. Sugarman², B. Riki¹

¹Beit Rivka' Geriatric Rehabilitation Center, Physical Therapy, Petach Tikva, Israel

²Research Center for the Health and Medical Sciences- Ono Academic College, Physical Therapy, Kiriat Ono, Israel

Introduction/Background

Because balance problems are one of the strongest risk factors for falling, one of the principal aims of physical therapy in the elderly is the improvement of balance and stability. Two commonly used methods of balance training are force platforms with postural feedback and virtual reality (VR). In recent years, the Nintendo WiiFit has been increasingly used as a VR therapeutic tool in the treatment of the elderly. Its attractive graphics and the sense of playing a game challenge and encourage the participants. Its low cost and ready availability make it attractive to the clinician. In contrast to this, force platform postural biofeedback systems, while superior in capabilities, are expensive, usually have simple basic graphics and relatively simple tasks. Despite the apparent advantages of the Wii, its acceptability to the elderly is unclear

Material and Methods

The aim of this study is to compare the acceptability of the WiiFit VR system and the Tetrax posturography system to elderly rehabilitation patients.

Twenty inpatients (17 orthopedic and 3 neurological) average age 75 were treated with both the Wii and the Tetrax systems as part of their regular physical therapy program. Two tasks from each system were used. Subjects filled out a Short Feedback Questionnaire (SFQ) for each task after the third treatment.

Results

Preliminary results indicate that the subjects found the Wii to be less enjoyable and its tasks more difficult than the Tetrax. While there was no difference between the Tetrax and the Wii in the total score of the SFQ, there were small but significant differences between the 2 systems in the items dealing with level of enjoyment and perceived level of difficulty

Conclusion

Despite the advantages of the Wii as a therapeutic tool, its acceptability by the elderly should be investigated further

No conflict of interest

ISPR7-0796

Geriatrics - Risk of Falls in the Elderly

DETECTABILITY OF FOUR WELL-ESTABLISHED BALANCE MEASURES TO IDENTIFY THE RISK OF FALLING IN COMMUNITY-DWELLING OLDER PEOPLE

Y. Otaka^{1,2}, M. Morita², T. Mimura², M. Uzawa³, M. Liu¹

¹Keio University School of Medicine, Department of Rehabilitation Medicine, Tokyo, Japan

²Keiyu Orthopedic Hospital, Center for Fall and Fracture Prevention, Gunma, Japan

³Keiyu Orthopedic Hospital, Department of Orthopedic Surgery, Gunma, Japan

Introduction/Background

Although various balance measures have been used to assess balance in community-dwelling older people, the best measure to identify the risk of falling has not been well explored. The aim of the study was to examine the detectability of the risk of falling for four well-established balance measures in community-dwelling older people.

Material and Methods

We retrospectively analyzed 2262 community-dwelling older people (mean age \pm standard deviation, 72.0 \pm 7.5 y) who participated in a local fall prevention class. They were assessed with the Timed Up & Go test (TUG), the Functional Reach test (FR) in the right hand, and the One Leg Standing test (OLS) in the right foot. In addition, almost half of the participants (n=902) were also assessed with the Berg Balance Scale (BBS). The risk of falling was determined by the multiple falls in a year prior to the assessments. We analyzed the relationships between these balance measures and the risk of falling with the logistic regression and the receiver operating curve (ROC) analyses.

Results

The univariate logistic regression analyses revealed that all the measures were significantly related to the risk of falling in both sexes ($p < 0.05$). The areas under the ROC curve for detecting the risk of falling with TUG, FR, OLS, and BBS were 0.66, 0.63, 0.63, and 0.66 in females; and 0.64, 0.58, 0.61, and 0.65 in males, respectively.

Conclusion

Although all the four measures were related to the risk of falling, the detectability of the risk of falling was relatively low and similar across the measures.

No conflict of interest

ISPR7-0851

Geriatrics - Risk of Falls in the Elderly

ALTERATION OF THE BALANCE ASSESSED BY TEST IN THE BALANCE REHABILITATION UNIT IN ELDERLY FROM GERIATRIC DAY HOSPITAL

M. Arias¹, M.V. Figueroa¹, B. Cordier¹, A. Ibaceta²

¹instituto Nacional de Geriatria, Hospital de Dia Geriatrico, Santiago de Chile, Chile

²instituto Nacional de Geriatria, Departamento de Docencia, Santiago de Chile, Chile

Introduction/Background

Changes in balance and frequent falls are an important geriatric syndrome, causing loss of functionality in the elderly.

Postural control is altered in the population as it ages due to the various systems involved producing a loss of balance which favors falls in the older adult population. The Balance Rehabilitation Unit (BRU) is a useful tool to evaluate these altered systems such as pressure center, stability limit and oscillation speed.

Material and Methods

The alteration of the balance with different stimuli was evaluated by means of the BRU, determining the stability limit and the pressure oscillation of the central pressure in a patient with a history of falls and patients without a history of falls.

Non-experimental cross-sectional study of 60 patients (30 patient with falls and 30 patients without falls) who entered Geriatric Day Hospital during October-December 2015.

SPSS processed information (significant $p < 0.05$).

Results

Average 74.5 years (64-89 years) 48.3% 75-89 years.

73.3% female.

Body Mass Index: deficit 10%, overweight 21.7%, obesity 35.0%.

Barthel Index: 93.3% moderate dependence in Basic Daily Living Activities

23.3% Mild cognitive impairment (DCL).

Diagnosis of admission: disorder walking 15.0%, frequent falls 23.3%, both 26.7%. Comorbidities: HTA 66.7%, DM 26.7%, hypothyroidism 13.3%

There were no significant differences in both groups between age, male-female ($p = 0.991$), patient with or without falls ($p = 0.313$), with-without DCL ($p = 0.063$).

Area of stability: stable surface / closed eyes $p = 0.114$, saccadic stimulation $p = 0.824$, lateral visuo-vestibular $p = 0.128$, vertical visuo-vestibular $p = 0.001$, unstable / closed eyes $p = 0.005$

Velocity of oscillation: stable surface / closed eyes $p = 0.004$, saccadic stimuli $p = 0.019$, lateral visuo-vestibular stimulus $p = 0.003$, vertical visuo-vestibular stimuli $p = 0.001$, unstable / closed eyes $p = 0.004$

Conclusion: Patients with a history of falls compared with the patients without falls they had altered the rate of oscillation in different balance assessment tests with decreased stability limit.

This difference is greater with closed-eyes, in visuo-vestibular or unstable surfaces.

No conflict of interest

ISPR7-0912

Geriatrics - Risk of Falls in the Elderly

APPLICABILITY OF RUSSIAN CURRENTS (RC) TO IMPROVE STRENGTH, BALANCE AND GAIT SPEED IN THE ELDERLY WITH RISK OF FALLS.

M. Sanjuán Vásquez¹, M.D.L.L. Montes Castillo², S. Martínez-Torres³, C.O. López López³

¹, Ciudad de México, Mexico

²Hospital General de México, Medicina Física y Rehabilitación, Ciudad de México, Mexico

³Hospital General de México, Servicio de Rehabilitación, Ciudad de México, Mexico

Introduction/Background

By 2050 there will be 180 million of older adults in Latin America. Sarcopenia is the loss of muscle mass and strength associated with age, muscle weakness, poor function and increased risk of falls. Electro-stimulation with **RC** help us to increase selective recruitment for Type II fibers at muscle.

Since, there is no evidence in the usage of **RC** in elderly, the aim of this study was to evaluate the applicability of this therapeutic modality in muscular strengthening to prevent falls.

Material and Methods

We selected patients >60 years old with one fall history in the last year, at least 50% of motion range in lower extremities and muscle strength 3+/5 (Medical Research Council).

We collected variables: strength with dynamometer, walk test (6 minute walk and Get Up and Go test) and balance (Tinetti and Berg test) before and after treatment.

Treatment: **RC** electrotherapy (30-440µs pulses, 200-2500Hz. frequency, 10 trains of 50Hz. 10sec. during stimuli and 50sec. during rest) at Tibialis anterior, vastus intermedius, vastus lateralis and vastus medialis motor points, followed by isometric exercise, for 3 sessions /30 minutes per week/ 12 weeks.

Descriptive statistics (mean ± SD and frequencies) were used to describe demographic and key clinical characteristics. Paired T tests were used for differences before and after treatment.

Results

We included 25 patients (62.5±5.5 years old), 96% female, 48% had elementary school and BMI 28.1±3.22kg/cm², all patients received 35.6±0.76 sessions of physical therapy. We found improvement with statistical significance (p<0.05) when compared all variables (Table1)

Variable	Baseline evaluation	<u>Second evaluation</u>	p
	Mean (SD)	Mean (SD)	
Gait speed test (<u>mt./sec.</u>)	0.93 (0.20)	1.11 (0.22)	0.001
Distance (<u>mt.</u>)	336.8 (72.91)	402.8 (81.3)	0.001
Get Up and GO Test (sec.)	13.72 (2.71)	10.24 (2.15)	0.001
<u>Tinetti</u> Test (score)	19.56 (4.60)	23.88 (3.28)	0.001
<u>Berg</u> Test (score)	36.76 (5.98)	40.36 (5.46)	0.001
<u>Quadriceps</u> strength(kg)	10.42 (2.82)	13.36 (2.95)	0.001
<u>Tibialis anterior</u> strength (kg)	4.12 (1.69)	5.80 (2.01)	0.001

Table 1. Clinical evaluation baseline and after treatment.

Conclusion

RC improved globally gait speed and strength, lowering risk fall and improving Tinetti and Berg scores after treatment. It's necessary to include a control group and older patients with comorbidities.

No conflict of interest

ISPR7-0040

Geriatrics - Sarcopenia

THE ROLE OF VITAMIN D AND EXERCISES IN CORRECTION OF AGE-RELATED SKELETAL MUSCLE CHANGES IN POSTMENOPAUSAL WOMEN

V. Povoroznyuk¹, N. Dzerovych¹, R. Povoroznyuk¹, A. Belinska¹, N. Balatska¹

¹D.F. Chebotarev Institute of Gerontology NAMS Ukraine,

Department of Clinical Physiology and Pathology of Locomotor Apparatus, Kiev, Ukraine

Introduction/Background

The aim of the study was to evaluate the role of vitamin D and exercises in correction of age-related skeletal muscle changes in postmenopausal women.

Material and Methods

38 postmenopausal women aged 53-82 years (mean age – 67.00±7.08 yrs) were examined. The women were divided into the following groups: A – control group (n=10), B – women who took an individually-targeted vitamin D therapy (n=11), C – women who took an individually-targeted vitamin D therapy and OTAGO Exercise Programme (http://www.hfwcny.org/Tools/BroadCaster/Upload/Project13/Docs/Otago_Exercise_Programme.pdf) during 12 months. The assessment of the examined women was conducted every 3 months at the medical center. We assessed the usual gait speed and used hand dynamometry. 25(OH)D total and iPTH levels were measured by electrochemiluminescent method i.e. Elecsys 2010 analytical system (Roche Diagnostics, Germany) and test-systems cobas. The lean mass was measured by the DXA method (Prodigy, GEHC Lunar, Madison, WI, USA).

Results

In women of the control group, the mean 25(OH)D level significantly increased after 9 months of observation (9 months – p=0.03) purportedly due to the seasonal factors. In women of 2nd and 3rd groups, the 25(OH)D level significantly increased after 3, 6, 9 and 12 months of observations (p<0.001). The muscle strength significantly increased after 9 months (p=0.01) in women of 3rd group while in women of 1st and 2nd group this parameter did not change. The usual gait speed and lean mass assessed by DXA did not change in all groups during 12 months. The fall frequency in women of 1st group significantly increased after 12 months, in women of 2nd group it did not change while in women of 3rd group the fall frequency significantly decreased.

Conclusion

Using individually-targeted vitamin D therapy and OTAGO Exercise Programme during 12 months significantly improves daily activity, muscle strength and decreases the fall frequency in postmenopausal women.

No conflict of interest

ISPR7-0358

Geriatrics - Sarcopenia

IMPACT OF LOW MUSCLE MASS AND HIGH BODY FAT ON PHYSICAL MOBILITY IN OLDER INDIVIDUALS WITH SARCOPENIC OBESITY

C.D. Liao¹, L. Tsan-Hon Liou¹

¹Shuang Ho Hospital, Department of Physical Medicine and Rehabilitation, Taipei, Taiwan R.O.C.

Introduction/Background

Both obesity and sarcopenia are increasingly prevalent among older persons and negatively affect physical functioning. However, the combined effect of coexisting obesity and sarcopenia on physical mobility decline remains unclear. We investigated whether obese elder individuals with sarcopenia suffer significantly greater declines in walking speed and mobility than their peers with only obesity or only sarcopenia.

Material and Methods

Appendicular lean mass (ALM) and percentage body fat (PBF) were measured by whole-body dual-energy x-ray absorptiometry. Obesity was identified by gender-specific cutoff points of PBF (men >30; women >40). The cutoff values for sarcopenia were 6.08 kg/m² in men and 4.79 kg/m² in women. Sarcopenic-obesity categories were defined by cross-classifying ALM index and obesity. Mobility limitation was defined as a gender-specific walk speed lower than 1.27 m/s in men and 1.19 m/s in women. Logistic regression calculated crude and adjusted odds ratios (OR) and 95% confidence intervals (CI) for mobility limitation, adjusting for covariates.

Results

A total of 169 community-dwelled older persons with a mean (SD) age of 64.3 (6.8) years were enrolled and divided into 4 sarcopenic-obesity categorized groups: referent (n = 16), only sarcopenic (n = 23), only obese (n = 72), and sarcopenic-obese (n = 58). Fifty-five percent of sarcopenic-obese group had mobility limitation, as well as 30% and 36% in only sarcopenic and only obese group, respectively. After adjusted with age and sex, sarcopenic-obesity has a significantly greater risk of slow walk speed (adjust OR 13.7; 95% CI 2.28–81.89, $P < 0.01$) either than their only sarcopenic (adjust OR 7.7; 95% CI 1.32–45.39) or only obese peers (adjust OR 4.8; 95% CI 0.64–35.71).

Conclusion

Both low muscle mass and high body fat exert negative impacts on physical mobility in older individuals. Combination of these two burdens increases risk of physical limitation in elderly with sarcopenic obesity.

No conflict of interest

ISPR7-0753

Geriatrics - Sarcopenia

CAN THE COMBINATION OF HYPOVITAMINOSIS D AND OVERWEIGHT EXERT AN ADDITIVE NEGATIVE EFFECT ON MUSCLE FUNCTION IN POST-MENOPAUSAL WOMEN?

A. de Sire¹, F. Gimigliano², A. Moretti¹, D. Calafiore¹, R. Gimigliano¹

¹University of Campania, Department of Medical and Surgical Specialties and Dentistry, Napoli, Italy

²University of Campania, Department of Mental and Physical Health and Preventive Medicine, Napoli, Italy

Introduction/Background

Recent studies showed that hypovitaminosis D and obesity are strictly correlated and might adversely affect the musculoskeletal function. The aim of our study was to prove if the combination of hypovitaminosis D and overweight could exert an additive negative effect on muscle function in post-menopausal women.

Material and Methods

In this retrospective study, we analyzed data from postmenopausal women, defining as hypovitaminosis D serum levels of 25(OH)D₃<30ng/ml and as overweight women with a BMI of 25-29.9kg/m². We divided the population into 4 groups: group 1, normoweight with hypovitaminosis D; group 2, overweight with normal levels of 25(OH)D₃; group 3, overweight with hypovitaminosis D; group 4, normoweight with normal levels of 25(OH)D₃, considered as controls. We assessed: muscle strength, using Hand Grip Strength (HGS) and physical performance, with the Short Physical Performance Battery (SPPB).

Results

We divided 368 women of 67.2 ± 7.7 years in the 4 groups: 95 in group 1; 90 in group 2; 96 in group 3; 87 in group 4. Overweight and normoweight women with hypovitaminosis D had a significantly increased risk of impairment in muscle strength (HGS<16kg) (OR 6.56, p<0.001 and OR 6.68, p<0.001, respectively) and performance (SPPB≤8) (OR 5.58, p<0.001 and OR 3.90, p<0.001, respectively) compared to controls.

Conclusion

In our cohort of post-menopausal women, the hypovitaminosis D was associated with a higher risk of muscle function deficit, but the combination with overweight lead to a higher risk of having an impairment of physical performance.

No conflict of interest

ISPR7-0389

Internal Medicine and Other Conditions - Bladder and Bowel Disorders

THE OUTCOME OF IMPLEMENTATION OF STRUCTURED CONTINENCE MANAGEMENT PROGRAM IN REHABILITATION SETTING

A. Elmalik¹

¹*Royal Melbourne Hospital, Rehabilitation Medicine, Melbourne, Australia*

Introduction/Background

Bladder and bowel disturbance is a commonly encountered problem in inpatient rehabilitation settings and associated with significant morbidity, impacting persons' physical, psychosocial, recreational and sexual function; and can compromise quality of life. A range of interventions are recommended for bladder and bowel management for inpatients in rehabilitation. The purpose of this study is to evaluate the impact of the structured continence management program (SCMP) in an inpatient rehabilitation service.

Material and Methods

Study design: Prospective study

Settings: Inpatient rehabilitation unit, Royal Melbourne Hospital

Participants: 100 consecutive admitted patients over six months.

Intervention: An individualised SBMP was instituted based on the individual's clinical needs.

Procedure: After an informed consent was obtained, each participant was assessed for bowel dysfunction on admission. The assessments were completed at baseline (T1), and discharge from ward (T2) using validated questionnaires. Another follow up program evaluation was conducted at 3-month (T3) post-discharge.

Results

Participants were predominantly female (52%), mean age 68 ± 13 years. Almost one-half (43%) had neurological conditions and 41% musculoskeletal problems.

At admission, 62% self-reported bowel dysfunction, mainly constipation (82%) and faecal incontinence (FI) (11%) and the rest were reported as diarrhoea.

At T2, participants showed significant improvement in bowel habit and stool consistency (Bristol stool chart, $p < 0.001$); severity of bowel symptoms such as FI (Wexner FI score, $p < 0.05$); and impact on quality of life (FI Quality of Life (QoL) subscales: "life style" and "coping/behaviour", $p < 0.05$ for both).

All functional independent measure "motor" and "cognition" subscales has improved significantly ($p < 0.01$ for all), with moderate to large effect sizes ($r = 0.5-0.7$).

No adverse effects were reported.

Conclusion

Continence management should be a priority within rehabilitative services. Evidence-based SCMP can improve symptoms and enhance overall QoL in patients admitted to rehabilitation settings.

No conflict of interest

ISPR7-0405

Internal Medicine and Other Conditions - Bladder and Bowel Disorders

BLADDER DYSFUNCTION, SEXUAL AND SPINAL POST-PARTUM COMPLICATIONS

M. Fourtassi¹, N. Abda², A. Hajjioui^{3,4}

¹University hospital Mohamed VI, Physical and Rehabilitation Medicine, Oujda, Morocco

²University Hospital Mohamed VI, Laboratory of Epidemiology and Clinical Research, Oujda, Morocco

³University Sidi Mohammed ben Abdellah, Clinical Neurosciences Laboratory, Fez, Morocco

⁴University Hospital HASSAN II, Physical and Rehabilitation Medicine, Fez, Morocco

Introduction/Background

Pregnancy and childbirth may result in complications affecting the perinealmuscles and the spine, caused by hormonal and anatomical changes. These complications often lead to bladder and sphincter dysfunction sometimes with sustainable social and psychological effects.

Our study aims to measure the prevalence of bladder and sphincter disorders, sexual and spinal dysfunction, occurring in postpartum women in Northern Morocco (the city of Oujda).

Material and Methods

The study was conducted in the major three health facilities, and included 200 mothers, who gave birth in the 3 months preceding the survey; the average age of the women was 34 years.

Results

The prevalence of bladder incontinence was estimated at 40%, with a significant association to the age of the mother, the high parity, natural birth, and the existence of a chronic cough. Anal incontinence with a high rate of uncontrolled gas leaks touched 53% of the population surveyed. The most severe incontinence with real leakage of stool were found only in 8% of women.

Dyspareunia prevalence had an estimation of 32%, significantly related to vaginal delivery and episiotomy. It was a source of denial or avoidance of sexual intercourse in 27% of women. Lower back pain had a prevalence of 53% with a significant relationship between low back pain and chronic constipation.

Conclusion

Postpartum may be accompanied by disorders of the genitourinary sphere and the spine that can alter the quality of life for new mothers. These disorders are rarely mentioned by the patients themselves and should be investigated systematically.

No conflict of interest

ISPR7-0725

Internal Medicine and Other Conditions - Bladder and Bowel Disorders

THE EMERGENCE OF INCURABLE FISTULA -THE CASE OF UGANDA

A. Emasu¹

¹The Association for the Rehabilitation and Re-orientation of Women for Developme, Management, Wakiso, Uganda

Introduction/Background

With a cumulative obstetric fistula cases of 200,000 in Uganda, patients of incurable fistula (IF) have emerged. Presently, 1,900 new cases are recorded annually, yet Uganda's capacity per year is estimated at 2,500 surgical repairs. Reasons: limited skilled surgeons, resources, and awareness. Thus, TERREWODE, a partner of Uganda's Ministry of Health, and a resource organization for the FC+, USAID 5-year multi-country funded program managed by EngenderHealth organized two consultative high level meetings for the Fistula Technical Working Group (FTWG) in 2015.

The meetings defined IF as cases in which restoration of functional anatomy to achieve urinary or fecal continence is not possible through surgery by the most skilled surgical team working in an enabling environment.

It is estimated that at least 10% of women with multiple failed surgical attempts for fistula continue to have incontinence and encounter the social consequences.

With even the most skilled surgeon, certain fistula cases can be inoperable due to urethral injury, small bladder, complete loss of bladder tissue, and generalized illness, leaving women alienated from society and feeling stigmatized.

Material and Methods

Literature reviews of research works on IF was done. Pre-workshop questionnaire was generated and shared with participants. PowerPoint presentations and plenary guided sessions were made by participants.

Results

The working definition of IF within the Ugandan context was agreed upon.

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- "IF are those in which restoration of functional anatomy to achieve urinary or fecal continence is not possible through surgery by the most skilled surgical team working in an enabling environment."

- Criterion including the algorithm for identification and referral of women with IF was approved

- Approved pilot study to identify individualized social reintegration needs of women with IF

- Rights-based approach in both medical and social reintegration care

Conclusion

Key recommendations:

Accreditation of foreign surgeons, strengthened collaboration with local surgeons

Guideline development for pre- and post-surgical care

Pre-surgical counseling,

Provision of evidence-based care

No conflict of interest

ISPR7-0894

Internal Medicine and Other Conditions - Bladder and Bowel Disorders

THE EFFECTIVENES OF PHYSICAL THERAPY ON PELVIC FLOOR MUSCLE ACTIVITY

R. Kulikauskaite¹, L. Butenaite¹, E. Voicikaite²

¹Vilnius University Hospital Santariskiu Klinikos Rehabilitation- Physical and Sports Medicine Center, Vilnius University- Faculty of Medicine- The department of Rehabilitation- Physical and Sports Medicine-, Vilnius, Lithuania

²Vilnius University- Faculty of Medicine, Vilnius University- Faculty of Medicine, Vilnius, Lithuania

Introduction/Background

Pelvic floor dysfunction is a complex and widespread problem among male and female. These problems are most often caused by weak or tight pelvic floor muscles and have a huge impact on patient's biopsychosocial status.

Purpose. To evaluate the effectiveness of physical therapy on pelvic floor muscle activity for patients with pelvic floor dysfunction, both in the short and in the long terms.

Material and Methods

51 patients aged 33–77 (mean age 58.15±10.99 years) with pelvic floor dysfunction volunteered for the study. All patients performed physical therapy 5 times per week for 2 weeks and continued exercises at home for 2 months. Subjects pelvic floor muscle activity was evaluated using Enraf Nonius Myomed 632V before and after physical therapy and after 2 months. The quality of life were assessed with 2 different questionnaires: Incontinence Quality of Life Measure (I-QOL) and Fecal Incontinence Quality of Life Scale (FIQLS).

Results

The change between the maximum and average muscle contraction before and after physical therapy differed significantly ($p<0.05$). After physical therapy and 2 months the quality of life improved significantly ($p<0.05$). A strong statistical correlation was found between the variation between the maximum and average muscle contraction and the physical activity in the past ($r=0.9$, $p<0.05$).

Conclusion

After 2 weeks of physical therapy and 2 months of home program the quality of life for patients with pelvic floor dysfunction improved significantly ($p=0.001$). The study results highlight the importance of physical therapy for the improvement of pelvic floor muscle activity.

No conflict of interest

ISPR7-0781

Internal Medicine and Other Conditions - Burns

REHABILITATION OF PATIENTS WITH SEVERE BURNS- OUR EXPERIENCE

G. Teodoru¹, A. Salceanu², G. Cristina²

¹, Bucharest, Romania

²Emergency University Central Military Hospital, Neurological Rehabilitation, Bucharest, Romania

Introduction/Background

Abstract:

The recent achievements in the multidisciplinary approach and starting intensive care treatment since the pre-hospital phase caused the increase in the number of survivors from fires involving large numbers of casualties how was the dramatic "Colectiv" nightclub fire almost a year ago. This approach brought great challenges in the rehabilitation of patients with severe functional deficits that in the past would not have survived until this phase.

In this paper we share our experience and results obtained in the treatment of patients with severe burns.

The medical rehabilitation principles is mandatory to be applied since the early postsurgical phase with functional positioning and avoiding complications of bed rest and should be continued for a long time until to complete the process of scar remodeling.

To obtain better outcome, patients should be regularly reassessed by all clinicians involved in their care and their treatment must be customized for each patient and each evolutionary stage.

Material and Methods

Local Topical application.
Clothing compressive.
Applying silicone sheets.
Compression and stretching massage.
Hyperbaric chamber.

Methods: KinetoTherapy, O.T.

Results

1. Increasing mobility, muscle strength and endurance.
2. Upgrading of hypertrophic scars and ADL's
3. Increase resistance to physical effort

Conclusion

1. For the patients with severe burns (post combustional syndrome) the rehabilitation treatment should be done by a specialized and multidisciplinary team.
2. The treatment plan should be precocious, intensive and for a long term.
3. The most survivors are young adults which makes their reintegration in work field and society to be very important.

No conflict of interest

ISPR7-0044

Internal Medicine and Other Conditions - Cancer

THE ROLE OF THE MEDICAL DIRECTOR IN DEVELOPING A QUALITY CANCER REHABILITATION SERVICE LINE

C. MayMoran de Brito¹, V. Raj², C. MacDonell³

¹*Cancer Institute of the State of Sao Paulo and Hospital of Siro-Libanés, PM&R, Sao Paulo, Brazil*

²*Carolinas Rehabilitation, Chief of Cancer Rehabilitation, Charlotte, USA*

³*CARF international, PM&R, Tucson, USA*

Introduction/Background

The advance of cancer rehabilitation means the development in many countries of new skills and competencies for physical medicine and rehabilitation physicians. Not only are new skills necessary for quality person centred care but there is a need for strong, innovative medical directors to direct and facilitate the unique interdisciplinary teams working in cancer rehabilitation. The ability to direct a results oriented program takes a unique blend of skills that are addressed in this session. The medical directors from the first two CARF accredited cancer rehabilitation programs in the world will address how the standards assisted them in the development of their programs and how they used the standards practically in their organizations. Both of these physicians also sat on the International Standards Advisory Committee that established the Cancer Rehab Specialty Program standards. Being a medical director is never an easy task since it blends administrative, communication, collaborative and medical skills into one job description. Learn how standards can develop and hone your skills to be an exemplary leader in cancer rehabilitation no matter where you practice.

Material and Methods

An external, peer review survey process was used in both of the physicians' hospitals to rate their conformance to international standards for cancer rehabilitation specialty programs.

Results

One organization was the first CARF Cancer Rehabilitation Specialty Program accredited in the world and the other was the first CARF Cancer Rehabilitation Specialty Program accredited in Brazil.

Conclusion

The use of CARF Cancer Rehabilitation Specialty Program standards can lead to the development and maintenance of a quality program focused on the Dietz model of preventive, restorative, supportive and palliative care. Always looking at their clinical and business results to insure durability and sustainability of specialty cancer care.

No conflict of interest

ISPR7-0045

Internal Medicine and Other Conditions - Cancer

FACTORS ASSOCIATED WITH PHYSICAL ACTIVITY OF BREAST CANCER PATIENTS PARTICIPATING IN EXERCISE INTERVENTION

S.W. Park¹, I. Lee², J.I. Kim³, J.D. Lee³, H. Park⁴, K.E. Uhm⁵, J.H. Hwang⁶, J.S. Yoo⁷, S.H. Chung⁷, Y.H. Park⁸, J.Y. Lee⁸

¹Catholic Kwandong University International St.Mary's Hospital, Department of Rehabilitation Medicine, Incheon, Republic of Korea

²Catholic Kwandong University International St.Mary's Hospital, Department of Surgery, Incheon, Republic of Korea

³Catholic Kwandong University International St.Mary's Hospital, Institute for Integrative Medicine, Incheon, Republic of Korea

⁴Catholic Kwandong University International St.Mary's Hospital, Cancer Healing Education Center, Incheon, Republic of Korea

⁵Konkuk University School of Medicine, Department of Rehabilitation Medicine, Seoul, Republic of Korea

⁶Samsung Medical Center- Sungkyunkwan University School of Medicine, Department of Physical and Rehabilitation Medicine, Seoul, Republic of Korea

⁷National Cancer Center, Department of Rehabilitation Medicine, Gyeonggi-do, Republic of Korea

⁸Seoul St. Mary's Hospital- The Catholic University of Korea College of Medicine, Department of Urology, Seoul, Republic of Korea

Introduction/Background

Physical activity has been known to improve survival as well as quality of life in the individuals with breast cancer. To find factors associated with physical activity of breast cancer patients, we analyzed the dataset of the multicenter controlled trial of exercise intervention.

Material and Methods

Three hundred fifty six participants were assigned into 2 groups: "Smart After-Care" (smartphone application and pedometer were provided) or exercise education only. Physical activity was measured by International Physical Activity Questionnaire – Short Form (IPAQ-SF) at baseline and after 12 weeks. Association between physical activity and other clinical characteristics was analyzed.

Results

At baseline, physical activity measured by IPAQ-SF was 2,315.5±3,513.2 MET-minute/week: 33.0% inactive, 49.6% minimally active, 17.4% HEPA (health enhancing physical activity) active. Factors associated with HEPA include cancer stage and grip strength. For those with advanced stage (3 or higher), significantly lower proportion was HEPA active than those with stage 0 (OR=0.14). After intervention, physical activity was increased to 3,466.2±4,712.5 MET-minute/week: 15.3% inactive, 50.4% minimally active, 34.2% HEPA active. Physical activity was increased in 63.4% of the participants. Factors associated with physical activity increase include cancer stage, diarrhea, and type of exercise intervention. Participants with advanced stage have 3.3 times higher chance of increasing physical activity than those with stage 0. Participants who received "Smart After-Care" have 64% higher chance of increasing physical activity than exercise education only.

Conclusion

Before intervention, breast cancer patients with advanced stage are less likely to be HEPA active. Exercise intervention of either type was more beneficial for increasing physical activity to those with advanced stage or physical symptoms. "Smart After-Care" was more effective than exercise education only in increasing physical activity of breast cancer patients.

No conflict of interest

ISPR7-0193

Internal Medicine and Other Conditions - Cancer

AXILLARY WEB SYNDROME (AWS) IN LYMPHADECTOMISED PATIENTS AFTER BREAST CANCER

A. María Ruíz¹, M.G. Agoteragaray²

¹Hospital De Cabuenes, Rehabilitacion, Gijon, Spain

²Specialist in Physical Medicine and Rehabilitation Chief of External Consultants of the Institute of Psychophysical Rehabilitation of the Government of the City of Buenos Aires (IREP), Argentina

BACKGROUND AND AIMS

Axillary web syndrome (AWS) self-limiting process, an immediate consequence of the harm in the venous and lymphatic system after axillary lymph node dissection, and after selective biopsy of the sentinel node¹. Described by Moskovitz in 2001 is characterized by pain, limitation shoulder, and visible/ palpable cord in armpit or upper ipsilateral^{3,4,5,6}.

Main goal is to increase knowledge, diagnosis, triggering factors and the role of Rehabilitation in AWS.

METHODS

Inclusion criteria: FIRST episode breast cancer: **42 patients**. 2 study groups: WITH / WITHOUT AXILLARY WEB SYNDROME (A/B): 11/31. Collected records and anatomical data, surgical technique, treatments applied included rehabilitation. Protocol specially designed exercises at home. Revision month. If symptomatology persists, a hospital-based rehabilitative treatment.

All the variables in both groups are compared with **SPSS 20.0**.

RESULTS

A/B (AWS/not AWS): Shoulder flexion $\leq 140^\circ$: 45%/70%. 180° : 45%/100% Shoulder abduction 180° A/B: 51.61%/0%. $\geq 140^\circ$: 72,72%/90.32%. **statistically significant differences** ($p \leq 0.05$).

Also differences in first consultation Pain: 81,82%/45,17%. At the Second: 45,45%/19,35%. QT previously: 45.46%/16.13%. Age (46.27 / 59.77), lymphedema (18.2% / 22.6%), hospital treatment (27.3% / 6.5%) but **NOT statistically significant**.

DISCUSSION

Frequency AWS was **26.2%**, similar other studies. AWS were thinner and younger. Limitation flexion and abduction shoulder are considered diagnostic criteria in the majority of studies². Our home protocol **72.72%** improve.

CONCLUSIONS

Early evaluation improve AWS diagnosis. Our study show greater limitation of the shoulder (flexion and abduction, but also in the rest of mobility) and complete improvement is less frequent than in others studies. Home kinesiotherapy could be a good treatment option and prevention.

No conflict of interest

ISPR7-0220

Internal Medicine and Other Conditions - Cancer

FACTORS RELATED TO QOL OF PATIENTS WITH BONE METASTASIS

Y. Shinoda¹, S. Ryoko², H. Toshihide², Y. Futaba¹, H. Nobuhiko¹

¹The University of Tokyo Hospital, Rehabilitation Medicine, Tokyo, Japan

²The University of Tokyo Hospital, Orthopaedic Surgery, Tokyo, Japan

Introduction/Background

Although the number of patients with bone metastases is increasing, QOL of these patients is not well investigated. The purpose of this study is to evaluate the QOL by using questionnaires and to find factors related to QOL of these patients.

Material and Methods

Questionnaires (EQ-5D, NRS(Numerical Rating Scale) for pain, EORTC QLQ-PAL15 and BM22, generic screening tool, K6) were self-completed by 64 patients with bone metastasis recruited from April 2015 to June 2016 in our hospital. Then we collected the clinical data retrospectively. We defined QOL score by EQ-5D, and investigated the related factors by univariate analysis.

Results

Of the 64 patients, 31 were male and 33 were female. Average age was 63.7. Primary cancer sites were breast 10, HCC 9, prostate 6, multiple myeloma 5, colon 5, lung 5, others 23. The average EQ-5D score was 0.58±0.24. NRS, Physical Functioning (PAL15), Functional Interference (BM22), Emotional Functioning (PAL15), generic screening tool, K6, and PS (Performance Status) were co-related to EQ-5D by $p<0.001$. Psychosocial Aspects (BM22), SRE, previous chemotherapy, serum Ca corrected by Alb, and CRP were co-related to EQ-5D by $p<0.05$. Primary cancer site, visceral metastasis, expected prognosis, number of bone metastasis, reaction patterns of metastatic site, and other laboratory data (serum ALP, ICTP, BAP, urine NTx) were not co-related.

Conclusion

Pain, physical function, and psychological factors seem to have strong effects on QOL of patients with bone metastasis. Consultation to psychiatrists, orthopaedic surgeons, and clinical psychotherapist might be important for improving the QOL of these patients.

Conflict of interest

Disclosure statement:

This work was supported by JSPS KAKENHI Grant Number 15k10388.

ISPR7-0287

Internal Medicine and Other Conditions - Cancer

COMPARISON OF KINESIOTAPING WITH COMPRESSION GARMENT IN THE TREATMENT OF LYMPHEDEMA AFTER BREAST CANCER - A PRELIMINARY REPORT

T. Ozsoy¹, C. Sanal Toprak¹, Y. Bahar¹, G. Akyuz¹

¹Marmara University Medical Faculty, Physical Medicine and Rehabilitation, ISTANBUL, Turkey

Introduction/Background

Lymphedema is caused by disrupted lymphatic drainage of upper extremity because of axillary lymph node dissection and/or after axillary radiotherapy in the patients with breast cancer. Post-operative complications like axillary band (axillary web) syndrome, infection, seroma and hematoma also increase the risk of lymphedema. Compression garment increases the lymphatic drainage, the venous return, and reduces the proteinous material. Kinesiotaping is applied with lymphatic correction technique to regulate the lymphatic circulation. It is non-invasive, easy to apply, cheap, easily detached and waterproof method. The aim of this study is to compare the effectiveness of these two modalities in early stage postmastectomy associated lymphedema. Herein, we report our initial results.

Material and Methods

Twenty one patients with early stage breast cancer associated lymphedema were enrolled into the study. Patients were randomized as group I (n=.10) kinesiotaping and group II (n=11) compression garment by first clinician. Kinesiotaping was applied weekly for 4 weeks by second blinded clinician. Home exercise program was also given to both groups. Patients were assessed with arm circumference, shoulder range of motion (ROM), visual analog scale, tension and weightiness sensation by third blinded clinician. The assessment was done before treatment, 4th week and 3rd months after treatment.

Results

There was no significant difference on demographic data and lymphedema duration($p<0,05$). Both treatment groups had a decrease on all measurements. However, there was more improvement at 4th week measurement on 15cm proximal of medial epicondyle and 3rd month measurement on metacarpophalangeal joint level in kinesiotaping group. Both groups had decrease in VAS scores, weightness and tension sensation after treatment but there was no significant difference between groups.

Conclusion

In this preliminary report, we found that both treatment modalities were effective in the treatment of lymphedema. This is an ongoing study for having bigger number of patients. We believe that results will be more reliable when the study ends.

No conflict of interest

ISPR7-0290

Internal Medicine and Other Conditions - Cancer

THE ASSESSMENT OF PAIN AND QUALITY OF LIFE IN CANCER PATIENTS

T. Ercalik¹, Y. Bahar¹, O. Uslu², T. Ozsoy¹, G. Akyuz¹

¹Marmara University Medical Faculty, Physical Medicine and Rehabilitation, ISTANBUL, Turkey

²Marmara University Medical Faculty, Senior student, ISTANBUL, Turkey

Introduction/Background

Cancer is a group of diseases characterized by uncontrolled growth and spread of abnormal cells, which can result in death. Pain in cancer patients can be cancer-related 70%; treatment-related 15%; or non-related with cancer and treatment 15%. Cancer rehabilitation programs aim to reduce pain, restore physical and/or mental, psychological abilities due to the disease or its complications and side effects of therapies, and improve quality of life. The goal of this study is to evaluate current problems and pain characteristics and quality of life(QoL) in cancer patients.

Material and Methods

Demographic data, types of cancer and therapy regimens of the cancer patients were recorded. The pain characteristics, current medication and past medication history were asked. The patients were evaluated with Brief Pain Inventory (BPI), Visual Analog Scale (VAS), Pain Detect (PD) questionnaire, Hospital Anxiety and Depression Scale for emotional status and European Organization for Research and Treatment of Cancer(EORTC QOL30) form. Additionally, the degree of burden was measured with Burden Interview (BI) from their caregivers.

Results

107 (F=62, M=45) patients were enrolled. Three most common cancer types were breast 40%, gastrointestinal 21,9%, lung 10,5%. 73 (72,3%) patients undergone surgery, 79(78,2%) patients were treated with chemotherapy and 69(68,3%) patients with radiotherapy. The mean value for pain treatment satisfaction of patients was 5,43±2,73(0-10). Total QoL score of patients with pain were significantly lower than the patients without pain(p:0,001). Patients with neuropathic pain had higher depression, anxiety and burden interview ratings(p<0,05). There was a positive correlation between VAS and depression score, BI and QoL.

Conclusion

The findings demonstrated extreme decrease in QoL, increase in depression and anxiety, difficulty in pain control and insufficiency in pain medication, especially in the cancer patients with neuropathic pain. We suggest that pain, QoL and accompanied psychological problems must be evaluated immediately and treatment protocols should be individualized depending on the needs of the patients.

No conflict of interest

ISPR7-0353

Internal Medicine and Other Conditions - Cancer

BONE LOSS AND AROMATASE INHIBITORS AS ADJUVANT THERAPY IN BREAST CANCER PATIENTS : FRACTURES RATE AND QUALITY OF LIFE

M. Pinto¹, L. Di Capua¹

¹Istituto Nazionale Tumori di Napoli, Health Policy- Farmacy and Quality of Life, Naples, Italy

Introduction/Background

Aromatase inhibitors (AIs) are an essential part of estrogen receptor-positive (ER+) breast cancer (BC) treatment but they are significantly associated with bone density loss and require specific medications (bisphosphonates or denosumab plus calcium and Vitamin D). The aim of our study was to evaluate fragility fractures rate and Quality of Life (QoL) in an ER + BC Italian women population.

Material and Methods

Our study population consists of 118 ER+ BR women underwent surgery and adjuvant treatment including AIs in the last year, age > 18 years, with no comorbidities affecting bone density, who gave their informed consent to personal and clinical data statistical analysis. We recorded : age, Body Mass Index (BMI), comorbidities, medications, occurred fractures and QoL by SF- 12 Physical and Mental Health Composite Scale, PCS and MCS scores.

Results

Patients personal and clinical data are summarized in Table 1. Our results are : fractures occurred in 17,79% of women, mean SF12 scores were PCS 43.6(DS ±2.33) and MCS 50.00 (DS±2.12).

Table 1. Descriptive Statistics on Demographics, and Variables Considered in the Analysis.

Variable	N^a (%)	Mean (SD)
Demographic		
Age (y)	118 (100)	68.80 (10.18)
BMI	118 (100)	29.00 (2.82)
Comorbidities		
Total count of problems (by diagnosis)	118 (100)	
none	15 (12,7)	
Hypertension	61 (51,7)	
Diabetes I,II	28 (23,7)	
Dysthyroidism	37 (31,35)	
Arthritis	43 (36,5)	
Medications		
none	0 (0)	
biphosphonates	80 (67,8)	
denosumab	38 (32,2)	
Calcium and Vitamin D	180 (100)	

NOTE. Values are N^a (%) or mean ± standard deviation (SD).

Conclusion

Fragility fracture is a statistically significant event in our ER+ BR study group, but nevertheless the quality of life is quite satisfactory.

Conflict of interest

Disclosure statement:

Monica Pinto has potential conflict of interest to disclose

Lucia Di Capua has potential conflict of interest to disclose

ISPR7-0373

Internal Medicine and Other Conditions - Cancer

MULTIDISCIPLINARY REHABILITATION IN WOMEN WITH BREAST CANCER

S. Hernandez¹

¹, La Habana, Cuba

Introduction/Background

With improved survival rates in breast cancer (BC), there are implications for longer-term impact on disability, psychological function and quality of life, which may be amenable to rehabilitation. Rehabilitation is an expensive resource and the evidence to support its justification is urgently needed

Material and Methods

A randomized controlled clinical trial is implemented as a comprehensive rehabilitation program offered to 352 women from 72 hours of surgery to promote healing, decrease pain, and facilitate shoulder range of motion. They were given a treatment program with deep oscillation therapy with the so-called lamina system, manual lymphatic drainage and upper limb mobility exercises. The evaluation was performed taking into account the cicatrization index, visual analog pain scale (VAS), (Goniometry), SF-36 questionnaire to measure health-related quality of life, comparative perimetry (manual and ultrasound) as well as the evaluation of complications and relapses at 6, 12 and 18 months

Results

This research concluded that the treatment with deep oscillations combined with manual lymphatic drainage and shoulder mobility exercises from 72 hours of surgery is effective to promote healing, reduce pain and prevent complications in the long term.

Conclusion

The multidisciplinary rehabilitation program in Women with Breast Cancer was effective because it improved the quality of life, its social reincorporation and reduced complications in the short, medium and long term

No conflict of interest

ISPR7-0386

Internal Medicine and Other Conditions - Cancer

EFFECTIVENESS OF EARLY REHABILITATION AFTER SURGERY FOR GYNECOLOGICAL CANCER

B.O. Kim¹, B. Soo Kyung¹, A. So Young¹

¹Chungnam National University Hospital, Rehabilitation Medicine, Daejeon, Republic of Korea

Introduction/Background

The aim of this study was to estimate the efficacy of an early CDPT (complex decongestive physical therapy) program, as well as to identify the prevalence associated with response to CDPT in lower limb lymphedema (LLL) after gynecological cancer therapy..

Material and Methods

Twenty patients with gynecological cancer treatment were enrolled and randomly assigned. 10 patients did not begin physiotherapy during hospitalization (Group A), 10 patients received early rehabilitation treatment (Group B). In group B, complex decongestive therapy (CDT) was started within 2 weeks after surgery for 30 minutes a day, for 10 days (5 days per week). The patients of Groups A and B were compared with respect to the following criteria: presence of lymphedema using leg circumference measure, bioimpedance spectroscopy (BIS), Quality of life through EORTC QLQ-C30 questionnaires. All patients were assessed at pre and post operation period, post CDPT (Group B only), 3, 6 months after surgery. Inbody S10[®] (Biospace, Seoul, South Korea) were used to evaluate the calculated extracellular fluid (ECF) and resistance difference. Leg Circumferences were measured at midfoot, ankle, calf, knee, distal 1/3 of thigh, proximal 1/3 of thigh and used sum value.

Results

In group B, statistically significant differences were apparent in global health, physical, role, and emotional functions, and cancer-related symptoms such as fatigue and pain, nausea, and dyspnea on the EORTC QLQ-C30. After surgery, mean resistance difference decreased in CDPT group.

Conclusion

The results of the present study show that early assisted rehabilitation play a crucial role in reducing the edema after gynecological surgery and improving quality of life. Although, it is possible to be expected that delayed development of lymphedema in the intervention group, long term follow up studies with a larger sample size are needed to warrant the time-group effect of early rehabilitation.

No conflict of interest

ISPR7-0404

Internal Medicine and Other Conditions - Cancer

DIAGNOSTIC CRITERIA FOR DETECTION OF LYMPHOEDEMA BASED ON UPPER LIMB NORMATIVE DATA IN CHINESE WOMEN

H.W. Wang¹, J. Jia¹, S. Li¹, K. SL², D. ES², L. Tao³, S. Peng⁴

¹Fudan University Huashan Hospital, Rehabilitation Department, Shanghai, China

²The University of Sydney, Faculty of Health Sciences, Sydney, Australia

³Maoqiao Heath Service Center, Public Health Department, Shanghai, China

⁴Fujian University of Traditional Chinese Medicine, School of rehabilitation medicine, Fujian, China

Introduction/Background

Upper limb lymphedema is a common consequence following breast cancer treatment. Typically, detection of lymphoedema is based on differences in limb circumference between the limb with or at-risk for Lymphoedema and the unaffected side. Recently, diagnostic criteria for detection of lymphoedema, based on inter-limb upper limb normative differences, were reported for Australian women. It is unknown whether these criteria are applicable to Chinese women. The aims of this study were to determine the normative inter-limb differences in Chinese women and to establish the thresholds for detection of lymphedema in Chinese women.

Material and Methods

Women (n=482) with no history of breast cancer and/or lymphoedema participated. Measurements included height, weight and bilateral arm circumference measures, commencing at the wrist and progressing proximally at 10 cm intervals to 40 cm. Adjacent arm circumference measures were also used to derive segmental volumes which also were compared to Australian outcomes.

Results

Calculated absolute inter-limb circumference and segmental volume differences were significantly affected by dominance and location along the limb. Diagnostic cut-offs, based on dominance and location along the limb, were determined for Chinese women. The circumference cut-offs were within 3 millimetres of the Australian sample, which was within the measurement error.

Conclusion

New circumference and volume criteria based on normative data in Chinese women has been established and the criteria established for Australian women are applicable to Chinese women.

No conflict of interest

FUNCTIONALITY AND FATIGUE IN PATIENTS TREATED FOR HEMATOLOGICAL NEOPLASMS AT HOSPITAL DISCHARGEL.A. Lorca P.¹, C. Sacomori², B. Puga¹¹Hospital del Salvador, Unidad de Hematología Intensiva, Santiago, Chile²Universidad Bernardo O'Higgins, School of Kinesiology, Santiago, Chile**Introduction/Background**

Cancer is the second leading cause of death in the world and also in Chile. Hematologic malignancies correspond to 7% of all cancers.

During important part of treatment these patients remain hospitalized in conditions of strict isolation. This added to the cancer and its treatments side-effects expose patients to significant deterioration of functional capacity. Aims: To evaluate the functionality and fatigue of cancer patients treated for hematological malignancies at hospital discharge.

Material and Methods

It is a cross-sectional and correlational study. We evaluated 122 patients treated in the intensive Hematology Unit of the Hospital del Salvador between July 2010 and July 2013. Background data were obtained from clinical physiotherapeutic assessment fact sheet. KATZ index was used to measure independence in activities of daily living (ADLs), Timed up and go test to measure dynamic balance, and independence for walking was recorded. To evaluate fatigue we used the Brief Fatigue Inventory.

Results

Most of the patients reported fatigue (99.2%) which has been classified in mild (48.4%), moderate (41%) or severe (9.8%). Regarding Independence in ADLs, 88 patients (72.1%) were independent in all their functions, 27.9% lost their Independence in at least one ADLs. Balance was compromised in most of the patients (87.8%) while most of them had independent gait (85.2%). There was a correlation between fatigue and independence in daily living activity ($\rho=-.485$, $p<.001$) and between fatigue and pain ($\rho=.460$, $p<.001$).

Table 1. Demographic characteristics, diagnosis and type of transplantation (n=122).

Characteristic	n (%)
Sex	
Masculine	61 (50)
Feminine	61 (50)
Age	
15 – 24	32 (26,23)
25 – 34	21 (17,21)
35 – 44	23 (18,85)
45 – 54	32 (26,23)
55 – 64	13 (10,66)
Diagnosis	
Acute Lymphoblastic Leukemia	28 (23)
Acute Myeloid Leukemia	34 (27,9)
Acute Promyelocytic Leukemia	14 (11,5)
Lymphoma Hodgkin	17 (13,9)
Lymphoma No Hodgkin	3 (2,5)
Multiple Myeloma	11 (9)
Burkitt Lymphoma	5 (4,1)
Others	10 (8,2)
Type of transplant	
Allogeneic Transplant	8 (6,5)
Autologous Transplant	32 (26,2)

Table 2. Characterization of fatigue and functionality (independence in daily life activities, gait and balance)

Characteristic	Total (n=122) n (%)
Oncological Fatigue	
No fatigue	1 (0,8)
Mild	61 (48,4)
Moderate	45 (41,0)
Severe	15 (9,8)
Independence of daily living activities (KATZ index)*	
A – Independent for all the activities (eating, control of sphincters, get up, going to toilet, dressing and taking a shower)	88 (73,8)
B - Independent for all these functions except one	12 (9,8)
C - Independent for all these functions except taking a shower and another function	9 (7,4)
D – Independent for all these functions except taking a shower, dressing and another function	4 (3,3)
E - Independent for all these functions except taking a shower, dressing, going to toilet and another function	0 (0)
F - Independent for all these functions except taking a shower, dressing, going to toilet, transferring and another function	6 (4,1)
G - Dependent in all six functions	1 (0,8)
H- Dependent in at least 2 functions, but not being C, D, E or F	2 (0,8)
Timed Up and Go	
Unable to do the test	14 (9,8)
With balance problems	105 (87,8)
Without balance problems	3 (2,4)
Gait independence	
Restricted to be	6 (4,9)
Independent	104 (85,2)
Dependent	12 (9,8)

Conclusion

Patients undergoing hospital treatments for hematological cancer should receive physical rehabilitation because they present fatigue and their functionality is compromised.

No conflict of interest

ISPR7-0464

Internal Medicine and Other Conditions - Cancer

CHARACTERIZATION OF CACHEXIA IN PATIENTS WITH ORAL CAVITY CANCER UNDERGOING RADIOTHERAPY OR CONCURRENT CHEMORADIOTHERAPY: PRELIMINARY RESULTS

F. Ribeiro¹, *I.P. Ribeiro*², *T. Lopes*³, *L. Barroso*³, *N. Pedro*², *F. Marques*⁴, *D. Figueiredo*⁵, *R. Costa*⁶, *J.B. Melo*², *A. Ferreira*³, *I.M. Carreira*²

¹University of Aveiro, School of Health Sciences and Institute of Biomedicine - iBiMED, Aveiro, Portugal

²University of Coimbra- Faculty of Medicine, Cytogenetics and Genomics Laboratory- CIMAGO - Center of Investigation on Environment Genetics and Oncobiology, Coimbra, Portugal

³Coimbra Hospital and University Centre- CHUC- EPE, Maxillofacial Surgery Department, Coimbra, Portugal

⁴Coimbra Hospital and University Centre- CHUC- EPE, Department of Dentistry- Stomatology Unit- Cytogenetics and Genomics Laboratory, Coimbra, Portugal

⁵University of Aveiro, School of Health Sciences and CINTESIS.UA-, Aveiro, Portugal

⁶University of Aveiro, School of Health Sciences and CINTESIS.UA, Aveiro, Portugal

Introduction/Background

It is estimated that 30% of cancer patients die as a result of cachexia rather than the cancer itself. Cachexia is defined as complex metabolic abnormalities that lead to the loss of body weight as a consequence of a chronic illness. This study aimed to explore alterations on body composition, physical activity (PA), inflammatory and cachexia biomarkers of patients with oral cavity squamous cell carcinoma during curative treatment.

Material and Methods

Nine patients (56.8±14.4 years), 7 males and 2 females, were assessed before and after radiotherapy or concurrent chemoradiotherapy. Outcome measures included body composition (bioimpedance), daily PA (International physical activity questionnaire), inflammatory (C-reactive protein and TWEAK) and cachexia markers (titin).

Results

Weight (67.44±14.29 to 61.15±11.26 kg, p=0.05), BMI (23.94±6.51 to 21.71±5.20 kg/m², p=0.05), free-fat mass (18.70±2.02 to 7.33±2.09 kg/m², p=0.028), total PA (4823±6086 to 2313±5060 MET-min/week, p=0.018) and moderate PA (2125±3949 to 154±358 MET-min/week, p=0.028) decreased after the treatment, while the time patients spent sitting (187±141 to 420±158 min/day, p=0.024) increased. After treatment, patients with higher body weight showed higher total PA (r=0.712, p=0.031), lower sitting time (r=-0.745, p=0.021) and lower TWEAK (r=-0.700, p=0.036); higher PA was correlated with higher muscle mass (r=0.729, p=0.026). BMI was associated with TWEAK (r=-0.733, p=0.025) and titin (r=-0.695, p=0.038); TWEAK was also correlated with titin (r=0.770, p=0.025).

Conclusion

Substantial reduction of free-fat mass, body weight and physical activity occurs in patients undergoing oral cancer treatment. Those patients showing better body composition also showed higher PA levels, lower inflammation and cachexia biomarkers. These preliminary findings highlight the relevance of physical activity and exercise as a complement to cancer treatments.

No conflict of interest

ISPR7-0780

Internal Medicine and Other Conditions - Cancer

FEASIBILITY OF PHYSICAL TRAINING FOR A PATIENT WITH BRAIN TUMOR: A CASE REPORT

E. Atabas¹

¹*Oncosportcenter, Medical Staff, Bonn, Germany*

Introduction/Background

The oncologic treatment of cerebral tumors can lead to different kinds of impairments. The most common ones are fatigue and decline of life quality. There is enough evidence that physical activity (PA) may relieve these negative effects in tumor patients in general. We wanted to examine if PA is feasible and useful in supporting patients with cerebral tumors.

Material and Methods

A 56 year old male patient with an oligoastrocytoma was enrolled into a sports program consisting of 40 minutes resistance and 20 minutes of endurance training. Totally a number of 30 sessions of training were carried out. The patient was examined by the PRM-specialist and enrolled into the treatment protocol. Life quality and fatigue were evaluated by two questionnaires (Functional Assessment of Cancer Therapy - FACT and Short Form 36 - SF36) in order to estimate pre and post treatment results. Additionally one repetition maximum test was performed in order to measure muscle strength.

Results

The FACT-Score dropped from 26 to 6 while life quality went up from 27 to the maximum of 38. Muscle strength increased by 25%.

Conclusion

Due to individualized training adjustments the patient was able to benefit from our sports program. No overexertion or adverse effects were observed. When training modalities are supervised by a PMR-Specialist and performed by special educated staff physical activity can be a reasonable supporting treatment modality for patients with cerebral tumors.

No conflict of interest

ISPR7-0837

Internal Medicine and Other Conditions - Cancer

HEMICORPORECTOMY: PRE AND POST-SURGICAL MULTIDISCIPLINARY REHABILITATION

*M.L. Costacurta Guarita¹, A.T. Sugawara², M. Oshiro³, C. da Silva Bueno⁴,
M. Cossi Salvador Guerra⁵, A.C. Alves Caporalli Pereira⁴, A.P. Mieko Matsubara⁴,
E. Iglez Yamanaka³, M. Leite da Costa⁶, A. Nunes Catellino Paris⁶, A. Rocha Ravagnani⁶,
C. Molina Velar⁴, A. da Silva Alves⁵, L. Rizzo Battistella⁷, C. May Moran de Brito¹*

¹*Instituto do Câncer do Estado de São Paulo – ICESP, Fisiatria, São Paulo, Brazil*

²*Instituto de Medicina Física e Reabilitação – IMREA HC FMUSP, Fisiatria/ Bioengenharia, São Paulo, Brazil*

³*Instituto de Medicina Física e Reabilitação – IMREA HC FMUSP, Bioengenharia, São Paulo, Brazil*

⁴*Instituto do Câncer do Estado de São Paulo – ICESP, Centro de Reabilitação, São Paulo, Brazil*

⁵*Instituto do Câncer do Estado de São Paulo – ICESP, Psicologia Hospitalar, São Paulo, Brazil*

⁶*Instituto do Câncer do Estado de São Paulo – ICESP, Reabilitação Hospitalar, São Paulo, Brazil*

⁷*Instituto de Medicina Física e Reabilitação – IMREA HC FMUSP, Fisiatria, São Paulo, Brazil*

Introduction/Background

The procedure known as hemicorporectomy is one of the most radical types of amputation. Reports of this kind of approach are still rare exactly because it is a highly complex surgery, with high functional, psychological, and social impacts.

The objective of this study was to describe a case of hemicorporectomy integrally assisted by a multidisciplinary rehabilitation team before, immediately after, and long after surgery, evidencing the benefits provided by this care.

Material and Methods

R.S.S, 35-years-old male, diagnosed with squamous cell carcinoma secondary to a chronic sacral pressure ulcer. He had a history of complete T10 paraplegia due to a gunshot wound at age 12-years. He was submitted to 5 unsuccessful tumor resection surgeries, developed osteomyelitis and sepsis episodes. The following was suggested:L4/L5 hemicorporectomy+thigh flap reconstruction. He was referred to the physiatrics unit where he started rehabilitation (see table) with intensive physiatrist supervision and support of bioengineers. Pre-surgical functional independence measure(FIM)-99, Karnovsky-50

Therapies x objectives in different phases	Physical therapy	Occupational Therapy	Physical Conditioning	Psychology
Pre-rehab (3months/2xweek)	Strength gain, balance, proprioception, protection reaction. Transfers.	Gaining awareness of postoperative functionality, adaptations, locomotion. Preparation of home ergonomics.	Aerobic and resistance training.	Helping to decide about the surgery, having realistic expectations, emotional support.
Immediately post-op (1month/daily)	Prevention of immobility-related sequelae.Weight unloading.Healing.	Re-adaptation and counseling regarding Activing Day Living (ADL).	Respiratory Physiotherapy, prevention of immobility related sequelae	Development of coping strategies, family support.
Late postop (undergoing)	Using a wheelchair, transfers, prosthesis.	Training ADL. Returning to work.	Resumed aerobic exercises	Social reintegration.

Results

After surgery, the patient recovered clinically and functionally, achieving total adapted independence and returning to work less than three months after surgery. Actual FIM-120, Karnovsky-90. Today he frequents a rehabilitation program aiming at prosthetics.

Conclusion

Coordinated multidisciplinary care proved to be extremely important during all phases of the process, enabling a quick recovery and social reintegration.

No conflict of interest

SUCCESSFUL ONCOLOGICAL MULTIDISCIPLINARY REHABILITATION OF A SEVERE CASE OF INTENSIVE CARE UNIT-ACQUIRED WEAKNESS

T. Pereira Pedron¹, A.P. Mieko Matsubara¹, A.C. Alves Caporalli Pereira¹, N. Lopes Hmeliowski¹, C. da Silva Bueno¹, L. Rizzo Battistella.², C. May Moran de Brito², **M.L. Costacurta Guarita³**

¹Instituto do Câncer do Estado de São Paulo – ICESP, Centro de Reabilitação, São Paulo, Brazil

²Instituto do Câncer do Estado de São Paulo – ICESP, Fisiatria, São Paulo, Brazil

³, São Paulo, Brazil

Introduction/Background

The higher survival of critical patients has made intensive care unit (ICU)-acquired weakness an increasingly frequent reality in hospitals. The extent of involvement may cause severe disabilities, worsening quality of life, and great socioeconomic impact.

The objective of this study was to describe a successful multidisciplinary approach of a severe case of ICU-acquired weakness.

Material and Methods

I.C.L, 22-year-old male was diagnosed with Burkitt Lymphoma. He remained in the hospital for 3-months and experienced complications from the disease and chemotherapy. According to the initial psychiatric assessment, the patient needed a wheelchair, lost 95pounds, and had sarcopenia, paresis of both lower limbs, severe muscle shortening, Functional Independence Measure (FIM)-88, ECOG-3, Karnofsky-40. Electroneuromyography (April/2016) of the lower limbs showed severe symmetric involvement of the motor-sensitive axonal type with signs of chronic denervation and few signs of reinnervation. He was submitted to multidisciplinary rehabilitation (see table). The process lasted 11 months, 2 sessions per week.

Multidisciplinary team	Objective	Intervention
Physiatry	Optimized rehabilitation, clinical stability with pain control, prevention of complications	Multidisciplinary meetings, clinical supervision, drug management
Nutrition	Quality weight gain	Diet management
Motor physiotherapy	Functional recovery	Stretching, strengthening, sensory stimulation, postural exchanges, stand posture, gait training
Physical conditioning	Improvement of cardiorespiratory, gain of muscle strength and resistance	Resistance and aerobic exercises
Occupational therapy	More independence with safety and lower energy expenditure	Training of activities of daily living and practice, ergonomics, adaptations
Psychology	Emotional stability, adherence, have realistic expectations	Therapist/patient bond, emotional support, coping strategies, expectations, family members.

Results

Last psychiatric assessment: FIM-124, ECOG-1, Karnofsky-90. Electroneuromyography (October/2016) of the lower limbs showed a small improvement. Today he has no evidence of oncologic disease, gained all the lost weight, uses one forearm crutch to walk, is totally independent and emotional stable. The patient went back to work, was promoted, and restarted exercising at a gym.

Conclusion

This case shows that despite the severity of the case based on physical and complementary tests, intensive multidisciplinary therapies helped this patient to resume his daily routine with total independence.

No conflict of interest

ISPR7-0857

Internal Medicine and Other Conditions - Cancer

BODY IMAGE OF WOMEN WITH BREAST CANCER

I.C. Zanlourense¹, D. Markovicz¹, C. Costa¹, A.C. Binda¹, A.R. Fréz¹, J.A. Ruaro¹, M.B. Ruaro¹, M.P. Baroni¹, C.R. Daniel¹

¹Universidade Estadual do Centro-Oeste, Physical Therapy Department, Guarapuava, Brazil

Introduction/Background

Breast cancer has high incidence and mortality in the female population. Body image is an important parameter in evaluating the quality of life of patients affected and has implications for the sex life, marital and social relations of women. This study aimed to evaluate and quantify the impairment of body image of women with breast cancer at the Hospital São Vicente de Paulo, in Guarapuava.

Material and Methods

To evaluate the body image the Body Image Scale was used. The final score is the sum of each of the 10 items score, ranging from 0 to 30 and the highest score indicates greater impairment of body image.

Results

Were evaluated 38 women over 18 years with a diagnosis of breast cancer in chemotherapy treatment. The mean score was 7.0 ± 8.6 .

Conclusion

Based in the result we observed a low level of body image impairment.

No conflict of interest

ISPR7-0861

Internal Medicine and Other Conditions - Cancer

UPPER LIMB FUNCTION IN WOMEN WITH BREAST CANCER

D. Markovicz¹, I.C. Zanlourese¹, C. Costa¹, A.C. Binda¹, A.R. Fréz¹, C.R. Daniel¹, M.B. Ruaro¹, M.P. Baroni¹, J.A. Ruaro¹

¹Universidade Estadual do Centro-Oeste, Physical Therapy Department, Guarapuava, Brazil

Introduction/Background

Breast cancer shows high rates of incidence and mortality. The disease treatment results in physical disabilities causing functional impairment in upper extremity. The aim of this study was to evaluate and quantify the upper limb disability of women with breast cancer in oncology sector of the Hospital São Vicente de Paulo in Guarapuava.

Material and Methods

To evaluate the function of the upper limb, the Brazilian version of Disabilities of the Arm, Shoulder and Hand questionnaire that is composed of 30 questions with the final score calculated by established formulas application, so that the highest score characterizes the worst condition of the patient.

Results

Were evaluated 38 women over 18 years with a diagnosis of breast cancer in chemotherapy treatment. The mean score of the questionnaire was 26.6 ± 20.3 .

Conclusion

Based in the result we observed a low level of functionality of upper limb impairment.

No conflict of interest

ISPR7-0868

Internal Medicine and Other Conditions - Cancer

THE IMPACT OF A PHYSICAL EXERCISE PROGRAM ON QUALITY OF LIFE, PHYSICAL PERFORMANCE, FATIGUE AND LEVEL OF PHYSICAL ACTIVITY IN CANCER PATIENTS

F. Reis¹, A. Olimpio¹, T.N. Iram¹, A.C. Caporalli¹, T. Garcia¹, C. Bueno¹, L. Lara¹, W. Baia², E. Almeida¹, R. Cecatto¹, C. Brito¹, L. Battistella³

¹*Faculdade de Medicina da USP - FMUSP,*

Serviço de Reabilitação do Instituto do Câncer do Estado de São Paulo, Sao Paulo SP, Brazil

²*Faculdade de Medicina da USP - FMUSP,*

Diretoria Geral de Assistência do Instituto do Câncer do Estado de São Paulo, Sao Paulo SP, Brazil

³*Faculdade de Medicina da USP - FMUSP,*

Departamento de Medicina Legal- Ética Médica- Medicina Social e do Trabalho, Sao Paulo SP, Brazil

Introduction/Background

Increasing evidence suggests that exercise programs are of great value in the rehabilitation of cancer patients. The objective of this study was to evaluate the impact of a supervised exercise program on quality of life, fatigue levels, physical performance and level of physical activity in cancer patients.

Material and Methods

This study involved 211 adult patients with cancer who participated in an outpatient physical rehabilitation program at the Cancer Institute of the State of São Paulo. The supervised exercise program consisted of two weekly sessions, each session lasting for one hour, during three months, encompassing aerobic, resistance and flexibility exercises. Patients were assessed initially and at the end of the program, and six, nine and twelve months later. Fatigue levels were assessed using the Piper-revised Fatigue Scale, quality of life using the SF-36 questionnaire, and physical performance by the 6-minute walk test before and after the program. Three, six and twelve months after discharge from the exercise program, the International Physical Activity Questionnaire was applied. Wilcoxon's test was used for pre- and post-treatment comparison.

Results

After three months of the exercise program, patients presented a significant reduction in fatigue levels ($p < 0.0001$) and a significant increase of quality of life ($p < 0.0001$) and walking distance ($p < 0, 0001$). After 12 months, 83% of the patients performed moderate activities and 88% more than 10 minutes of walking on a regular basis.

Conclusion

The results of this study confirm that therapeutic exercise programs are an important tool in the rehabilitation of cancer patients and an initial supervised exercise program, as well as the follow-up, contributed to increase the level of physical activity of a significant amount of the individuals.

No conflict of interest

ISPR7-0902

Internal Medicine and Other Conditions - Cancer

EFFECTIVENESS OF TWO DIFFERENT BANDAGES FOR UPPER LIMB COMPRESSION IN BREAST CANCER-RELATED LYMPHEDEMA TREATMENT: PRELIMINARY RESULTS

G. Luppi¹, M. Maselli¹, S. Miccinilli¹, M. Bravi¹, F. Bressi¹, S. Sterzi¹

¹Policlinico Università Campus Bio-Medico, UOC di Medicina Fisica e Riabilitativa, Roma, Italy

Introduction/Background

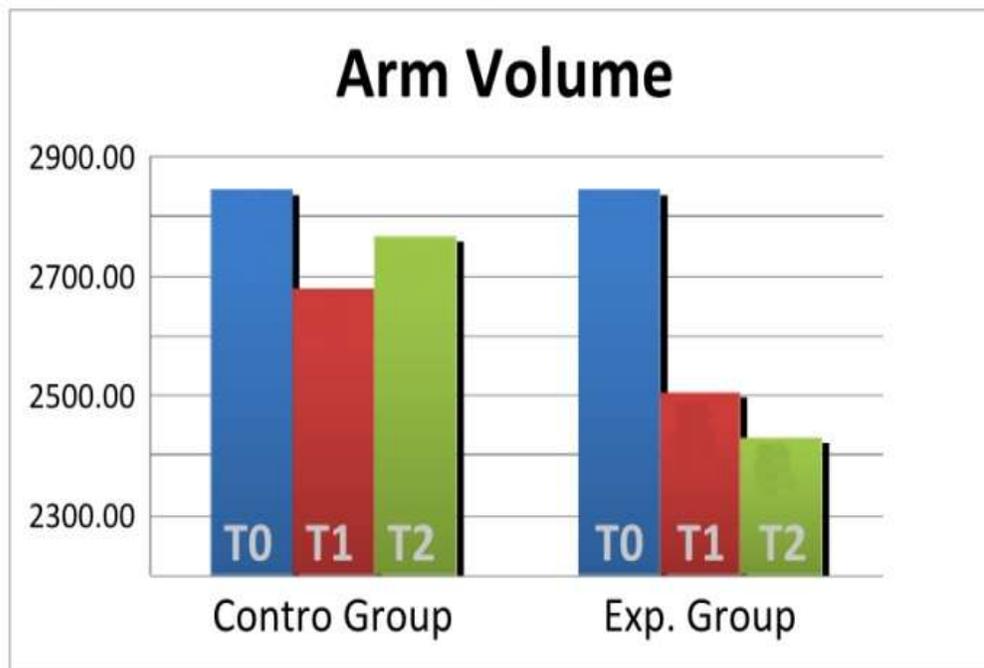
Post-surgery lymphedema in breast cancer is a chronic disorder that negatively impact Quality of Life (QoL), concerning physical functional and psychological aspects. Treatment of lymphedema seeks to decrease/control the limb volume. This study aims to evaluate the effectiveness of two different bandages for limb compression associated to manual lymph drainage (MLD).

Material and Methods

Sixteen patients with lymphedema were randomized in two groups: experimental (EG) and control group (CG). All patients underwent a procedure of MLD (8 daily sessions). The CG received a standard low-tension multilayer bandage (LTMB), whereas the EG was treated with Mobiderm®. A blind clinical evaluation was performed before (T0) and after treatment (T1), and at one month follow-up (T2). Arm volume, VAS scale and the Lymphedema Functioning, Disability and Health Questionnaire (Lymph-ICF) were used for clinical evaluations.

Results

Both groups exhibited decreased arm volume, VAS and Lymph-ICF scores both at T1 and at T2 with respect to T0. Arm volume decreased at T2 respect to T1 in EG, only [Fig.1]. Arm mobility decreased at T1, yet both groups showed a significative enhancement comparing T2 to T0.



Conclusion

Both groups exhibited an improvement of QoL, assessing the effectiveness of LTMB associated to MLD. Mobiderm® bandage showed a higher effectiveness, enabling better limb mobility. ADLs during treatment were affected in both groups, due to a greater hindrance of the bandage. These positive preliminary results demand to extend the investigation also at long-term periods, due the chronic nature of the condition.

No conflict of interest

ISPR7-0908

Internal Medicine and Other Conditions - Cancer

EARLY MOBILIZATION PROGRAM IMPROVES FUNCTIONAL CAPACITY AFTER MAJOR ABDOMINAL CANCER SURGERY: A RANDOMIZED AND CONTROLLED TRIAL

E. Almeida¹, J. Almeida², G. Landoni³, F. Galas², J. Fukushima², E. Fominskiy³, C. Brito¹, L. Cavichio¹, L. Almeida¹, U. Ribeiro-Jr⁴, E. Osawa², M. Diz⁵, R. Cecatto¹, L. Battistella¹, L. Hajja²

¹*Instituto do Câncer do Estado de São Paulo, Rehabilitation Service, São Paulo, Brazil*

²*Instituto do Câncer do Estado de São Paulo, Intensive Care Unit, São Paulo, Brazil*

³*Vita-Salute San Raffaele University- Milan- Italy, Anaesthesia and Intensive Care, Milan, Italy*

⁴*Instituto do Câncer do Estado de São Paulo, Surgery, São Paulo, Brazil*

⁵*Instituto do Câncer do Estado de São Paulo, Oncology, São Paulo, Brazil*

Introduction/Background

Major abdominal oncology surgery is a prototype of surgical trauma that leads to a substantial loss of functional capacity, particularly in elderly patients. Full recovery to a preoperative state of independence may take weeks or even months to take place. Although surgery is the cornerstone of treatment to many intra-abdominal tumors, the decline in physical status caused by a surgical procedure can postpone the initiation of other adjuvant cancer therapies and impair the quality of life and patient outcomes.

Material and Methods

We performed a single-blind, randomized and controlled trial in patients who underwent major abdominal oncology surgery in a tertiary university hospital. Patients were randomized to an early mobilization postoperative program based on supervised aerobic exercise, resistance and flexibility training or to standard rehabilitation care. After exclusion according to selection criteria, 108 patients were enrolled (54 to the early mobilization program and 54 to the standard rehabilitation care).

Results

Nine (16.7%) patients in the early mobilization group were not able to cross the room or to walk 3 meters without human assistance at postoperative day 5 compared to 21 (38.9%) of patients in the standard rehabilitation group (P=0.01) with an absolute risk reduction of 22.2% (95%CI 5.9 to 38.6%) and a number needed to treat of 5 (95% CI 3 to 17). At Postoperative day 5, performance in the six-minute walk test was better in the early mobilization program group when compared to the standard rehabilitation group. Also, patients of the early mobilization program group had a lower incidence of fatigue at Postoperative day 5. Health-related quality of life at Postoperative 5 was better in the early mobilization group.

Conclusion

An early postoperative mobilization program with aerobic and resistance training, implemented twice daily, improves functional capacity, quality of life, fatigue compared to a standard rehabilitation care in patients undergoing major elective abdominal surgery.

No conflict of interest

ISPR7-0909

Internal Medicine and Other Conditions - Cancer

FUNCTIONALITY OF LOWER LIMBS IN PEOPLE WITH LYMPHEDEMA SECONDARY TO CANCER TREATMENT: CASE SERIES

P. Araya¹, C. Sacomori², D. Jimenez¹, D. Monje¹, N. Nunez³

¹Universidad San Sebastian, Facultad De Ciencias De La Salud, Santiago, Chile

²Universidad Andres Bello, Facultad De Ciencias De La Rehabilitacion, Santiago, Chile

³Universidad San Sebastian, Facultad De Ciencias De La Salud, Santiago, Chile

Introduction/Background

Lower extremity lymphedema is a poorly recognized and reported condition, as well as its impact on functionality. The aim of this study was to describe the functionality of the lower extremities of people with lymphedema secondary to cancer.

Material and Methods

The sample consisted of 10 participants of both sexes, with different oncological diagnoses, mostly women with gynecological cancer, with secondary lymphedema of the lower extremities, and average age of 55 years. In addition to sociodemographic and clinical antecedents, the variables of functionality and lower limb volume were recorded. The Lymphedema Questionnaire in Gynecologic Cancer (GCLQ) and the Functional Assessment Scale of the lower limbs were used, in addition the indirect volume of lower limbs according to the Frustrum formula was recorded.

Results

The volume difference between lower extremities varied between 214.86 ml. and 2317.61 ml, 4 participants had bilateral limphoedema and 6 unilateral. According to the scale of functionality, all patients presented compromised functionality with a wide dispersion (18.75% -80%), without a clear pattern considering sex, age, laterality, comorbidities or limb volume. The most limited movement was the knee and the least limited was the foot. The biggest difficulty was found: "running", "spinning while running" and "jumping".

Conclusion

The functionality of lower extremities is affected by the presence of lymphedema. A high body mass index and older age could potentiate this affectation. Although GCLQ is built for use in women, it could be useful and beneficial in people of both sexes with lower limb lymphedema for other causes.

No conflict of interest

ISPR7-0314

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

EFFECTIVENESS OF CONTINUATION PHYSICAL MEDICINE PROGRAM ON VASCULAR HEALTH OF PEOPLE WITH STROKE

A. Kimura¹

¹, Takasaki, Japan

Introduction/Background

We have focused on vascular health as a precursor to physical inactivity. The purpose of this study is to clarify the influence of continuation of PM program that does not lose interest to people with high risk hemiplegia on vascular-health.

Material and Methods

A person with hemiplegy over 75 years old who stay at the elderly health facility located in Japan. Their movement is independent. No dementia. Intervention-Control study. Outcomes are pulse wave velocity (PWV) and ABI. Participants are randomly divided into intervention (IG) and control groups(CG). The between the average values of PWV and ABI between the two groups after two years is examined. In addition, a linear model of each group is created and the slope of the program coefficient of the multiple regression equation adjusted for age and sex is evaluated. IG done FES and Passive Cycling, Posing. CG conducted health education and a massage based program. 1 session was practiced 20 minutes once a week, by Physical Therapist.

Results

The IG(n = 6) and the CG (n = 18). The difference between the average values of PWV (right foot) between the two groups is 521 m / sec (61 to 980), left 426 m / sec. (- 34 to 887), right PWV has only significant difference. In the multiple regression analysis models, The β factor is 0.33 (-2.908 to 43.471) in age, intervention -0.453 (-965.285 to -87.762).

Conclusion

Continuation physical medicine program significantly shows the effectiveness on vascular health of people with stroke. We need more research to attract interest.

No conflict of interest

ISPR7-0330

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

GROUP-BASED OUTPATIENT CARDIAC REHABILITATION MODELS AND QUALITY OF LIFE IN BULGARIAN PATIENTS WITH CHRONIC HEART FAILURE

J. Papathanasiou¹

¹*Department of Medical Imaging, Dental Allergology & Physiotherapy, Faculty of Dental Medicine, Medical University of Plovdiv, Bulgaria*

Introduction/Background

Chronic heart failure (CHF) is one of the most common cardiovascular diseases, which affects patients quality of life (QoL) and functional capacity. QoL includes multiple aspects and interdisciplinary approaches including medicine, sociology, psychology, economics, and philosophy.

Material and Methods

The present study was performed in outpatients at Medical Center for Rehabilitation and Sport Medicine I - (Plovdiv- Bulgaria). Seventy-five (n=75) eligible subjects with stable CHF (New York Heart Association classes II to IIIB) were enrolled in the study. Subjects were allocated to two training groups in a 12-week CR Program. Thirty-eight (n=38) of eligible subjects performed high-intensity aerobic interval training (HIAIT), a modified version of CR model Ullevaal (m- Ullevaal), (Fig. 1). Thirty-seven (n=37) participants performed moderate intensity continuous training (MICT). QoL and functional capacity were assessed before and after each training session.

Results

There was significant improvement in the baseline Minnesota Living with Heart Failure Questionnaire (MLHFQ) scores in both CR groups after 12-weeks. The improvement in MLHFQ scores in HIAIT group compared to the MICT group was significantly greater (-17, 26% vs. -6.42% p<0.001). The improvement of six-minute walk test 6MWT in the HIAIT group was significantly higher compared to the MICT group, 14, 5% vs 10% (p<0.001) respectively (Table 1). During both rehabilitation interventions, no major adverse cardiovascular events were noted.

Conclusion

Our data indicate that both CR interventions (HIAIT and MICT) had a positive impact on QoL and functional capacity of Bulgarian patients with CHF, however the difference was greater in the HIAIT group. The impact of the MLHFQ scores was smaller in Bulgaria compared to more developed countries. It is possibly attributed to the specificities of the Bulgarian healthcare system and the socioeconomic status of the included individuals. The higher improvement on QoL and functional capacity in HIAIT indicates a relative superiority of this CR model in Bulgarian population.

No conflict of interest

ISPR7-0331

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

ISOMETRIC EXERCISE FACILITATES MYOCARDIUM COLLATERAL DEVELOPMENT

L. Xiao¹

¹The first affiliated hospital of Nanjing Medical University, Rehabilitation department, Nanjing, China

Introduction/Background

This study was aimed to investigate the effects of isometric handgrip induced physical ischemia training (PIT) on remote coronary recruitment and growth.

Material and Methods

74 CAD patients were randomly assigned to either an isometric handgrip group (IHG) or non-exercise group (NEG). Patients in the IHG group performed isometric handgrip exercises during 1min of coronary balloon occlusion, while patients in the NEG group remained sedentary. Collateral flow index (CFI), heart rate (HR), systolic blood pressure (SBP) and diastolic blood pressure (DBP) were evaluated prior to and at the end of 1 min occlusion.

Second study, 21 CAD patients were randomly divided into an isometric handgrip training group (IHT) or non-training group (NTG). Patients in the IHT group performed three-month isometric handgrip training while patients in the control group remained sedentary. Single-photon emission computed tomography (SPECT) was used to evaluate myocardial perfusion. VEGF were determined using ELISA .

Results

In the IHG group, increments of CFI were significantly higher than that in the control group ($P<0.01$). HR, SBP, DBP in the IHG group were significantly higher than values in the NEG group ($p<0.01$) at the end of occlusion.

In the second study, myocardial perfusion and left ventricular ejection fraction were significantly improved in the IHT group ($P<0.05$, $P<0.01$) . VEGF levels in IHT were increased significantly ($P<0.01$). Levels of VEGF were positively correlated with the summed rest score of SPECT ($r=0.60, P<0.01$)

Conclusion

Isometric handgrip exercise induced PIT may promote remote collateral recruitment and growth in CAD patients.

No conflict of interest

ISPR7-0410

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

OPTIMUM EXERCISE PRESCRIPTION OF RESISTANCE TRAINING FOR PATIENTS WITH CARDIAC DISEASE ESTIMATED BY USING “HAND-HELD DYNAMOMETER”

T. Tanaka¹

¹, Fukuoka, Japan

Introduction/Background

The fact that exercise therapy could improve prognosis of the patients with cardiac disease, is previously proved. Both the Aerobic exercise and resistance training are effective and recommended.

Though we set the goal of aerobic exercise with the measurement result of CPX, we often do not have the method of measuring the appropriate load for resistance training, the load targeted 50~60% of 1 repetition maximum.

For the purpose setting optimum exercise load of strength-training machine, we tried to making an estimate equation, by using the measurements of “Hand-Held Dynamometer”.

Material and Methods

The outpatients with cardiac disease, who come our hospital for the cardiac rehabilitation start resistance training using strength-training machine 1 month after beginning.

Before stating the training, we measure muscle strength of quadriceps extension by using “Hand-Held Dynamometer” bilaterally. Then patients do resistance training “leg extension” and “leg press” by using the training machine. They train with the load targeted 50~60% of 1 repetition maximum.

Finally, we adjust the weight with 20 times resistance training actually, and made a calculating formula.

Results

we extrapolate the math formula from the Hand-Held Dynamometer result, in combination with other patients' datum of BMI, 6 minute walk test result, grip strength test result, other. We could made a reasonable estimate of weight load for resistance training by using the formula.

Conclusion

“Hand-Held Dynamometer” is useful for estimating the optimum exercise prescription of resistance training, adjusted with BMI, 6MD, grip strength test.

No conflict of interest

ISPR7-0414

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

RANDOMIZED CONTROLLED TRIAL OF A HOME-BASED EXERCISE PROGRAM FOR CHILDREN WITH CONGENITAL HEART DISEASE FOLLOWING INTERVENTIONAL CARDIAC CATHETERIZATION: A PRELIMINARY STUDY

X. Zhou¹, Q. Du¹, K. Sun²

¹Xin Hua Hospital affiliated to Shanghai Jiao Tong University School of Medicine, Rehabilitation, Shanghai, China

²Xin Hua Hospital affiliated to Shanghai Jiao Tong University School of Medicine, Pediatric cardiology, Shanghai, China

Introduction/Background

It has been demonstrated that the majority of children with congenital heart disease (CHD) are at an increased risk of motor development problems. Studies identifying the efficacy of exercise therapy are rare in this field. The aims of this study are to identify the efficacy of a home-based exercise program to improve the motor function of children with CHD following interventional cardiac catheterization.

Material and Methods

The study was designed as an evaluator-blinded randomized controlled trial. The study was performed at Xin Hua Hospital affiliated to Shanghai Jiao Tong University School of Medicine in China. 21 children with CHD following interventional cardiac catheterization were recruited. Subjects were randomized allocated to either an intervention group(10 patients) or a control group (11 patients). The intervention group carried out home-based exercises, and the control group received education only. Motor quotient was assessed by the Peabody Developmental Motor Scales, 2nd Edition as the primary outcomes.

Results

The mean age was 29.1 ± 16.2 months in the control group (7 girls/3 boys) and 24.7 ± 17.4 months in the intervention group (6 girls/5 boys). The mean total motor quotient was 93 ± 6.3 in the control group and 92.2 ± 8.3 in the intervention group at baseline. Mean motor quotients in the intervention group improved significantly (92.2 vs 99.6) while that in the control group showed no change(93 vs 89.9).

Conclusion

A home-based exercise program for children with CHD following interventional cardiac catheterization appeared more useful than education in the short-term effect on total motor quotient.

No conflict of interest

ISPR7-0487

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

CENTRAL AND PERIPHERAL BLOOD PRESSURE RESPONSE TO A SINGLE BOUT OF EXERCISE IN PATIENTS WITH RESISTANT HYPERTENSION

F. Ribeiro¹, N. Almeida², R. Ferreira³, S. Lopes², N. Oliveira⁴, A.J. Alves⁵, J. Oliveira⁴, J. Mesquita-Bastos³

¹*University of Aveiro, School of Health Sciences and Institute of Biomedicine - iBiMED, Aveiro, Portugal*

²*University of Aveiro, School of Health Sciences, Aveiro, Portugal*

³*Centro Hospitalar do Baixo Vouga- EPE, Cardiology- Hospital Infante D. Pedro, Aveiro, Portugal*

⁴*University of Porto, Faculty of Sport- Research Centre in Physical Activity- Health and Leisure, Porto, Portugal*

⁵*University Institute of Maia - ISMAI, Research Center in Sports Sciences- Health Sciences and Human Development - CIDESD, Maia, Portugal*

Introduction/Background

Central blood pressure may respond differently to exercise in patients with resistant hypertension, which show uncontrolled hypertension with 3 or more antihypertensive agents including 1 diuretic. Thus, this study aimed to analyze the effects of a single bout of aerobic exercise on central and peripheral blood pressure, and carotid-femoral pulse wave velocity (cf-PWV) in patients with resistant hypertension.

Material and Methods

Nineteen patients (9 females and 10 males) were enrolled in the study (age: 58.7 ± 9.0 years; weight: 84.4 ± 9.5 kg; height: 166.6 ± 7.4 cm; BMI: 30.5 ± 3.7 kg/m²). Changes in central and brachial blood pressure and cf-PWV were recorded in response to a 10-minute bout of walking on a treadmill at 3 km/h. cf-PWV and pulse wave analysis in the radial artery were performed at rest and immediately after exercise by applanation tonometry.

Results

Both central (150.5 ± 22.8 to 156.6 ± 21.1 mmHg; $P=0.023$) and peripheral (163.1 ± 21.7 to 173.4 ± 21.2 mmHg; $P=0.002$) systolic blood pressure were increased after exercise, but the magnitude of the increase was significantly lower in central pressure (6.1 ± 10.7 versus 10.3 ± 12.7 mmHg; $P=0.002$). The results of central pulse pressure also showed lower values than peripheral (15.4 ± 11.8 versus 20.2 ± 15.1 mmHg; $P=0.001$). Both central (89.9 ± 15.3 to 80.6 ± 15.3 mmHg; $P=0.023$) and peripheral (89.7 ± 13.8 to 78.7 ± 15.2 mmHg; $P=0.002$) diastolic pressure decreased after exercise. Neither radial augmentation index nor cf-PWV changed in response to exercise.

Conclusion

The response of central blood pressure, which is a better index of cardiac load than peripheral pressure, to a single bout of exercise is lower than the peripheral response in patients with resistant hypertension.

No conflict of interest

ISPR7-0491

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

APPLICATION OF A MODIFIED GROUP-BASED HIGH INTENSITY INTERVAL TRAINING IN THE BULGARIAN CARDIAC REHABILITATION SETTING

J. Papathanasiou¹

¹Department of Medical Imaging, Dental Allergology & Physiotherapy, Faculty of Dental Medicine, Medical University of Plovdiv, Bulgaria

Introduction/Background

Despite the proven advantages and benefits of group-based cardiac rehabilitation (CR) models on economic performance, cost effectiveness, functional capacity and quality of life (QoL), in Bulgaria such models hardly apply. Generally, CR services in our country are underutilized. Moderate intensity continuous training (MICT) models are widely used in Bulgaria.

The aim of our study was to implement a modified group-based high intensive aerobic interval training model (HIAIT) – which we called modified Ullevaal (m-Ullevaal) and define its feasibility in Bulgarian rehabilitation practice, as well as to compare it with the widely used MICT.

Material and Methods

The included individuals (n=75) in our randomized controlled trial (RCT) were with stable CHF, New York Heart Association classes II to IIIB, in a 12-week CR program. Subjects were randomly assigned to two CR groups. One CR group (n=38) performed HIAIT, m-Ullevaal model (Figs 1, 2) and the second group (n=37) performed MICT in cycle ergometers. The primary outcome was functional capacity, evaluated by the 6-minute walking distance test (6MWT). The 6MWT was performed in a 30 m marked corridor and the participants were instructed to walk from end to end at their own pace, attempting to cover as much distance as possible in 6 minutes.

Results

The improvement observed, in six-minute walking distance (6MWD) was 63 m (14.53%)

in the m-Ullevaal group, as compared with the improvement of 44 m (10.01 %) in the MICT group (Table 1). Compliance in the m-Ullevaal group was 88,17% of the scheduled training sessions, while that of the MICT group was 87,67% (Table 2).

Conclusion

Our results showed that the suggested m-Ullevaal CR model is suitable for optimal use in Bulgarian rehabilitation practice, by minimizing costs and it is tailored to meet the needs of our healthcare infrastructure.

No conflict of interest

ISPR7-0548

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

CHARACTERISTICS OF LYMPHOEDEMA AT A REHABILITATION DEPARTMENT IN TUNISIA

*L. Ines¹, M. Guaddour¹, W. Haj Hmad¹, E. Toulgi¹, M. Guedria², S. Jemni², S. Mtawaa¹,
F. Khachnaoui¹*

¹hospital center sahloul, rehabilitation physical medicine, Sousse, Tunisia

²hospital center sahloul, rehabilitation physical department, sousse, Tunisia

Introduction/Background

Lymphoedema is a chronic condition characterized by tissue swelling and poor skin condition. It is detrimental to many aspects of patients' health-related quality of life. Although it's a frequent problem, it remains under recognised and undertreated. Unfortunately, there is no Tunisian study to describe the situation in our hospitals. Thus, a retrospective review was conducted to determine the clinical characteristics and treatment practices of lymphedema in rehabilitation department.

Material and Methods

Data were collected retrospectively from hospital medical records of lymphoedema patients hospitalized in a rehabilitation department from 2012 to 2016, university hospital center Sahloul, Sousse, Tunisia.

Results

A total of 20 patients were included in this study (4 males and 16 females) The mean age (\pm SD) of patients was 50.7 (\pm 14.7). Most of patients were sent from internal medicine department (26.3%) and dermatology department (15.8). fifty two percent of patients had BMI \geq 30. primary lymphoedema was diagnosed in 26.3% of cases. seventy-three of patients had secondary lymphoedema, which is caused mainly by infections(52.6%) and malignant tumors(26.3%).Treatments prescribed were intermittent pneumatic compression, active exercises, sleeves and compression bandage with a successful result only in 36.8% of cases. Several complications have been identified such as lymphangitis(36.8%) and erysipelas (42.1%).

Conclusion

A significant proportion of lymphedema patients are women. Lack of resources, lack of efficiency of treatment and patient adherence are barriers to lymphoedema care.

No conflict of interest

ISPR7-0564

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

“LIVING WITH THE BREAKS ON” A QUALITATIVE EXPLORATION OF WOMENS RECOVERY PROCESS AFTER A CARDIAC EVENT (CE)

E. Hellem¹, K.A. Bruusgaard¹

*¹Oslo and Akershus University College of Applied Sciences,
Faculty of Health Sciences- Dep. Physiotherapy, Oslo, Norway*

Introduction/Background

Having experienced a cardiac event is associated with an insecure existence, with considerable physical and emotional burden in both men and women. However, women frequently experience greater anxiety, uncertainty and depression and report lower quality of life and a greater fear of relapse than men. The purpose of this study was to explore how women experience the recovery process after a CE and what impact the event has on emotional and bodily experiences

Material and Methods

A qualitative study based on a phenomenological framework of understanding included 20 women in individual, - and focus group interviews. The interviews were analyzed by systematic text condensation.

Results

The findings can be summarized as suffering vulnerability, fragility and insecurity when returning home and difficulties in relying on their body, especially related to exertion. Having experienced a threat to life seem to change the women's sense of self and of the body as well as influence their relationship to activities of everyday life.

Conclusion

The women lack support and follow-up in the early recovery phase, before enrolling in CR-programs. Feeling alone with uncertainty and anxiety affects not only the women's well-being but also their activity level. To prevent withdrawal and reduced participation, it is essential that professionals not only focus on the medical care and the clinical recovery but also give support and facilitate the personal recovery-process. A greater understanding of the personal recovery concept would be an important contribution to improve the follow-up practices for women having experienced a CE.

No conflict of interest

ISPR7-0570

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

“EMPOWERED THROUGH SAFETY, BODILY EXPERIENCES, PERCEPTION AND KNOWLEDGE” WOMEN’S EXPERIENCES WITH CARDIAC REHABILITATION (CR)

K.A. Bruusgaard¹, E. Hellem¹

*¹Oslo and Akershus University College of Applied Sciences,
Faculty of Health Sciences- Dep. Physiotherapy, Oslo, Norway*

Introduction/Background

Despite compelling evidence on numerous benefits of cardiac rehabilitation programs, they are largely under-utilized especially in women. Women seem to have more challenges than men, linked to training in particular. They have poorer adherence to the program and maintain to a smaller degree the new exercise habits. The purpose of the study was to gain more knowledge of women’s experiences with CR and what impact the process has on perception of the body, self efficacy and mastering of physical activity and exercises.

Material and Methods

A qualitative study based on a phenomenological framework of understanding included 20 women in focus groups and individual in-depth interviews. The interviews were analysed by systematic text condensation.

Results

Preliminary findings: The CR-program helped to empower the women and build self-efficacy. Assurance and the proximity to first aid was essential to reduce uncertainty and fear in terms of daring to exert the heart, especially in the initial phase. Knowledge and bodily experiences in the safe hands of a competent physiotherapist was crucial in the process. Support and informal knowledge sharing between peers contributed to a positive outlook. Inadequate follow-up routines, random culture of referral to CR was said to add a burden to an insecure existence.

Conclusion

Exercise-based CR provided valuable experiences to overcome insecurity, strengthened confidence in the body and increased awareness of the importance of exercise and physical activity. Skilled professionals and social support from peers were regarded as crucial contributors. Access to CR was perceived as a lottery.

No conflict of interest

ISPR7-0604

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

MUSCLE QUALITY DEPENDS ON FUNCTIONAL CAPACITY BUT NOT ON THE CLINICAL CONDITION IN PATIENTS WITH CHF AND COPD COEXISTENCE

G. Arêas¹, F. Cristina Rossi Caruso¹, L.C. Soares Carvalho Junior¹, K. Thays Lopes Zangrando¹, R. Boemo Jaenisch¹, **L. Pinheiro Carvalho**¹, M. Goi Rosconi², R. Cabiddu¹, A. Borghi-Silva¹

¹Universidade Federal de São Carlos, Departamento de Fisioterapia, São Carlos, Brazil

²Universidade Federal de São Carlos, Departamento de medicina, São Carlos, Brazil

Introduction/Background

It is known that chronic heart failure (CHF) and chronic obstructive pulmonary disease (COPD) are syndromes which cause muscle impairment and thus physical disability. One of the major contributors of functional capacity decline is loss of muscle quality (dynapenia) rather than muscle mass (sarcopenia) itself. It is far from clear if the coexistence of both diseases (CHF-COPD) could worsen the muscle impairment in this population. The aim of this study was to compare sarcopenia and dynapenia between CHF-COPD and CHF as well as their association with aerobic capacity.

Material and Methods

Ten CHF and nine CHF-COPD patients with reduced ejection fraction (CHF: 36.7±5.5% vs CHF-COPD: 40.5±5.8%; $p=0.12$) were recruited. Clinical status, handgrip strength (dynamometer), body composition (bioimpedance), and functional capacity (Duke activity status index [DASI]) were evaluated. Sarcopenia (appendicular lean mass divided/height squared) and dynapenia was assessed by the calculation of muscle quality (handgrip strength/body mass index). Unpaired t test and Pearson's test were applied ($p<0.05$).

Results

There were no differences in aerobic capacity (27.8±12.5 vs 31.4±14.5), muscle quality (1.1±0.4 vs 1.1±0.5 kg/kg.m²) and sarcopenic index (8.5±1.0 vs 8.3±1.1 kg.m⁻²) between CHF and CHF-COPD, respectively. Nevertheless, there was a positive moderate correlation between muscle quality and aerobic capacity independently of the COPD coexistence ($p=0.009$; $r=0.58$). Furthermore, sarcopenic index was not correlated with aerobic capacity.

Conclusion

The overlap condition does not influence muscle quantity and quality. Apparently, muscle quality is more associated with aerobic capacity in CHF patients than with the cumulative effect of both diseases themselves.

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No conflict of interest

ISPR7-0610

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

CARDIAC REHABILITATION PROGRAMS - REVIEW OF PORTUGUESE STATE OF ART

P. Caetano¹, C. Martins Moreira²

¹USF Nova Via, Family Medicine, Gaia, Portugal

²CHP, Serviço de Fisiatria, Porto, Portugal

Introduction/Background

Currently, cardiovascular diseases lead the morbidity and mortality rates in Portugal, so the importance of proper orientation of these patients in an acute phase becomes evident. In this context, cardiac rehabilitation programs (CRPs) were developed based on an individualized and multidisciplinary approach to inform the patient about their pathology, promote early recovery after an acute event, control of cardiovascular risk factors, prevention of secondary events and optimization of functional capacity. The purpose of this paper is to evaluate the state of the art regarding the effectiveness of the CRP, as well as its level of implementation in the Portuguese reality. To alert health professionals to the need for implementation and referral for CRP

Material and Methods

Bibliographic research (last 10 years) in medical search engines, "PubMed" and "Uptodate".

Keywords "hypertension" "cardiac rehabilitation" "cardiovascular prevention"

Results

In the current literature there is undeniable evidence of the benefit of CRPs in ischemic heart disease, with a 20-30% reduction in mortality rates in patients who do not perform such programs. However, Portugal is among the countries that recruits less of the potential candidates for these programs (5% vs 30% European average), which, is in line with our clinical perception. The reasons are due to the lack of responsiveness on the part of the CR units, or lack of primary care orientation.

Conclusion

This work highlights the need to promote the correct and timely orientation of existing CRPs, as well as the need to create new centers to provide care for a larger population. It is essential for physicians to be aware of the importance of implementing CRPs in an acute phase after the event, as well as patient accountability throughout the rehabilitation process.

No conflict of interest

ISPR7-0613

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

DEEP VEIN THROMBOSIS OF LOWER EXTREMITY IN NEUROLOGICAL REHABILITATION

**G.D.L.F. Juan Ignacio¹, G.K. Gutierrez², G.P. Cosentino³, B. Peña³, D.F. Ricci³, E. Prieto⁴,
G.A. Mosconi⁴, I. Bruno⁴**

¹, *Mar del Plata, Argentina*

²*Instituto de Rehabilitacion Psicofisica del Sur, Rehabilitacion Medica, Mar del Plata, Argentina*

³*Instituto Nacional De Rehabilitacion Psicofisica del Sur, Rehabilitacion Medica, Mar del Plata, Argentina*

⁴*Instituto Nacional de Rehabilitacion Psicofisica del Sur, Rehabilitacion Medica, Mar del Plata, Argentina*

Introduction/Background

Describe clinical, epidemiological and functional characteristics of the cases with deep vein thrombosis (DVT) in patients with Neurological Disease (Spinal Cord Injury and Acquired Brain Damage) in the sub-acute and chronic phase.

Material and Methods

Descriptive, longitudinal, retrospective study. 135 case files of inpatients admitted to our unit were analyzed, 10 of them were diagnosed with DVT in lower limbs during the period of time from March 2015 to September 2016.

Results

40% of the cases with DVT were stroke patients, all of them had an increased diameter of the lower limb and 80% had edema associated. 30% of them had no major criteria for thromboprophylaxis. 90% were confined to their beds more than 72hs, half of them had left-side paralysis and no muscular activity in foot flexors. All of them had less than 80 points at a Functional International Measure (FIM), motor FIM 41. Every case had low mobility scores in different assessments scales.

Conclusion

The probability of suffering DVT is related with motor and functional impairment, and it increases in cases with foot paralysis, left-side impairment, long bed stay and low FIM score at admission.

No conflict of interest

ISPR7-0626

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

**CARDIAC REHABILITATION IN PATIENTS WITH HIGH-RISK CARDIOVASCULAR DISEASE-
GENERAL HOSPITAL OF DISEASES (HGE) -HOSPITAL JUAN JOSE AREVALO BERMEJO
(HJJAB), GUATEMALA 2014-2016**

L. Rodríguez¹

¹Hospital General de Enfermedades IGSS, Guatemala, Guatemala, Guatemala

Introduction/Background

Approximately 1-2% of the adult population has heart failure, with an increase in their prevalence, even greater than 10% in the elderly. Prior to the 1990s and the modern era of treatment, 60-70% of patients died within 5 years of diagnosis and hospitalization with symptoms was frequent and recurrent, which in many countries resulted in an epidemic leading to an endless Complications and mortality. The HF - ACTION study demonstrated safety in the performance of physical exercises, as well as the reduction of mortality and hospitalization, so it was studied if there is variability in patients who underwent cardiac rehabilitation.

Material and Methods

A longitudinal, prospective, analytical study, carried out in HGE and HJJAB, with the objective of measuring the tolerance to effort in metabolic units (METS) before and after a cardiac rehabilitation program, by means of an in-band stress test when evaluating 21 Cases with peripheral arterial disease, heart failure and advanced ischemic heart disease, excluding those cases with renal comorbidities, valvulopathies and cases with inability to perform the stress test, using the statistics: Chi2 test, Macnemar and Student's T test for samples related to the objective Statistically to compare, through a stress test, METS before the beginning of the cardiac rehabilitation and another control when completing 12 sessions

Results

There was a difference in the patients who underwent cardiac rehabilitation, optimizing their METS ($p < 0.001$); However, there is no dependence on one another, Pearson's correlation.

Conclusion

Cardiac rehabilitation is an option for the patient with high cardiovascular risk, and there is variability in the patients who underwent the procedure ($p < 0.001$) with a 99% confidence interval, with a good correlation (R Pearson 0.74).

No conflict of interest

ISPR7-0811

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

CAN WE ESTIMATE ANAEROBIC THRESHOLD FROM FREQUENCY ANALYSIS OF HEART RATE VARIABILITY DURING AN INCREMENTAL EXERCISING TEST IN PATIENTS WITH CHRONIC THROMBOEMBOLIC PULMONARY HYPERTENSION?

M. Abe¹, Y. Ogawa², N. Mori³, O. Ito¹, M. Kohzuki¹

¹Tohoku University Graduate School of Medicine,

Department of Internal Medicine and Rehabilitation Science, Sendai, Japan

²Teikyo University, Department of Sport and Medical Science, Tokyo, Japan

³Iwate Prefectural Isawa Hospital, Department of Respiratory Medicine, Isawa, Japan

Introduction/Background

Frequency analysis of heart rate variability (HRV), which is convenient and noninvasive, is widely used to evaluate autonomic nervous system activity. We have found that anaerobic threshold (AT) was estimated from changes in the high-frequency (HF) component of HRV in an incremental exercising test in healthy young adults and patients with obesity. Therefore, we assessed whether AT was estimated from frequency analysis of HRV in patients with chronic thromboembolic pulmonary hypertension (CTEPH).

Material and Methods

Seven female patients with CTEPH (age 63.6±14.2 years) performed an incremental exercise to exhaustion using a cycle ergometer with respiratory gas analysis in order to determine ventilator threshold (VT). In addition, frequency analysis of HRV was performed during exercise. Electrocardiographic R signals were obtained at 1,000 Hz, and then HF component (0.15–0.40 Hz) and low-frequency (LF) component (0.04–0.15 Hz) were extracted. The point that HF reached a plateau to increasing workload was defined as HRVT-HF.

Results

VO₂ and heart rate (HR) at VT were 10.2±3.0 ml/kg/min and 93.9±13.1 bpm, respectively. HF decreased with increasing exercise intensity in all cases, and then plateaued to increasing workload. VO₂ and HR at HRVT-HF were 9.7±2.4 ml/kg/min and 95.1±12.5 bpm, respectively. VO₂ at HRVT-HF significant positively correlated with VO₂ at VT (r =0.909, p <0.005). HR at HRVT-HF also significant positively correlated with HR at VT (r =0.925, p <0.005).

Conclusion

We clarified that AT was estimated from frequency analysis of HRV in patients with CTEPH identically to healthy young adults and patients with obesity.

No conflict of interest

ISPR7-0865

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

**CARDIOVASCULAR DISEASES: RESPIRATORY AND FUNCTIONAL CHARACTERISTICS
BASED ON THE GENDER**

T.S. Nicaretta¹, C.R. Daniel¹, A.R. Fréz¹, A.C. Binda¹, M.P. Baroni¹, J.A. Ruaro¹, M.B. Ruaro¹

¹Universidade Estadual do Centro-Oeste, Physical Therapy Department, Guarapuava, Brazil

Introduction/Background

Patients with heart disease have a quality of life deficit by physical impairment caused by deterioration of cardiac function, which may have different characteristics depending on the genre. So, the aim of this study was to compare the quality of life and respiratory and functional characteristics between men and women with heart disease.

Material and Methods

This is a cross-sectional study, the quality of life is assessed by the SF-36, evaluation of respiratory muscle strength measurements, lung function, peripheral muscle strength and 6-minute walk test. 15 patients were analyzed, and found a significant difference between genders in expiratory muscle strength, distance and heart rate in the 6-minute walk test, handgrip and vitality domain of the SF-36.

Results

Significant data on the correlation of functional capacity, general health status and handgrip to the distance traveled in men.

Conclusion

We conclude that there is a difference in performance between men and women evidenced by the differences in the walk test, quality of life and peripheral muscle strength.

No conflict of interest

ISPR7-0869

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

**RESPIRATORY MUSCULAR STRENGTH, QUALITY OF LIFE AND PHYSICAL PERFORMANCE
IN THE PRE-OPERATIVE OF ONCOLOGICAL SURGERY**

*S.C. Santos¹, T.W. Kultz¹, C.R. Daniel¹, A.R. Fréz¹, A.C. Binda¹, J.A. Ruaro¹, M.P. Baroni¹,
M.B. Ruaro¹*

¹Universidade Estadual do Centro-Oeste, Physical Therapy Department, Guarapuava, Brazil

Introduction/Background

The aim of the study was to correlate respiratory muscle strength with the quality of life and the level of physical performance in women in preoperative oncologic surgery.

Material and Methods

Thirteen women, mean age 54.3 ± 12.4 years, who underwent oncologic surgery, participated in the study. For the evaluation of respiratory muscle strength, the maximum respiratory pressures (MIP and MEP) were measured using the MVD 300 digital manovacuometer, following the recommendations of the American Thoracic Society. The EORTC questionnaire QLQ-C30 was used to assess the quality of life and the physical performance was assessed by the Karnofsky index. Spearman's correlation coefficient test was used for correlation of respiratory muscle strength with EORTC QLQ-C30 categories.

Results

The inspiratory muscle strength was 23 ± 13.9 cmH₂O and the expiratory pressure was 46.5 ± 21.1 cmH₂O. A moderate quality of life and a score related to the symptoms were observed, particularly 67/100 fatigue. The Karnofsky index had a score of 73%, which ranks patients as self-sufficient but unable to maintain normal or working activity. A negative correlation was observed between the inspiratory and expiratory muscle forces and the fatigue symptom of EORTC QLQ-C30 ($p=0.05$; $r=-0.51$ and $p=0.05$; $r=-0.54$). Between the inspiratory muscle strength and the physical performance, the correlation was significant and positive ($p=0.002$, $r=0.7$).

Conclusion

We can infer from the correlations found that the weaker the respiratory muscles the fatigue level will be higher, and that the whole respiratory musculature reflects in a good physical performance.

No conflict of interest

ISPR7-0875

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

QUALITY OF LIFE, PHYSICAL ABILITY AND RESPIRATORY MUSCLE STRENGTH IN PATIENTS WITH CANCER

T.W. Kultz¹, S.C. Santos¹, C.R. Daniel¹, M.P. Baroni¹, J.A. Ruaro¹, A.C. Binda¹, A.R. Fréz¹, M.B. Ruaro¹

¹Universidade Estadual do Centro-Oeste, Physical Therapy Department, Guarapuava, Brazil

Introduction/Background

The aim of the study was to observe the correlation between quality of life, respiratory muscle strength and performance in the six-minute walk test (6MWT) in preoperative oncologic surgery subjects.

Material and Methods

Oncological patients with an indication of surgical procedure participated in the study at Hospital São Vicente de Paulo, Guarapuava, Brazil. A preoperative evaluation was performed to collect the data. Quality of life was assessed by the EORTC questionnaire QLQ-C30 (version 3), specific for cancer patients, which is divided into 15 categories. Physical performance was assessed by the 6MWT. Respiratory muscle strength was assessed by measuring maximal respiratory pressures (MIP and MEP). Statistical analysis: The Spearman correlation coefficient test was used for correlation of respiratory muscle strength and 6MWT with EORTC QLQ-C30 categories.

Results

A total of 33 patients were evaluated: 87.9% female, mean age was 52.8±14.1 years, mean weight was 67.5±18.4 kg, And height of 162.54±8.89 cm. In the health status category, the mean score was 57±27.86 points, the physical capacity had a mean of 61.76±31.10 points and the functional scale, which is the sum of physical function scores, role performance, emotional function, cognitive function and social function, presented a mean of 52.34±24.71 points. The mean distance walked by patients on the 6MWT was 448.81±147.88 m (79% of predicted). Mean inspiratory and expiratory muscle strength values were 50.45±31.69 cmH₂O (57% predicted) and 64.33±23.75 cmH₂O (74% predicted), respectively. The health status category presented a positive correlation with MIP (r=0.39, p=0.02), the 6MWT presented a positive correlation with physical capacity (r=0.66 p<0.0001), and with the functional scale (r=0.5, p=0.003).

Conclusion

The patients had a decrease in respiratory muscle strength. The correlations found allow us to infer that a good health reflects better pulmonary conditions, and a good performance in the 6MWT is related to better physical and functional capacities

No conflict of interest

ISPR7-0914

Internal Medicine and Other Conditions - Heart, Cardiovascular and Lymph Diseases

IMPACT OF MUSCULOSKELETAL COMORBIDITIES IN A CARDIAC REHABILITATION PROGRAM

M. Gimeno Gonzalez¹, J. ruiz serrano¹, J. Acosta Rueda², M. supervia pola³, A.B. Morata Crespo¹, A. Fernandez Sanz⁴

¹*Miguel Servet Hospital, Physical Medicine and Rehabilitation, zaragoza, Spain*

²*hospital clinico universitario, physical medicine and rehabilitation, zaragoza, Spain*

³*Mayo Clinic, Cardiovascular diseases, Rochester. Minnesota, USA*

⁴*Miguel Servet Hospital, Neurology, zaragoza, Spain*

Introduction/Background

We aimed to study the prevalence of musculoskeletal comorbidities (MSKCs) among patients enrolled in a phase II Cardiac Rehabilitation (CR) program and its effect on participation.

Material and Methods

We selected patients who enrolled in a phase II CR program between the months of January 2016 and October 2016 and were included in this study. We assessed sociodemographic and clinical variables, including reason for CR along with previous history and development of new MSKCs during the program. Evolution of exercise tolerance test before and after completion of the CR program, as well as quality of life were studied.

Results

Our cohort included 80 patients, 70% of males, with mean age 56y.(SD-1.07). Reasons for cardiac rehabilitation were: Coronary artery disease (28), coronary artery bypass surgery (21); Others (valve surgery and cardiac transplant, 28). Seventeen (21%) patients reported MSKCs as a limitation to perform exercise and medical treatment were requested in 17 patients. The most common MSKCs were: generalized muscle pain (45%) and low back and knee pain. Patients with MSKCs were significantly older ($p = 0,018$), and had a significantly lower functional capacity ($P = 0,054$) when they enrolled in CR compared to those without MSKCs. Both groups (with and without MSKCs) showed similar improvements in functional capacity at the end of the program. Significant improvements were found in the evolution of SF36 questionnaire in both groups.

Conclusion

1. The MSKCs are frequent in patients entering CR in relation with an older population
2. At entry to Cardiac Rehabilitation Program, patients reporting MSKCs had a lower functional capacity probably in relation with previous deconditioning associated with their MSKCs and cardiologic pathology.
3. Initial detection and treatment of the MSKCs avoids to affect exercise and allows an individualized adaptation of the training program in order to achieve significant improvement in functional capacity and quality of life without affecting compliance.

No conflict of interest

ISPR7-0010

Internal Medicine and Other Conditions - Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

THE ROLE OF PMR IN DISABLING OBESITY

P. Capodaglio¹

¹Istituto Auxologico Italiano - IRCCS, Rehabilitation, Verbania, Italy

Introduction/Background

Given the figures of obesity worldwide, its impact on disability and on the National Health Systems, it appears mandatory for PMR to face this issue. Morbid obesity as a chronic disease, its comorbidities and consequential disability that negatively impact quality of life call for an approach that involves PMR.

Material and Methods

In 2011, the Italian Ministry of Health has acknowledged the need for a multidisciplinary and integrated rehabilitation pathway for severely obese patients with comorbidities including multiple rehabilitative settings according to the severity of disability and to the phases of instability of the condition. Pathways of care based on a multidisciplinary approach that not only deal with the weight issue in the long term, but, above all, prevent and treat its complications, improve function and quality of life and enhance participation are to be devised.

Results

In May 2013, delegates of the Italian Society of Physical and Rehabilitation Medicine, the Italian Society of Obesity and the Italian Society of Eating Disorders have joined in a panel of experts to discuss a consensus document on the organizational requisites of rehabilitation units devoted to patients affected by severe obesity with comorbidities. In 2013, the International Society of Physical and Rehabilitation Medicine started a Special Interest Group on Rehabilitation in Obesity and Metabolic Conditions with the aim of gathering existing related national guide lines and documents and develop position papers of the PMR Societies and further guide lines.

Conclusion

The ESPRM-UEMS Section is now in the process of producing an evidence-based position paper on this issue.

No conflict of interest

ISPR7-0013

Internal Medicine and Other Conditions - Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

DIAGNOSTIC ACCURACY OF MONOFILAMENT TEST IN DETECTING DIABETIC PERIPHERAL NEUROPATHY: A SYSTEMATIC REVIEW AND META-ANALYSIS.

F. Wang¹, J. Zhang², J. Yu³, Y. Yang¹, P. Wang¹

¹West China Hospital of Sichuan University, Rehabilitation Medicine Center, Chengdu, China

²The Chinese University of Hong Kong, Faculty of Medicine, Hong Kong, Hong Kong- China

³West China Hospital- Sichuan University, Center of rehabilitation medicine, Chengdu, China

Introduction/Background

Diabetes mellitus (DM) is one of the most common metabolic diseases worldwide, and it's rising in incidence, prevalence and importance as a chronic disease. Diabetic peripheral neuropathy (DPN), the most common complication of DM, which can lead to loss of sensation of foot and increase the incidence of foot ulcers, may easily cause infection and/or amputation in people with DM. Early detection of DPN would lead to a more appropriate prevention of foot ulcers and amputations. The aim of the article is to evaluate the accuracy of monofilament test in diagnosing diabetic peripheral neuropathy.

Material and Methods

We searched EMBASE (OvidSP), MEDLINE (OvidSP), Cochrane Library, Web of Science to identify diagnostic accuracy trials of monofilament in detecting diabetic peripheral neuropathy, from the inception to April 2016. Two reviewers independently assessed full articles according to inclusion criteria. Quality Assessment of Diagnostic Accuracy Studies (QUADAS-2) was used to assess the methodological quality of the included studies, and the meta-analysis were conducted by the Meta-DiSc.

Results

Finally 23 comparative trials met the inclusion criteria and retrieved in qualitative synthesis, and 8 trials which used the nerve conduction study as reference standard were selected in meta-analysis. Sensitivity and specificity of monofilament diagnosing diabetic peripheral neuropathy was ranged from 0.06 to 0.985 (95%CI) and 0.48 to 1.00 (95%CI), respectively. The SROC analysis for the studies yielded overall weighted AUC of 0.8528 (0.042) with index Q* value of 0.7839 (0.04).

Conclusion

The findings from this review indicated that the monofilament demonstrated fairly good diagnostic accuracy in detecting diabetic peripheral neuropathy as a screening tool. The studies about the application of monofilament on detecting DPN vary greatly, and optimal protocol of conducting monofilament in DPN is under exploration. More high-quality studies according to the QUADAS-2 are needed.

No conflict of interest

ISPR7-0559

Internal Medicine and Other Conditions - Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

MORPHOFUNCTIONAL CHARACTERISTICS OF THE FOOT IN PATIENTS WITH DIABETES

M. Abid¹, Z. Kammoun², E. Toulgui³, S. Mtawa³, S. Jemni⁴, F. Khachnaoui⁴

¹, Sfax, Tunisia

²High School of Sciences and Technology of Health of Sousse- Sousse- Tunisia, Podiatry, Sousse, Tunisia

³Faculty of medicine of Sousse, Physical reability department, Sousse, Tunisia

⁴Faculty of Medecine of Sousse, Physical Rehabilitation Department, Sousse, Tunisia

Introduction/Background

Diabetic foot is exposed to develop neuropathy that will damage all the sensations felt by the foot therefore it will make it less aware of the aggressions and contribute to rise the risk of establishing morphofunctionals troubles in patient's feet. For that reason, our study aims to identify biomechanical and structural characteristics of the foot in diabetic patients with and without neuropathy and to compare it to nondiabetic subjects

Material and Methods

It is a transversal, descriptive and analytic study that is based on the quanti-qualitative approach which included 96 subjects with or without diabetes (65 are diabetics and 31 are nondiabetics), recruited from endocrinology services of universities hospitals in Tunisia (Sfax, Sousse, Kairaouan) from January to April 2016, who underwent neurological and vascular examinations and had no previous of ulcerations or amputations.

Results

No substantial differences were found between the three groups concerning socio-demographic variables, Body Mass Index, deformities, foot types, also for the evaluation of neutral calcaneal stance position and medical data. But, we noticed that substantial differences were observed for type of diabetes ($p= 0.033$), neuropathic pain ($p= 0.002$), the presence of hyperkeratosis and muscular weakness and also for the evaluation of joint mobility range of the ankle and the foot except the inversion movement of the subtalar joint. According to Foot Posture Index, pronated foot was more frequent in diabetic patients with neuropathy.

Conclusion

The confluence of risk factors such as neuropathy, type 2 of diabetes, the presence of hyperkeratosis and reduced joint mobility which will ruin the foot biomechanics. All of them will lead afterwards to establish foot ulcerations and tardily for amputations that is why the prevention is essential to avoid diabetes foot complications.

No conflict of interest

ISPR7-0580

Internal Medicine and Other Conditions - Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

MORPHOFUNCTIONAL CHARACTERISTICS OF THE FOOT IN PATIENTS WITH DIABETES

Z. Kammoun¹, M. Abid¹, E. Toulgui², S. Mtawa², S. Jemni², F. Khachnaoui²

¹High School Of Sciences And Technology Of Health Of Sousse, Podiatry, Sousse, Tunisia

²Faculty Of Medecine Of Sousse, Department Of Physical Therapy And Rehabilitation, Sousse, Tunisia

Introduction/Background

Foot complications in diabetic patients usually result from the interplay of several causes including neuropathy, foot type and reduced joint mobility. From our study, we sought to identify the structural and biomechanical characteristics associated with the conditions diabetes mellitus and diabetic neuropathy.

Material and Methods

It is a transversal, descriptive and analytic study involved 65 patients with diabetes with or without neuropathic (31 neuropathic and 34 non neuropathic), recruited from endocrinology services of universities hospitals in Tunisia (Sfax, Sousse, Kairaouan) from January to April 2016, who underwent neurological and vascular examinations and had no previous of ulcerations or amputations. The patient's foot type according to Foot Posture Index and joint mobility were recorded.

Results

Substantial differences were found between patients with or without neuropathy in joint mobility range of metatarsophalangeal, the ankle and the movement of inversion of the subtalar joint. The pronated foot was more current in patients with neuropathy (Right foot: 71 % versus 23, 5 %; Left foot: 67, 8 % versus 35, 5 %) and Pes Cavus was equally present in the both groups. For neutral calcaneal stance position, no substantial difference was observed.

Conclusion

The confluence of risk factors in patients with diabetes such as neuropathy, limited joint mobility, pronated foot and Pes Cavus may be considered as predisposing factors for developing associated complications like Charcot foot.

No conflict of interest

ISPR7-0583

Internal Medicine and Other Conditions - Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

MYOSTATIN MAY PLAY A ROLE IN THE METABOLICALLY HEALTHY OBESE PHENOTYPE IN YOUNG ADULTS

L.P. Carvalho¹, L. Di Thommazo-Luporini¹, R.G. Mendes¹, R.P. Basso-Vanelli¹, M.C. Oliveira-Junior², R.D.P. Vieira², A. Borghi-Silva¹

¹Universidade Federal de São Carlos UFSCar, Physical Therapy, Sao Carlos, Brazil

²Universidade Nove de Julho UNINOVE, Pulmonary and Exercise Immunology, Sao Paulo, Brazil

Introduction/Background

Obesity is often associated with metabolic disorders. However, it seems to exist a controversy regarding this association since some obese people can present a metabolically healthy phenotype. Myostatin appears to be a key factor on the regulation of muscle and energy metabolism and it is widely studied in animal models. However, its function has not yet been clarified in humans. The aim was to study the associations between myostatin (MSTN), parameters of obesity and muscle mass, metabolic syndrome (MetS) and other obesity-related cytokines (adiponectin [ADP], leptin [LP] and tumor necrosis factor α [TNF- α]) in obese adults.

Material and Methods

Sixty-seven sedentary subjects (n=33 men/ n=34 women), aged 20-45y, normal-weight(NW, n=28; $18.5 < \text{BMI} < 24.9 \text{ kg.m}^{-2}$) or obese(OB, n=39; $\text{BMI} > 30 \text{ kg.m}^{-2}$) underwent body composition (body fat [BF] and lean mass [LM] by bioimpedance) and distribution (waist circumference [WC]) evaluations. Metabolic Syndrome was defined according to NCEP/ATPIII criteria. Serum MSTN, ADP, LP and TNF- α were quantified(ELISA). Partial correlations identified associations between main variables adjusted for sex, BMI and/or groups (α level was set at 0.05).

Results

Adjusted correlations demonstrated that MSTN is negatively associated with BMI ($r=-0.41$), WC ($r=-0.42$), BF ($r=-0.47$), LM ($r=-0.42$). In addition, MSTN ($r=0.44$) and LP/ADP ratio ($r=0.50$) were positively associated with the number of criteria for MetS (n=14 subjects from OB group had at least 3 criteria for MetS). MSTN was negatively associated with ADP in NW ($r=-0.54$) and OB ($r=-0.58$) and, for both groups, positively associated with TNF- α ($r=0.48$).

Conclusion

Healthy metabolic profile, low chronic inflammatory status and high muscle mass are related to low circulating levels of serum myostatin, which can partially explain the metabolic healthy phenotype in obese adults. Thus, myostatin inhibition may be considered as an adjuvant therapy to counteract deleterious consequences of obesity and improve muscle hypertrophy in young adults.

Fundings:Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP: 2009/01842-0;2013/15681-3;2012/15165-2); CNPq (141331/2011-9).

No conflict of interest

ISPR7-0606

Internal Medicine and Other Conditions - Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

A SUBMAXIMAL EXERCISE TESTING TO ASSESS VENTILATORY EFFICIENCY IN OBESE WOMEN

L. Di Thommazo-Luporini¹, L.P. Carvalho¹, R.L. Luporini², R. Trimer¹, C.B.F. Pantoni¹, A.M. Catai¹, A. Borghi-Silva¹

¹Universidade Federal de São Carlos, Physical Therapy, Sao Carlos, Brazil

²Universidade Federal de São Carlos, Medicine, Sao Carlos, Brazil

Introduction/Background

Ventilatory efficiency is often expressed by two terms, oxygen uptake efficiency slope (OUES), defined as the relationship between oxygen uptake (VO_2) and the logarithmic transformation of ventilation (VE), and the VE/carbon dioxide production (VCO_2) slope. Obesity may lead to dysfunctional respiratory mechanics and even ventilatory inefficiency. Previous studies found agreement between cardiovascular and metabolic, but not ventilatory parameters, obtained from cardiopulmonary exercise testing (CPX) and a submaximal exercise, the incremental shuttle walk test (ISWT). We aimed to evaluate if there is an agreement between CPX and ISWT regarding ventilatory efficiency in sedentary obese women.

Material and Methods

Thirty-seven women (36 ± 6 years, BMI $37.6 \pm 5.0 \text{ kg.m}^{-2}$) completed a CPX and an ISWT, both using a metabolic card. Submaximal intensity was considered when $0.85 \leq \text{respiratory exchange ratio (RER)} < 1.1$ and maximal when $\text{RER} \geq 1.10$. Stepwise multiple linear regression analysis and Bland-Altman plots were applied ($p < 0.05$).

Results

As expected, in CPX obese women presented higher values of $\text{VO}_{2\text{peak}}$ (23.0 ± 4.2 vs. 17.0 ± 2.9 , $\text{mL.kg}^{-1}.\text{min}^{-1}$), $\text{VO}_2\%_{\text{pred}}$ (112 ± 15 vs. 84 ± 12), RER (1.20 ± 0.10 vs. 0.93 ± 0.07), OUES (2.72 ± 0.57 vs. 2.33 ± 0.37) and $\text{OUES}\%_{\text{pred}}$ (127 ± 37 vs. 107 ± 17) when contrasted with these parameters obtained in ISWT. Only VE/VCO_2 slope and $\text{VE}/\text{VCO}_2\text{slope}\%_{\text{pred}}$ were lower in CPX than in ISWT (25.4 ± 3.0 vs. 27.0 ± 2.9 and 82 ± 10 vs. 87 ± 9 , respectively). There was agreement between CPX and ISWT regarding $\text{VE}/\text{VCO}_2\text{slope} = -1.6$ (CI: 4.9 to -8.2) and $\text{OUES} = 0.38$ (CI: 1.9 to -1.1). Regression analysis showed that $\text{VE}/\text{VCO}_2\text{slope}$ at CPX can be predicted by age, BMI, VO_2 and $\text{VE}/\text{VCO}_2\text{slope}$ at ISWT ($r^2 = 0.30$, $p = 0.01$).

Conclusion

ISWT may be a useful alternative to evaluate ventilatory efficiency, especially $\text{VE}/\text{VCO}_2\text{slope}$, in obese women in clinical settings without imposing them a maximal stress and enabling its application more often in rehabilitation programs.

Fundings: CNPq141331/2011-9; FAPESP 2009/01842-0, 2013/15681-3.

No conflict of interest

ISPR7-0834

Internal Medicine and Other Conditions - Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

THERMOGRAPHIC EVALUATION OF DIABETIC PATIENTS FOR EARLY PREDICTION OF DIABETIC FOOT

J.M. Kim¹, G.M. Eom², Y.T. Lim³, Y.S. Chung⁴

¹*Konkuk University School of Medicine, Physical Medicine & Rehabilitation, Chungju, Republic of Korea*

²*Konkuk University, Research Institute of Biomedical Engineering, Chungju, Republic of Korea*

³*Konkuk University, Division of Sport Science- College of Science and Technology, Chungju, Republic of Korea*

⁴*Konkuk University School of Medicine, Neurosurgery, Chungju, Republic of Korea*

Introduction/Background

To evaluate the foot plantar temperature in normal and diabetic patient (DM) and to assess development of diabetic foot ulceration could be predicted by the foot temperature.

Material and Methods

The first investigation was designed for assessment of correlation between foot plantar temperature and diabetic foot. Eighteen normal controls were compared to 23 DM without polyneuropathy (Group I), 20 DM with polyneuropathy (Group II), and 16 DM with polyneuropathy plus diabetic foot ulcer (Group III). Temperature were assessed using IR in six standard plantar sites; medial (MLA) and lateral longitudinal arch (LLA), heel, 5th toe, 3rd metatarsal head (3MTH), and greater toe (GT), and mean foot temperature; MFT. The second investigation would be followed after 5 years among the same subjects except for control group.

Results

Ten among sixteen Group I subjects accepted the follow-up investigation. Thirteen of fifteen contacted Group II and eight of eleven contacted Group III subjects accepted to be enrolled in the 2nd investigation. In the 1st investigations, the MFT was significantly higher in Group III than in Group II and higher in Group II than in Group I ($p < 0.001$), but no significance was shown between Group I and the control group. There was an increasing tendency of focal MFT at 3MTH, MLA and GT in DM. In the 2nd investigation, six of 10 previous Group I developed polyneuropathy (into Group II), and three of 13 previous Group II and 1 of 10 previous Group I had foot ulcer (into Group III). Temperature of 3MTH in Group II and Group III had showed significantly higher than that of Group I and Group II in the 1st investigation ($p < 0.05$).

Conclusion

Temperature of 3MTH, GT and MLA were higher in DM according to microangiopathy followed by arteriovenous shunt, and these, especially which of 3MTH could be the predictable value of developing diabetic foot.

No conflict of interest

ISPR7-0879

Internal Medicine and Other Conditions - Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

OBSTRUCTIVE SLEEP APNOEA IN SUPER OBESE WOMEN ON THE WAITING LIST FOR BARIATRIC SURGERY

E. Araujo Perez¹, W. Rodrigues freitas JR², E. Fernandes de Oliveira¹, G. Insalaco¹, S. roberto Nacif¹, C. Alberto Malheiros², R. Stirbulov², L. oliveiro¹

¹*Universidade Nove de Julho, Sleep laboratory, sao paulo, Brazil*

²*Faculty of medical science santa casa de sp, Department of Bariatric Surgery, sao paulo, Brazil*

Introduction/Background

Obstructive sleep apnoea (OSA) has been linked to increased cardiovascular morbidity and mortality from both coronary heart disease and stroke, but whether this risk is due to coexistent known cardiovascular risk factors or specific effects of OSA remains to be established. In populations at risk of vascular disease, many patients who experience a cardiovascular event either do not have identifiable risk factors or have disease severity which appears to be out of proportion to their known risk factors. A lot of the variance in the incidence of vascular disease is therefore not explained by known risk factors. It is possible that OSA is a cardiovascular risk factor, previously largely unrecognised, which may account for some of the apparently unexplained variance in vascular risk.

Material and Methods

This was a cross-sectional study, conducted in accordance with the strengthening of observational studies of communication in Epidemiology (STROBE) statement. Super obese women who adhere to the eligibility criteria were consecutively recruited from Ambulatory of bariatric surgery of the Santa Casa de Misericordia de Sao Paulo, and were referred to the Sleep Laboratory at Nove de Julho University (Sao Paulo, Brazil)

Results

The study involved 25 super obese women on the waiting list for bariatric surgery with a mean age of 45.1±12.8 years, mean body mass index of 54.8±4.4, mean neck circumference 43.5±6, and mean waist circumference 132.3±12.4. The mean apnoea/hypopnoea index per hour was 26.9±24.8, and oxygen saturation average of 87.6±15.1, and nadir oxygen saturation was 77.1±10.8. The prevalence of apnoea/hipopnoea index by severity score was 8.6% normal, 39% mild, 21.7% moderate, and 30.4% severe

Conclusion

We observed the high prevalence of obstructive sleep apnoea in super obese women on the waiting list for bariatric surgery.

No conflict of interest

ISPR7-0881

Internal Medicine and Other Conditions - Metabolic Disorders (e.g. Obesity, Diabetes Mellitus)

THE PREVALENCE OF SYNDROME Z IN SEVERELY OBESE WOMEN ON THE WAITING LIST FOR BARIATRIC SURGERY

E. Araujo Perez¹, W. Rodrigues Freitas JR¹, C. Pita lottenbeg¹, A. Soares Silva¹, J. Julioti Urbano¹, C. Alberto Malheiros¹, R. Stirbulov¹, L. oliveiro¹

¹Universidade Nove de Julho, Sleep laboratory, sao paulo, Brazil

Introduction/Background

The metabolic syndrome (MS) is a risk factor for development of cardiovascular disease and is closely associated with obstructive sleep apnoea (OSA). Co-occurrence of both OSA and MS is called syndrome Z. It has been hypothesized that the OSA may be a manifestation of MS. We collected data on polysomnography (PSG) and biochemical investigations on middle aged urban Indians during a community based study in South Delhi while studying prevalence of obstructive sleep apnoea and analysed to find out the ages at which the OSA, MS and syndrome Z exist in these subjects.

Material and Methods

This was a cross-sectional study, conducted in accordance with the strengthening of observational studies of communication in Epidemiology (STROBE) statement. Severely obese women who adhere to the eligibility criteria were consecutively recruited from Ambulatory of bariatric surgery of the Santa Casa de Misericordia de Sao Paulo, and were referred to the Sleep Laboratory at Nove de Julho University (Sao Paulo, Brazil)

Results

The study involved 53 severely obese women on the waiting list for bariatric surgery with a mean age of 40.8 ± 10.8 years, mean body mass index of 46.5 ± 6.1 , mean neck circumference 401.5 ± 2.5 , and mean waist circumference 128.9 ± 12.1 . The mean apnoea/hypopnoea index per hour was 25.2 ± 21.1 , and oxygen saturation average of 92.9 ± 3.2 , mean heart rate of 74.33 ± 10.6 , lowest heart rate of 46.7 ± 12 , and higher heart rate of 112.7 ± 22.8 . The REM sleep was 12.5 ± 6.24 (% total sleep time). The prevalence of obstructive sleep apnoea by metabolic syndrome was 12.2% normal, 30.6% mild, 28.5% moderate, and 28.5% severe). We observed the significant prevalence of syndrome X (77%) and high prevalence of syndrome Z (63%) in severely obese women on the waiting list for bariatric surgery.

Conclusion

Clinically stable severely obese women on the waiting list for bariatric surgery exhibit a high prevalence of syndrome Z.

No conflict of interest

ISPR7-0536

Internal Medicine and Other Conditions - Miscellaneous

NEURO-BEHCKET SYNDROME: DOES REHABILITATION HELP?

S. Hassan¹, K. DARAWIL¹

¹King Fahad Specialist Hospital, Rehabilitation Medicine- Neuroscince center, Dammam, Saudi Arabia

Introduction/Background

Behcet disease (BD) is a rare multisystem vasculitis of unknown etiology. Central nervous system involvement occurs in 5-30 % of cases.

Material and Methods

Here, we report a 30-year-old female with Neuro-Behcet Syndrome (NBS), who presented with acute onset of hemiparesis after 3 year of initial diagnosis of BD. The patient received intensive rehabilitation while she was on immunosuppressive medications. We will discuss the clinical presentation, investigations, treatment modalities, and outcome after 8 months of follow up.

Results

NBS is one of the most serious manifestations of BD. Case series describing NBS are limited in number. Neurological involvement may occur in the course of the disease and have two major forms: vascular and parenchymal. Immunosuppressant therapy and vigorous rehabilitation are the main lines of management.

Conclusion

Intensive rehabilitation enhances the benefit of early immunosuppressant treatment and might provide good prognosis with excellent clinical outcome for patients with NBS.

No conflict of interest

ISPR7-0728

Internal Medicine and Other Conditions - Miscellaneous

FATIGUE & HEPATITIS C: A FOCUS GROUP STUDY

S. Afdhal¹, A. Weinstein², C. Spataro², C. Escheik¹, P. Austin¹, L. Gerber³, Z. Younossi³

¹Inova Health System, Betty and Guy Beatty Center for Integrated Research, Falls Church, USA

²George Maon University, Center for the Study of Chronic Illness and Disability, Fairfax, USA

³Inova Fairfax Hospital, Department of Medicine, Falls Church, USA

Introduction/Background

Fatigue is a frequently reported symptom that affects patients with Chronic Hepatitis C Virus (HCV). However, the word fatigue is a broad term and fatigue self-report measures may not fully assess the fatigue symptoms of individuals with HCV. The purpose of this study was to explore experiences of HCV-related fatigue.

Material and Methods

Three focus groups were conducted (total of 16 individuals). These participants were on average 58±4 years old, 56% female, and 50% Caucasian. Patients in each focus group were asked similar prompts focusing on fatigue descriptions. The audio recordings of the focus groups were analyzed by two independent researchers.

Results

Analysis identified two main dimensions of fatigue: capacity and engagement in activity. The theme of capacity was broken into subcategories of access (e.g. "I don't have a lack of energy; I have an inability to access that energy. It's like a car that won't start."), depletion (e.g. "If I got up today and worked a whole eight hour day, I wouldn't make it tomorrow."), and restoration (e.g. "It's like a car running out of gas. Sooner or later, you better stop and get the fill up or you're just going to be dead on the side of the road"). Within engagement in activity two domains were endorsed: initiation (e.g. "My mental self can see myself getting up but my physical self can't do it.") and personal satisfaction (e.g. "Affects activity schedule because I have to balance activity and can't do all the things I want to do").

Conclusion

Capacity and engagement in activity were the overarching themes that encompass the patient reported experiences of fatigue. Self-report fatigue instruments need to assess both of these domains in order to fully evaluate the level and type of fatigue being experienced by those individuals with HCV.

No conflict of interest

ISPR7-0788

Internal Medicine and Other Conditions - Miscellaneous

**A CASE OF CEREBRAL HEMORRHAGE ACCOMPANIED BY SEVERE LIVER CIRRHOSIS:
TREATED BY AGGRESSIVE MOVEMENT THERAPY AND ACHIEVING HOME DISCHARGE**

M. Fukai¹, Y. Uchiyama¹, M. Kagoshima¹, W. Yosuke¹, K. Domen²

*¹Sasayama Medical Center Hyogo College of Medicine, Department of Rehabilitation,
Sasayama Hyogo, Japan*

*²Hyogo College of Medicine, Department of Physical and Rehabilitation Medicine,
Nishinomiya Hyogo, Japan*

Introduction/Background

Patients suffering from decompensated liver cirrhosis have been generally recommended to stay in bed for keeping hepatic blood flow. Conversely, it has been recently pointed out that excess rest has harmful effects causing disuse for those patients. We experienced a case of cerebral hemorrhage accompanied by severe liver cirrhosis who was treated by aggressive movement therapy and achieved home discharge.

Material and Methods

We report the case of a 58-year-old man. He had alcoholic liver cirrhosis (Child-Pugh C) with bleeding tendency and developed subcortical cerebral hemorrhage of left frontal lobe.

Results

After the onset of cerebral hemorrhage, he was delivered to another hospital and received total enteral nutrition by using nasogastric tube to compensate for dysphagia. Fifty-four days after the onset, he was transferred to the convalescent rehabilitation ward in our hospital. He had nutritional disorder due to cirrhosis, right hemiplegia, and disuse muscle atrophy, but no aphasia or apraxia. We continued tube feeding and started rehabilitation from the date of admission in our hospital. We also continued to provide movement therapy while monitoring liver function and nutrition at weekly intervals. Finally, he could achieve full oral intake by himself 3 weeks after admission and discharged home 15 weeks after admission.

Conclusion

The results in this case suggest that movement therapy under careful monitoring of liver function and nutrition might improve activities in daily living with no further complications in stroke patients accompanied by severe liver cirrhosis.

No conflict of interest

ISPR7-0070

Internal Medicine and Other Conditions - Pulmonary Diseases

RELIABILITY AND INTER-CORRELATIONS OF FUNCTIONAL MUSCLE TESTS IN REHABILITATION OF LUNG TRANSPLANT RECIPIENTS

T. Kienbacher¹, G. Ebenbichler², G. Achim³, K. Kersch-Schindl⁴, P. Jaksch⁵

¹Karl Landsteiner Institute of outpatient rehabilitation research, PMR, Vienna, Austria

²Vienna medical university, Dept of PMR, Vienna, Austria

³Vienna medical University, Dental Surgery, Vienna, Austria

⁴Vienna medical University, Dept PMR, Vienna, Austria

⁵Vienna medical University, Department of Thoracic Surgery, Vienna, Austria

Introduction/Background

Pulmonary transplant recipients suffer from an overall reduction of isometric back extension strength, hand grip strength, and back muscle endurance associated with multiple impaired health categories such as balance, posture, and osteoporosis. Thus monitoring of these measures seems key in rehabilitation but no reliability study could be revealed.

Material and Methods

In this cohort study 50 lung transplant recipients (28 females) performed isometric back extension, hand grip, and back endurance testing shortly before (day 1), shortly after discharge (day 2) from the hospital, and two month after rehabilitation (day 3).

Results

The strength tests revealed excellent within-day and between-day coefficients of variation. 21 patients were unable to perform all endurance tests but the between-day variability was good. The changes of the mean overall included zero. The ICCs revealed excellent relative reliability for all the strength performances and acceptable ones for the endurance test. Between day 1 and 2 the SEMs were very high and the SEMs% were well below 10% for all strength tests whereas those of endurance were worse. A similar pattern was detected from the SRD and SRD%. Correlations between grip strength (right, left, and both sides together) and isometric back strength were significant but there was no correlation between endurance and the strength tests.

Conclusion

Reliability and sensitivity measures of isometric back and grip strength testings are excellent whereas those of endurance are not and it's clinical feasibility in lung transplant recipients is low. In cases of reduced strength evaluation of further health impairment is recommended.

No conflict of interest

ISPR7-0156

Internal Medicine and Other Conditions - Pulmonary Diseases

THE EFFECT OF EARLY PULMONARY REHABILITATION IN PATIENTS WITH MECHANICAL VENTILATION

L. Gao^{1,2}, H. Zhao^{1,2}, L. Chen^{1,2}

¹China Rehabilitation Research Center Beijing Boai Hospital, Respiratory and critical care medicine, Beijing, China

²Capital Medical University, School of Rehabilitation Medicine, Beijing, China

Introduction/Background

To investigate the effect of early pulmonary rehabilitation in patients with mechanical ventilation.

Material and Methods

Methods : Collecting 111 mechanical ventilation patients from the RICU of China Rehabilitation Research Center from 1st,Jan,2009 to 31st,Aug,2016.The patients were divided into experimental group (group A) and control group (group B). Group A and group B were accepted routine treatment and nursing. Except on the basis of routine treatment, group A received early pulmonary rehabilitation. Compared the two groups of patients' mortality, length of hospital stay, time of mechanical ventilation, APACHE- II , albumin content , Barthel index and hospitalization expenses, and analyzed the influencing factors of patients' risk of death by Multivariate Logistic regression.

Results

Group A has significant difference ($p < 0.01$) with group B in the aspect of mortality, length of hospital stay, time of mechanical ventilation. The function scores of the patients before and after treatment in group A and group B had significant difference ($p < 0.01$).Two groups on the albumin content and hospitalization expenses have no significant statistical difference ($p > 0.05$). Multivariate logistic regression showed that early pulmonary rehabilitation may reduce the risk of death of 83.7% (OR = 0.163);The higher age and APACHE- II score, the higher the risk of death.

Conclusion

Early pulmonary rehabilitation has therapeutic effect in patients with mechanical ventilation.

No conflict of interest

PRELIMINARY DATA OF AN EARLY PULMONARY REHABILITATION PROGRAM IN SURGICALLY TREATED LUNG CANCER PATIENTS

C. Mainini¹, R. Bardelli¹, B. Kopliku¹, P.F. Sobral Rebelo¹, S. Tenconi², C. Rapicetta², R. Piro², S. Costi¹, C. Galeone², C. Tedeschi¹, S. Fugazzaro¹

¹Azienda ospedaliera IRCCS S.Maria Nuova, Neuromotor Department, Reggio Emilia, Italy

²Azienda ospedaliera IRCCS S.Maria Nuova, Cardio-Thoracic-Vascular and Intensive Care Medicine, Reggio Emilia, Italy

Introduction/Background

Non-small cell lung cancer is the most common type of lung cancer. Surgery appears to be the most effective treatment in early stage although it has important impact on quality of life. Pulmonary rehabilitation, both before and after surgery, could reduce symptoms and morbidity and improve exercise capacity, pulmonary function and quality of life.

Aim. Assess pulmonary rehabilitation programme for lung cancer patients surgically treated.

Material and Methods

Single blinded randomised controlled trial. Participants: suspected or diagnosed primary lung cancer (stage Ia-IIb) eligible for surgical treatment. Standard care (CG): one therapeutic educational session the day before surgery and standard inpatient pulmonary rehabilitation after surgery. Intervention group (IG): standard care and preoperative pulmonary rehabilitation (14 sessions - 6 outpatients and 8 home based) based on aerobic, resistance and respiratory training. Outcomes: Six-Minutes Walk Test (6MWT), Pulmonary Function Tests (PFT), Hospital Anxiety and Depression Scale (HADS), length of hospital stay and perioperative complications. Assessments: T0 – baseline; T1 – one day before surgery and perioperative days

Results

To date we enrolled 47 patients, table 1 reported baseline assessments

Table 1	IG (n=24)	CG (n=23)	p-value
Mean age ± SD	70 ± 10.9	67.7 ± 6.8	0.370
Gender m (%)	16 (69.9%)	13 (54.2%)	0.278
6-MWT m (mean±SD)	402.7±71.8	448.0±72.3	0.037
FEV1%(mean±SD)	91.9±17.6	93.7±25.3	0.793
FVC%(mean±SD)	104.2±20.5	105.0±21.8	0.904
HADS tot (n,%) <= 7 8-10 >= 11	7 (30.4%) 3 (13.0%) 13 (56.5%)	6 (25.0%) 3 (12.5%) 15 (62.5%)	0.915

Comparison between T0 and T1 in IG is reported in Table 2

Table 2	Baseline (T0)	T1	p- value
6-MWT m(mean±SD)	448.0±72.3	476.3±86.7	0.006
FEV1%(mean±SD)	93.7±25.3	87.9±22.4	0.685
FVC%(mean±SD)	105.0±21.8	109.7±21.7	0.010

Regarding HADS ,perioperative complications and length of hospital stay there isn't a significant difference between groups

Conclusion

This preliminary analysis shows promising results in favour to preoperative pulmonary rehabilitation

No conflict of interest

ISPR7-0354

Internal Medicine and Other Conditions - Pulmonary Diseases

TE ASSESSMENT OF THE EFFECTIVENESS OF A PULMONARY REHABILITATION PROGRAM IN COPD PATIENTS THROUGH THE COPD ASSESSMENT TEST (CAT)

E. García Álvarez¹, G.R. Rekalde Aizpuru¹, J.M. Abad Diez², G. Cuko³, E. Aparicio Jimenez⁴, J. Acosta Rueda¹, C.E. Parra Soto¹, A.J. Regla Raufast¹, R. Carneiro Lazaro¹

¹Hospital Clinico Universitario Lozano Blesa, Servicio de Medicina Física y Rehabilitación, Zaragoza, Spain

²Servicio Aragonés de Salud, Atención Especializada, Zaragoza, Spain

³Hospital Royo Villanova, Servicio de Medicina Física y Rehabilitación, Zaragoza, Spain

⁴Hospital Reina Sofía de Tudela, Servicio de Medicina Física y Rehabilitación, Tudela, Spain

Introduction/Background

Pulmonary rehabilitation improves both health and mood status in patients with chronic obstructive pulmonary disease (COPD). The aim of this study was to evaluate the usefulness of the COPD Assessment Test (CAT) as an outcome of a pulmonary rehabilitation program (PRP) in patients with COPD, comparing it with the Saint George's Respiratory Questionnaire (SGRQ).

Material and Methods

Our PRP consists mainly in a 6-8 week-long 2-3 day/week supervised exercise treatment. We included all the COPD patients who have finished the PRP and completed the SGRQ and CAT pre and post the PRP.

Design: prospective analysis. Variables: demographic (age and sex), body mass index (BMI), clinical (FEV1, mMRC) and severity scales (BODE Index). We assessed the functional capacity of the patients before and after the PRP through three different measures: 6 minutes walking test (6MWT), SGRQ (symptoms (S), activity (A), impact (I) and total (T) domains) and CAT.

We analyzed the correlation between the variation in the SGRQ and CAT. We also analyzed the predictive ability of the minimal clinically important difference (MICD) in CAT (>-2) and the MICD in the different dimensions of SGRQ (<-4). We constructed the ROC curves and calculated the Area Under the Curve (AUC).

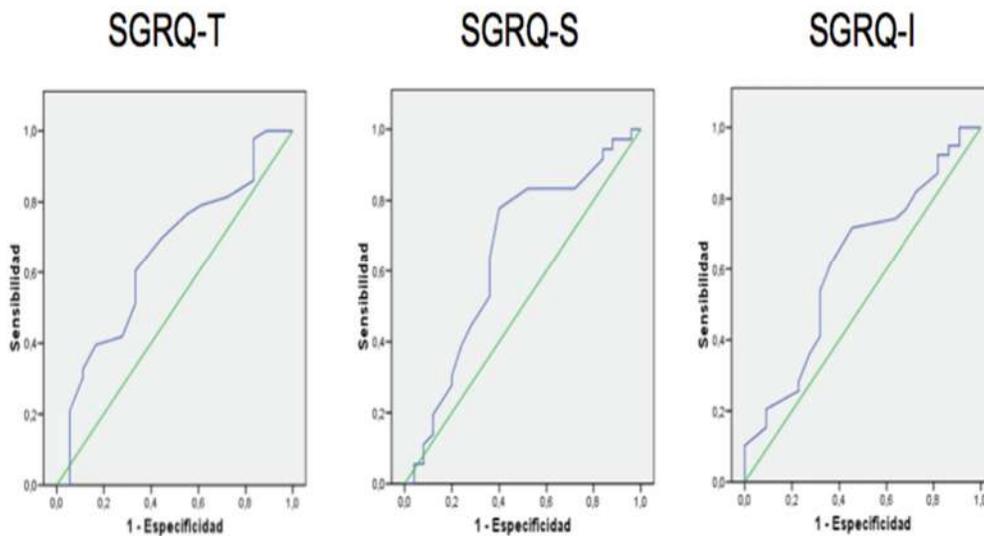
Results

n=66. 77,3% were men, mean age 65.4 years (SD=15.9).

Variable	Mean	Standard Deviation
Body Mass Index	28.1	4.6
FEV1	41.0%	15.6%
BODE Index	4.3	2.3
6MWT	396.8 m	118.3 m
SGRQ-S	52.2	18.8
SGRQ-A	71.8	17.2
SGRQ-I	42.7	16.6
SGRQ-T	53.1	14.7
CAT	19.2	5.7

Mean change in CAT: 4.0 (SD=6.0). Mean change in SGRQ-T: -11.1 (SD=13.4). 70.5 % of the patients achieved a significative improvement in the SGRQ-T(change <-4).

Correlations between the CAT and the SGRQ were statistically significant for the total scale ($r=0.53$; $p<0.001$) and for the 3 subscales. The improvement in the CAT was associated with significative improvements in SGRQ-T (AUC=0.651), SGRQ-S (AUC=0.648) and SGRQ (AUC=0.618).



Conclusion

The CAT is useful evaluating the response to a PRP, it has a significant correlation with SGRQ in the Total, Symtoms and Impact domains, but not with the Activity.

No conflict of interest

ISPR7-0449

Internal Medicine and Other Conditions - Pulmonary Diseases

ACUTE EFFECTS OF EXPIRATORY POSITIVE PRESSURE ON THORACIC AND ABDOMINAL MOBILITY OF PATIENTS WITH COPD BY OPTO-ELETRONIC PLETHYSMOGRAPHY

D. Costa¹, C. Feitoza², E. Dantas Gomes², F. Dias²

¹*Universidade Nove de Julho UNINOVE, Rehabilitation Sciences Pos-graduation Program, São Paulo, Brazil*

²*UNINOVE, Rehabilitation Sciences Pos-graduation Program, SÃO PAULO, Brazil*

Introduction/Background

Introdução: The thoracoabdominal mobility in patients with chronic obstructive pulmonary disease (COPD) changes due process that causes permanent pulmonary obstructive hyperinflation. Because of that, physical activity may increase the minute ventilation, reducing the time to expiration. Expiratory positive airway pressure (EPAP) is a rehabilitation feature that assists in reducing the air trapping during exacerbations these patients, but little known about the effects of the EPAP on pulmonary hyperinflation.

Objetivo: Evaluate the effects of physical effort and EPAP on pulmonary hyperinflation and Thoracoabdominal mobility through opto-eletronic plethysmography (OEP) in patients with COPD and in healthy individuals.

Material and Methods

Material e Método: Thoracoabdominal mobility assessed by OEP in 30 subjects; 15 with COPD and 15 healthy, before and after performing a battery of exercise, going up and down stairs, and after a battery of exercise with EPAP (8cmH₂O). The OEP Protocol rest, after 2 minutes step and after EPAP.

Results

Resultados: With regard of the OEP there were no significant differences at rest between the groups with the exception of Ti/Ttot COPD group haracterizing obstruction/fatigue. After the 2-minute step the COPD group presented an increase in abdominal participation greater than the CG. After EPAP an increase of the intermediate compartment in CG and abdominal compartment of the COPD group. After the EPAP had a normalization of Ti/Ttot in COPD group.

Conclusion

Conclusão: The physical effort and the use of EPAP alter the participation of thoracic and abdominal compartments differently between the groups and EPAP in COPD appears to contribute to the reduction of the hyperinflation.

No conflict of interest

ISPR7-0509

Internal Medicine and Other Conditions - Pulmonary Diseases

THE EFFECTS OF PULMONARY REHABILITATION ON LUNG FUNCTION, FUNCTIONAL CAPACITY AND QUALITY OF LIFE FOR ADULT PULMONARY TUBERCULOSIS PATIENTS: A SYSTEMATIC REVIEW

S. Manie¹, A. Hohlfeld², Q. Louw³

¹, South Africa

²Medical Research Council- South Africa, Cochrane center-, Cape Town, South Africa

³Stellenbosch University-, Physiotherapy, Cape Town, South Africa

Introduction/Background

Research in the last decade has confirmed that the end of TB treatment does not equate to a clean bill of health; on the contrary, it is the start of chronic lung function abnormalities. Pulmonary rehabilitation has long been a treatment provided for people living with obstructive pulmonary disease primarily caused by smoking. The aim of the systematic review is to see if pulmonary rehabilitation is effective in improving lung function, exercise tolerance and quality of life for individuals with pulmonary tuberculosis.

Material and Methods

Data Sources: A comprehensive literature search was conducted from 1995 to June 2016 using medical and health sciences databases (PubMed, Medline, EMBASE, CINAHL, EbscoHost, Web of Science, Pedro and Cochrane Library). Study selection: Two independent reviewers selected studies reporting outcomes for lung function parameters and functional capacity following pulmonary rehabilitation or exercise in patients with pulmonary tuberculosis. **Data extraction:** Two reviewers independently extracted data and assessed the methodological quality of the studies.

Results

A meta-analysis was not possible due to heterogeneity amongst included trials, therefore a narrative analysis was performed for best evidence synthesis. Five studies (3 randomised controlled trial, 2 observational) investigated pulmonary rehabilitation and exercise interventions for pulmonary tuberculosis patients to evaluate effectiveness in improving lung function. The findings suggest 'some' evidence for the effectiveness of pulmonary rehabilitation in improving exercise tolerance and lung function parameters. There was no data available for associated costs.

Conclusion

Pulmonary rehabilitation is a safe adjunct to standard treatment of drug therapy only for pulmonary tuberculosis patients who suffer from chronic obstructive pulmonary disease. More methodologically sound studies are needed to build evidence for rehabilitation programs, cost-effectiveness and outcome measurement for patients with pulmonary tuberculosis

No conflict of interest

ISPR7-0545

Internal Medicine and Other Conditions - Pulmonary Diseases

ARE FUNCTIONAL PARAMETERS ASSOCIATED TO CARDIAC AUTONOMIC MODULATION IN EXACERBATED COPD PATIENTS?

E. Kabbach¹, A.G. Agnoletto¹, J.F. Barbosa¹, R. Cabiddu¹, C.I. Monteiro¹, A. Borghi-Silva¹, R.G. Mendes¹

¹Federal University of São Carlos, Department of Physiotherapy, SAO CARLOS, Brazil

Introduction/Background

During exacerbation periods there is evidence of a negative impact on functional capacity and cardiovascular response in patients with chronic obstructive pulmonary disease (COPD). Bronchoconstriction is related to an activation of the parasympathetic nervous system. However, there is no scientific knowledge about the association between functional parameters and cardiac autonomic modulation (CAM) in these patients. Therefore, we aimed to evaluate the association between functional capacity and CAM in exacerbated COPD patients.

Material and Methods

Eighteen patients with moderate to severe COPD (70.22 ± 9.64) were evaluated at least 24 hours and within 48 hours after starting standard therapy for exacerbation of COPD during hospitalization. Handgrip strength test was performed by Jamar® dynamometer (maximal voluntary contractions) and the Duke Activity Status Index (DASI) questionnaire was applied. The RR intervals (RRi) were registered using a heart rate monitor (Polar® system) at rest in seated position during 10 minutes. Heart rate variability (HRV) indices were analyzed by linear methods (LF) and nonlinear methods (SD2 and Sample Entropy (SampEn)) using the program Kubios HRV Analysis. The Pearson correlation coefficient was calculated, considering a significance level of $p < 0.05$.

Results

Significant and positive correlations were found between Handgrip strength and LF ($r=0.53$; $p=0.02$); DASI and SD2 ($r=0.60$; $p=0.01$). A significant and negative correlation was observed between Handgrip strength and SampEn ($r=-0.543$; $p=0.02$) ($p < 0.05$).

Conclusion

These findings indicate that during exacerbation higher functional capacity is associated to higher overall and sympathetic autonomic modulation in COPD patients. Moreover, higher capacity is related to lower complexity of the cardiovascular system.

FAPESP 2015/12763-4; 2015/16043-6.

No conflict of interest

ISPR7-0870

Internal Medicine and Other Conditions - Pulmonary Diseases

**SLEEP, LUNG FUNCTION, AND QUALITY OF LIFE IN PATIENTS WITH MYASTHENIA GRAVIS.
A CROSS-SECTIONAL STUDY.**

*E. Fernandes de Oliveira¹, A. Soares Silva¹, E. Araujo Perez¹, C. Santos Oliveira¹,
R. André Oliveira Peixoto¹, S. Roberto Nacif¹, L. oliveiro¹*

¹Universidade Nove de Julho, Sleep laboratory, sao paulo, Brazil

Introduction/Background

The purpose of this study was to investigate the physiological variables of lung function, respiratory muscle strength, and sleep in clinically stable patients with myasthenia gravis.

Material and Methods

This was a prospective cross-sectional study conducted in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement. Patients adhering to the eligibility criteria were consecutively recruited from the Research Department of Neuromuscular Diseases at the Federal University of Sao Paulo and the Department of Neurology at Santa Casa de Misericordia of Sao Paulo and were referred to the Nove de Julho University Sleep Laboratory (Sao Paulo, Brazil).

Results

The study included 25 patients (21 female) with a mean age of 45.28 ± 12.33 years. Only one patient exhibited a restrictive ventilatory pattern. The maximum ventilatory pressures observed were considerably reduced in most patients as compared to reference values. In sleep studies, the patients exhibited significantly reduced oxygen saturation, reduced rapid eye movement sleep time, increased non-rapid eye movement stage 3 sleep, and considerable apnoea/hypopnoea indexes.

Conclusion

Clinically stable patients with myasthenia gravis exhibit a high prevalence of sleep-disordered breathing, significant reductions in maximum ventilatory pressures, and impairment of health-related quality of life. This work was published in Neuromuscular Disorders Journal.

No conflict of interest

ISPR7-0871

Internal Medicine and Other Conditions - Pulmonary Diseases

EFFECT OF HEMODIALYSIS ON UPPER AIRWAY COLLAPSIBILITY IN PATIENTS WITH CHRONIC KIDNEY DISEASE.

N. Teixeira Fonseca¹, A. Soares Silva¹, J. Julioti Urbano¹, L. oliveiro¹

¹Universidade Nove de Julho, Sleep laboratory, sao paulo, Brazil

Introduction/Background

Chronic kidney disease (CKD) is one of the most serious public health problems, becoming a global epidemic. It is also known that the volume of the rostral fluid displaced during the night, from the lower limbs is associated with increased neck circumference and severity of obstructive sleep apnea (OSA). Our aims is to determine the degree of collapsibility of the upper airways (UA) through the negative expiratory pressure (NEP) test in patients with CKD undergoing HD.

Material and Methods

A cross-sectional clinical study involving patients with CKD undergoing HD was conducted with the NEP test before and after the HD sessions.

Results

The mean circumference of the neck pre HD was 38.60 ± 4.32 cm whereas after HD was 37.92 ± 3.89 cm and the weight of the pre HD patients had an average of 72.4 ± 21.15 kg and 70.64 ± 21.21 kg after HD. The average value $V_{0.2}$ was $19.98 \pm 11.77\%$ before HD and $28.60 \pm 21.98\%$ after HD. Patients with CKD undergoing HD presents increased expiratory flow based on NEP test.

Conclusion

The NEP test can be stated as assessment tool in the direction of increased expiratory flow.

No conflict of interest

ISPR7-0884

Internal Medicine and Other Conditions - Pulmonary Diseases

SLEEP DISORDERS BREATHING IN COPD PATIENTS

J. C M Oliveira¹, R. Andre Oliveira Peixoto¹, E. Araujo Perez¹, C. Santos Oliveira¹, G. insalaco¹, L. oliveiro¹

¹Universidade Nove de Julho, Sleep laboratory, sao paulo, Brazil

Introduction/Background

Chronic obstructive pulmonary disease (COPD) is considered a major cause of morbidity and mortality, accounting for a serious global public health problem. It is common for COPD patients present a poor quality of sleep caused by the nocturnal cough, dyspnoea, medication use and recurrent hypoxemia. The term Overlap Syndrome is employed when COPD is associated with obstructive sleep apnea (OSA). The overlap syndrome, with a prevalence of 9.5 to 28%, resulting in severe hypoxemia during sleep with a greater tendency to hypercapnia, pulmonary hypertension and cor pulmonale, resulting in a poor prognosis. The study had purpose verify the prevalence of sleep disorders breathing in COPD patients.

Material and Methods

This was a cross sectional study, conducted in accordance with the STrengthening the Reporting of OBservational studies in Epidemiology. (STROBE) statement. COPD patients who adhere to the eligibility criteria were consecutively recruited, and referred to the Sleep Laboratory of Instituto do Pulmão de Cascavel (Parana, Brazil).

Results

The study involved 110 stable COPD patients (24 female), with a mean age of 71.38±9.4 years, mean body mass index of 25.6±4.7, mean neck circumference 38±4.3. According Epworth Sleepiness Scale, the excessive daytime sleepiness was observed in 11% of patients. The Berlin questionnaire was considered high risk in 60,55% of our sample.

Conclusion

Clinically stable COPD patients exhibit a high prevalence of obstructive sleep apnoea.

No conflict of interest

ISPR7-0015
Miscellaneous

**SOUTH ASIAN CONTRIBUTIONS TO THE INTERNATIONAL REHABILITATION LITERATURE:
AN ONLINE LITERATURE SURVEY OF 10 YEARS**

S. Mangat¹, F.A. Rathore², S. Ali¹, M. Shahid¹, H. Altaf¹

¹CMH Lahore Medical and Dental College, Rehabilitation Medicine, Lahore, Pakistan

²PNS Shifa Hospital, Department of Rehabilitation Medicine, Karachi, Pakistan

Introduction/Background

Rehabilitation Medicine is an emerging medical specialty in the South-Asian region (Pakistan, India, Bangladesh, Nepal and Srilanka). The region comprises 24% of the world population with a huge burden of disability. The contributions of South Asian authors to the international rehabilitation medicine literature are unknown. The aim of this study was to document the contributions of south Asian authors in the international rehabilitation literature in the last decade.

Material and Methods

Five leading international journals of PM & R selected for the survey included American Journal of PM&R, Archives of PM&R, PM&R, Journal of Rehabilitation Medicine and Journal of Neurorehabilitation and Neural Repair. The online archives of these journals (Jan 2005- Dec 2015) were reviewed. Total number of manuscripts published in a single issue was noted. Author's affiliations were checked and manuscripts with at least one south Asian author were recorded. The article type, number of authors and author's country were noted. Citations of these articles were checked from Google scholar.

Results

The total number of manuscripts published in these five major PM&R journals in the last decade is 8341. South Asian authors published only 18 manuscripts. Thirteen were from India and five articles were from Pakistan. There was no contribution from any other South Asian country. Fifteen articles had all South Asian authors while three articles had a foreign co-author too. The manuscripts were mostly related to Neuro-rehabilitation, Spinal cord injury & Pediatric followed by musculoskeletal, orthopedic and disaster rehabilitation. Most of the manuscripts (8) were original research articles.

Conclusion

The contribution of South Asian authors to the leading international rehabilitation journals in the last one decade is less than 1 % . There is a need to conduct more research on different aspects of disability and PM&R interventions and collaborate with colleagues abroad to improve the publication rate from this region of the world.

No conflict of interest

ISPR7-0075
Miscellaneous

ELASTOFIBROMA DORSI: REHABILITATION IN AN UNCOMMON TUMOR- A CASE REPORT

M. B.C. Saavedra¹, F. Pereira¹, A. Silva¹, M. Pontinha¹

¹Hospital Senhora da Oliveira, Physical and Rehabilitation Medicine Department, Guimarães, Portugal

Introduction/Background

Elastofibromas are rare, slow-growing, soft tissue benign tumors that originate from mesenchymal tissue. They occur mostly in the infrascapular region between the scapula and the thoracic wall, deeply to the serratus anterior and latissimus dorsi muscles, sometimes inserting into the periosteum of the posterior ribs. It is frequently bilateral.¹

These tumors are more common in women over 50 years of age^{1:2} and extremely rare in children.^{1:3} Symptoms typically include local scapular swelling, pain, stiffness, scapular snapping and impingement like symptoms^{1:4:5}. The most frequent upper limb limitation occurs in the anterior extension of the arm.⁶

Material and Methods

We report an 85-year-old male patient, retired from construction work and agriculture, with no relevant clinical background, who was admitted to our consult with the diagnosis of a bilateral elastofibroma dorsi for rehabilitation. His symptoms were bilateral shoulder and scapular pain and limitation of shoulder movement, with significant limitation in his activities of daily living.

He joined a rehabilitation programme in our department, focused on pain management and postural reeducation of the scapulohumeral rhythm.

Results

After 2 months of treatment the patient had a great improvement, namely on the anterior extension and abduction of the shoulder and with resolution of the pain symptoms.



Conclusion

For the author's best knowledge, this is the first case report of this rare tumor in the portuguese population.

No conflict of interest

ISPR7-0272
Miscellaneous

EFFECTS OF BALLOON SWALLOWING TREATMENT FOR POST-STROKE PATIENTS WITH DYSPHAGIA: A RANDOMIZED CONTROLLED TRIAL

Y.K. Kim¹, H. Seok²

¹Myongji Hospital, Rehabilitation Medicine, Goyang, Republic of Korea

²Sooncheonhyang University Hospital, Physical Medicine and Rehabilitation, Bucheon, Republic of Korea

Introduction/Background

This objectives of this study was to evaluate the effects of balloon swallowing treatment prospectively in stroke patients having dysphagia.

Material and Methods

30 patients were enrolled. Inclusion criteria were stroke patients with tube feeding whose onset being less than 3 years, in video-fluoroscopic swallow study (VFSS) having post-swallow residue in the piriform sinus more than 10 percent. Exclusion criteria were acute stroke patients, whose onset being less than one month. Subjects were all informed for consent. They were randomly assigned in two groups. One was balloon swallowing treatment group (15 patients), the other was control group (15 patients). One session was 30 minute. Subjects had one session per day for weekdays. The balloon treatment group had balloon swallowing for 10 minute and conventional dysphagia treatment for 20 minute. The control group had conventional dysphagia treatment for one session. The balloon swallowing treatment was to locate urethral catheter on piriform sinus through nose and subsequently expanding the balloon, which provoked swallowing. After swallow, de-ballooning was done and then the catheter was re-located to the piriform sinus. It was performed repeatedly. To evaluate the effect of both treatments, VFSS were conducted three times; baseline, after 2weeks, and after 4weeks. The remnants after swallow were calculated in VFSS.

Results

There were no statistical differences of baseline characteristics in both groups. In both groups, significant decrease of post-swallow residue was shown compared with baseline, at 2weeks and 4weeks later. The differences of decrease of post-swallow residues were significantly greater in balloon treatment group compared to in control group at 2weeks and 4 weeks later ($p=0.045$ at after 2 weeks later and $p= 0.03$ at 4 weeks later).

Conclusion

Balloon swallowing treatment is one of the treatment modality in stroke patients with dysphagia by decreasing post-swallow remnants in piriform sinus.

No conflict of interest

ISPR7-0327
Miscellaneous

MORTALITY IN REHABILITATION: THE STORY OF DECONDITIONING

S. Naparstek^{1,2}, A. Friedman¹, E. Ilouz¹, T. Khutoryuk¹, L. Lutsky³, I. Treger^{1,4}

¹Soroka University Medical Center, Rehabilitation, Beer Sheva, Israel

²Ben-Gurion University of the Negev, Psychology, Beer Sheva, Israel

³South Department of Clalit Health Services, Rehabilitation Unit, Beer Sheva, Israel

⁴Ben-Gurion University of the Negev, Medicine, Beer Sheva, Israel

Introduction/Background

Deconditioning is a complex process of physiological change following injury or disease resulting in functional decline. Although the effectiveness of inpatient rehabilitation in deconditioning is under debate, deconditioning remains one of the reasons of referral to rehabilitation. Unfortunately, mortality rate in this population is high. Here we examined rehabilitation outcome in 55 patients admitted to our department due to deconditioning and discuss implications for the feasibility of rehabilitation in this population.

Material and Methods

Data from 323 patients admitted to our newly established department over 18 months of activity was collected. 17% (n=55) were referred following deconditioning. Information included: demographic characteristics, diagnosis, length of stay (LOS) in rehabilitation, and time between discharge and death.

Results

Of the 55 patients with deconditioning, 4 (7.2%) resulted in patient's death. Only one (0.03%) death occurred among the remaining 268 patients. Of the four patients (3 males) one patient suffered from severe medical complication and died on the day of admission. The additional 3 patients who developed severe medical conditions were transferred to other departments and died within three weeks. The first three deaths occurred during the first 6 months of the department's activity whereas only one patient died during the following 12 months.

Conclusion

Our findings indicate mortality rates were significantly higher in patients with deconditioning and during the preliminary stages of the department's activity. It is possible that these patients were admitted too early for rehabilitation and were medically instable. These findings highlight the importance of setting clear characteristics for patient selection in rehabilitation.

No conflict of interest

ISPR7-0383
Miscellaneous

STATUS OF RESEARCH IN IRAN ON HUMAN PLATELET DERIVATIVES, AS A TOOL FOR REGENERATIVE MEDICINE

Z. Hashemi¹, S.A. Raeissadat¹, M. Babaei¹

¹Physical Medicine and Rehabilitation research center, Physical medicine and rehabilitation, Tehran, Iran

Introduction/Background

A new therapeutic approach, especially for chronic disease is “Regenerative medicine”. Its aim is regeneration of human cell, tissue and organ by using of stem cells, platelet cells, biologic proteins and etc. Platelet cells play an important role in recent researches due to their various growth factors and cytokines with healing effects.

In this study, we review the application of platelet derivatives in regenerative medicine in Iran. **Material and Methods**

In this review, two independent researchers systematically search Persian (Iranmedex, Iran doc) and English electronic data bases (Scopus, Cochrane Central Register of Controlled Trials, PubMed, Google scholar) by key words “platelet rich*” AND “Iran” until 26 May 2016. Number of studies published per year, fields of disorders, type of platelet products, method of studies and financial supporters were analyzed. We review final results of all studies and compared the overall results by recent systematic review and meta-analysis in each field.

Results

Within 2138 articles in primary search, finally, 133 articles were eligible. We classified articles in 8 groups (bone, cartilage, osteoarthritis, tendon & ligaments, nerve tissue, wound & fistula, dental & gingival, skin & cosmetic and nonspecific field), bone disorders (25%), wound & fistula (16%), dental & gingival disorders (14%) and osteoarthritis (11%) have more relative frequency.

PRP with 72% , then PRGF (13.5%) and PRF (12%) were more attractive platelet products in Iranian researches. 41% of studies designed in animal experimental method, while randomized clinical trials (17%) and non-randomized clinical trials (17%) were the next in rank. **Conclusion**

Necessity of pursuing standard protocols in preparation of the platelet products, stating the precise content of platelets and growth factors and long term follow up of study subjects were the most important points in Iranian studies. clarification of status of research can guide both researchers and health policy makers to accelerate the entry of new therapeutic methods in clinic.

No conflict of interest

ISPR7-0390
Miscellaneous

PREVALENCE OF OROPHARYNGEAL DYSPHAGIA IN A THIRD LEVEL HOSPITAL IN MADRID, SPAIN

A. Teixeira¹, J.C. Estupinan², P. Sanchez Tarifa¹, A. Gomez Gomez¹, S. Dominguez¹,

C. De Miguel Benadiba¹

¹Ramon y Cajal Hospital, Rehabilitation, MADRID, Spain

²ramón y Cajal Hospital, Rehabilitation, Madrid, Spain

Introduction/Background

Oropharyngeal dysphagia (OD) has a high prevalence in the elderly and it may affect up to 30-40% over 65 years. The clinical significance of the OD derives from a decrease in the safety of swallowing what causes choking or tracheobronchial aspiration, originating aspiration pneumonia, death in 50% of cases, and decreases the effectiveness of swallowing (which could result in malnutrition and/or dehydration). All this leads to a high socioeconomic impact.

Material and Methods

Cross-sectional study carried out on August 30th 2016 in patients over 18 years old admitted in the Ramon y Cajal Hospital to determine the prevalence of OD. After signing the consent, a validated questionnaire in Spanish for screening dysphagia, called Eating Assessment Tool 10 (EAT-10), is filled by the patients or their relatives. Patients admitted to the emergency room and outpatients are excluded.

Considered variables are: age, gender, Hospital Admission Service and a diagnosis of dysphagia (score over 3 in EAT-10).

Results

The questionnaire was given to 356 patients. We found an OD prevalence of 33%. The average age of the affected patients was 73 years old and the service with the highest OD rate was Intensive Care unit followed by Orth-geriatrics and then Internal Medicine.

Conclusion

OD is underdiagnosed and it is not recorded regularly in our midst. There is a strong evidence that the use of screening programs, diagnosis and treatment in vulnerable patients can achieve a reduction of morbidity and mortality by improving evolution in the short, medium and long terms. It also improves the quality of life and nutritional status even with a lower cost of hospitalization

No conflict of interest

ISPR7-0391
Miscellaneous

REFLECTIONS ON THE EXPERIENCE OF A NATURAL DISASTER

G. Abbott¹, M. Galea²

¹, Hampton, Australia

²University of Melbourne, Department of Medicine, Melbourne, Australia

Introduction/Background

Nepal suffered a 7.8 magnitude earthquake on April 25th 2015. The multidisciplinary Royal Melbourne Hospital Team was the first Foreign Medical Rehabilitation team deployed to a disaster area so soon after a disaster. A second earthquake occurred on the third day of our deployment, while ward rounds were being conducted.

Material and Methods

The brief was to conduct a needs assessment, assist in patient triage and care of earthquake victims with spinal cord injury, and provide education and training to staff where necessary. A needs analysis identified the need to triage all patients and we conducted daily ward rounds with the local staff to plan management and future care.

Results

After the second earthquake we were involved in a new disaster management plan, and assisted in the evacuation and care of the patients, moving them to makeshift tents outdoors. Continued aftershocks kept the medical team and patients on edge in the days following the second quake.

Conclusion

Nepal faces various challenges in the long-term management of earthquake survivors. There were a lot of people who had no home and were just living under tents or tarpaulins on the side of the road, with lack of access to toilets or washing facilities. The healthcare focus for disaster management was primarily on acute care; rehabilitation services and community care were of lesser priority. The spinal cord injury survivors are a vulnerable population requiring long-term planning for service delivery and rehabilitation. Understandably, most emphasis was placed on the acute response, saving lives and treating acute injuries. However the role of acute rehabilitation and preventative care has the potential to minimize complications such as pressure ulcers, which have a negative impact on recovery.

No conflict of interest

ISPR7-0437
Miscellaneous

CENTRAL ITALY EARTHQUAKE 2016

G. Abbott¹, G. Pestelli²

¹, Hampton, Australia

²Primus Forlì Medical Center, Rehabilitation, Forlì, Italy

Introduction/Background

The central Italy was hit by a massive earthquake (6.1 Richter) 24 August 2016 in which the countries of Arquata del Tronto and the township, Accumoli and Amatrice place famous for medieval history and spaghetti all 'amatriciana' were almost destroyed .

Material and Methods

There were 394 dead people and 500 wounded treated in the main Italian cities from Rome to Florence to Ancona. SIMFER was in the earthquake crater with 2 his doctors after a few days to make operating agreements with healthcare executives and civil safeguard. Five days after the earthquake in the Marche region began the activity of SIMFER. Subsequently, agreements were made to manage the rehabilitation both in Umbria and in Lazio with some operational difficulties due to the big Italian state bureaucracy . We worked on both elderly and disabled people prior to the earthquake and also on the injured because of EQ.

Results

.After two months (30 Oct.) a new strong earthquake (6.5 Richter) hit the Marche and Umbria regions, in particular the medieval towns of Norcia and Cascia important religious centers. Simfer departed immediately with the tent of "listening and rehabilitation " to support the hospital field army raised in Cascia. In this second earthquake there were no fatalities but extensive damages to houses and public buildings .

Conclusion

At the time to send the abstracts we are working in Cascia and Norcia. In three months there have been over 30,000 shocks superior to 3.0 Richter.

No conflict of interest

ISPR7-0443
Miscellaneous

EFFECTS OF PHYSIOLOGIC ISCHEMIC TRAINING ON NEUROPROTECTIVE DURING POST-STROKE REHABILITATION

J. Ni¹, C. Mei^{1,2}, S. Yu³, G. Shen^{1,2}, X. Lu^{4,5}, J. Li^{4,5}, J. Zhu⁶

¹Department of Rehabilitation Medicine, The Affiliated Hospital of Nantong University, Nantong, China, 226001

²Department of Rehabilitation Medicine, Nantong University, Nantong, China, 226001

³Jiangsu Key Laboratory Neuroregeneration, Nantong University, Nantong, China, 226001

⁴Department of Rehabilitation Medicine, The First Affiliated Hospital of Nanjing Medical University, Nanjing, China, 210029

⁵Department of Rehabilitation Medicine, Nanjing Medical University, Nanjing, China, 210029

⁶Department of Cardiac Medicine, The Affiliated Hospital of Nantong University, Nantong, China, 226001

Background: This study aimed to observe whether physical ischemic training (PIT) could enhance the neuroprotective effect during post-stroke rehabilitation.

Methods: Adult male SD rats were first subjected to 90-min transient middle cerebral artery occlusion (MCAO) and then randomized into a PIT group and a non-PIT control group. A sham-operated group was used as the negative control. After 1- and 2-week PIT, the brain infarct volume was measured by TTC staining, and behavioral outcomes, neuronal loss, apoptosis, cerebral edema were assessed by the modified neurological severity score (mNSS) system, Nissl staining, TdT-mediated dUTP Nick-End Labeling (TUNEL) staining and cerebral water content, respectively. The messenger ribonucleic acid (mRNA) expression of vascular endothelial growth factor (VEGF) was assayed by RT-PCR and the protein expression of VEGF were quantified by Western blot.

Results: Cerebral infarction and neurological deficits were reduced significantly, and the mRNA expression of VEGF and the protein expression of VEGF were enhanced markedly after 1- and 2-week PIT.

Conclusion: These findings suggest that PIT could promote neurogenesis and neuronal remodeling during post-stroke rehabilitation. This new remodeling method may provide a novel training strategy for rehabilitation of stroke patients.

Document not received

ISPR7-0553
Miscellaneous

FOOT STATIC DISORDERS IN A TUNISIAN POPULATION

E. Toulgui¹, Z. Kammoun², M. Abid², M. Gaddour¹, R. Moncer¹, S. Jemni¹, F. Khachnaoui¹

¹*Hopital Sahloul, Physical Medicine and Rehabilitation, Sousse, Tunisia*

²*High School of Sciences and Technology of Health of Sousse, Podiatry, Sousse, Tunisia*

Introduction/Background

Foot examination is part of a general clinical examination. The foot area is subject to multiple intra and extra-articular problems. This work aims to identify, from a podiatric examination, the morpho-functional characteristics of the foot in a Tunisian adult population

Material and Methods

This is a prospective study conducted between January and April 2016. This work included 31 subjects. The exclusion criteria were the presence of diabetes, history of ulcers on the feet or amputations, a Charcot foot, the presence of ischemia, rheumatic inflammatory or degenerative and traumatic lesions legs.

Results

The average age of patients was 52.5 ± 12.5 years. 71% of patients were male. 7 patients had regular physical activity. The average BMI of the patients was 25.8 ± 2.7 kg / m². The deformities were observed in descending order: a hallux valgus in 20 patients, a Quintus Varus in 12 patients, a claw toes in 15 patients and overlapping toes in 8 patients. The claw toes were proximal in 12 patients, total in 3 patients, reducible in 6 patients and non-reducible in 9 patients. Concerning teguments, 5 patients had xerosis and 13 patients had hyperkeratosis zones in the feet.

Conclusion

The foot is anatomically the most exposed organ of our body to mechanical stress. Screening of these disorders can relieve asymptomatic patients suffering from podiatric disorders.

No conflict of interest

ISPR7-0560
Miscellaneous

STATIC DISORDERS OF DIABETIC FOOT: ABOUT 65 CASES

E. Toulgui¹, Z. Kammoun², M. Abid², R. Moncer¹, M. Gaddour¹, S. Jemni¹, F. Khachnaoui¹

¹*Hopital Sahloul, Physical Medicine and Rehabilitation, Sousse, Tunisia*

²*High School of Sciences and Technology of Health of Sousse, Podiatry, Sousse, Tunisia*

Introduction/Background

This work aims to identify, from a podiatric examination, the morpho-functional characteristics of the foot in an adult population with diabetes.

Material and Methods

This is a prospective study conducted between January and April 2016. This work included 65 diabetic patients. The exclusion criteria were a history of ulcers on the feet or amputations, a Charcot foot, the presence of ischemia, rheumatic inflammatory or degenerative and traumatic injuries of the lower extremities.

Results

The average age of patients was 57.4 ± 13.8 years. 52.2% of patients were male. Diabetes was type 2 in 62.3% of cases. Neuropathy was found in 47.7% of cases. Regular physical activity was performed in 27.7% of cases. The average BMI of the patients was 26.7 ± 3.4 kg / m². The deformities were observed in descending order: Hallux valgus in a 52.3% of patients, Quintus Varus in 38.5% of patients, claw toes in 67.7% of patients and an overlapping toes in 24.6 % patients. The claw toes were proximal in 49.2% of patients, total in 13.8% of patients, reducible in 13.8% of patients and not reducible in 50.8% of patients. Concerning teguments, 69.9% of patients had xerosis and 81.9% of patients had hyperkeratosis zones in the feet.

Conclusion

The foot is anatomically the most exposed organ of our body to mechanical stress and consequences of vascular and nervous disturbances induced by diabetes.

No conflict of interest

ISPR7-0667
Miscellaneous

POSTOPERATIVE ASPIRATION-RELATED LRTI ANALYSIS IN THE PATIENTS WITH THE ORAL AND MAXILLOFACIAL DISEASES AND THE TRACHEOTOMY

L. Yang¹

¹Guanghua School of Stomatology- Guangdong Provincial Key Laboratory- Sun Yat-sen University, Department of oral and maxillofacial surgery, Guangzhou, China

Introduction/Background

Aspiration is one of main causes of lower respiratory tract infection, or LRTI. This study aims to investigate the incidence rate and risk factors of postoperative aspiration-related LRTI in the patients with oral and maxillofacial diseases and tracheotomy.

Material and Methods

A perspective study was performed between October 2015 and March 2016. Clinical materials were recorded (age, sex, tobacco, radiotherapy, gastroesophageal reflux, choking, systemic disease, BMI, preoperative albumin level, disease onset time). Preoperative swallowing function were assessed by both objective evaluation method (tongue mortality, mouth opening degree, water swallowing test) and subjective one (M.D. Anderson Dysphagia Inventory, or MDADI). Postoperatively, patients underwent a dye test for the detection of aspiration. We investigate the relationship between aspiration and LRTI, MDADI. The data was analyzed with SPSS 19.0 for the univariate and multivariate analysis to screen the influencing factors.

Results

Postoperative aspiration was detected in 24 patients in the 34 patients enrolled (70.6%). In aspiration cohort, 11 contracted LRTI, while no patient developed LRTI in non-aspiration cohort ($P<0.05$). Preoperative MDADI score in aspiration cohort was lower than that in non-aspiration cohort ($P>0.05$). Patients with MDADI score less than 60 were all detected with aspiration. Univariate analysis revealed that age, sex, tobacco history, MDADI score were statistic different between two cohorts ($P<0.05$). Multivariate logistic analysis showed that having tobacco history and lower MDADI score are the independent risk factors of aspiration ($P<0.05$).

Conclusion

This study indicates tobacco history and MDADI score are important risk factors for aspiration-related LRTI in tracheotomized patients undergoing oral surgery.

No conflict of interest

ISPR7-0687
Miscellaneous

A QUESTIONNAIRE BASED SURVEY OF PHYSICAL MEDICINE AND REHABILITATION RESIDENCY TRAINING PROGRAM IN PAKISTAN

F.A. Rathore¹, A.W. Butt², N. Soomro³, N. Akhtar²

¹PNS Shifa Hospital, Department of Rehabilitation Medicine, Karachi, Pakistan

²Armed Forces Institute of Rehabilitation Medicine, Department of Rehabilitation Medicine, - Rawalpindi, Pakistan

³Institute of Physical Medicine and Rehabilitation - DUHS, Department of Rehabilitation Medicine, Karachi, Pakistan

Introduction/Background

Pakistan is one of the three countries in the South East Asia with an active postgraduate PM&R training program (others being India and Bangladesh). College of Physicians and surgeons of Pakistan (CPSP) offers the only postgraduate residency-training program in Physical Medicine and Rehabilitation (PM&R) in the country. It is 4 years structured training program consisting of clinical teaching, lectures, rotations in other specialties and writing a research dissertation.

Aim of this survey was to provide an objective analysis of the current PM&R training program including the facilities available for training, participation of residents in academic activities and their participation in different PM&R procedures

Material and Methods

Hospital ethics committee approval was obtained. A four-part questionnaire was constructed consisting of informed consent; basic demographics; questions about different components of the residency training and self-assessed competence in different procedural skills. It was reviewed and approved by the current dean of PM & R at the CPSP. There are six accredited training centers inside Pakistan. Twelve residents are undergoing residency training at four different centers (Dec 2015). Key persons were nominated at each center to facilitate data collection.

Results

All residents (100% response rate) completed the survey. Almost all had read the CPSP training manual. Most had completed the submitted the research dissertation. Training facilities varied across different centers with the military center being the best equipped. The self-assessed competency in different PM&R procedures varied among different centers but overall it conformed to the competency levels specified in the training manual.

Conclusion

The overall PM&R residency training in Pakistan is satisfactory but there is a need to strengthen the weak areas and standardize the training across all centers in the country. There should be more collaboration between global PM&R and allied societies to develop PM&R training programs in low resourced countries of the world.

No conflict of interest

ISPR7-0692
Miscellaneous

**DEVELOPMENT AND IMPLEMENTATION OF AN ICF AND CLINICAL PATHWAY BASED
PATIENT MANAGEMENT COCKPIT IN REHABILITATION OF SPINAL CORD INJURY (SCI)**

K. Schmitt¹, H.P. Gmuender², A. Scheel-Sailer¹

¹Swiss Paraplegic Centre, Rehabquality Management, Nottwil, Switzerland

²Swiss Paraplegic Centre, Head department- CEO, Nottwil, Switzerland

Introduction/Background

Quality in health care intervention builds on structure, process and outcome quality. Clinical pathways - to support clinical decision making - should be integrated in a Hospital Information System. Rehabilitation management as a complex task includes defining rehabilitation goals, as a part of the Rehab-Cycle based on the ICF framework. Software solutions are often developed in separated information systems. However rehab professionals in its interdisciplinary approach need an overview within an ICF based goal setting and face a lack of information due to single clinical expert system. The aim of the study is a description of the development and implementation of a process oriented clinical documentation system in the field of SCI.

Material and Methods

- Design of clinical pathways in SCI
- Transfer into Business Process Modeling Notation (BPMN)
- Implementation of Patient Management Cockpit (PMC) into clinical practice (proof of concept)

Results

Design of clinical pathways including the process of clinical change management took 12 months. Developing PMC as a process oriented clinical documentation system using the Scrum project method (2013). Implementation of the program on all wards within the rehab center (2014).

Testing PMC with a specific clinical pathway "SCI Decubitus Ulcer" .

Conclusion

The interdisciplinary development of PMC allows integrating clinical rehabilitation requirements. ICF based rehabilitation management including the definition of participation goals can be supported by PMC with visualized clinical pathways and standardized treatment packages. The improvement of rehabilitation management after implementation of PMC is currently evaluated in a follow up study.

No conflict of interest

ISPR7-0761
Miscellaneous

IMPACT OF A TRANSDISCIPLINARY NEUROREHABILITATION PROGRAM ON THE PATIENTS' QUALITY OF LIFE

K. Bustos¹, M. Perez Bruno¹, A. Finkelberg¹, M. Clark¹, M. Godoy¹, A. Zanella¹

*¹Fundación AlunCo Internacional - Centro de NeuroRehabilitación Transdisciplinaria.,
Departamento de docencia e investigación, Olivos - Vte. Lopez - Provincia de Buenos Aires,
Argentina*

Introduction/Background

Life's quality is a relevant factor in transdisciplinary neurorehabilitation.

This model is a patient-centered treatment approach, based on an intervention that includes the global analysis of the context and it addresses physical, cognitive, emotional and social aspects of the patients to reach their greater autonomy and social inclusion.

The purpose of the present study was to evaluate factors related to quality of life in a group of patients subject to transdisciplinary neurorehabilitation.

Material and Methods

Patients were consecutively analyzed in transdisciplinary neurorehabilitation in AlunCo International Foundation.

The patients' quality of life was evaluated through SF36.

Independent variables evaluated included: causal pathology of the disability, severity of disability, time in rehabilitation, age, gender, related caregiver, work status and educational level.

Linear regression model was used to determine the association. P significant <0.05, Stata 10.1 for analysis.

Results

The analysis included 38 patients.

The causes of disability were cerebrovascular accident (CVA 27 %), traumatic brain injury (TBI 11 %), Parkinson's disease (13.6 %) and multiple sclerosis (MS, 8.1 %).

The mean age of the sample evaluated was 61.5 ± 17 years, 60.5 % male.

There was a significant connection between a longer rehabilitation time and higher quality of life (p 0.004, r 0.56).

And greater disability and lower quality of life (p <0.01, r -0.6).

The rest of the analysed variables showed no association.

Conclusion

The increase in the amount of rehabilitation time was associated with higher quality of life in the analysed sample.

These data support the sustained use of transdisciplinary neurorehabilitation and should be associated with the related functional impact.

No conflict of interest

ISPR7-0762
Miscellaneous

ULTRASONOGRAPHIC EVALUATION OF GENIOHYOID MUSCLE MASS IN PERIOPERATIVE PATIENTS

S. Shimizu¹, K. Hanayama¹

¹Kawasaki Medical School, Rehabilitation Medicine, Kurashiki, Japan

Introduction/Background

Surgical invasion and postoperative disuse are known to promote systemic skeletal muscle atrophy; however, similar effects on the mass of the muscles of deglutition have yet to be confirmed. Our method of using ultrasonography to measure the area of the geniohyoid muscle (GM), to evaluate the mass of the muscles of deglutition, has been shown to have high reliability. In the present study, we measured the GM area before and after surgery in patients to investigate changes in their muscle mass.

Material and Methods

Parameters including GM area, quadriceps femoris muscle (QF) thickness, and arm muscle circumference were measured preoperatively and at 7 and 14 days postoperatively in patients who underwent thoracotomy and laparotomy.

Results

Comparison of each evaluation parameter between measurement time points demonstrated significant decreases in GM area, QF thickness between preoperatively and both postoperative day (POD) 7 and POD 14. The patients were divided into good (n = 19) and poor (n = 12) postoperative oral intake groups for comparison of GM area. The percentage decrease in GM area was significantly greater in patients with poor oral intake.

Conclusion

To our knowledge, this is the first study to demonstrate that muscle atrophy due to surgical invasion or disuse may occur in the muscles of deglutition, as in the limb muscles. The findings showed that muscle atrophy occurs in the early postoperative period and persists even at 2 weeks postoperatively. Furthermore, insufficient oral intake may promote disuse muscle atrophy.

No conflict of interest

ISPR7-0777
Miscellaneous

IS BALNEOTHERAPY A NEW TREATMENT OPTION FOR MASTALGIA? PRELIMINARY RESULTS.

A. Genç¹, S.U. Çelik², F.D. Evcik³, E.D. Atman⁴, A.H. Elhan⁵, V. Genç²

¹Ankara University Haymana Vocational School, Physiotherapy Program, Ankara, Turkey

²Ankara University Faculty of Medicine, General Surgery, Ankara, Turkey

³Ankara Güven Hospital, Physical Medicine and Rehabilitation, Ankara, Turkey

⁴Ankara University Faculty of Medicine, Radiology, Ankara, Turkey

⁵Ankara University Faculty of Medicine, Biostatistics, Ankara, Turkey

Introduction/Background

Mastalgia is the most common breast related complaint among women. Two distinctive entities mastalgia and fibromyalgia (FM) which seem to frequently coexist and it is well known that balneotherapy has positive effects on FM. The aim of the study is to investigate the effects of balneotherapy on mastalgia.

Material and Methods

A randomized controlled clinical trial was conducted with twenty-eight women with complaints of mastalgia. Patients were randomly assigned to the control group (group 1) and to the balneotherapy group (group 2). Sports brassiere, refraining from caffeine- and methylxanthine-containing foods, and simple analgesics were recommended for two groups for 6 weeks. In group 2, additional consecutive balneotherapy was given a total of ten sessions in last two weeks. Participants in both groups were evaluated with breast pain and the SF-36 questionnaires before and six weeks after study.

Results

No significant differences were detected with respect to age, body mass index, menopausal status, psychiatric condition, existence of unexplained pain syndromes, and total breast pain scores between the groups (Table 1).

Table 1. Demographic, clinical and socioeconomic data of the two groups

Variable	Group 1, n=16	Group 2, n=12	p
Age (years), mean±SD	41.4±11.8	49.4±4.9	NS
Educational background, n			NS
Primary or secondary school	11	5	
High school or university	5	7	
Body mass index, mean±SD	28.2±5.8	25.8±5.6	NS
Marital status, single, n	4	2	NS
Daily caffeine and methylxanthine intake (number of cups), mean±SD	2.9±2.3	6±2.5	0.001
Psychiatric conditions (past year), n			NS
PTSD	0	1	
Depression	4	1	
Domestic violence	1	0	
Anxiety	2	1	
Unexplained pain syndromes (past year), n			NS
Fibromyalgia	1	3	
Chronic pelvic pain	3	0	
IBS	1	1	
Pre-menopausal, n	11	6	NS
Cyclic mastalgia	5	3	NS
Total Breast Pain Score	205.8±79.2	203.1±44.3	NS
Sensory component	11.4±7.4	12.2±6.6	NS
Affective component	2.44±3.2	2.5±2.4	NS
VAS	5.4±2	4.8±1.3	NS

Values are mean units ± SD. PTSD: posttraumatic stress disorder, IBS: irritable bowel syndrome, VAS: visual analog scale, NS: not significant.

Total breast pain score and the sensory component of this significantly improved via balneotherapy in only group 2 (Table 2).

Table 2. Comparison of total breast score before and after study.

Variable	Group 1 (BS)	Group 2 (BS)	Group 1 (AS)	Group 2 (AS)	p ¹	p ²	p ³
Total Breast Pain Score	205.8±79.2	203.1±44.3	186.5±88.6	155.1±53.1	0.046	0.234	0.003
Sensory component	11.4±7.4	12.2±6.6	9.3±6.9	6.2±3.5	0.001	0.186	0.002
Affective component	2.44±3.2	2.5±2.4	2±3.1	1.8±2.3	0.631	0.290	0.303
VAS	5.4±2	4.8±1.3	4.8±2.6	3.9±2.4	0.423	0.321	0.119

Values are mean units ± SD. BS: Before study, AS: After study

p¹: The comparison of changes from BS values to AS values between two groups.

p²: BS values vs. AS values in Group 1.

p³: BS values vs. AS values in Group 2.

SF-36 subscale scores for social functioning significantly improved in group 1 and scores for role

physical, bodily pain, and vitality improved in group 2. When the changes from before study to after study values were compared between two groups, improving in role physical was significantly better (Table 3).

Table 3. Comparison of mean values of SF-36 subscales before and after study.

Variable (SF-36)	Group 1 (BS)	Group 2 (BS)	Group 1 (AS)	Group 2 (AS)	p ¹	p ²	p ³
Physical functioning	45.94±7.78	44.30±7.59	49.04±6.34	43.98±7.32	0.324	0.139	0.959
Role physical	45.88±14.13	40.31±11.82	49.53±10.39	46.86±10.11	0.205	0.173	0.047
Bodily pain	43.98±10.23	38.41±8.81	49.89±12.06	44.73±5.77	0.767	0.156	0.040
General health	41.76±11.73	45.57±10.74	44.93±10.43	44.31±11.27	0.223	0.182	0.624
Vitality	43.24±9.72	45.92±6.95	46.63±9.37	51.86±6.47	0.302	0.099	0.016
Social functioning	40.21±12.48	42.30±9.56	45.61±11.62	46.90±9.67	0.873	0.015	0.056
Role emotional	44.96±16.39	47.46±13.57	46.26±13.00	41.37±13.94	0.036	0.461	0.089
Mental health	38.91±11.80	44.55±4.09	41.00±13.83	48.03±8.38	0.623	0.463	0.080
PCS	45.87±9.08	41.03±9.33	50.50±7.64	45.42±6.16	0.889	0.088	0.347
MCS	40.43±12.22	46.92±8.32	42.48±11.61	47.27±8.53	0.642	0.134	0.754

Values are mean units ± SD. BS: Before study, AS: After study, PCS: physical component summary, MCS: mental component summary.

p¹: The comparison of changes from BS values to AS values between two groups.

p²: BS values vs. AS values in group 1.

p³: BS values vs. AS values in group 2.

Conclusion

Balneotherapy has beneficial effects in patients with mastalgia and can be suggested as an alternative therapy.

No conflict of interest

ISPR7-0844
Miscellaneous

VALUE OF MUSCULOSKELETAL SONOGRAPHY IN IMPROVING REHABILITATION SERVICE IN KUWAIT

M. Dughbaj¹

¹*Physical Medicine and Rehabilitation Hospital, Physical medicine and Rehabilitation Department, Kuwait, Kuwait*

Introduction/Background

The diagnostic role of sonography in internal medicine, obstetrics, gynecology, cardiology & urology is so established by now that it proves indispensable in many respects.

Continuous perfection of equipments, high frequency & high resolution transducers has also permitted extension of **US** into diverse disciplines from traditional areas (like physiatry and rheumatology), so

Physiatrists have made excellent use of **Diagnostic & Interventional Ultrasound**

Material and Methods

My presentation will show six years experience:

(2010-2016) in **MSK US IP Clinic in PMR Hospital in KUWAIT (7400 CASES)** 40% of these cases for diagnosis and monitoring of recovery and healing during rehabilitation, while 60% of these cases are interventional procedures guided by US with significant positive impact on the rehabilitation service in the state of Kuwait

The presentation will show salient pathological features in various interesting cases of different traumatic, inflammatory, degenerative & pathological conditions

The presentation will include demonstration of **US Dynamic Examination** of some joints & structures.

Results

My presentation will show six years experience:

(2010-2016) in **MSK US IP Clinic in PMR Hospital in KUWAIT (7400 CASES)** 40% of these cases for diagnosis and monitoring of recovery and healing during rehabilitation, while 60% of these cases are interventional procedures guided by US with significant positive impact on the rehabilitation service in the state of Kuwait

The presentation will show salient pathological features in various interesting cases of different traumatic, inflammatory, degenerative & pathological conditions

The presentation will include demonstration of **US Dynamic Examination** of some joints & structures.

Conclusion

Our experience with the extensive work in literatures show clearly the value of **MUSCULOSKELETAL US** as a valid, sensitive, specific and cost effective diagnostic and interventional tool in hand of physiatrist in management of soft tissue pathologies and injuries from the surface of skin to the surface of bone in the field of **REHABILITATION MEDICINE**

Link for my talk

<https://drive.google.com/file/d/0BzvStyFPeYgvMGxyM1A5NnNOT0U/view?usp=sharing>

No conflict of interest

ISPR7-0899
Miscellaneous

CHARACTERISTICS OF INPATIENT POPULATION IN A REHABILITATION CENTER AND ITS RELATION WITH PATIENT'S SOCIAL ENVIRONMENT

A.I. De Carli¹, N.L. de la Torre¹, A.D. Giler Sarmiento¹, G. Cardone¹, P.J. Garcia Gimenez¹, K. Guerrero¹, M. Zavala¹

¹*Instituto de Rehabilitacion Psicofisica IReP, Physical medicine and rehabilitation, Buenos Aires, Argentina*

Introduction/Background

To describe the main characteristics of inpatient population in a rehabilitation center and to establish the relation between patient's social environment and the outcome of the rehabilitation program.

Material and Methods

A retrospective, descriptive and correlational study that describes the population of inpatients in IReP, a rehabilitation center in Buenos Aires, Argentina between June 2014 and September 2016. The data was obtained from patients Clinical records after informed consent.

Results

We were unable to find correlation between patient's social environment and the functional outcome of rehabilitation program evaluated by functional impairment measure (FIM) evolution ($W=748.5$, $p= 0.7743$). Nevertheless we found that patients with a positive social environment had significantly shorter inpatient stays ($W=1069.5$, $p=0.007535$).

Conclusion

It's necessary to perform further studies with larger samples, classifying patients according to pathology, to confirm the relation found between a positive social environment and inpatient stays in rehabilitation centers. Furthermore, to ratify the relation between social environment and rehabilitation outcome, either positive or negative.

No conflict of interest

ISPR7-0921
Miscellaneous

HVLT-R, STROOP AND BNT: NORMATIVE DATA FOR THE ARGENTINIAN ADULT POPULATION

M. Longoni¹, J.C. Arango Lasprilla², D. Rivera Camacho³

¹, San Jerónimo Sur, Argentina

²Ikerbaske Basque Foundation, Neurorehabilitation research, Bilbao, Spain

³Deusto University, Neurorehabilitation Research, Bilbao, Spain

Introduction/Background

Objective: To generate normative data on the Hopkins Verbal Learning Test–Revised (HVLT-R), Stroop Test (ST) and Boston Naming Test (BNT) for Argentina, with adjustments for gender, age, and education. .

Material and Methods

Method: The sample consisted of 320 healthy adults who were recruited from Argentina. Inclusion criteria were to have a Mini-Mental State Examination (MMSE) score of ≥ 23 , have a Patient Health Questionnaire–9 (depression) score of ≤ 4 , and have a Barthel Index of ≥ 90 . 70.0% were women, the average age was 45.7 ± 19.5 years (range 18-90), and the average education was 13.8 ± 4.5 years. All participants completed the HVLT-R, ST and BNT. Regression-based and standard deviation procedure was used to generate norms

Results

Results: The final multiple linear regression models explained 18.3–25.8% of the variance in HVLT-R, 14%-30% in ST, and 17.5% in BNT scores. All scores showed increased for those with more than 12 years of education; showed no significant differences between men and women on the scores, and BNT showed no significant effect in age. Therefore, tables of percentiles were calculated adjusted by Age and education level.

Conclusion

Conclusions: The current results suggests that gender should not be taken into account when calculating participants' percentiles for HTLVR, ST and BNT. But, it is very important in Argentina to use the age adjusted norms for HTLVR. The results from this study will have a substantial impact on the practice of neurorehabilitation in Argentina.

No conflict of interest

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Miscellaneous

CHANGES OF SURFACE ELECTROMYOGRAPHIC SIGNAL IN PATIENTS WITH CHRONIC LOW BACK PAIN TREATED BY ELECTROMYOGRAPHIC BIOFEEDBACK THERAPY

Z.X. Wang¹

¹Department of rehabilitation medicine, Affiliated Hospital of Chengde Medical College, Chengde City, Hebei Province, China

Background: At present in our country ,complete introduction surface electromyography(sEMG) principle, signal analysis and clinical application of academic monograph is very few, especially the study on sEMG in chronic low back pain (CLBP)and clinical application is rare. This study is about the sEMG for CLBP related assessment and treatment to do a clinical experimental study.

Methods: 60 cases of CLBP patients, the patient was given 1 times a day, for 2 weeks the electromyographic biofeedback therapy (EMGBFT), were collected in half bridge action the pain side erector spinae and multifidus sEMG signals respectively before and after the treatment, the time domain indicators: the root mean square(RMS) value and frequency domain index: the median frequency (MF), were compared in statistics. Results: After treatment, the pain side time domain index RMS of the erector spinae and multifidus was higher than that before treatment, and the pain side frequency domain index MF was decreased compared with that before treatment, and the difference was significant ($P<0.05$).

Conclusion: After EMGBFT treatment, in CLBP patients, the degree of fatigue of the pain side erector spinae and multifidus musclethe decreased, the contraction capacity enhanced.

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CHANGES OF SURFACE ELECTROMYOGRAPHIC SIGNAL IN PATIENTS WITH CHRONIC LOW BACK PAIN AFTER SWISS BALL EXERCISE THERAPY

Z.X. Wang¹

¹Department of rehabilitation medicine, Affiliated Hospital of Chengde Medical College, Chengde City, Hebei Province, China

Background: In recent years, domestic and foreign scholars have gradually put the Swiss ball used in rehabilitation of chronic low back pain (CLBP), the treatment effect is significant, but the study combined with surface electromyography (sEMG) is less and less, this study investigate the changes of surface electromyographic signal before and after Swiss ball treatment in patients with CLBP.

Methods: 80 patients with CLBP received Swiss ball treatment, 1 times a week for 4 weeks. The sEMG signals of erector spinae and multifidus of both sides were collected, when they were in erect position, flexion motion, maximum voluntary flexion, and back to erect position, before and after intervention. The root mean square (RMS) was analyzed, and the flexion-relaxation ratio (FRR) was compared.

Results: The FRRs of both erector spinae and multifidus were lower in the painful side than in the healthy side before intervention (P

Conclusion: Swiss ball treatment may improve the active motion function of the erector spinae and multifidus of the painful side and recovery of flexion-relaxation phenomenon.

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PHYSIOLOGIC REMOTE ISCHEMIC TRAINING OFFERS A CARDIOPROTECTIVE EFFECT AGAINST MYOCARDIAL INFARCTION IN A TIME-DEPENDENT MANNER

J. Ni¹, O. Peng³, X. Lu⁴, M. Jiang², J. Li⁴, J. Zhu²

¹*Department of Rehabilitation Medicine, The Affiliated Hospital of Nantong University, China*

²*Department of Cardiology, The Affiliated Hospital of Nantong University, China*

³*Intensive Care Unit, The Affiliated Hospital of Nantong University, China*

⁴*Department of Rehabilitation Medicine, The First Affiliated Hospital of Nanjing Medical University, Nanjing, China*

Aims: Physiologic remote ischemic training (PRIT) has a protective effect in the pathologically ischemic myocardium. The aim of this study was to investigate the effectiveness of PRIT to second MI and the difference of variable durations of PRIT against myocardial infarction.

Methods and results: A myocardial infarction model was first established in 64 male Sprague-Dawley (SD) rats, and after one week the modeled animals were equally randomized into two groups: the PRIT group, which was further divided into 1-, 2-, 4- and 6-week PRIT subgroups as 1w, 2w, 4w and 6wPRIT, and the pure myocardial infarction group, which were further divided into 1-, 2-, 4- and 6-week myocardial infarction groups as 1wMI, 2wMI, 4wMI and 6wMI as controls. At the end of scheduled time points, all rats received the second MI. Cardiac troponins I (cTnI), cardiac function, vascular endothelial growth factor (VEGF), capillary density and myocardial infarct size was determined. Except 1w groups (PRIT and MI), post-MI cTnI levels in PRIT groups were significantly (p

Conclusions: PRIT could induce a protective effect against myocardial infarction and these trends became more pronounced with the prolonging of the training time. **Keywords :** Physiologic remote ischemic training (PRIT) ; Myocardial infarction; vascular endothelial growth factor (VEGF)

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EFFECTS OF EARLY REHABILITATION THERAPY ON INTENSIVE CARE PATIENTS WITH TRACHEOTOMY

R. Yu¹, H. Haixia¹, W. Baolan¹

¹Department of Rehabilitation, 1st Hospital Of Xinjiang Medical University, Urumqi, 830054

Objective : To clarify the effects of early rehabilitation on the extubating time of various tracheotomy patients.

Method : Total 81 tracheotomized patients were investigated from January 2010 to August 2016 in the First Affiliated Hospital of Xinjiang Medical University. The patients' disease type, date of rehabilitation starting time, the patients' extubating time were assessed.

Results : We classified the patients into the following six groups: hemorrhage stroke (29), ischemic stroke (14), intracranial tumor (12), Gillan Barre's disease (6), high cervical spinal cord injury (7), brain trauma (12). The average extubating time in these patients were: hemorrhage stroke was 51.5 days after onset (exclude 7 patients with tracheost, accounted for 24.14%); ischemic stroke was 53.66 days after onset (excluded 8 patients with tracheost, accounted for 57.14%); intracranial tumor was 39.5 days after onset (excluded 8 patients with tracheost, accounted for 50%); Gillan Barre's disease was 51.2 days after onset (excluded 1 patients with tracheost, accounted for 16.67%); high cervical spinal cord injury was 65 days after the onset (excluded 6 patients with tracheost, accounted for 85.71%); brain trauma was 41.9 days after the onset (excluded 2 patients with tracheost, accounted for 16.67%).

Conclusion : After rehabilitation treatment, the average extubating time in these patients with intracranial tumor and brain trauma was shorter than other types; most high cervical spinal cord injury patients without extubation; most of the patients with Gillan Barre's disease and brain trauma were extubated.

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CHILDREN ACQUIRED SPINAL CORD INJURY. EPIDEMIOLOGICAL STUDY

H. Cometta¹, N. Gil¹, J.L. Guimil¹, J.V. Markovic¹

¹Physical Medicine and Rehabilitation Service, Children's Hospital Sor María Ludovica, La Plata, Argentina

Spinal Cord Injury (SCI) is a pathological process that produces motor, sensory and / or autonomous alterations, generating severe disability. MATERIALS AND METHODS: Is a quantitative, descriptive, non-experimental study. 14 patients diagnosed with SCI, served in the Department of Physical Medicine and Rehabilitation of the Interzonal Acute Hospital Specialized in Pediatrics "Sor María Ludovica" in La Plata, between 1 January 2009 and 30 October 2016 were selected. Classified according to sex, age, etiology, neurological level, ASIA scale, evolutionary to entry in the department, length of hospital instance, complications and discharge destination. RESULTS: The mean age was 11 years, higher incidence of male, vascular and inflammatory most common causes, followed by trauma, tumor and postsurgical. There was a higher incidence of cervical levels ASIA A and C. Rapid entry into the department was recorded, with long hospital stay. DISCUSSION: We found a correlation with the literature regarding age of onset and incidence by sex. Within the etiology, the sample does not correspond to the literature. This discrepancy could be attributed to the small sample and hospital characteristics. Rapid referral is observed, with early comprehensive intervention. In contrast, we notice a prolonged hospital instance, exceeding the acute stage. CONCLUSION: The low prevalence generates docketed difficulty in handling, presenting potentially avoidable complications. The absence of a public monovalent child and adolescent rehabilitation institution, along with complications, condition prolonged hospitalization. Finally we believe important to emphasize the need for interdisciplinary approach.

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PERINEURAL SUBCUTANEOUS INJECTIONS: NEUROPATHIC PAIN TREATMENT. CASE REPORT

S. Itri¹, M.M. Romero¹, S. Salas¹, G. Arena¹, M. Ayelén¹

¹Residencia de Fisiatría. Hospital de Rehabilitación Manuel Rocca. CABA

Objective: To present a case report and review of the available literature about neuropathic pain and its treatment.

Materials and methods: a non-systematic literature search based in digital scientific databases and manuals in regard to a clinical case about neuropathic pain and its treatment.

Results: The patient's pain decreased after successive applications, and her performance in daily life activities and gait showed an improvement.

Conclusions: Although a single case is presented, we consider perineural subcutaneous injections a good choice for treatment of neuropathic pain.

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PREVENTION AND TREATMENT OF HIP DISLOCATION THROUGH THE APPLICATION OF BOTULINUM TOXIN IN CHILDREN WITH CEREBRAL PALSY

N.A. Amado¹, M.B. Arocena¹, J.L. Guimil¹, J.V. Markovic¹

¹Physical Medicine and Rehabilitation Service, Children's Hospital Sor María Ludovica, La Plata, Argentina

Abreviaturas: *Modified Ashworth Scale: ASH, Reime Index: IR, Gross Motor Functional Classification System: GMFCS, Botulinum toxin tipe A (BotoxR): BTX A. Cerebral Palsy: PC.*

BACKGROUND AND AIMS: The purpose of this work is to study the therapeutic effectiveness of BTX A in the prevention and / or treatment of hip dysplasia or dislocation in spastic infantile PC. It has been carried out in the Department of Physical Medicine and Rehabilitation of the Interzonal Acute Hospital Specialized in Pediatrics (HIAEP) "Sor María Ludovica", in the city of La Plata, during the year 2016. **METHODS:** Children diagnosed with PC, aged 0-14 years, who had been treated with BTX A in adductor hip muscles, were selected from January 2014 to September 2016. A total of 22 hips, were included. Three evaluations were performed in the pre-infiltration period and at 6 months with ASH and IR, and at 3 months with ASH. It was considered a decrease or maintenance of IR, or increase of IR. **RESULTS AND CONCLUSIONS:** The results indicate that 63% of the cases presented a good response and that the result was not favorable in hips already luxated. It can also be concluded that the treatment with BTX A is effective in the treatment of focal spasticity in adductor hip muscles in patients with CP; Although the decrease in spasticity in these muscles is not directly related to the good response in the IR. The motor start-up functionality measured by GMFCS is the best predictor of response to this treatment and it is independent of the initial IR. It is considered necessary to expand the sample in order to obtain conclusions of greater statistical significance.

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FIRST DIAPHRAGM PACING STIMULATION SYSTEM IMPLANTED IN ARGENTINA: CASE REPORT AND SYSTEMATIC REVIEW

G.L. Garategui¹, J. Freire², O.L. ², M. Urquizo², L. Perez², C. Ciraolo¹

¹Neurosurgical Service of Italian Hospital of Buenos Aires

²General Surgery Service of Italian Hospital of Buenos Aires

Objective: To describe a case report of Diaphragm Pacing Stimulation implantation and do a systematic review of the procedure.

Material & Methods: A 8 years old girl sustained a spinal cord hematoma at the level C3-C6 when she born. After six days, she was referral to another hospital because she had an acute dyspnea and muscle hypotonic. She was hospitalized for kinesiology rehabilitation therapy and gastrostomy procedure was performed for feeding. After the surgery, two failures attempt of weaning were made and the patient was submitted to tracheostomy. A lot of weaning attempts were made without response. More later, the patient suffered a lot of complications because her health condition. In 2014 a multidisciplinary management team of doctors, nurses and therapist started planning for the implantation of a breathing pacemaker and the girl was implanted with a Diaphragm Pacing Stimulation System (DPS) in June. Nowadays, she combines 6 hours of spontaneous breathing with 6 hours of DPS.

Discussion: The DPS is a device that produce low-frequency electrical stimulation at a slow respiratory rate to condition the diaphragm muscle against fatigue in order to maintain ventilation. The system consists of internal leads in the phrenic nerves on both sides and connected to radioreceivers under the skin. An external transmitting box is connected an antenna that it send the stimuli to the radioreceivers and its translate the radio waves into a pulses that activate the leads and produce the ventilatory cycle.

Conclusion: This is an excellent alternative to mechanical ventilation in tetraplegic patients with chronic respiratory insufficient that can allow independent living, enhanced mobility and better quality of life in this kind of patients.

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LIFE SKILLS TRAINING FOR ADOLESCENT BURMESE REFUGEES RESETTLED IN CENTRAL INDIANA

F. Kuo¹, K.L. VanKoevering¹, N.S. Holland¹, K.M. Ewing¹, K.J. Gossett¹

¹School of Rehabilitation Sciences, Indiana University, Indianapolis, IN, USA

LIH Olivia's Place, Shanghai, China

Biographical Sketches

Fengyi Kuo is occupational therapy consultant at LIH Olivia's Place in China and Visiting Professor of Occupational Therapy at Indiana University Purdue University at Indianapolis, IN, USA. She maintains numerous certifications including: SIPT, Certified Psychiatric Rehabilitation Practitioner (CPRP), and Global Mental Health Trauma and Recovery by the Harvard Program in Refugee trauma (HPRT). She is the recipient of the 2013 AOTF Award for Community Volunteerism recognizing her works with Burmese refugees.

Abstract Synopsis

Refugees often face trauma, separation, and difficulty with acquisition of the host culture, which may negatively influence their self-efficacy. The authors implemented a group training focused on enhancing the life skills of adolescent Burmese refugees through a community-based program.

Learning objectives: At the conclusion of this discussion, participants will be able to

1. Recognize the depth and breadth of global health issues in refugees;
2. Understand the outcomes of a life skills training curriculum on development of self-efficacy among adolescent Burmese refugees resettled in central Indiana; and
3. Discuss how occupational therapists can be involved in public and private partnership from the perspectives of public health and wellness promotion.

Abstract

Objective: The objective of this study was to explore the outcomes of a life skills training on the self-efficacy of adolescent Burmese refugees who resettled in central Indiana.

Rationale/Background: Refugees often face trauma, separation, and difficulty with acquisition of the host culture that may negatively influence their self-efficacy. Community-based programs might be an appropriate approach to address developmental needs of youth refugees, by providing life skills training and building capacities.

Methods:

- *Participants.* A total of 27 students participating in the Upward College Program were enrolled in the life skills training during the academic year of 2012-2013 (n=27, mean age=17.33, 70.4% female). Inclusionary criteria included adolescent Burmese refugees in grades ten to twelve who were able to read and understand English, and had not previously been enrolled in life skills training.
- *Setting.* All training took place in a community high school classroom.
- *Design.* This was a mixed methods design study. Trained occupational therapy students completed all skills training, baseline and post-training assessments. The authors used Shapiro Wilks test for normality to check for normal distributions of all

data; Wilcoxon Signed Rank test or paired samples *t* test was then selected to compare pre and post training outcomes.

- Measures included: Generalized Self-Efficacy Scale (GSE, self-perceived efficacy); Program Evaluation Tool (P.E.T. – A, program feedback); Seattle Social Development and Rochester Youth Development (commitment to school); Attitude Toward Conflict; Denver Youth Survey (attitude toward school); Upward College Program Feedback Form (a Likert scale of knowledge, English skills, and ability toward college preparation); and qualitative feedback through curricular addendums, reflective notes and student comments.
- *Intervention.* The life skills training curriculum, adapted from *Tackling The Tough Skills*[™] (Trotta, 2000), addressed five modules: attitude, responsibility, communication, problem solving and college or job preparations. Participants engaged in ten one-hour group training, incorporating Bandura's Self-Efficacy theory and the logic model process.

Results: Descriptive and inferential statistics were conducted on the six assessment tools completed prior to and following each of the appropriate training modules. Scoring improved for all measures, but Wilcoxon Signed Rank test demonstrated no statistically significant difference between the GSE pretest and post-training at the 5-week interval ($p = .144$). The Upward College Program Feedback Form indicated the life skills training has a significant effect on student's English skills ($t = 7.51$, 95% CI = 1.628-2.943, $p = .001$), knowledge ($t = 4.89$, 95% CI = 1.396-3.604, $p = .001$) and self-perceived ability to prepare for college. The life skills training demonstrated potential for improving the skills development of self-efficacy and college preparation for participants. Qualitative thematic analysis revealed students' values in education, religious activities, relationships, future aspirations, helping others, and volunteerism within a variety of contexts.

Limitations: Study limitations include the absence of life skills assessments directly related to self-efficacy, difficulty acquiring accurate demographic data, and inconsistent attendance due to logistic issues such as location, evening hours and lack of transportation. Additionally, a small sample size of Burmese students simultaneously enrolled in the Upward College Program and lack of control, make the results difficult to generalize the program outcomes to the adolescent refugee population.

Conclusions: Adolescent refugees are often faced with obstacles and new opportunities during the resettlement process. Due to cultural differences, these opportunities may be perceived as a struggle. The findings suggest the importance of life skills training for adolescent refugees; however, further research is needed to determine its impacts and training effectiveness.

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Miscellaneous

COMMUNITY BASED REHABILITATION FOR DISPLACED PERSONS TO SUPPORT THEIR SELF-EFFICACY AND COMMUNITY INTEGRATION

F. Kuo¹

*¹School of Rehabilitation Sciences, Indiana University, Indianapolis, IN, USA
LIH Olivia's Place, Shanghai, China*

Abstract Synopsis

Human displacement produces barriers and a sense of loss that affect persons' capacity to participate in meaningful occupations. This short course will address challenges faced by displaced persons, and explore OT's role in working with refugees to support their self-efficacy and resettlement.

Abstract

People may be displaced from their homes and communities by disaster, war or conflict. They often experience psychological, social and physical trauma and separation from the familiar. They may have witnessed violence, be living in poor condition in temporary camps and feel incapable of moving forward in their lives. Displaced persons may have lost their past valued roles and be unable to adjust to new situations where language and cultural barriers profoundly impact their functional participation in the new communities. The experience of displacement and resettlement produce barriers that can negatively affect their self-efficacy and restrict their capacity to participate in meaningful activities and routines, including loss of valued roles, barriers to education, employment, healthcare, social support, cultural adaptation and transportation.

Self-efficacy was defined by Bandura (1977) as one's own perception of the ability to make life choices and to perform purposeful actions that affect an individual's own life. Self-efficacy, which strengthens an individual's resilience to adversity, is evident in 1.) one's level of confidence in the ability to perform individual components of a task or 2.) one's ability to overcome barriers. A high level of self-efficacy can play an essential role in overcoming the obstacles present throughout displaced persons' transition into their country of resettlement.

Clinicians practicing in community-based rehabilitation can play a vital role in aiding displaced persons' transition into their new environment through empowering their resilience and rebuilding their capacity, roles, routines and self-efficacy. Another powerful role for clinicians to undertake while working with displaced persons is to support the development of a stronger social support network and develop community based programs which are strength-based, client-centered and context-specific.

Integrating a variety of community supports has been shown to buffer the effects of isolation felt after migration has occurred. Through community based program development, clinicians such as occupational therapists practicing in community-based rehabilitation collaborate with community leaders and stakeholders to empower members of the community to recognize their own potential through meaningful occupations. The absence of meaningful activities and routines, commonly referred to as occupational deprivation, which often occurs in the lives of displaced persons may result in loss of role identity. Participation in productive, meaningful activities and structured daily routines are important components in establishing positive coping, personal control, and self-efficacy.

This presentation will address challenges faced by displaced persons and explore clinicians' role in working with refugees to support their self-efficacy and transition into new environments. In support of the US Department of Health and Human Services' Refugee Health Promotion and Disease Prevention (RHPDP) initiatives (HHS, 2016), we will present resources published by the Office of Refugee Resettlement (ORR) and the implementation of a community based life skills training program developed for displaced persons. Strategies to collaborate with non-governmental

organizations (NGOs) in support of displaced persons' self-efficacy, skill development and social support networks will be discussed. Through guided discussions, evidence-based resources and examples of community based programming, participants will recognize challenges faced by human displacement, understand needs and adaptations among refugees resettled in the United States, explore ways to empower displaced persons, and utilize strategies to help them deal with their personal and family trauma including those marginalized by gender, poverty, and disability.

Learning objectives: At the conclusion of the short course, participants will be able to

- Understand challenges faced in human displacement and the barriers which restrict the rights of displaced persons to meaningful community participation, including loss of valued roles, barriers to education, employment, healthcare, social support, cultural adaptation and transportation;
- Describe how clinicians can be involved at all stages of community integration for persons displaced by disaster, war or conflict; and
- Explore models to guide changes in social participation and self-efficacy through the perspectives of public health and empowerment.

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Miscellaneous

THE EFFECT OF WEIGHT BARING ALIGNMENT EXERCISE ON ANTERIOR PELVIC TILT IN CHILDREN WITH CEREBRAL PALSY

H. Ying¹, W. Qing-juan¹, Z. Fei-fei¹, Z. Qian-ying¹, X.U. Hui-rong¹

¹Department of Rehabilitation Medicine of Xinghai Hospital of Suzhou Industrial Park, Suzhou, Jiangsu, China, 215021

Objective To compare the effects of three therapies, a newly weight bearing alignment exercise(WBAE) which was designed by the author, the traditional strengthening exercise and the traditional standing exercise, on anterior pelvic tilt in the children with cerebral palsy.

Methods Design the WBAE to improve the alignments of the children with cerebral palsy. A total of 25 patients with spastic diplegia and anterior pelvic tilt were randomly divided into 3 groups, WBAE group, Standing group, and Strengthening group. The assessments of anterior superior iliac spine-posterior superior iliac spine angle(ASIS-PSIS angle), anterior-posterior angle(A-P angle) and 1min walk test were used for each patient before and after the study. These three therapies above were carried out respectively to the three groups and the time-dose for individuals was 20 min per day, 5 times per week and for 4 weeks. Each of the patients accepted the occupational therapy, speech and language therapy or sensory integration training for about 1.5 hours a day in all. **Results** Significant increases of ASIS-PSIS angle, A-P angle, and 1min walk test in WBAE group($P=0.00,0.00,0.02$), an marked increase of 1min walk test in Strengthening group($P=0.01$), and an increase of A-P angle in Standing group($P=0.02$) were recorded. When comparing the three groups with ANOVA($\alpha=0.05$), significant difference of the ASIS-PSIS angles between WBAE group and Strengthening group have been observed($P=0.02$). As for the comparison between any two groups, ASIS-PSIS angles of WBAE group and Strengthening group showed the statistic difference, and the difference in means of the angles was above 6° . **Conclusion** The WBAE has effect on ASIS-PSIS angle, A-P angle, and 1min walk test of children with spastic diplegia, especially on the curing of anterior pelvic tilt compared with the standing exercise and the strengthening exercise. The WBAE is a effective and efficient therapy for the children with cerebral palsy.

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EFFECTS OF DIFFERENT HYPERBARIC OXYGEN TREATMENT COURSES ON PERIHEMATOMAL EDEMA AND EXPRESSION OF AQUAPORIN-4 AND SUPEROXIDE DISMUTASE IN RATS WITH INTRACEREBRAL HEMORRHAGE

X. Li¹

*The Second Hospital of Hebei Medical University, Heping west road 215,
Shijiazhuang city of Hebei province, China*

Objective: To explore the effects of different courses of hyperbaric oxygen (HBO) treatment on the expression of water channel protein (AQP4) and superoxide dismutase (SOD) in the rat brain after intracerebral hemorrhage (ICH).

Method: A total of 52 male SD rats were randomly divided into 3 groups, normal group (12 rats), intracerebral hemorrhage group (20 rats) and hyperbaric oxygen therapy group (20 rats). Cerebral hemorrhage model was induced by collagenase. The rats according to different hyperbaric oxygen treatment were further divided into 4 subgroups: 1 week group, 2 week group, 3 week group and 4 week group, 3 rats in each group, cerebral hemorrhage group and the hyperbaric oxygen treatment group with 5 rats in each group. Hyperbaric oxygen therapy group after cerebral hemorrhage were given to the rats in 6h after the model was successfully prepared, the pressure was 2.0ATA, stabilized oxygen time HBO 60min treatment, 1 times /d, 7 times a week. Normal group and cerebral hemorrhage group were not given any intervention, all rats were kept in normal environment. The rats in each group were treated with brain tissue to retain part of brain tissue after the end of treatment period. The water content of brain tissue was measured by dry wet weight method, the expression of AQP4 was detected by immunohistochemical staining and determination of SOD by xanthine oxidase activity. The results of the experiment were processed by statistical analysis with SPSS19.0 software.

Results: 1. brain tissue water content: the water content of the brain tissue in cerebral hemorrhage group and hyperbaric oxygen treatment group was higher than

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PSOAS MAJOR (PM) MUSCLE INJECTION ACCURACY IN ADULT SPASTICITY (AS) MANAGEMENT

S. Sharma¹, A. Duong², A.M.R. Agur^{1,2}

¹*Division of Physical Medicine & Rehabilitation, Department of Medicine*

²*Division of Anatomy, Department of Surgery, University of Toronto, Toronto, ON M5S 1A8, Canada*

Introduction: PM is an important target in AS management using Botulinum Toxin A (BTX). There are multiple published reports of BTX injection in hip flexor spasticity in Cerebral Palsy but the target muscle described is iliopsoas (IP) rather than PM which is difficult to access from anterior groin approach used in studies with or without ultrasound (US) or EMG guidance. The PM injection technique from lumbar approach with US guidance is described in Anesthesia literature for Lumbosacral block but accuracy of the injection site within the muscle has not been studied. **Method:** We used a US guided lumbar approach of injection of 2 ml dye in embalmed cadaveric specimens. The abdominal contents were removed. The surface of PM, quadratus lumborum, aorta and inferior vena cava was digitized. (MicroScribe™ MLXDigitizer). The spread of the dye was localized within PM and digitized. All data was modelled in 3D (Autodesk Maya) and was used to analyze, in 3D space, the location and area of spread of the dye within PM. Safety of the technique was evaluated. **RESULTS:** *Study 1-* Dye in middle 1/3 of length, centre of muscle volume. Area = 12.5cm². Max Length = 7.2cm. Max Width = 1.8cm. *Study 2-* Dye in middle 1/3 of muscle belly, in the lateral side of muscle volume. Area = 10.8cm². Max Length = 7.0cm. Max Width =2.1cm. **CONCLUSION:** The PM was targeted accurately for injection in the desired area. The technique needs to be evaluated clinically.

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Miscellaneous

Functional Ambulation and Balance in Patients with Peripheral Nerve Palsy during Wearing Ankle Foot Orthosis

T. Matsushita¹, Y. Nishimura¹, T. Nakamura², Y.I. Kamijo¹, F. Tajima¹

¹Department of Rehabilitation Medicine, Wakayama Medical University, 811-1 kimiidera, Wakayama city, Wakayama 641-8509, Japan

²Department of Rehabilitation Medicine, School of Medicine, Yokohama City University, 3-9 Fukuura, Kanazawak-ku, Yokohama, Kanagawa 236-0004, Japan

Background and aim:

There are several studies that have examined merits of wearing ankle foot orthosis (AFO) in patients with hemiparesis, but little is known in patients with peripheral nerve palsy. Our aim was to examine whether AFO improves functional ambulation and balance in patients with unilateral lower-extremity palsy and to compare to patients with hemiplegia.

Methods:

We recruited 50 normal subjects (Con), 49 post stroke hemiparesis (PSH), and 13 lower-extremity palsy (LEP) from rehabilitation units of five hospitals in Japan [Case control study]. A distance during a 6-min walking test (WD_{6min}) and 10-m maximum walking speed (WS_{max}) were performed to assess functional ambulation and the Berg balance scale (BBS) was tested to assess functional balance with and without AFO.

Results:

WS_{max} were significantly lower in PSH and LEP without AFO than Con and faster in the two patient groups with AFO than that without AFO. WD_{6min} were significantly shorter in PSH and LEP without AFO than that in Con, but increased significantly in both patient groups after wearing the AFO. BBS was significantly lower in PSH and LEP without AFO than that in Con, but was significantly improved by AFO in both patient groups.

Conclusion:

Functional ambulation and balance were improved in patients with PSH and LEP by using AFO. The present results suggest that the use of AFO should be considered not only in PSH but also in LEP.

Document not received

ISPR7-0067

Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

THE ABILITY OF CALCANEAL AND MULTISITE QUANTITATIVE ULTRASOUND VARIABLES IN THE IDENTIFICATION OF OSTEOPOROSIS IN WOMEN AND MEN

A. Oral¹, S. Esmailzadeh¹, A. Yaliman¹, D. Sindel¹, P. Kursuz Koseoglu¹, T. Aydin¹

¹Istanbul University Istanbul Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Istanbul, Turkey

Introduction/Background

The aim of this study was to assess the ability of calcaneal and a multi-site quantitative ultrasound (QUS) variables in the identification of osteoporosis in women and men and to provide cut-off values for ruling osteoporosis in or out.

Material and Methods

We included 131 women and 109 men whose bone mineral density (BMD) at the spine and proximal femur was measured using dual-energy X-ray absorptiometry (DXA). Acoustic bone properties were also examined using both a calcaneal and a multisite QUS. We employed ROC analysis with the calculation of AUCs to evaluate the ability of both QUS devices to identify osteoporosis. We also calculated a lower and an upper threshold at a specificity of 90% and at a sensitivity of 90%, respectively, for the identification of osteoporosis along with a threshold/cut-off value with the best balance between sensitivity and specificity.

Results

While all calcaneal QUS parameters showed significant AUCs within the range of 0.712 [for Broadband Ultrasound Attenuation (BUA)] and 0.764 [for Speed of Sound (SOS)] in women and ranging from 0.661 (for BUA) to 0.735 (for SOS) in men, only radial SOS of the multisite QUS demonstrated a significant AUC value of 0.661 for identifying osteoporosis in women. A Quantitative Ultrasound Index T-score of -1.53 for women and -1.68 for men showed a sensitivity and specificity of 0.714 and 0.720 and 0.703 and 0.722, respectively.

Conclusion

Calcaneal QUS in both women and men and possibly radial SOS measurements of the multisite QUS in women may help the identification of those at higher or lower risk for osteoporosis.

No conflict of interest

ISPR7-0322

Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

HEIGHT LOSS AS THE PREDICTOR FOR OSTEOPOROSIS IN POSTMENOPAUSAL WOMEN

G. Stefanovski¹, M. Glogovac-Kosanović², S. Pjanić²

¹, Banja Luka, Bosnia - Herzegovina

²ZFRM Zotović, Rheumatology, Banja Luka, Bosnia - Herzegovina

Introduction/Background

Growth and height have its physical, psychical, emotional, social and cultural aspects. Loss of body height is accelerated after age of 50. Aim was to establish the connection between degree of loss of body height and decrease of bone mineral density (BMD) in postmenopausal women.

Material and Methods

The research included 68 women referred to DXA exam (Hologic QDR 4500). Inclusion criteria were: postmenopausal women and loss of height greater than 2cm compared to height at the age of 25. Monitoring parameters: DXA finding (BMD L-spine: T-score), body height (HAYENDRA stadiometry, HOLTAIN CRYMYCH, UK), anamnesis data on height at the age of 25. Participants: Group I (n=51; mean age 63.55±7.09): decrease in body height 2.0-4.0 cm and Group II (n=15; mean age 69.87±7.07): decrease in body height >4.0 cm. For statistical analysis we used Student t-test for independent samples (significance level p>0.05) and nonparametric Mann-Whitney U test (IBM SPSS Statistics 21.0; MS Office Word 2010 i MS Office Excel 2010).

Results

Average duration of menopause in participants in Group I was 15.65±7.65 years and in Group II 18.73±6.22 years (p=0.158). Decrease in body height was in Group I 3.00±0.80 cm and in Group II 5.40±0.51 cm (p<0.001). The loss of BMD was 26.04±8.47% in Group I and 36.20±6.78% in Group II (p<0.001).

Conclusion

Based on results of our research, we established that loss of height positively correlates with loss of BMD (p<0,05) and represents a significant predictor for osteoporosis in menopause.

No conflict of interest

ISPR7-0349

Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

RARE ADVERSE EFFECTS OF ZOLEDRONIC ACID INFUSIONS: ARTHRITIS AND UVEITIS

A.K. Cengiz¹, Z. Ozer², B. Cetin³

¹Sivas Numune State Hospital, Rheumatology, Sivas, Turkey

²Sivas Numune State Hospital, Physical Medicine and Rehabilitation, Sivas, Turkey

³Sivas Numune State Hospital, Ophthalmology, Sivas, Turkey

Introduction/Background

The most frequent adverse event reported in zoledronic acid infusions is acute phase response characterised by flu-like symptoms, fever, arthralgia, myalgia, nausea and headache. Arthritis after zoledronic acid infusion is rare and occurs mostly in joints with degeneration. Arthritis is hypothesized to be due to the release of proinflammatory cytokines secondary to activation of gamma-delta T lymphocytes. Ocular side effects that have been associated with bisphosphonate usage are conjunctivitis, uveitis, episcleritis, scleritis and keratitis. Zoledronic acid induced uveitis is a rare entity occurring mostly a short while after the infusion.

Material and Methods

Case report

Results

Case 1: A 72 years old female patient admitted to rheumatology department with polyarthritis in both hands , 18 hours after her first zoledronic acid infusion. She had no history of arthritis or a rheumatologic diagnosis other than osteoarthritis and osteoporosis. Erythrocyte sedimentation rate was 40 mm/h and c-reactive protein was only slightly elevated. RF, Anti-CCP, ANA were negative. With prednisolone 7.5 mg/day, polyarthritis resolved in 4 days time and did not relaps. One year later she didn't want to receive another zoledronic acid infusion. She is now on alendronate treatment for 9 months and her arthritis did not relaps.

Case 2: A 65 years old woman admitted to ophthalmology department with complaints of blurred vision, irritation in the eyes and periorbital swelling 24 hours after her first intravenous zoledronic acid infusion. She was referred to the rheumatology department with diagnosis of bilateral anterior uveitis by her ophthalmologist in order to exclude other possible causes of uveitis. Her examination didn't reveal any rheumatological finding other than osteoarthritis in both knees. With diagnosis of zoledronic acid induced uveitis topical steroids were prescribed and her complaints resolved completely in 2 days time.

Conclusion

Zoledronic acid induced uveitis and arthritis are rare entities. Physicians dealing with osteoporosis must be aware of these conditions.

No conflict of interest

ISPR7-0454

Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

THE CORRELATION BETWEEN MUSCLE STRENGTH, BONE MINERAL DENSITY, BONE MICROARCHITECTURE INDEX AND DURATION OF MENOPAUSE - IN HEALTHY POSTMENOPAUSAL WOMEN

K. Markovic¹, S. Mitic², F. Rozita³, K. Slavica⁴, S. Milena³

¹, Nis, Serbia

²Institute for Treatment and Rehabilitation " Niška Banja " – Niš, Department of rehabilitation, Niška Banja – Niš, Serbia

³Institute for Treatment and Rehabilitation " Niška Banja " – Niš, Department of rehabilitation, Niška Banja – Niš, Serbia

⁴Institute for Treatment and Rehabilitation " Niška Banja " – Niš, Department of Rehabilitation, Niška Banja " – Niš, Serbia

Introduction/Background

Estrogen protects bones from osteoporosis. Osteoclastogenesis increases the secretion of parathyroid hormone in menopause. This affects on muscle strength.

Material and Methods

Study examined 514 healthy postmenopausal women, which is made DXA-review at the lumbar spine and hip, also measuring TBS the lumbar spine. From the study have excluded persons with risk factors on bone microarchitecture. The average age was 63.4 years. According to the duration of menopause respondents were divided into 3 groups. The first, women with menopausal duration to 5 years (172 subjects), the second 6-10 years (149 subjects), the third with menopausal over of 11 years (193 subjects). The average T-score (BMD) was highest in the first group: -1.56 ± 0.36 (0.765 ± 0.039 g/cm²), in the second: -1.72 ± 0.60 (0.749 ± 0.065 g/cm²) and lowest in the third group: -1.78 ± 0.53 (0.736 ± 0.056 g/cm²)

Results

The average value of TBS amounted 1.232 ± 0.101 in the first group, in second: 1.207 ± 0.117 , in the third group: 1.199 ± 0.139 . The average muscle strength muscles of the hull, according to MMT, in the first group was: 4, in the second was: 3+ and in third group was: 3-. Statistical analysis was performed in SPSS system. Significant positive correlation was between BMD and TBS, L spine ($p < 0.001$) and between TBS and hip BMD ($p < 0.001$). A significant negative correlation was observed comparing the years menopause and muscle strength with TBS ($p < 0.001$) as well as with a hip BMD ($p < 0.001$), while the menopause, muscle strength of the hull and BMD L spine didn't correlate significantly ($p = 0.003$).

Conclusion

Any change BMD of the lumbar spine and hip, gives the change in TBS in the same direction. There was no significant variation of BMD of the lumbar spine with age of menopause, which may indicate the progression of degenerative changes of the spine. TBS is an independent parameter, which has the potential diagnostic value by itself, without BMD, muscle strength of the hull and the age of menopause.

No conflict of interest

ISPR7-0532

Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

INFLUENCE OF DIFFERENT TYPES OF PHYSICAL ACTIVITIES ON THE RISK OF VERTEBRAL FRACTURES IN POSTMENOPAUSAL WOMEN

H. Rybina¹, N. Grygorieva¹, V. Povoroznyuk¹

¹D.F. Chebotarev Institute of gerontology NAMS Ukraine,

Department of Clinical Physiology and Pathology of Locomotor Apparatus, Kyiv, Ukraine

Introduction/Background

There are conflicting views about the role of different types and modes of exercise trainings in the prevention and treatment of osteoporosis. In addition, there are mixed results about the influence of resistance, aerobic training, weight-bearing impact exercise or their combination in childhood on bone mineral density and risk of osteoporotic fractures in postmenopausal women.

The **aim** of the study was to examine the relationship between types of exercise trainings in the past and present and the risk of vertebral fractures in postmenopausal women (VF).

Material and Methods

We examined 115 postmenopausal women aged 50-87 years divided into two groups: the first group included 84 women without any osteoporotic fractures, and the second consisted 31 women with previous VF. We used the questionnaire about types and modes of exercise trainings and their duration. Vertebral fractures were confirmed by VFA-method (DXA). Statistical analysis was performed using relative-risk calculator.

Results

Our study did not find any significant association between types and modes of exercise trainings in the childhood and the risk of VF (RR=0.80, 95% CI=0.38-1.67, p= 0.55), including cyclic training (RR=0.69, 95% CI=0.25 - 1.91, p= 0.48), coordinating training (RR=1.81, 95% CI=0.73 -4.53, p= 0.20) and playing types in sports (RR=0.65, 95% CI=0.17 - 2.48, p= 0.53). However, it was shown the significant relationship between the VF and regular training exercises in present time (RR=2.73, 95% CI=1.45-5.14, p= 0.001).

Conclusion

Our study found the significant correlations between VF in postmenopausal women and current physical training however not with exercise training in the childhood.

No conflict of interest

ISPR7-0547

Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

LONG-TERM EFFECTS OF BACK EXTENSOR STRENGTHENING EXERCISES ON QUALITY OF LIFE IN WOMEN WITH OSTEOPOROSIS

S.A. Raeissadat¹, A. Khalil², M. Heidari Almasi², L. Sedighipour³, Y. Salek zamani⁴, M.R. Omid zohoor⁵

¹Shahid Beheshti University of medical sciences- Shahid Modarres Hospital, Physical and Rehabilitation medicine department, Tehran, Iran

²Islamic Azad university of Medical Sciences, Islamic Azad university of Medical Sciences, Tehran, Iran

³Shahid Beheshti University of Medical Sciences, Physical Medicine & Rehabilitation Research Center, Tehran, Iran

⁴Physical Medicine and Rehabilitation Research Center, Tabriz University of Medical Sciences, Tabriz, Iran

⁵Omid Rehabilitation Center, Omid Rehabilitation Center, Tehran, Iran

Introduction/Background

The aim of the present study was to evaluate the long term effect of back extensor strengthening exercises on health related quality of life in women with osteoporosis.

Material and Methods

In this randomized clinical trial, all 183 women with primary osteoporosis who entered the study were treated with pharmacotherapy, weight-bearing and balance training exercises. The case group additionally performed back extensor strengthening exercises at home. Patients filled out the Persian version of the Short Form (SF36) quality of life questionnaire. This questionnaire covers physical function, role limitations due to physical problems, bodily pain, vitality or energy level, role limitations due to personal or emotional problems, mental health, social function, and general health perceptions. Patients filled out the questionnaire at baseline and 6 months after entering the study. At the end, quality of life subscales were compared between two groups.

Results

At the end, all physical and mental parameters of the SF-36 questionnaire improved significantly in the case group, except for one subscale of mental health, compared to the control group. In the control group, only some physical health dimensions (bodily pain, role limitation, physical function, vitality), and mental health status as a mental health subscale improved.

Conclusion

considering a major impact of back extensor exercises on improving QOL in women with osteoporosis over the long term, these exercises should be prescribed in routine management of these patients.

No conflict of interest

ISPR7-0746

Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

PRIMARY HYPERPARATHYROIDISM AND SECONDARY OSTEOPOROSIS. CASE REPORT- 12 YEAR'S FOLLOW UP.

O. Ilic Stojanovic¹, M. Lazovic², N. Radosavljevic¹, M. Hrkovic³, S. Kostic³, T. Filipovic⁴, D. Sarac Radovic⁴, L. Djelic Azdejkovic⁵

¹Institute for Rehabilitation, Rheumatology rehabilitation, Belgrade, Serbia

²Institute for Rehabilitation, Cardiology rehabilitation, Belgrade, Serbia

³Institute for Rehabilitation, Department of functional diagnostics, Belgrade, Serbia

⁴Institute for Rehabilitation, Ambulatory rehabilitation, Belgrade, Serbia

⁵General hospital, Department of early rehabilitation, Krusevac, Serbia

Introduction/Background

The patient born in 1940, was observed from 2004 to 2016 in Institute of rehabilitation in Belgrade, Serbia. Patient had diffuse chronic pain in "all muscles and bones". She was treated before, by general practice doctor and PRM specialist in polyclinic without any improvement. No risk factors in personal history but high risk factors for fractures in the family history were observed (sister of two nonvertebral fractures, brother of hip fracture).

Material and Methods

During observation period a polyneuropathy was the dominant clinical findings. Hyperkyphosis with hump of thoracic part with spasm of paravertebral muscles on the thoracic and lumbosacral regions was found. Neurological motor and sensitive deficits wasn't observed.

Standard biochemical analysis and parameters of acute inflammation markers, were in reference ranges except ALP, PTH, total Ca, Ca ionized, Ca in 24/h urine. A Myeloma multiplex was excluded. The patient was sent to the endocrinologist with diagnosis of Primary Hyperparathyroidism with secondary osteoporosis and vertebral fractures Th7-Th10 in observation.

Results

Spine X-ray showed: Thoracic hyperkyphosis. Wedge deformation on Th7-Th10 vertebrae. DXA BMD measurements in spine and hip showed the osteoporosis. The patient was operated in 2004. Histopathology findings confirmed the Hyperplasia of parathyroid glands. Dynamic of investigated biochemical parameters and DXA BMD measurements are shown in table 1,2 and 3. She was treated with Alendronate from 04.02.2006. up to 2013 and from 2016. Fosavance 5600 IU was re-introduced in the therapy. Since July 2005. until today the therapy were calcimimetic - Cinacalcet, Letrox, and Metoprolol.

Table 1. Examined parameters of bone metabolism 2004-2011.

	Ca total	Ca ionized	P	PTH ng/l	TSH mIU/l	ALP IU/l	Osteocalcin ng/ml	β cross Laps ng/ml	25OH VITD nmol/l	Ca urine 24/h	P urine 24/h
	2.15-2.65	1.12-1.32 mmol/l	0.8-1.55							mmol/l	
03.2004.	2.44	1.22	0.60	147.5		305				12.5	25
06.2004.	2.65	1.32	0.92		1.9	267				15.4	20.3
07.2005.	2.73	1.32	0.62	98.8							
02.2006.	2.61	1.45	0.74	62.9	0.9	97					
07.2007.	2.70	1.32	0.70	78	2.6	84				13.5	19.8
06.2008.	2.44	1.24	0.94			70				14.4	34.5
09.2009.	2.70	1.38		96	86.4	1.5		ref.val.	ref.val.		
04.2010.	2.79	1.40			75	2.5		ref.val.	ref.val.		
09.2011.	2.6		1.38	0.70	100.4						

Table 2. Examined parameters of bone metabolism 2011-2016.

	Ca total	Ca ionized	P	PTH ng/l	TSH mIU/l	ALP IU/l	Osteocalcin ng/ml	β cross Laps ng/ml	25OH VITD nmol/l	Ca 24/h urine	P 24/h urine
	2.15-2.65	1.12-1.32 mmol/l	0.8-1.55							mmol/l	
09.2011.	2.8	1.38	0.70	100.4							
03.2013.	2.66	1.44	0.80	113.9	2.6	74	ref.val	ref.val	38		
10.2013.	2.74	1.41	0.80	68.7	1.4		upper border	upper border	160	14	
02.2014.		1.33	0.70	75.6	2.12		ref.val.	ref.val.	165		
03.2015.				113.9	2.3		ref.val	ref.val.			
12.2015.	2.87	1.54	0.86	91.6	1.3						
02.2016.	2.66	1.38	0.88	117	2.88	90	elevate	elevate			
10.2016.	2.61	1.22	0.67	114					70.3	10.2	31.8

Table 3. DXA BMD measurements

	D forearm	ND forearm	L1-L4	L2-L3	Neck	Total hip
	Tscore (SD) Zscore (SD)					
05.03.2004. <i>Osteocare DTX</i>	-3.7 -2.0	-4.1 -2.2				
18.03.2004. <i>(Hologic ZTP)</i>			-2.90 -1.40	-3.50 -2.00		
15.03.2005. <i>(Hologic ZTP)</i>			-2.51 -0.01	-2.91 -0.23		
08.04.2006. <i>(Hologic ZTP)</i>			-1.98 -0.20	-2.13 -0.40	-2.54 -0.57	-2.60 -1.24
31.03.2007. <i>(Hologic ZTP)</i>			-1.89 -0.05	-2.36 -0.54	-2.40 -0.37	-2.38 -0.97
16.04.2009. <i>(Hologic ZTP)</i>			-2.00 -0.1	-2.1 -0.0	-1.70 -0.00	-1.80 -0.40
12.03.2013. <i>(Hologic ZTP)</i>			-1.60 [-6.0%] +0.60	-1.50 +0.50	-1.90 +0.00	-1.80 -0.10
12.02.2015. <i>(Hologic ZTP)</i>			-1.50 +0.8	-1.60 +0.70	-1.70 +0.30	-2.20 -0.50

Conclusion

Despite the elevated values of PTH, therapy with Calcimimetic, and bisphosphonates improved the T-score level from osteoporosis to the osteopenia without progression of vertebral fractures compression. The VIT D restitution and repeated treatments of low level laser therapy on affected tendons led to the synergistic reduction of widespread chronic musculoskeletal pain syndrome caused by primary hyperparathyroidism.

No conflict of interest

ISPR7-0847

Musculoskeletal Conditions - Bone Diseases (e.g. Osteoporosis)

OSTEOPOROSIS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE

G.R. Rekalde Aizpuru¹, E. García Álvarez¹, G. Cuko², E. Aparicio Jiménez³, J. Acosta Rueda¹, C. Parra Soto¹

¹Hospital Clínico Universitario Lozano Blesa, Servicio de Medicina Física y Rehabilitación, Zaragoza, Spain

²Hospital Royo Villanova, Servicio de Medicina Física y Rehabilitación, Zaragoza, Spain

³Hospital Reina Sofía, Servicio de Medicina Física y Rehabilitación, Tudela, Spain

Introduction/Background

Chronic obstructive pulmonary disease (COPD) is a lifestyle-related chronic disease associated with morbidity and mortality.

It is associated with different comorbidities found in all stages of COPD. They have significant impact in terms of morbidity, mortality. Management of comorbidities should go together with the management of COPD as this will also have an effect on the final outcome in COPD patients. Various comorbidities in COPD include: cardiovascular disease, skeletal muscle dysfunction, and osteoporosis.

Osteoporosis (OP) is a significant comorbidity in COPD patients. Tobacco smoking, systemic inflammation, vitamin D deficiency, and the use of oral or inhaled corticosteroids (ICSs) are some of the risk factors.

Material and Methods

Aim: describe the osteoporosis in a subgroup of COPD patients who were undergoing a Pulmonary Rehabilitation Program (PRP) in the Rehabilitation Unit with risk of fractures.

We assessed the fragility fracture risk using FRAX and observed if they were presenting morphometric fractures in their lateral chest x-Ray.

Blood analysis (Calcium (Ca), vitamin D (VitD) and parathyroid hormone (PTH) levels) and bone mineral density (BMD) measured with densitometric image, were made in risk patients.

Results

Assessment of 39 patients between 1-7-2015 and 30-10-2106.

18 (47%) were assessed for OP, 94% of them had morphometric fractures in the x-Ray.

11 (78,5%) presented VitD alterations (value 30-150). VitD Mean 20,76 (SD 12).

7 (53,8%) presented hyperparathyroidism secondary to VitD deficiency.

BMD	Median (SD)	>-1,5 N(%)	-1,5 and -2,5	< -2,5 N(%)
T-Femoral neck	-1,56 (0,9)	6(42,8)	3 (21,4)	7 (53,8)
T-Total hip	-1,53(1,2)	7(58)	2(16,6)	2(16,6)
L1-L4	-1,14(1,9)	8(57,2)	2(14)	4(28,6)

11 patients (78,5%) received treatment: 4 (28,6%) Teriparatide, 4 (28,6%) alendronic acid, 2 (16,6%) Denosumab and 6 (42,8%) vitamin D supplementation.

Conclusion

Comorbidities are common in COPD patients, and their assessment should be done routinely. Osteoporosis is a common comorbidity in COPD patients and is associated with significant morbidity. Early diagnosis and treatment prevents future fracture risk.

No conflict of interest

ISPR7-0052

Musculoskeletal Conditions - Miscellaneous

REHABILITATION INSTEAD OF SURGERY: WHEN THE PATIENT SHOULD BE EVALUATED FIRST BY A PHYSIATRIST FOR THE TREATMENT OF MUSCULOSKELETAL INJURIES (MI)

T. Nakazato¹, G. Camacho¹

¹CEDOMUH, Clínica Especializada en Dolor Muscular y del Hueso, Lima, Peru

Introduction/Background

Most patients with MI attend surgical specialties for treatment (such as orthopaedics or neurosurgery). These usually prescribe invasive procedures to fix the damage. On the contrary, physiatry is a non-surgical medical specialty that does not focus on the injury, but on impairments and disabilities to restore functioning despite the damage. Several studies reveal that outcomes of surgical and conservative treatments are similar (Thomas KC et al, Spine 2007; Katz JN et al, N Eng J Med 2013; Kukkonen J et al, J Bone Joint Surg Am 2015). We present cases report of common MI who were recommended surgical treatments, but attended a physiatric consultation for a second opinion. They agreed to receive a conservative rehabilitation program with the aim of avoiding surgery.

Material and Methods

Eight patients with common MI: Three herniated lumbar discs, two meniscal tears and three full-thickness tear of supraspinatus tendon. After medical evaluation each received treatment including drugs (NSAIDs, analgesics, muscle relaxants, antidepressants/anticonvulsants), physical therapy and infiltrations/dry-needling as needed.

Results

After three months all patients relieved their pain and returned to their usual daily routine. At six-month follow-up they maintained their improvement and none of them required surgery.

Conclusion

Patients with MI who were recommended surgery could be treated successfully with rehabilitation. They should attend a physiatrist for initial evaluation or at least for a second opinion. Non-operative treatment is a reasonable first strategy, with surgery reserved for the minority who do not have improvement. Physiatry needs to be seen as a primary option for MI management, and not only as a post-surgery (or tertiary) intervention. The impact of this approach may be huge in our society, with a significant reduction of costs and surgical-related complications.

No conflict of interest

ISPR7-0113

Musculoskeletal Conditions - Miscellaneous

POSTERIOR TIBIAL NERVE LOCATION AT THE TARSAL TUNNEL IN NORMAL POPULATION

S.Y. Chung¹, D.Y. Park¹, J.S. Yoon¹

¹Guro Hospital Korea Univ Colledge of Medicine, Physical rehabilitation and medicine, Seoul, Republic of Korea

Introduction/Background

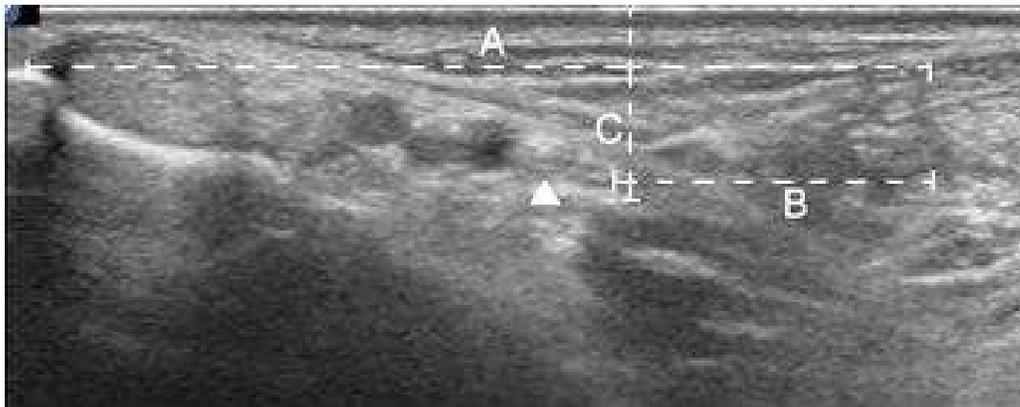
Tarsal tunnel syndrome is arising from damage of posterior tibial nerve or its branches under the flexor retinaculum. There are two tendons and vessels just anterior to posterior tibial nerve (PTN): tibialis posterior tendon, flexor digitorum longus tendon and posterior tibial vessels. These structures could be damaged during injection to PTN.

The aim of our study is to present location of PTN in normal population with ultrasound to provide data when performing injection to PTN.

Material and Methods

We included 31 volunteers. The inclusion criteria were: 1) no varus or valgus deformity of the foot, 2) no subjective discomfort on the sole and leg, 3) no history of previous fractures or surgery in the ankle and foot. We excluded obese population whose BMI exceeds 30 kg/m².

The ultrasound examination was done with linear probe. Three parameters were evaluated: A) distance between the most prominent point of medial malleolus and anterior margin of the calcaneal tendon, B) distance between the posterior side of PTN and anterior margin of the calcaneus tendon, and C) depth of PTN from the skin. The relative location of PTN was measured as $(A-B)/A \times 100(\%)$. Additionally, we analyzed the location of PTN according to sex and body mass index.



Results

The mean depth of PTN was 0.89 ± 0.18 (cm). The relative location of PTN in tarsal tunnel was $64 \pm 5(\%)$. There was no significant difference in mean depth and relative location between male and female groups. There was no significant difference in mean depth and relative location among normal, overweight and pre-obese groups of male volunteers and among underweight and normal groups in female volunteers.

Sex	Category (BMI)	No.	Depth (skin to PTN, cm)	Relative Location (%)
Male	Normal (18.5-22.9)	14	0.85±0.13	62±10
	Overweight (23-24.9)	12	0.89±0.11	66±4
	Pre-obese (25-29.9)	6	0.96±0.25	68±6
Female	Underweight (<18.5)	6	0.88±0.08	65±5
	Normal (18.5-22.9)	21	0.84±0.12	64±5

Conclusion

Our study showed the relative location and depth of PTN at the medial malleolus level in normal population with ultrasound. The anatomical study may provide safer injection to PTN because tendons and vessels are located anteriorly to PTN.

No conflict of interest

ISPR7-0114

Musculoskeletal Conditions - Miscellaneous

NEW TECHNOLOGY OF THERMOTHERAPY: FOCUSED MICROWAVE IN MUSCULOSKELETAL DISEASE.

D.Y. Park¹, S. Kang¹, J.S. Yoon¹, J.Y. Kim², S.H. Son²

¹Guro Hospital Korea Univ College of Medicine, Physical rehabilitation and medicine, Seoul, Republic of Korea

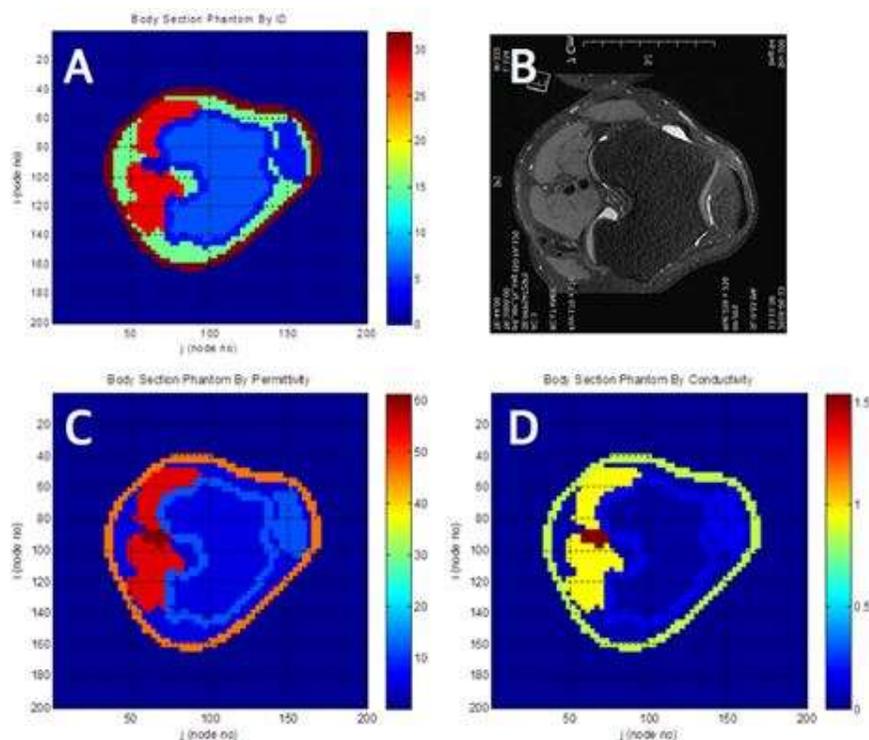
²Radio Technology Research Department, ETRI, Daejeon, Republic of Korea

Introduction/Background

Recently, microwave system capable of inducing localized hyperthermia had been developed. In many musculoskeletal diseases, focused microwave thermotherapy could be useful for pain relief and treatment of pathology. We have developed the algorithm of focused heat generation using microwave and investigated the simulation of localized thermal increase using the algorithm in knee pathology model.

Material and Methods

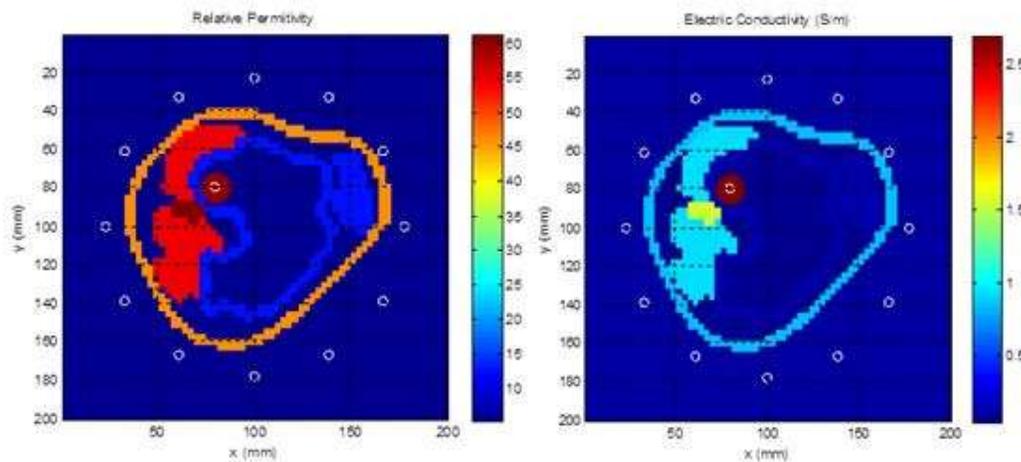
First, the electrical phantom model of normal knee structures was developed. The tissues around the knee were sectioned according to the signals in normal magnetic resonance image (figure 1).



Then the pathologic phantom model was developed which the pathology was located in posterior distal femur. After mapping of pathologic phantom model according to permittivity and conductivity, we performed electromagnetic analysis. In forward analysis, the signals from a transmitter in target area were analyzed at multiple receivers. In reverse analysis, the transmitter was removed and the signals from multiple transmitters, which were receivers in forward analysis, were analyzed whether they were focusing at the target area.

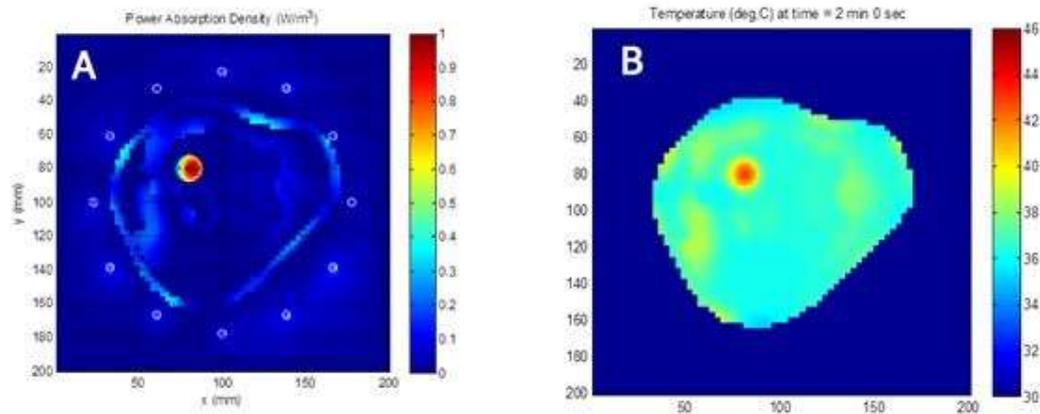
In figure 2, the antenna design in this simulation analysis is presented. The Power absorption density

was used for analysis of thermal focusing at target area. The background temperature was hypothesized to be kept at 30°C during the simulation. The temperature of phantom at initial stage was set at 36°C. We simulated the focused thermal increase to 43°C at target area.



Results

We confirmed that the temperature was increased at target area to 43°C. Simultaneously, the temperature around the target area was below 40°C. The time for thermal increase was 2 minutes, and took 5 minutes with lower electrical power. (figure 3)



Conclusion

In conclusion, we had found the possibility of application of the focused microwave thermal therapy in musculoskeletal disorders. In future, the focused microwave therapy might be one of the non-invasive treatment tool in musculoskeletal disease such as osteoarthritis or tendinitis.

Conflict of interest

Disclosure statement:

This work was supported by Electronics and Telecommunications Research Institute (ETRI) grant funded by Korean government. [16ZR1300, Research on Beam Focusing Algorithm for Microwave Treatment]

ISPR7-0298

Musculoskeletal Conditions - Miscellaneous

EFFECTS OF OZONE INJECTION IN THE TREATMENT OF WOMEN WITH CARPAL TUNNEL SYNDROME: A RANDOMIZED CLINICAL TRIAL

F. Hojjati¹, S.A. Raeissadat², S.M. Rayegani¹, M.H. Bahrami¹, S.M.R. Nezamabadi¹

¹Shohada-e-Tajrish Hospital, Physical medicine and rehabilitation, Tehran, Iran

²Shahid Modarres Hospital, Physical Medicine and Rehabilitation, Tehran, Iran

Introduction/Background

Carpal tunnel syndrome (CTS) is the most common entrapment neuropathy in the upper limb. Steroid injection has been used as an acceptable conservative treatment in many cases of non-severe CTS. Recent studies have shown promising effects using other injection therapies such as progesterone, insulin and ozone in improvement of pain and function in patients with mild and moderate CTS. The aim of this study was to evaluate the effects of a single ozone injection in management of CTS.

Material and Methods

In this randomized clinical trial 40 patients with electrodiagnostically confirmed CTS were studied. Patients were divided into 2 groups, cases and controls. Both groups used a wrist splint for 8 weeks, an injection of 4 milliliter ozone (10 microgram /DL) was added to the treatment received by case group. Outcome measures included: pain (based on visual analog scale), symptom severity and functional status (based on Boston carpal tunnel questionnaire) and median nerve sensory peak and motor distal latencies (measured by electrodiagnostic nerve conduction study), checked before and 10 weeks after treatment.

Results

At the end of trial, pain, function and electrodiagnostic measures were significantly improved in both groups, compared to pre-treatment assessments (P-value<0.05). These improvements were significantly higher in the cases group compared to control group, except for electrodiagnostic results. Although post-treatment electrodiagnostic improvement was higher in cases group, the difference was not statistically significant.

Conclusion

As ozone therapy is a low-cost treatment and has no significant side effect, in tandem with a wrist splint, it can be beneficial in short term management of mild to moderate CTS.

No conflict of interest

ISPR7-0352

Musculoskeletal Conditions - Miscellaneous

CAN WE HAVE A FUNCTIONAL JOINT WITHOUT AN ANATOMICAL ONE? - CLINICAL CASE

C. Martins Moreira¹, P. Caetano², A. Correia¹, L. Vouga¹, P. Barros¹

¹Centro Hospitalar do Porto - Hosp Santo Antonio, Serviço de Fisiatria, Porto, Portugal

²CHVNG/E, USF Nova Via, Porto, Portugal

Introduction/Background

The mobility and structure of a joint are two indissociable entities that we tend to consider inseparable. But what can we expect in terms of functionality when a patient loses the entire bone structure of a joint? That's the set point of this clinical case.

Material and Methods

Woman, 58 years old, autonomous.

Elbow arthritis, with 10 years evolution and increasing disability leading to elbow arthroplasty in August 2012. A few months later, a prosthesis infection was diagnosed, with necessity of revision arthroplasty in two stages (October 2013 and August 2014). Posteriorly underwent three new surgical debridement due to infectious complications that led to total extraction of surgical components in April 2016, becoming definitely without any articulation, either physical or functional.



ADC1

C: 2048,0, W: 4096,0
C=2048,0, W=4096,0 1/2
Age at exam 62 anos
S: 200



25-10-2016, 13:09:26

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1

ADC1

C: 2048,0, W: 4096,0
C=2048,0, W=4096,0 1/2
Age at exam 62 anos
S: 200

E



L

25-10-2016, 13:10:06

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Cotovelo LAT
2

Results

During these period the patient spent several months in hospital, mainly in intensive care without any physiotherapy. Her autonomy and self confidence were lost and became chronically medicated for pain.

She was forwarded to Rehabilitation query in October 2016, being unable of any functional movement with left harm. The pain was limiting her shoulder movement, there were no control of elbow and arm and hand had a severe amyotrophy.

Conclusion

The aim of the rehabilitation program was reduce pain and improve mobility and muscle function. We had the necessity of search for motor points because all the anatomy was changed and she started electrical stimulation in addiction to active/assisted mobilization of shoulder, elbow, wrist and hand. Progressively she began practicing active daily living activities, improving substantially her autonomy, which is patent in the videos taped throughout the rehabilitation program, showing that we can have a functional articulation without a physical one!

No conflict of interest

ISPR7-0424

Musculoskeletal Conditions - Miscellaneous

MORBIDLY OBESE SURGICAL PATIENTS IN A GREEK GENERAL HOSPITAL: DIFFICULT TO HANDLE FOR POSTOPERATIVE RECOVERY

I. Christodoulou¹, G. Grigoriadis², G. Dounias¹, N. Peitsidis¹, V. Kelesidou¹, D. Gonezou¹

¹G.Papanikolaou General Hospital, B' Surgical Department, Thessaloniki, Greece

²G.Papanikolaou General Hospital, Physical Therapy Unit, Thessaloniki, Greece

Introduction/Background

Morbid obesity cannot be handled as a common comorbidity. Bariatric Units are able not only to prevent the fast weight loss which triggers immunosuppression and subsequent complications, but also support the physical rehabilitation thanks to the adequacy of human resources. Aim of our study is to present the problems arising from the lack of a bariatric unit in our Hospital, and the consequences for our morbidly obese patients.

Material and Methods

This is a case series presentation with three morbidly obese women, 49,58 and 60 years old respectively, and one man, of 60 years old. The 49 year old woman, 139 kilos, underwent a sleeve gastrectomy. The 58 year-old woman, 130 kilos, underwent a total thyroidectomy, a tracheostomy and a gastrostomy. The 60-year old woman, 147 kilos, underwent a Whipple procedure for pancreatic cancer. The 60 year old man, weighing 220 kilos, underwent a hernia correction for a strangulated periumbilical ventral hernia.

Results

The 60 year old man died after a long stay in Hospital (4 months). He was operated 2 times, because of postoperative infection of his surgical wound. This patient suffered from chronic pulmonary disease and sleep apnea. The patient with the pancreatic cancer has presented a paraplegia for 4 months now and managed to get out of Hospital and enter a Rehabilitation Center. The 49 year old woman, presented a severe paraparesis for 2 months, and stayed in Hospital for about 4 months. The 58- year old woman managed to maintain a pararetic gait for 5 months so far.

Conclusion

Morbidly obese patients are difficult to handle in General Hospitals. The postoperative care is not enough, including the rehabilitation of gait. We assume that morbidly obese patients should be admitted only in Hospitals that have bariatric units, either they are to be operated for a bariatric operation or not.

No conflict of interest

ISPR7-0441

Musculoskeletal Conditions - Miscellaneous

SYNOVIAL CHONDROMATOSIS OF THE SHOULDER: A DIAGNOSTIC CHALLENGE

J.A. Aroca Arroba¹, N. Jain², C. Smith²

¹HOSPITAL GERMANS TRIAS I PUJOL, Physical medicine and rehabilitation, BADALONA BARCELONA, Spain

²Vanderbilt University, Physical medicine and rehabilitation, Nashville, USA

Introduction/Background

We present a case report of primary synovial chondromatosis (SC), presented to a sports medicine rehabilitation clinic

Material and Methods

A 56-year-old woman with bilateral shoulder pain mildly limited her activities of daily living. There was no history of trauma, or inciting events. On physical examination, the patient experienced notable pain on the left shoulder without instability. After physical therapy she continued to experience pain. Her forward flexion range of motion was to 150 degrees and abduction to 120 degrees. The MRI demonstrated SC with loose bodies in the left glenohumeral joint, and a moderate to large effusion. The patient was sent to orthopedics and underwent a shoulder arthroscopy with total synovectomy. After surgical intervention and rehabilitation 3 times a week, her range of motion and strength showed a satisfactory evolution

Results

Few cases of SC of the shoulder have been documented, is a rare arthropathy so there is often a significant delay in diagnosis, with most cases averaging 5 years. Clinical symptoms are generally nonspecific, limitation in range of movement and mechanical symptoms can occur as result of the free fragments. SC can be further classified into primary and secondary that is associated with degenerative joint disease, trauma, or neuropathic arthropathy. Both types may have similar clinical findings, but histological and radiographic differences are present

Conclusion

Physicians must make a conscious effort to consider SC in appropriate cases, since osteoarthritis may coexist with SC, a high index of suspicion is needed because there is a rare risk of transformation of the lesion into synovial chondrosarcoma

No conflict of interest

ISPR7-0555

Musculoskeletal Conditions - Miscellaneous

PARTICIPATION IN THE EHLERS DANLOS SYNDROME AND FIBROMYALGIA: USING THE GHENT PARTICIPATION SCALE (GPS) AND THE WORK REHABILITATION QUESTIONNAIRE (WORQ) FOR MAPPING

S. De Baets¹, P. Calders², F. Malfait³, G. Vanderstraeten⁴, G. Van Hove⁵, D. Van de Velde¹

¹*Ghent University,*

Faculty of medicine and health care sciences - Department of rehabilitation sciences and physiotherapy - occupational therapy program, Ghent, Belgium

²*Ghent University,*

Faculty of medicine and health care sciences - Department of rehabilitation sciences and physiotherapy, Ghent, Belgium

³*Ghent University Hospital, Centre for Medical Genetics, Ghent, Belgium*

⁴*Ghent University, Faculty of medicine and health care sciences., Ghent, Belgium*

⁵*Ghent University, Faculty of psychology and educational sciences - centre for disability studies, Ghent, Belgium*

Introduction/Background

The Ehlers Danlos Syndrome (EDS) comprises a clinically and genetically heterogeneous group of hereditary disorders of connective tissue that are generally caused by a collagen synthesis defect (Parapia & Jackson, 2008). In general, EDS is a chronic musculoskeletal disorder, the severity can range from mild symptoms in undiagnosed cases to more severe forms (Hagberg et al., 2004). EDS affects many aspects of daily life. It is a complex, chronic disorder leading to disabilities which can limit daily activities (Hagberg et al., 2004). Several studies have reported that the EDS-HT produces physical and psychosocial impairments and thus reduces participation in work and leisure time activities (Berglund, Nordström, & Lützen, 2000). The effects of the disorder manifest physically, emotionally and socially. 'Living with limitations' is a central theme of EDS patients' lives (Berglund et al., 2000). Pain, fatigue and other symptoms interfere with everyday functioning.

Material and Methods

This study included patients with the Ehlers Danlos Syndrome, diagnosed by the multidisciplinary team of the Centre for Medical Genetics at the University Hospital of Ghent. We also included patients with fibromyalgia and a healthy control group. Data were collected using a survey method. The Ghent Participation Scale gives an overview of the level of participation in 3 dimensions: (1) performing activities according to preferred choices and wishes; (2) performing activities leading to social appreciation and acceptance and (3) the need to delegate activities. The WORQ questionnaire was used to assess and evaluate the vocational related participation.

Results

A strong evidence base exists to assume that there's a different pattern of participation in EDS and Fibromyalgia, compared to the healthy control group. This study gives insight in the restrictions on the level of participation in daily life.

Conclusion

The results can give 'fruitful' information regarding how to guide these patients in clinical practice.

No conflict of interest

ISPR7-0774

Musculoskeletal Conditions - Miscellaneous

RHEUMATIC DISEASES PROFILE IN PHYSICAL AND REHABILITATION MEDICINE

DEPARTMENT OF MAHDIA (TUNISIA)

M. Rezik¹, M. Sghir¹, I. Ksibi², N. Gader¹, S. Jerbi³, W. Kessomtini¹

¹CHU Tahar Sfar, Department of Rehabilitation- Tahar Sfar hospital, Mahdia, Tunisia

²Military Hospital, Physical Medicine and Rehabilitation, Tunis, Tunisia

³CHU Tahar Sfar, Department of Radiology- Tahar Sfar hospital, Mahdia, Tunisia

Introduction/Background

Describe rheumatological characteristics of patients followed in a Physical Medicine and Rehabilitation (PMR) in order to adapt the management and improve the quality of care.

Material and Methods

Retrospective descriptive study conducted over a period of 4 years (2012-2015) on the records of 1612 patients referred to the PRM consultation for rheumatological diseases.

Results

There were 839 men (52%) and 773 women (48%). The mean age was 43 ± 3 years. The main spinal disorders were back pain (17.12% of cases), neck pain (16.31% of cases), common sciatica (10.42% of cases), scoliosis (3.22% of cases), the cervicobrachial neuralgia (2.91% of cases), cervical-thoracic outlet (2.17% of cases), ankylosing spondylitis (0.93% of cases), Scheuermann's disease (0.74 % of cases), psoriatic arthritis (0.124% of cases), infectious spondylitis (0.062% of cases) and Forestier's disease (0,062% of cases). The abarticular shoulder disorders were represented by sub acromial conflict (11.35% of cases), rotator cuff tendinopathy (7.44% of cases) and adhesive capsulitis (6.01% of case). Degenerative knee conditions regrouped osteoarthritis (12.22% of cases) and the patellofemoral syndrome (5.70% of cases). As for hand rheumatic diseases, it was carpal tunnel syndrome (1.24% of cases), Dupuytren's disease (0.18% of cases), rhizarthrosis (0.124% of cases), rheumatoid arthritis (0.062% of cases) and the trigger finger (0.062% of cases). Osteoarthritis was encountered in two patients (0.124% of cases) and epicondylitis in 22 patients (1.36%).

Conclusion

Although this study shows the diversity of rheumatic diseases encountered in MPR, it reveals that some diseases such as rheumatoid arthritis and ankylosing spondylitis whose rehabilitation treatment is important are rarely referred.

No conflict of interest

ISPR7-0253

Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

THE ASSOCIATION BETWEEN ANTICHOLINERGIC DRUG USE AND REHABILITATION OUTCOME IN POST-ACUTE HIP FRACTURED PATIENTS

A. Hershkovitz¹, R. Nisaan¹, S. Brill¹

¹Beit Rivka' Geriatric Rehabilitation Center, "D", Petach Tikva, Israel

Introduction/Background

Objective: To evaluate whether anticholinergic (AC) drug use is associated with rehabilitation achievement in post-acute hip fractured patients.

Material and Methods

Design: Retrospective cohort study.

Setting: Post-acute geriatric rehabilitation center.

Participants: 869 hip fractured patients admitted from 1/2011-10/2015.

Measurements: Two common four-point scales were used to quantify the AC burden: the modified Anticholinergic Risk Scale (mARS) and the Anticholinergic Cognitive Burden Scale (ACB). Main outcome measures were the Functional Independence Measure (FIM) instrument, motor FIM (mFIM), Montebello Rehabilitation Factor Score (MRFS) on the mFIM and length of stay (LOS). Satisfactory functional gain was defined as an mFIM MRFS score above median value. The associations between AC burden and clinical, demographic and comorbidity variables were assessed by the Kruskal Wallis and chi-square tests. Logistic regression was used to determine if the AC burden was an independent predictor for achieving a satisfactory functional gain.

Results

Results: Patients with a high AC burden had a significantly higher rate of higher education, resided in nursing homes, waited a longer period of time for rehabilitation, were less independent pre-fracture and had a higher rate of vascular disorders, depression and Parkinson's disease compared with patients with a lower AC burden. They also exhibited a significantly lower FIM score on admission and at discharge from rehabilitation and a lower FIM score change and extracted less of their rehabilitation potential compared with patients with a lower AC burden. LOS was independent of the AC burden. Finally, an admission ACB score negatively impacted the patients' ability to achieve a satisfactory functional gain (OR .80,95% CI, .67-94; p=.008).

Conclusion

Conclusion: Post-acute hip fractured patients with an increased AC drug burden are less likely to achieve a favorable rehabilitation outcome

No conflict of interest

ISPR7-0256

Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

SIMULTANEOUS TRAINING EARNINGS IN CON-TREX® MJ AND ELECTRICAL STIMULATION IN MUSCULAR ATROPHY. CASE PRESENTATION

P.L. Pazo Mollineda¹, C.P. Vianka²

¹, Boyeros, Cuba

²Centro Nacional de Rehabilitación Julio Díaz González, Vice- Dirección, La Habana, Cuba

Introduction/Background

Background. Muscle atrophy refers to a decrease in muscle size, strength losing this because of the relationship with its mass. This can be controlled by stimulating pathways that induce muscle hypertrophy or increased muscle mass or size. Currently we isokinetic training evaluation and giving us a functional block diagram with a well-off resistance and controlled rate.

Material and Methods

Description of the case. Male patient, 30-year-old top athlete, the 07/10/2015 suffers muscle rupture in right hamstring, preventing its continuation and competitive sports training, leaving sequels to continue his career, 22.01.2016, he received at the National Rehabilitation center Julio Diaz, applying a program of 27 days, including evaluation and training system CON-TREX® MJ simultaneous electrostimulation. The evaluation was conducted in knee flexion and extension at the beginning and end, in Isokinetic classic, 250 Nm, with / mode with 60 ° / s in 5 repetitions.

Results

Result. The results were in terms of force applied, as in Max. 278.3 [Nm] of 152.2 in extension and 192.8 97.8 in flexion, maximum power [W] obtained was 738.3 from 159.9 in extension and 202.1 102.2 flexion, the average work [J / kg]] corresponds to the average work done in each direction of movement, from 1.42 to 3.08 for extension and flexion 1.07 to 2.40, thereby increasing muscle tone and strength.

Conclusion

Conclusions / Recommendations. With simultaneous training-Trex MJ and electrostimulation produced a favorable response for muscle atrophy, and with improved patient satisfaction, it would be desirable to evaluate the efficacy of this therapy in a randomized controlled athletes same clinical trial mode.

No conflict of interest

ISPR7-0646

Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

EXPERIENCE IN THE MANAGEMENT OF POST-TRAUMATIC POSAL TALONAVICULAR PSEUDOARTROSIS, WITH EXTRACORPOREAL SHOCK WAVE THERAPY. CASE REPORT

E.D.P. Cruz Vasquez^{1,2}, C.T. Esquivia Pajaro^{1,2}

¹Universidad Militar Nueva Granada, Cundinamarca, Bogota, Colombia

²Hospital Militar Central, Cundinamarca, Bogota, Colombia

Introduction/Background

The pseudoarthrosis talonavicular joint refers to a failure in the consolidation of the fracture with the consequent formation of "false callus" or false adhesion to that level. At present, extracorporeal shock wave therapy (TOCH) is an established method of non-surgical treatment with the best evidence in patients with bone problems, especially fractures and pseudoarthrosis. In the long term, it may improve perfusion of the blood leading to vasculogenesis with improvement in bone perfusion, therefore it may decrease the risk of fracture and lead to a significant increase in angiogenic markers of neovascularization.

Material and Methods

A 33-year-old male patient with a 12-year clinical course consisting of antipersonnel mine trauma with diagnosis of fracture of the talus, fibula, fourth metatarsal and calcaneus left foot, with functional limitation and pain. He has received multiple surgical interventions, so that he presents a delay in the consolidation process at the level of the talonavicular joint, as evidenced by the radiological examination. (See Figure 1).

Patient was referred to our service 11 years after the traumatic event occurred. According to initial assessment of pain by Analog Visual Scale (EVA) 10/10. Patient is considered candidate for shockwave therapy. It receives 8 sessions with a frequency of 14 beats per second, intensity of 2 Bar and 3000 beats per session.



Results

After the sessions, control x-rays were taken (see Figure 2) where improvement in the area of pseudoarthrosis at the talonavicular level with a significant pain improvement of the current EVA of

2/10 is evident.



Conclusion

Treatment with extracorporeal shock waves in our particular case provides an effective acceleration of bone metabolism and osteogenesis with anatomical and functional recovery at the site of pseudoarthrosis. This confirms the usefulness of this therapy in cases of failure in bone healing in fractures and that have received multiple treatments without significant local improvement or pain.

No conflict of interest

ISPR7-0680

Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

A LONGITUDINAL STUDY TO DEFINE CLINICAL PRESEASON FEATURES AND KNEE ISOKINETICS PARAMETERS AS RISK FACTORS FOR LOWER LIMB MUSCULOSKELETAL INJURIES IN ELITE FOOTBALL PLAYERS

M. Riberto¹

¹*Ribeirao Preto, Brazil*

Introduction/Background

Background: Football players frequently face the occurrence of non-contact injuries. However, it is not clear how much of individual training abilities may interfere in these events. Purpose: to establish risk factors for lower limbs musculoskeletal injuries in elite football players identified in preseason assessment.

Material and Methods

Study Design: An observational cohort study. Methods: Professional male football players from Brazilian teams were recruited and evaluated. Bilateral knee isokinetic dynamometry at 60 degrees/s for concentric flexion and extension was carried during preseason assessment, together with the collection of data on previous injuries, anthropometry and training characteristics. Lower limb musculoskeletal injuries were recorded during the season according to FIFA's standards. The incidence of injuries and odds ratios were calculated for suspected risk factors.

Results

Results: 62 athletes were followed for one year after preseason assessment. Identified risk factors for muscle strain were: extensor peak of torque asymmetry greater than 10% (OR=7.49; 95%CI: 1.51 - 37.26), flexor peak of torque asymmetry greater than 10% (OR=46.94; 95%CI: 4.16 - 530), Hamstring/Quadriceps (H/Q) ratio outside the safety range of 55-64% (OR=6.72; 95%CI: 1.32 - 34.31), previous thigh or knee injuries (OR=2.96; 95%CI: 1.01 - 8.72). The non-dominant lower limbs were at greater risk of sustaining a ligamentous or meniscal injury (OR=4.32; 95%CI: 1.18 - 15.77).

Conclusion

Conclusion: H/Q ratio defines the force regimen in the knee and may be involved in the occurrence of non-contact muscle injuries in the thigh as well as bilateral asymmetry and lower limb dominance. These results may guide the preparation of the athletes for competitive play. Clinical Relevance: These kind of evaluation can result in intervention programs that may decrease the risk of lower limbs musculoskeletal injuries throughout the season

No conflict of interest

ISPR7-0778

Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

AN ORTHOPAEDIC SURGEON'S RECOVERY PROCESS: RETURNING TO THE OPERATING ROOM, FOLLOWING AN AXILLARY NERVE AXONOTMESIS SECONDARY TO A TRAUMATIC ANTERIOR SHOULDER DISLOCATION

G. Ferreira Dos Santos¹, V. Campos²

¹Centro Hospitalar de Lisboa Central - Hospital de Curry Cabral, Physical and Rehabilitation Medicine Department, Lisbon, Portugal

²Centro Hospitalar de Lisboa Central - Hospital de Curry Cabral, Orthopaedics and Traumatology Department, Lisbon, Portugal

Introduction/Background

A twenty-six year old, male, orthopaedic surgery resident doctor sustained a traumatic anterior dislocation to his left shoulder whilst on a cruise, leading to the reduction being performed by the onboard physician.

Upon arrival he was re-examined accordingly and submitted to an MRI scan which revealed a mild Hill-Sachs lesion without signs of bony Bankart lesion.

Following a three week period of immobilization with a sling in internal rotation he presented at a PRM consultation with a severe deficit of his global left shoulder ROM, major muscular atrophy, hipoesthesia of the anterior and lateral sides of his arm and as a consequence was left incapable of performing surgery. An EMG later on revealed the presence of an axillary nerve class II lesion (axonotmesis).

This case report aims to cover the patient's recovery process up until the day he was able to return to the operating room.

Material and Methods

The patient underwent an intensive rehabilitation program consisting of five weekly sessions for a nine week period, including monthly follow-up consultations. During these sessions the patient was treated using therapeutic US (ultrasound), NMES (neuromuscular electrical stimulation), LASER therapy and was also subjected to a strength training regime.

Results

After three weeks of immobilization and nine weeks of rehabilitation the patient regained almost full ROM of his left shoulder with exception of a minor external rotation insufficiency, and more than 80% of the strength of the opposite side.

Conclusion

As supporting evidence, this case report shows that conservative treatment remains as a first option on traumatic anterior shoulder dislocations even when mild or moderate nerve injuries occur, given that no major bony lesions coexist.

No conflict of interest

ISPR7-0856

Musculoskeletal Conditions - Musculoskeletal Trauma (e.g. Fractures) and Sports Injury

FINGER-SHAPED SESAMOID BONES ALIGNED WITHIN THE NUCHAL LIGAMENT

Y. Bozkurt¹, E.I. Cicek², H.T. Sanal³, A. Carli⁴

¹*Golcuk Necati Celik Devlet Hastanesi, Radiology, Kocaeli, Turkey*

²*Golcuk Necati Celik Devlet Hastanesi, Orthopedic Surgery, Kocaeli, Turkey*

³*Gulhane Egitim Ve Arastirma Hastanesi, Radiology, Ankara, Turkey*

⁴*Saglik Bilimleri University Haydarpasa Sultanabulhamit Training Hospital, Physical Medicine And Rehabilitation, Istanbul, Turkey*

Introduction/Background

Sesamoid bones can be described as ovoid or round nodular small ossicles usually in the vicinity of a joint or tendon. Their main function is to reduce the friction between the bone and the tendon.

Sesamoid bone embedded in the nuchal ligament is extremely rare in the literature. They are usually found within the nuchal ligament at C4, C5 and C6 spinous processes level during the routine cervical lateral X-ray imaging. And they may be misdiagnosed as fracture in trauma patients.

Material and Methods

We aimed to present radiographic appearance of an elderly man who admitted to the emergency department with trauma history and has multiple finger-shaped sesamoid bones in the nuchal ligament.

Results

A 66-year-old man was presented due to his complaints of neck pain after he fell down in his apartment 2 days ago. On physical examination, local tenderness at the posterior aspect of the neck from level C2 to T2 was noted. No ecchymosis or hematoma was detected. Minimal restriction on flexion and rotations of cervical column were observed. Neurologic examinations were normal. Lateral view X-ray and axial spiral tomography of the cervical spine showed three supernumerary ossicles aligned within the nuchal ligament at the level of C4–C6 vertebral spinous processes.

Conclusion

All ossicles had smooth borders and arranged in an order so that they were giving a configuration of a “finger” (Figure 1-2). Examples of sesamoid bone in the nuchal ligament of the axial skeleton are usually small ovoid or round ossicles. In this case, the patient’s pain resolved with rest, physical therapy and non-steroidal anti-inflammatory drugs.

No conflict of interest

ISPR7-0017

**Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity
(including Enthesopathy, Tendinitis and Others)**

EXTRACORPOREAL SHOCK WAVE THERAPY IN CALCIFIC ROTATOR CUFF TENDINOSIS.

*J.A. Mirallas Martínez¹, M.T. Sabater Querol¹, A. Beltrán Vives¹, B. Cardells Beltrán¹,
S. Pina Buded¹, M. Hayani Al-Nisr¹, J. López Escobar¹, M. López Juncosa¹*

¹University General Hospital of Castellón, Physical Medicine and Rehabilitation, Castellón, Spain

Introduction/Background

Extracorporeal shock wave therapy (ESWT) is suggested as a treatment alternative for calcific rotator cuff tendinosis (CRCT), which may decrease the need for surgery. We assessed the evidence for effectiveness, tolerance and satisfaction of ESWT for these disorders.

Material and Methods

From 14 february, 2002 and 30 september, 2016, a prospective longitudinal descriptive study was performed on treatment with a Piezoelectric generator of ESWT, to 183 consecutive adults subjects with CRCT. All were treated, 1 session for week, 4 weeks, were assessed before each treatment and one month, after completion of therapy. The main outcome measures were: pain, tolerance and satisfaction through visual analog scale 0-10 (VAS), flux density and number of pulses, applied, limitations (in daily living, sporting and working activities), calcifications lithotripsi, and active articular range measurement of the shoulder. The frequency analysis was conducted. The level of evidence is 3. Randomised controlled trials (RCTs) were reviewed to evaluate the evidence of the effectiveness of ESWT in the management of CRCT.

Results

The mean flux density and number of pulses applied were $0.59 \pm 0.17 \text{ mJ/mm}^2$ and 2213.3 ± 756.2 respectively. One month after completion of therapy with ESWT, the evaluation resulted in significant improvement in pain (64.8% less in activity) and in active articulation range measurement ($29.5^\circ \pm 16.4^\circ$ more in abduction). The limitations in daily living, sporting and working activities, that initially existed in 183 (100%) persisted in 20 (11.1%), 28 (15.6%) and 28 (15.6%) respectively and the calcifications persisted in 67 (37.2%). The tolerance was good and without secondary effects of interest. Mean flux density, number of pulses applied, and improvement in pain compared with other studies are respectively: $0.99 \text{ mJmm}^2 / 0.60 \text{ mJmm}^2$, $2213.3 / 2000$, and $64.8\% / 21\% - 84\%$. Only high-ESWT is effective for treating CRCT.

Conclusion

ESWT in CRCT are well tolerated, and shows a significant effectiveness for pain relief, functional restoration and calcifications lithotripsi, with a mean satisfaction of 8.53 ± 1.80 (VAS 0-10).

No conflict of interest

ISPR7-0180

Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

ULTRASOUND-GUIDED INTERPHALANGEAL AND METACARPOPHALANGEAL JOINT HYDRODILATATION AS TREATMENT OF FINGER CAPSULITIS IN THIRD STAGE OF COMPLEX REGIONAL PAIN SYNDROME. TECHNIQUE DESCRIPTION AND CASE SERIE

I. Díaz-Cano Carmona¹, A. Galván Ruiz¹, M.O. González Oria¹, C. Echevarría Ruiz de Vargas¹

¹Hospital Virgen del Rocío, Physical Medicine and Rehabilitation, Sevilla, Spain

Introduction/Background

Most of the patients who had suffered any wrist, hand or finger injury (trauma related as well as soft tissue injury) are not able to grip or extending the fingers not only in an active way if not in a passive way too - secondary to capsulitis in the metacarpophalangeal or interphalangeal joint as result of the atrophic stage of complex regional pain syndrome-. Physiotherapy usually is a slowly and tedious treatment in these cases and some patients don't recover as much as we would like to, with important limitations for daily activities. The aim of this study is to describe a new ultrasound-guided technique, its safety and effectiveness.

Material and Methods

Inclusion criteria are patients with impossibility to grip or extending the fingers -because of a passive range of motion limitation in metacarpophalangeal or interphalangeal joint-, who haven't made physiotherapy yet. As principal exclusion criteria are stages 1 or 2 of complex regional pain syndrome or any infiltration contraindication (coagulopathies or local infection sign). Ultrasound-guided hydrodilatation -with physiological saline solution- is carried out as first treatment followed by usual physiotherapy.

Results

A total of 10 patients have been included following inclusion and exclusion criteria. All of them was hydrodiluted at least one of the finger joints and most of them shorten time of physiotherapy treatment. No adverse reaction have been found.

Conclusion

Metacarpophalangeal or interphalangeal joint hydrodilatation is a safety and effective treatment that should be consider as initial treatment of finger capsulitis.

No conflict of interest

ISPR7-0231

**Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity
(including Enthesopathy, Tendinitis and Others)**

**THE EVALUATION OF EFFECTIVENESS OF KINESIO TAPING IN PATIENTS WITH
MYOFASCIAL PAIN SYNDROME: A RANDOMIZED PLACEBO CONTROLLED STUDY**

S. Zardoust¹, O. Özdemir¹, P. Borman¹

*¹Hacettepe University- Faculty of Medicine, Department of Physical Medicine and Rehabilitation,
Ankara, Turkey*

Introduction/Background

Myofascial pain syndrome (MPS) is a disorder characterized by hypersensitive sites called trigger points at ≥ 1 muscles leading to pain, spasm, and weakness. Several manipulative methods and physical therapy modalities are used for the treatment of this condition. The objective of the study was to evaluate the effectiveness of kinesio taping in the treatment of MPS.

Material and Methods

Fifty-one patients (50 women, 1 men) with an active trigger point in upper trapezius muscle were included in this study. In the treatment group (n=26), 4 sessions of kinesio taping and in the control group (n=25) 4 sessions of sham kinesio taping were applied with 5 days intervals. Additionally, posture exercises were prescribed for all patients. Pain severity at rest and during activity were evaluated by Visual Analog Scale (VAS) at the beginning, immediately after the treatment and one month later. Furthermore, pressure pain threshold (PPT) was measured by algometer. To assess the health related quality of life, the participants were asked to complete SF-36 questionnaire.

Results

The mean age of 31.15 ± 10.36 years. At baseline visit, the mean values of VAS at rest and during activity, PPT and SF-36 scores of both groups were found to be similar. Immediately after the treatment, there were a statistically significant decrease in VAS and increase in PPT and SF-36 scores in both groups. It was observed that all these improvements maintained at T2 visits.

Conclusion

In the treatment of MPS, kinesio taping was shown to be effective on decreasing pain and improving quality of life. However, similar findings were also found in the control group.

No conflict of interest

ISPR7-0305

Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

RESULTS AND IONOSON-EVIDENT®-TREX® MJ IN REHABILITATION TENDINITIS. CASE PRESENTATION

P.L. Pazo Mollineda¹, C.P. Vianka²

¹, Boyeros, Cuba

²: Hospital de Rehabilitación Julio Díaz- Centro de Referencia Nacional, Vice-Dirección de Rehabilitación, La Habana, Cuba

Introduction/Background

Background: Muscle imbalances can disrupt the process of optimal movement and have negative consequences. To detect biomechanical computerized procedures as currently used. The exercises are aimed at correcting what is now considered the main problem in chronic tendon pain: a tendon that is not prepared for the activity requested, in so-called intrinsic tendinitis where the aim of the exercise is to strengthen the tendon and restructure microarchitecture.

Material and Methods

Description case, female patient of 25 years, diagnosed with chronic tendinitis that 06/21/2016 is received in the service SOMA National Rehabilitation Center Julio Diaz, applying a program of 20 days, including evaluation and training CON-TREX® system MJ and therapeutic ultrasound. Results: The evaluation was conducted wrist flexion and extension at the beginning and end, in CPM mode, Con / With 60 ° / s in 5 repetitions.

Results

The results were in terms of force applied, as in Max. 5.9 [Nm] of 2.3 in length and 11.0 2.1 in bending, maximum power [W] was 6.0 2.2 in length and 11.5 2.2 in bending, means work [J / kg]] corresponds to the average work done in each direction movement, of 0.04 to 0.14 for extension and flexion .03 to .28, increasing the muscle tone and strength.

Conclusion

Conclusions: The therapeutic ultrasound and isokinetic dynamometry produced a favorable response tendinitis, with improvement and patient satisfaction, it would be desirable to evaluate the effectiveness of this therapy a controlled clinical trial.

No conflict of interest

ISPR7-0395

**Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity
(including Enthesopathy, Tendinitis and Others)**

PREVALENCE OF SHOULDER PAIN IN PARAPLEGIC SPINAL CORD INJURED PATIENTS

M. Azadvari¹, S.Z. Emami Razavi¹

¹Tehran University of Medical Sciences, physical medicine and rehabilitation, Tehran, Iran

Introduction/Background

Spinal Cord Injury (SCI) is a debilitating damage which affects various sensory-motor systems and leads to limbs paralysis.

Patients with SCI suffer a number of complications. One of the most prevalent of these complications is Shoulder pain that is common due to the repetition of the wheelchair propulsion and the increased intra-articular pressure during transfers.

The aim of this study is to determine the prevalence of shoulder discomfort in paraplegic spinal cord injury patients who come to our clinic in Brain and spinal cord injury research center of Tehran University of medical science.

Material and Methods

65 paraplegic spinal cord patients who come to our physical medicine and rehabilitative clinic in Brain and spinal cord injury research center of Tehran University from March 2015 to March 2016 included in study. The patients use manual wheelchair for mobility and did not suffer from shoulder pain before spinal cord injury. duration of spinal cord injury were more 6 Months. An expert physiatrist evaluated them and filled demographic and DASH questionnaire for them.

Results

54 men & 11 women participated in our study. Mean age was 34.6 years. The 39 (59%) of all the patients who answered to the questionnaire complain shoulder pain. Mean of DASH score was 68.6 (24.5-95.4). DASH score was duration pass of spinal cord injury and patient's age.

Conclusion

In comparison with other studies our patients less suffer of shoulder pain, it may be due to excessive support of these patients by their family. A lot of our patients are completely dependent for daily activity. Our study confirms that age and duration pass of SCI are risk factors for shoulder pain.

No conflict of interest

ISPR7-0401

**Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity
(including Enthesopathy, Tendinitis and Others)**

**THE LONG TERM EFFECTIVENESS OF LOCAL PROGESTERONE INJECTION VS. LOCAL
STEROID INJECTION FOR MANAGEMENT OF CARPAL TUNNEL SYNDROME**

L. Sedighipour¹, S.A. Raeissadat², S. Shahraeeni³

¹, Tehran, Iran

*²Associate professor of Physical Medicine and Rehabilitation research center,
Shahid beheshti university of medical sciences, Tehran, Iran*

*³Shahid beheshti university of medical sciences,
Physical Medicine and Rehabilitation research center, Tehran, Iran*

Introduction/Background

The objective of this study was to compare the long term effects of progesterone versus corticosteroid local injections in patients with mild and moderate carpal tunnel syndrome.

Material and Methods

In this randomized clinical trial, 78 hands with Carpal Tunnel Syndrome were assigned to two groups. Patients were treated with a single local injection of triamcinolone acetonide in one group and single local injection of hydroxy progesterone in the other group. Variables including pain (based on Visual Analogue Scale), symptom severity and functional status (based on Bostone/Levine symptom severity and functional status scale) and nerve conduction study were evaluated before and 6 months after the treatments.

Results

All outcome measures including pain, functional scales and electrophysiologic findings improved in both groups and there were no meaningful differences between two groups regarding mentioned variables. However, functional outcome was significantly better in progesterone compared to corticosteroid group at 6 month follow up ($P = 0.04$).

Conclusion

Progesterone local injection in mild and moderate CTS can be superior to corticosteroid injection for relieving symptoms and improving functional and electrophysiologic findings at long term follow up.

No conflict of interest

ISPR7-0402

**Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity
(including Enthesopathy, Tendinitis and Others)**

**IS STEROID PHONOPHORESIS EFFECTIVE ON SUBACROMIAL IMPINGEMENT SYNDROME'S
TREATMENT? RANDOMISED CONTROLLED STUDY**

S. Kutlay¹, E. Kars², S. Ergin³, D. Oztuna⁴

¹Ankara University Medical School, Department of PRM, Ankara, Turkey

²Ozel Koru Hastanesi, Department of PMR, Ankara, Turkey

³Fizyocare, Department of PMR, Ankara, Turkey

⁴Ankara University Medical School, Department of Biostatistics, Ankara, Turkey

Introduction/Background

Subacromial impingement syndrome (SIS) is the most common cause of shoulder pain. Although, there are conservative and surgical treatment options for SIS, there isn't a gold standart therapy. The aim of this study was to evaluate the effectiveness of steroid phonophoresis in patients with SIS.

Material and Methods

Sixty patients with SIS were participated in this prospective, single-blind randomized controlled study and randomly divided into 2 groups: intervention group (steroid phonophoresis) and control group (sham ultrasound). Hot pack and shoulder exercises including pendulum, range of motion (ROM) and strengthening exercises were given all patients. Steroid phonophoresis was applied with 1% hydrocortisone cream (2gr/session hydrocortisone with 1.5 watt/cm² ultrasound for 7 minutes). All participants completed 15 treatment session and were assessed with visual analog scale for pain intensity, shoulder ROM, muscle strength, the University of California Los Angeles (UCLA) Shoulder Rating Scale, Shoulder Disability Scale (SDS) and Nottingham Health Profile (NHP) for quality of life at pretreatment, post-treatment and 3rd month treatment.

Results

Baseline demographic characteristics of two groups were found similar except of their ages (the mean age \pm SD 49.57 \pm 6.73 for intervention group, 53.97 \pm 5.81 for control group). Statistically significant improvements were observed in all parameters in both groups at the end of the therapy and 3 months afterterwards. There was a statistically significant difference in pain severity, shoulder ROM, UCLA Shoulder Rating Scale, SDS and NHP (pain, energy, sleep, social isolatio, mobility) between two groups ($p < 0.05$).

Conclusion

Steroid phonophoresis can be used as an alternative well tolerated noninvasive therapy option for SIS.

No conflict of interest

ISPR7-0495

**Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity
(including Enthesopathy, Tendinitis and Others)**

UPPER LIMB HETEROTOPIC OSSIFICATION IN A PATIENT WITH TRAUMATIC BRAIN INJURY

I. Bruno¹, E. Prieto¹, M.V. Benzo¹, D.F. Ricci¹, M.F. Bueno¹

¹Instituto Nacional de Rehabilitación Psicofísica del Sur, Fisiatria, mar del plata, Argentina

Introduction/Background

The heterotopic ossification (HO) is defined as the ectopic bone formation in soft tissue. Its pathophysiology is not completely understood. It is common complication of traumatic brain injury (TBI). The treatment is based on nonsteroidal antiinflammatory drugs (NSAIDs), physical therapy, radiation therapy, bisphosphonates and surgery.

Material and Methods

Patient 37 years old with severe TBI, began rehabilitation seven months after TBI , and presented multiple joint limitations, due to HO. Pharmacological treatment with alendronate and physical therapy was introduced, not getting the desired results. Physical examination showed that the left elbow flexion range of motion was up to 30-35° and extension up to 90°. A three-dimensional CT was performed and showed an extra-articular ankylosis posterior to humerus-radioulnar area. As conservative approach of rehabilitation treatment was inefficient, olecranon osteotomy was performed. Treatment was completed with oral indomethacin prophylaxis for recurrence prevention.

Results

An increased joint range extension of up to 160 ° was obtained, and flexion of 60 °, also improved some activities of daily living (feeding and self hygiene).

Conclusion

HO results a common complication in patients with TBI. Its diagnosis and evaluation is guided by imaging. Surgical treatment offers better results when conservative treatment fails. Its recurrence can be minimized by combining NSAIDs and rehabilitation.

No conflict of interest

ISPR7-0685

Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

OBSERVATION OF BRACHIAL PLEXUS MAGNETIC RESONANCE NEUROGRAPHY ON INTERSCALENE INJECTIONS BY ULTRASOUND-GUIDED FOR NEUROGENIC THORACIC OUTLET SYNDROME

*W. Jun*¹

¹*Shenzhen Nanshan Hospital, Rehabilitation Medicine, Shenzhen, China*

Introduction/Background

To observe the therapeutic effects of interscalene injections by ultrasound-guided for neurogenic thoracic outlet syndrome (nTOS), explore the difference magnetic resonance neurography (MRN) of brachial plexus between prior treatment and post-treatment

Material and Methods

Thirty patients with suspected nTOS were received two stages treatments. First stage, all patients were received one week conventional therapies, that included analgesics treatment and psychological treatment; After that, the patients were given drug discontinuance 3 days. Patients were get into the second stage, that were treated with interscalene injections by ultrasound-guided. The changes of Visual Analogue Scale (VAS) scores before and after 2 stages treatment were record, and in the second stage the subjective perception after injections were record; Before the first stage and 2 weeks after the second stage, patients were received brachial plexus high-resolution MRN examination. Images were evaluated for anatomical anomalies compressing the brachial plexus and for scalene muscles elements.

Results

Before treatment the VAS scores were (8.25±1.53), after conventional therapies the VAS scores were (7.85±2.04), comparison of VAS scores before treatment and after conventional therapies, there was no significant difference ($P > 0.05$); 2 weeks after injections, the VAS scores were (2.57±1.06), comparison of VAS scores before treatment and 2 weeks after injections, there was significant difference ($P < 0.05$). The patients after interscalene injections for half an hour fell swell and fever on their necks and shoulders, and their upper limbs were numbness and fatigue. Compared the images between prior treatment and post-treatment, MRN of brachial plexus did not detect abnormalities, there were no abnormal increased T2W signal within plexus elements. Compared the cross section of scalene muscles between prior treatment and post-treatment, the diameter of scalene muscles decreased after injections.

Conclusion

Interscalene injections by ultrasound-guided for the treatment of nTOS could have certain efficacy. High-resolution MRN and tractography of brachial plexus maybe identify the source of nerve compression in patients with nTOS.

No conflict of interest

ISPR7-0712

**Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity
(including Enthesopathy, Tendinitis and Others)**

EVALUATION OF THE HEALTH PROBLEMS PATIENTS WITH THORACIC OUTLET SYNDROME

N. Milenovic¹, S. Ristic², B. Popovic³

*¹Special Hospital for Rheumatic Diseases Novi Sad,
Special Hospital for Rheumatic Diseases Novi Sad, Novi Sad, Serbia*

*²Wattlemore Holdings PTY LTD all hours physiotherapy,
Wattlemore Holdings PTY LTD all hours physiotherapy, Avoca Beach, Australia*

³Scope International, Scope International, Zrenjanin, Serbia

Introduction/Background

Thoracic Outlet Syndrome (TOS) is caused by compressing cervical circulation and neural structure. Because of the patho-anatomical structure of TOS patients develop broad spekter of the health problems. Aim of the study is to evaluate the patient's problems with TOS.

Material and Methods

In the study was included 82 participants with diagnose TOS. All participants were filled out the questionnaire about their problems caused by TOS.

Results

Patients reported many different health problems caused by TOS. Because of the broad spekter of TOS symtomes, it was problem at the beginning of the diagnosis process and further planing and organization rehabilitation process of those patients. Problems were affected many different organ system- from nervous system, cardiovascular system and muscular-skeletal system. In this study headache was reported in 64.6%, vertigo was reported in 61,0%, tinnitus was reported in 42.7%, stenocardia was reported in 46.3%, tachycardia was reported in 14.6%, dizziness was reported in 15.9%, metereopathy was reported in 14.6%, cold hand was reported in 45,1%, reduction muscle strength was reported in 13.4%, trophical changes on the hands was reported only in 3.7% and muscle hypotrophy of hand was reported only in 1,2%. All reported symptoms were statistically significant ($p=0.05$).

Conclusion

Our research definitively pointed on existence broad spekter of the problems at patients with TOS which require further detail evaluation and the patient modified planning further rehabilitation process.

No conflict of interest

ISPR7-0798

**Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity
(including Enthesopathy, Tendinitis and Others)**

**COMBINATION OF SUBACROMIAL GLUCOCORTICOID INJECTION AND MOBILIZATION IN
SUBACROMIAL IMPINGEMENT**

I. Ilhanli¹, C. Celik¹, A. Turkoz¹, E. Uysal¹

¹Giresun University - Medical Faculty, Physical Medicine and Rehabilitation, Giresun, Turkey

Introduction/Background

Subacromial glucocorticoid injection is proved as both diagnostic and treatment method for subacromial impingement. Mobilization is also a well known therapeutic approach for shoulder pain. In this study we aimed to investigate the additional effect of mobilization in patients with subacromial impingement who are treated by subacromial glucocorticoid injection.

Material and Methods

80 patients were included in the study. Subacromial impingement is diagnosed by symptoms, physical examination and magnetic resonance imaging of the effected shoulder. Patients were randomly divided into 2 groups. Mobilization was administered after subacromial glucocorticoid injection in one group and only subacromial glucocorticoid injection (20 mg triamcinolone hexasetonid) was done in the second group. Codman exercises were prescribed to all patients. Patients were allowed to use acetaminophen as rescue medication. Amount of rescue medication was recorded. Patients were evaluated with range of motion, visual analog scale for pain (VAS) at activity and at rest and Disabilities of Arm, Shoulder and Hand Score (DASH) before treatment, after treatment and 4th week after the treatment. Significance level was accepted as $p < 0.05$.

Results

There was any difference according to the demographic data (Table 1). Both groups showed significant improvement according to range of motion, VAS pain and DASH scores in each evaluation step ($p < 0.05$, Table 2 and 3). VAS activity after treatment was significantly better in mobilization group ($p = 0.028$). Flexion and abduction degrees showed significantly better improvement after treatment in mobilization group ($p = 0.008$ and $p = 0.036$, respectively). According to rescue medication there was any difference between groups ($p = 0.448$).

Conclusion

Subacromial glucocorticoid injection is an effective intervention for the treatment of subacromial impingement. Addition of mobilization may provide rapid improvement in flexion and abduction as well as early pain relief after subacromial glucocorticoid injection.

No conflict of interest

ISPR7-0808

**Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity
(including Enthesopathy, Tendinitis and Others)**

EFFICACY OF RADIAL EXTRACORPOREAL SHOCK WAVE THERAPY (RESWT) IN LATERAL EPICONDYLITIS

H. Kocyigit¹, M.B. Korkmaz², S. Bal¹

¹*Ataturk Training and Research Hospital, PM&R, izmir, Turkey*

²*Denizli State Hospital, PM&R, Denizli, Turkey*

Introduction/Background

To evaluate the efficacy of radial extracorporeal shock wave therapy (rESWT) in lateral epicondylitis.

Material and Methods

The study involved 57 patients (36 women, 21 men) with pain and tenderness on the outer part of elbow at least six weeks and who fulfilled the inclusion criteria. Participants were randomly assigned to two groups.

In the first group (rESWT group), patients were treated by rESWT (with 3 bar, 10 Hz, 1000 pulses). In the other group (control group), patients were treated by rESWT in an ineffective-dose (with 1 bar, 1 Hz, 100 pulses). rESWT was applied three sessions in one week apart. Both groups were given a home-based exercise programme for lateral epicondylitis.

Endpoints were changes in the scores of the Visual Analog Scale (VAS) in pain, Patient & Physician Global Assessment, Roles & Maudsley (RM), Patient Rated Tennis Elbow Evaluation (PRTEE) questionnaires from baseline to 3 weeks and 12 weeks follow-up.

Results

A significant improvement were seen in VAS, Physician Global Assessment and Patient Global Assessment (except control group) scores in both groups. However this improvement was more significant in rESWT group after 12 weeks. The Roles and Maudsley score showed significantly greater improvement in rESWT group in comparison with the control group. The pain and functional subscale scores of PRTEE were more significantly improved in rESWT group.

Conclusion

Our results suggest that rESWT provides meaningful benefit in terms of pain and function in patients with lateral epicondylitis.

No conflict of interest

ISPR7-0850

**Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity
(including Enthesopathy, Tendinitis and Others)**

ACTIVITIES RELATED WITH CARPAL TUNNEL SYNDROME (CTS)

N. Ananidis¹, K. Gioti¹, D. Psillaki¹, I. Kapralos¹, N. Koutsogeorgis¹, N. Groumas¹

¹National Rehabilitation Centre, Physical Medicine And Rehabilitation, Athens, Greece

Introduction/Background

To justify why carpal tunnel syndrome is presented in people who performed specific activities for a long period of time or in those starting a new activity.

Material and Methods

A total of 111 patients were electromyographically diagnosed with carpal tunnel syndrome (77 women, 34 men), aged 22-73 years over the past two years. Out of 77 women examined, 3 women were occupied in agricultural (age range 47-69), 49 were housewives (age range 51-73), 16 women were computer operators (age range 22-54), 9 women were hairdressers. Out of 34 men examined, 9 men were occupied as farmers (age range 47-69), 2 men as computer operators (age range 22-54), 6 men as electricians, 2 men as plumbers, 5 men as hairdressers (age range 22-31), 8 men as construction workers, 2 men as other technicians. The patients presented symptomatology during the clinical examination as well as pathological values consisted with CTS in the EMG. A specific scientific protocol was used, including not only basic data (name, age, occupation, etc.) but also such as onset of symptoms related with activities or any change in activities at least one month before the onset of symptoms. Correlation between EMG and ENG findings was performed (motor and sensory latency). The study excluded patients suffering from diabetes mellitus and hypothyroidism.

Results

76 patients (69%) out of the total of 111 patients examined increased activity, 17 patients (15%) maintained the same level of activity, 18 patients (16%) started a new activity.

Conclusion

Carpal tunnel syndrome is not completely related with occupation but in any change in intensity and frequency of activity.

No conflict of interest

ISPR7-0898

Musculoskeletal Conditions - Regional Pain Syndromes of the Neck and Upper Extremity (including Enthesopathy, Tendinitis and Others)

THE EFFECT OF A NEW COMBINATION OF ELASTIC TAPING ON QUALITY OF LIFE AND FUNCTION IN ROTATOR CUFF TENDINOPATHY: A PILOT STUDY

S. Miccinilli¹, G. Luppi¹, M. Morrone¹, F. Santacaterina¹, M. Bravi¹, F. Bressi¹, S. Sterzi¹

¹Policlinico Università Campus Bio-Medico, UOC di Medicina Fisica e Riabilitativa, Roma, Italy

Introduction/Background

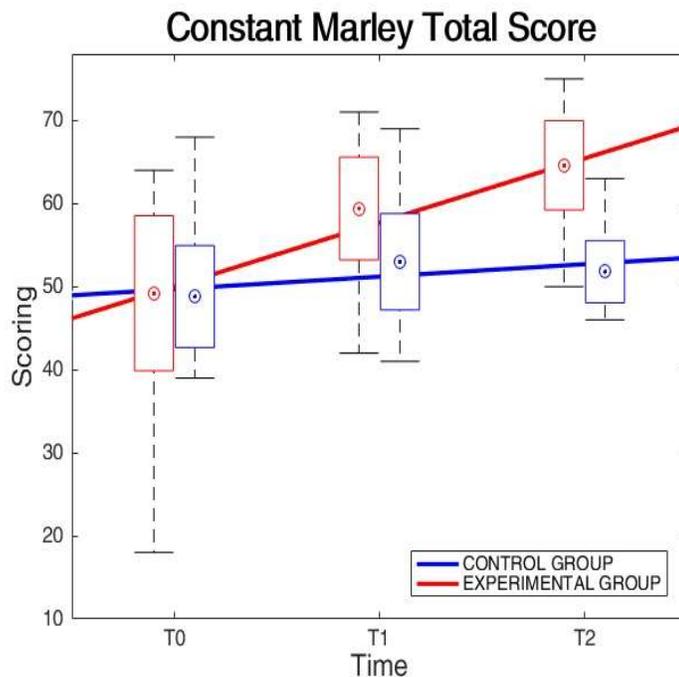
Rotator Cuff tendinopathy (RCt) is a common disorder in PMR and results in shoulder pain and limited ROM. Rehabilitative Treatment (RT) increases QoL and autonomy in ADLs. The aim of the present study is to investigate the possible role of a new combination of elastic-taping (ET) techniques in positively modifying the outcomes of common RT.

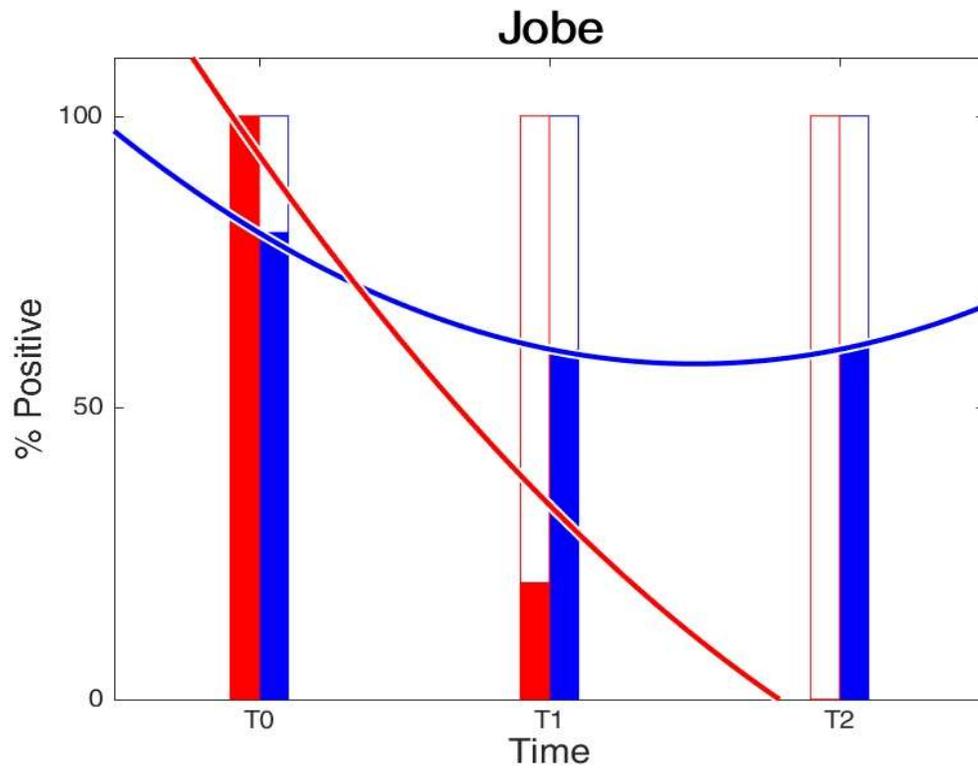
Material and Methods

Ten patients with RCt were randomized in two groups: experimental (EG) and control group (CG). All patients underwent a standardized RT one-to-one protocol (ten daily sessions). The EG underwent therapeutic ET(5 sessions), whereas CG underwent sham ET (5 sessions). A blind clinical evaluation was performed before treatment (T0), after treatment (T1), at one month follow-up (T2). VAS scale, Constant-Murley modified scale and clinical test for rotator cuff tendons were used for clinical evaluations.

Results

Both groups at T1 exhibited decreased VAS score, increased Constant-Murley total-score, and less positive tests for rotator cuff tendons, confirming the central role of RT. EG showed a better global improvement than CG at T1. Notably, comparing T2 with respect to T1, CG showed a slight worsening, whereas EG manifested further improvement [Fig.1, Fig.2].





Conclusion

This combination of elastic taping proved to be a useful tool in RCt treatment when used to support traditional RT. More interestingly, patient condition of EG was even enhanced at follow-up evaluation. This enhancement is likely due to a possible effect of ET over the proprioceptive system. A larger number of patients is required to assess these preliminary results.

No conflict of interest

ISPR7-0088

Musculoskeletal Conditions - Back Pain and Spine Disorders

RELATIONSHIP BETWEEN SPINAL PAIN AND RANGE OF MOTION IN DENTISTS

H. Yuçel¹

¹Bezmialem Vakif University, Occupational Therapy, Istanbul, Turkey

Introduction/Background

The aim of this study was to see if there was cervical and lumbal range of motion (ROM) limitations and relations between ROM and pain.

Material and Methods

54 dentists (mean age: 32.46±9.22 years) were included. Universal goniometry was used to assess cervical and lumbal ROM. Values by American Association of Orthopaedic Surgens were accepted as normal. Cervical and lumbal pain severity were assessed using visual analogue scale. Pain was described as "light, medium, severe".

Results

The mean of working years of dentists was 9.50±9.00. ROM degrees were shown at Table 1. Cervical values were slightly less than normal values except flexion. Lumbal values were slightly higher than normal values. Dentists were mostly working in a position of trunk lumbal flexion and cervical lateral flexion. 31 were having lumbal and 18 were having cervical pain. The mean of cervical and lumbal pain were 1.24±2.12 and 2.01 ± 2.23, respectively. The pain was not severe in both areas (Table 2). The more pain means increased the more each ROM value decreased. There were no relations between ROM values of cervical flexion/extension, lumbal rotation and pain.

Table 1.

Motion	Mean value±SD (normal)
Cervical flexion	56.44 ± 11.96 (45)
extension	41.47 ± 7.62 (45)
lateral flexion right	41.75 ± 6.90 (45)
left	42.09 ± 6.61 (45)
rotation right	53.29 ± 6.83 (60)
left	53.42 ± 6.78 (60)
Lumbal flexion	86.44 ± 8.37 (80)
extention	33.38 ± 5.44 (25)
lateral fleksiyon right	38.70 ± 6.45 (35)
left	39.00 ± 6.81 (35)
rotation right	48.19 ± 5.62 (45)

left 50.32 ± 6.45 (45)

Table 2.

	Pain					
	Light		Medium		Severe	
	n	%	n	%	n	%
Cervical	7	13.0	11	20.4	0	0
Lumbal	19	35.2	11	20.4	1	1.9

Conclusion

Musculoskeletal problems such as pain, spasm, and postur impairments along with reduced mobility. Ergonomic recommendations chair dementions and exercise habits to acquire etc. are important in dentists.

No conflict of interest

ISPR7-0100

Musculoskeletal Conditions - Back Pain and Spine Disorders

LIFTING CAPACITY AND LOW BACK PAIN IN DENTISTS

H. Yuçel¹

¹*Bezmialem Vakif University, Occupational Therapy, Istanbul, Turkey*

Introduction/Background

Due to static working positions of dentists, it is thought that their lifting capacities are decreased and they have pain. The aim of this study was to show the relation between lifting capacity and low back pain of dentists.

Material and Methods 49 dentists working at different divisions and with the mean age of 31.26 ± 8.19 years were included in this study. Their active working years and duration (year) of low back pain were recorded. Active working years were categorized as lower than 10 years, between 11 to 20 years, 21 to 30 years, and more than 31 years. Pain frequency related to categorized active working years were set out. Lifting strength (kilogram:kg) was tested by using lifting commander of J Tech computerised functional capacity evaluation system while participants were standing in squat position. The relation between lifting strength and pain duration was analyzed by SPSS 11.0. $p < 0.01$ was considered as significant. **Results**

26 (%53) were having low back pain. Pain frequency related to active working years was shown in the table. They had low back pain for 2.48 ± 4.12 years. The mean of lifting strength was 24.70 ± 12.37 kg. Lifting capacity values were decreased while duration of low back pain increased ($r = -0.30$, $p < 0.01$).

T

Table. Low back pain related to active working years

years	pain	
	n	%
≤10 (n=34)	17	50
11-20 (n=8)	4	50
21-30 (n=5)	3	60
≥31 (n=2)	2	100

Conclusion

Low back pain frequency were more of the participants who work actively more years. Dentists should be referred back school programmes to protect their lifting strength functional capacities.

No conflict of interest

ISPR7-0122

Musculoskeletal Conditions - Back Pain and Spine Disorders

EFFECTS OF INFRARED RADIATION (THZ RANGE) ON THE PATIENTS WITH CHRONIC LOW BACK PAIN AND ABSORPTION OF RADIATION (GHZ RANGE) ON LOW BACK REGION.

M.A. Shakoor¹, P.D.M. Moeenuzzaman¹, P.D.S.R. Chakraborty²

¹Bangabandhu Sheikh Mujib Medical University, Physical Medicine and Rehabilitation, Dhaka, Bangladesh

²University of Chittagong, Department of Physics, Chittagong, Bangladesh

Introduction/Background

- Chronic low-back pain (CLBP) is very common in day today practice. To find out the effectiveness of Infrared Radiation on CLBP and absorption of radiation on low back region the present study was conducted.

Material and Methods

- The study was done in two phases. In the first phase, a randomized clinical trial and in phase two, a simulation study was conducted.

Results

In phase one, out of 266 patients, 43.6 % were male and 56 % were female with the mean age of 46.30 ± 8.75 years. Group -A was treated with NSAID + Activities of daily living (ADL) + SWD, Group-B with NSAID + ADL + IRR and Group-C treated with NSAID +ADL. We found all modalities are effective (P = 0.001). But more improvement was found in SWD and IRR receiving groups (P= 0.001 table-1). SWD has some better effect than IRR but IRR is also effective to reduce CLSP.

Table-1: Response after giving IRR (n=92).

Group	W0	W6	P-value	95% CI
VAS	7.79±0.78	2.71±1.49	0.001	+5.17 to +5.91
MZI	33.28±4.00	16.16±7.23	0.001	+19.34 to +22.28
ODI	28.90±3.56	13.82±6.11	0.001	+18.28 to +20.70

In phase two, radiation was applied on human phantom of lower back region up to 25 mm thickness with GHz range. Radiation was applied from low frequency to high frequency and return loss was measured. It was found that when radiation with 99.899994 GHz to 100.1 GHz (~100 GHz) was applied the return loss was -26.901541 dB to -26.42996dB. This indicates that maximum absorption of radiation (~100%) and absorption rate increases with frequency.

Conclusion

As absorption of radiation occurs (~100%) with GHz range, IRR in can be used effectively to improve CLBP.

No conflict of interest

ISPR7-0240

Musculoskeletal Conditions - Back Pain and Spine Disorders

THE ROLE OF THE FEATURES OF FACET JOINT ANGLE IN THE DEVELOPMENT OF ISTHMIC SPONDYLOLISTHESIS IN YOUNG MALE PATIENTS WITH L5-S1 ISTHMIC SPONDYLOLISTHESIS

A. Eroglu¹, A. Carli², S. Pusat¹, H. Simsek¹

¹Saglik Bilimleri University Haydarpasa Sultanabulhamit Training Hospital, Neurosurgery, Istanbul, Turkey

²Saglik Bilimleri University Haydarpasa Sultanabulhamit Training Hospital, Physical Medicine And Rehabilitation, Istanbul, Turkey

Introduction/Background

The objective of the study is to investigate the facet tropism and its role in the development of lumbar isthmic spondylolisthesis (IS) in young male adults.

Material and Methods

Bilateral facet joint angles were measured axially at the level of L3-4, L4-5 and L5-S1 in the lumbar computerized tomography (CT) of the 97 individuals (46 patients with IS and 51 control) aged between 20 and 29.

Results

276 and 306 facet angles from 46 patients with IS and from 51 controls respectively, were measured (582 total). For the patients with IS, there was no tropism in 43.5% (n=20), there was moderate tropism in 50% (n=23) and severe tropism in 6.5% (n=3) at the level of L3-4. For the level of L4-5, there was no tropism in 28.3% (n=13), there was moderate tropism in 60.9% (n=28) and severe tropism in 10.9% (n=5). For the level of L5-S1, there was no tropism in 32.6% (n=15), there was moderate tropism in 39.1% (n=18) and severe tropism in 28.3% (n=13). For the control group, there was no tropism in 86.3% (n=44), there was moderate tropism in 13.7% (n=7) and no severe tropism at the level of L3-4. For the level of L4-5, there was no tropism in 80.4% (n=41), there was moderate tropism in 17.6% (n=9) and severe tropism in 1.9% (n=1). For the level of L5-S1, there was no tropism in 68.6% (n=35), there was moderate tropism in 29.4% (n=15) and severe tropism in %1.9 (n=1). In the IS patients group, the mean facet angles were 35.2°, 40.8° and 43.7° for the levels of L3-4, L4-5 and L5-S1, respectively. For the control group these values were 33.2°, 39.7° and 42.1°.

Conclusion

Facet angle tropism is seen in a high proportion of patients with IS and seems to be a predisposing factor in the etiology of IS.

No conflict of interest

ISPR7-0283

Musculoskeletal Conditions - Back Pain and Spine Disorders

WORK-RELATED PSYCHOSOCIAL EXPOSURES AND LOW BACK PAIN AMONG PROFESSIONAL DRIVERS IN ISMAILIA CITY, EGYPT

R. M. Farghaly¹, D. A. El-Shafe², M. Emad Ibrahim³, M.H. K. Shehata⁴

¹Suez Canal University-faculty Of Medicine, Community- Environmental And Occupational Medicine, Ismailia, Egypt

²Zagazig University-faculty Of Medicine, Community- Environmental And Occupational Medicine, Zagazig, Egypt

³Suez Canal University-faculty Of Medicine, Physical Medicine And Rheumatology, Ismailia, Egypt

⁴Helwan University - Faculty Of Medicine, Family Medicine, Cairo, Egypt

Introduction/Background

Occupational Low Back Pain (LBP) is one of the most common health problems among professional drivers. It has been identified as a cause of disability, job absences and paid compensations. Occupational Psychosocial risk factors include job satisfaction, mental demands and poor supervisor ratings. These can cause muscle tightness, mechanical strain on spinal structures, and fatigue that could lead to traumatic injury and LBP. Studies showed association between occupational physical exposures and LBP among professional drivers. However, few studies assessed the association between work-related psychosocial factors and LBP in professional drivers. The aims of this study are twofold: to determine the prevalence of LBP among professional drivers in Ismailia city, and assess its association with work-related psychosocial risk factors.

Material and Methods

A cross sectional analytic study will be conducted among professional drivers in Ismailia city. All study participants will be subjected to a semi-structured questionnaire about personal, socio-demographic data, occupational history, Modified Nordic Low Back Pain Questionnaire (MNLBPQ). They will be asked if they experienced LBP during the last 12 months (ache, pain or discomfort) for a day or longer. In addition, Job Content Questionnaire (JCQ) will be filled which is a 14-item questionnaire used to measure psychological job demands and decision latitude (control) rated on a 4-point Likert scale. It is comprised of 4 subscales: psychological job demands (5 items) and decision latitude (9 items) comprising decision authority (3 items) and skill discretion (6 items). The job strain score will be calculated using the difference between mean psychological job demands and mean decision latitude. Higher scores reflect higher levels of job strain.

Results

We expect to find a high incidence of LBP among the study participants which will be strongly associated with work-related psychosocial risk factors.

Conclusion

Psychosocial stressors at work contribute independently to LBP among professional drivers

No conflict of interest

ISPR7-0288

Musculoskeletal Conditions - Back Pain and Spine Disorders

BACK-STUDY BAUMGARTEN – TECHNOLOGY-ASSISTED HOMETRAINING AFTER INPATIENT ORTHOPEDIC REHABILITATION IN PATIENTS WITH CHRONIC LOWER BACK PAIN

T. Bochdansky¹, F. Leisch¹, M. Schmidt¹

¹VAMED, Rehabilitationsklinik Baumgarten, Vienna, Austria

Introduction/Background

Lower back and neck pain was the leading global cause of disability in all high-income countries and in most other countries in 2015 and physical activity is a key public health intervention (1). Telerehabilitation is supposed to improve patient compliance in a home based exercise program. In a prospective randomized clinical pilot study we examined if a technology assisted exercise program could improve the sustainability and effect of an exercise program after discharge from inpatient rehabilitation.

Material and Methods

After approval by the local ethical commission 60 Patients had been tested in 2 groups. Both groups underwent an inpatient rehabilitation program for 21 days. During the last days the first group got a written exercise program (standard group, SG) and the second group (interventional group, IG) got an inertial movement unit (IMU; Valedo, hocoma®) as motion sensor and a tablet for their home exercise. Both groups had been instructed to do their home exercise program on a daily base for 4 weeks after discharge and to keep a diary. On day 1 after admission, on day 20 (before discharge) and after the 4 weeks of home exercise every patient had a medical (anamnesis, clinical examination) and therapeutical (visual analog scale for pain VAS, timed-up-and-go Test TUAG) examination and had to complete scores (SF-12; Tampa scale for kinesiophobia TS; Roland Morris questionnaire RM)

Results

In both groups VAS, TUAG as well as SF-12, TS and RM improved significantly between first and second test during inpatient phase. Only in IG the parameters improved also during the home-phase. Compliance was much better within the IG during home-Phase.

Conclusion

It could be shown that a telerehabilitation assisted home exercise program improved the overall compliance and therefore the clinical result after discharge of a inpatient rehabilitation.

No conflict of interest

ISPR7-0325

Musculoskeletal Conditions - Back Pain and Spine Disorders

INFLUENCE OF FACET TROPISM ON THE EFFICACY OF FLUOROSCOPY GUIDED TRANSFORAMINAL EPIDURAL STEROID INJECTION

A.E. Celenlioglu¹, O.H. Gunduz¹

¹Marmara University Hospital, Physical medicine and rehabilitation, ISTANBUL, Turkey

Introduction/Background

Facet joints (FJ) are normally symmetrical. Facet tropism is defined as more than 10 degrees of asymmetry between opposing FJ. Facet tropism (FT) may influence lumbar degenerative changes by altering lumbar biomechanics which creates stress on lumbar disc herniation (LDH) and FJ.

Objective: To investigate the influence of FT on the efficacy of fluoroscopy guided transforaminal epidural steroid injection.

Material and Methods

One hundred patients who were diagnosed unilateral and single level lumbar radiculopathy by using MRI findings and clinical examination were enrolled in this study. Patients were evaluated by physical examination (manual muscle strength test, sensory examination, deep tendon reflexes), straight leg raise (SLR) test, numeric rating scale (NRS), Oswestry Disability Index (ODI), Istanbul Low Back Pain Disability Index (ILBPDI) and Beck Depression Inventory (BDI) at baseline, third week and third month. Presence of FT was assessed by calculating the facet angles on Lumbar MRI T2 axial slices of L3/L4, L4/L5, and L5/S1 segments. Ninety-six of 100 patients completed 3 months follow up. Because of LDH four patients had undergone to surgery after third week assessment. So three patients could not be assessed at 3rd month. In this study effectiveness of treatment were compared between patients with or without FT.

Results

In this study both groups showed statistically significant improvement on NRS, ODI, ILBPDI, BDI ($p < 0.05$). While comparing the groups improvements were higher on patients without FT ($p < 0.05$).

Conclusion

Fluoroscopy guided TFESI are effective treatment strategy for patients with LDH. In this study FT is factor that negatively influence the clinical outcomes after TFESI.

No conflict of interest

ISPR7-0347

Musculoskeletal Conditions - Back Pain and Spine Disorders

EFFECTS OF A LUMBAR STABILIZATION PROTOCOL APPLIED IN PATIENTS WITH CHRONIC LOW BACK PAIN: A RETROSPECTIVE STUDY

C. Lago-Rizzardi¹, A.P. Ramos da Silva¹, P.C. Moreira de Sousa¹, D. Souza Speciali²

¹*Hospital Israelita Albert Einstein, Centro de Reabilitação, São Paulo, Brazil*

²*Hospital Israelita Albert Einstein, Laboratório de estudo do movimento, São Paulo, Brazil*

Introduction/Background

Low back pain is one of the leading causes of disability, affecting much of the adult population at some point in life. Instability of the low back pain is present in pain complaints and usually results from degenerative, inflammatory, congenital and mechanical-postural changes. An adequate rehabilitation program stimulating the rebalancing of the muscles and the stabilization of the spine can provide an improvement in strength and muscular endurance and motor control, consequently an improvement in the quality of life.

The objective of the study was to evaluate the effect of the lumbar stabilization protocol in 60 patients with non-specific chronic low back pain in relation to the pain complaint and improvement of the spine function.

Material and Methods

The objective of the study was to evaluate the effect of the lumbar stabilization protocol in 60 patients with non-specific chronic low back pain in relation to the pain complaint and improvement of the spine function.

The patients underwent a 12-week rehabilitation program at the Israelita Albert Einstein Hospital Rehabilitation Center twice a week to reduce pain, improve lumbar stabilization, and consequently gain function. The evaluation and reevaluation were done through EVA and Roland Morris (RM).

Results

Of the 60 patients studied, 85% achieved pain improvement above 30% and 81.7% improved over 30% at Roland Morris. The mean of the complaint before rehabilitation was 6.3 (EVA 0-10) and after the rehabilitation was 3.16. The mean of RM before rehabilitation was 10.81 points and after 5.1.

Conclusion

It was concluded that the lumbar stabilization protocol was effective for patients with chronic non-specific low back pain with significant reduction of pain and improvement of function.

No conflict of interest

ISPR7-0415

Musculoskeletal Conditions - Back Pain and Spine Disorders

THE ASSOCIATION OF BMI AND CURVE SEVERITY IN CHILDREN DIAGNOSED WITH IDIOPATHIC SCOLIOSIS IN A SCHOOL SCOLIOSIS SCREENING PROGRAM: ANALYSIS OF 473 PATIENTS

Q. Du¹, X. Zhou¹

¹Xinhua Hospital Affiliated to Shanghai Jiaotong University School of Medicine, Rehabilitation Department, Shanghai, China

Introduction/Background

Low body weight is thought to be associated with scoliosis. However, the association of curve severity and body mass index (BMI) is still unclear. The objective of this study was to determine whether an association exists between low BMI (<18.5 kg/m²) and curve severity in children diagnosed with idiopathic scoliosis in a school scoliosis screening program.

Material and Methods

473 children (192 girls/181 boys) diagnosed with idiopathic scoliosis in a school scoliosis screening program were recruited. Scoliotic curve severity assessed by Cobb's angle was categorized as mild (10°-19°) or moderate (≥20°). Height and weight were measured. BMI were calculated. BMI was categorized as low (<18.5 kg/m²) or normal (≥18.5 kg/m²).

Results

The mean age of the subjects was 14.2 ± 2.5 years old. The mean Cobb angle was 12.4° ± 2.5° in the mild group and 27.3° ± 13.1° in the moderate group. The mean BMI was (16.6 ± 1.3) kg/m² in the low BMI group and (20.9 ± 2.3) kg/m² in the normal BMI group. Of 639 children with idiopathic scoliosis, 40 (8.5%) had moderate curve, 260 (55.0%) had normal weight. There was no significant association between BMI and curve severity. After adjustment for age and BMI, a positive association was seen between moderate curve and female (OR, 2.35; 95% CI, 1.09-5.08).

Conclusion

BMI is not related to the scoliotic curve severity in idiopathic scoliosis patients.

No conflict of interest

ISPR7-0503

Musculoskeletal Conditions - Back Pain and Spine Disorders

PERCEPTION OF VERTICALITY AND BODY IMAGE IN IDIOPATHIC SCOLIOSIS

M. Le Berre¹, J.F. Catanzariti², C. Pradeau¹, M. Coget², M. Bussiaux², M.C. Versyp², I. Bourdeauducq², A. Thevenon¹

¹CHRU Lille, Physical and rehabilitation medicine, Lille, France

²SSR pédiatrique Marc Sautelet, pediatric spine, Villeneuve d'Ascq, France

Introduction/Background

Idiopathic scoliosis (IS) is a 3D-deformation of the spine which seems to have a polyfactorial origin. Disruptions of postural control are proven. Verticality has a prominent place in postural control. Adolescence seems to be a risky period in the perception of verticality and body image. IS can therefore be explained by an erroneous mental representation of verticality, occurring during the brain maturation period. This erroneous representation leads to a reorientation of the body axe and thus the trunk, could be at the origin of the deformation.

Material and Methods

Transversal study, control cases, multicentric, involving IS and control subjects, matched in age, sexe, BMI et Tanner stade. The frontal list, Cobb angle, gibbosity and laterality was collected. Visual Vertical and postural vertical (PV) was measured; Perception of truncal deformation via modified Spinal Appearance Questionnaire (modified-SAQ)

Results

Data from 60 of the individuals (30 per group) were used after matching. The manual laterality of our groups was comparable. In our group IS, PV was tilted more significantly ($p < 0,001$), correlated to the frontal list ($r = 0,456$; $p = 0,007$). The modified-SAQ score was also more significant in the IS group ($p < 0,001$). Cutoff levels were calculated by ROC curves using the two significant variables : +0,42 for VP and 2,5 for modified SAQ.

Conclusion

This was the first study regarding children suffering from scoliosis to combine VV and PV evaluations and modified-SAQ. The results provide evidence for tilted PV and altered perception of body image. These distortions can initiate and/or increase the spinal deformity.

No conflict of interest

ISPR7-0520

Musculoskeletal Conditions - Back Pain and Spine Disorders

A SUBTLE THREAT TO URBAN POPULATIONS IN DEVELOPING COUNTRIES: LOW BACK PAIN AND ITS RELATED RISK FACTORS

P. Noormohammadpour¹, M.A. Mansournia², M. Asadi-Lari³, R. Nourian⁴, M. Rostami⁵, R. Kordi¹

¹*Sports Medicine Research Center- Neuroscience Institute, Tehran University of Medical Sciences, Tehran, Iran*

²*Department of Epidemiology and Biostatistics- School of Public Health, Tehran University of Medical Sciences, Tehran, Iran*

³*Oncopathology Research Center, Iran University of Medical Sciences, Tehran, Iran*

⁴*Spine Division, Noorafshar Rehabilitation & Sports Medicine Hospital, Tehran, Iran*

⁵*Department of Neurosurgery- Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran*

Introduction/Background

Low back pain (LBP) is a common and costly medical problem all around the world. Currently, there are limited data available on prevalence as well as biological and psychological correlates of LBP in large urban populations in developing countries.

The aim of this study was to estimate the prevalence, and biological and psychological correlates of LBP in large, populated urban areas.

Material and Methods

Here, in a cross-sectional, population-based survey, we analyzed data obtained from 22,952 subjects living in Tehran.

Results

Chronic, 1-year, and point prevalence of LBP among subjects were 12.2%, 42.1%, and 36.2%, respectively. LBP was more prevalent among older population, women, housewives, and obese people after adjustment for confounding factors using logistic regression models. In addition, persons with a general health questionnaire (GHQ-28) score ≥ 6 were about 2 times more likely to experience LBP in comparison with others. Both subjects with higher educational levels and those who were never married reported significantly less LBP. Furthermore, we could not find any significant correlation between smoking and physical activity level with LBP.

Conclusion

LBP is prevalent among the general population of Tehran. Our findings can help health care providers regarding logical assignment of limited resources, in order to create multidimensional prevention plans according to potentially modifiable associated factors.

No conflict of interest

ISPR7-0525

Musculoskeletal Conditions - Back Pain and Spine Disorders

BIOMECHANICAL ANALYSIS OF SMALL AMPLITUDE PHYSIOTHERAPY OF LUMBAR SPINE

M. Tomanova¹, M. Daniel²

¹Rehabilitacni ustav Brandys nad Orlici, Brandys nad Orlici, Czech Republic

²Czech Technical University in Prague, Faculty of Mechanical Engineering, Prague, Czech Republic

Introduction/Background

Physical rehabilitation in treatment of chronic low back pain should reduce pain/muscle tension and restore spine stability and balance. It has been proposed that the skill or quality of the movement pattern that is used could be more important than simple achievement of muscle strength in rehabilitation. The overall aim of the study is to estimate the effect of various motion pattern during active exercises on the spinal muscle and L5/S1 load using mathematical modeling. Specifically, we wanted to analyze effect of the center of gravity of upper body displacement on the lumbar spine load during the exercise, define "safe zone" of simple lumbar exercise that will not overload the spine and study the effect of various kinematics motion pattern on lumbar spine load.

Material and Methods

Three-dimensional model of lumbar spine musculoskeletal system was used to simulate effect of various load motion pattern induced by displacement of upper body center of gravity in rehabilitation. Four types of upper body motion trajectory in physiotherapy have been studied: simple lateral pendulum motion, oblique pendulum motion, ellipse motion and shape-eight motion described by Bernoulli lemniscate. Spinal load is estimated considering equilibrium of gravitational, intraabdominal, muscle, and spinal reaction forces and torques. Muscle activity required to maintain equilibrium in a given position of body is computed using the method of inverse dynamic optimization.

Results

Spinal load is less sensitive to left-right displacement than to antero-posterior displacement. The simple pendulum-like and elliptical-like pattern induce harmonic muscle activation and harmonic spinal load. The shape eight motion pattern doubles the frequency of loading the spine while conditions complex muscle activation pattern.

Conclusion

The results of the study confirm hypothesis that complex motion pattern during rehabilitation might alter the spine stability by influencing its passive, active and neural components.

No conflict of interest

ISPR7-0595

Musculoskeletal Conditions - Back Pain and Spine Disorders

SPINOPELVIC MISALIGNMENT IN PATIENTS WITH CHRONIC LOW BACK PAIN WHO DID NOT RESPOND COMPREHENSIVE NON-SURGICAL TREATMENTS

S. Demir-Deviren¹, H. Cil¹, S. Berven¹

¹University of California- San Francisco, Department of Orthopaedic Surgery-Spine Center, San Francisco, USA

Introduction/Background

The etiology of low back pain (LBP) is multifactorial. Morphological and postural factors can potentially affect the occurrence of LBP. A harmonious sagittal spinopelvic alignment is needed for a neutral posture, which is provided by balanced spinopelvic curves (lumbar lordosis (LL), pelvic incidence (PI), sacral slope (SS) and pelvic tilt (PT)). The effect of sagittal spinopelvic alignment on LBP is poorly understood. The aim of this study: to determine the occurrence of sagittal spinopelvic misalignment (SSM) in a prospective cohort of 82 patients with chronic LBP who did not respond non-surgical treatments.

Material and Methods

Spinopelvic curves were measured prospectively using Surgimap® on lateral spine X-rays. Patients were excluded if they had scoliosis, spondylolisthesis, spinal surgery, fracture or tumor, and leg pain. SSM was defined as $PI-LL \geq 10^\circ$. Lumbar spine magnetic resonance images (MRI) were reviewed.

Results

Twenty-seven patients out of 82 (32%) had SSM. In 24 patients (89%), LL was higher than PI to cause SSM. Ten patients (37%) had normal lumbar spine MRI. The patients with normal MRI were significantly younger than patients without normal MRI (38.6 ± 9.43 vs 47.06 ± 10.20 years, $p=0.04$).

Conclusion

SSM is mainly seen and utilized in spinal deformity. We showed 32% of patients in our cohort had SSM without any deformity and 37% of these patients had normal lumbar spine MRIs. In conclusion, we think SSM needs to be considered in the etiology of LBP and future studies need to be done to evaluate the effect of SSM on the development of degenerative changes.

No conflict of interest

ISPR7-0609

Musculoskeletal Conditions - Back Pain and Spine Disorders

THE OCCURRENCE OF SAGITTAL SPINOPELVIC MISALIGNMENT IN PATIENTS WITH DEGENERATIVE DISC DISEASE WHO DID NOT RESPOND NON-SURGICAL TREATMENTS

H. Cil¹, S. Demir-Deviren¹, S. Berven¹

¹University of California- San Francisco, Department of Orthopaedic Surgery-Spine Center, San Francisco, USA

Introduction/Background

The analysis of sagittal spinopelvic alignment has been shown to be essential in the treatment of spinal deformity. A harmonious sagittal spinopelvic alignment for a neutral posture is provided by balanced spinopelvic curves (lumbar lordosis (LL), pelvic incidence (PI), sacral slope (SS) and pelvic tilt (PT)). The difference between PI and LL should be $\leq 10^\circ$ to have balanced curves and avoid sagittal spinopelvic misalignment (SSM).

Aim 1: To determine the occurrence of SSM in a prospective cohort of 53 patients with degenerative disc disease (DDD) who did not respond non-surgical treatments.

Aim 2: To determine the effect of SSM on the development of Modic changes.

Material and Methods

Spinopelvic curves were measured prospectively using Surgimap® on lateral spine standing X-rays in patients with DDD. SSM was defined as $PI-LL \geq 10^\circ$. Lumbar spine magnetic resonance images (MRI) were reviewed.

Results

Nineteen patients (36%) out of 53 had SSM. LL was significantly higher (51.1 ± 9.7 vs 57.8 ± 11.3 , $p=0.03$) and PT was significantly lower (15.5 ± 6.1 vs 10.7 ± 7.6 , $p=0.01$) in patients with SSM. Age was similar between groups. There were significantly fewer patients with Modic changes in the group with SSM comparing to the group without SSM ($p=0.041$).

Conclusion

Currently, sagittal spinopelvic alignment is only utilized in the treatment planning of spinal deformity. In this study, we showed 36% of patients with DDD had SSM. In conclusion, we think SSM needs to be utilized in the treatment planning of patients with DDD and future studies need to be done to evaluate the effect of SSM on the development of DDD.

No conflict of interest

ISPR7-0638

Musculoskeletal Conditions - Back Pain and Spine Disorders

SPONDYLODISCITIS IS INFECTION OF THE VERTEBRAL BODY AND INTERVERTEBRAL DISC WHOSE CLINIC IN EARLY STAGES CAN BE CONFUSED WITH PICTURES OF MECHANICAL LOW BACK PAIN.

M.F. vasquez rojas¹, M.F. vasquez rojas²

¹, bogota, Colombia

²universidad militar nueva granada, bogota, bogota, Colombia

Introduction/Background

The purpose of this article is to report a case of spondylodiscitis by an unusual microorganism.

Material and Methods

A 77-year-old male patient with a history of splenectomy presented with 3 months of low back pain with mechanical characteristics. Lumbar X-ray was reported with multiple osteophytes, decreased L3-L4 joint space, and fusion of L1-L2 vertebral body with possible pathological fracture on L1, lumbar spine magnetic resonance reported previous perivertebral and epidural inflammation.

Due to persistent pain and imaging findings, L2 vertebral body biopsy was performed with acute and chronic inflammation with *Chryseobacterium indologenes* microorganism resistant to carbapenems, complementary paraclinics with no signs of systemic inflammatory response or hemodynamic repercussion.

A surgical procedure was performed for posterior arthrodesis, placement of pedicular laminar hooks from vertebral body T11 to vertebral body L4 and placement of somatic cylinder.

Results

We present the case of a patient with mechanical low back pain with poor response to conventional medical management and symptomatic worsening. With risk factors for developing spondylodiscitis such as age, secondary immunosuppression by splenectomy, imaging changes and pathology reporting in bone culture positive for atypical bacteria and not reported in the literature, *Chryseobacterium indologenes* a gram-negative, anaerobic, facultative microorganism that can be found in the soil, plants, food, chlorinated drinking water sources and medical supplies. *Staphylococcus aureus* (57%), *Streptococcus* (2.0%), *Enterococcus* (0.7%) and anaerobic bacteria (less than 1%) were found to be the highest incidence among causal microorganisms. There are no reports of the association of *Chryseobacterium indologenes* with spondylodiscitis presentations.

Conclusion

This entity requires a degree of suspicion taken in patients with low back pain without improvement to conventional management. Initial suspicion, location through imaging, identification of red flags as the detection of comorbidities are emphasized and are part of an early treatment to avoid situations of disability to the future.

No conflict of interest

ISPR7-0767

Musculoskeletal Conditions - Back Pain and Spine Disorders

NEW EPISODES OF BACK PAIN AMONG EMPLOYED PEOPLE IN IN PRIMARY CARE, SICKNESS CERTIFICATION AND RTW : A NATIONWIDE REGISTER BASED STUDY FROM NORWAY

S. Gjesdal¹, K. Monstad², T.H. Holmaas³, V.P. Moen⁴, Ø. Hetlevik¹

¹*University of Bergen, Global Public Health, Bergen, Norway*

²*Uni Research, Rokkan Centre, Bergen, Norway*

³*Uni Research, Rokkan Centra, Bergen, Norway*

⁴*Helse Bergen Health Trust, Competency Centre for Rehabilitation, Bergen, Norway*

Introduction/Background

Back pain is on top among causes of disability in Europe. Costs are mainly related to lost productivity, sickness absence and permanent disability. In the Norwegian gate-keeping health service most consultations for back pain, and sickness certification take place in general practice. Sick-pay is tax funded and paid after 16 days' absence for up to 50 weeks.

Material and Methods

Data from all GPs for 2013 was obtained electronically. 983, 2010 employed women and 1,114,040 men were at risk. Patients without consultations during the last three months, consulting a GP with a back pain diagnosis, where a sick-note was issued were identified. Sociodemographic characteristics of the patients and GP variables were used as predictors for sickness certification and prolonged absence in logistic regression analysis.

Results

32,059 employed women (2.90%) and 44,107 men (3.47%) consulted with a new episode of back pain. Of these 41.4% of the women and 44.7% of the men were sickness certified but only 14% stayed on sick-leave over 16 days, in both genders. Male gender, lower education, being divorced and having a female or foreign GP predicted initial sickness certification. Higher age, lower education, and having an older, female or foreign GP, predicted prolonged

Conclusion

In Norway employed men consulted their GPs for back pain more often than women and were also sickness certified slightly more frequent. However longer-time prognosis was similar between the genders. Especially, older and less educated workers need a better follow-up. Different practices between GPs warrant closer investigation.

No conflict of interest

ISPR7-0772

Musculoskeletal Conditions - Back Pain and Spine Disorders

REHABILITATION CARE OF COMMON SCIATICA IN THE ELDERLY

M. Rekik¹, M. Sghir¹, I. Ksibi², W. Said¹, S. Jerbi³, W. Kessomtini¹

¹CHU Tahar Sfar, Department of Rehabilitation- Tahar Sfar hospital, Mahdia, Tunisia

²Military Hospital, Physical Medicine and Rehabilitation, Tunis, Tunisia

³CHU Tahar Sfar, Department of Radiology- Tahar Sfar hospital, Mahdia, Tunisia

Introduction/Background

To describe the epidemiological, clinical, radiological and evolutionary characteristics of an elderly population followed in our Physical and Rehabilitation Medicine Department for common sciatica (CS) and to assess the effectiveness of the treatment.

Material and Methods

A retrospective study conducted over a period of 4 years (2012-2015), including 84 cases of patients aged over 65 years diagnosed with CS. We collected epidemiological, clinical and radiological data, the management and follow-up.

Results

There were 61 women (72.5%) and 23 men (27.5%). The average age was 74 ± 3 years. More than half of the studied population (63%) had overweight. The onset of neuralgia was gradually in all patients, and the presence of a precipitating factor was found only in 14.28% of cases. Clinical evaluation revealed a postural syndrome and spinal syndrome in all cases, and root syndrome in 40.47% of cases. Neurological examination showed motor impairment in 33.3% of cases and sensitivity disorders in 7.14% of cases. The standard x-ray revealed a degenerative spine in all cases, disc space narrowing in 72.61% of cases, a subsequent inter-apophysis arthrosis in 64.28% of cases, spondylolisthesis in 48.80% of cases, and a transitional abnormality in 38.09% of cases. All patients had received symptomatic treatment and appropriate functional rehabilitation. Orthopaedic corset was prescribed for 38.09% of patients and epidural injections in 5.95% of cases. We observed a statistically significant improvement ($p < 0.05$) in all evaluated clinical parameters.

Conclusion

This study focuses on the characteristics of the CS among a geriatric population and suggests the effectiveness of rehabilitative and multidisciplinary treatment.

No conflict of interest

ISPR7-0797

Musculoskeletal Conditions - Back Pain and Spine Disorders

PREVALENCE AND RISK FACTORS OF WORK-RELATED LOW BACK PAIN AMONG NURSES

E. OZCAN¹, T. BAYSAK¹, S. ASGHARI KALEIBAR¹, S. ESMAEILZADEH¹

¹Istanbul University Istanbul Faculty of Medicine, Department of Physical Medicine and Rehabilitation, Istanbul, Turkey

Introduction/Background

Nurses are exposed to various physical and psychosocial risks in the workplace. The aim of this study is to determine the prevalence and risk factors of task related low back pain in nurses.

Material and Methods

A total of 500 nurses were involved in a questionnaire and 370 nurses completed the questionnaires. A total of 330 participants who met the inclusion criteria were included in the study. The intensity of low back pain, exposure to physical and organizational risk factors and poor working posture measured with visual analog scale (VAS). The relationships between intensity of low back pain and work-related risk factors were analyzed by Spearman's correlation test.

Results

The mean age of nurses was 34.5±9.5 (22-60) years, 97.9% (n=323) were female. The mean of work experience as nurse was 12.6±9.9 (1-40) years. The prevalence of low back pain in the past 12 months and past 7 days were 74.5% and 52.1%, respectively. 58.8% of the nurses (n=194) had low back pain. There was a positive significant relationship between the intensity of low back pain and physical risk factors such as repeatedly doing same task (p<0.001), poor posture and handling a job in same position for a long period of time (p<0.001), forward bending and rotation (p<0.001), lifting and transferring the bedridden patients (p=0.02), struggling with confused or agitated patients (p=0.015), carrying heavy objects (p=0.001). Also, there was a positive significant relationship between the intensity of low back pain and psychosocial risk factors such as insufficient breaks during the working day (p<0.001), irregular work in schedule (p<0.001).

Conclusion

Our study suggests that low back pain is common among nurses and emphasizes its relationship with exposure to risk factors. The current results suggest that the participatory ergonomic interventions may be effective in prevention of the low back pain among nurses.

No conflict of interest

ISPR7-0854

Musculoskeletal Conditions - Back Pain and Spine Disorders

INTRA-RATER RELIABILITY OF COMPUTERIZED PHOTOGRAMMETRY IN POSTURAL DEVIATIONS OF SCHOOLCHILDREN

A. Menon¹, M.P. Baroni¹, A.C. Binda¹, A.R. Fréz¹, C.R. Daniel¹, J.A. Ruaro¹, M.B. Ruaro¹

¹Universidade Estadual do Centro-Oeste, Physical Therapy Department, Guarapuava, Brazil

Introduction/Background

The computerized photogrammetry has been an alternative frequently used to the quantitative assesment of postural deviations. This study aimed to analyze the intra-rater reliability of photogrammetry through Corel Draw® software version 17.

Material and Methods

The sample consisted of children and adolescents, aged 10 to 15 years old, from the city of Guarapuava/PR. These were subjected to participate in a photo shoot, after demarcation of anatomical points of interest for the analysis of linear and angular postural variables, using Corel Draw® software version 17. The photos were analyzed by the same rater with an interval of 15 days, for statistical analysis we used the intraclass correlation coefficient (CCI).

Results

Were made 18 evaluations. The majority variables analyzed had demonstrated high levels of reliability (CCI $\geq 0,79$), just one variable presented not acceptable levels (CCI = 0.46).

Conclusion

Corel Draw® software version 17 proved a reliable tool for postural evaluation.

No conflict of interest

ISPR7-0860

Musculoskeletal Conditions - Back Pain and Spine Disorders

A COMPARISON OF MRI OR CT WITH EMG FINDINGS AND CLINICAL LUMBOSACRAL RADICULOPATHY

D. Psillaki¹, I. Kapralos¹, V. Tragoulias¹, K. Gioti¹, D. Emmanouil¹, N. Groumas¹

¹National Rehabilitation Centre, Physical Medicine And Rehabilitation, Athens, Greece

Introduction/Background

To evaluate the agreement of CT or MRI imaging and EMG findings in patients suffering from lumbosacral radiculopathy.

Material and Methods

84 patients (49 women and 35 men aged between 26-71 years old) with suspected lumbosacral radiculopathy underwent CT or MRI imaging and EMG investigation. We made 3 groups: Group A: patients suffering from lumbar pain, group B: patients suffering from ischialgia, group C: patients presenting also neurologic clinical findings. All of them have CT or MRI and EMG investigations.

Results

In group A (18 patients) the agreement between CT or MRI with clinical findings are 11 (61%) and with EMG only 2 (11%). In group B(49 patients) respectively 44 (89%) and 19 (38%). In group C (17 patients) respectively 17 (100%) and 14 (82%).

Conclusion

EMG study showed a higher specificity than MRI or CT scan and MRI a higher sensitivity than EMG findings.

No conflict of interest

ISPR7-0891

Musculoskeletal Conditions - Back Pain and Spine Disorders

POSTURAL AND BEHAVIOURAL HABITS AND BACK PAIN IN ADOLESCENT SCHOOL STUDENTS

A.M. Ferreira¹, G. Andrade¹, F. Carvalho¹, A. Morais², J. Sarmiento², R. Alves²

¹Rovisco Pais Rehabilitation Medicine Center, PRM, Cantanhede, Portugal

²São Martinho Community Health Centre, Community Health Centre, Coimbra, Portugal

Introduction/Background

Aims - Analyse postural and behavioural habits and the prevalence of neck and back pain in adolescent school students.

Material and Methods

Cross-sectional study with 119 students from 10 to 11 years old. Students completed a questionnaire about postural and behavioural habits and neck and back pain, adapted from the Back Pain and Body Posture Evaluation Instrument and Nordic Musculoskeletal Questionnaire.

Results

One hundred students (84%) had a school backpack with 2 straps, 20 of those transported it asymmetrically in a shoulder. The majority studied sitting down (96,6%) and watched television laying down (64,7%). Ninety-four (79%) had inappropriate postures while studying and using the computer and 86 (72,3%) while talking to friends. Fifty-nine (49,5%) watched television for more than 30 minutes/day and 52 (43,8%) used the computer and mobile for more than 30 minutes/day. Fifty (42%) slept 8-9 hours/day. Fifty-four (45,4%) practiced physical exercise once or twice a week and 10 (8,4%) practiced high competition sports. In the last year 58 (48,7%) had back pain, 37 neck pain, 27 thoracic pain and 29 low back pain. Of these, 29 went to the physician and 23 took oral analgesic drugs.

Conclusion

These results demonstrate a high prevalence of back pain in adolescent school students. This is an on-going study and in order to develop educational and preventive programs for schools, we believe the next step will be to increase the sample, search for a relationship between back pain and postural and behavioural habits and evaluate the presence of structural changes in the spine.

No conflict of interest

EFFECT OF PULSED THERAPEUTIC ULTRASOUND (TUS) ON MUSCLE STRENGTH, JOINT MOBILITY AND FUNCTIONALITY IN PEOPLE WITH KNEE OSTEOARTHRITISC. Ramírez¹, E. Rodríguez²¹Universidad Industrial de Santander, Escuela de Fisioterapia, Bucaramanga, Colombia²Universidad Industrial de Santander, Escuela de Fisioterapia, Bucaramanga, Colombia**Introduction/Background**

Osteoarthritis (OA) is a chronic disease that affect negatively muscle strength, joint mobility and leads progressively to functional impairment. The TUS is a modality used by physiotherapists but its effect on strength, joint mobility and functionality has not been verified yet. Aim: To determine the effect of pulsed TUS on muscle strength, joint mobility and function in people with knee OA.

Material and Methods

A quasi-experimental study that included participants with knee OA between 40 and 75 years, with disease severity grade II and III according to Kellgren & Lawrence classification. Ten pulsed TUS sessions (ERA 10cm², SATP intensity 2.2 W/cm² 1MHz for 4 minutes) were applied on lateral and medial compartment of the knee joint. Quadriceps and hamstrings strength was measured using the hand-held dynamometer MicroFET 2®, knee range of motion was evaluated with the universal goniometer and functionality was tested with the 6 minutes' walk test. The differences between the final (T2) and initial measurement (T0) were evaluated with t-student paired and Wilcoxon test ($\alpha=0.05$).

Results

Seventeen participants were evaluated (mean age of 61.4 ± 6 years). There were significant differences in functionality and quadriceps muscle strength after 10 TUS sessions (Table 1).

Table 1. Results of initial assessment (T0) and final assessment (T2) for joint mobility, muscle strength and functionality.

Variable		T0	T2	p
Knee joint mobility (°)	Flexion	132 ± 5.0	132 ± 6.1	0.6
	Extension	130(120-135)	130(125-135)	0.1
Muscle strength (lbs.)	Quadriceps	33 ± 10.2	38.3 ± 7.5	0.04**
	Hamstrings	24 ± 5.3	25.5 ± 4.1	0.1
Functionality (m)		449.3 (422.5-465.3)*	484.6 (473.1-512.3)	0.008**

Data are expressed as mean±SD. *Median (25 – 75%). m: meter, ° grades, lbs: pounds. ** $p<0.05$.

onclusion

The TUS improved strength and functionality of people with knee OA. Muscle strength effect has clinical relevance because is considered a predictor of disease progression and knee arthroplasty, besides it indicates lower risk of requiring orthotic aids for walking.

No conflict of interest

ISPR7-0064

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

COMPARISON OF WALKING PATTERNS BETWEEN DEGENERATIVE KNEE OSTEOARTHRITIS AND CONTROL GROUPS

K.H. Cho¹

¹Chungnam National University Hospital, Department of Rehabilitation, Daejeon, Republic of Korea

Introduction/Background

To compare walking patterns between degenerative knee osteoarthritis (OA) and healthy control groups using dynamic foot pressure measuring system and to obtain a baseline data for predicting energy expenditure using a footwear-based system with pressure sensors.

Material and Methods

Inclusion criteria was : 1) be able to walk, 2) no history of lower extremity surgery, 3) body mass index under 30, 4) diagnosed knee OA. To compare the walking patterns, aged 20-30 years, 50-60 years subjects with no history of musculoskeletal disease were recruited. We used a in-shoe dynamic pressure measuring system, Pedar[®]-X (Novel GmbH, Munich, Germany) and for the prediction of energy expenditure, we used K4b2 (COSMED, Italy). K4b2 provided data for energy expenditure by calory, metabolic equivalent (METs), heart rate. During each subjects performing various treadmill speed (2,3,4,5,6 km/h) gaits, gait patterns and foot pressure were measured (Figure 1).

Results

Total 50 subjects were analyzed with three groups (aged 20-30 years control group, aged 50-60 years control group, degenerative knee OA patients). Demographic data were shown in Table 1. We obtained baseline data of gait patterns, foot pressure, and energy expenditure of each groups during treadmill gait. About dynamic foot pressure, there was no significant difference between aged 20-30 and 50-60 years control groups. But between aged 50-60 control and degenerative knee OA group showed different mean force during 2km/hour gait ($p < 0.05$). And degenerative knee OA group showed higher maximal mean force in affected side ($p < 0.05$).

Conclusion

Degenerative knee OA patients showed imbalance of both foot mean force during gait compared with control groups. Knee OA group showed averagely 4% higher maximal mean force in affected side than unaffected side. We need further large study about accuracy of insole dynamic pressure measurement system and estimation of the energy expenditure associated with common daily activities using that system.

No conflict of interest

ISPR7-0121

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

A PILOT STUDY ON THE THERAPEUTIC ROLE OF MOTOR IMAGERY AFTER TOTAL KNEE ARTHROPLASTY

N. Hoyek¹, M. Moukarzel¹, F. Di Rienzo¹, A. Guillot¹

¹Université Claude Bernard Lyon 1, Laboratoire Interuniversitaire de Biologie de la Motricité LIBM, Villeurbanne, France

Introduction/Background

Motor imagery (MI) is known to decrease pain and promote recovery after neurological and peripheral injuries. Yet, whether MI can be implemented into the classical course of physical therapy during the acute phase following total knee arthroplasty (TKA) remains a working hypothesis. The aim of this study was to measure physical and functional outcomes during the acute postoperative recovery in patients who underwent TKA.

Material and Methods

Twenty volunteers were randomly assigned to either a MI or a control group. Physical outcomes such as pain, range of motion (ROM), knee girth, and quadriceps strength were measured within a test-retest procedure. The functional test was the Timed Up and Go Test (TUG). The pretest was conducted during the 1st physical therapy session immediately after hospital discharge (5 days after operation), and the posttest was conducted during the last physical therapy session (4 weeks later). Participants from the MI group were subjected to MI exercises in addition to classical physical therapy. Participants from the control group underwent the same physical therapy program with a neutral activity during equivalent time (free discussion with the physical therapist).

Results

The MI group exhibited larger decrease of pain and knee girth, as well as a greater increase of ROM and quadriceps strength compared to the control group. No effects of MI on TUG scores were observed.

Conclusion

Implementing MI practice into classical physical therapy enhanced various physical outcomes in acute postoperative recovery after TKA, without subsequent transfer to functional mobility. MI might thus be relevant to promote motor relearning and recovery during the acute phase after TKA.

No conflict of interest

ISPR7-0270

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

COMBINED APPLICATION OF CELECOXIB AND NEUROMUSCULAR EXERCISE THERAPY IN PEOPLE WITH KNEE OSTEOARTHRITIS: A RANDOMIZED CONTROLLED TRIAL

X. Yang¹, C. He¹

¹West China Hospital of Sichuan University, Rehabilitation Medicine, Chengdu, China

Introduction/Background

To examine the effects of combined application of celecoxib and neuromuscular exercise therapy on improving pain, gait performance, and physical function in people with knee osteoarthritis.

Material and Methods

sixty subjects with knee osteoarthritis were randomized into either a control group (n = 30) or a intervention group (n = 30). The intervention group was treated with celecoxib and neuromuscular exercise therapy while the control group was treated with only celecoxib for 4 weeks. Primary outcomes were pain (visual analog scale(VAS)), gait performance (6-minute walking test, timed up and go test), and self-reported physical function (Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), Knee injury and Osteoarthritis Outcome Score (KOOS)).

Results

There were no significant differences between the groups on the primary outcomes after the 4-week treatment period. The changes between intervention and control groups were significantly different in the 6-minute walking test, timed up and go test, WOMAC and KOOS at the 1-month follow-up.

Conclusion

These results suggest that combined application of celecoxib and neuromuscular exercise therapy have long-term effects on improving gait performance and physical function in knee osteoarthritis patients.

No conflict of interest

ISPR7-0279

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

PREDICTION OF RESPONSE TO INTRA-ARTICULAR INJECTION OF HYALURONIC ACID FOR KNEE OSTEOARTHRITIS

A. Selim¹, A. Hegazy²

¹, Memphis, USA

²DAMMAM MEDICAL COMPLEX, REHABILITATION CENTER, DAMMAM, Saudi Arabia

Introduction/Background

Osteoarthritis (OA) of the knee is a debilitating condition that affects a large population. Intra-articular injections of

hyaluronic acid (IA-HA) have been shown to provide symptom relief for patients who have failed to

respond to conservative interventions. Many other patients, however, experience only slight or no improvement. The

results from this pilot study will allow physicians to identify whether a patient is likely or unlikely to respond well to HA

therapy leading to improved treatment success rates.

Material and Methods

Inclusion Criteria: Symptomatic knee OA; radiographic evidence of OA; age 18 years or older; failed minimum of 3 months of non-operative treatment for at least 3 months.

Exclusion Criteria: Associated ligamentous instability; history of deep knee infection; previous knee surgery; candidate for total knee arthroplasty or arthroscopy; peripheral neuropathy; X-rays that are completely negative and only MRI evidence or arthroscopic evidence (from previous arthroscopy) of OA; prior IA-HA injections; chondrocalcinosis; patients with precautions or contraindications for viscosupplementation use; and cortisone injection within past 3 months.

Study patients received 3 injections over 3 weeks. The following data were collected: age; weight; BMI; pre-injection Knee injury and Osteoarthritis Outcome Score (KOOS) and Visual Analog Score (VAS); post-injection KOOS and VAS at 6 months.

Results

The study population (n= 30) has BMI average of 32.9 ± 4.5 , pre-treatment average KOOS of 54.06 ± 16.6 , and an average VAS of 7.1 ± 1.6 . A clinically meaningful improvement was observed at 6-months post-injection; KOOS showed a change of 16 points and VAS has 3.43 points. The data-mining analysis suggested that pre-injection KOOS (KOOS-0) is the most significant predictor. Additionally, the regression analysis data showed that KOOS-0 can predict the clinical improvement at 6 months; $KOOS-6 = 49.68 + (0.39 * KOOS-0)$.

Conclusion

This mathematical tool may support clinical decision making related to IA-HA in the treatment of OA in a patient with a mild-moderate disease.

No conflict of interest

ISPR7-0343

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

RELATIONSHIP AMONG WALKING SPEED, SELECTED CLINICAL SYMPTOMS AND EXERCISE SELF-EFFICACY IN INDIVIDUALS WITH KNEE OSTEOARTHRITIS

O. Ogwumike¹, A.F. Adeniyi², S. Musa³

¹University of Ibadan/University College Hospital, Department of Physiotherapy, Ibadan, Nigeria

²University of Ibadan/ University College Hospital, Department of Physiotherapy, Ibadan, Nigeria

³University of Ibadan, Department of Physiotherapy, Ibadan, Nigeria

Introduction/Background

Background: Osteoarthritis (OA) is characterised by a combination of joint symptoms and signs stemming from defects in the articular cartilage and changes in the adjacent tissues, such as bone, synovial joint capsule, muscles and ligaments. It is one of the most common causes of pain and disability in middle-aged and older people. This study investigated the relationship among selected clinical symptoms (pain, stiffness and physical function), walking speed and exercise self-efficacy in individuals with knee OA in Ibadan, Nigeria.

Material and Methods

Methods: One hundred individuals diagnosed with knee OA participated in this study. Exercise self-efficacy was assessed using the exercise self-efficacy scale. Pain, stiffness and physical function were assessed using the Western Ontario Macmaster (WOMAC) Osteoarthritis Index questionnaire. Walking speed was assessed using the 20 meter walk test. Data were analysed using Pearson's correlation test and linear regression with significance level set at 0.05.

Results

Results: Significant correlations were observed between pain intensity and walking speed ($r = -0.38$), stiffness and walking speed ($r = -0.19$), physical function and walking speed ($r = -0.40$), pain intensity and exercise self-efficacy ($r = -0.43$), stiffness and exercise self-efficacy ($r = -0.46$), physical function and exercise self-efficacy ($r = -0.41$). More than fifty percent of the participants with knee OA had low exercise self-efficacy and moderate walking speed. Individuals who had higher levels of pain, stiffness and functional limitations showed lower level of exercise self-efficacy and lower level of walking speed.

Conclusion

Individuals with knee OA had low exercise self-efficacy, low walking speed and reduced physical function probably because of the debilitating effects of the condition.

No conflict of interest

ISPR7-0439

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

NEUROPATHIC PAIN FEATURES IN PATIENTS OF VARIOUS AGE WITH KNEE OSTEOARTHRITIS

V. Povoroznyuk¹, U. Pryimych²

¹*D.F. Chebotarev Institute of gerontology NAMS Ukraine,*

Department of Clinical Physiology and Pathology of Locomotor Apparatus, Kyiv, Ukraine

²*D.F. Chebotarev Institute of Gerontology NAMS Ukraine,*

Department of Clinical Physiology and Pathology of Locomotor Apparatus, Kiev, Ukraine

Introduction/Background

Osteoarthritis-induced pain is a result of nociceptor stimulation, associated with local tissue damage and inflammation. Recent data suggest the presence of neuropathic pain symptoms in patients with osteoarthritis.

The aim of this study was to estimate the structure of pain syndrome, reveal the presence of neuropathic pain (NP) component, symptoms and signs of NP in patients suffering from knee osteoarthritis. **Material and Methods**

We've examined 44 patients with knee osteoarthritis of the II-III stages by the Kallgren-Lawrence scale aged 47-85 years (average age 66,1±1,5 years). To assess the NP component, we used screening scales painDETECT, LANSS, DN4 questionnaires. To assess intensity of pain, visual analogue scale (VAS) was used. Besides WOMAC and EuroQol-5D questionnaire were applied.

Results

4,6% of patients with knee osteoarthritis examined by painDETECT were likely to have the NP component. LANSS scale: 25% were probably to have NP. DN4 scale: 31,2% probably had NP. Moderate to significant correlations were found between intensity of pain by VAS data and Neuropathic Pain Scales (painDETECT, LANSS, DN4) data ($p<0,05$). It was established that higher results of screening by painDETECT and DN4 positively correlate with a disturbance of physical function tested by WOMAC ($p<0,05$). PainDETECT data have moderate to significant correlations with EuroQol-5D questionnaire ($p<0,01$). Burning pain ($p<0,01$), pins and needles ($p<0,05$) can be associated with a more severe pain in patients with knee osteoarthritis.

Conclusion

Thus, in patients with osteoarthritis the pain syndrome may reveal NP features. Identification of these would promote a targeted treatment strategy.

No conflict of interest

ISPR7-0451

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

KINESIO TAPING IS BENEFICIAL FOR KNEE OSTEOARTHRITIS: A META-ANALYSIS

X. Li¹, Q. Du¹, X. Zhou¹

*¹Xinhua Hospital Affiliated to Shanghai Jiaotong University School of Medicine,
Department of Rehabilitation Medicine, Shanghai, China*

Introduction/Background

Kinesio Taping (KT) has been applied in knee osteoarthritis (KOA) rehabilitation. However, the benefits of KT are still unknown. We conduct a meta-analysis to assess the effects of KT on patients with KOA.

Material and Methods

A computerized search was conducted on September 20, 2016 by using electronic databases. Randomized controlled trials (RCTs) of KT for KOA were eligible. The primary outcomes were self-reported pain at activity and knee flexion range of motion (ROM). Secondary outcome was knee-related health status. The risk of bias tool of the Cochrane Collaboration was used to assess the quality of the studies included, as well as a random-effects model was used to calculate the weighted mean difference (WMD) and 95% confidence intervals (CI).

Results

Eleven trials with 482 participants provided data for the meta-analysis. Significant difference was shown in self-reported pain at activity (WMD, -0.85; 95% CI, -1.55 to -0.14; $P = 0.02$) between KT and other forms of exercise, as well improvement in knee flexion ROM (WMD, 7.95; 95% CI, 0.61 to 14.56; $P = 0.03$) was greater in KT group. Parameters of knee-related health status including the WOMAC scale and the Lequesnel Index. Although the Lequesnel Index revealed no statistically significant difference (WMD, -0.06; 95% CI, -0.89 to 0.77; $P = 0.89$), WOMAC Scale has been significant difference between two groups (WMD, -4.10; 95% CI, -7.75 to -0.45; $P = 0.03$).

Conclusion

This meta-analysis demonstrated that KT is effective in the treatment of KOA. This provides a new evidence for KOA management.

No conflict of interest

ISPR7-0458

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

THE RADIOLOGIC FINDINGS OF SPINE WITH OSTEOARTHRITIS

M. Jung¹, Y.M. Cheon¹

¹Asan Medical Center, Department of Rehabilitation Medicine, Seoul, Republic of Korea

Introduction/Background

Maintaining the normal lumbar lordotic curve and sacral inclination is associated with the prevention of spinal disorders. A posture with a reduced lordosis is associated with an increased intradiscal pressure which may cause low back pain. There are some reports that Knee osteoarthritis patients accompany with lumbar degenerative. In this study, we retrospectively investigated patients with Knee osteoarthritis to examine the association between the radiologically determined severity of knee osteoarthritis and the sagittal alignment of the lumbar spine.

Material and Methods

From March to September 2009, knee pain patients who visited or were consulted to rehabilitation department of Asan Medical Center were enrolled. The recruited patients were who have diagnosed knee osteoarthritis patient by radiography, no complain of back pain during previous 6 months and no compression fractures from L1 to S1. We assessed Kellgren-Lawrence grading scale and Knee varus angle of the patients' weight bearing whole lower extremity anteroposterior (AP) radiography of the knee. We calculated Cobb's angle (total lumbar lordosis, angle between the superior end plates of L1 & S1) and sacral inclination angle (angle between the superior end plate of S1 and a horizontal line) in lateral lumbar radiography of whole spine.

Results

A total of 35 appropriate patients selected in the study. In the more severe knee osteoarthritis, knee varus angle is decreased and the degenerative change of lumbar spine is progression. Also lumbar lordosis and pelvic anterior tilt are decreased.

Conclusion

The results of our study suggest that the knee osteoarthritis patients tend to have the lumbar spine degenerative change and sagittal balance derangement. Therefore, we think that spine evaluation is needed in patients with knee osteoarthritis, even though the patient have no complain of back pain.

No conflict of interest

ISPR7-0534

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

CAN SERUM LEPTIN AND ADINOPECTIN LEVELS PREDICT CLINICAL AND RADIOGRAPHIC SEVERITY IN KNEE OSTEOARTHRITIS?

O. Umit Yemisci¹, A. Gungor Oygur¹, S. Ikbali Afsar¹, S.N. Saracgil Cosar¹

¹Baskent University, Physical Medicine and Rehabilitation, Ankara, Turkey

Introduction/Background

Adipokines are thought to play a role in the pathophysiology of OA by mediating the secretion of variable inflammatory molecules and research about their use as biochemical markers for monitoring is ongoing. The aim of this study was to determine the association between serum levels of leptin and adinopectin with clinical and radiographic severity of knee OA.

Material and Methods

Seventy-six consecutive patients, who were admitted to an outpatient clinic of a tertiary level rehabilitation center with a diagnosis of knee OA were included. Radiographic severity was assessed by Kellgren-Lawrence staging system, clinical severity was assessed by Visual Analogue Scale (VAS), Western Ontario and McMaster Universities Arthritis Index (WOMAC) and quality of life was evaluated by Short Form 36 (SF-36).

Results

A total of 76 female patients ages between 40-85 (mean age 62.16 ± 12.04) years were enrolled to the study. Only 10.5% of the patients had normal BMI while 89.5% of the patients were either overweight or obese. There was a statistically significant and moderate positive correlation between leptin and BMI ($p=0.000$, $r=0.528$); and statistically significant and weak-to-moderate positive correlation between age and adinopectin levels ($p=0.008$, $r=0.301$). No correlation was found between leptin levels and SF-36 components ($p>0.05$). Furthermore radiographic staging, VAS and WOMAC scores of the patients showed no significant correlation with neither serum leptin nor adinopectin levels.

Conclusion

These findings suggest that neither adinopectin nor leptin levels are effective biomarkers for monitoring and predicting the outcomes of OA. Further investigations should be well considered for more specific laboratory marks for this common disease.

No conflict of interest

ISPR7-0554

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

CORRELATION OF WESTERN ONTARIO AND MCMASTER UNIVERSITIES OSTEOARTHRITIS (WOMAC) AND SHORT FORM 36(SF36) QUESTIONNAIRES IN PATIENTS WITH KNEE OSTEOARTHRITIS

S.A. Raeissadat¹, E. Ghorbani², L. sedighipour³

¹Shahid Beheshti University of medical sciences- Shahid Modarres Hospital, Physical and Rehabilitation medicine department, Tehran, Iran

²Shohada hospital, Physical Medicine & Rehabilitation Research Center, Tehran, Iran

³Shahid Beheshti University of Medical Sciences, Physical Medicine & Rehabilitation Research Center, Tehran, Iran

Introduction/Background

The aim of the present study was evaluate the correlation between condition-specific and generic health status questionnaires for measuring health-related quality of life in patients with osteoarthritis (OA) of the knee

Material and Methods

This cross-sectional survey included a total of 424 patients aged 50 years and over,

with symptomatic OA of the knees. All patients completed Correlation of Western Ontario and McMaster Universities Osteoarthritis (WOMAC) and Short Form(SF-36) questionnaires and were assessed for severity of OA. The correlation between radiographic findings, patients' symptoms also between the scores of two questionnaires were evaluated.**Results**

A significant correlation was found between WOMAC pain, stiffness and function scores and all SF-36 domains and the strongest correlation was between WOMAC pain dimension and the SF physical function. There was correlation between patients BMI and SF-36, also VAS scores. Patients with knee OA in grade 2 and 3 had lower HRQL (according to both WOMAC and SF 36 measure) compared to patients with knee OA in grade 1.

Conclusion

There are agreements between dimensions of WOMAC and SF36 in measuring HRQL in patients with knee OA. Symptoms also correlate with radiographic findings and BMI. The use of both a generic measure of HRQOL such as the SF-36, and a disease specific such as WOMAC is useful in characterizing the global burden of this disease.

No conflict of interest

ISPR7-0577

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

WHEN THE CLINIC DOES NOT MATCH THE IMAGE

Ú. Martins¹, R. Marques², J. Cunha², J. Gomes², C. Branco²

¹Centro Hospitalar Entre Douro e Vouga, Physical Medicine and Rehabilitation Department, Maia, Portugal

²Centro Hospitalar Entre Douro e Vouga, Physical Medicine and Rehabilitation Department, Santa Maria da Feira, Portugal

Introduction/Background

Reverse shoulder total arthroplasty(RSTA) was initially designed to rotator cuff tear arthropathy in elderly patients. Nowadays is accepted to advanced glenohumeral(GH) joint pathology who have persistent pain and loss of function despite conservative management.

Material and Methods

The aim of this study is to review the main complications of RSTA, and the role of a good rehabilitation in maintaining an adequate functional level.

Results

Case report

Female, 78 years old. Medical history of a knee surgery, resulting in an altered gait pattern, requiring a crutch on the right side. 18, years later, she started pain and loss of function on right shoulder with gait impairment, as she cannot use the crutch.

The RMI showed an advanced GH osteoarthritis with rotator cuff tear, subluxation of humerus head and a destruction of the glenoid.

The patient was subjected to a RSTA. Followed by a 5 month rehabilitation program returning to her daily life activities as the previous level.

One year after surgery, RX showed a glenoid detachment, with a luxation. The patient was proposed for new surgery, which she refused, as she hadn't functional limitation or pain. She then started a conservative approach focus on strengthening and mantainning functional Independence without pain. Four years later, she returned to trauma urgency with movement restriction, acute pain and finally accepted the surgery.

Conclusion

RSTA, implies changes of joint physiology and biomechanics, which might increase the potential for complications, as scapular notching followed by glenoid component misalignment.

RSTA leads to an improvement of shoulder function and quality of life, despite its surgical risk complications. In this case, as a consequence of an early return to walking with crutch. Post surgical rehabilitation has an important role in maintaining an adequate functional level.

No conflict of interest

ISPR7-0597

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

PROCESS MODULATED MICROCURRENT THERAPY (ZYZOENERGESE ®) DURING EARLY INPATIENTREHABILITATION AFTER KNEE- AND HIP OPERATIONS. A DOUBLE-BLIND, RANDOMIZED, PLAZEBO-CONTROLLED PILOT TRIAL

T. Bochdansky¹, K. Ammer²

¹VAMED, Rehabilitationsklinik Baumgarten, Vienna, Austria

²Medical Imaging Research Unit- University of South Wales, Rheumatologie, Pontypridd CF37 1DL, United Kingdom

Introduction/Background

Although the positive effects of electrotherapy are known empirically for several centuries, there are still many physiological questions about the mechanisms of action, especially in the field of molecular and membrane physiology despite of latest research results (including Nobel Prize). It is also unclear what electrical parameters for which therapeutic goals are most optimal.

Material and Methods

In a pragmatic, randomized, Placebo-controlled study, we investigated the additional clinical effectiveness of a new form of electrotherapy, the process-modulated micro current therapy (PMMST, Zytoenergeese ®), during a 14-day inpatient early mobilization after knee and hip operations (endoprosthesis). The results of 114 of the 120 participating patients were evaluated. In addition to clinical tests (gait velocity, timed-up & go test, 5-chair rise test, functional reach test, VAS for pain) the balance ability was recorded with a test equipment (Tetrax, neurodata, ®) at admission approximately 1 week after surgery, at dismissal and at a follow-up 1 month after surgery (approx. 50 days).

Results

All clinical parameters showed a significant improvement at the end of the inpatient stay, which was more pronounced in the phase of early mobilization than in the follow-up period. In the Tetrax-test a better improvement in symmetrical weight distribution of the feet was observed after application of real micro-currents in patients after hip surgery than in patients after knee surgery.

Conclusion

The mechanisms, by which PMMST can contribute to restore the mobility of patients after hip or knee surgery, remain unclear for the moment. Improving the muscular function and the promotion of integration in everyday use are possible explanations. Further investigations to this topic and to pain therapy and wound management are warranted.

No conflict of interest

ISPR7-0665

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

SAFETY AND EFFECTIVENESS OF LOW-LEVEL LASER THERAPY IN PATIENTS WITH KNEE OSTEOARTHRITIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

S.M. Rayegani¹

¹Physical medicine and rehabilitation research center, Shahid Beheshti university of medical sciences, Tehran, Iran

Introduction/Background

Background: Osteoarthritis of the knee is the most common joint disease and is associated with significant physical disability. Low Level Laser Therapy was introduced as an alternative non-invasive treatment for osteoarthritis about 10 years ago, but its effectiveness is still controversial.

Objectives: The main objective of this article was to determine the safety and efficacy of Low Level Laser Therapy in patients with knee osteoarthritis.

Material and Methods

Materials/Patients and Methods: In order to gather evidence, main databases [MEDLINE, PubMed, Cochrane Library, Science Direct, Trip, Google Scholar, Institute of Scientific Information (ISI), SCOPUS and EMBASE] as well as relevant websites were searched without time limit up to September 2016. We searched with appropriate keywords and strategies. After quality assessment of studies, study data were extracted by two reviewers. Because all the outcomes were continuous, standard mean difference by using the random-effects model proposed by Invers Variance was used in the meta-analysis. I² values were used for the evaluation of heterogeneity. Analyses were conducted using Review Manager Software.

Results

Results: A total of 823 studies, 652 studies were entered firstly and 14 RCTs were selected after final review. There was significant difference between LLLT and Placebo in pain at rest ($p=0.02$), pain at activity ($p=0.01$), pain total ($p=0.03$), WOMAC function ($p=0.01$), WOMAC stiffness ($p=0.02$) and WOMAC total ($p<0.0001$) in favor of the LLLT. There was no significant difference between LLLT and Placebo in WOMAC pain ($p=0.09$) and range of motion ($p=0.1$).

Conclusion

Conclusions: Although the heterogeneity of the results calls for caution in interpretation, LLLT seemed to be effective in pain relief and functional outcomes. Despite some positive findings, this meta-analysis lacked data on how LLLT effectiveness is affected by important factors: wavelength, energy density, laser continuous output, and treatment duration, number of sessions the treatment, lost to follow up, severity of KOA and site of application.

No conflict of interest

ISPR7-0675

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

CLINICAL CASE - ECOGUIDED INTRATISSUE PERCUTANEOUS ELECTROLYSIS (EPI)

J. Branco¹, J. Ricardo Pereira², C. Nazareth¹

¹Centro de Medicina de Reabilitação da Região Centro - Rovisco Pais, Medicina Física e de Reabilitação, Coimbra, Portugal

²Centro de Medicina de Reabilitação da Região Centro - Rovisco Pais, Medicina Interna, Coimbra, Portugal

Introduction/Background

Currently, chronic tendinopathy is recognized as a disease of degenerative nature, rather than inflammatory, often resistant to conservative treatment. The ecoguided Intratissue Percutaneous Electrolysis (EPI®) is a minimally invasive technique, causing electrochemical athermic ablation producing localized inflammation that allows tissue repair. With this clinical case we intend to acknowledge this therapeutic option, analyzing the effects of the intervention on pain and function of an individual with patellar tendinosis.

Material and Methods

22-year-old male soccer player with patellar tendinopathy, submitted to several previous interventions without symptomatic improvement. The patient had pain on palpation of the patellar tendon in the lower extremity of the patella. The tendon had changes compatible with patellar tendinosis through ultrasound image.

During treatment we applied the ecoguided technique of EPI®. Per session, three transversal applications (4mA) and three longitudinal applications (4mA) were held, after which the debridement was confirmed by ultrasound image. The sessions of EPI® were conducted every week, complemented by a protocol of eccentric exercises. **Results**

At the beginning, the patient ranked his pain as 7 (0-10), obtaining a 41 score (0-100) in the VISA-P questionnaire. After five interventions of EPI®, the patient ranked his pain as 3 (0-10) and the classification obtained through the VISA-P questionnaire was 81 (0-100). The individual was satisfied with the results which enabled his return to physical activity.

Conclusion

The ecoguided intratissue percutaneous electrolysis (EPI®), complemented with a specific protocol of eccentric exercises, allowed a decrease in pain intensity and an improvement in the functionality of the knee

No conflict of interest

ISPR7-0679

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

TREATMENT OF CHRONIC PAIN IN THE HIP OSTEOARTRITS WITH NEUROYSIS OF THE ANTERIOR BRANCH OF THE OBTURATOR NERVE WITH PHENOL

C. Crema¹, A.P.B.C. Santos¹, L.P.T. Magario¹, M. Riberto¹, M.M. Mourani¹

¹Ribeirao Preto Medical School - University of Sao Paulo,

“ Biomecânica- Medicina e Reabilitação do Aparelho Locomotor, Ribeirao Preto, Brazil

Introduction/Background

The conservative treatment of hip osteoarthritis (OA) is basically symptomatic, aimed at relieving pain and minimizing loss of function. When clinical treatment fails, hip arthroplasty may be needed, but when this procedure is not possible, the anterior obturator nerve branch (RAO) block can be used as palliative analgesic therapy.

Material and Methods

A prospective study with a series of ten cases in which patients with hip OA, resistant to conservative treatment, were submitted to phenol application in the obturator nerve and evaluated in consultations after 01, 02 and 06 months of the procedure with Visual Analogic Scale (VAS), Harris Hip Score (HHS) and dolorimetry.

Results

Regarding VAS, the patients presented an average of 8.18 points at initial evaluation and at 06 months, 7.45. Applying ANOVA, we verified a statistical difference (p 0.0094). Analyzing HHS, we found an initial HHS score of 33.27 and final of 40.33, but there is no statistical difference (P 0.04). The last variable analyzed was Dolorimetry, measured by applying pressure in the medial gluteus medius, lateral gluteus medius, gluteus maximus and piriformis, mesuaring the average value. At the initial evaluation, a value of 7.8 and in the 6th month 7.25. When applying the ANOVA test, no difference was observed (p 0.69).

Conclusion

The application of Phenol in RAO may be an alternative treatment of hip OA in patients with restrictions to hip arthroplasty.

No conflict of interest

ISPR7-0716

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

THE CLINICAL STUDY OF ULTRA-EARLY STANDARDIZED PHYSICAL THERAPY ON SHORTENING THE AVERAGE LENGTH OF STAY IN TOTAL KNEE ARTHROPLASTY

M. Wu¹, J.C. Cui¹, Y. Zhang¹, C.M. Ni¹

¹Anhui Provincial Hospital, Dept. Rehabilitation, Hefei, China

Introduction/Background

To investigate the effect of ultra-early standardization of physical therapy on shortening the average length of stay in total knee arthroplasty (TKA).

Material and Methods

85 cases with met the study conditions were divided into treatment group (n=50) and control group (n=35). All patients were treated with routine treatment after surgery. On the basis of this, the treatment group received ultra-early standardization of physical therapy. The single average total length of stay, the ALOS after surgery, the active range of motion (AROM), the time "up & go" test (TUGT) were respectively compared between the two groups, and correlation analysis between length of stay and range of joint motion, walking time were performed.

Results

Before treatment, there was no significant differences between the two groups ($P > 0.05$). The single average total length of stay and the ALOS after surgery were respectively (9.92 ± 2.57) days, (5.04 ± 1.17) days in the treatment group, which were significantly less than those in the control group ($P < 0.01$); the AROM and TUGT in treatment group were significantly lower than those in the control group at the 1st day, 2nd day, 3rd day and discharge the day ($P < 0.01$). The ALOS after surgery was positively correlated with the TUGT at discharged the day ($P < 0.05$), and negatively correlated with the AROM at discharged the day ($P < 0.05$).

Conclusion

Ultra-early standardized rehabilitation can effectively shorten the average length of stay after surgery, therefore it can shorten the whole length of stay.

No conflict of interest

ISPR7-0836

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

GAIT ANALYSIS DURING STAIR CLIMBING FOR KNEE OSTEOARTHRITIS CASES TREATED WITH ELECTRO-AUCPUNCTURE

X. Wang¹, M. Hou¹, X. Xie¹, J. Yu¹, J. He¹, L. Xiang¹, W. Xiaoling¹

¹Fujian University of Traditional Chinese Medicine, College of Rehabilitation Medicine, Fuzhou, China

Introduction/Background

Electro-acupuncture has been proved effective for improving daily function in knee osteoarthritis (KOA) based on systematic review. But its biomechanical mechanism on stair climbing warrants exploration further.

Material and Methods

In the two randomized groups, acupuncture (A) group accepted electro-acupuncture, and control (B) group accepted placebo needling with shallow insertion without electrical stimulation for 3 weeks. Twenty KOA cases (10 in each group) have done the treatment, stair climbing test by Motion Analysis system with 2 AMTI force plates under 4-step stairs and data analysis by Visual 3D software (C-Motion).

Results

1) After treatment, WOMAC total score, pain and physical function sub-scores decreased in A group ($P < 0.05$). But the stiffness didn't show significant difference. No difference showed between before and after treatment in control group. 2) During stair ascending after treatment, the average AP direction (X axis) of ground reaction force (GRF) on right low limbs was larger in A group ($P < 0.05$). In control group, average vertical (Z axis) GRF in left limbs and AP GRF in right limbs was larger, and ROM of add-abd on right knee joints was smaller than those before treatment ($P < 0.05$). 3) During stair descending, ROM and average GRF on both knee joints didn't show different between before and after treatment in A group ($P > 0.05$). Medial-lateral (Y axis) GRF in right limbs decreased after treatment in control group ($P < 0.05$).

Conclusion

Current data were too limited to deduce convincing conclusion because not all data have been analyzed. The results would be renewed after all the cases (40, 20 in each group) have done by conference date. The kinematic and kinetic data during stair climbing would be analyzed with data from surface electromyography to get a whole picture from biomechanics perspective.

No conflict of interest

ISPR7-0859

Musculoskeletal Conditions - Degenerative Joint Diseases (e.g. Osteoarthritis)

ENJOYING THE LIMITS OF MUSCULOSKELETAL ULTRASOUND

E. Ata¹, A. Erbirol¹, A. Carli¹

*¹Saglik Bilimleri University Haydarpasa Sultanabulhamit Training Hospital,
Physical Medicine And Rehabilitation, Istanbul, Turkey*

Introduction/Background

Carotid arteries are the major vascular structures that deliver blood to brain. A blockage in carotid arteries can lead to a stroke which is typically caused by atherosclerosis. The artery-wall thickens as a result of invasion and deposit of white blood cells and proliferation of intimal-smooth-muscle cell creating a fatty plaque is known as atherosclerosis. These deposits also contain cellular waste, cholesterol and triglycerides with calcification often occurring.

Material and Methods

An 80-year-old lady was seen due to the complaint of neck pain over the last year that has aggravated recently. She denied history of trauma. Physical examination was compatible with cervical osteoarthritis with limited cervical range of motion in all directions and tenderness to palpation. On radiological evaluation, cervical X-ray revealed a calcified mass in the left mid-paravertebral region with cervical degenerative changes (Figure 1). At first glance, a calcification inside the cervical muscles was suspected.

Results

Ultrasonographic examination of the cervical region revealed the presence of intraluminal calcification at the level of the bifurcation of the left common carotid artery (Figure 2A, B and C). The patient was referred to Neurology department for being at risk for stroke.

Conclusion

Paravertebral calcifications seen on X-ray might be inside the vessels, particularly in the elderly. Complications of the carotid artery calcification should be kept in mind, so that the patient could be referred to the relevant departments before catastrophic consequences such as stroke occur. Ultrasonography should be the method of choice in confirming the diagnosis. Lastly, ultrasound gives not only the opportunity of evaluation of musculoskeletal pathologies but it also offers visualization of a wide range of nearby tissues such as vessels and organs. Physicians who are dealing with musculoskeletal conditions and performing ultrasound should make a thorough musculoskeletal ultrasound examination including nearby vessels.

No conflict of interest

ISPR7-0076

Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

ULTRASONOGRAPHIC ENTHESOPATHY OF THE FOOT AND THE PSORIATIC ARTHRITIS DISEASE ACTIVITY SCORE (PASDAS) IN PSORIATIC ARTHRITIS

M. Ahmed¹, G. Elolemy², A. Alfeeli¹, A. Baqer³, A. Gad⁴

¹*Amiri Hospital, PHYSICAL MEDICINE and REHABILITATION, Kuwait, Kuwait*

²*Faculty of Medicine- Benha University-, Rehabilitation and Rheumatology Department, Cairo-, Egypt*

³*Al-Farwania Hospital, Physical Medicine and Rehabilitation, Kuwait, Kuwait*

⁴*Faculty of Medicine for Girls- Al-Azhar University, Internal Medicine, Cairo-, Egypt*

Introduction/Background

Ultrasound (US) is thought to be the gold standard technique for assessing foot enthesal abnormalities in psoriatic arthritis (PsA).

Aim is to investigate the presence of enthesal abnormalities in the foot including Achilles tendon, and plantar fascia insertions in the calcaneus by ultrasonographic examination in active and inactive PsA and to compare the results of US of foot enthesal abnormalities and Psoriatic Arthritis Disease Activity Score (PASDAS) in active PsA.

Material and Methods

A total of 65 PsA patients were involved and divided into two groups. The first group of thirty-five active PsA patients was recruited with the second group of thirty ages and sex matched inactive PsA patient as a control group. Both groups were evaluated by examination, radiological findings and ultrasonography.

Results

Of 70 entheses in 35 active PsA patients, PASDAS was a direct significant correlation with Leeds Enteritis Index (LEI) score in active PsA patients ($r = 0.452$, $p < 0.05$). Moreover, PASDAS was a direct highly significant correlated with Plantar fascia and Achilles tendon thickness in active PsA patients ($r = 0.823$, $p < 0.001$ and $r = 0.796$, $p < 0.001$ respectively).

Conclusion

US have helped us to be more accurately assessment and low cost method for assessment superficial soft-tissue abnormalities. There is the link between ultrasonographic enthesopathy and disease activities in psoriatic arthropathy patients.

No conflict of interest

ISPR7-0152

Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

PSEUDOSEPTIC ARTHRITIS: A CASE REPORT

I.A. Aksoy¹, L.E. Mertz²

¹Mayo Clinic Arizona, Physical Medicine & Rehabilitation, Scottsdale, USA

²Mayo Clinic Arizona, Rheumatology, Scottsdale, USA

Introduction/Background

A 73-year-old man with history of psoriatic arthritis, spondyloarthropathy and gout presented to PM&R clinic with complaints of right leg pain, swelling and limited range of motion of the knee. Symptoms started two months prior to presentation. There was no inciting event such as trauma or injury. However, the patient fell down a flight of stairs one month prior to the onset of symptoms.

Material and Methods

Additional symptoms included malaise and temporal headaches. Patient denied head trauma associated with the fall. He denied fever, chills, vision changes and jaw claudication. Medications included Methotrexate, Adalimumab, Atorvastatin, Levothyroxine, Cetrizine, Rabeprazole, Colchicine and Indomethacin as needed for "gout attacks". Prior to presentation to our clinic, he had been treated with a 15 day course of Colchicine 0.6 mg and Indomethacin 25 mg daily. Patient tolerated this treatment well, his contralateral left knee and lateral foot pain resolved, however, pain and swelling along the right knee and leg persisted.

Results

Initial evaluation comprised complete blood count, ESR, CRP, uric acid, as well as radiologic studies including plain x-rays of knees and feet. Due to significantly elevated ESR of 68 mm/hr and CRP of 154.7 mg/L without leukocytosis patient was referred to our Rheumatology clinic for a consultation. Knee joint synovial fluid aspiration and microscopic examination revealed cloudy liquid without crystals and there were 35,150 nucleated cells/micL (94% PMNL, 2% Lymph). Synovial fluid and blood cultures as well as cocci serologies were negative. A diagnosis of pseudoseptic arthritis was made and intraarticular steroid injection was performed.

Conclusion

Patient's knee pain and leg swelling resolved completely within a few weeks. Pseudoseptic arthritis presentation, diagnosis, treatment and literature review will be presented.

No conflict of interest

ISPR7-0182

Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

CLINIC AND DEMOGRAPHIC CHARACTERISTICS OF PATIENTS WITH RHEUMATIC PATHOLOGIES ADMITTED TO REHABILITATION: RETROSPECTIVE AND DESCRIPTIVE STUDY

C.M. Sanchez Correa¹, M. Maiarú¹, M.D. Kramer¹, J. Abudarham¹, S.A. Dilascio¹, S. Gallo¹, M. Ostolaza¹

¹Instituto de Rehabilitación Psicofísica, Kinesiología, CABA, Argentina

Introduction/Background

To describe and analyze a sample of patients with rheumatic diseases admitted to Service of Kinesiology of "Instituto de Rehabilitación Psicofísica (I.Re.P.)" of the Autonomous City of Buenos Aires during January 2010 to December 2015.

Material and Methods

The study design was descriptive, retrospective. Data patients with rheumatic diseases admitted to rehab was registered. Clinic demographic variables analyzed were taken from the kinesiology records and we also resorted to the medical records of the institution.

Results

377 patients were admitted to Service of Kinesiology. 79.6% were women with a mean of 55 years of age [interquartile range (Q: 20 years). From the total of patients, 65[MK1] % suffered from Rheumatoid Arthritis (RA). 24.6% of the patients belonged to the functional class (FC) I, 54.4% to FC II, 17.3% to FC III and 3.7% to FC IV. From 167 patients with RA, 18% were in remission, 15% in low activity, 42.4% in moderate activity and 24.6% in high activity. 18% of the patients attended the initial session with an assist device for wandering.

Conclusion

This is the first study to describe and analyze patients with rheumatic pathologies admitted to rehabilitation in Argentina.

No conflict of interest

ISPR7-0263

Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

COMPARISON OF LIFE QUALITY, PAIN INTENSITY AND FATIGUE WITH PATIENTS SUFFERING FROM RHEUMATOID ARTHRITIS AND KNEE OSTEOARTHRITIS

J. Jovanovic¹, V. Jovanovic², S. Bozilov³

¹*Institute for treatment and rehabilitation " Niska Banja", Clinic for rheumatology, Niska Banja- Nis, Serbia*

²*Clinic for orthopedics- Clinical Centre- Nis- Serbia, Clinic for orthopedics, Nis, Serbia*

³*Institute for treatment and rehabilitation " Niska Banja", Clinic for rehabilitation, Niska Banja- Nis, Serbia*

Introduction/Background

It is well known that chronic rheumatoid diseases have negative impact on life quality. Pain and joint swelling, limited motion, stiffness and deformity from one side, as well as fatigue, poor sleep quality and depression, on the other hand, significantly reduce life quality.

Paper goal: Comparison of life quality, pain intensity and fatigue intensity of patients with rheumatoid arthritis (RA) and knee osteoarthritis (knee OA).

Material and Methods

170 patients have been examined: 85 patients with RA and 85 patients with knee OA. Groups were homogenous regarding gender and age. Life quality has been estimated by means of questionnaire- Short Form Medical Outcomes Instruments (SF 36) SF 36F-physical sphere and SF 36M-mental sphere. Pain and fatigue intensity was estimated by scale VAS.

Results

Average value of SF 36F with patients suffering from RA was 36.72 ± 24.73 in regard to patients suffering from knee OA 62.72 ± 19.85 , $p < 0.001$. Average value of SF 36M with patients suffering from RA was 45.49 ± 25.25 compared to patients with knee OA having 68.13 ± 21.74 , $p < 0.001$. Pain intensity with patients with RA was 48.82 ± 25.62 compared to patients with knee OA ranging 47.08 ± 19.82 , $p = 0.622$. Fatigue intensity with patients suffering from RA was 48.28 ± 25.64 compared to patients with knee OA having 29.76 ± 15.62 , $p < 0.001$.

Conclusion

Patients with RA have significantly less quality of life and greater fatigue intensity compared to patients with knee OA. Pain intensity was not statistically significantly different. Although patients with RA have poorer values of quality of life, taking into account a big number of patients with knee OA, a significant implication of this disease is recognized. Pain is significant predictor of poor quality of life

No conflict of interest

ISPR7-0319

Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

THE EFFECTS OF FLUOROSCOPY-GUIDED SACROILIAC JOINT (SIJ) STEROID INJECTION ON CLINICAL PARAMETERS AND NON-STEROIDAL ANTI-INFLAMMATORY DRUG REQUIREMENT OF PATIENTS WITH AXIAL SPONDYLOARTHRITIS

S. Kokar¹, H. Gunduz¹, O. Kayhan¹

¹Marmara University Pendik Training and Research Hospital, Physical medicine and rehabilitation, Istanbul, Turkey

Introduction/Background

Objective: To investigate the effects of fluoroscopy-guided sacroiliac joint (SIJ) steroid injection on clinical parameters and non-steroidal anti-inflammatory drug (NSAID) requirement of patients with axial spondyloarthritis (AxSpa) who have bilateral acute sacroiliitis.

Material and Methods

Forty-three patients who were diagnosed AxSpa by using ASAS 2009 criteria and had bilateral sacroiliitis were enrolled into study. Patients were divided into two groups, both groups received indomethacin treatment and therapeutic exercises. First group included those who underwent fluoroscopy-guided SIJ injection and second group continued medical treatment without injection. Patients physical examination findings, NSAID usage and numeric rating scale (NRS) scores at baseline, post-injection 1st week, 1st month, 3rd month and 6th month were retrospectively evaluated.

Results

Improvement measured by NRS, >50% decrease and >80% decrease accepted as recovery and very good recovery, respectively. In all seasons recovery rates were higher in the injection group. That difference was statistically significant at week-1 and 1st month if cut off value is accepted as >50%, there were also significant difference at 6 months if it is accepted as >80% ($p<0.05$). When NSAID usage was evaluated, injection group had statistically lower requirement of NSAIDs between first and third month assessments ($p<0.05$). In addition to this, the patients in the control group also had higher drug usage in week-1, which was not statistically significant but clinically important for us ($p=0.064$).

Conclusion

Fluoroscopy guided SIJ steroid injections can be suggested to patients with AxSpa especially who have active sacroiliitis. By using that treatment option NSAID requirement can be reduced.

No conflict of interest

ISPR7-0428

Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

TREATMENT OF SPINAL ANKYLOSING SPONDYLITIS WITH FOCUSED EXTRACORPOREAL SHOCK WAVE THERAPY (ESWT): A PILOT STUDY WITH A FOLLOW-UP TO 5 YEARS

R. Saggini¹, E. Ancona², S.M. Carmignano², T. Palermo², R.G. Bellomo¹

¹University "G. D'Annunzio" Chieti, Department of Medical Oral and Biotechnological Sciences-, Chieti, Italy

²University "G. D'Annunzio" Chieti, School of Specialty in Physical and Rehabilitation Medicine, Chieti, Italy

Introduction/Background

Ankylosing spondylitis (AS) is a chronic, inflammatory rheumatic disease characterised by inflammatory back pain due to sacroiliitis and spondylitis

Often both pharmacological and traditional rehabilitative approaches are disappointing, and the natural history culminates in debilitating pain, spinal fusion, progressive disability, and dysfunction

The aim of this study is to evaluate the effect of ESWT for treatment of spinal ankylosing spondylitis

Material and Methods

The study was conducted, at the University Center Physical and Rehabilitation Medicine of the University "Gabriele d'Annunzio" of Chieti-Pescara. In the study were included 24 patients with the disease at least five years and who received drug therapy with NSAIDs

Patients were treated with focused ESWT with an electrohydraulic generator on the spine in the section between C7 and L5 according to the following scheme: 2 times / week for the first 4 weeks, then 1 time / week for 4 weeks, then 1 time / 2 weeks for 4 months, so 1 time / month as maintenance

Results

After 8 months of treatment an improvement of all parameters evaluated :pain, mobility, flexion and disability The follow-up to 5 years showed that these benefits have been preserved in 18 patients at the end of eight months of initial treatment have respected the monthly maintenance therapy. The 6 patients that have not complied the therapeutic prescription showed relapse during follow-up in relation to the period of suspension of therapy

Conclusion

It could be proposed the introduction of ESWT as a new therapeutic option in the treatment of AS from the early stages of the disease

No conflict of interest

ISPR7-0659

Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

EVALUATION OF THE EFFICACY OF THE TREATMENT WITH BODY FLOW IN PATIENTS WITH OSTEOARTROSIS AND RHEUMATOID ARTHRITIS.

A. Sanchez¹

¹International Center for Neurological Restoration, Rehabilitation, Habana, Cuba

Introduction/Background

The artropaties inflammatory characterized by chronic inflammation and destruction of the articular cartilage, the rheumatoid tell osteoartrosis and arthritis are a diseases produces a lot of pain and physical invalidity for limitation of articular mobility generate for who suffers it.

The therapy with Body the flow makes the flow of corporal fluids, such like blood and the lymph easy, by means of the stimulation (pumping) of the smooth muscle within veins, arteries and lymphatic glasses. The increment of the hemorrhage and lymph is sent to kidneys to be masking, so that toxins and undesirable products are eliminated by urine.

Material and Methods

Was realized a descriptive study and side road in patients with artropaties inflammatory characterized by chronic inflammation and destruction of the articular cartilage, the rheumatoid tell osteoartrosis and arthritis to oneself, entered in the CIREN in the period understood among April - October of the 2016. They had an interview to 35 patients's total that they constituted the universe of study, the ones that they devoted themselves to him a clinical fiche manufactured for the purpose that he picked up data, Katz's index for the activities of life daily, the questionnaire of health SF 36, and the analogical visual scale of the pain (EVA) before and after the treatment with Body flow.

Results

It was demostrated than the treatment with Body flow in these patients Is able to improve the physical mobility and reduce the pain.

Conclusion

It was demostrated than the treatment with Body flow in these patients Is able to improve the physical mobility and reduce the pain.

No conflict of interest

ISPR7-0686

Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

WORK DISABILITY IN A COHORT OF PATIENTS WITH PSORIATIC ARTHRITIS

C. Zaffarana¹, O. Cerda¹, J. Gallino Yanzi¹, M. Landi¹, E. Schneeberger¹, I. Carrillo¹, M.D.C. Gonzalez Guzman¹, S. Gagliardi¹

¹Instituto de Rehabilitación Psicofísica de Buenos Aires, Reumatología, Buenos Aires, Argentina

Introduction/Background

Several studies showed that unemployment and work disability are high in Psoriatic Arthritis (PsA).

Objectives: To evaluate work status in a cohort of patients with PsA in Argentine and to identify variables associated to work disability

Material and Methods

A cross-sectional study was conducted including patients ≥ 18 years old with PsA according to classification criteria for Psoriatic Arthritis (CASPAR). Demographic data, disease duration, clinical features, articular and extra articular manifestations, comorbidities and current treatment were collected. Disease activity was assessed by the 66 swollen and 68 tender joint counts, DAS28, DAPSA, BASDAI and RAPID3. Quality of life was assessed using DLQI and PsAQoL questionnaires. Functional capacity was assessed by HAQ and BASFI. Skin involvement was evaluated using PASI. Presence of dactylitis and enthesitis (MASES) were evaluated. Statistical analysis: T test, Mann Whitney, χ^2 and Fisher exact test. Multiple logistic regression analysis to explore factors associated to work disability

Results

87 patients with PsA were evaluated. Median age was 52 years (IQR 40.2-61.7). . 28 patients (32.2%) were unemployed and 18 of them (20.6%) were unemployed attributed to PsA, 10 were retired . Unemployed patients had a lower age at disease onset (33.9 ± 12.28 vs 38.87 ± 11.91 , $p=0.042$), higher disease activity (BASDAI 5.7 ± 2.9 vs 4.06 ± 2.8 , $p=0.03$, RAPID 13.99 ± 7.4 , vs 10.5 ± 6.27 $p=0.03$, DAPSA 20.5 ± 10.7 vs 16.5 ± 5.16 $p=0.04$, DAS28 4.2 ± 1.3 vs 3.44 ± 1.4 , $p=0.032$), worse functional status (HAQ 1.18 ± 0.8 vs 0.68 ± 0.6 , $p=0.006$) and worse quality of life (PsAQoL 12.1 ± 3.7 vs 6.56 ± 6 , $p<0.001$). In the multivariate analysis, lower age at disease onset [OR 0.9 (CI 95% 0.8-0.9), $p=0.004$] and worse functional status [HAQ OR 7.1 (IC 95% 1.9-25.7), $p=0.003$] were independently associated with WD

Conclusion

In our cohort the prevalence of work disability attributed to PsA was 20.6%, and it was associated to a lower age at disease onset and worse functional status.

No conflict of interest

ISPR7-0738

Musculoskeletal Conditions - Inflammatory Joint Diseases (e.g. Rheumatoid Arthritis, Ankylosing Spondylitis)

THE FACTOR STRUCTURE OF THE TURKISH REVISED ILLNESS PERCEPTION QUESTIONNAIRE IN PATIENTS WITH RHEUMATOID ARTHRITIS

Y. Ulus¹, B. Tander¹, Y. Akyol¹, Y. Terzi², Y. Zahiroglu¹, G. Sarisoy³, A. Bilgici¹, O. Kuru¹

¹Ondokuz Mayıs University Medical School, Physical Therapy and Rehabilitation, Samsun, Turkey

²Ondokuz Mayıs University Faculty of Science and Arts, Department of Statistics, Samsun, Turkey

³Ondokuz Mayıs University Medical School, Department of Psychiatry, Samsun, Turkey

Introduction/Background

Illness perceptions provide the patient's view of an illness and influence how the patients adjust and cope with their illness. The Revised Illness Perception Questionnaire (IPQ-R) has been used extensively for the assessment of illness perception. The Turkish version of the IPQ-R has shown good reliability and discriminant validity, and the factor structure of Turkish IPQ-R has been evaluated in patients with diabetes and cardiovascular disease. The purpose of the present study was to examine the factor structure of the Turkish IPQ-R in patients with rheumatoid arthritis (RA) in our country.

Material and Methods

One hundred-fifty RA patients were included in the study. Direct maximum likelihood confirmatory factor analysis (CFA) was used to test the factor structure of 38 items of the seven-dimensional IPQ-R section.

Results

Three items (items 12, 18, 19) were deleted because of poor factor loadings. A second model with 35 items and four error covariances resulted in good fit suggesting superiority to the first model. The modified 35-item model showed good reliability, discriminant and convergent validity.

Conclusion

Revised illness perception questionnaire could be a valuable instrument in the assessment of illness perceptions in Turkish RA patients. Although the IPQ-R may be valid and reliable across cultures, it may be needed to modify some of its items taking in consideration clinical and cultural differences. Verification of the reliability and validity of this instrument may contribute to its generalizability and availability.

No conflict of interest

ISPR7-0018

Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

EXTRACORPOREAL SHOCK WAVES THERAPY IN PLANTAR FASCIITIS

J.A. Mirallas Martínez¹, M.T. Sabater Querol¹, A. Beltrán Vives¹, B. Cardells Beltrán¹, S. Pina Buded¹, M. Hayani Al-Nisr¹, J. López Escobar¹, M. López Juncosa¹

¹University General Hospital of Castellón, Physical Medicine and Rehabilitation, Castellón, Spain

Introduction/Background

The short-term pain relief and functional outcomes of the extracorporeal shock wave therapy (ESWT), in plantar fasciitis (PF) are satisfactory. However, owing to the lack of a long-term follow-up, its long-term efficacy remains unknown. We assessed the evidence for effectiveness, tolerance and satisfaction of ESWT for these disorders.

Material and Methods

From 14 february, 2002 and 30 september, 2016, a prospective longitudinal descriptive study was performed on treatment with a Piezoelectric generator of ESWT, in 221 consecutive adults subjects with PF. . All were treated, 1 session for week, 4 weeks, were assessed before each treatment and one month, after completion of therapy. The main outcome measures were: pain, tolerance and satisfaction through visual analog scale 0-10 (VAS), flux density and number of pulses, applied, limitations (in daily living, sporting and working activities), calcifications lithotripsi, and active articular range measurement of the ankle. The frequency analysis was conducted. The level of evidence is 3. Randomised controlled trials (RCTs) were reviewed to evaluate the evidence of the effectiveness of ESWT in the management of PF.

Results

The mean flux density and number of pulses applied were $0.32 \pm 0.11 \text{ mJ/mm}^2$ and 1451.3 ± 559 respectively. One month after completion of therapy with ESWT, the evaluation resulted in significant improvement in pain (88% less in walking) and in active articulation range measurement ($4.37^\circ \pm 6.2^\circ$ more in flexion-extension). The limitations in daily living, sporting and working activities, that initially existed in 221 (100%) persisted in 11 (4.9%), 14(6.3%) and 14(6.3%) respectively. The tolerance was good and without secondary effects of interest. Mean flux density, number of pulses applied, and improvement in pain compared with other studies are respectively: $0.32 \text{ mJmm}^2/0.45 \text{ mJmm}^2$, $1451.3/2000$, and 88%/21-84%.

Conclusion

ECSWT in plantar fasciitis, are well tolerated, and shows a significant effectiveness for pain relief and functional restoration, with a mean satisfaction of $8,3 \pm 2$ (VAS 0-10).

No conflict of interest

ISPR7-0071

Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

EFFECT OF MULTIWAVE LOCKED SYSTEM (MLS) LASER THERAPY ON THE SPONTANEOUS REGRESSION (AUTOLYSIS) THE DISC HERNIA STRUCTURE.

A. Tkachev¹, A. Smirnova²

¹*The Volgograd State Medical University, Neurology, Volgograd, Russia*

²*DTC IIBS, Radiology, Saint-Petersburg, Russia*

Introduction/Background

Acute and chronic cervical and low back pain with clinical symptoms – radiation of pain to extremities, with disc herniation present as confirmed by MRI. Patients were administered two forms of treatment in separate groups – MLS Laser Therapy in and conservative methods use of NSAIDs.

Material and Methods

Two hundred patients volunteered to participate in this study. They were split into 2 groups – A and B, with 100 patients per group. The average size of disc hernia was 9.5 mm in both groups. Group A was treated using MLS Laser Therapy, while group B were given conservative treatment. MLS technology delivers therapeutic wavelengths, 808nm (anti-edemic and anti-inflammatory) and 905nm (analgesic), allowing a tissue penetration depth of 3-4 cm. This is introduced to points located on the spinous processes of vertebrae, on which MRI studies revealed intervertebral disc lesions (protrusions or disc hernias). Treatment duration is 15 minutes, everyday, for 10 days. Conservative treatment includes the use of NSAIDs. MRI scans were taken of patients before treatment and after treatment 1 month.

Results

MRI scans showed that there was a greater reduction in the size of the disc hernias in patients in Group A, as compared to those in Group B. The average reduction of disc hernia in group A was 4.2 mm, in Group B 1.6 mm.

Conclusion

This study shows that the use of MLS laser therapy results in an increase in the rate of spontaneous regression of disc hernias. The result is attributed to the effect of the laser itself. Treatment with MLS leads to an increase in the blood supply to the injured area. This temporarily potentiates reaction, including the 1) stimulation of phagocytosis, which leads to faster resorption of the intervertebral disc hernia 2) stimulation of angiogenesis which intensifies the blood circulation in the avascular area

No conflict of interest

ISPR7-0119

Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

SENSITIVITY, SPECIFICITY AND ACCURACY OF ULTRASONOGRAPHY AND PLAIN X-RAY IN DIAGNOSIS OF ACHILLES TENDON PATHOLOGIES

M.R. Khasru¹, A.B. Siddiq², F. Nazrin³, A.K.M. Salek¹, T. Marzen⁴, F. Haseen⁵, M. Ahsan Ullah¹, M. Moniruzzaman⁶, N. Anowar⁷, S.M. Rahman³

¹*Bangabandhu Sheikh Mujib Medical University, Physical Medicine and Rehabilitation, Dhaka, Bangladesh*

²*Feni Diabetic Hospital, Physical Medicine and Rehabilitation, Feni, Bangladesh*

³*Bangabandhu Sheikh Mujib Medical University, Radiology and Imaging, Dhaka, Bangladesh*

⁴*Upazila Health Complex- Muksudpur- Gopalganj, General Practitioner, Muksudpur- Gopalganj, Bangladesh*

⁵*Bangabandhu Sheikh Mujib Medical University, Public Health and Informatics, Dhaka, Bangladesh*

⁶*Dhaka Medical College and Hospital, Physical Medicine and Rehabilitation, Dhaka, Bangladesh*

⁷*Bangabandhu Sheikh Mujib Medical University, Neurology, Dhaka, Bangladesh*

Introduction/Background

The current study aimed to highlight diagnostic usefulness of ultrasonography (USG) in Achilles tendon pathology.

Material and Methods

This cross-sectional study conducted in the Bangabandhu Sheikh Mujib Medical University, Bangladesh. The study period was July 2010 to June 2014 and 61 patients with posterior heel pain selected consecutively. Along with history taking, enrolled subjects examined meticulously. Non-invasive measures such as X-ray, USG also used to acquire further information regarding heel pathology. A semi-structured questionnaire used to preserve primary data. Since, four subjects refused to do USG and X-rays were not available from another seven, we studied over rest fifty. Univariate analysis performed. Having been used kappa statistics, sensitivity, specificity, positive predictive value, and negative predictive value of ultrasound and X-ray in several Achilles tendon pathologies performed; $p < 0.05$ considered statistically significant.

Results

Among of all participants, 38.0% belonged to 36-45 age range and maximum (68.0%) were male. Although a substantial 37 (76.0%) had been suffering from localized back heel pain, 13 (26.0%) of them had systemic diseases like diabetes mellitus (76.9%), dyslipidaemia (1, 2.0%), systemic lupus erythematosus (1, 2.0%), and ankylosing spondylitis (1, 2.0%). Achilles tendinitis, Achilles tendon rupture, retrocalcaneal bursitis, tendon xanthoma diagnosed using ultrasonogram in 31 (62.0%), 7 (14%), 3(6%), and 1 (2.0%) patients respectively. Concerning Achilles tendon pathology, USG was 95.0% sensitive, 50.0%, specific, and 92.0% accurate, whereas diagnostic sensitivity, specificity, and accuracy for X-ray was 39.0%, 75.0%, and 42.0% respectively.

Conclusion

In diagnosing soft tissue pathologies in and around Achilles tendon ultrasound is far better option than X-ray.

No conflict of interest

ISPR7-0124

Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

ISCHIOFEMORAL IMPINGEMENT SYNDROME IN TWO FEMALE TEENS

M.F. Diaz¹, N. Lara Arroyo¹, J.A. Diaz Ruiz¹

¹Universidad Nacional de Colombia, Departamento de medicina física y rehabilitación, Bogotá, Colombia

Introduction/Background

Hip pain is a common cause of medical consultation, which is usually difficult to diagnose because of its diverse etiology. Ischiofemoral impingement syndrome is a cause of hip pain potentially underestimated, and it is defined by pain related to a decrease of the space between the ischial tuberosity and the lesser trochanter of the femur, with abnormal morphology and intensity of quadratus femoris in magnetic resonance imaging.

Material and Methods

We present two cases of ischiofemoral impingement in two female teens who play sports regularly without traumatic or surgical history, with clinical evolution of approximately 2 years of hip pain radiating to the thigh in one case. Presenting exacerbation with physical activity and improved with rest. Also, was found in both cases pain with adduction and external rotation movements of the hip and signs of joint hypermobility.

Results

The hip MRI study showed . The distance of ischiofemoral space and quadratus femoris space were narrow. The findings were compatible with ischiofemoral impingement syndrome in both patients, as it is shown in Figs 1 and 2.

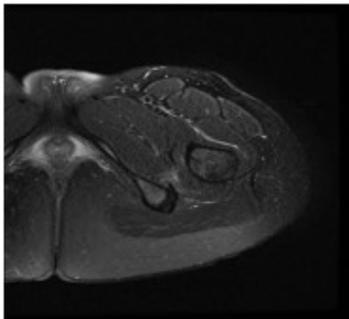


Fig. 1

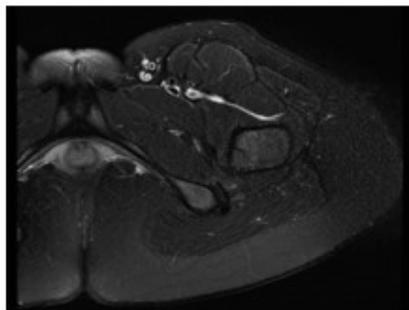


Fig. 2

Conclusion

In one case, rest and stretching exercise was satisfactory, while in the other case the symptoms have persisted despite conservative treatment and CT guided blocking using corticosteroids and anesthetics, and it was considered the need to perform a surgical procedure with resection of the lesser trochanter.

These cases show this entity as a possible cause of hip pain, which can accurately diagnose with MRI and clinical findings, and treat promptly.

No conflict of interest

ISPR7-0140

**Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity
(including Enthesopathy, Tendinitis and Others)**

**THE EFFECTS OF BIOMECHANICAL FOOT ORTHOSIS ON GAIT PATTERN IN PATIENTS WITH
HALLUX VALGUS**

S.K. Bok¹, B.O. Kim¹, S.Y. Ahn¹, S.C. Ahn¹

¹Chungnam National University Hospital, Rehabilitation Medicine, Daejeon, Republic of Korea

Introduction/Background

Introduction : Hallux valgus deformity is the most commonly observed forefoot deformity. We investigated the effects of customized biomechanical foot orthosis (BFO) on kinematic data during gait pattern in patients with hallux valgus deformities.

Material and Methods

Methods : Total 20 female(10 with hallux valgus deformity, 10 with healthy control) were enrolled in this study. All subject were evaluated based on measurements on weight-bearing AP plain radiographs. Hallux valgus was defined by the following 2 criteria, hallux valgus angle (HVA \geq 15 degrees) and intermetatarsal angle (IMA \geq 9 degrees). Hallux valgus patients received the customized FOs manufactured at a commercial orthosis laboratory (Biomechanics, Korea) according to a strictly defined procedure and under the care of a single experienced technician. The kinematic data by the Vicon 3D motion capture system (Oxford Metrics, Oxford, England) were compared in with/without application of the BFO and healthy control. Data were collected as subjects walked at self-selected speed along a 5-m walkway. At least 3 walking trials were completed.

Results

Results : Patients with application of the BFO showed increased gait cadence, walking speed and decreased stride, step time in temporal parameters. Total mean range of motion (ROM) of hallux respect to forefoot was 27.1 degree without BFO, and was increased to 34.9 after application of the BFO. The angles of ankle plantar-flexion in toe-off phase and knee flexion in mid-swing phase were increased after application of the BFO. The averaged position of forefoot during whole gait cycle was persistently abducted in with application of the BFO.

Conclusion

Conclusion : The application of BFO was considered to be useful method for improvement of gait pattern in patients with hallux valgus deformities by increased ROM of hallux and change of foot position. Further study was recommended to investigate the effectiveness of BFO on gait pattern in arthritis with hallux valgus.

No conflict of interest

ISPR7-0586

**Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity
(including Enthesopathy, Tendinitis and Others)**

**THE EFFICACY OF HEAVY LOAD EXERCISE FOR THE TREATMENT OF CHRONIC ACHILLES
TENDINOSIS. A RANDOMIZED CONTROLLED TRIAL**

E. Gara¹, B. Haxhiu², F. Gashi³

¹*QKUK Qendra Klinike Universitare Prishtine, physiotherapy, Prishtina, Kosovo*

²*Q.K.U.K, Physiotherapy, Fush Kosovo, Kosovo*

³*Q.K.U.K, Physiotherapy, Pristina, Kosovo*

Introduction/Background

The Achilles tendon is the strongest and largest tendon in the body. It is extremely vulnerable to injury due to its limited blood supply and the numerous forces to which it is subjected.

The objective of this study is to compare the effectiveness of treatment with eccentric loading with physiotherapeutic interventions (ultrasound and physical therapy) for the treatment of chronic Achilles tendinosis.

Material and Methods

This is a randomized controlled trial which is performed at the Physical Medicine and Rehabilitation Clinic in University Clinical Center of Kosovo. Twenty-four patients with Achilles tendinosis are included in the trial. The subjects were randomly assigned to either the intervention group (n=13) who were treated with eccentric loading exercise and the control group (n=11) who received ultrasound and physical therapy. Outcomes were assessed at baseline and postintervention. The primary outcome was pain as assessed by Visual Analogue Scale and the secondary outcome was calf muscle strength assessed by dynamometer. All subjects were evaluated before treatment and at the 12th week.

Results

Twenty-four of 33 subject randomized (72.7%) completed the study. There were no significant differences between the two groups with regard to any variable at baseline ($p>0.05$). In the exercise group, significant improvements were demonstrated for VAS, and muscle strength compared to the control group. The exercise group reported a significantly greater increase in all variables at 12 weeks than did the control group ($p<0.01$).

Conclusion

Our results suggest that heavy load eccentric exercise is beneficial in the treatment of Achilles tendinosis.

No conflict of interest

ISPR7-0664

**Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity
(including Enthesopathy, Tendinitis and Others)**

**CLINICAL CASE REPORT: MANAGEMENT OF PUBALGIA WITH PROLOTHERAPY IN THE
PHYSICAL MEDICINE SERVICE AND REHABILITATION OF THE CENTRAL MILITARY
HOSPITAL OF BOGOTA D.C. COLOMBIA.**

J.M. Tolosa Cubillos¹, C.T. Esquivia Pajaro¹

¹Hospital Militar Central, Bogota, Bogota, Colombia

Introduction/Background

Pubalgia is a localized pain in the pubic symphysis that can radiate to the groin, hypogastrium, hip and even the perineum and evidently the movement of the corresponding joints or the work of the musculature of these zones will reproduce the pain according to the activity. However in addition to its presentation, it is not easy to establish a cause. This pathology is associated with sports patients or with activities that merit overexertion and in which overuse syndrome is generated. There are also risk factors that predispose to the occurrence of pubalgia, taking into account the kinematics of the coxofemoral joint. Decreased hip mobility has been considered as a risk factor among others as contact sports players, shoulder sex with a presenting ratio with respect to the female from 5 to 1.

Material and Methods

CLINICAL CASE

A 33-year-old patient with a history of osteochondroma supraacetabular right exophytic lesion who after medical management persisted with puberty of 8/10 intensity and with the movement was exacerbated to maximum intensity according to analogous visual scale. He is referred to the Physical Medicine and Rehabilitation service after conducting multiple physiotherapy sessions without pain control. Subsequent to performing 5 sessions of infiltrations with 50% dextrose plus lidocaine, the patient refers to an improvement of pain according to the visual analog scale in 2. When a control is performed at the end of the intervention, the patient has been able to involve High-impact physical activities without presenting new episodes of pain.

Results

DISCUSSION

Although prolotherapy as a single method has not been proven to be efficient in pain management, the level of evidence in its use in refractory tendinopathies has increased and it is relatively safe as contraindications are more towards the Similar with respect to the application of other injections and the external conditions of its application.

Conclusion

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No conflict of interest

ISPR7-0755

**Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity
(including Enthesopathy, Tendinitis and Others)**

**EFFECTS OF FOCUSED EXTRACORPOREAL SHOCK WAVES THERAPY ON PAIN AND ON
QUALITY OF LIFE IN PATIENTS WITH MUSCULOSKELETAL DISORDERS: A PROSPECTIVE
STUDY**

D. Calafiore¹, F. Gimigliano², A. de Sire¹, L. Stefano¹, G. Pellegrino¹, R. Gimigliano¹

¹*University of Campania, Department of Medical and Surgical Specialties and Dentistry, Napoli, Italy*

²*University of Campania, Department of Mental and Physical Health and Preventive Medicine, Napoli, Italy*

Introduction/Background

The focused extracorporeal shock waves therapy (f-ESWT) has beneficial effects on pain relief in several musculoskeletal disorders, but its impact on quality of life (QoL) is still not well demonstrated. The aim of our study was to assess the effects of the f-ESWT on intensity and interference of the pain during the activities of daily living (ADL) and on QoL in patients with musculoskeletal disorders.

Material and Methods

In this prospective study, we evaluated the effects of f-ESWT in patients with chronic pain (at least 6 months) due to plantar fasciitis, shoulder tendonitis and trochanteric bursitis, assessing the Brief Pain Inventory (BPI) (intensity and interference indexes) at baseline (T0), and every week after each session (T1, T2, T3).

Results

The 75 patients included (24 male, 51 female; mean age: 57.06 years) were divided in 3 groups: 38 had plantar fasciitis, 23 shoulder tendonitis, and 14 trochanteric bursitis. In the first group, the BPI intensity and interference indexes were significantly improved from baseline to T3 (4.93 ± 1.59 vs 3.88 ± 2.30 , $p=0.006$; 5.21 ± 1.67 vs 3.40 ± 2.27 , $p<0.001$; respectively). Similar results were found in the second group (5.73 ± 2.50 vs 4.33 ± 1.95 , $p=0.005$; 4.54 ± 2.27 vs 3.44 ± 2.10 , $p=0.002$; respectively). In the trochanteric bursitis group, a significant improvement was observed only in the BPI interference index from T0 to T3 (4.75 ± 2.37 vs 2.97 ± 2.62 , $p=0.033$).

Conclusion

We can affirm that f-ESWT seems to be effective in reducing the intensity and the interference of pain on ADL and to improve the QoL in patients affected by plantar fasciitis, shoulder tendonitis, and trochanteric bursitis.

No conflict of interest

ISPR7-0864

Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity (including Enthesopathy, Tendinitis and Others)

RELATIONSHIPS BETWEEN THE SEVERITY OF THE CHONDROMALACIA PATELLA IN MRI, PATELLOFEMORAL ALIGNMENT AND INTENSITY OF PAIN AND FUNCTIONAL CAPACITY IN PATIENTS WITH ANTERIOR KNEE PAIN

H. Kocyigit¹, İ.K. Aysin¹, B.D. Mete², S. Demirdal¹, A. Askin¹, A. Tosun¹

¹Ataturk Training and Research Hospital, PM&R, izmir, Turkey

²Ataturk Training and Research Hospital, Radiology, izmir, Turkey

Introduction/Background

Chondromalacia patellae (CMP) is a term indicates softening of the cartilage in the knee area or varying degrees of damage without subchondral bone changes. The magnetic resonance imaging (MRI) scans show details of the knee joint and can show up many cases of chondromalacia. Moreover, the staging of chondromalacia can be determined with the use of MRI. The purpose of this study is to investigate relationships between the severity of the CMP in MRI, patellofemoral alignment and intensity of anterior knee pain and functional capacity in patients with anterior knee pain for at least one month.

Material and Methods

Thirty-eight patients diagnosed as having CMP with MRI and met the inclusion criteria were retrospectively examined from their medical records. After MRI staging of this condition by an experienced radiologist, patients were assigned to two groups: patients with early chondromalacia (stage 1-2) and severe chondromalacia (stage 3-4) groups. The measurements of trochlear sulcus angle, trochlear depth, lateral patellofemoral angle, patellar translation and Insall-Salvati Index were performed with MRI images of each patient. Their demographic data and their scores of Patellofemoral Pain Intensity Scale, Kujala Scoring Questionnaire and Functional Index Questionnaire were also obtained from their records.

Results

The groups did not differ significantly with regard to variables related to patellofemoral alignment. While joint effusion of knee was significantly detected more in severe CMP group, there was no significant difference between the two groups with regard to the other clinical symptoms and physical examination findings. The severe CMP group had significantly lower scores on Kujala Scoring Questionnaire ($p=0.012$) and Functional Index Questionnaire ($p=0.026$) and significantly higher scores on Patellofemoral Pain Intensity Scale ($p=0.008$) than the early CMP group.

Conclusion

The prospective trials with larger cohorts and control group are required in order to investigate and determine these relationships in CMP in the future.

No conflict of interest

ISPR7-0867

**Musculoskeletal Conditions - Regional Pain Syndromes of the Pelvis and Lower Extremity
(including Enthesopathy, Tendinitis and Others)**

**MUSCLE ENERGY TECHNIQUE ON NON-SPECIFIC KNEE PAIN ASSOCIATED WITH
SACROILIAC DYSFUNCTION**

*G. Antonelli¹, M.Y. Outi¹, B.G. Muller¹, A.R. Fréz¹, A.C. Binda¹, C.R. Daniel¹, M.P. Baroni¹,
J.A. Ruaro¹, M.B. Ruaro¹*

¹Universidade Estadual do Centro-Oeste, Physical Therapy Department, Guarapuava, Brazil

Introduction/Background

The aim of the study was to check the effectiveness of the increase on sacroiliac joint mobility on the painful knee among university students.

Material and Methods

This was an experimental study with 13 students, from 18 to 25 years, which were subjected to an application of muscle energy technique in the sacroiliac joint. The knee functioning was assessed using the International Knee Documentation Committee Subjective Knee Form (IKDC). As for pain assessment, it was used the visual analog scale (VAS).

Results

In initial evaluation, the referred pain was 6.1 ± 1.3 . After intervention was observed significant difference ($p=0,0009$), and reported pain of 3.3 ± 2.7 .

Conclusion

A muscle energy technique applied in sacroiliac joint can be used for reduction of unspecific painful symptomatology of knee joint.

No conflict of interest

ISPR7-0033

Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

IMPACT OF EXERCISE INTENSITY DOMAIN ON BILATERAL ASYMMETRY IN MULTIPLE SCLEROSIS

J. Farrell III¹, C. Ade², D. Lantis¹, G. Cantrell¹, B. Pribble¹, L. Dan¹, R. Larson¹

¹*University of Oklahoma, Department of Health and Exercise Science, Norman, USA*

²*Kansas State University, Department of Kinesiology, Manhattan, USA*

Introduction/Background

Bilateral asymmetry has been observed in individuals with Multiple Sclerosis (MS) at peak power out (PPO) and $\dot{V}O_2$ peak during a single leg graded exercise test (SLGXT). However, little is known about the influence of exercise intensity on bilateral asymmetry. The purpose of this pilot study was to examine the presence of asymmetry in MS patients at moderate, heavy, and severe exercise intensity domains by the gas exchange threshold (GET), critical power (CP), and PPO respectively.

Material and Methods

5 MS patients were recruited for this study, 2 males and 3 females (Age: 43.2 ± 7.3 yrs, Height: 170.5 ± 7.4 cm, Weight: 90.2 ± 18.5 kg, EDSS: 3 ± 1). A SLGXT was performed on each leg utilizing a ramp protocol using an increase of 1 watt/4 seconds. PPO and GET were determined from the SLGXT. CP was determined from the power-duration relationship obtained from a series of time-to-fatigue trials between 70-100% PPO performed across 3-4 different days. Limbs were classified as stronger (S) or weaker (W) based on their PPO and self-report.

Results

No significant differences were observed between S and W limbs at both the GET and CP ($p > 0.05$). PPO was significantly different between the S and W (S: 106.2 ± 26.01 vs. W: 97.6 ± 19.8 watts, $p < 0.05$).

Conclusion

The current pilot data suggests that asymmetry may manifest differently across domains of exercise intensity. Asymmetry was not observed at the GET and CP, but was at PPO, suggesting that exercise intensity may play a role in the appropriate evaluation and clinical consequences of asymmetry.

No conflict of interest

ISPR7-0130

Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

THE EFFECT OF URINARY INCONTINENCE AND SEXUAL DYSFUNCTION ON THE QUALITY OF LIFE AMONG PEOPLE WITH MULTIPLE SCLEROSIS

A.P.C. Loureiro¹, F.A. Carvalho¹, L.S.F. Godoy¹, T.C. Antunes¹, J.L.P. Ribeiro², L.M.R. Pedro³

¹Pontifícia Universidade Católica do Paraná, Physical Therapy, Curitiba, Brazil

²Faculdade de Psicologia da Universidade do Porto, Psychology, Porto, Portugal

³Escola Superior de Tecnologia da Saúde de Lisboa, Instituto Politécnico de Lisboa, Lisboa, Portugal

Introduction/Background

Urinary incontinence and sexual dysfunction are frequent clinical manifestations in Multiple Sclerosis (MS) sufferers, of great social impact, but their impacts on the quality of life of these people are not always recognized and evaluated. This study aim to investigate if there are any differences between Brazilian and Portuguese MS populations for the scores obtained in the Multiple Sclerosis Quality of Life – MSQOL-54 questionnaire for the sexual function and social function questions.

Material and Methods

58 individuals with MS (average age of 38.57±12.02; average diagnosis time of 6.28 years) living in Curitiba, Brazil; and 280 individuals with MS (average age of 39.23±(11.21; average diagnosis time of 7.21 years) living in Lisbon, Portugal, took part in this study. Women predominated in both the groups living in Curitiba (72.4%) and in Lisbon (71.4%).

Results

The values obtained for sphincter incontinence X social function, described by their medians (1Q-3Q) were 100.0 (75.0 – 100.0) for the Brazilian population and 75.0 (50.0 – 100.0) for the Portuguese population; showing a 25% higher score amongst the Brazilians ($p = 0.046$ – Mann Whitney). There was no difference for the sexual function score ($p = 0.156$ – Mann Whitney) with values of 66.7 (45.0 – 80.0) for the Brazilians and 66.7 (33.3 – 80.0) for the Portuguese.

Conclusion

It was observed that sexual function interfered with the quality of life of the two populations studied in a similar way, and that the influence of problems caused by sphincter disorders on social life were of a lower level for the participants from Lisbon. Thus it is suggested that intervention programs focused on sexual and sphincter adjustments are necessary for both populations.

No conflict of interest

ISPR7-0258

Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

RESPIRATORY IMPAIRMENT IN MULTIPLE SCLEROSIS: A NARRATIVE REVIEW OF REHABILITATION PROGRAMS

J. Levy^{1,2}, H. Prigent^{1,3}, D. Bensmail^{1,2}

¹INSERM - Université de Versailles St-Quentin-en-Yvelines- UFR des Sciences de la Santé, UMR 1179, Montigny-le-Bretonneux, France

²APHP - Raymond Poincaré University Hospital, Physical Medicine and Rehabilitation, Garches, France

³APHP - Raymond Poincaré University Hospital, Physiology and Functional Testing, Garches, France

Introduction/Background

Respiratory disorders in multiple sclerosis (MS) are an important issue. They can occur relatively early in the course of the disease, are correlated with the neurological impairment, and can lead to pneumonia and respiratory failure which are the main causes of death in advanced MS. The prevailing impairment of expiratory muscles and cough abilities has been previously demonstrated in this population. This might constitute a specific target for rehabilitation interventions. But, international guidelines lack recommendations regarding respiratory rehabilitation in MS.

Material and Methods

We conducted a systematic review of literature, within the MedLine database, using the terms 'multiple sclerosis', 'respiratory rehabilitation', 'respiratory muscle training', 'lung volume recruitment', 'cough assistance', 'mechanical in-exsufflation'. We focused on clinical trials and well designed cohorts. Literature reviews, case reports and physiological studies were excluded. Maastricht criteria were used to assess the quality of clinical trials in rehabilitation. We followed the Oxford Centre for Evidence-Based Medicine guidelines to determine levels of evidence and grade of recommendations.

Results

Twenty-one studies were initially selected, 10 were excluded, and 11 retained for review. Seven studies were randomized controlled trials (RCT), 2 were non-RCT, and 2 were observational studies. Respiratory muscle training (expiratory and/or inspiratory) using portable resistive mouthpiece was the most evaluated technique, with 2 RCTs reaching the grade A. Another RCT evaluated deep-breathing exercises reached the grade A. All reviewed studies evaluated home-based rehabilitation programs, and focused on spirometric outcomes. The disparities regarding outcome measures between published studies did not allow a meta-analysis. Cough assisted devices were not evaluated in this population, although validated in neuromuscular diseases and spinal cord injuries.

Conclusion

Respiratory muscle training programs lead to an improvement of spirometric parameters in MS, and should be considered within global rehabilitation programs. Our review highlights the lack of data regarding functional improvement using such techniques with MS patients.

No conflict of interest

ISPR7-0333

Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

GUILLAN-BARRE SYNDROM IN A PATIENT WITH IGG4-RELATED DISEASE

A.K. Cengiz¹, B. Cigdem²

¹*Sivas Numune State Hospital, Rheumatology, Sivas, Turkey*

²*Cumhuriyet University Faculty of Medicine, Neurology, Sivas, Turkey*

Introduction/Background

Guillain-Barre Syndrome (GBS) is an acute inflammatory demyelinating polyneuropathy characterized by inflammation and demyelination of peripheral nerves and roots.

IgG4 related disease (IgG4-RD) is a systemic fibroinflammatory condition defined in the first decade of this century and affects many organ systems.

Material and Methods

Case Report

Results

Here we would like to present a 60 year-old male patient who presented with paraesthesia and ascending motor weakness . His past medical records revealed a double j stent administration 1 year ago for right hydronephrosis which was due to a mass lesion in retroperitoneum. A biopsy was taken and fibroid tissue with dense lymphoplasmocytic infiltrate was reported. IgG4 level was measured and found as 270 mg/dL (8-140 mg/dL normal range).Positron emission tomography (PET)/CT revealed increased uptake in the defined lesion. With diagnosis of IgG4-RD prednisolone 40 mg/day and methotrexate 20 mg/week was started.Four months later patient presented with a severe peripheral paraesthesia in both lower extremities. He was hospitalised and MRI of lomber vertebra was planned in order the rule out the possibility of spinal cord compression by the mass. MRI revealed no increase in the size of the lesion and no spinal cord compression was detected. During hospitalisation an ascending motor weakness in both of the lower extremities developed and the patient became unable to walk independently. DTR were absent. Cerebrospinal fluid examination revealed albuminocytologic dissociation. Cultures were negative. Electrophysiological assessment revealed demyelinating polyneuropathy. The diagnosis of GBS was established. The patient became bed ridden and had dyspnea so plasmapheresis was performed. After plasmapheresis he recovered. He was able to ambulate independently in 2 weeks time and 2 months later he had no sequela.

Conclusion

To best of our knowledge this is the first report that reveals an association between IgG4-RD and GBS. Inflammatory process in IgG4-RD can trigger the immune-mediated process in GBS.

No conflict of interest

ISPR7-0367

Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

HYPERBILIRUBINEMIA CAUSED BY HEMOLYSIS IN NEWBORN RHESUS MONKEY

T. Jiulaj¹

¹Anhui Medical University, Pediatric Neurological Rehabilitation Center, Hefei, China

Introduction/Background

To establish the newborn rhesus monkey model of hyperbilirubinemia and provide an experimental basic model for research of hyperbilirubinemia.

Material and Methods

Sixteen 3-day old macaques (8 male, 8 female) were divided to experimental group and control group, 8 macaques in each group. Eight macaques in experimental group were intravenous injection of phenylhydrazine hydrochloride (50 mg/kg) to establish model of hyperbilirubinemia induced by hemolysis. The macaques in control group were intravenous injection of 9g/L saline at the same time. Twenty-four hours and 48 hours after the experimental treatment, the bilirubin in blood were detected to evaluate the models, and the clinical manifestation of hyperbilirubinemia were used monitoring equipment recorded. The brain slices were made to evaluate the model at 7th day in one dead monkey in the experimental group.

Results

The macaques of experimental group showed obvious skin and sclera jaundice and hemoglobinuria. The serum of total bilirubin (252.76 ± 63.42) $\mu\text{mol/L}$, unconjugated bilirubin (165.85 ± 44.93) $\mu\text{mol/L}$ and conjugated bilirubin (87.16 ± 21.22) $\mu\text{mol/L}$ in the experimental group were significantly higher than those [(20.62 ± 5.72) $\mu\text{mol/L}$, (7.93 ± 2.31) $\mu\text{mol/L}$, (12.51 ± 3.53) $\mu\text{mol/L}$] in the control group, the difference had statistical significant ($t=14.581, 13.881, 14.040, P < 0.01$); The level of hemoglobin (47.18 ± 10.09) $\mu\text{mol/L}$ in the experimental group was significantly lower than that of the control group (136.85 ± 13.48) $\mu\text{mol/L}$, the difference had statistical significant ($t=-21.308, P < 0.01$). The results of pathological showed brain edema, rupture and eosinophilic and the basal nuclei appear of bilirubin deposition, severe parts appear necrosis. And there are different degrees of retardation and coordination disorders in the experimental group's monkeys, but gradually return to normal in 4 months later.

Conclusion

Intravenous injection of phenylhydrazine hydrochloride can be used to produce newborn rhesus monkey models of hyperbilirubinemia.

No conflict of interest

ISPR7-0588

Neurological and Mental Health Conditions - Autoimmune and Inflammatory Neurological Conditions (e.g. Multiple Sclerosis)

LOWER URINARY TRACT SYMPTOMS AND IMPACT ON QUALITY OF LIFE ON FEMALE MULTIPLE SCLEROSIS PATIENTS

A. Karavasili¹, A. Tsigoulis², N. Protopapas³, D. Tsertou⁴

¹Diaplasia Rehabilitation Centre, Physical Medicine and Rehabilitation, Kalamata, Greece

²University Hospital of Larissa, Neurology, Larissa, Greece

³Diaplasia Rehabilitation Centre, Neurology, Kalamata, Greece

⁴Diaplasia Rehabilitation Centre, Nurse, Kalamata, Greece

Introduction/Background

One of the most important impairments affecting quality of life in Multiple Sclerosis (MS) patients is lower urinary tract symptoms (LUTS). The International Continence Modular Questionnaire - Female Lower Urinary Tract Symptoms (ICIQ-FLUTS) is a patient-completed questionnaire for evaluating female LUTS and impact on quality of life (QoL)

Material and Methods

From January to September of 2016, MS female patients admitted as outpatients on Neurology Clinic were assessed using the ICIQ-FLUTS questionnaire. Demographic data were recorded as well as onset of the disease and duration of MS symptoms. Data were analysed with SPSS

Results

In total, 55 patients were addressed and the mean age was 45.05±9.776. The mean onset of the disease was 32.44±10.559 years while the mean values for the duration were 13.51±8.494. Among all lower urinary tract symptoms, bladder pain, straining and urgency, straining and frequency of incontinence were the less common symptoms but had greater impact for the patient. Frequency of urination had the least impact on individuals

Conclusion

Lower Urinary Tract Symptoms affects Quality of Life in Multiple Sclerosis female patients and the use of evaluation scales indicate a better understanding and localization of symptoms allowing proper treatment

No conflict of interest

ISPR7-0101

Neurological and Mental Health Conditions - Language and Speech Disorders

A PATIENT WITH CYTOMEGALOVIRUS INFECTION COMPLICATING WITH SEVERE RHABDOMYOLYSIS AND DYSPHAGIA : A CASE REPORT AND LITERATURE REVIEW

H. Yeh¹

¹*Taoyuan City, Taiwan R.O.C.*

Introduction/Background

Cytomegalovirus (CMV) is a common virus usually occurs in immunocompromised patients. Rhabdomyolysis is a disease of human muscle cell necrosis, the rapid dissolution of damaged or injured muscles may lead to acute kidney injury or multiple organ failure. Patients with severe rhabdomyolysis caused by cytomegalovirus infection are rarely reported and even rarer lead to severe dysphagia.

Material and Methods

Case report

Results

<case presentation>

The patient was a 35-year-old woman without underlying disease. Two month before hospitalization, she visited emergency department due to headache and intermittent fever. Four days later, symptoms still persisted, lab data showed increase of C-reactive protein, abnormal liver function test, differential count of white blood cell showed lymphocyte dominant and positive of immunoglobulin M. Cytomegaloviral hepatitis was diagnosed. One month later, she was admitted to the hospital due to persisted swallowing difficulties.

During hospitalization, rhabdomyolysis was diagnosed as superimposed on CMV infection. With the deterioration of rhabdomyolysis, patient was in quadriplegia and severe dysphagia.

During Videofluoroscopic Swallowing Study (VFSS), she swallowed 2ml barium. It showed completion of oral stage, but pharyngeal stage showed severe dysfunction, including of poor pharyngeal constriction, poor epiglottis closure, poor laryngeal elevation, much residues in vallecula and pyriform sinus and the presence of penetration.

Conclusion

Cytomegalovirus has rarely been reported as a cause of rhabdomyolysis and the virus-induced rhabdomyolysis rarely leads to severe dysphagia as well. Only two cases had been reported with mild dysphagia and esophagitis. Although severe rhabdomyolysis often leads to acute renal failure, this case shows it may cause severe dysphagia indeed. This case may be the first case of severe rhabdomyolysis with severe dysphagia secondary to a cytomegalovirus primary infection in Taiwan. This case report suggests that swallowing assessment and then providing suitable swallowing training may be recommended to those patients of the viral-induced rhabdomyolysis with swallowing difficulties.

No conflict of interest

ISPR7-0117

Neurological and Mental Health Conditions - Language and Speech Disorders

ETIOLOGY-DEPENDENT SUCCESS OF LANGUAGE TREATMENT FOR SEMANTIC VARIANT PRIMARY PROGRESSIVE APHASIA

R. Jokel¹

¹*Rotman Research Institute, Toronto, Canada*

Introduction/Background

Semantic variant primary progressive aphasia SvPPA (a.k.a. semantic dementia) is a disorder with insidious onset and a steady language decline that is characterized by deficits in naming and comprehension of single words due to a profound loss of semantic knowledge. Recent progress in interventions for SvPPA provided encouraging evidence for the regaining of lost words accompanied by neuroplasticity. This study was designed to establish whether treatment is equally successful in progressive semantic disorders of different etiologies and whether it is accompanied by neuroplasticity, regardless of the degree of success.

Material and Methods

We provided therapy for naming disorders to two participants with classic SvPPA profiles due to PPA (Primary Progressive Aphasia) and CADASIL (Cerebral Autosomal-Dominant Arteriopathy with Subcortical Infarcts and Leukoencephalopathy), respectively. They were matched for age, education, time post onset, and severity of the semantic disorder. Their brains were scanned before and after naming therapy while they were performing semantic tasks in the fMRI scanner. Results of therapy were reconciled with post-treatment changes in brain activation.

Results

Participant with CADASIL showed no improvement after naming therapy, despite typical SvPPA language profile at the outset of the study. He showed robust but random activation of various brain regions in both hemispheres. The PPA participant significantly improved after therapy and showed prominent recruitment of left temporal regions.

Conclusion

The findings suggest that (1) not all etiologies of semantic deficits are amenable to a naming intervention, (2) activation of left hemisphere regions might be associated with a more successful language recovery while right hemisphere activation represents (mal)adaptive plasticity or compensatory mechanisms, and (3) changes in both left and right hemisphere regions contributed to neuroplasticity in both SvPPA participants.

No conflict of interest

ISPR7-0474

Neurological and Mental Health Conditions - Language and Speech Disorders

**ISCHEMIC STROKE AND SPEECH DISORDERS: NEW OPPORTUNITIES
NEUROREHABILITATION**

S. Turuspekova¹, A. Alvarez², A. Tokmirzaev³, A. Seydanova³

¹Kazakh National Medical University, of Neurology and Neurosurgery, Almaty, Kazakhstan

²Licensed Marriage & Family Therapist, Private Practice, Miami- Florida, USA

³City Clinical Hospital № 1, of neurorehabilitation, Almaty, Kazakhstan

Introduction/Background

Provision of specialized psychological and logotherapy assistance contributes to more effective rehabilitation of patients after cerebral stroke.

Objective: To evaluate the effectiveness of articulating logotherapy on the background of intrapersonal psychological correction of recovery integrative image of "I" in the rehabilitation of patients with ischemic stroke (IS) in the early recovery period.

Material and Methods

Materials and Methods: The study included 183 patients with speech disorders (motor, sensory, amnesic aphasia -68, dysarthria-115) on the background of IS at the age of 55-68 years. As the performance criteria the scale of speech disorders (SSD) was approbated for the first time. We used Scale MMSE, Barthel ADL Index, questionnaire Rivermead. Watched 2 groups: 1 - 110 patients who underwent sessions intrapersonal psychological correction, articulation exercises and massage; 2nd - 73 control patients treated according to the protocol.

Results

Results and Discussion: sessions intrapersonal psychological correction and articulating logotherapy statistically significantly improve speech functions and the degree of self-service patients with speech disorders on the background of the IS. There was a positive dynamics of speech functions on SSD (average score from $48,8 \pm 1,6$ to $75,86 \pm 1,5$ - intervention group; control - $48,6 \pm 1,6$ - $57,88 \pm 1,6$). Barthel Index climbed 18 points, Rivermead - on 17.

Conclusion

Conclusions: The articulating logotherapy on background intrapersonal psychological correction of recovery integrative image of "I" can achieve more effective rehabilitation IS patients in the early recovery period. The results make defensible use of SSD to assess the dynamics of speech disorders and the effectiveness of therapeutic methods.

No conflict of interest

ISPR7-0519

Neurological and Mental Health Conditions - Language and Speech Disorders

EFFECTS OF ELECTROSTIMULATION THERAPY IN SWALLOWING AND VOCAL FUNCTION IN A PATIENT WITH SEVERE BRAINSTEM TRAUMATIC BRAIN INJURY

S. Aranda^{1,2}, P. Orellana¹

¹Universidad del Desarrollo,

Carrera de Fonoaudiología- Facultad de Medicina Clínica Alemana Universidad del Desarrollo, Santiago, Chile

²Clínica Alemana de Santiago, Medicina Física y Rehabilitación, Santiago, Chile

Introduction/Background

Relationship between vocal folds paralysis and neurogenic dysphagia is common in patients with brainstem affection. Electrostimulation (ES) with EMS current has been useful to recover swallowing and vocal function in patients with neurological diagnosis. In this study case, a patient with severe Traumatic Brain Injury (TBI) was assessed. His diagnosed was severe Neurogenic Dysphagia, reaching 2 points in Food Intake Level Scale (FILS), increased timing on the initiation of swallowing reflex and pharyngeal transit, decreased elevation of hyolaryngeal complex, penetration and aspiration confirmed by Videofluoroscopic Swallowing Study (VFSS) and Videostroboscopy (VS), right vocal fold paralysis in intermedia position confirm by VS, producing moderate/severe organic dysphonia.

In this context, does ES technique improve the Speech Language Therapy (SLT), without surgical intervention?

This study describes changes that ES produces in swallowing and vocal function in patient with severe brainstem TBI.

Material and Methods

Case study of patient treated 7 months after TBI, using ES with EMS current and swallowing and phonatory conventional SLT exercises, with 2 sessions per week for 2 months, then 1 session per week for 4 months. Both exams were repeated after treatment, comparing the swallowing and phonatory functions.

Results

Decreasing time on the initiation of swallowing reflex and pharyngeal transit, increasing elevation of hyolaryngeal complex, reaching 10 points in FILS. The right paralyzed vocal fold was medialized, allowing functional closure for swallowing and phonatory function.

Conclusion

The ES demonstrated to be efficient in this patient with neurological dysphagia and dysphonia. The reduction in the rehabilitation period and avoiding the surgical procedure to the vocal fold is outstanding.

No conflict of interest

ISPR7-0542

Neurological and Mental Health Conditions - Language and Speech Disorders

EFFECT OF CEPHALIC CORRECTION IN SPONTANEOUS SWALLOWING FREQUENCY IN PATIENTS WITH MINIMAL CONSCIOUS STATE

V. Ton¹, G. Parra², C. Berystain¹, C. Ciocchini¹, V. Silahian¹, S. Guerriero¹, R. Sabena¹, D. Gonzalez¹, N. Rivero³

¹*CIAREC, Speech and Language therapist, CABA, Argentina*

²*CIAREC, Physical Therapy, CABA, Argentina*

³*CIAREC, Occupational Therapist, CABA, Argentina*

Introduction/Background

Spontaneous swallowing (SS) is one of the protective airway reflexes, reduction in frequency increases the risk of aspiration lung disease.

In neurological patients with severe consciousness disturbance the frequency of SS is often decreased. This factor is taken as an index of high sensitivity of dysphagia and involves increased pharyngeal secretions.

Efficient posture is one that requires minimal energy expenditure in order to maintain a correct body segment alignment and favoring the proper muscle chains that work on the function. The neutral position minimizes cervical tension assisting autonomous function of SS. This posture promote the correct kinematic secuencia for the structures involved on swallowing and respiratory systems.

Objective

To study the effects of cefalic and cervical column posture after a correct positioning in the SS frequency, in patients with severe consciousness disturbance

Material and Methods

Cross-cohort study of adult patients admitted in a rehabilitation clinic presenting score grade 2 and 3 of JFK awareness scale. SS measurement was performed with cervical auscultation at 3 different times. First measure without postural correction, second with postural correction and third one 30' after the correction.

Results

64% of patients increased the SS frequency once positioning. Of that percentage the 66,66% could mantain the improvement after 30'.

Conclusion

Obtained results inferred that neutral positioning assist the correct oropharyngeal structures alignment promoting the swallowing reflex trigger and better handle secretions.

No conflict of interest

ISPR7-0625

Neurological and Mental Health Conditions - Language and Speech Disorders

DYNAMICS OF THE COMMITTEE OF NEUROLINGUISTIC DISORDERS

L. Haller¹, A. Bertazza², A. Felipez³, G. Garelli⁴, A. Marchi⁵

¹Hospital Rocca, Fonoaudiología, Buenos Aires, Argentina

²Hospital Rocca, Terapia Ocupacional, Buenos Aires, Argentina

³Hospital Rocca, Fisiatría, Buenos Aires, Argentina

⁴Hospital Rocca, Psicopedagogía, Buenos Aires, Argentina

⁵Hospital Rocca, Salud Mental, Buenos Aires, Argentina

Introduction/Background

Children with neuropsycholinguistic disorders constitute a large population that requests assistance in our institution. The prevalent pathology is Speech and Language Impairment (SLI). This team receives heterogeneous referrals from general pediatric hospitals. That is why we selected a peculiar case in order to show the different modalities of assistance that this team performs. Objective: To show the functioning of the committee through the evaluations and therapeutic interventions in case M.

Material and Methods

This is a clinical case: Case M. The materials were the protocol designed by the different specialties that make up the committee, the toys to enhance the activity of patients during admission. Specific tests and rehabilitation elements from different disciplines to carry out specific evaluations and treatments by area.

The child was assessed by areas, joint assessment of equipment and diagnosis under treatment. The referrals were made by pertinent disciplines to each case to deepen the study and evaluation of this one. When they were made effective, the conclusions were discussed with the team and the interventions were established. Treatments were began in the areas of Occupational Therapy, Language Therapy, Mental Health. Evaluation and monitoring by Psychopedagogy and Social Service intervention, simultaneously with periodic checks of Children Psychiatry.

Results

Case M allowed to use all the resources and devices of the dynamics of this team: Evaluation in the different disciplines, joint evaluation and diagnosis in treatment; and treatment.

Conclusion

Teamwork allows us to reach a differential diagnosis (SLI, disorder of communication or ASD) in complex cases.

No conflict of interest

ISPR7-0641

Neurological and Mental Health Conditions - Language and Speech Disorders

PROPORTIONATE A NEW DEVICE FOR STUDYING CHILDREN WITH COMMUNICATION AND LANGUAGE DISORDERS

A. Bertazza¹, L. Haller², A. Felipez³, G. garelli⁴

¹Hospital de Rehabilitacion Manuel Rocca., Department of physical medicine and rehabilitation, ciudad autonoma de buenos aire, Argentina

²hospital de rehabilitacin Manuel rocca, fonoaudiologia, ciudad autonoma de buenos aires, Argentina

³hospital de rehabilitacion manuel rocca, medicina fisica y rehbilitacion, ciudad autonoma de buenos aires, Argentina

⁴hospital de rehabilitacion manuel rocca, psicopedagogia, ciugdada autonoma de buenos aires, Argentina

Introduction/Background

The complexity and heterogeneity of the consultations from children with regarding Language Disorders moved us to consider a new approach. **Objetives:**-Describe the Join Evaluation (JE) process and the results of the cases treated between June 2014 and June 2016. Compare the waiting time and the number of sessions spent between Joint Evaluation and conventional evaluation (CE) over the same period.

Material and Methods

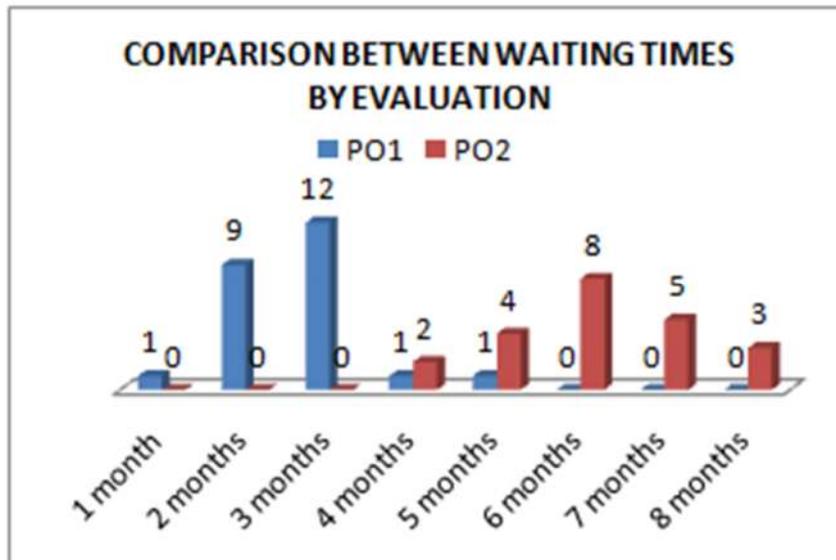
This is a retrospective, observational, descriptive, comparative y transversal study. Medical records (MR) were analyzed for JE and for the same amount of CE selected randomly, for a 24-month. Population was made of 46 MR divided in Po1 (JE) = 24 and Po2 (CE) = 22. Materials: Toys and database (A) for Po1 with item for differential diagnosis between SLI (Speech and Language Impairment) and other Neurodevelopment Disorders. Standardized Tests for JE and the database (B) with waiting time and number of sessions spent in JE and CE. JE was administrated in one session. They were diagnosed according to DSMV criteria.

Results

Po1 was made of 24 MR of children with an average age of 39 months.

THERAPEUTIC CONDUCT PO1	FA	FR%
NOT INCLUDED IN THE ATTENTION CRITERIA	18	75
"DIAGNOSIS TREATMENT	2	8
ORDINARY TREATMENT	4	17

DIAGNOSIS PO 1	FA	FR%
OTHER PATHOLOGIES	3	13
GLOBAL DEVELOPMENTAL DELAY (GDD)	10	42
AUTISTIC SPECTRUM DISORDER (ASD)	10	42
SLI	1	4



Po2 was made of 22 MR of children with an average age of 49 months. The average number of sessions required to diagnose was 3 for JE (Po1) and 16 for CE (Po2).

Conclusion

Incorporation of the new device (JE) showed better effectiveness while reducing waiting time for diagnosis. Therefore, JE device was effective to attend Po1.

No conflict of interest

ISPR7-0885

Neurological and Mental Health Conditions - Learning Disabilities

USE OF THE INHIBITION BOARD FOR DECREASE OF VERBAL PERSEVERATIONS IN NEUROREHABILITATION

P. Alegría¹

¹Clinica Alemana, Medicina Física y Rehabilitación, Santiago, Chile

Introduction/Background

Verbal perseverations are alterations that frequently appear in cognitive disorders associated with working memory mainly, and to disorders in inhibition secondarily (Fischer-Baum S, 2016). Is an alteration that hinders rehabilitation work and disturbs the rehabilitation team and their family. Environmental modifications have been shown to be effective in reducing these alterations (Wilson, 2009). The aim of the present study was to evaluate the efficacy of an inhibition board specifically designed to reduce perseverance in patients.

Material and Methods

Three patients with these deficits were evaluated, two with traumatic brain injury and one with stroke, who showed a 21-point average Montreal Cognitive Assessment (Deterioration of mild) and a Frontal Assessment Battery of 9 points (deterioration of the executive functions Moderate to Severe). It was evaluated through a subjective scale of perseverative deficits (generated for this study) applied to their family caregiver and to the neurorehabilitating team. The board was exposed permanently in the sessions of cognitive stimulation, with a specific message according to the theme in which each patient persevered.

Results

There was a significant efficacy in the use of this board in the reduction of the perseverations to the month through the interaction with the board and to two months without the permanent use of it. The difference was 3 points in the first month and 6 points in the second month.

Conclusion

The inhibition board is an effective tool for the control of perseverations not only in the rehabilitation session, but also in the long term and in different contexts.

No conflict of interest

ISPR7-0150

Neurological and Mental Health Conditions - Mental Disorders (e.g. Depression; Bipolar Disorders)

EVIDENCES FOR SPINAL CORD INJURY ATTENUATES COGNITIVE FUNCTION IN ADULT RATS

B. Tan¹, Z. Luo²

¹, *Chongqing, China*

²*2nd affiliated hospital of Chongqing Medical University, rehabilitation medicine, chongqing, China*

Introduction/Background

The sensorimotor dysfunctions are the main concerns for several researches on spinal cord injury (SCI). However, clinical studies have suggested potential cognitive changes based upon patient self-reporting of post-morbid conditions. The current study aims to investigate the effects of spinal cord injury on the cognitive functions such as learning and memory in adult rats and its possible mechanisms.

Material and Methods

T9~10 contusion injury model of adult rats were applied and observed at least 8weeks. The mirrors water maze and shuttle box testing were used to assess the learning and memory function of the animals. Nissl staining and FD rapid Golgi staining were employed to observe the neurons and dendritic morphology in the brain. Expressions of endoplasmic reticulum stress (ER) markers were characterized by immunofluorescence and Western Blot.

Results

The latency of mirrors water maze and shuttle box testing showed significant extension in SCI animals after 8 weeks and more but not the early times points (e.g. 4 weeks) compared to the control ones. Obvious decrease of Nissl bodies was observed in SCI group 8 weeks post injury as well as the cell boundaries blur at the hippocampus region of CA2 and CA3. This was further confirmed by FD rapid Golgi staining because there were a lot more breakage axons and reduced dendrites in the chronic stages of SCI animals. Makers of reticulum stress such as BIP, p-Ire and, Ikka were found up-regulated at hippocampus in SCI animals.

Conclusion

We found here that SCI might attenuate the brain functions like memory and learning besides paralysis of limbs. This work gives a clinical indication that brain function of chronic SCI patients in rehabilitation should be noted in this regard.

Conflict of interest

Disclosure statement:

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ISPR7-0184

Neurological and Mental Health Conditions - Mental Disorders (e.g. Depression; Bipolar Disorders)

PSYCHIATRIC AND COGNITIVE DISORDERS IN NEUROREHABILITATION

A. Dr. Büttner-Teleagă^{1,2}

¹Woosuk University, Institute of Cognitive Science, Samrye-up, Germany

²University Witten-Herdecke, Dept. of Psychiatry, Witten, Germany

Introduction/Background

Apart from a multitude of physical complaints, neurological disorders can also lead to various kinds of psychiatric and cognitive disorders like mental and cognitive changes or reduced Quality of Life. The most important neuropsychiatric consequences include HOPS, PTSD, Depression, Neurocognitive deficits, Quality of Life (QoL) deficits and Quality of Sleep (SQ) deficits, which are targeted in neurological and neurosurgical rehabilitation.

In such cases, mental health, mood, attention, vigilance and/or memory may be affected as well as the actual mental and/or cognitive processes themselves. Important factors in this can be the severity of the disorder on one hand, and the duration of prior therapy on other hand. **Material and Methods**

The study was carried out involving two groups of randomly selected persons, neurology patients and healthy participants. All patients were selected according to their clinical diagnosis (ICD-10).

So far, data have been gathered more than 50 healthy persons (42 male; 9 female) and around 150 neurological patients (101 male; 47 female) (with various neurological clinical pictures) using different tests to research the psychiatric/mental and cognitive status as well as the QoL. **Results**

Testing of psychiatric, cognitive and QoL achievements revealed highly significant differences between healthy persons and neurological patients (all parameters: $p < .001$); revealed a highly significant difference between untreated neurological patients and patients, who had undergone therapy (after 3 weeks of neurological rehabilitation) between $p < 0.001$ and $p < 0.05$.

Analysis of the degree of severity showed for neurology patients no significant differences between mild and severe status ($p > .050$).

Conclusion

The study revealed that patients with neurological diseases (strokes, cerebrovascular diseases, brain traumas, brain tumors etc.) show problems, deficits and disorders concerning in different areas of psychiatric/mental and cognitive achievements as well as in multidimensional QoL. In contrast, the degree of severity of the disorders (neurology patients) was not relevant.

No conflict of interest

ISPR7-0186

Neurological and Mental Health Conditions - Mental Disorders (e.g. Depression; Bipolar Disorders)

COGNITIVE BEHAVIOUR THERAPY (CBT) IN DEPRESSION (BASED ON: 1BURRHUS FREDERIC SKINNER, 2AARON T. BECK, 3ALBERT ELLIS, 4MARTIN HAUTZINGER, 5CARL ROGERS & 6SIGMUND FREUD)

A. Dr. Büttner-Teleagă^{1,2}

¹Woosuk University, Institute of Cognitive Science, Samrye-up, Germany

²University Witten-Herdecke, Dept. of Psychiatry, Witten, Germany

Introduction/Background

The Cognitive-Behavioural Therapy (CBT) of Depression is a multimodal Treatment, based on different elements of Psycho-Education, Conversation Management, Cognitive Therapy¹, Behaviour Therapy², Rational-Emotive Therapy³, Cognitive-Behavioural Therapy⁴, ABCD-Method, Client-Centred Therapy⁵ and Psychotherapy⁶.

The **Baseline** has to take place at least 1 or 2 weeks before the start of the Depression Training. It includes a Complex Depression Anamnesis (*Special Anamnesis Questionnaire*) with Evaluation of Demographic & Anthropomorphic Data, Living Conditions, Daily Life, Social Life, Medical Status, Medications, Sleep Conditions & Sleep Behaviour, Former Treatments.

Cognitive-Behavioural Therapy is based on the interrelationship of thoughts, actions, and feelings. In order to work with feelings of depression, this model establishes the importance of identifying the thoughts and actions that influence mood. In this manner the patients learn to gain control of his/her feelings.

The CBT for Depression can be divided into **3 Modules**, each with **4 Sessions**:

1. Module 1: Thoughts
2. Module 2: Behaviour & Activities
3. Module 3: Social Interactions / Competencies

Module 1: Thoughts (Sessions 01-04)

The main background/purpose of this module is to present how the thoughts can influence your mood. A Session Weekly Schedule is established, rules are set forth, and the issue of confidentiality is clearly explained.

Module 2: Behaviour & Activities (Sessions 05-08)

The main objective is to gain control of one's own life and identify ways to gain a sense of freedom. Together with the therapist, the patients should generate options and goals, and identify activities that allow themselves to improve their mood.

Module 3: Social Interactions / Competencies (Session 09-12)

Third module based on the idea that social interactions and competencies (interpersonal relationships) can affect the mood. The group should work about the influence of social support, and how it helps to manage difficult situations.

The last sessions should integrate the previous topics and there will be carrying out a **Catamnesis**.

Material and Methods

No conflict of interest

ISPR7-0019

Neurological and Mental Health Conditions - Miscellaneous

PREVALENCE OF ALTERATIONS OF THE PERIPHERIC NERVOUS SYSTEM WITH ATTENTION IN PHYSICAL THERAPY SERVICES

G.A. Baquero Sastre¹

¹Manuela Beltran University, Physical Therapy, Bogotá, Colombia

Introduction/Background

The alterations in the peripheric nervous system have important implications with your presentation in the muscular proprieties and the sensibility functions, and this situations have impacts in the life and labors of the persons, with important economic cost in the rehabilitation process

Material and Methods

This investigation is a cross – sectional study, and the study population are the persons over 15 years old with diseases of the peripheric nervous system with attention for this situation in the Physical Therapy Services that have clinical practices of the Physical Therapy Program of Manuela Beltran University in the year 2012 in the period of February to November, and for the recollection of information the instrument is the statistical register of attention of patients in physical therapy. The analysis of results have general prevalences and specific prevalences for gender and for the relationship of the gender with alterations of peripheric nervous system we have the Chi Square Test with one level of freedom $p < 0.05$ and confidential interval to 95%

Results

1062 persons have neurological diseases and between this persons the 8.26% have diseases of the peripheric nervous system ($n=88$, standard error= 0.02). 56.81% of persons with diseases of the peripheric nervous system have polineuroradiculopathy ($n=50$, standard error=0.04), 66% of this persons are of male gender ($n=33$, standard error=0.04, $X^2=6.02$, $p<0.05$, O.R.= 2.08, C.I. 95% 1.20 – 3.56)

Conclusion

The principal disease of the peripheric nervous system is the polineuroradiculopathy and your presentation have more prevalence in the persons of male gender

No conflict of interest

ISPR7-0181

Neurological and Mental Health Conditions - Miscellaneous

EFFECT OF HIGH FREQUENCY REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION IN RESTLESS LEGS SYNDROME PATIENTS

B.Y. Lee¹, W.Y. Shin¹, J.K. Lee¹, H.S. Kee¹, S.R. Yoon¹, K.I. Jung¹

¹Gwangju Veterans Hospital, Rehabilitation medicine, Gwangju, Republic of Korea

Introduction/Background

To investigate the effect of additional high-frequency (10Hz) repetitive transcranial magnetic stimulation in Restless Legs Syndrome patients with pharmacological treatment.

Material and Methods

This study was designed by double-blind and placebo -controlled study. Twenty RLS patients with medicine treatment were recruited. All patients fulfilled International RLS Study Group criteria. Participants were assigned to 2 groups: 1) 'Real rTMS group' (10 patients) 2) 'Sham rTMS group' (10 patients). One rTMS session consisted of 40 rTMS trains, 20 trains delivered to the right leg area of primary motor cortex and the other half to the left. A single train consisted of 50 stimulations, which 90% of resting motor threshold with 10Hz frequency was delivered in 5 seconds, and intertrain interval was 25 seconds. Each patients received 10 sessions of either real rTMS or sham rTMS in two weeks. We consider motor hot spot as the location where the stimulation evoke movement of contralateral tibialis anterior. International RLS Rating scale(IRLS), Johns Hopkins RLS Quality of Life Questionnaire (RLS-QOL), and Pittsburgh Sleep Quality Index (PSQI) were assessed before rTMS, at last session and at 2months after the last session.

Results

The baseline IRLS, RLS-QOL and PSQI scores were not significantly different between two groups. After last session, all of the IRLS, RLS-QOL, PSQI scores were significant improved compared to baseline in real rTMS group. Comparing real rTMS group and Sham rTMS group, all of the IRLS, RLS-QOL, PSQI scores were significantly improved more in real rTMS group at last session but at 2months after the last session, difference between two groups were not significant statistically.

Conclusion

The results of this study suggest that additional High-frequency rTMS on RLS patients with pharmacological treatment reduce RLS symptoms during the intervention. But long-lasting effects after rTMS intervention seem to be absent.

No conflict of interest

ISPR7-0199

Neurological and Mental Health Conditions - Miscellaneous

POSTOPERATIVE GAIT DISTURBANCES IN PATIENTS WITH BENIGN OR MALIGNANT SURGICAL DISEASES

I. Christodoulou¹, G. Grigoriadis², E. Kallistratos³, I. Tsakiridis⁴, P. Angelopoulos⁵, D. Hrisomallos⁶, D. Gonezou¹

¹*G.Papanikolaou General Hospital, B'Surgical Department, Thessaloniki, Greece*

²*G.Papanikolaou General Hospital, Physical Therapy Unit, Thessaloniki, Greece*

³*Alexander Technological University of Thessaloniki- Greece, Physical Therapy Unit, THESSALONIKI, Greece*

⁴*G.Papanikolaou General Hospital, B' Surgical Department, Thessaloniki, Greece*

⁵*G.Papanikolaou General Hospital, Neurology Department, Thessaloniki, Greece*

⁶*G.Papanikolaou General Hospital, Neurosurgery Department, Thessaloniki, Greece*

Introduction/Background

Preoperatively, we inform in detail our patients on possible postoperative complications and include them all in the document of the written consent. Aim of this study is to highlight the unexpected postoperative complication of severe gait disturbance in patients with either benign or malignant surgical conditions.

Material and Methods

We present a case series of 6 patients, two women operated for pancreatic cancer, 55 and 62 year old respectively, one 75- year old man operated for ruptured colon cancer, a 60 year-old man operated for ruptured duodenal ulcer, an 82 year- old male patient operated for primary hyperparathyroidism, and a 49 year- old woman operated for morbid obesity (sleeve gastrectomy). The age of the patients varied from 49 to 83 years old. The type of gait disturbance was paraparetic in all patients, and mixed in one patient who combined a hemiparetic and a paraparetic disturbance.

Results

All of our patients presented a functional gait impairment, which resolved in only one patient, after 3 months of daily physical therapy, which was the 49-year old woman treated for morbid obesity. The rest of patients are still under follow up, one of them died (two years after the operation for gastric ulcer rupture). All studied patients had been admitted in the Intensive Care Unit for 3 days up to 2 months. Only one patient had not received norepinephrine, but this patient suffered from severe hypercalcemia and hypernatremia during his stay in the ICU and had received zoledronic acid.

Conclusion

The study of our patients revealed immunodepression, due to rapid weight loss as well as the rest of comorbidities and subsequent failure of the hypophysis- pituitary -adrenal axis, not related primarily to malignancy, but linked to overwhelming or/and prolonged somatic stress which was profoundly important during the critical period for the correction of the gait anomaly.

No conflict of interest

ISPR7-0202

Neurological and Mental Health Conditions - Miscellaneous

EVIDENCE FOR USING MUSIC-BASED INTERVENTIONS FOR MOTRICITY AND COGNITIVE FUNCTIONS IN NEUROLOGICAL POPULATIONS: A SYSTEMATIC REVIEW

L. Moumdjian¹, C. Leone¹, T. Sarkamo², M. Leman³, P. Feys¹

¹Hasselt University, REVAL - BIOMED, Hasselt, Belgium

²University of Helsinki, Cognitive Brain Research Unit- Institute of behavioural sciences, Helsinki, Finland

³UGent, IPEM, Gent, Belgium

Introduction/Background

Motor and cognitive symptoms are frequent in persons with neurological disorders and often require extensive long-term rehabilitation. Recently, a variety of music-based interventions have been introduced into neurological rehabilitation as training tools. This review aims, in the neurological population, to a) describe and define music-based intervention modalities and content which are applied in experimental studies, and b) evaluate the effects of these interventions on cognitive and/or motor symptoms.

Material and Methods

The databases PubMed and Web of Science were searched. Cited references of included articles were screened for potential inclusion. A systematic literature search up to 20th of June 2016 was conducted to include controlled trials and cohort studies that have used music-based interventions for ≥ 3 weeks in the neurological population (inpatient and/or outpatient) targeting motor and/or cognitive symptoms. No limitations to publication date was set.

Results

Nineteen articles comprising thirteen randomised controlled trials (total participants $N_{\text{exp}} = 241$, $N_{\text{ctrl}} = 269$), four controlled trials ($N_{\text{exp}} = 59$, $N_{\text{ctrl}} = 53$) and two cohort study ($N = 27$) were included. Fourteen studies were conducted in stroke, three in Parkinson's disease, and two in multiple sclerosis population. Modalities of music-based interventions were clustered into four groups: instrument-based, listening-based, rhythm-based and multicomponent-based music interventions. Overall, studies consistently showed that music-based interventions had similar or larger effects than conventional rehabilitation on upper limb function ($N=16$; fine motricity, hand and arm capacity, finger and hand tapping velocity/variability), mobility ($N=7$; gait parameters), and cognition ($N = 4$; verbal memory and focused attention).

Conclusion

Variety of modalities using music-based interventions has been identified and grouped into four clusters. Effects of interventions demonstrate an improvement in the domains assessed. Evidence is most available for improving motricity in stroke. More studies are warranted to investigate cognition as well as motor and cognition dysfunctions in combination.

No conflict of interest

ISPR7-0245

Neurological and Mental Health Conditions - Miscellaneous

THE PATIENT-CENTRED APPROACH AS EXPERIENCED BY MALE NEUROLOGICAL REHABILITATION PATIENTS. A QUALITATIVE STUDY BASED ON A GROUNDED THEORY TRADITION

D. Van De Velde¹, I. Devisch², P. De Vriendt³, S. De Baets¹

¹Ghent University, Rehabilitation sciences and physiotherapy, Ghent, Belgium

²Ghent University, Department of Family Medicine and Primary Health Care, Ghent, Belgium

³Vrije universiteit Brussel, Department of Gerontology and Frailty in Ageing, Brussels, Belgium

Introduction/Background

Patient-centred practice (PCP) has become such an important feature of rehabilitation that newly graduated therapists even take it for granted. Besides, most therapists today claim to work within a patient-centred model. Little is known about how individuals who receive rehabilitation experience PCP. This study aims to monitor PCP as it has been experienced by neurological patients.

Material and Methods

This study involved a qualitative research design based on the grounded theory tradition. Individual in-depth interviews were used to collect data. Data were analysed using a constant comparative method. Male participants from an inpatient neurological setting were included using a theoretical sampling technique until saturation of the data occurred.

Results

Individuals who receive rehabilitation experience that their therapist is getting acquainted to them as a patient with biomedical problems and not as a person with also psycho-social problems. A structural analysis led to 3 themes explaining this experience: (a) a shared biomedical focus as the start of the rehabilitation process, (b) the un-simultaneous shift from a biomedical towards a psycho-social focus and (c) formal versus informal nature of gathering client information.

Conclusion

PCP entails a shift from the therapist focussing on recovery from the short-term neurological issues towards the long-term consequences of the disease. According to the patient this shift in reasoning must occur at a specific and highly subjective moment during the rehabilitation process. Identifying this moment could strengthen the PCP.

the paradigm shift towards a PCP perspective in rehabilitation has not yet been fully accomplished and a huge field of patient needs remain untouched by the professional. Both the patient and the professional should be trained to work towards specific communication skills to promote PCP.

No conflict of interest

ISPR7-0368

Neurological and Mental Health Conditions - Miscellaneous

**DIAGNOSTIC DIFFICULTIES OF NEUROMUSCULAR DISEASES IN PATIENTS OF A
PROLONGED MECHANICAL VENTILATION REHABILITATION PROGRAM WITH THERAPEUTIC
AND PROGNOSTIC IMPLICATIONS**

R. Camacho¹

¹, Chia, Colombia

Introduction/Background

Neuromuscular diseases are among the main causes of mechanical ventilation dependence, its precise diagnosis has therapeutic and prognostic implications. Diagnostic delay range from 3 months to 25 years from the time neuromuscular disease was first diagnosed and new one. Even Three months had serious implications for the patient; allowing rapid progression of infantile Pompe disease which has specific treatment (1 case). In most cases delay prevented the use of Non-invasive mechanical ventilation (NiMV) and appropriate rehabilitation.

Material and Methods

Case series study. The diagnosis of 11 patients (representing the 31.4% of a hospitalized population from neuromuscular causes and 17.4% from all neurological causes from a prolonged mechanical ventilation program) were challenged and new different diagnoses were found, involving changes in treatment, functional and ventilatory prognosis.

Results

Causes of misdiagnosis were absence of a definite protocol documented in clinical history, incomplete electrodiagnostic studies, controversial interpretations, misleading muscle biopsies, absence of genetic testing and unexpected clinical evolution (Table below).

Table: Findings.

Initial Diagnosis	Definitive diagnosis	Delay (moths)	Incomplete diagnostic protocol	Misleading Muscle Biopsy	Misleading electrodiagnosis
Espinal Muscle Atrophy Type I*	Nemaline Myopathy	48	Yes	Not performed	Yes
Espinal Muscle Atrophy Type I*	Nemaline Myopathy	48	Yes	Yes	Yes
Duchenne Muscular Dystrophy	Merosine Deficit	23	Yes	Not performed	Yes
Espinal Muscle Atrophy Type I	Pompe Disease	3	No	Yes	Yes
Espinal Muscle Atrophy Type IV	Pompe disease	300	No	Yes	Yes
Ondine Syndrome	Myopathy	No data	Yes	Not performed	Yes
Guillain Barre Syndrome	Spinal Cord hemorrhage	3	Yes	Not performed	Not performed
Multifocal motor neuropathy (MMN) with conduction block	Amyotrophic Lateral Sclerosis	7	No	Not performed	Yes
Chronic Motor Polyneuropathy	Amyotrophic Lateral Sclerosis	16	Yes	Not performed	Yes
* siblings					

Conclusion

Proper diagnosis is vital for adequate therapeutic planning: favors specific therapies and rational management of (NiMV); allows patients advance decisions according to their needs and beliefs.

No conflict of interest

ISPR7-0572

Neurological and Mental Health Conditions - Miscellaneous

**CLINICAL AND PSYCHOLOGICAL EVALUATION OF FUNCTIONAL NEUROLOGIC DISORDER
(CONVERSION DISORDER)**

J. Speed¹, S. Trapp¹, L. Waller¹, A. Long¹, J. MacKenzie¹

¹University of Utah, Division of PM&R, Salt Lake City, USA

Introduction/Background

Functional neurologic disorder (FND) presents many diagnostic challenges to clinicians. Significant uncertainty is engendered in the diagnostic process, leading to unnecessary delays, expensive, invasive, and time-consuming tests and evaluations, with resultant prolongation of symptoms. This process results in FND symptoms becoming behaviorally engrained and more resistant to treatment.

Our center has evaluated and treated over two hundred patients with FND over the last twenty five years. This experience has iteratively informed an efficient evaluative process, both in terms of physician and psychologic evaluations. This presentation will discuss the dual components of the evaluation process, which leads to enhanced efficiency and diagnostic clarity.

Material and Methods

Physician evaluation typically begins with referral of a patient with a provisional diagnosis of FND. Not all patients so referred result in the diagnosis of FND; diagnostic characteristics that support and refute the diagnosis will be discussed.

Psychologic evaluation includes a comprehensive evaluation including diagnostic interview, interview of family members when available, personality and psychopathology testing, screening of other somatoform conditions, examination of dissociative experiences, and more specific screening of somatic dissociation. Choice of instruments and diagnostic effectiveness will be discussed.

Results

Our center has developed an approach to evaluation of the FND patient that is efficient, involving both physician and psychologic assessments that lead to a greater degree of diagnostic certainty and effective treatment.

Conclusion

In the absence of diagnostic imaging, prompt and confident diagnosis (or exclusion) of FND through coordinated physician and psychologic evaluations allows for rapid initiation of treatment and improved patient outcomes.

No conflict of interest

ISPR7-0578

Neurological and Mental Health Conditions - Miscellaneous

FUNCTIONAL NEUROLOGICAL DISORDER: A CASE SERIES ILLUSTRATING AN INTERDISCIPLINARY APPROACH TO TREATMENT ON AN INPATIENT MEDICAL REHABILITATION UNIT

J. Speed¹, S. Trapp¹, L. Waller¹, A. Long¹, J. MacKenzie¹

¹University of Utah, Division of PM&R, Salt Lake City, USA

Introduction/Background

Functional neurological disorders (FND) often have a poor prognosis with high rates of chronicity of symptoms. Although advances in understanding of the neurophysiology of FND are developing, there is no agreed upon standard of treatment. Formative research conducted by and clinical findings from the authors have demonstrated that a coordinated team approach involving cognitive-behavioral principles is successful when treating a patient with FND on an inpatient rehabilitation unit. This presentation will utilize a case series to illustrate the team protocol from diagnosis to discharge. Aims of the presentation include: (1) the nature of the disorder; (2) the interdisciplinary approach to treatment; and (3) outcomes associated with the cases.

Material and Methods

Case Series

Results

Clinical observations collected over the course of treating a series of patients with FND on the acute medical rehabilitation unit will be used to (a) review the interdisciplinary clinical protocol for treating an individual with conversion disorder, and (b) demonstrate salutary benefits of the treatment protocol

Conclusion

The treatment protocol has demonstrated clinical effectiveness for treating FND on an inpatient rehabilitation unit. Future research validating the protocol in a systematic manner will be discussed.

No conflict of interest

ISPR7-0697

Neurological and Mental Health Conditions - Miscellaneous

EVALUATION OF FUNCTIONAL CAPACITY AND QUALITY OF LIFE OF PATIENTS WITH PARKINSON'S DISEASE

R. Barbosa¹

¹, São Paulo, Brazil

Introduction/Background

Parkinson's disease (PD) is a degenerative and progressive disease of the central nervous system (CNS), characterized to typical motor changes with major impact on functional capacity and quality of life.

Material and Methods

METHODS: This is an observational study developed by graduates of the physiotherapy course at São Camilo University Center. The study was approved by the Ethics and Research Committee number 1.436.942. Four patients both genders were evaluated with diagnosis of Parkinson's disease treated in PROMOVE São Camilo and submitted to evaluation of functional capacity through the six-minute walk test (6MWT), functional independence measurement (FIM) and perception of the factors related to quality of life by the English Parkinson's Disease Questionnaire (PDQ-39). Were included: patients ages of 45 and 80 years; with optimized drug treatment and 2 and/or 3 classification on the scale of Hoehn and Yahr modified.

Results

Within the group studied there was a prevalence of males, with a average age of 73.5 (\pm 4.5) years, BMI of 23.0 (\pm 3.7). In the 6MWT patients presented distance average of 332.5 (\pm 71.5) meters showing decreased functional capacity. In the FIM, the results indicated that patients evaluated have complete independence, whereas the average score was 84.5 (\pm 5.2). In addition, it was found that the patients have a good perception of the factors related to quality of life according to the score presented in PDQ-39 29.3 (\pm 11.8).

Conclusion

The Parkinson's patients evaluated in this study presented low functional capacity, despite performing complete independence to carry out motor activities. In addition, greater perception was verified to factors related to quality of life. Despite the restricted number of patients evaluated, our results suggest that Parkinson's disease results in a negative impact on functional capacity despite the maintenance of complete independence and good perception of the factors related to quality of life.

No conflict of interest

ISPR7-0752

Neurological and Mental Health Conditions - Miscellaneous

THE ROLE OF NUTRACEUTICALS IN MYOPATHIES: A SCOPING REVIEW

A. de Sire¹, F. Gimigliano², S. Mozzillo¹, F. Russo¹, S. Liguori¹, M.F. Siani¹, G. Iolascon¹, R. Gimigliano¹

¹University of Campania, Department of Medical and Surgical Specialties and Dentistry, Napoli, Italy

²University of Campania, Department of Mental and Physical Health and Preventive Medicine, Napoli, Italy

Introduction/Background

Myopathies are characterized by progressive muscle weakness, myalgias, and fatigue. Treatment is mainly symptom-oriented and includes physical therapy, orthopedic corrections, artificial ventilation, corticosteroids, etc. Nutraceuticals are foods or their parts that are supposed to provide beneficial effects with their micronutrients. The aim of this scoping review was to summarize the state of the art about the effects of nutraceuticals in myopathies.

Material and Methods

We selected from the "EU Register of nutrition and health claims made on foods" the micronutrients that have an effect on muscle performance or an antioxidant effect. We searched the available literature on PubMed using as MeSH terms the selected micronutrients, and for each of them, we added to the PubMed Search Builder the terms: muscular dystrophy(ies), muscular disease(s), congenital myopathy(ies), metabolic myopathy(ies), mitochondrial myopathy(ies), myotonic dystrophy(ies). We searched for all the studies published in literature in the last 10 years up to August 2015, including only studies in English language and performed on individuals affected by muscle disease; we selected for each micronutrient the most relevant positive study, according to the EBM pyramid.

Results

From the 65 micronutrients listed on EU Register, we selected 12 with an effect on muscular performance and 12 with an antioxidant effect. Six of these had a beneficial effect in patients affected by myopathies: creatine, idebenone, vitamin C, vitamin E, zinc gluconate, and selenomethionine.

Conclusion

Nutraceuticals might be a new frontier in the treatment of myopathies. Creatine and some antioxidant micronutrients seem to improve physical performance in these patients.

No conflict of interest

ISPR7-0782

Neurological and Mental Health Conditions - Miscellaneous

AQUISITION OF ADULT LIFE MILESTONE IN PATIENTS WITH MYELOMENINGOCELE WITH AND WITHOUT HYDROCEPHALUS

T.R. Smanioto¹, R.F.A. FERREIRA¹, A.C.S. CAMARGO¹, M.V.D. FONSECA¹

¹Sarah Network of Rehabilitation Hospitals, Spinal Cord Injury Neurorehabilitation Program, Brasilia, Brazil

Introduction/Background

Life expectancy of people with myelomeningocele (MMC) has increased, with most reaching adult life. Hydrocephalus is associated with 85%-90% of cases of MMC. Previous studies indicate that these individuals present greater cognitive difficulty, such as memory, attention and executive functions, which may lead to greater difficulty in acquiring adult life milestones, such as living alone, having an affective relationship, completing studies and employment.

The objective of this study was to analyze the acquisition of adult life milestones of MMC patients with and without hydrocephalus.

Material and Methods

Review of medical record of adult patients with MMC admitted at Sarah Network of Rehabilitation Hospitals, between January of 2013 and July of 2015. The patients were divided into two groups: MMC with hydrocephalus and MMC without hydrocephalus. Data related to the level of injury, locomotion, level of schooling, marital status, living conditions and employment were collected and compared using Chi-square test ($p < 0.05$).

Results

In the studied period 294 patients were admitted to the rehabilitation program. We observed statistically significant difference between the groups regarding the level of injury, locomotion, living conditions, marital status and employment (Table 1). There was no significant difference in relation to schooling. Individuals with hydrocephalus had a higher lesion level and greater difficulty in locomotion.

Conclusion

Results of this study point to a greater difficulty for individuals with hydrocephalus in the acquisition of adult life milestones. These data are in accordance with current literature. Our results corroborate the need for rehabilitation programs aimed at transition to adult life, in order to alleviate difficulties and favor this process.

No conflict of interest

ISPR7-0830

Neurological and Mental Health Conditions - Miscellaneous

ARTHROGRYPOSIS MULTIPLEX CONGENITA: WHAT ARE THE ACTIVITY LIMITATIONS IN ADULTHOOD?

S. Dai^{1,2}, K. Dieterich³, M. Jeager¹, P.S. Jouk³, E. Clarac¹, S. Schrock¹, F. Leite¹, A. Gascoin¹, D. Perennou¹

¹CHU Grenoble Alpes, Physical medicine and rehabilitation, Grenoble, France

²Second affiliated hospital of soochow university, Physical medicine and rehabilitation, Suzhou, China

³CHU Grenoble Alpes, Genetic department, Grenoble, France

Introduction/Background

Arthrogryposis multiplex congenita (AMC) is a disease characterized by the presence of at least two joint contractures at birth. This study is the first to describe disability patterns of a cohort of adults with AMC.

Material and Methods

Between 2010 and 2016, 43 patients (age 33.2±13.4 years; 27 females) underwent a 4 day evaluation in the frame of the French Reference Centre for AMC: 28 with amyoplasia, 15 with other types.

Results

Deficits in muscular testing and articular ranges of motion were pronounced, both in upper and lower limbs. Most patients had modified independence, with an average FIM= 113±14.2. Nearly all subjects had satisfactory Cognitive-FIM (34.8±0.6), while motor items of the FIM were altered (78.2±13.7), especially personal care and locomotion, Motor FIM was lower in patients with amyoplasia (p<0.05). Regarding mobility limitation, most patients were independent in walking, but with a limited walking distance, while amyoplasia patients had more difficulty in stairs (p<0.05). Regarding the upper limbs, majority of AMC could achieve all the upper limbs' tests, with greater activity limitations for patients with amyoplasia. Regarding eating, most of them presented good swallowing function, but one third of AMC showed chewing problems.

Conclusion

Despite obvious muscular and articular deficits, most persons with AMC can live independently with few technical aids and compensations. Patients with amyoplasia presented greater activity limitations than other types of AMC. Rehabilitation options were proposed accordingly, and patients' satisfaction for this expert evaluation was high.

No conflict of interest

ISPR7-0900

Neurological and Mental Health Conditions - Miscellaneous

REHABILITATION IN POMPE DISEASE: CASE REPORT

R.S. Martins¹, D.J. Filho¹, M.H. Miyazaki¹, L.R. Battistella¹

¹Physical Medicine Institute – IMREA/HC/FMUSP, PM&R, São Paulo, Brazil

Introduction/Background

Pompe Disease (PD) is rare, progressive and can be fatal. This autosomal recessive pathologic is caused by the deficiency of acid alpha glucosidase (GAA) lysosomal enzyme that is essential to the glycogen degradation. The glycogen cumulates and destroys the myofibrils, changing the muscles, causing fibrosis and lipidic infiltration. Most individuals with late-onset PD experience progressive muscle weakness, especially in the leg and the trunk, including the muscles involved in breathing. In most cases it is observed gait changes, fatigue and respiratory difficulties. Definitive diagnosis is done by bio-molecular analysis of GAA gene. Enzyme Replacement Therapy (ERT) has proven effective in modifying the natural course of the disease. However, there is functional loss for the individual by the time ERT starts and it can be defying for rehabilitation.

Material and Methods

A 3-year follow up of a 43 year old male, that had symptoms for 10 years before being diagnosed with PD. The follow up started with the ERT. Patient was submitted to a Rehabilitation Programme (RP) for 1 year.

Results

In the first evaluation, patient had dyspnea, weakness in legs and trunk and frequent falls. The RP started 6 months after ERT – by that time patient had no dyspnea. Pre RP assessment showed a Functional Independence Measure (FIM) of 117 and a Time Up and Go score of 2. In the final assessment, after 1 year of RP, patient had a FIM of 119 and a TUG score of 1. Patient received crutches, dorsiflexion orthosis and insoles after baropodometry evaluation, having no falls since then.

Conclusion

In spite the progressive aspect of PD, patient improved functionality after ERT, RP and receiving orthotic devices guided by baropodometry.

Conflict of interest

Disclosure statement:

Renato Silva Martins is in an Advisory Board for Genzyme.

ISPR7-0206

Neurological and Mental Health Conditions - Nerve Injury

COMMON FIBULAR NERVE COMPRESSION AFTER BARIATRIC SURGERY

D. Hoyos-Castro¹, N. Lara-Arroyo¹, S. Castellar-Leones¹, J. Diaz-Ruiz^{1,2}

¹Universidad Nacional de Colombia, Medicina Física y Rehabilitación, Bogotá, Colombia

²CIFEL, Fisiatria, Bogotá, Colombia

Introduction/Background

INTRODUCTION: obesity is associated with increased morbidity and mortality. Bariatric surgery is reserved for patients who have failed in losing weight and have a body mass index of 35 Kg/m². Weight loss that occurs after bariatric surgery is a risk factor for fibular neuropathy as the fat that previously protected the common fibular nerve of compression may be lost. Complications of bariatric surgery are not insignificant, among these are important neurological complications such as, Wernicke encephalopathy, myelopathy, myopathy, mononeuropathy or polyneuropathy usually related to nutritional deficits.

OBJECTIVE: to present two clinical cases of common fibular nerve compression after bariatric surgery with footdrop.

Material and Methods

METHODS: to describe motor and sensory nerve conduction studies of the lower limbs in two patients after bariatric surgery performed at the clinical neurophysiology laboratory at the Universidad Nacional de Colombia.

Results

RESULTS: motor nerve conduction studies of the fibular nerve showed amplitude decrease and diminished nerve conduction velocity when stimulating the nerve at the fibular head. Sensory nerve conduction studies of the superficial fibular nerve in one patient were absent. Electromyography of the muscles innervated by the fibular nerve showed prolonged insertional activity, profuse signs of denervation at rest and decreased voluntary recruitment.

Conclusion

CONCLUSION: peripheral nerve disorders after bariatric surgery are usually generalized with sensory and sensorimotor features, often associated with nutritional deficiencies. Even though common fibular nerve compression at the fibular head is a rare condition, it must be suspected in patients after bariatric surgery.

No conflict of interest

ISPR7-0207

Neurological and Mental Health Conditions - Nerve Injury

COMMON PERONEAL NERVE INJURY AFTER HAVING ANKLE SPRAIN

D. Hoyos-Castro¹, N. Lara-Arroyo¹, S. Castellar-Leones¹, N. Muñoz-Rodríguez¹, F. Ortiz-Corredor^{1,2,3}

¹*Universidad Nacional de Colombia, Medicina Física y Rehabilitación, Bogotá, Colombia*

²*CIFEL, Electrodiagnostico, Bogotá, Colombia*

³*Instituto de Ortopedia Infantil Roosevelt, Rehabilitación, Bogotá, Colombia*

Introduction/Background

The common peroneal nerve injury is often seen after knee dislocations and fractures of the leg; however the common peroneal nerve injury may occur as a complication in ankle sprains. In the scientific literature has reported only 13 cases of this type since 1911. In several studies it has been found evidence of ischemic damage, so that the theory of a traction/compression mechanism in the vasa nervorum during trauma, as a result of muscle stretching is postulated.

Material and Methods

In the service of electrodiagnostic of Universidad Nacional de Colombia, with the application of electrodiagnostic tests, is diagnosed a common peroneal nerve injury in a patient of 27 years old, who developed footdrop after a trauma in his ankle, listed as a Grade II sprain of his left ankle.

Results

Is founded electrodiagnostic evidence of common peroneal nerve injury in the left limb, with absence of motor and sensory potential at the left peroneal nerve, recording at tibialis anterior and extensor digitorum brevis muscles, and the presence of positive sharp waves and fibrillations in the same muscles, as shown in tables 1 and 2

Conclusion

These kind of clinical cases are weird and their diagnosis is not easy. In Colombia is the first case reported. Often the management of these patients is surgical and the prognosis depends on preoperative neurologic status. However many patients with absence of motor responses and absent or markedly reduced recruitment, still have a high recovery rate and good prognosis

No conflict of interest

ISPR7-0344

Neurological and Mental Health Conditions - Nerve Injury

ELECTRODIAGNOSTIC EVALUATION OF A PATIENT WITH ANTERIOR INTEROSSEOUS NERVE INJURY

S. Castellar-Leones¹, J. Diaz-Ruiz^{1,2}, C. Mendoza-Pulido³, F. Ortiz-Corredor^{1,2}, I. Alba-Coronado¹

¹Universidad Nacional de Colombia, Medicina Física y Rehabilitación, Bogotá DC, Colombia

²CIFEL, Fisiatria, Bogotá, Colombia

³Instituto Ortopédico Infantil Roosevelt, Rehabilitación, Bogotá, Colombia

Introduction/Background

The anterior interosseous nerve (AIN) is an exclusively motor terminal branch of the median nerve in the forearm that innervates the *flexor pollicis longus* (FPL), the *flexor digitorum profundus* (FDP) for index and middle fingers and the *pronator quadratus* (PQ) muscles.

OBJECTIVE: to present the case of a 28-year-old male stab wounded in the forearm with weakness for the flexion movement of the thumb and index fingers, impairment of the pincer movement with inability to pick up a coin from a table and when asked to make the "OK" sign, made a triangle sign instead.

Material and Methods

Electromyographic (EMG) evaluation and nerve conduction studies (NCS) of the upper limbs.

Results

When NCS and EMG needle placement were performed for the *abductor pollicis brevis* muscle, normal findings were obtained. A decrease of 79% in the amplitude compared with the healthy arm was found when NCS were performed for the PQ muscle. Fibrillation potentials and positive sharp waves were found in the PQ and the FDP for index and middle fingers.

Conclusion

Clinical suspicion of an AIN lesion/compression requires that the neurophysiologic evaluation has to be expanded to uncommonly EMG and NCS techniques that are not routinely performed in the neurophysiologic laboratory.

No conflict of interest

ISPR7-0363

Neurological and Mental Health Conditions - Nerve Injury

RADIAL NEUROPATHY SECONDARY TO SPONTANEOUS HEMATOMA DIAGNOSED WITH ULTRASOUND

E. Morrison¹, J. Norbury¹

¹East Carolina University, Physical Medicine and Rehabilitation, Greenville, USA

Introduction/Background

A 58 year-old female presented to an electrodiagnostic laboratory complaining of left arm and hand numbness and weakness. Her symptoms started suddenly 2 months prior when she awoke in the morning with left wrist drop and hand weakness. She also noted a relatively painless bruise over her left triceps area a few days later with no recollection of trauma.

Material and Methods

Physical examination revealed 3/5 strength in the left wrist extensors, decreased sensation over the dorsal aspect of the left forearm and the first 2 digits of the hand, and normal reflexes. Nerve conduction studies of bilateral median, ulnar, and radial sensory and motor nerve conduction studies were essentially normal. Needle electromyography showed reduced recruitment of the left extensor digitorum communis and normal findings in the left triceps. Neuromuscular ultrasound showed a hematoma adjacent to the radial nerve in the left arm at the exit from the spiral groove along with loss of fascicular architecture and increased hypoechogenicity of the left radial nerve compared to the contralateral side.

Results

The history, physical examination, and electrodiagnostic study of this patient suggested a radial neuropathy, but the etiology remained unclear. Neuromuscular ultrasound, however, revealed a hematoma compressing the radial nerve in the spiral groove, consistent with the patient's history of sudden onset weakness and bruising. The anatomical findings revealed by ultrasound provided the necessary missing information to explain the etiology behind the neuromuscular pathology.

Conclusion

To our knowledge this is the first reported case of a radial neuropathy secondary to a spontaneous hematoma diagnosed with ultrasound. Neuromuscular ultrasound is a useful tool in combination with an electrodiagnostic study to provide anatomical explanation and more precise localization for neuropathies, and can help confirm or rule out suspected diagnoses when the etiology is unclear.

No conflict of interest

ISPR7-0502

Neurological and Mental Health Conditions - Nerve Injury

POSTURAL REACTION TO VISUAL AND PROPRIOCEPTIVE STIMULATIONS IN CHRONIC ACQUIRED DEMYELINATING POLYNEUROPATHY (CADP)

A. Yelnik¹, P. Clement¹, L. Pierre², P. Giulia¹, T.P. Sophie¹, Q. victorine¹, A. bernard², K. nathalie²

¹GH Lariboisière F.Widal, PRM, paris, France

²GH Lariboisière F.Widal, Neurophysiology, paris, France

Introduction/Background

Objective: To investigate the weight of visual and proprioceptive inputs on standing position in patients with Chronic Acquired Demyelinating Polyneuropathies (CADP).

Design: Observational study.

Material and Methods

Methods: A total of 25 patients with CADP and 25 healthy controls. Posture was recorded on a double force platform. Stimulations used were optokinetic for the visual input and vibration for the proprioceptive input. A total of 4 tests (upward, downward, rightward and leftward) were done for the visual stimulation and 2 tests (Triceps Surae and Tibialis Anterior) for the proprioceptive stimulation. A composite score was created from the recorded postural signal of the different tests.

Results

Results: As expected patients were more sensitive to visual stimuli than healthy controls (composite score: 8.3 versus 4.5mm, $p=0.003$). However, unexpected result was that patients were more sensitive to proprioceptive stimuli than healthy controls (composite score: 7.6 versus 6.4mm, $p=0.045$) despite their sensitive deficits. Moreover, falls were more frequent in CAPD, explaining the loss of 26% versus 2.7% of the records, essentially in visual condition.

Conclusion

Conclusion: These results encourage a rehabilitation aimed at promoting the recovery of proprioceptive information, fighting visual compensation too early developed while proprioception is still available.

No conflict of interest

ISPR7-0652

Neurological and Mental Health Conditions - Nerve Injury

CAN BLINK REFLEX PREDICT RECOVERY FROM BELL'S FACIAL PALSY ?

Y.G. Park¹, J. Park¹, S. Pyo¹, Y. Kim¹

¹Yonsei University College of Medicine, Rehabilitation Medicine, Seoul, Republic of Korea

Introduction/Background

Several electrophysiological tests have been used to determine facial palsy prognosis. There have been some reports suggesting that prolonged degree or absence of R1, R2 by blink reflex (BR) can also be used to predict the prognosis. The aims of this study are to find out whether the BR can be used as a prognosis predicting test of Bell's palsy (BP).

Material and Methods

This study involved 74 patients diagnosed with BP. Clinical examination of facial nerve was recorded using the House-Backmann (HB) scale at initial and after two weeks. Electrophysiological evaluation were performed using BR and ENoG tests within one month from the onset. Responses of BR were defined as 'acceptable', 'prolonged' and 'no response', and patients were divided into two groups as 'no response or prolonged' or 'acceptable' focusing on the ipsilateral R1, R2, or contralateral R2 latency. ENoG were evaluated in both nasalis.

Results

Among total 74 patients, 42 patients improved in H-B grade were classified as recovered group, and other 32 were classified as unrecovered group. In recovered group, 23 patients showed no response of ipsilateral R1, two showed prolonged R1 latencies, and 17 showed acceptable R1 latencies. In unrecovered group, 27 patients showed no response of ipsilateral R1 and five showed acceptable ipsilateral R1 latencies. Each proportion of abnormal R1 latency was 59.5% and 84.3% in recovered and unrecovered group, respectively.

On the basis of degeneration ratio (DR) of ENoG 90%, 68 patients' DR was below 90%, implying favorable prognosis according to previous studies. Among them, 41 patients were recovered group, and 27 were unrecovered group. Each proportion of abnormal R1 latency was 58.2% and 81.4%, respectively.

Conclusion

BR is a prognosis predicting test in BP. Furthermore, in the subjects of degeneration ratio by ENoG below 90%, BR can complement limitation of prognostic value of ENoG.

No conflict of interest

ISPR7-0654

Neurological and Mental Health Conditions - Nerve Injury

CRUCIAL MANUAL DATA PROCESSING OF CATWALK GAIT ANALYSIS AFTER SCIATIC NERVE INJURY AND REPAIR

H. Chen¹, J. Du¹, X. Jia²

¹University of Maryland School of Medicine, Neurosurgery, Baltimore, USA

²University of Maryland School of Medicine, Neurosurgery- Orthopaedics- Anatomy Neurobiology, Baltimore, USA

Introduction/Background

Peripheral nerve regeneration is a major burden to healthcare systems worldwide, and a reliable method evaluating functional recovery is still elusive. The CatWalk system has emerged as a powerful evaluation method, gaining popularity in mainstream research. However, a lack of a standard method, along with several factors such as preferential heel walking and errors produced by automated data collection features, hinders attempts at generating consistent and meaningful data. This study aims to identify a standard set of parameters that can consistently model functional recovery after sciatic nerve injury.

Material and Methods

Athymic nude rats underwent a 15mm sciatic nerve repair model with either autologous nerve graft, empty conduit guide, or human neural crest stem cell filled conduit (N=12 for each). Serial gait assessments by Catwalk were measured before injury, 2, 6 and 12 weeks after repair, and analyzed with both automated data collection and manual data processing. Half the rats in each group was euthanized at 6 weeks and 12 weeks for histomorphometric analysis, and the number of myelinated axons was quantified.

Results

Myelinated axon count was statistically significantly greater for the autograft group (87.83 ± 0.54) at 12-week than the NCSC group (54.33 ± 5.32 , $p=0.004$), which is also larger than the conduit group (10.50 ± 1.95 , $p<0.001$). The "Auto Classify" function produced many errors, including steps not being classified, junk particle being classified as steps, single steps being classified as two, and inconsistent step patterns. With custom manual processing, these errors were eliminated, and dynamic metrics such as Stand Time, Duty Cycle, and Swing Speed were sensitive enough to track significant difference between experimental groups (all $p<0.05$).

Conclusion

Manually processing CatWalk parameters is a crucial step to improve the accuracy of recovery assessment. Despite convenient features, caution should be taken using automatic processing. With manual processing, dynamic parameters of gait are suitable parameters for modelling and evaluating recovery.

Conflict of interest

Disclosure statement:

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ISPR7-0784

Neurological and Mental Health Conditions - Nerve Injury

GRADE OF SATISFACTION OF FACIAL PALSY UNIT PATIENTS TREATED BY PHYSICAL THERAPY AND BOTULINIUM TOXIN TYPE A

E.C. martinez arroyo¹, X. Valencia Murua¹, I. ECEIZABARRENA MATXINANDIARENA¹, M. ², A. ZABALA PARDO³, N. PEREZ IGLESIAS², I. RUIZ DE ANGULO DE LA GRANJA⁴, N. ROSELL ROMERO²

¹UNIVERSITARY HOSPITAL OF DONOSTIA, PHYSICAL MEDICINE AND REHABILITATION, san sebastian, Spain

²UNIVERSITY HOSPITAL OF DONOSTIA, PHYSICAL MEDICINE AND REHABILITATION, SAN SEBASTIAN, Spain

³UNIVERSITY HOSPITAL OF DONOSTIA, PHYSICAL MEDICINE AND REHABILITATION, SAN SEBASTIAN, Spain

⁴UNIVERSITY HOSPITAL OF DONOSTIA, PHYSICAL MEDICINE AND REHABILITATION, san sebastian, Spain

Introduction/Background

Peripheral Facial Palsy affects the main face function; communication and expression. After facial palsy not verbal communication is affected; therefore is not only an aesthetic problem but also a functional and social problem; It's a handicap expression.

The aim of this study is to analyze the satisfaction of those patients that are followed in an specific Facial Nerve Palsy unit being treated with physical therapy and Botulinum Toxin type A.

Material and Methods

This is a prospective observational study to measure the degree of satisfaction of those patients. The inclusion criteria was to be followed by this specific unit and want to continue with.

We excluded the patients that disrupt the following. Data collected between August and November 2016.

Other information like age, diagnosis, measure of paralysis by Sunnybrook scale: Facial Grading System (FGS) and labor status were collected from electronic medical history.

Results

61 patients meet the inclusion criteria, 4 were excluded. The mean age was 53,52.

The Facial Palsy leading cause was due to surgery (47,5%) mainly acoustic neurinoma surgery followed by the Bell's palsy (34,4%). All of them received physical therapy and the satisfaction rate was 93,4%.

The other 26,2% were in initial phase of paralysis.

The 73.8% patients went under TBA and 70,5% of them would use it again.

Conclusion

Most of the patients are satisfied with the following by a specific facial palsy unit and with the treatment received.

The means of 2 FGS scales differs only in 1.06, so it seems a good interobserver and intraobserver correlation.

The sick leave was 8,7%. A 36,1% rate the status was unknown, would be interesting to ask for it. No conflict of interest

ISPR7-0831

Neurological and Mental Health Conditions - Nerve Injury

CONSTRAINT-INDUCED THERAPY FOR BRACHIAL PLEXUS INJURY: CASE REPORT

C.D.F. Baccarin Scridelli¹, R.S. Martins¹, T.D. Pedroso¹, G.R. Tsukimoto¹, M.H. Miyazaki¹,

L.R. Battistella¹

¹Physical Medicine Institute – IMREA/HC/FMUSP, PM&R, São Paulo, Brazil

Introduction/Background

Injuries of the peripheral nervous system can lead to motor and sensitive consequences, generating occupational and functional hazard for individuals. Brachial plexus injury (BPI) is the lesion of multiple anterior nerve cords from the cervical and thoracic region, directly interfering with the upper limb function and brain progressively suppresses the use of the affected extremity, phenomenon also known as learned non-use. Constraint Induced Therapy (CIT) implements a technique that aims to re-integrate the affected arm in the performance of Activities of Daily Living (ADL) and could reduce, in BPI, the learned non-use.

Material and Methods

A 55 year old male, that was victim of a firearm projectile that injured the left brachial plexus in 2008, underwent routine rehabilitation during the years that followed the accident. Once we detected that there was no progression in recovering function of the left upper limb, and based in few cases that showed bennefit with CIT for BPI of obstetric causes, we decided to try CIT for this patient. Patient was submitted to a 12 days protocol of CTI and 6 months of follow up. The results were assessed by Motor Activity Log (MAL), Wolf Motor Function Test (WMFT).

Results

In the initial evaluation, patient scored a mean of 1.5 (quantity) and 1.4 (quality) in MAL and in the WMFT he had a mean of 8 seconds per task, functional ability mean score was 3.8 and hand prehension was 7.2kgf. In our last assessment (6 months after therapy), he scored a mean of 4.2 (quantity) and 3.7 (quality) in MAL, and in WMFT he had a mean of 2.16 seconds per task, functional ability mean score was 4.1 and hand prehension was 11kgf.

Conclusion

CTI could be an inexpensive, fast and useful tool for BPI after firearm injury of the brachial plexus, even after 8 years of lesion.

No conflict of interest

ISPR7-0029

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

PARKINSON'S DISEASE AND MUSCULOSKELETAL PAIN: THE EFFECT OF LEVODOPA

W.C. Lien¹

¹National Cheng Kung University Hospital, Physical Medicine and Rehabilitation, Tainan, Taiwan R.O.C.

Introduction/Background

To evaluate the incidence of musculoskeletal pain (MSP) in patients with Parkinson's disease (PD) and the effect of levodopa.

Material and Methods

The retrospective cohort study used a subset of the Taiwan National Health Insurance Research Database comprising information on one million beneficiaries randomly sampled from the entire population of Taiwan. A total of 490 patients aged 50 and above with newly diagnosed PD were identified during a period from the years 2000-2005. Among them, 199 developed MSP following PD. Previous studies found that a higher levodopa daily dose was related to a more severe Unified Parkinson's Disease Rating Scale and Hoehn and Yahr scores. We managed to adjust for PD severity by using the cumulative defined daily dose (cDDD) of levodopa as a proxy.

Results

The incidence rate ratios of MSP were higher in the PD group than in the control group (105.45 versus 69.80 per 1,000 person-years), representing an adjusted hazard ratio (AHR) of 1.33 (95% confidence interval [CI] = 1.11-1.60). We found a significantly higher HR of MSP in the group of levodopa cDDD \leq 365 (AHR = 1.39; 95% CI = 1.04-1.86) than in the group of levodopa cDDD $>$ 365 (AHR = 1.30; 95% CI = 0.99-1.71).

Conclusion

This study showed that PD may significantly increase the risk of developing MSP. The risk of MSP in PD patients was modified by the levodopa cDDD, with the highest HR noted for PD patients with levodopa cDDD \leq 365. Clinicians should be alert for MSP occurring in PD patients treated with levodopa.

No conflict of interest

ISPR7-0066

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

A NOVEL TARGET FOR ALZHEIMER'S DISEASE IMMUNOTHERAPY

B. Solomon¹

¹Tel-Aviv university, Tel-Aviv, Israel

Introduction/Background

Alzheimer's disease (AD) is characterized by amyloid plaques composed beta-amyloid peptides (A β) produced by beta – and gamma-secretase cleavage of the amyloid precursor protein (APP) and intracellular tangles of TAU.

We develop a new approach to limit beta secretase activity based on blocking the beta –secretase cleavage site on the APP via antibodies. These antibodies called (BBS1) were found to block the β -secretase site on APP, interfere with APP-BACE interaction, exploiting their presence at the cell surface prior to their internalization into early endosomes.

Material and Methods

Here we investigate the effect of BBS1 on pathology and cognitive functions in triple transgenic mice model of AD (3x Tg-A), harboring the concomitant manifestation of PS1_{M146V}, APP_{Swe}, and TAU_{P30L}. The mice were treated ICV, with antibody BBS1 and /or saline for one month with Alzet pumps.

Results

The treatment of 3xTg- AD mice improved the cognitive function of the treated mice, lowered the levels of A β and phosphorylated tau, as well as the inflammation levels and did not interfere with BACE1 activity on other substrates.

Conclusion

The work presented is a novel approach to inhibit b-secretase cleavage site of APP by blocking the substrate rather than by inhibiting the total enzymatic activity. The approach presented here overcomes some of the limitations presented by BACE1 inhibition methodologies given that BACE1 shares the processing of other non-APP substrates and thus inhibition of the enzyme may induce adverse effects.

No conflict of interest

ISPR7-0197

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

RELATIONSHIP BETWEEN GAIT PARAMETERS AND POSTURAL STABILITY IN EARLY AND LATE PARKINSON'S DISEASE AND VISUAL FEEDBACK-BASED BALANCE TRAINING EFFECTS

M. Ahmed¹, D. Mosalem², A. Alfeeli³, A. Baqer⁴, D. Soliman⁵

¹Amiri Hospital, PHYSICAL MEDICINE and REHABILITATION, Kuwait, Kuwait

²Al Razi Hospital, Physical Medicine and Rehabilitation, Kuwait, Kuwait

³Amiri Hospital, Physical Medicine and Rehabilitation Department, Kuwait, Kuwait

⁴Al-Farwania Hospital, Physical Medicine and Rehabilitation Department, Kuwait, Egypt

⁵Faculty of Medicine- Cairo University, Neurology Department, Cairo-, Egypt

Introduction/Background

Gait disorders or postural instability has been done before. However, relation between gait parameters and postural stability in Parkinson's disease (PD) and visual feedback-based balance training effects has not been done. Thus, our aim is to evaluate relation between gait parameters and postural stability in early and late stages of PD as well as visual feedback-based balance training effects.

Material and Methods

The forty-one idiopathic PD patients were divided into two groups according to a modified Hoehn and Yahr Scale into group (A) considered as early PD and group (B) considered as late ambulant PD. They were evaluated for postural stability using sensory organization test (SOT) and motor control test (MCT) by computerised dynamic Posturography (CDP) device and gait analysis using an 8 m-camera Vicon 612 data capturing system set.

Results

There was a statistical significant improvement of composite equilibrium score, composite latency of motor response, walking speed and cadence after treatment as compared to results before training ($p < 0.05$) in early PD. However, in the late PD, there was a non-significant change of previous parameters after treatment as compared to results before training ($p > 0.05$). There was a significant correlation between composite latency of motor response and walking speed before training in early and late PD.

Conclusion

Both gait analysis and CDP are important quantitative tools in the assessment of gait and posture instability as well as visual feedback-based balance training program can improve gait parameters and postural stability in early PD.

No conflict of interest

ISPR7-0350

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

HYPERTHYROIDISM AS THE INICIAL MANIFESTATION OF STEINERT'S DISEASE

F.A. Pereira¹, A. Maia e Silva¹, O. Martins Cardoso¹, M. Saavedra¹, M.J. Azevedo¹

¹Hospital da Senhora da Oliveira - Guimarães, Physical Medicine and Rehabilitation, Guimarães, Portugal

Introduction/Background

Myotonic dystrophy (MD) type I is characterized by progressive muscle weakness and myotonia. Hyperthyroidism has been described in this disease. Thyrotoxicosis may also cause myopathy.

Material and Methods

Our aim was to describe a patient that started with symptoms of hyperthyroidism and later was diagnosed with Steinert's Disease and the difficulties of the rehabilitation process.

Results

A 46-year-old woman with history of hypertension, dyslipidaemia and cataracts was admitted with six months of progressive muscle weakness, asthenia and weight loss. Later she described myalgia and dysphagia. No family history of myotonic dystrophy. Physical examination revealed affected cranial nerves, enlargement of the thyroid gland, motor examination with grade 4 in the upper limbs and grade 3 in the lower limbs and exuberant tremor. Serum thyroxine (T4) was greatly increased and serum thyroid stimulating hormone was very low. Cervical ultrasound revealed a multinodular goiter with hypoechogenic nodules. The electromyography showed myotonic discharges. The muscle biopsy was compatible with MD. The patient was treated with methimazole and propylthiouracil keeping the same symptoms and lab results. She started physical therapy, however due to the doubtful diagnosis and difficulty in reaching a normal thyroid state early evolution was precarious. Euthyroidism was only obtained after the total thyroidectomy, with improvement of the symptoms. Further after she received the genetic confirmation for MD type 1, setting new goals for rehabilitation.

Conclusion

The patient's symptoms led to dubious diagnosis. In thyrotoxic myopathy, after proper thyroid function, patients with rehabilitation regain muscle strength. Whereas in myopathy dystrophy physical therapy maximizes functional ability, delays complications and improves quality of life.

No conflict of interest

ISPR7-0431

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

RELATION BETWEEN THE LATERALITY OF THE BEGINNING OF MOTOR SYMPTOMS AND VIVIDNESS OF MOTOR IMAGERY IN INDIVIDUALS WITH PARKINSON'S DISEASE

T. Ribeiro¹, L. Santiago¹, D. Oliveira¹, L. Ferreira¹, H. Pinto¹, A.P. Spaniol¹, L. Lucena¹, A. Sousa¹, A.R. Lindquist¹

¹Universidade Federal do Rio Grande do Norte, Departamento de Fisioterapia, Natal, Brazil

Introduction/Background

While some patients with Parkinson's disease (PD) respond best to visuospatial stimuli, others require kinesthetic feedback to compensate the deficiency of the intrinsic control of movements. The aim is to differentiate the sharpness of motor imagery between two groups of individuals with idiopathic Parkinson's disease (IPD), with onset of motor symptoms on right and left side of the body.

Material and Methods

11 subjects showed the onset of motor symptoms on right side of the body (Right side group - RSG) and 9 on left side (Left side group - LSG), evaluated by the part III of the Unified Parkinson's Disease Rating Scale (UPDRS). The sharpness of the mental image was assessed using the Revised Movement Imagery Questionnaire (MIQ-R). To compare the study groups, it was used a T test for independent samples.

Results

The groups were homogeneous with regard to middle age, cognitive level (according to Montreal Cognitive Assessment – MoCA) and disability level (according to Hoehn and Yahr scale). A significant difference was observed between the study groups with respect to the motor imagery scores in visual mode, $P = 0.03$, RSG=16.82 ± 7.18, LSG= 22.89 ± 3.65. There was no difference between groups in the kinesthetic mode, $P = 0.31$, RSG=19.73 ± 3.37, LSG= 21.33 ± 3.60.

Conclusion

Individuals with IPD with onset of symptoms in the right hemibody have more difficulty in clearly generating a visual mental image when compared to individuals with onset of symptoms in the left hemibody.

No conflict of interest

ISPR7-0467

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

EMOTIONAL DIMENSION DETERMINANTS IN PATIENTS WITH AMYOTROPHIC LATERAL SCLEROSIS

J. Garzón-Lievano¹, M. Uribarren², F. Ortiz-Corredor^{3,4}, C. Mendoza-Pulido³, S.M. Castellar-Leones⁴, J.N. Muñoz-Rodríguez⁴, D. Hoyos-Castro⁴, E. Ruiz-Ospina³

¹Instituto Ortopédico Infantil Roosevelt, Departamento de Calidad, Bogotá, Colombia

²Instituto Ortopédico Infantil Roosevelt, Departamento de Neuropsicología, Bogotá, Colombia

³Instituto Ortopédico Infantil Roosevelt, Rehabilitación, Bogotá, Colombia

⁴Universidad Nacional de Colombia, Medicina Física y Rehabilitación, Bogotá, Colombia

Introduction/Background

The emotional dimension of health is one of the most affected and also one of the least evaluated areas in patients with Amyotrophic Lateral Sclerosis (ALS).

Objective: to evaluate the emotional dimension of health in patients with ALS.

Material and Methods

A convenience sample of 121 patients with ALS, referred to the Instituto de Ortopedia Roosevelt in Bogota-Colombia between 2009 and 2016, was evaluated. All patients were sorted according to the initial segment where the disease was initially manifested (bulbar, cervical or lumbar). The degree of clinical certainty according to the modified El Escorial criteria was also specified. All patients were evaluated by means of the Revised Amyotrophic Lateral Sclerosis Functional Rating Scale (ALSFRS-R) and the Amyotrophic Lateral Sclerosis Assessment Questionnaire 40 (ALSAQ-40) questionnaires Spanish versions. The progression index was calculated according to the formula:

Progression Index = 48 - ALSFRSR_{current}

Time since onset (month)

Correlation coefficients between the emotional dimension of the ALSAQ-40 and the progression index, the domains of the ALSFRS-R (bulbar, manual dexterity, gross motor function and breathing) and the mean strength were calculated.

Results

Patients' characteristics are presented in Table 1. Correlation coefficients of the emotional dimension and the aforementioned variables are presented in Table 2.

A slight but significant correlation between the emotional domain of the ALSAQ-40 and the progression index, the manual dexterity, the gross motor function and the breathing domains of the ALSFRS-R was obtained. No correlation was found between the emotional domain of the ALSAQ-40 and the degrees of diagnostic certainty ($p=0.1$)

Conclusion

The progression index of the disease and the ALSFRS-R are useful tools for predicting emotional problems in patients with ALS and may be used as guidelines for early psychological intervention.

No conflict of interest

ISPR7-0616

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

THE EFFECTS OF BALANCE TRAINING ON AN INDIVIDUAL WITH FRIEDREICH'S ATAXIA: A SINGLE-SUBJECT DESIGN

K. Stroesser¹, V. Dal Bello-Haas²

¹St Clair College, Athletic Therapy, Windsor, Canada

²McMaster University, School of Rehabilitation Science, Hamilton, Canada

Introduction/Background

Friedreich's Ataxia (FA), the most common hereditary ataxia, affects one in 50,000 individuals, and about 15% of those with FA have the late-onset form. Of the typical signs and symptoms, impaired balance and locomotion are particularly detrimental to quality of life, and contribute to increased fall incidence and injury prevalence. There is a lack of evidence-based best practice guidelines for those with FA, and there has been little research on therapeutic interventions that may slow the progression of impairments and activity limitations for individuals living with FA.

Material and Methods

An A-B-A single-subject design with baseline, intervention, and post-intervention phases over a 9-week period was conducted. The study was approved by the Hamilton Integrated Research Ethics Board and the participant, a 44-year-old male with Late Onset FA, signed an informed consent prior to study initiation. Thrice-weekly intervention was comprised of a 10 minute warm-up and 40 minutes of balance training. The Berg Balance Scale and 10-Meter Walk Test were measured to examine balance and gait speed across the three phases. Data were plotted, visually analyzed, and celeration lines were calculated to analyze changes in trend and slope across phases.

Results

From visual analysis and celeration line, BBS scores improved during intervention phase (B), and the improvement was sustained into the second phase A (post-intervention). From the visual analysis and celeration line, the 10MWT scores appeared to decrease towards the end of phase B into post-intervention (phase A), however the change was minimal. Subjectively, the participant reported feeling more steady during the intervention phase.

Conclusion

Based on visual analysis and celeration lines, a thrice weekly 50-minute balance training program seemed to be effective for improving BBS scores over time in an individual with FA. More research needs to be conducted to determine whether balance interventions are beneficial for people with Friedreich's Ataxia.

No conflict of interest

ISPR7-0635

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

IMPLEMENTATION OF A BATTERY OF PHYSICAL TESTS FOR EVALUATION OF MOTOR FUNCTION IN PATIENTS WITH MULTIPLE SCLEROSIS.

I. Alba¹, J. Díaz Ruiz², F. Ortiz Corredor²

¹Universidad Nacional de Colombia, Medicina Física y Rehabilitación, Bogotá, Colombia

²Universidad Nacional de Colombia, Medicina física y rehabilitación, Bogotá, Colombia

Introduction/Background

Multiple sclerosis (MS) is a chronic degenerative central nervous system disease. Predominantly affects young adults with neurological impairment leading to disability.

An accurate assessment of motor function in patients with MS, shows us the clinical course, response to treatment and the specific functional limitation to establish an adequate program of neurorehabilitation.

Objective: To determine the validity and reliability of the physical tests in the evaluation of motor function in MS.

Material and Methods

It is an observational, prospective, longitudinal study in patients with relapsing-remitting MS and Expanded Disability Status Scale (EDSS) ≤ 6.5 . Two evaluations were performed: the first evaluation EDSS was applied, and tests of Five Times Sit to Stand Test (5TSTS), Timed 25-Foot Walk (25TFW), unipedal stance test (UST), the tests were repeated, but not EDSS.

Results

47 patients were included in the first evaluation and 37 patients in the second. The 25TFW and UST have a good correlation with the EDSS and good intraobserver agreement. CRT and ST had a low correlation with the EDSS - which does not evaluate upper limbs - however when compared against 9HolePegTest (most commonly used measure to assess hand function in MS) have a statistically significant correlation and good intraobserver agreement. 5TSTS showed low validity and reliability.

Test	EDSS (rho)	Pyramidal (rho)	Cerebellar (rho)	Sensory (rho)
Timed 25-Foot Walk	0,7 *	0,86 *		
Five Times Sit to Stand Test	0,2	0,2	0,2	
Unipedal stance test right	0,6 *		0,6 *	
Unipedal stance test left	0,3 *		0,3 *	
Coin rotation task right	0,4 *			0,02
Coin rotation task left	0,2			0,36
Squares test right	0,4 *	0,3 *		
Squares test left	0,48*	0,3 *		

Spearman Rank Correlation Coefficient (rho)

Table 1. Correlation between the Test, EDSS score and functional systems

Test	ICC
Timed 25-Foot Walk	0,97
Five Times Sit to Stand test	0,67
Unipedal stance test right	0,85
Unipedal stance test left	0,96
Coin rotation task right	0,85
Coin rotation task left	0,82
Squares test right	0,84
Squares test left	0,9

ICC: intraclass correlation coefficient

Table 2. Correlation coefficient intraobserver

Conclusion

The 2525TFW, UST, CRT and ST are valid and reliable tests, for assessing motor function in MS

No conflict of interest

ISPR7-0645

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

FUNCTIONALITY AND COGNITIVE IMPAIRMENT IN OLDER ADULT WOMEN IN THE CITY OF MERIDA, YUCATAN, MEXICO

R. Arcila Novelo¹, A. Lopez Manrique², D. Estrella Castillo³

¹Universidad Autonoma de Yucatan, Unidad Universitaria de Rehabilitacion, Mérida, Mexico

²Universidad Autonoma de Yucatan, Facultad de Medicina, Merida Yucatan, Mexico

³Universidad Autonoma de Yucatan, Unidad Universitaria de Rehabilitacion, Merida Yucatan, Mexico

Introduction/Background

Conditions of functional impairment incapacitate elderly people to do certain activities of daily living. These disabilities increase considerably after age 75 and increase among women and in rural areas. The aim of this study was to determine the relationship between the level of functioning and the cognitive impairment of the older adult women of the Mexican Southeast.

Material and Methods

An analytical, prospective study involving 172 women, with an average age of 65, retired or pensioned, residents of the city of Mérida, Yucatán, who were selected by means of an intentional sampling by quota and to which Barthel and Pfeifer scales were applied

Results

We carried out the frequency analysis of the level of functionality of older adults, 91.3% have a mild dependence level and 8.7% have moderate dependence. In relation to the level of cognitive deterioration of older adults, 52.3% have normal cognitive functioning and 6.5% have severe cognitive impairment. Significant correlations were found between cognitive impairment (Pfeifer) and functioning and independence level factors (Barthel) ($r = .489$; $p = .001$). It is evidenced that the greater cognitive deterioration there is less functionality in the older adult women, that is to say that when they have a high level of cognitive deterioration they present less functionality and therefore makes them prone to be attended by other people to subsist.

Conclusion

It is necessary to devote time to the work of prevention of cognitive deterioration in the elderly, since it affects their independence and therefore their quality of life.

No conflict of interest

ISPR7-0698

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

CLINICAL AND NON-CLINICAL FACTORS INFLUENCE THE QUALITY OF LIFE IN PATIENTS WITH EXTRAPYRAMIDAL DISORDERS.

R. Matmurodov¹, K. Khalimova¹, J. Vaisov¹

¹Tashkent medical academy, Neurology, Tashkent, Uzbekistan

Introduction/Background

Markers and test for early detection of extrapyramidal disorders (EPD), and how Parkinson's disease (PD) and torsion dystonia (TD) has not yet been fully explored not only in Uzbekistan, but in others the efforts of the world.

AIM: To study the basic clinical and non-clinical factors affecting the quality of life of patients with PD and TD.

Material and Methods

The study involved 92 patients with EPD (PD-32 and 60-TD) and the control group consisted of 20 patients without EPD. All patients underwent clinical neurological examination, including a detailed assessment of movement disorders. For the diagnosis of cognitive impairment in clinical practice and research are more commonly used neuropsychological research methods. To evaluate the quality of life was used the EuroQoL-5D.

Results

Compared with patients with TD, in patients with PD motor and non-motor disorders significantly affect quality of life. It was found that 15 patients with PD have addressed to the doctor after 4-6 years from the onset of the disease, 73.6% (28) patients with ET were not even examined by specialized doctors, 43.3% (26) patients with TD had never applied to see a doctor. Among patients with PD who did not go to the doctor motor changes occurred in 92.3% of cases, pain/discomfort 85.1%, and anxiety/depression in 87.7% of cases, these rates among patients go the doctors amounted to 84.3 %, 78.4% and 76.2% respectively, and have created some problems ($p < 0,05$). One of the factors affecting the quality of life is the late diagnosis of undifferentiated and EPD. I

Conclusion

The deterioration of the quality of life of patients with EPD depends on clinical factors in the form of motor and non-motor disorders, late treatment of patients to the doctor, undifferentiated and late diagnosis, untimely differential treatment.

No conflict of interest

ISPR7-0705

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

SUSTAINABLE REDUCTION IN THE OCCURRENCE OF FALLS IN A PARKINSON'S PATIENT WHO FOLLOWED AN INTENSIVE AND SPECIFIC REHABILITATION PROGRAM TO RECALIBRATE VERTICALITY PERCEPTION

L. Mathevon¹, N. Leroux¹, C. Piscicelli¹, E. Clarac¹, S. Dai¹, P. Davoine¹, P. Krack¹, D. Perennou¹

¹Grenoble Alpes Hospital, Physical and Rehabilitation Medicine, GRENOBLE, France

Introduction/Background

To take care of postural disorders is a issue in Parkinson's disease (PD). We present a documented observation suggesting the existence of a biased representation of verticality in PD, resulting in a severe retropulsion and recurrent falls. A rehabilitation program aimed to modulate verticality perception improved the postural perception of the vertical, balance abilities, reduced retropulsion and lastingly fall frequency.

Material and Methods

A 68 year-old patient with Parkinson's disease fall backward 3 times a day. He presented an important camptocormia. There were no spinal muscular amyotrophy on the lumbar tomography. The Postural vertical (PV) was tilted backward at - 9° (normal PV for this age = - 1.2° ± 1.4°). Our interpretation was that retropulsion was due to a backward tilt of the internal model of verticality, which led to recurrent falls. Camptocormia was mainly compensatory.

The patient underwent an intensive rehabilitation program of 15 days including: erectus spinae muscles strengthening, realization of postural exercices, forward modulation of PV. On the basis of theoretical arguments (synthesis of graviceptive vestibular and somatosensory information) and on experimental studies, we also proposed technics supposed to recalibrate the internal model of verticality: 30° forward tilted posture, bodyweight support walking, vibration of tibialis anterior's tendons. PV measurements during/just after these technics confirmed the relevance of this approach.

Results

The results were spectacular : 35 mm gain in the measurement of C7 sagittal arrow, 1 point gain in Backward Disequilibrium Scale (BDS) and overall normalization of PV = 0.1°. The patient was questioned 2 months later then assessed 6 months later. He continued to daily perform auto-exercices taught, and was very satisfied because of a dramatic reduction of fall frequency.

Conclusion

This observation brings a new insight about the nature of some postural disorders in PD, and suggests the interest of a novel rehabilitation dedicated to the sense of verticality.

No conflict of interest

ISPR7-0713

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

THE PHYSIOLOGICAL MECHANISM OF GAIT IMPROVEMENT WITH RHYTHMIC STIMULATION IN PATIENTS WITH PARKINSON'S DISEASE

D. Nishida¹, K. Mizuno¹, K. Kato¹, H. Ebata², M. Liu¹

¹Keio University, Department of Rehabilitation School of Medicine, Tokyo Shinjuku-ku, Japan

²Saiseikai Kangawa-ken Hospital, Department of Rehabilitation Medicine, Yokohama, Japan

Introduction/Background

Patients with Parkinson's disease (PD) suffer from gait disturbance that, in some patients, can be improved by rhythmic stimulation. This effect is useful for their rehabilitation, but its physiological mechanism is not yet well understood. The purpose of this study is to investigate brain activation patterns with functional magnetic resonance imaging (fMRI) in patients with PD while they are imaging gait with and without rhythmic stimulation.

Material and Methods

The participants were 5 right-handed patients with PD (mean age: 78.6 +/- 6.0, 1 male), whose Yahr stages ranged from 2 to 3. They could walk independently, had no cognitive impairment, and could walk more smoothly with rhythmic stimulation than without it. As a control group, we examined 7 healthy right-handed volunteers (mean age: 74.0 +/- 4.8, 5 males). The participants were asked to image gait with rhythmic stimulation (beep on 100 beats per minute) or with white noise during the fMRI imaging.

Results

Gait imagery in patients with PD showed activation of supplementary motor area (SMA) and precentral lobule, while with white noise, the activation pattern was more widespread, including precuneus as well as SMA and precentral lobule ($p < 0.001$, (uncorrected)). In healthy controls, the activation was limited to SMA and precentral lobule both with rhythmic stimulation and with white noise.

Conclusion

Both SMA and precentral lobule were activated while other regions including precuneus were suppressed with rhythmic stimulation in patients with PD. This result may suggest that rhythmic stimulation can suppress the overactivation of precuneus to improve the attention and to correct the motor programs for the gait function in these patients.

In this study, we could suggest the mechanism of the immediate effect of gait improvement with rhythmic stimulation.

Acknowledgement: This study is supported by "Brain-Machine-Interface Development" under the Strategic Research Program for Brain Sciences by Japan Agency for Medical Research and Development.

No conflict of interest

ISPR7-0714

Neurological and Mental Health Conditions - Neurodegenerative Diseases (e.g. Dementia)

EFFECT OF CHOLINOMIMETIC TREATMENT ON LONGEVITY AND COGNITIVE DECLINE IN A MEMORY CLINIC- FOLLOW UP OF 659 PATIENTS.

Z. Meiner¹, Y. Neeman¹, S. Kahana¹, U. Feintuch²

¹Hadassah-Hebrew University Medical Center, Physical and Medical Rehabilitation, Jerusalem, Israel

²Hadassah-Hebrew University Medical Center, School of Occupational therapy, Jerusalem, Israel

Introduction/Background

Alzheimer's disease (AD) is the most common form of dementia and affect more than 100,000 patients in Israel. The main symptomatic treatment is cholinomimetic treatment using cholinesterase inhibitors. Many short term randomized trials showed small but significant benefit of the medications over placebo. However the long term effect of longevity and cognitive decline in real life setting in Israel is still unknown.

Material and Methods

The Neurogeriatrics and Memory disorders clinic in Hadassah medical center is a tertiary center for the diagnosis and treatment of patients with memory disturbances and dementia, mainly AD. More than 1400 patients with dementia were evaluated in the last 15 years among them 73% were diagnosed as suffering from AD. These patients were treated with either Donepezil or Rivastigmine and were follow up for long period.

Results

659 patients, 51% women, with mean age of 74.8 ± 8.6 years were followed up for a mean of 29 ± 22 months. 47.5% of the patients were treated with Donepezil, 33.3% with Rivastigmine and 16% were switched from one medication to the other. Average longevity among dementia patients was 6.2 ± 3.3 years without difference between the 2 drugs however women who were treated with Rivastigmine had significantly longer longevity (1.5 years more, $p=0.006$). The rate of MMSE deterioration per year was similar in both medications (2.18 ± 2.3) and was lower than the progression of the disease in historical controls (between 3 to 4 MMSE units per year).

Conclusion

This is the first study of long term follow up of AD patients treated with cholinesterase inhibitors in real life setting in Israel. No difference was found between the 2 commonly used drugs in terms of longevity and disease progression which was lower than the natural deterioration rate of the disease.

No conflict of interest

ISPR7-0055

Neurological and Mental Health Conditions - Spinal Cord Injury

DETERMINANTS OF THE PAIN-RELATED MEDICAL EXPENSES IN THE PATIENTS WITH SPINAL CORD INJURY

W.C. Lien¹

¹National Cheng Kung University Hospital, Department of Physical Medicine and Rehabilitation, Tainan, Taiwan R.O.C.

Introduction/Background

Spinal cord injury is one of the most severe injury. Patients with spinal cord injury suffered from pain, including musculoskeletal pain, visceral pain, neuropathic pain, and psychogenic pain. The pain after spinal cord injury required comprehensive analgesics control and interventional procedures. The study aimed to find out the determinants of the pain-related medical expenses in the patients with spinal cord injury during the first year after injury in Taiwan.

Material and Methods

A population-based cohort study. Medical claim data analyzed in this study comprised cases of newly developed SCI in 2001-2010. The pain-related medical expenses including the costs of pain-related medication and interventional procedures within the first year following SCI incidence were calculated. Patients with spinal cord injury were divided into 3 groups of neurological impairment, including complete tetraplegia, complete paraplegia, and incomplete and unspecified spinal cord injury. Multivariate model was conducted to find out the determinants of the pain-related medical expenses in the patients with spinal cord injury during the first year after injury.

Results

The multivariate model result indicated that the pain-related medical expenses were significantly related to the neurological impairment, spinal surgery, co-morbidities, and hospital accreditation level.

Conclusion

This study investigated the determinants of the pain-related medical expenses in the patients with spinal cord injury in Taiwan. The pain-related medical expenses were significantly related to the neurological impairment, spinal surgery, co-morbidities, and hospital accreditation level. The results could provide a reference for policy makers to formulate policies and allocate medical resources.

No conflict of interest

ISPR7-0106

Neurological and Mental Health Conditions - Spinal Cord Injury

SCI RELATED OSTEOPOROSIS. THE DRAFT OF THE WORKING GROUP FOR OSTEOPOROSIS OF THE GERMAN SPEAKING MEDICAL SOCIETY OF PARAPLEGIA (DMGP) AS A BASIS FOR DISCUSSION

Y.B. Kalke¹

*¹RKU - Universitaets- und Rehabilitationskliniken Ulm,
SCI Centre of the Orthopaedic Department Ulm University, Ulm, Germany*

Introduction/Background

The DMGP (German speaking Medical Society for SCI) founded a specialized working group for "SCI and Osteoporosis".

Material and Methods

A S1-guideline "SCI related osteoporosis" was worked out so far as a draft based on the DVO-guideline "Prevention, diagnostics and therapy of osteoporosis in men over 60 and in postmenopausal women."

Results

There are multiple reasons for SCI related osteoporosis additional to the pure mechanical relief. The loss of bone mineral density can be measured within the first months after SCI. Osteoporosis related fractures can be found typically in the region of the distal femur and the proximal tibia without adequate trauma. Bisphosphonates seem to reduce the bone resorption and functional electric stimulation seems to have a positive influence on the bone density in this special patient group. Osteodensitometry with DXA for lumbar spine and hip region should be performed within 12 weeks after SCI, further control examinations in a scheduled time frame only on one hip side. Basic medication with calcium and vitamin D3 will be recommended for a t-score between -1.0 and -2.0, additional use of bisphosphonates or osteoanabolic medication for a t-score of <-2.0. This therapy should be given for the duration of at least 3 years as long as the t-score is <-2.0.

Conclusion

So far there are not high level evidenced based recommendations for prevention and therapy of osteoporosis in individuals with SCI to minimize the risk of fracture incidence. This DMGP S1-guideline will be helpful for orientation. For further information: www.dmgp.de

No conflict of interest

ISPR7-0133

Neurological and Mental Health Conditions - Spinal Cord Injury

LOCAL INJECTION OF LENTI-OLIG2 AT LESION SITE PROMOTES FUNCTIONAL RECOVERY OF SPINAL CORD INJURY RATS

*B. Tan*¹

¹, *Chongqing, China*

Introduction/Background

Olig2 is one of the most critical factors during CNS development which belongs to b-HLH transcription factor family. Previous reports have shown that Olig2 regulates the remyelination processes in CNS demyelination diseases. However, the role of Olig2 in contusion spinal cord injury (SCI) and the possible therapeutic effects remain obscure.

Material and Methods

Lenti-Olig2 expression and control Lenti-eGFP vector were prepared. Virus in a total of 5 μ L (10^8 TU/ml) was locally injected into the injured spinal cord 1.5 mm rostral and 1.5 mm caudal to the epicenter. Immunostaining, WB, TEM, and a CatWalk analysis were employed to investigate the effects of Olig2 overexpression on rats contusion spinal cord injury.

Results

Injection of Lenti-Olig2 significantly increased the number of oligodendrocytes lineage cells and enhanced myelination after SCI in adult rats. More importantly, the induction of Olig2 significantly improved hindlimb locomotor performances. The oligodendrocytes related transcription factors, which were obviously downregulated or upregulated after injury, were reversed by Olig2 induction.

Conclusion

Our findings provided the evidences that promoting myelination by overexpression Olig2 might be a breakthrough point for SCI and other CNS diseases.

Conflict of interest

Disclosure statement:

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ISPR7-0167

Neurological and Mental Health Conditions - Spinal Cord Injury

COMPLICATIONS TO NEUROGENIC BLADDER AND BOWEL AFTER SPINAL CORD INJURY: THE MILITARY VETERAN'S PERSPECTIVE

D. Tate¹, E. Rohn², L. DiPonio³, M. Forchheimer⁴, G.M. Rodriguez²

¹, Novi, USA

²University of Michigan Medical School, Physical Medicine and Rehabilitation, Ann Arbor, USA

³Ann Arbor Veterans Hospital, Physical Medicine and Rehabilitation, Ann Arbor, USA

⁴University of Michigan, Physical Medicine and Rehabilitation, Ann Arbor, USA

Introduction/Background

Neurogenic bowel and bladder (NBB) dysfunction can be accompanied by complications such as constipation, bowel and bladder incontinence, hemorrhoids, and urinary tract infections (UTIs). These affect one's physical health and have psychosocial complications negatively impacting quality of life (QOL). This study examined differences in NBB management and rates of complications among US veterans and civilians with spinal cord injury (SCI) through their personal narratives and data collection measures.

Material and Methods

Qualitative interviews and focus groups were conducted with 40 SCI participants and 20 caregivers. Information was transcribed and coded using NVivo 10 software. Matrices identified patterns and themes. Quantitative measures were used to assess bladder and bowel methods, complications and QOL. The Bowel and Bladder Treatment Inventory (BBTI) assessed complications, methods and satisfaction with methods. The study used Schwartz's Response Shift Model to describe changes in adaptation to health related to bladder and bowel. Data analysis included t tests and Chi-square depending on the variable.

Results

Participants were on average 52 years old and on average 18.7 years post injury. Digital stimulation was the preferred method of bowel management (72.7%) while intermittent catheterization (IC) was the most common method of bladder management (68.2%). Bladder incontinence was reported by 80% of veterans and 60% of civilians. Those who used self IC had significantly fewer UTIs ($p=.004$). Compared to civilians, veterans seem to make more changes to their methods of bowel and bladder management, seeming to rely more on surgical interventions to manage complications. Compared to civilians, more veterans with SCI made behavioral driven changes to adaptation to health and NBB complications.

Conclusion

Bladder complications (e.g. UTIs) were frequently reported by both groups at a rate of 80 to 60%. Bowel complications were reported next at 55 to 50% (incontinence and constipation). Veterans reported higher numbers of bladder incontinence and UTIs compared to civilians, even when age adjusted.

No conflict of interest

ISPR7-0189

Neurological and Mental Health Conditions - Spinal Cord Injury

TRAUMATIC AND NON TRAUMATIC SPINAL CORD INJURIES: COMPARAISON OF NEUROLOGICAL AND FUNCTIONAL OUTCOMES

M. Gaddour¹, W. Haj Hmad¹, R. Moncer¹, E. Toulgui¹, I. Loubiri¹, M. Guedria¹, S. Mtawaa¹, S. jemni¹, F. Khachnaoui¹

¹University Hospital Sahloul, Physical and rehabilitation medicine Department, SOUSSE, Tunisia

Introduction/Background

Spinal cord injuries(SCI) can be associated with significant functional impairment in the areas of mobility,self-care,bowel and bladder management and sexuality.SCI are classified in traumatic spinal cord injuries (TSCI) and non traumatic spinal cord injuries(NTSCI) . objectives: to compare neurological and functional outcome of persons with TSCI vs NTSCI.

Material and Methods

In our retrospective study ,177 patients with SCI : TSCI(108 patients,M/F=77:31) and NTSCI(69 patients,M/F=27:32) were admitted. American spinal cord injuries association (ASIA)impairment scale, duration of stay (DOS),Functional independence measure (FIM) scores at admission and after two years of follow ,in both groups were recorded ,compared and analysed

Results

ASIA impairment scale scores were significantly higher in traumatic group both at admission and after two years ($P<0,001$ and $0,001$) respectively,showing lesser impairment in non traumatic group.DOS for rehabilitation was significantly higher for traumatic group compared to non traumatic group(40 days vs 24 days; $P<0,001$).FIM scores were 52,7 vs 78,8 at admission and 87,5 vs 96,6 after 2 years in traumatic and non traumatic groups,respectively. A significant difference ($P=0,02$) was recorded between the two groups,both at admission and after 2 years of follow.Orthoses was required significantly more frequently($P<0,001$) in TSCI.

Conclusion

In clinically stable patients, spinal cord injuries etiology seems to affect the rehabilitative prognosis.At admission ,traumatic patients show lower autonomy in daily life activities ,probably because of associated lesions that these patients often have .After 2 years of follow,NTSCI patients achieved better results with regard to neurological and functional improvement

No conflict of interest

ISPR7-0192

Neurological and Mental Health Conditions - Spinal Cord Injury

WALKING-RELATED OUTCOMES FOR INDIVIDUALS WITH TRAUMATIC AND NON-TRAUMATIC SPINAL CORD INJURY

W. Haj Hamad¹, M. Gaddour¹, S. Jemni¹, S. Mtawa¹, E. Toulgui¹, I. Loubiri¹, F. Khachnaoui¹

¹University Hospital Center Sahloul, Rehabilitation Department, Sousse, Tunisia

Introduction/Background

As a devastating condition, spinal cord injury not only causes permanent serious dysfunctions but also leads to disorders of several organ systems. It exerts a severe burden on patients, their families and society because of the tremendous cost of health-care treatments and rehabilitation. The objectives of our study is to describe and compare patient demographics, inpatient lengths of stay (LOS), and walking related functional outcomes of individuals with spinal cord injuries (SCIs) of traumatic (TSCI) and nontraumatic (NTSCI) etiologies. To contrast these features between individuals who walked from those who did not walk after two years of follow in rehabilitation department.

Material and Methods

A retrospective study comparing between TSCI and NTSCI, walkers and non-walkers was performed in the Rehabilitation department of university hospital center Sahloul, Sousse, Tunisia. It included adults with NTSCI (n=69) or TSCI (n=108) admitted to inpatient rehabilitation, from 2006 to 2013. The outcome measures were Walking possibilities, American Spinal Injury Association standards (ASIA), functional score using functional independence measure (FIM) and Length of Stay (LOS) at inpatient facilities.

Results

Groups (NTSCI vs. TSCI) differ in the proportion of individuals that achieved "walker" status (88.4% vs 29.6%; $p < 0.001$). Inpatient LOS at rehabilitation department differ between groups. Patients with non-complication and incomplete lesions had better chances to achieve "walker" status.

Conclusion

Walking outcomes are not comparable among individuals with NTSCI vs. TSCI admitted for specialized SCI rehabilitation. Routine use of ASIA score and FIM are recommended for inpatient rehabilitation.

No conflict of interest

ISPR7-0194

Neurological and Mental Health Conditions - Spinal Cord Injury

TRAUMATIC SPINAL CORD INJURY IN SOUSSE, TUNISIA: A SINGLE-CENTER REPORT OF 108 CASES

M. Gaddour¹, W. haj hmad¹, R. moncer¹, E. toulgui¹, I. loubiri¹, M. Guedria¹, S. mtawaa¹, S. Jemni¹, F. khachnaoui¹

¹University Hospital center Sahloul, Physical and rehabilitation Medicine Department, SOUSSE, Tunisia

Introduction/Background

As a devastating condition, traumatic spinal cord injury (TSCI) not only causes permanent serious dysfunction but also leads to disorders of several organ systems. It is generally known that TSCI exerts a severe burden on patients, their families and society because of the tremendous cost of health-care treatments, rehabilitation and lost productivity.

The objective of this study was to describe the epidemiological profile of traumatic spinal cord injury (TSCI) in rehabilitation Department in university hospital center Sahloul, Sousse, Tunisia.

Material and Methods

Hospital medical records of patients with TSCI admitted to hospital from 1 January 2006 to 31 December 2013 were reviewed. Collected variables included gender, age, marital status, occupation, co morbidities, etiology, neurological level of injury, American Spinal Injury Association (ASIA) impairment scale at admission, functional independence measure (FIM), the severity, concomitant injuries and treatment choice.

Results

During the study period, 108 cases were identified. Male-to-female ratio was 0.4, with a mean age of 34±13 years. motor vehicle accidents (MVAs) (48.14%), followed by Falls (25%) were the leading causes. The most common injury site was the cervical spinal cord, especially C4–C6, accounting for 31.5%. Most patients presented ASIA impairment scale type "A" and "B". The mean of FIM score was 52.5. The mean of duration of stay of patients in rehabilitation department was 40 days. Surgery was the major treatment choice (84.8%).

Conclusion

The number of TSCI patients increased annually in our center. the proportion of males was higher. The leading two causes were falls and MVAs. Manual workers and unemployed individuals were those at higher risk. Surgery was the major treatment choice. These data may be useful to implement those preventive strategies focused on the characteristics of different groups and pay more attention to high-risk populations.

No conflict of interest

ISPR7-0198

Neurological and Mental Health Conditions - Spinal Cord Injury

NON TRAUMATIC SPINAL CORD INJURY: DEMOGRAPHIC CHARACTERISTICS AND COMPLICATIONS

W. Haj Hamad¹, M. Gaddour¹, S. Jemni¹, S. Mtawa¹, R. Moncer¹, I. Loubiri¹, E. Toulgui¹, F. Khachnaoui¹

¹University Hospital Center Sahloul, Rehabilitation Department, Sousse, Tunisia

Introduction/Background

Spinal cord lesions are a devastating condition that can lead to severe functional and psychosocial problems. Nontraumatic causes represent a significant proportion of individuals admitted for spinal cord injuries. The objectives of our study are to investigate the demographic characteristics and complications of nontraumatic spinal cord injury (NT/SCI) and to compare our findings with those of other studies.

Material and Methods

we performed a retrospective study in the rehabilitation department, university hospital center Sahloul, Sousse, Tunisia including Sixty-nine adults referred inpatients with NT/SCI requiring initial rehabilitation or readmission. The main outcomes measures were demographic characteristics, neurological injuries, etiologies, comorbidities, and complications of NT/SCI.

Results

The mean age was 49 years (46.4% women) and the most common cause of NT/SCI was degenerative disorders (50.5%): cervical spondylotic myelopathy and hernia, but several other etiologies had been identified. Tetraplegia occurred in 44.9% of patients, and 88.5% had motor incomplete injuries. Most patients (61.2%) had at least 1 complication, including neuropathic pain (19%), pressure ulcer (13.6%) and urinary tract infection (8.7%)

Conclusion

NT/SCI rehabilitation patients have a particular demographic profile. Through our study, a large variety of complications had been detected and analyzed.

No conflict of interest

ISPR7-0201

Neurological and Mental Health Conditions - Spinal Cord Injury

PATIENTS WITH SPINAL CORD INJURY IN A MEDICAL REFERRAL CENTER IN THE CITY OF BUENOS AIRES- RETROSPECTIVE AND TRANSVERSAL STUDY

S. Gallo¹, F.G. Peralta¹, L.A. Garcete¹, M.E. Drault Boedo¹

¹Instituto de Rehabilitación Psicosfísica, Kinesiología, CABA, Argentina

Introduction/Background

A spinal cord injury is the damage resulting from trauma or disease or degeneration. The main aim of this study is to describe functional and clinic-demographic characteristics in patients with spinal cord injury who attended the Kinesiology Service provided by the Instituto de Rehabilitación Psicosfísica. The secondary aim is to know the functional impact caused by pressure sores.

Material and Methods

Transversal observational and retrospective study. The variables analyzed were grouped into functional and clinical-demographic.

Results

Data from 178 patients (122 men, 56 women) served on an outpatient basis (41.6%) and boarding (58.4%) was analyzed. The thoracic region was the most frequently affected (64.6%), followed by the compromise cervical spine (21.3%), lumbar (12.9%) and sacrum (1.1%). The main cause of injury was traumatic injury (67.9%). Regarding wheelchair users, 34.6% owned their own wheelchair and 53.8% did not have an appropriate chair and / or cushion. 41.6% of the patients presented pressure sores at the time of admission. Statistically significant differences were observed regarding the functional abilities of those patients who had at least one pressure sore when entering and those who did not.

Conclusion

This study allows to know the functional and clinic-demographic characteristics of a group of individuals who have suffered a spinal cord injury and have been attended in the Kinesiology Service of a referral center. This study could be the basis for the development of a research which allows to identify issues associated with the pressure sores development in this population.

No conflict of interest

ISPR7-0204

Neurological and Mental Health Conditions - Spinal Cord Injury

APPLICATION OF EXOSKELETON EXOATLET® WITH INTEGRATED FUNCTIONAL ELECTROSTIMULATION IN COMPLEX REHABILITATION OF THE SPINAL CORD INJURY PATIENTS.

P. Tkachenko¹

¹*National Medical Surgery Center named by N.I.Pirogov, medical rehabilitation, Moscow, Russia*

Introduction/Background

Each year up to 500 thousand people are injured spine complicated by SCI and become severe disabled with a poor prognosis of walking recovery. **The aim** was to evaluate the safety and effectiveness of the synchronized application of the exoskeleton ExoAtlet® with FES in the complex rehabilitation of the SCI patients.

Material and Methods

24 of SCI patients, thoracic level, the late period of trauma. Objective: lower paraparesis - from 0 to 3 points on a 5-point scale; muscle tone - up to 3 points (Ashworth scale); an opportunity to use a wheelchair; safe function of the upper extremities. Divided into 2 groups. Main group had therapeutic gymnastics and trainings in the exoskeleton ExoAtlet® with FES. Control group got trainings on the robotic complex Lokomat and gymnastics. Rehabilitation course included 15 trainings. Blood pressure, heart rate, saturation were monitored. The skin was examined after each training. It was performed USDS of lower limbs veins, videoanalysis, electromyography (8 muscles) on the 1st, 7th, and 15th day. Evaluation of energy consumption was carried out using physiological energy index.

Results

Significant changes in the neurological status were not revealed after rehabilitation course in both groups. BP values were changed by not more than 15% from baseline, HR values were within acceptable values. ECG monitoring excluded significant cardiac pathology during walking. We had increasing tolerance to physical stress and reducing energy consumption. It was objectively noted a comparable increasing in the muscle strength and its maximum electrical activity, increasing in the amplitude of the angular movements of the leg's joints, increasing of the stance and jog functions of the lower limbs and formation of more correct EMG muscle profile.

Conclusion

We can do preliminary conclusions on the safety and clinical efficacy of synchronized applications ExoAtlet® and FES in the complex rehabilitation of the SCI patients.

No conflict of interest

ISPR7-0212

Neurological and Mental Health Conditions - Spinal Cord Injury

BOTULINUM TOXIN TYPE A FOR NEUROPATHIC PAIN IN PATIENTS WITH SPINAL CORD INJURY

M.E. Chung¹

¹St. Paul's Hospital- College of Medicine- The Catholic University of Korea, Rehabilitation Medicine, Seoul, Republic of Korea

Introduction/Background

Neuropathic pain after SCI is generally severe, refractory to treatment, and persistent over time. We evaluated the analgesic effect of botulinum toxin type A (BTX-A) on patients with spinal cord injury-associated neuropathic pain.

Material and Methods

The effect of BTX-A on 40 patients with spinal cord injury-associated neuropathic pain was investigated using a randomized, double-blind, placebo-controlled design. A one-time subcutaneous BTX-A (200 units) injection was administered to the painful area. Visual analogue scale scores (0-100 mm), the Korean-version of the short-form McGill Pain Questionnaire, and the World Health Organization WHOQOL-BREF quality of life assessment were evaluated prior to treatment and at 4 and 8 weeks after the injection.

Results

At 4 and 8 weeks after injection, the VAS score for pain was significantly reduced by 18.6 ± 16.8 and 21.3 ± 26.8 , respectively, in the BTX-A group, whereas it was reduced by 2.6 ± 14.6 and 0.3 ± 19.5 , respectively, in the placebo group. The pain relief was associated with preservation of motor or sensory function below the neurological level of injury. Among the responders in the BTX-A group, 55% and 45% reported pain relief of 20% or greater at 4 and 8 weeks, respectively, after the injection, whereas only 15% and 10% of the responders in the placebo group reported a similar level of pain relief. Improvements in the score for the physical health domain of the WHOQOL-BREF in the BTX-A group showed a marginal trend toward significance ($p = 0.0521$) at 4 weeks after the injection.

Conclusion

These results indicate that BTX-A may reduce intractable chronic neuropathic pain in patients with spinal cord injury.

No conflict of interest

ISPR7-0218

Neurological and Mental Health Conditions - Spinal Cord Injury

DEMOGRAPHIC AND CLINICAL CHARACTERISTICS OF PATIENTS WITH SPINAL CORD INJURY: A SINGLE HOSPITAL-BASED STUDY

M. Sahbi¹, M. Gaddour¹, S. Jemni¹, E. Toulgui¹, W. Haj Hmad¹, I. Loubiri¹, F. Khachnaoui¹

¹university hospital center Sahloul, Rehabilitation, Sahloul, Tunisia

Introduction/Background

To evaluate demographic and clinical characteristics of patients diagnosed with spinal cord injury (SCI) admitted to a single center

Material and Methods

This study reviewed 177 patients with SCI. Data were extracted from medical records and retrospectively reviewed in university hospital center Sahloul, Sousse, Tunisia.

Results

A total of 177 patients with a diagnosis of SCI were included in the analysis. Of these, 108 (61.1%) had traumatic SCI (TSCI) and 69 (38.9%) had non-traumatic SCI (NTSCI). The principal causes of traumatic TSCI were motor vehicle accidents in 52 patients (48.1%), falls in 27 patients (25.0%) . degenerative disease-causing myelopathy and hernia was the main cause of NTSCI in 50 patients (50.9%), followed by infection in 21.6 patients (14.9%). The age of patients with NTSCI was significantly higher (49 vs 34 ; $P<0.001$) and SCI was less severe, AIS D 40.6% vs 10.5% ($P=0.0001$) compared with the TSCI group

Conclusion

The demographic profiles of patients with TSCI and NTSCI differ in terms of proportion of total SCIs, patient age, male: female ratio and incomplete vs complete injury. The most common etiology of TSCI was motor vehicle accidents (48.1%), and neurological lesions were complete in 61.1% of patients. The most common etiology of NTSCI was degenerative causes (50.9%), and lesions were incomplete in 88.5% of patients.

No conflict of interest

ISPR7-0242

Neurological and Mental Health Conditions - Spinal Cord Injury

USE OF TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION FOR A PATIENT WITH BILATERAL DIAPHRAGMATIC PACEMAKER: A CASE REPORT

I. Gundogdu¹, A. Karakuyu¹, K. Aydemir², F.A. Cakci¹

¹Ministry of Health Diskapi Yildirim Beyazit Education and Research Hospital, Physical Medicine and Rehabilitation, Ankara, Turkey

²Health Sciences University, Physical Medicine and Rehabilitation, Ankara, Turkey

Introduction/Background

Patient:

A 27-year-old tetraplegic patient with bilateral diaphragmatic pacemaker.

Material and Methods

Case Description:

The patient suffered C1-2 fracture secondary to gunshot wound. He was failed to wean from mechanical ventilator (MV) for 63 days and transported to our clinic for evaluation of weaning potential. He was classified as a C1 ASIA A and phrenic nerve conduction and needle diaphragm electromyography showed bilateral intact phrenic nerves. He was started medical spasticity treatment and discharged for diaphragmatic pace placement. At 14th month, he was successfully implanted with diaphragmatic pace system (DPS) in another institute. The patient weaned from MV and tracheostomy tube at 16th month. He was able to use DPS for continuous ventilatory support for 20 months. At 3rd year, the patient was readmitted for spasticity and pain management. There was no change in ASIA impairment scale and the degree of bilateral lower extremity spasticity assessed by modified Ashworth scale (MAS) were 3-4/4 in hip flexor and abductor, knee flexor, knee extensor and foot palmar flexor muscles despite baclofen, gabapentin and tizanidine treatment. Botulinum toxin A injections and transcutaneous electrical nerve stimulation (TENS) (20 min/day, 0.25 ms, 100 Hz, 15 mA) were added to spasticity and neuropathic pain treatment. He was continually monitored for pulse, blood pressure, respiratory rate, oxygen saturation and ECG readouts by physician for the possibility of pacemaker interference while the TENS unit was operating.

Results

No interference of the diaphragmatic pacemaker was noted, and patient's respiratory rhythm was undisturbed.

Conclusion

DPS could interfere with TENS because it is a source of external interference according to use and care manual of DPS. The results of this case report indicate that the TENS unit and diaphragmatic pacemaker can be used simultaneously in certain conditions.

No conflict of interest

ISPR7-0284

Neurological and Mental Health Conditions - Spinal Cord Injury

TREATMENT WITH BOTULINUM TOXIN A FOR UPPER EXTREMITY CLONUS IN A PATIENT WITH INCOMPLETE TETRAPLEGIA SECONDARY TO C2-C3 INTRAMEDULLARY HEMANGIOBLASTOMA

A. Saric¹

¹, Halifax, Canada

Introduction/Background

Objectives: To evaluate treatment and determine efficacy of Botulinum Toxin A (BTX A) for management of upper extremity clonus in patient with hemangioblastoma.

Clonus is one of the positive signs of upper motor neuron syndrome, and is most commonly found at the ankle, but very few case studies reported treatment of clonus in the upper extremity. Clonus is typically seen in patients with stroke, multiple sclerosis and spinal cord injury. Hemangioblastomas are uncommon central nervous system tumors, which most commonly occur in the cerebellum, brainstem or spinal cord. Male to female ratio is 2:1; the peak age of incidence is between age 20 and 50 years. The clinical presentation depends on the anatomical location and growth pattern.

Material and Methods

This case report describes a 24 year old right handed male who was diagnosed with intramedullary cervical tumor. He presented with headaches, associated with nausea and right hand and foot numbness. MRI showed contrast enhancing intramedullary lesion at the C2-C3 level associated with cervical and upper thoracic syrinx. Clinically patient had signs and symptoms consistent with mild myelopathy and a partial Brown-Sequard syndrome. He underwent hemilaminectomy, with tumor resection. Postoperatively his deficit included right upper and lower extremity weakness, numbness, and decreased sensation. During rehabilitation stay patient developed significant right upper extremity clonus, affecting his wrist and finger flexors and pronators. Clonus was interfering with occupational therapy and his daily routine. Upon evaluation decision was made to proceed with a trial of Botulinum toxin A. Progress was monitored by clinical assessment, MAS, clonus frequency and videotaping prior and 3 weeks post treatment.

Results

The patient had clinically meaningful improvement, and decreased upper extremity clonus allowed participation in therapy.

Conclusion

The treatment had significant impact on patient care and participation in therapy. This case report demonstrates efficacy of Botulinum Toxin A for management of upper extremity clonus.

No conflict of interest

ISPR7-0312

Neurological and Mental Health Conditions - Spinal Cord Injury

TAKO-TSUBO CARDIOMYOPATHY: A REVERSIBLE COMPLICATION OF INTRATHECAL BACLOFEN WITHDRAWAL

T. Lansaman¹, J. Levy^{1,2}, G. De Brier³, C. Hugeron¹, D. Bensmail^{1,2}

¹APHP - Raymond Poincaré University Hospital, Physical Medicine and Rehabilitation, Garches, France

²INSERM - University of Versailles Saint-Quentin-en-Yvelines, UMR 1179, Montigny-le-Bretonneux, France

³HIA - Laveran Hospital, Physical Medicine and Rehabilitation, Marseille, France

Introduction/Background

An acute disruption of intrathecal baclofen (ITB) infusion, can cause a baclofen withdrawal syndrome (BWS). Clinical features of BWS range from pruritus, delirium, to cardiac dysfunction and multi-system organ failure. Pathophysiology for cardiac failure in BWS remains unknown, therefore we propose putative mechanisms for BWS-related cardiac dysfunction.

Material and Methods

Single case-report and unsystematic review of literature.

Results

A 55-year-old man with a Th2 complete paraplegia started to experience spasm resurgence and supraspinal pruritus, a month after his baclofen pump replacement. Despite oral baclofen and benzodiazepine, symptoms worsened. After 3 days, the patient became tachycardic and hypertensive, with cardiac enzyme elevation. The coronary angiography was normal, the ventriculography and echocardiography showed an apical ballooning with hypokinesia, typical of takotsubo cardiomyopathy. The abdominal X-Ray revealed a migration of the distal part of the catheter in the abdominal wall. Beta-blockers and oral baclofen helped controlling BWS, until catheter was surgically replaced and ITB delivery reinstated.

The review of literature revealed that adrenergic mechanisms might have been implicated in this case. Researchers have demonstrated that chronic GABA exposure can lead to an inhibition of the spinal sympathetic preganglionic neurons' outflow. The acute discontinuation of baclofen (a GABA_B agonist) could have led to a high sympathetic/parasympathetic ratio. On the other hand, β -adrenergic receptors of myocytes are known to activate a Gi coupling mechanism at high catecholamine concentrations, resulting in a paradoxical inhibition of contractility. Hence, two pathways appear plausible: i) a direct overstimulation of sublesional β -adrenergic receptors; ii) an activation of adrenal secretions and norepinephrine production with a secondary overwhelming of myocardial adrenoceptor.

Conclusion

We propose a physiological scheme for cardiac dysfunction in BWS. The implication of an adrenergic dysregulation secondary to the acute discontinuation of a chronic GABA infusion is hypothesized. Beta-blockers might be helpful in the management of BWS in these cases.

No conflict of interest

ISPR7-0313

Neurological and Mental Health Conditions - Spinal Cord Injury

THE EFFECTIVENESS OF INPATIENTS REHABILITATION FOR SPINAL CORD PATIENTS IN REHABILITATION CENTER

M. Sahbi¹, M. Gaddour¹, S. Jemni¹, E. Toulgui¹, W. Haj Hmad¹, I. Loubiri¹, F. khachnaoui¹

¹university hospital center Sahloul, Rehabilitation, Sahloul, Tunisia

Introduction/Background

To study the effectiveness of inpatient rehabilitation in spinal cord injury (SCI) patients admitted in

Rehabilitation Medicine Department (University hospital center Sahloul, Sousse, Tunisia) from 2006 to 2013.

Material and Methods

Medical records of SCI patients including baseline characteristic, functional score using functional independence measure (FIM), American Spinal Injury Association standards (ASIA), concomitant injuries length of stay (LOS) and complications were reviewed. The effectiveness and efficiency were calculated by difference of FIM admission and FIM after 2 years of follow (FIM gain), evolution of ASIA scores and walking possibilities. The factors associated with the effectiveness were then determined by multivariate linear regression analysis.

Results

There were 177 admissions (108 traumatic spinal cord injuries (TSCI) cases and 69 cases of non-traumatic spinal cord injuries (NTSCI). The average LOS was 40 days for TSCI populations vs 24 days for NTSCI. FIM gain was significantly increased after inpatient rehabilitation in both groups, neurological recovery and walking outcome were significantly better in NTSCI population. Only incomplete lesions, NTSCI causes and absence of complications were found to associate with neurological and functional recovery.

Conclusion

Inpatient rehabilitation is considered as important part for improving SCI patients' functional abilities. The absence of complications, incomplete lesions and no traumatic diseases were positively associated with the effectiveness of rehabilitation. These factors should be taken care during inpatient rehabilitation program.

No conflict of interest

ISPR7-0385

Neurological and Mental Health Conditions - Spinal Cord Injury

CAN A NOVEL 12-WEEK WIDE-PULSE WIDTH NEURO-MUSCULAR-ELECTRICAL-STIMULATION STRENGTH TRAINING INTERVENTION IMPROVE QUADRICEPS MUSCLE SIZE, STRENGTH AND SPASTICITY SYMPTOMS IN PEOPLE WITH SPINAL CORD INJURY?

V. *Bochkezanian*¹, R.U. *Newton*¹, G.S. *Trajano*², A.J. *Blazevich*¹

¹*Edith Cowan University, School of Medical and Health Sciences, Perth, Australia*

²*School of Exercise and Nutrition Sciences. Faculty of Health, Brisbane, Australia*

Introduction/Background

Short pulse widths (100-200 μ s) and low-to-moderate pulse frequencies (30-50 Hz) are commonly recommended for neuromuscular electrical stimulation (NMES) training in people with spinal cord injury (SCI), but this causes rapid muscle fatigue due to high stimulation intensities and non-physiological motor unit recruitment. Wide pulse widths (1000 μ s) might optimise motor unit activation and delay fatigue, increasing muscle force and mass and ameliorating symptoms of spasticity after training in people with SCI. Therefore, the aim of this study was to examine the effects of a 12-week NMES intervention on muscle force and mass and symptoms of spasticity in people with SCI.

Material and Methods

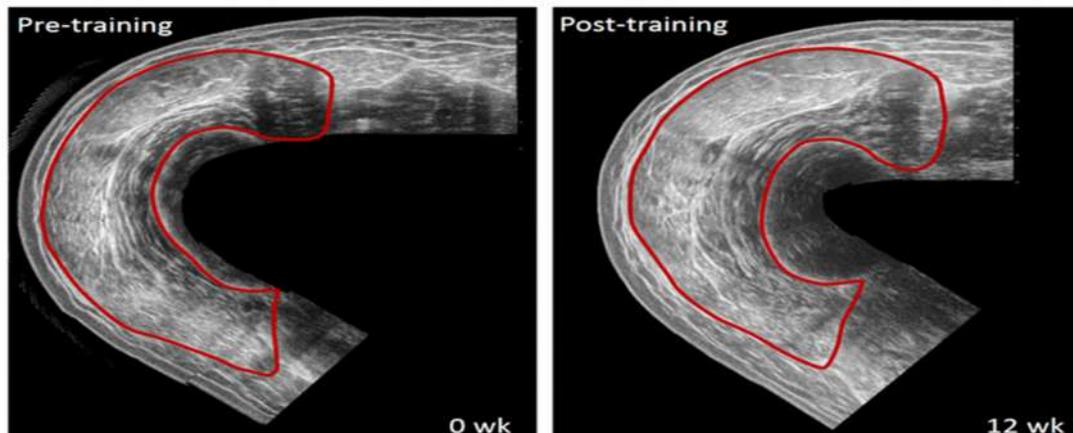
Five individuals with SCI completed two 30-min isometric knee extension NMES strength-training sessions a week for 12 weeks. Training was performed on both right (R) and left (L) quadriceps muscles. Quadriceps femoris cross-sectional area (CSA_Q) was measured with extended-field-of-view ultrasonography and isometric knee extensor torque was measured on a dynamometer. The Spinal Cord Injury Spasticity Evaluation Tool (SCI-SET) was measured before and after the intervention.

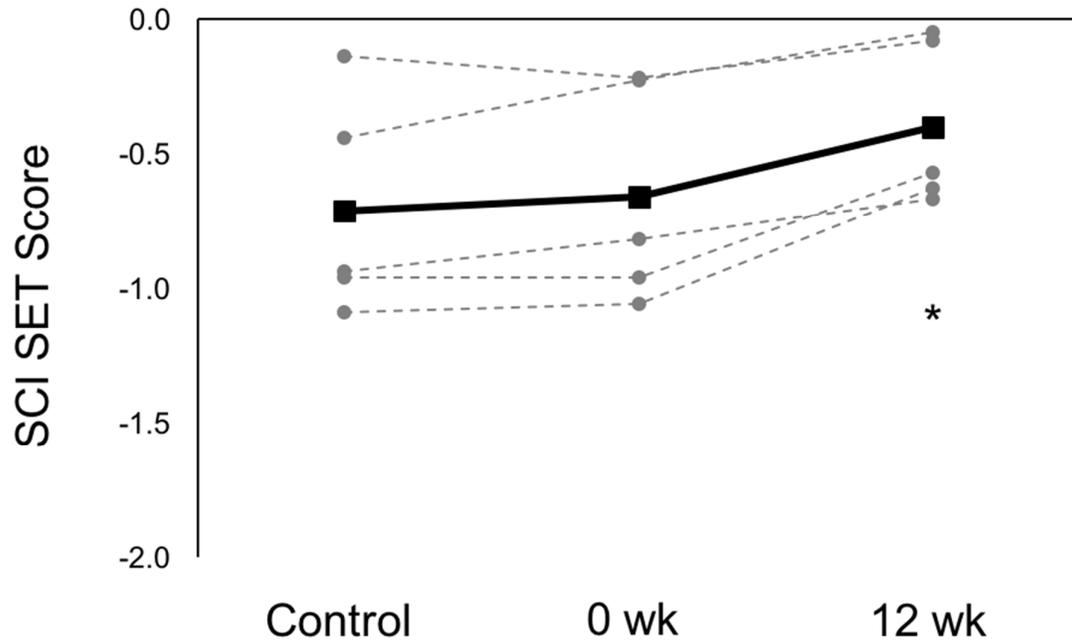
Results

Following the intervention, cross-sectional area of the quadriceps femoris (CSA_Q) on average by 47% (14-145%) (see picture 1 attached) and tetanic isometric knee extensor torque increased on average by 35% (2-92%). A mean improvement of 0.26 in the SCI-SET score was also observed (see Picture 2 attached).

Picture 1: Extended-field-of-view ultrasonography cross-sectional area measurement of the left quadriceps in a subject at weeks 0 and 12.

Picture 2: Spasticity measured using the SCI-SET 7-day at control and weeks 0 and 12.





Conclusion

The increases in muscular strength and CSA highlight the potential of wide pulse-width NMES strength training in people with SCI. Whilst further examination is required, clinicians might consider using NMES strength training to improve muscle mass and strength and ameliorate symptoms of spasticity in people with SCI.

No conflict of interest

ISPR7-0484

Neurological and Mental Health Conditions - Spinal Cord Injury

RAPPER II TRIAL: AN ASSESSMENT OF THE SAFETY AND FEASIBILITY OF A FUNCTIONAL EXERCISE PROGRAM IN THE REX ROBOTIC EXERCISE DEVICE

N. Birch¹, M. Sake², G. Jon³, A. Gall⁴, N. Andrew⁵, N. Signal⁶, C. Heywood¹

¹Chris Moody Rehabilitation Centre, Spinal Department, Northampton, United Kingdom

²East Kent University Hospital NHS trust, Neuro-Rehab Unit, Canterbury, United Kingdom

³Chris Moody Rehabilitation Centre, PhysioFunction, Northampton, United Kingdom

⁴Royal National Orthopaedic Hospital, SCI Unit, Stanmore- Middlesex, United Kingdom

⁵Austin Hospital, Victorian Spinal Cord Service, Heidelberg- Victoria, Australia

⁶AUT University, Spinal Injuries Unit, Auckland, New Zealand

Introduction/Background

Upright powered exercise and gait retraining devices can help paralysed people function and ambulate. For people with spinal cord injury (SCI) there are benefits to being upright and mobile, but there are also risks. This study assessed the feasibility and safety of a functional shoulder and trunk physiotherapy regime in people with chronic SCI using the REX robotic exercise device.

Material and Methods

A prospective, multi-centre, registry study in 56 non-randomised volunteers with chronic SCI. Primary feasibility outcomes: Completion of transfer into the device; Completion of an exercise regime.

Primary safety outcomes: Occurrence of serious adverse events (SAE).

Secondary outcomes: Time of transfer; Autonomous control of the device; Timed Up and Go (TUG) Test; Change in range of motion in the lower limb joints; Spasticity; Pain; Quality of life questionnaire results; Sleep disturbance; User Experience Questionnaire results.

Results

All participants were able to transfer. 53 participants (36 of 38 paraplegic and 17 of 18 tetraplegic) completed the exercise regime. There were no SAEs.

Average time of transfer was 6:21 min for paraplegic and 7:56 min for tetraplegic participants.

54 participants completed the TUG Tests (mean 5:16 min) and 53 achieved autonomous control of the device.

Range of motion at the hip was improved in 45% of participants and at the ankle in 48%. There was an improvement in the spasticity score in 66% of patients. There was no change in the pain or general quality of life scores. There was a trend to improved sleep parameters particularly a reduction in physical tension, bad dreams at night and waking pain. The User Experience was generally positive especially across the domains of safety, comfort, stability and ease of control.

Conclusion

This report has demonstrated the utility and safety of a physiotherapy program in the REX powered exercise device in people who have chronic SCI.

Conflict of interest

Disclosure statement:

I am paid a stipend by Rex Bionics PLC to act as the Principal Investigator of the RAPPER II trial. I hold stock in Rex Bionics PLC (< \$10,000).

ISPR7-0516

Neurological and Mental Health Conditions - Spinal Cord Injury

INFECTIOUS SPONDYLODISCITIS: A CAUSE OF NON-TRAUMATIC SPINAL CORD INJURY

G. Mohamed¹, W. Haj Hamad¹, S. Jemni¹, M. Guaddour¹, S. El Mtawa¹, I. Loubiri¹, E. Toulgui¹, K. Fayçel¹

¹University Hospital Sahloul, Physical and Rehabilitation medicine, SOUSSE, Tunisia

Introduction/Background

Spondylodiscitis is a common cause of non-traumatic spinal cord injury; it can lead to severe functional and psychosocial problems. The aim of our study is the presentation of epidemiology, clinical symptoms, microbiological results, and management of this cause of non-traumatic spinal cord injury.

Material and Methods

A retrospective study was performed in the rehabilitation department, university hospital center Sahloul, Sousse, Tunisia including patients diagnosed with spondylodiscitis associated with neurological complications admitted to inpatient rehabilitation, from 2006 to 2016.

Results

There were 25 patients (10 males, 15 females) with a mean age of 46 years. The patients presented with spinal pain and increased CRP level in 57% of cases. (38% dorsal pain, 14, 4% lumbar pain and 14,3% cervical pain), and walking disorders in 76%. Paraplegia occurred in 95% of patients, and 28,6% had motor incomplete injuries.

MRI was performed in 96% of cases. A microorganism was isolated in 20 patients; Mycobacterium tuberculosis was the most common (52, 4%).

Infection was managed using antibiotics adjusted according to the culture results and 61,9% of patients underwent surgery. Spinal immobilization was performed in 80% of cases for a duration of 6-12 weeks. **Conclusion**

Infectious Spondylodiscitis presents a potentially life-threatening disease. Neurological compression is a potentially severe complication. Therefore, the onset of nonspecific symptoms should not be overlooked, and MRI must be performed if infection is suspected. Microbiological confirmation is critical in optimizing treatment, which should be aggressive, even if overall prognosis seems to be good.

No conflict of interest

ISPR7-0527

Neurological and Mental Health Conditions - Spinal Cord Injury

REHABILITATION OUTCOMES FOLLOWING WORK- RELATED SPINAL CORD INJURIES IN GAUTENG PROVINCE, SOUTH AFRICA

N. Pefile¹, S. Visagie², S. Gcaza²

¹University of KwaZulu-Natal, Physiotherapy, Durban, South Africa

²Stellenbosch University, Centre for Rehabilitation Studies, Cape Town, South Africa

Introduction/Background

Spinal cord injury (SCI) is a serious neurological injury with varying degrees of motor and sensory functioning loss and possible sphincter disturbance, which are permanent and cannot be cured or reversed in most cases. Rehabilitation is aimed at enabling people with disabilities to reach and maintain their optimal physical, sensory, intellectual, psychological and social functional levels. Therefore, the aim of this study was to determine the impact of rehabilitation on individuals with SCI at the study setting.

Material and Methods

A descriptive, retrospective design was used. 135 medical records of people who sustained work related spinal cord injuries were perused. Data was collected using the Functional Independence Measure on admission and on Discharge. Data was analyzed using the Statistical Package for the Social Sciences, version 18.

Results

The most affected age range was 26–35. The male-to-female ratio was 6.69:1. Road traffic accidents (48.9%) were the major cause of injury. The majority were classified as paraplegic (58.5%) and 51% were classified as complete. The mean functional discharge scores were almost double those of the mean admission scores, while much smaller gains were made in cognitive scores. There were statistically significant functional gains following rehabilitation ($p=0.000$). 25% of participants with cervical lesions gained up to 14 points in their functional abilities following rehabilitation. Seventy-five percent of participants in this category had up to 40.75 points gain while 50% had gained up to 25.5 points. There was a marginal correlation between LOS and functional FIM+FAM scores ($r=-0.32$). Re-employment levels were high (54%). Participants with lumbar lesions showed statistically higher re-employment levels than those with other level lesions ($p=0.036$).

Conclusion

There were improved functional outcomes following rehabilitation. Employment outcomes improved although there was limited specific vocational rehabilitation interventions. Therefore, there is a need for rehabilitation interventions to improve community integration including employment.

No conflict of interest

ISPR7-0596

Neurological and Mental Health Conditions - Spinal Cord Injury

DYSAUTONOMIA AFTER SPINAL CORD INJURY: A CLINICAL CASE

I. Santos Jorge¹, M.J. Andrade¹

¹Centro Hospitalar do Porto, Physical and Rehabilitation Medicine Department, Porto, Portugal

Introduction/Background

Spinal cord injury (SCI) causes not only motor and sensory deficits but also autonomic dysfunctions (AD). Sweating disorders are frequent complaints of SCI. The most common, in response to noxious stimuli below the level of the SCI, is hyperhidrosis.

Material and Methods

Clinical case report about dysautonomia after spinal cord injury.

Results

Woman, 57, SCI C4, ASIA A, since 1980. At the time treated in a Central Hospital and in a Rehabilitation Center. After that, no follow-up in specialized SCI Unit.

The first time we saw the patient she was profuse sweating (face and neck) with an important abdominal distension. She had an indwelling catheter (but kept losses), and irregular bowel movements without medication.

So, we were facing a SCI with autonomic changes for two important stimuli: fecal impaction with intestinal distension by the absence of effective intestinal training and indwelling catheter with progressively larger caliber.

We adjusted the diet, started a medication (sene and microlax®) to promote a regular intestinal transit, reduced the size of the catheter and prescribed an anticholinergic to lower the hyperreflexia response to the presence of catheter.

The patient improved tremendously her general condition. The abdominal distension disappear and sweating became restricted to left hemiface. She maintains continuous indwelling catheters without incontinence and intestinal transit became regular.

Conclusion

AD may have an important functional consequences. In this case, the absence of significative blood pressure changes allowed the patient to survive without severe sequelae. The follow-up in a SCI outpatient Unit is essential to those patients to prevent risk behavior, allowed early detection of AD and an appropriate treatment.

No conflict of interest

ISPR7-0629

Neurological and Mental Health Conditions - Spinal Cord Injury

INFLUENCE OF PRESSURE ULCERS IN THE LENGTH OF STAY IN PATIENTS WITH SPINAL CORD INJURY IN A REHABILITATION HOSPITAL

G.A. Mosconi¹, M.F. Bueno¹, E. Prieto¹, I. Bruno¹, J.I. Gomez de la Fuente¹, M.B. Peña¹, G. Cosentino¹, G. Gutierrez¹

¹INAREPS, Physical and Rehabilitation Medicine, Mar del Plata, Argentina

Introduction/Background

Analyze the relationship between pressure ulcers (PU) in spinal cord injury patients and the length of stay as inpatient in a Public Rehabilitation facility in Argentina. Describe clinical, epidemiological and functional characteristics of the cases analyzed

Material and Methods

Case files of inpatients from 2009 to 2016 were analyzed with the approval of the hospital's Ethics committee.

Results

82 cases had a Spinal Cord Injury diagnosis.

Male rate was 4 to 1 (80%) and the most frequent etiology was traumatic (Transit accident, gun wounds, fall of height) with 79.3% (n=65) followed by infectious cause (8.5%). Average age was 37 years.

Upper thoracic injuries (T-1 / T-9) were the most frequent with 34 cases, followed by cervical location (n=26). Most cervical SCI (65%) had an incomplete ASIA score (B, C, D or E). In other locations ASIA A scores were higher.

More than 95% of our patients scored a Barthel Index below 60/100 (severe dependence) at admission.

Average length of hospital stay was 224 days (DS: 124), 41.5% stayed less than six months (<180 days) and another 40% for a whole year. Half of them had PU at admission, 65.9% were grade III or IV. Sacrum location was the most frequent presentation for severe PU. This group of patients had a longer length of stay with an average of 287 days.

Conclusion

The presence of deep pressure ulcers (grade III or higher) in patients with SCI are more likely to have longer inpatient time at our rehabilitation facility.

No conflict of interest

ISPR7-0700

Neurological and Mental Health Conditions - Spinal Cord Injury

RETROSPECTIVE AUDIT OF RETURN TO WORK, RECREATIONAL ACTIVITIES AND CANNABIS USE FOLLOWING TRAUMATIC SPINAL CORD INJURY IN NEW ZEALAND IN 2015 A PILOT STUDY

S. Xiong¹, P. Aspell¹

¹Christchurch Hospital, Burwood Spinal Unit, Christchurch, New Zealand

Introduction/Background

Central to ISPRM's goals is maximising the function and community participation of people with disabilities. In line with the international survey on quality of life following spinal cord injury (SCI) we undertook a pilot study to investigate what proportion of our SCI population return to work and how their leisure activities and hobbies changed following SCI. Furthermore, we sought to quantify the proportion of our SCI population that use recreational drugs, cannabis in particular, following their injury and whether its use had an impact on their quality of life.

Material and Methods

In 2015 our spinal unit admitted 63 patients with traumatic SCI, 45 of whom consented to participate in a telephone questionnaire a year on from their injury. The survey included 13 key questions on their pre and post injury status with respect to employment, recreational activities and cannabis use.

Results

Forty-seven percent of respondents, more than half of them incomplete tetraplegics, had returned to work. Active involvement in sporting activities prior to their injury was described by 58% of respondents – most popularly hunting and fishing (50%). Only 30%, however, are still involved in sports and 49% reverted to sedentary lifestyles with digital media their primary pastime.

Conclusion

Cannabis use was reported in 20% of respondents, often daily, primarily to alleviate neuropathic pain and spasticity. A third of users reported concentration and memory problems. In comparison with the 9% of cannabis users documented on admission and follow up reassessment it appears that the use of cannabis is being underreported in the SCI population.

No conflict of interest

ISPR7-0719

Neurological and Mental Health Conditions - Spinal Cord Injury

PREVALENCE OF NOSOCOMIAL INFECTIONS IN THE SPINAL CORD INJURY UNIT OF HOSPITAL MIGUEL SERVET. A RETROSPECTIVE STUDY.

M.C. Untoria¹, B. Hidalgo¹, R. Jarrod¹, J.M. Celorrio¹

¹Hospital Universitario Miguel Servet, Department of Physical Medicine and Rehabilitation, Zaragoza Spain, Spain

Introduction/Background

Patients with spinal cord injury present with a complex clinical course including an increased rate of nosocomial infections being the urinary tract the most frequently affected. The presence of a urinary bladder catheter is the leading cause for these infections in more than 80 % of the cases and genitourinary manipulation is also associated.

Material and Methods

In this retrospective study we evaluate the prevalence of nosocomial infections in the Spinal Cord Injury Unit of our Hospital Universitario Miguel Servet. Data and results obtained between July 2005 and June 2016 are presented. We only include those nosocomial infections which were active at the time the questionnaire was completed (so called 'prevalent infections'), not considering the infections that were already resolved.

Results

During the time the study was carried out the 6-month cumulated rate of nosocomial infection moved from 51.54 % to 14.29 % while prevalence of Urinary Tract Infection (UTI) changed from 44.05 % to 12.55 % respectively. UTI presents with a mean prevalence of 87 % of all nosocomial infections in this period. The cumulative prevalence rate of nosocomial infections including UTI has shown a decreasing trend since the beginning of the series in 2005 until June 2016: 40% to actual 30 %.

Conclusion

Prevalence of nosocomial infections registered in patients assisted in our Spinal Cord Injury Unit is directly related to infections of the urinary tract whether associated or not to urinary bladder catheterism. These infections clearly show a decreasing trend along the years since the beginning of the series (2005 – 2016).

No conflict of interest

ISPR7-0757

Neurological and Mental Health Conditions - Spinal Cord Injury

INSTRUMENT BASED ON THE ICF CORE SET FOR INDIVIDUALS WITH ACUTE TRAUMATIC SPINAL CORD INJURY: ELABORATION AND VALIDATION

J. Nogueira Coelho¹, S. Assad Nasbine Rabeh², M. Riberto¹, P. Carla Vianna³

¹Faculdade de Medicina de Ribeirão Preto-USP, Ciências da saúde aplicada ao aparelho locomotor, RIBIERÃO PRETO, Brazil

²Escola de Enfermagem de Ribeirão Preto-USP, Departamento geral e especialista de Enfermagem, RIBIERÃO PRETO, Brazil

³Hospital das Clínicas FMRP-USP, Centro de Reabilitação, RIBIERÃO PRETO, Brazil

Introduction/Background

Traumatic spinal cord injury (TSCI) has several repercussions on functioning. ICF Core Sets for spinal cord injury (CSSCI) may be an innovative assessment of the functioning of people with TSCI, however, it has not been applied in this context.

Objective: Create and validate an instrument based on summed up ICF Core Set for patients with acute TSCI.

Material and Methods

The survey was divided into three phases: Phase 1 – Elaboration of the instrument based on summed up ICF Core Set for acute spinal cord injury; Phase 2 – Validation of the instrument and data collect; Phase 3 – Pre-test. Face and content validation tool had 13 categories which were part of ICF: body functions (3), body structure (1), activities and participation (9); in total 109 items. A sixteen-judge committee validated the content.

Results

Most of the judges were 30 to 39-year-old women, with doctorate degree and they were professors who also studied ICF and applied it in their clinics. The evaluators checked more than 70% of each item of the tool and it was considered enough for the validation of the content. The pre-test was performed at Rehabilitation Center of HCFMRP-USP; ten patients who have had TSCI for up to 6 months. Most of them were 43 –year- old men, with a trauma caused by a car crash. Some technical terms were replaced in order to help the community understanding.

Conclusion

In clinical practice, this instrument will contribute as innovative tool to be used by the multidisciplinary team when evaluating the functioning for the assistance planning.

No conflict of interest

ISPR7-0759

Neurological and Mental Health Conditions - Spinal Cord Injury

EVALUATION OF INDIVIDUALS WITH NON-TRAUMATIC SPINAL CORD INJURY USING THE CORE SET BASED INSTRUMENT OF TRAUMATIC SPINAL CORD INJURY

J. *Nogueira Coelho*¹, P. *CARLA VIANNA*², C. *de Almeida*², M. *Riberto*¹

¹*Faculdade de Medicina De Ribeirão Preto-USP, Ciências da saúde aplicada ao parêlho locomotor, RIBIERÃO PRETO, Brazil*

²*Hospital das Clínicas FMRP-USP, Centro de Reabilitação, RIBIERÃO PRETO, Brazil*

Introduction/Background

: Non-traumatic spinal cord injury (NTSCI) has several repercussions on functioning. The ICF Core Sets for spinal cord injury (CSSCI) contains 43 questions. It may be an innovative assessment of the functioning of people with NTSCI, however, it has not been applied in this context.

Objective:Apply the ICF CSSCI-based instrument to individuals with NTSCI.

Material and Methods

Cross-sectional descriptive study. The ICF CSSCI-based instrument was applied, followed by Osame Motor Dysfunction Scale (OMDS) and Spinal Cord Independence Measure (SCIM III) in 40 patients with NTSCI (women: 62.5%; mean age: 44 years; OMDS: 5,4; SCIM III: 83,0), between 2013 March to 2014 June. Prevalence of disability in each ICF category with the qualifiers from 1-4. The OMDS score defined the patients as mild (OMDS ≤ 4) or severe (OMDS > 5).

Results

Individuals from the severe group presented a greater frequency of disabilities when evaluated by the CSSCI, mainly: sexual functions, neuromusculoskeletal, defecation and pain. The spinal cord was the Body Structure most frequently cited. Activities and Participation: all of the individuals presented limitation to use transportation as well as the use of hand and arm, walking, driving, moving, carrying out daily routine tasks, work and leisure. Main barriers: conditions of internal and external environments. Main facilitators: products for personal use in daily life, followed by those used for mobility and personal transport in internal and external environments, immediate family and health professionals.

Conclusion

The instrument must be applied by a single health professional, it is able to differentiate the individuals more severely disabled.

No conflict of interest

ISPR7-0760

Neurological and Mental Health Conditions - Spinal Cord Injury

FUNCTIONING OF INDIVIDUALS WITH SPINAL CORD INJURY OF NON-TRAUMATIC

ETIOLOGY: USE OF ICF CORE SETS

J. Nogueira Coelho¹, P. CARLA VIANNA², C. de Almeida², M. Riberto¹

¹Faculdade de Medicina De Ribeirão Preto-USP, Ciências da saúde aplicada ao parêlo locomotor, RIBIERÃO PRETO, Brazil

²Hospital das Clínicas FMRP-USP, Centro de Reabilitação, RIBIERÃO PRETO, Brazil

Introduction/Background

ICF Core Sets for spinal cord injury (CSCI) is an innovative assessment of the functioning of people with non-traumatic spinal cord injury (NTSCI).

Objective: Evaluate the frequency and intensity limitation of ICF for NTSCI, by using the CSCI.

Material and Methods

Was applied the ICF CSCI-based instrument, followed by Osame Motor Dysfunction Scale (OMDS) and Spinal Cord Independence Measure (SCIM III) in 40 patients with NTSCI: women: 62.5%; mean age: 44 years, from 2013 March to 2014 June. Prevalence of disability in each ICF category with the qualifiers from 1-4. OMDS was dichotomized into two groups: mild (≤ 4 points), and severe (≥ 5). Intensity of disability was calculated on all ICF categories. Problem frequency: defined by the number of categories that received qualifiers 1-4.

Results

The Spearman correlation between the OMDS and SCIM III was statistically significant (-0.77 ; $p < 0.001$). In SCIM III the mild group had a higher score (90.4; $p < 0.05$) than the severe group (75.5; $p < 0.05$), in the OMDS was the inverse: severe group (6.86, $p < 0.05$) and mild (3.68, $p < 0.05$). Frequency of problems in 86.9% of CSCI was higher in the severe group for the components: Function and Structure Body and Activities and Participation (AP). In the Environmental Factors (EF), the participants presented greater impact and greater frequency in the facilitators than the barriers on their functioning. AP showed the highest Spearman correlation with OMDS and SCIM III (-0.82 , $p < 0.001$).

Conclusion

This questionnaire evaluates aspects not covered in other instruments such as EF.

No conflict of interest

ISPR7-0785

Neurological and Mental Health Conditions - Spinal Cord Injury

PREVALENCE OF AUTONOMIC DYSREFLEXIA IN PATIENTS WITH SPINAL CORD INJURY ABOVE T6

M.C. Joo¹

¹Wonkwang University and Hospital, Rehabilitation Medicine, Iksan, Republic of Korea

Introduction/Background

To investigate the prevalence of autonomic dysreflexia (AD) using ambulatory blood pressure monitoring (ABPM) and the autonomic dysfunction following spinal cord injury (ADFSCI) questionnaire in patients with spinal cord injury (SCI) above T6.

Material and Methods

Twenty-eight patients diagnosed with SCI above T6 were enrolled. ABPM and ADFSCI were utilized to assess AD. Using ABPM, systolic blood pressure (SBP), diastolic blood pressure, and heart rate (HR) were measured at 30-minute intervals. AD was defined as SBP 20 mm Hg higher than basal SBP, and the number of AD events was counted. The ADFSCI questionnaire was administered to evaluate the AD symptoms.

Results

Average daytime and nighttime SBP were 119.9 ± 18.8 mm Hg and 123.8 ± 21.2 mm Hg, respectively, and the nighttime mean SBP appeared to be 4 mm Hg higher than daytime mean SBP. These findings suggest the loss of nocturnal BP dipping in SCI patients. According to the ABPM, AD occurred in 26 patients and AD events occurred 5.8 ± 4.7 times. ADFSCI results revealed that 10 of the patients evaluated were symptomatic while 8 were asymptomatic.

Conclusion

AD following SCI above T6 was highly prevalent and several patients seemed asymptomatic. These results suggest the necessity of proper diagnostic and therapeutic interventions for managing AD.

No conflict of interest

ISPR7-0813

Neurological and Mental Health Conditions - Spinal Cord Injury

OUTCOMES' COMPARISONS IN BETWEEN HYDROPHILIC AND RESPECTIVELY, VS. PRE-LUBRICATED, DEVICES, FOR INTERMITTENT CATHETERIZATION (IC) IN NEUROGENIC BLADDER, AT POST SPINAL CORD INJURY PATIENTS

A. Spînu¹, C. Popescu¹, I. Andone¹, C. Daia¹, T. Spiricu¹, A. Angheliescu¹, G. Onose¹

¹University of Medicine and Pharmacy "Carol Davila"- Teaching Emergency Hospital, Physical neural-muscular and Rehabilitation Medicine Clinic Division, Bucharest, Romania

Introduction/Background

This meta-analytic kind of endeavor is based on results within three previous studies: the first two (one in 2010 and another, in 2015) emphasized differences (more in the latter) regarding specific bio-/pathological and psychometric parameters (see below some of them), in favor of hydrophilic catheters with lubrication in close circuit (HCLCC – 30/35, and further: 61; totally 96, cases – see in the work) vs. simple/non-hydrophilic ones (56 controls), IC, and in the third (in 2015), the advantages of glycerin based formula pre-lubricated catheters' use (43 patients) towards the same control lot. These results were actually compared as shown in the title.

Material and Methods

First processing [Somers's – concordance – Index (SI), Pearson's correlation – coefficient – (PC), respectively T/Levene, chi²/ Fisher/ Z, Mann-Whitney, tests], verified whether larger HCLCC lot highlighted significances not reached in the smaller one, and/or issues closer matched to empiric observations. The second, targeted differences regarding outcomes obtained assessing same evaluated parameters, between the HCLCC and pre-lubricated, catheters, studied lots.

Results

Only in the larger HCLCC lot resulted slight negative concordance (SI: -0.230; PC: -0.169) between patients' satisfaction degree and number of orchi-epididimitis episodes, and significantly less urinary tract infections (UTI) activations, /surveyed period (p-value<0.001); conversely, significantly lower (p-value < 0.001) number of urethral bleeding/year were in the smaller one. Those benefiting of glycerin-based catheters showed – knotty – significant lower number of UTI activations/surveyed period (p-value = 0.010).

Conclusion

Larger/enlarged HCLCC lot enabled objectifying aspects more adequate – but also a rather strange one, therefore needing even larger lots – to clinical findings.

No conflict of interest

ISPR7-0852

Neurological and Mental Health Conditions - Spinal Cord Injury

USE OF RADIOTHERAPY IN THE MANAGEMENT OF HIP HETEROTOPIC OSSIFICATION IN PATIENTS WITH SPINAL CORD INJURY OR HEAD INJURY

T. Honore¹, F. Genet²

¹CHU Pontchaillou, Ile et Vilaine, Rennes, France

²hôpital Raymond Poincaré, hauts de seine, Garches, France

Introduction/Background

The aim of this case-control study was to evaluate effects of radiotherapy associated to surgical resection of hip troublesome heterotopic ossifications (HO) in early postoperative complications (recurrence and sepsis) in patients with spinal cord injury (SCI) or head injury.

Material and Methods

SCI or head injury patients which underwent an excision surgery for troublesome hip HO and identified in BANKHO database were included. The primary end point was the recurrence occurrence, and the secondary end points were postoperative complications and more precisely complications requiring a revision surgery for sepsis.

Results

Statistical analysis was undertaken for 19 patients which have received radiotherapy and 76 controls matched for sex and age (+/- 4 years). Regarding to the main outcome measure, we found for the total group (SCI and head injury) OR=0.63, for the subgroup SCI OR = 0.45 and for the subgroup head injury OR =1.04. These results were not significant. Regarding to the postoperative complications requiring a revision surgery for sepsis, OR=4.70 for the total group and SCI group, with statistically significance ($p<0.05$).

Conclusion

This retrospective study demonstrated a trend of efficacy of radiotherapy to prevent the development of postoperative recurrence of HO, especially for patients with SCI, but without statistically significant results. The rate of revision surgery for sepsis was statistically higher in the total group and the subgroup SCI. Lack of randomization of the two groups probably explains this results (case patients were more likely to lead to complications).

No conflict of interest

ISPR7-0866

Neurological and Mental Health Conditions - Spinal Cord Injury

USE OF GLUCOCORTICOIDS IN THE ACUTE PHASE OF SPINAL CORD INJURY IN SPAIN, COMPLICATIONS AND FUNCTIONAL OUTCOME

D. Gonzalez Paesani¹, E.R. Meza Murillo¹, X. Segura Navarro¹, M. Aznarez Jimenez¹, C. Castellano Tejedor², M.A. Gonzalez-Viejo³, L. Montesinos i Magraner³

¹Vall d'Hebron, Physical and rehabilitation medicine resident, Barcelona, Spain

²Vall d'Hebron, Research institute VHIR, Barcelona, Spain

³Vall d'Hebron, Physical and rehabilitation medicine MD Spinal Cord Injury Unit, Barcelona, Spain

Introduction/Background

The use of glucocorticoids (GC) in the acute spinal cord injury (ASCI) has evolved since 1984 with controversial NASCIS studies, actually there is insufficient scientific support to justify its use. The complications related to the administration of GC at very high doses, discard its use as a standar treatment, it should be considered according to the pathology of each patient individually.

The aim of this study is to evaluate if there are differences between the use or not of GC in ASCI patients, regarding the complications and the functional outcome while hospitalized.

Material and Methods

Realization of a prospective database with information about diagnosis, treatment, complications, evolution, functional outcome and other items, applied to each patient with traumatic spinal cord injury that arrived at our center, from November 2015 to November 2016.

Results

With a total of 71 patients with ASCI, 57% received GC; of them 22% presented pressure ulcers, 25% pneumonia, 45% urinary infections, 5% sepsis. Of the ones without GC treatment 16% pressure ulcers, 38% pneumonia, 51% urinary infections and no sepsis. About the ASIA grade of the patients who received GC improvement was evident in 27% and about neurological level an improvement of 47%; regarding the patients that didn't received GC, there were an ASIA improvement of 33%, and neurological level of 43%.

Conclusion

The use of GC in patients with ASCI is associated with a higher degree of clinical complications during hospitalization.

No conflict of interest

ISPR7-0897

Neurological and Mental Health Conditions - Spinal Cord Injury

COMPARISON OF INTERNATIONAL STANDARDS FOR NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY (ISNCSCI) ALGORITHM CALCULATORS

S.C. Budithi¹, A. Alshahrani¹, P. Silva¹, A. Osman¹, J.R. Chowdhury¹

¹Robert Jones and Agnes Hunt Orthopaedic Hospital, Midland Centre for Spinal Injuries, Oswestry, United Kingdom

Introduction/Background

ISNCSCI is used worldwide for neurological classification in spinal cord injury (SCI). Computational algorithm calculators classify neurological deficit based on data entered. Two commonly used algorithms are: ISNCSCI Calculator by European Multicentre Study about Spinal Cord Injury (EMSCI) and ISNCSCI Calculator by Rick Hansen Institute (RHI) in collaboration with International Spinal Cord Society. This study aim is to compare these two calculators.

Material and Methods

Neurological examinations of 24 consecutive patients in a spinal injuries centre were classified according to both ISNCSCI calculators. The agreement between both calculators in relation to Sensory level, Motor level, Neurological level, Completeness, ASIA Impairment Scale (AIS) and Zone of Partial Preservation (ZPP) was studied.

Results

Both calculators returned same results in 20 (83.3%) examinations for all parameters tested. There were differences in 4 (16.7%) examinations.

There was 100% agreement in Sensory level, Neurological level, AIS and ZPP. The completeness was calculated as 'Not Determinable (ND)' on EMSCI's calculator and as 'Incomplete (I)' on RHI calculator in two cases where neurology improved to AIS E. The same discrepancy was found in one case of intact neurology with 'Not Tested' S3-S5 segments.

In one case of C4 level AIS D, where the S4-S5 dermatomes and Voluntary anal contraction were not tested, there was discrepancy in motor level identification (ND on EMSCI's calculator and T1 on RHI's calculator).

Conclusion

The ISNCSCI calculators are comparable and consistent for Neurological level, AIS, ZPP, Sensory level. Minor differences were noted for completeness of the lesion and motor level. Verification by clinicians is still of paramount importance.

No conflict of interest

ISPR7-0903

Neurological and Mental Health Conditions - Spinal Cord Injury

RELIABILITY OF PEG STRAINED INTRINSIC MUSCLE EVALUATOR (PRIME) FOR MEASUREMENT OF INTRINSIC HAND MUSCLE STRENGTH

G. Francisco¹, N. Yozbatiran¹, Z. Keser¹, R. Mary Beth¹, K. Radha¹

¹The University of Texas Health Science Center at Houston, Physical Medicine and Rehabilitation, Houston, USA

Introduction/Background

The manual muscle test (MMT) is the traditional method to assess the intrinsic hand muscle test. However this test is qualitative and subjective. A device capable of rapidly measuring motor output along a linear scale may be of value in the evaluation of hand recovery from any neurological impairment. The Peg Restrained Intrinsic Muscle Evaluator (PRIME) was developed to quantify intrinsic hand muscle strength. The device consists of 3 major components: a pegboard, a force transducer, and a base control unit. Standardized peg placement isolates individual intrinsic muscles or functional muscle groups and thereby provides highly specific testing. In this report, we demonstrate inter-rater reliability results of intrinsic hand muscle strength in adults with impaired hand functions.

Material and Methods

In order to establish inter-observer error, intrinsic hand muscle strength of adults with cervical spinal cord injury were performed by two-tester with use of PRIME device within the same session.

Results

16 subjects (2 female, 14 male, mean age=47±15 years) were enrolled. Intraclass correlation coefficients for hypothenar, first dorsal interosseous, abductor pollicis brevis and opponence pollicis muscles ranged from 0.7 to 0.8 with hypothenar muscle test being lowest ICC=0.7 and thumb opposition highest, ICC=0.81.

Conclusion

Results from this study suggest that PRIME device demonstrates good reliability within testers for quantified measuring of intrinsic hand muscle strength. Further use of PRIME in clinic will aid in diagnostics, medical decision making and evaluation of rehabilitation progress in patients with cervical spinal cord injury.

No conflict of interest

ISPR7-0928

Neurological and Mental Health Conditions - Spinal Cord Injury

CHILDREN ACQUIRED SPINAL CORD INJURY. EPIDEMIOLOGICAL STUDY

M. Arocena¹

¹Hospital de Niños, Medicina física y rehabilitación, La plata, Argentina

Introduction/Background

INTRODUCTION: Spinal Cord Injury (LM) is a pathological process that produces motor, sensory and / or autonomous alterations, generating severe disability.

Material and Methods

MATERIALS AND METHODS: is a quantitative, descriptive, non-experimental study. 14 patients diagnosed with LM, served in the Department of Physical Medicine and Rehabilitation (SMFyR) of HIAEP Sister Maria Ludovica de La Plata, between 1 January 2009 and 30 October 2016 were selected. Classified according to sex, age, etiology, neurological level, ASIA scale, evolutionary SMFyR to entry, length of hospital instance, complications and discharge destination.

Results

RESULTS: The mean age was 11 years, higher incidence of male, vascular and inflammatory most common causes, followed by trauma, tumor and postsurgical. There was a higher incidence of cervical levels ASIA A and C. rapid entry into service was recorded, with long hospital stay. **DISCUSSION:** We found a correlation with the literature regarding age of onset and incidence by sex. Within the etiology, the sample does not correspond to the literature. This discrepancy could be attributed to the small sample and hospital characteristics. rapid referral is observed, with early comprehensive intervention. In contrast, we notice a prolonged hospital instance, exceeding the acute stage.

Conclusion

CONCLUSION: The low prevalence generates docketed difficulty in handling, presenting potentially avoidable complications. The absence of a public monovalent child and adolescent rehabilitation institution, along with complications, condition prolonged hospitalization. Finally we believe important to emphasize the need for interdisciplinary approach.

No conflict of interest

ISPR7-0026

Neurological and Mental Health Conditions - Stroke

THE EFFECT OF BLOOD PRESSURE (BP) ON STROKE REHABILITATION

N. Saito¹, K. Tanaka¹, T. Matsumoto¹

¹Yokohama Rosai Hospital, Rehabilitation, Yokohama, Japan

Introduction/Background

High blood pressure (HBP) is one of the risk factors of stroke, but the effect of BP on rehabilitation after stroke is not considered enough.

Material and Methods

We analyzed the database established by Japan Association of Rehabilitation Database (JARD), which included inpatients of acute phase (IAP, n 9951) and recovery phase (IRP, n 6322).

We stratified the stroke patients into HBP or non-HBP populations, and analyzed the effect of BP on rehabilitation outcome.

We used each item of Barthel Index (BI) for comparisons between dependent population (the lowest score, i.e. zero) and control population, or between independent population (the highest score) and control population.

Results

The increases of dependent (transfers and toilet use) IRP of L (Lacuna Infarct) among non-HBP group were statistically significant.

The increases of dependent (feeding, transfers, grooming, toilet use, dressing, bowels and bladder) and non-independent (feeding and grooming) IAP of A (Atherothrombotic Infarct) among non-HBP group were statistically significant.

The dependence (feeding and dressing) and the non-independence (transfers, toilet use, and bladder) of IO (Infarct of Others) IRP increased among non-HBP group with statistical significance.

The increases of dependence (bathing) and non-independence (transfers, toilet use, bathing, stairs and bladder) of S (SAH) IAP were statistically significant among HBP group.

No effect of BP on BI of C (Cardiogenic Infarct), H (Hemorrhage of Hypertension), or HO (Hemorrhage of Others) was confirmed.

Conclusion

Our data suggested certain causes among non-HBP population that deteriorates items of BI after ischemic stroke rehabilitation. HBP lowered BI of S IAP.

No conflict of interest

ISPR7-0034

Neurological and Mental Health Conditions - Stroke

STUDY ON RELIABILITY OF THE BRIEF STROKE ICF CORE SET IN ACUTE PHASE FOR CHINESE PATIENTS WITH STROKE

J. Zhang¹, Z. Qian¹

¹The Affiliated Hospital Of Guizhou Medical University, Rehabilitation Medicine, Guiyang, China

Introduction/Background

To study the reliability of the Brief International Classification of Functioning, Disability and Health (ICF) Core Set in Acute Phase for Chinese Patients for Stroke (Short for-The brief stroke ICF in acute phase) , to add evidence to universality.

Material and Methods

Use the brief stroke ICF in acute phase to evaluate the patients with stroke, the first evaluate result as the basis of reliability analysis.24 hours later, author and another experienced doctor re-evaluation the patients with the brief stroke ICF in acute phase, use the author's first and second results analyzed the test-retest reliability, the first and the another doctor's results analyzed inter evaluation reliability, which were analyzed by kappa correlation. Use the first assessment result's body functioning, body structure, activity and participation, environmental to analyzed internal consistency reliability by Cronbach α coefficients.

Results

1. The feasibility of the scale: to assess four components of the brief stroke ICF Core Set in acute phase average last 17.67 ± 3.57 minutes, the feasibility is moderately. 2. Reliability: the κ value of the four components the brief stroke ICF in acute phase inter evaluation reliability,body structure between 0.854 and 0.858,get a excellent inter evaluation reliability,The κ value of body functioning、 activity and participation and Environmental between 0.680 and 1.000,get a moderate-excellent inter evaluation reliability.The κ value of the test-retest reliability,body structure between 0.760 and 0.902,get a excellent test-retest reliability,The κ value of body functioning、 activity and participation and Environmental between 0.699 and 1.000,get a moderate-excellent inter evaluation reliability.The α coefficient of the body functioning、 activity and participation and Environmental is 0.815、 0.952 and 0.850 respectively ,that means internal consistency reliability are very excellent.body structure's α coefficient is 0.200,means internal consistency reliability is weak.

Conclusion

The brief stroke ICF in acute phase for Chinese Patients for Stroke is reliable and stable as a measurement for stroke patients in acute phase.

No conflict of interest

ISPR7-0054

Neurological and Mental Health Conditions - Stroke

SPASTIC EQUINUS FOOT DEFORMITY IN CHRONIC STROKE ADULT PATIENTS TREATED WITH BOTULINUM TOXIN A. A SERIES OF CASES IN A SPASTICITY UNIT

A. Torrequebrada Giménez¹, J. Chaler Vilaseca², R. Garreta Figuera¹

¹*Hospital universitari Mutua de Terrassa, Physical Medicine and Rehabilitation, Terrassa, Spain*

²*Egarsat, Physical Medicine and Rehabilitation, Terrassa, Spain*

Introduction/Background

Aims of the study are to know the frequency of equinus foot deformity, in a selected population of spastic stroke patients previously treated with botulinum toxin A (BtxA) in leg muscles, and to study the association between maximum ankle dorsiflexion, walking ability, disability and previous BtxA treatments.

Material and Methods

A series of cases of 27 consecutive patients visited over a period of 4 months are included. The variables studied are sex, age, time since stroke, time since the last BtxA treatment, total number of BtxA treatments, maximum ankle dorsiflexion (MaxAD), Functional Ambulation Classification Scale (FAC) and modified Rankin Scale (mRS). Equinus foot deformity is defined if MaxAD is above 80°.

Results

Sex: F12/ M15. Age: mean (m) 65.48 years, SD 11.56. Time since stroke: m 83.92 months, SD 59.81. Time since last BtxA treatment: m 7.97 months, SD 5.72. Number of previous BtxA treatments: m 6,37, SD 4.70. MaxAD: m 96,29°, SD 10,61°. Frequency of equinus foot deformity 92,6%. Assisted walk: 37,04 % of patients. ADL dependent: 70,37 % of patients. Correlation between MaxAD and FAC: -0.5231 and maxAD and mRS: 0.4259. Bonferroni adjusted maxAD and FAC: -0.5231 (p<0.01), and maxAD and mRS: 0.4259 (p<0.05). No correlation is found between number of previous BtxA treatments and MaxAD.

Conclusion

A high frequency of equinus foot deformity is observed. Equinus foot is associated with worse walking ability and more disability. In chronic spastic stroke patients does not appear to be a progression of equinus foot deformity associated with repeated botulinum toxin A leg injections. Therefore, this issue does not seem a limitation for repeated treatments in this period, if there are therapeutic targets for focal treatment.

No conflict of interest

ISPR7-0078

Neurological and Mental Health Conditions - Stroke

PARETIC KINEMATIC DETERMINANTS OF TEMPORAL ASYMMETRY INSUBACUTE POST-STROKE PATIENTS.

C. Gath¹, M. Crespo¹, M. Gianella¹, L. Bonamico¹, L. Olmos¹, M.J. Russo¹

¹FLENI, Rehabilitation, Buenos Aires, Argentina

Introduction/Background

Temporal asymmetry and kinematic analysis are useful outcome to study the negative consequences of gait alterations. Our objective was to know the level of relationship between the peaks of extension and flexion of the hip, knee and ankle of the paretic limb and the temporal asymmetry. Identify those kinematic alterations of the paretic limb that determine temporal asymmetry in subacute post-stroke patients.

Material and Methods

A convenience sample of 17 subacute post-stroke subjects was included. The kinematic variables of interest were peak hip flexion/extension, peak knee flexion/extension, and peak ankle dorsiflexion/extension in a gait laboratory. The Temporal Swing Symmetry (TSS) Ratio was calculated (TSS= paretic swing time/nonparetic swing time).

Results

Six (35.30%) were haemorrhagic and 10 (58.7%) ischemic. Mean age was 52.94 (\pm 14.11) years and 12 (70.6%) were male. A multiple linear regression was calculated to predict TSS based on age, side stroke, walking velocity, motor function, spasticity, and kinematic variables. A significant regression equation was found ($F(2, 14) = 27.138, p \leq .001$), with R^2 of .795. TSS ratio was positively correlated with peak hip flexion and negatively with walking velocity ($p \leq .001$).

Conclusion

These results suggest that an increased peak hip flexion reflects a possible compensatory strategy to advance the paretic limb in swing phase. In those more asymmetric the compensatory strategy would start at stance phase with a flexed hip posture that move the body mass forward the knee and then a wider range of motion is needed to advance the paretic limb, furthermore it decreases the swing time of the nonparetic limb and also modifies the TSS ratio.

No conflict of interest

ISPR7-0079

Neurological and Mental Health Conditions - Stroke

MEASURING PERFORMANCE IN ACTIVITIES OF DAILY LIVING IN STROKE: 6-, 12- AND 24-MONTHS FOLLOW-UP

M. Ron¹, V. Lado¹, I. Aranguren¹, L. Bonamico¹, M. Rey¹, L. Olmos¹, M.J. Russo¹

¹FLENI, Rehabilitation, Buenos Aires, Argentina

Introduction/Background

Information on predictors of long-term change in functional performances after a rehabilitation program in stroke patients is scarce. The purpose of this study was to evaluate the functional status using the FIM following an ischemic or hemorrhagic stroke and to analyze the clinical and demographic characteristics associated with the functional status at 6, 12 and 24 months after discharge using the FIM.

Material and Methods

We conducted a prospective study of patients admitted to the stroke unit between January 2006 and December 2011 diagnosed with ischemic or hemorrhagic strokes. A series of clinical and demographic variables were collected. The main outcome measure was change over time in FIM. Predictors included hemisphere side of the lesion, gender, age and time from the stroke onset to rehabilitation admission.

Results

147 participants were included. Fifty six were female. Their age ranged from 18 to 92. Left-hemispheric strokes (54%) were more common. The mean interval between the stroke onset to rehabilitation admission was 90.3 days. The FIM ranged from 87.91 ± 21.09 (discharge) to 99.89 ± 20.23 (6 months after discharge) to 102.35 ± 19.63 (12 months) and 104.01 ± 19.52 (24 months). There was a correlation between FIM and age (-0.349; $p \leq 0.001$) and time between stroke onset and rehabilitation admission (-0.177, $p = 0.032$). In multivariate analysis, age ($p \leq 0.001$) and gender ($p = 0.048$) were independent predictors of poor FIM at discharge. After 24 months of follow-up, only age remained significant predictor of functional status ($p \leq 0.001$).

Conclusion

These results suggest that in stroke patients the most significant functional changes occur during the first 6 months. There is evidence that older patients may have less chance of achieving functional recovery at discharge and follow up.

No conflict of interest

ISPR7-0085

Neurological and Mental Health Conditions - Stroke

THE HAND HUB: INCREASING THE INTENSITY OF UPPER LIMB REHABILITATION AFTER STROKE

M. Galea¹, F. Khan², B. Amatya², M. Klaic³, A. Elmalik², G. Abbott²

¹The University of Melbourne, Medicine Royal Melbourne Hospital, Parkville, Australia

²Royal Melbourne Hospital, Rehabilitation, Parkville, Australia

³Royal Melbourne Hospital, Occupational Therapy, Parkville, Australia

Introduction/Background

Although most patients regain walking ability, 30%-60% of stroke survivors fail to regain functional use of their arm and hand. Rehabilitation of the arm is frequently given a lower priority than training of walking (only 4-10 minutes per session). In order to improve the functional outcome for the upper limb following stroke or any other neurological injury, and to maximise the patients' time in inpatient/ambulatory rehabilitation, the amount of practice of arm and hand activities needs to be increased. Advances in robotics, sensor and game technology now provide a means of enabling patients to undertake intensive structured practice of upper limb tasks with minimal supervision.

Material and Methods

We established a Hand Hub, comprising several workstations of relatively inexpensive devices to facilitate activities via computer games that are appropriate for patients with varying levels of severity of arm and hand impairment. Intervention was delivered via individual or group sessions for a period of 6 weeks and was additional to the patients' regular therapy. Patients were assessed before and after the program on the Arm Activity Measure (ArmA), the streamlined Wolf Motor Function Scale, modified Ashworth Scale, Functional Independence Measure and the EQ-5D.

Results

Ninety-two participants (mean age 57 yrs, SD 17; 58% male; 88% with stroke) completed both baseline and post-intervention assessments. Post-intervention, participants showed significant improvement in arm function and strength and the streamlined Wolf Motor Function Test score, improved muscle tone on the Modified Ashworth Scale, and improvements in the locomotion, mobility and psychosocial subscales of the Functional Independence Measure. Quality of life (EQ-5D) and overall health also improved significantly.

Conclusion

Increasing the intensity of rehabilitation for the upper limb via the Hand Hub was feasible and has shown promising results with respect to functional outcomes.

No conflict of interest

ISPR7-0118

Neurological and Mental Health Conditions - Stroke

THE PERCEIVED CHANGES IN SELF-EFFICACY AFTER TASK-ORIENTED ADL TRAINING FOR PATIENTS WITH CEREBRAL VASCULAR ACCIDENT

X. Ma¹

¹West China Hospital of Sichuan University, Rehabilitation Medicine Center, Chengdu, China

Introduction/Background

This study examined that whether a 4 - week task-oriented ADL training program would improve Cerebral Vascular Accident(CVA) patients' self-efficacy and the perceived differences between CVA patients' self-rated self-efficacy and therapist-rated self-efficacy.

Material and Methods

The subjects in this study were 24 stroke patients from three different sites: Nantong University Affiliated Hospital, West China Hospital and Taihe Hospital, who were hospitalized for the first time and received Occupational Therapy from early February to middle April in 2016. All participants were given a four weeks' ADL training program under a certain prototype provided by Occupational therapists as a routine. Three times assessments were implemented at pre-, mid- and post-intervention. The first one was before the training program at first day, another two were at the last day of the second week and week four by using Bobath balance scale (BBS), Modified Barthel Index (MBI) and General Self-efficacy Scale (GSES).

Results

The therapist-rating GSES scores showed improvement after 4 weeks' task-oriented ADL training with the mean scores of 21.71(pre-intervention), 24.38(mid-intervention) and 25.75(post-intervention). The changes from pre- to mid-intervention ($P=0.0048$) and pre- to post-intervention ($P<0.0001$) were both statistically significant, but the differences from mid- to post-intervention were not statistically significant ($P=0.133$). There were no statistically significant differences between self-rating scores and therapist-rating scores at pre-intervention stage ($P=0.359$), but differences were statistically significant at the mid-intervention ($P=0.039$) and post-intervention ($P=0.025$).

Conclusion

The results suggest that task-oriented ADL training will increase CVA patients' self-efficacy and the changes perceived by themselves are watered-down.

No conflict of interest

ISPR7-0128

Neurological and Mental Health Conditions - Stroke

STUDY OF 180° TURNING STRATEGIES USING INERTIAL MEASUREMENT UNITS AND FALL RISK IN POST-STROKE PATIENTS

A. Yelnik¹, B. Remi¹, R. damien², O. laurent³, P. clément¹, V. alienor³, V. pierre paul³

¹GH Lariboisière F.Widal, PRM, paris, France

²HIA Percy Service ed santé des armées, Neurological department, Paris, France

³CNRS UMR 8257, Cognition and action group, Paris, France

Introduction/Background

Objective - We analyzed spontaneous 180° turning strategies in post-stroke hemiparetic patients by using inertial measurement units (IMUs) and the association of turning strategies with risk of falls.

Material and Methods

Methods –patients with right hemiparesis (RP), left hemiparesis (LP) and healthy controls (HC) from a PRM department. Participants were instructed to turn 180° in a self-selected direction after a 10-m walk while wearing 3 IMUs on their trunk and both feet. We defined 3 turning patterns based on the number of external steps (pattern I= 1; II= 2-4 steps; III ≥5) and 4 turning strategies based on the side chosen to turn (healthy or paretic) and the stance limb used during the first step of the turn (healthy or paretic). Falls in the 6 months after measurement were investigated.

Results

Results – We included 17 patients with RP (mean [SD] age 57.5 [9.5] years [range 43 to 73]), 20 with LP (mean age 60.7 [8.8] years [range 43 to 63]) and 15 HC (mean age 56.7 [16.1] years [range 36 to 83]). The LP and RP groups behaved similarly in turning patterns, but 90% of LP patients turned spontaneously to the paretic side versus 59% of RP patients. This difference increased with turning strategies: 85% of LP versus 29% of RP patients used strategy 4 (paretic turn side with paretic limb). Patients using strategy 4 had the highest rate of falls.

Conclusion

Conclusion –Spontaneous turning strategies could be routinely assessed by using IMUs to identify risk of new falls among post-stroke patients.

No conflict of interest

ISPR7-0142

Neurological and Mental Health Conditions - Stroke

CHANGES IN HEMODYNAMIC RESPONSES DURING MOVEMENTS OF THE UPPER EXTREMITIES IN THE ACUTE PHASE AFTER STROKE: A fNIRS STUDY

M. Delorme^{1,2}, S. Perrey², G. Vergotte², J. Froger^{1,2}, I. Laffont^{2,3}

¹CHU Nîmes, Department of Neurology- Rehabilitation Medicine, Nîmes, France

²University of Montpellier, EuroMov, Montpellier, France

³CHU Montpellier, Department of physical medicine and rehabilitation, Montpellier, France

Introduction/Background

The acute phase of stroke is accompanied by functional changes and interplay of both hemispheres. However little is known on how the time course of functional motor recovery is related to the progression of symmetry in the motor areas of the brain. This study aimed to indicate the time course of both hemodynamic patterns of cortical motor areas using functional near infrared spectroscopy (fNIRS) and functional recovery during 2 months after stroke.

Material and Methods

Eight right-handed first ischemic/hemorrhagic stroke patients (60±8 yrs, 3 female and 5 men) with mild to severe hemiparesis were examined with fNIRS measurements and functional motor recovery (Fugl-Meyer score) tests every two weeks during two months (five sessions). We investigated hemodynamic changes over the contralateral and ipsilateral motor areas with a 2x8-channel fNIRS system (Oxymon MkIII®) during a unilateral intermittent isometric forearm task (1 Hz) at self-selected submaximal force levels. Laterality index (LI) was computed to evaluate the asymmetry of hemodynamic changes from the two hemispheres.

Results

Unaffected upper limb movements-related contralateral motor areas activity showed no significant changes. Affected upper limb movements were associated early with a bilateral cortical activity before shifting to contralateral patterns ($p < 0.01$). Progressive lateralization was observed with LI increases over the first 4 sessions (from -0.24 ± 0.18 to 0.36 ± 0.27 , $p < 0.05$) prior to level off (session 5, 0.25 ± 0.39), as did the Fugl-Meyer score.

Conclusion

These preliminary results suggest that cortical reorganization monitoring with fNIRS during the first weeks after stroke should be considered further when assessing functional motor recovery in stroke rehabilitation services.

No conflict of interest

ISPR7-0148

Neurological and Mental Health Conditions - Stroke

STROKE REHABILITATION UNIT AND ROBOTICS IN EARLY REHABILITATION

E.P. Buffagni¹

¹*Fundacion San Andres, Capital, Mendoza, Argentina*

Introduction/Background

Conceptually we consider the necessity of creating an integral treatment of rehabilitation for: etiopathogenic study, therapeutic assessment, diagnosis of complications, functional and physiological consequences. Emphasis in starting as soon as possible with the process of rehabilitation.

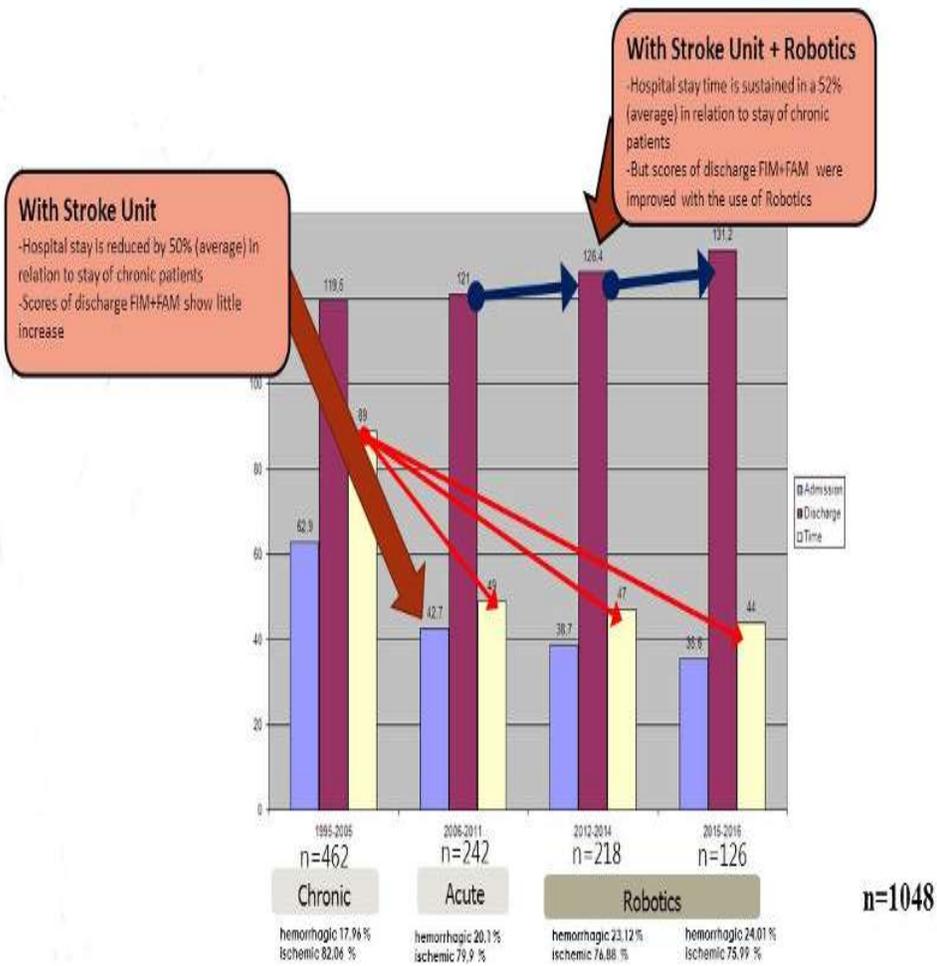
Material and Methods

Creating a stroke unit of rehabilitation to treat the post-acute phase of recovery following a stroke. Patient is transferred once they are medically stable. Length of stay in that phase is 4-6 weeks. The goal of this unit is to maximize the stroke recovery potential in patients so they may be able to function at the highest level of physical and mental ability they can achieve post-stroke.

Elements of stroke rehabilitation unit:

- Building structure, technical equipment and trained personal
- Medical organization: team formed by: physiatrist doctor, neurologist, intensive care, internal medicine, nursery, respiratory, speech language, occupational, physical, neurophysicologist, social worker and nutritional therapists.
- Comprehensive, evidence based, written protocols, order sets and care pathways/algorithms should be in place to guide.
- Early use of robotic therapy: Rehabilitation is inherently a labor intensive process and has always relied on an individualized therapy programs provided by highly skill therapist. This type of therapist has advantages but it is very physically demanding, so the training duration is limited by the fitness of the therapist. As a solution to this limitation a robot driven therapy has been proposed
- Interdisciplinary meeting
- Previous considerations provide: early intensive task specific, multisensorial stimulation performed by highly skilled team. In addition we have developed on cutting edge robotic department with excellent results

Results



Conclusion

Stroke rehabilitation unit and robotic are an effective program that provides:

- Early stimulation
- Prevention and treatment of risk factors
- Intensive stimulation
- Task specific stimulation
- Multi-sensory stimulation
- Decrease length of stay in the hospital

Improvement in functional capacity
 No conflict of interest

ISPR7-0154

Neurological and Mental Health Conditions - Stroke

MOTOR TASK BASED NOVEL MIRROR VISUAL FEEDBACK TRAINING MIGHT ENHANCE THE CORTICAL ACTIVATION OF STROKE PATIENTS: A PRELIMINARY STUDY

L. Ding¹, X. Wang², X. Guo², J. Jia¹

¹Huashan Hospital, Department of Rehabilitation Medicine, Shanghai, China

²Shanghai Jiaotong University, School of Biomedical Engineering, Shanghai, China

Introduction/Background

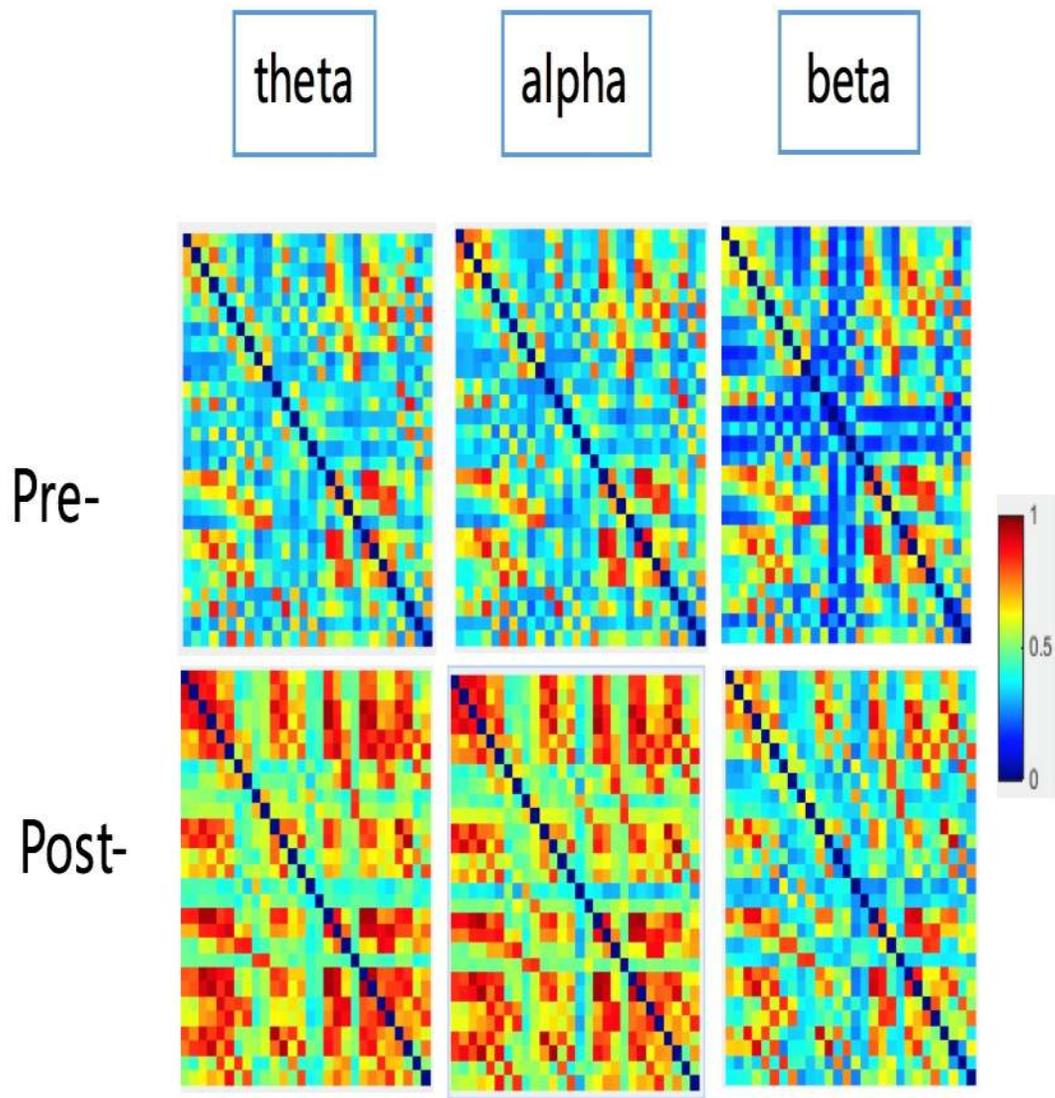
Some novel mirror visual feedback (MVF) trainings have been the focus of much interest and debate and was introduced to cause cortical activation. But the sparse literature on this topic reports the effectiveness on stroke patients. The object of this study was to assess the feasibility and effects of the novel MVF combined with motor task on stroke patients.

Material and Methods

Three sub-acute stroke patients were recruited. The therapies were applied for 60 minutes per day, 5 times per week, for a total of four weeks. The primary outcome measures were the upper-limb function based on Fugl-Meyer Assessment (FMA), Motor Status Scale (MSS), Brunnstrom and electroencephalogram (EEG). Event-related potential (ERP), event-related (de) synchronization (ERD/ERS) in beta band and behavior performance were recorded in the mental rotation task through left/right hand judgment. All data was collected before and after the intervention.

Results

All the patients showed dramatic improvements of upper limb function (Brunnstrom: V to VI; FMA: 43.5 to 62.5 for upper limb; 14 to 22.5 for hand; MSS: 66.1 to 79.3). The improvement of behavior performance (reaction time and accuracy) during mental rotation task and the advancement of P200 and P300 were found after intervention. The overall degree and path length of brain connection network were increased while the bias connection between right and left brain hemisphere and cluster coefficient was decreased (Fig. 1).



Conclusion

The novel MVF with the combination of specific motor task might enhance the motor performance and cortical activation of stroke patients.

No conflict of interest

ISPR7-0168

Neurological and Mental Health Conditions - Stroke

ASSESSMENT OF AUTONOMY, GAIT AND BALANCE IN STROKE PATIENTS

S. Salah¹, M. Rekik¹, A. Jellad¹, Z. Ben Salah Frih¹

¹Fattouma Bourguiba University Hospital Monastir, physical Medicine and Rehabilitation, Monastir, Tunisia

Introduction/Background

The aim of the current study was to assess autonomy, gait and balance in ischemic stroke (IS) patients

Material and Methods

We conducted a cross-sectional study (January-August 2015), including 50 IS. The patients' functional status, gait quality and dynamic balance were assessed according to the Barthel index(BI), the New Functional Ambulation Classification(NFAC) and the Timed Up and Go Test(TUGT).

Results

The median age was 58 years, 30 men and 20 women. The stroke median duration was 2 years [6 months-7 years]. According to the BI, IS patients had varying degrees of autonomy, 80 % had a score between 80 and 100/100 showing a total independence. According to the NFAC, 40 % of the subjects could walk only on flat surface, climbing stairs was possible using a ramp or a cane, without assistance and/or surveillance by a third party. And 22% could walk in flat surface, climb stairs without using a ramp or a cane. In 72% of cases the TUGT was between 10 and 20 seconds corresponding to independence for basic transfers and ability to climb stairs and go out alone. A significant risk of fall was found in 28 % of cases (TUGT>20 seconds).

Conclusion

Two years after the occurrence of the IS, 20 to 40% of the evaluated subjects were still not completely independent; they showed difficulties climbing stairs with a significant risk of fall. The restoration of the autonomy and the rehabilitation of gait and balance of IS patients remains a fundamental objective; it depends on the precocity of the rehabilitation care.

No conflict of interest

ISPR7-0170

Neurological and Mental Health Conditions - Stroke

THE DORSAL LUMBER APPROACH IS MORE EFFECTIVE THAN THE INGUINAL APPROACH IN THE BOTULINUM TREATMENT OF THE ILIOPSOAS FOR REDUCING THE HIP FLEXOR STROKE SPASTICITY

Y. Kurihara¹

¹Tokyo Medical Center, Rehabilitation Medicine, Meguro-ku, Japan

Introduction/Background

Targeting muscles for hip flexor spasticity are the iliopsoas. At the inguinal lesion, a bundle of iliacus and the psoas major is easily to access and usually on a target. At the dorsal lumber lesion, lying the muscle belly of the psoas major but it is difficult to access because of deep lesion and near to other organs and not on a target.

Material and Methods

A 74-year-old man had developed spastic right hemiplegia after the left corona radiata cerebral infarction five years ago. The Brunnstrom stage of lower limb was at stage IV. His chief complaint was the right lower limb floating above the bed and the lower quadrant pain in the morning. He also complained right lower quadrant pain during walking. His right hip joint ROM was -15° extension on the lateral position. We planned to inject into the Botulinum toxin type A (BTA: Botox®) 80U into the iliopsoas by US guided and electrical stimulation. We performed in the inguinal approach in the initial treatment. After three months, the chief complaints recurred. We performed in the dorsal lumber approach in the second treatment.

Results

No complication of the both treatments. We evaluated two weeks after the both treatments. After the both treatments, his right lower limb wasn't floating. In the initial treatment, the right lower quadrant pain reduced on the spine position and remained during walking. His right hip joint ROM was -5° extension on the lateral position. In the second treatment, the right lower quadrant pain disappeared on the spine position and during walking. His right hip joint ROM was $+5^{\circ}$ extension on the lateral position. His right hip joint extended in his swing phase.

Conclusion

The dorsal lumber approach is more effective than the inguinal approach in the BTA treatment of the iliopsoas for reducing the hip flexor stroke spasticity.

No conflict of interest

ISPR7-0211

Neurological and Mental Health Conditions - Stroke

MODULATION OF RESTING-STATE NETWORKS BY TRANSCRANIAL DIRECT CURRENT STIMULATION PRECEDING FUNCTIONAL ELECTRIC STIMULATION THERAPY PROMOTES HAND REHABILITATION AFTER STROKE

C. Chen¹, C. Tang², J. Jia¹

¹Huashan Hospital- Fudan University, Department of Rehabilitation Medicine, Shanghai, China

²Beijing Normal University, State Key Laboratory of Cognitive Neuroscience and Learning, Beijing, China

Introduction/Background

Recent studies have provided preliminary evidence that the combined use of dual tDCS and physiotherapy, which could better facilitate arm recovery, in comparison to physiotherapy alone, in chronic stroke patients with mild to moderate paralysis. Thus, we applied the FET program as a peripheral sensorimotor activity, to shape the motor control of paretic hand following dual tDCS. Based on the sustained priming effect of tDCS-induced neural excitability, which in turn augments motor learning, we tested here whether the daily application of dual tDCS with task-oriented FET could promote the motor recovery of severe hand deficits in chronic stroke patients

Material and Methods

Fifteen chronic stroke patients, without active finger extension, underwent 20 sessions of dual tDCS with task-oriented FET. The motor function was assessed by Fugl Meyer Assessment of Hand+Wrist (FMA-HW) and Modified Ashworth Scale (MAS) before and after the intervention. Apart from the behavioral assessment of the paretic hand, resting-state fMRI was used to detect neural correlates of motor improvements.

Results

Synchronization changes of functional connectivity within resting-state networks in the ipsilesional precentral gyrus and contralesional middle frontal gyrus were positively correlated with the improvement of motor scores in FMA-HW and MAS, respectively. Moreover, the changes of functional network connectivity between the anterior default mode network and left frontoparietal network were associated with a better motor outcome in the FMA-HW test.

Conclusion

Our findings suggest that adding dual tDCS to prime FET program may be beneficial for recovering chronic stroke patients with severe hand dysfunction, and that the functional reorganization of resting-state networks might play a vital role in motor rehabilitation after stroke.

No conflict of interest

ISPR7-0214

Neurological and Mental Health Conditions - Stroke

EFFECT OF TRACHEOSTOMY ON SWALLOWING AND VOLUNTARY COUGH FUNCTION IN PATIENTS WITH STROKE

S.J. Lee¹, S.B. Kim¹, K.W. Lee¹, D.W. Kim¹, J. Kyeong Won¹

¹DONG-A UNIVERSITY HOSPITAL, Dept. Rehabilitation Medicine, Busan, Republic of Korea

Introduction/Background

Previous studies had shown that the interference of tracheostomy on swallowing; it may interfere directly in the pharyngeal phase of swallowing, so that increased risk of aspiration. And tracheostomized patients also cannot produce an effective cough and cannot be accrued sufficient cough flow.

The aim of this study was (1) to evaluate the characteristics of whom could remove tracheostomy tube, and (2) to investigate changes of swallowing and voluntary cough function before and after tracheostomy decannulation.

Material and Methods

We enrolled stroke patients who had tracheostomy tube. All patients underwent serial videofluoroscopic swallowing studies (VFSS) and peak flow meter through the oral interface to measure peak cough flows (PCF). These evaluations were done within 7 days before tracheostomy decannulation, and within 7 days after tracheostomy decannulation.

Swallowing function was evaluated using functional dysphagia scale (FDS), and penetration aspiration scale (PAS), based on the results of VFSS. PCF was used as a parameter to measure voluntary coughing ability. Mini-Mental State Exam (MMSE), Korean version of modified Barthel Index (K-MBI) also measured to assess cognitive function and self-reliance in daily living activities.

Results

Twenty three patients were enrolled in this study during 6 months follow up period, 14 patients were able to remove tracheostomy tube. Compared with patients who couldn't remove tracheostomy tube, patients who could remove were significantly younger, and showed higher values in MMSE, K-MBI and FDS ($p < 0.05$).

The FDS (oral and pharyngeal phase), PCF and K-MBI after tracheostomy decannulation were improved significantly compared to before tracheostomy decannulation ($p < 0.05$). However, PAS did not significantly changed in time.

Conclusion

This study showed that the patients who were younger, had better cognitive function were more considered to be a potential candidate for tracheostomy decannulation. Our results provided that more active attempt of tracheostomy decannulation is needed to achieve better rehabilitation goal in tracheostomized patients.

No conflict of interest

ISPR7-0215

Neurological and Mental Health Conditions - Stroke

COMBINED THERAPY WITH FUNCTIONAL ELECTRICAL STIMULATION AND STANDING FRAME IN STROKE PATIENTS.

S.J. Lee¹, K. Sang Beom¹, L. Kyeong Woo¹, P. Min Kyu², L. Joung Bok¹, P. Joo Won¹

¹DONG-A UNIVERSITY HOSPITAL, Dept. Rehabilitation Medicine, Busan, Republic of Korea

²DONG-A UNIVERSITY HOSPITAL, Dept. Clinical pharmacology, Busan, Republic of Korea

Introduction/Background

Recovery of postural stability following a stroke is an important factor for quality of life and functional improvement. During standing balance exercise, it is important to induce weight bearing exercise on their affected side. Actually, hemiparetic stroke patients have a tendency to stand only using their intact lower limb without using their affected side. Thus we hypothesized that if FES and standing frame exercise were applied simultaneously, the patients would have better outcome in postural stability.

The aim of our study is to investigate the therapeutic effects of combination FES and standing frame training for standing balance in subacute stroke patients.

Material and Methods

Patients who had hemiparesis and postural instability after unilateral MCA territory CVA were enrolled. They were randomly assigned to one of two groups; study group underwent FES on the quadriceps and tibialis anterior muscle with standing balance training simultaneously. And control group received standing frame training and FES separately. All participants received 30 sessions of therapy for 3 weeks.

Stability index in balance master and berg balance scale (BBS) were used to assess standing stability and balance. To evaluate patients' physical and cognitive function, manual muscle test, Korean version of modified Barthel index, and Korean version of mini mental status examination were used. All evaluations were measured before and after treatment.

Results

Twenty patients were enrolled, 10 patients in study group and 10 in control group. After treatment, all groups showed improvement in the scores postural stability, physical and cognitive functions. When changes of postural stability were compared between two groups, study group showed more significantly improvement than control group on the scores of BBS and stability index.

Conclusion

Our results showed the therapeutic effectiveness of combined therapy of FES and standing frame in subacute stroke patients. This protocol could save times, and is easy to apply in the clinical setting.

No conflict of interest

ISPR7-0223

Neurological and Mental Health Conditions - Stroke

THE EFFECT OF AEROBIC EXERCISE FOR POST-STROKE DEPRESSION : A SYSTEMATIC REVIEW AND META-ANALYSIS

Y.S. Min¹, O. Hyun-Min¹, K. Min-Gu¹

¹kyungpook national university hospital, rehabilitation department, Daegu, Republic of Korea

Introduction/Background

Physical inactivity and comorbid depressive symptoms are prevalent among patients with a stroke. The objective was to conduct a systematic review and meta-analysis of studies that examined the effects of structured exercise on depressive symptoms in stroke patients.

Material and Methods

We searched for published randomized controlled trials that evaluated the effect of structured aerobic exercise programs on depressive symptoms using PubMed, MEDLINE, Cochrane Library, Google Scholar, PsycINFO and Web of Science before November 1, 2015. Included articles required (1) randomized allocation to an aerobic exercise intervention or nonexercise comparison condition and (2) a depression outcome assessed at baseline and at mid- and/or postintervention. Hedges d mean effect sizes, a 95% confidence interval (CI) were computed, study quality was evaluated, and random effects models were used to estimate sampling error and population variance of the observed effects. I-squared (I²) for heterogeneity were estimated. Sensitivity analyses were conducted.

Results

Thirteen studies (n = 908) were included in the meta-analysis. Exercise resulted in less depressive symptoms immediately after the exercise program ended, standardized mean difference = -0.27 [95% CI = -0.43, -0.10], I² = 25.6%, p = 0.0018. Exercise appeared to have a positive effect on depressive symptoms in patients with post-stroke depression. Antidepressant medication use was not documented in the majority of studies and thus, its potential confounding interaction with exercise could not be assessed.

Conclusion

Aerobic exercise is a potential and essential treatment to reduce depressive symptoms in patients with stroke.

No conflict of interest

ISPR7-0228

Neurological and Mental Health Conditions - Stroke

EFFECTS OF “NOURISHING LIVER AND KIDNEY” ACUPUNCTURE THERAPY ON EXPRESSIONS OF BRAIN DERIVED NEUROTROPHIC FACTOR AND SYNAPTOPHYSIN AFTER CEREBRAL ISCHEMIA REPERFUSION IN RATS

W. Xia¹

¹Hubei Province Hospital of the Intergrated Chinese and Western Medicine, Department of Physical Medicine and Rehabilitation, Wuhan, China

Introduction/Background

To investigate effects of “nourishing liver and kidney” acupuncture therapy on expressions of brain derived neurotrophic factor (BDNF) and synaptophysin (SYN) in dentate gyrus of cerebral ischemia reperfusion in rats.

Material and Methods

Healthy adult male SD rats were randomly divided into sham operation group (n=32), model group (n=32), acupuncture group (n=32) and acupuncture control group (n=32). The middle cerebral ischemia reperfusion model was established. Acupuncture were performed in the acupuncture group and acupuncture control group with at acupoints of Taixi (K103), Taichong (ST09) of both sides, for 30min. The rats of each group were assessed with Modified neurological severity scores (mNSS) , the expressions of BDNF and SYN in dentate gyrus of hippocampal were detected with the method of immunohistochemical SP and Synaptic structure in hippocampus area was assessed morphologically and quantitatively at the 3th d, the 7th d and 14th d. The Morris water Maze (MWM) test was evaluated on the 14th d after acupuncture.

Results

In the acupuncture group of rats' nerve functional recovery were significantly better than that in the model group. The average MWM escape latency in the acupuncture group was shorter than in the model group. In acupuncture group the expressions of BDNF at the 7th d , the 14th d increased more significantly than those in the model group. In acupuncture group the expressions of SYN at the each time point increased more significantly than those in the model group. The post-synaptic density (PSD) were significantly increased and the synapse cleft width were narrower in the acupuncture group as compared with the other groups.

Conclusion

The “nourishing liver and kidney” acupuncture therapy has positive effects on behavioral recovery, learning and memory abilities.

No conflict of interest

ISPR7-0229

Neurological and Mental Health Conditions - Stroke

EFFECTS OF COMBINED ADELI SUIT AND NEURODEVELOPMENTAL TREATMENT IN STROKE PATIENTS WITH CEREBELLAR ATAXIA: A RANDOMIZED CONTROLLED PILOT STUDY

C. Guo^{1,2}, T. Wang^{1,2}, G. Liu³

¹The First Affiliated Hospital - Nanjing Medical University -, Department of Rehabilitation Medicine, Nanjing, China

²Jiangsu Province Hospital Changzhou De'an Rehabilitation Branch, Department of Rehabilitation Medicine, Changzhou, China

³Changzhou De'an Hospital, Department of Rehabilitation Medicine, Changzhou, China

Introduction/Background

Ataxia is one of the most common neurological signs after cerebellar stroke, which not only affects the safety and living quality of patients but also bring a heavy care and economy burden to their family. The Adeli suit therapy (AST) is a new approach towards the rehabilitation of cerebellar ataxia. Previously, the studies of AST were more about children with CP, clinical studies of AST involving rehabilitation on cerebellar ataxia were rarely reported for adult stroke. The purpose of this study was to compare the effects of combined Adeli suit and neurodevelopmental treatment (ASNT) with neurodevelopmental treatment only (NT) in stroke patients with cerebellar ataxia.

Material and Methods

Thirty-nine post-cerebellar stroke patients were matched by age and functional ability and randomly assigned to the ASNT and NT group. In ASNT group (n=20), a combined treatment with Adeli suit and neurodevelopmental treatment was administered for 6 weeks (2 times daily, 60 minutes each time, 5 days per week), while in NT group (n=19), neurodevelopment treatment was administered only during the same period. To compare the treatment, time up and go test (TUG, 3 meter), 10 meter walking test(MWT), Berg Balance Scale (BBS), International Cooperative Ataxia Rating Scale (ICARS) were measured at baseline and immediately after 6 weeks training.

Results

According to the first baseline measurement, no significant difference was found between the ASNT and NT group ($p>0.05$). After 6 weeks training, data analysis found significant increase of all parameters (TUG, 10MWT, BBS, ICARS) in the ASNT group and NT group ($p<0.05$), but the increase of the ASNT group is more significant compared to the NT group ($p<0.05$).

Conclusion

The ASNT proved to be superior to the normal neurodevelopment, suggesting AST can be a promising treatment option for cerebellar ataxia.

No conflict of interest

ISPR7-0234

Neurological and Mental Health Conditions - Stroke

THERAPEUTIC PATIENT EDUCATION (TPE) IN STROKE SURVIVORS: EFFICACY OF LAY - LOOK AFTER YOURSELF - SELF MANAGEMENT PROGRAM

R. Bardelli¹, S. Fugazzaro¹, M.A. Accogli¹, M. Denti¹, A. Altavilla¹, G. Maisto¹, E. Cavalli², D. Pagliacci³, S. Calugi⁴, S. Costi⁵, S. Cavazza⁶, C. Tedeschi¹, M. Taricco²

¹IRCCS Azienda Ospedaliera Arcispedale S.Maria Nuova, Neuromotor department, Reggio Emilia, Italy

²Azienda Ospedaliero-Universitaria S.Orsola-Malpighi, Elderly and Rehabilitation Department, Bologna, Italy

³ASL Livorno, Val di Cornia District, Livorno, Italy

⁴Università degli Studi di Bologna, Università degli Studi, Bologna, Italy

⁵Università degli Studi di Modena e Reggio Emilia, Physiotherapy Faculty, Modena, Italy

⁶Nuovo Ospedale Civile S.Agostino Estense, Neuromotor department, Baggiovara MO, Italy

Introduction/Background

Guidelines recommend Therapeutic Patient Education (TPE) in stroke patients, but there are no strong evidences of efficacy (variability in type, timing and setting of existing programs).

Aim: to develop and evaluate the efficacy of a standardized TPE program on empowerment of self-management (SM) and facilitation of social reintegration.

Material and Methods

Design: controlled clinical trial in 3 rehabilitation centers: S.Orsola Bologna (BO), Reggio Emilia (RE), Baggiovara (MO).

Patients: Usual Care (UC) phase: 10+10 (RE+MO); 20 (BO). Intervention phase: 120 intervention group (RE+MO); 120 control group (BO).

Inclusion criteria: first stroke, >18 ys, presence of caregiver, moderate-severe disability (MBI-Modified Barthel Index<70), no severe communication disability and cognitive impairment (MMSE-Mini Mental State Evaluation>15).

Primary outcome: patient perceived self efficacy (SSEQ-Stroke Self Efficacy Questionnaire)

Assessments: T0 (enrollment), T1 (inpatient rehabilitation discharge), T2 (50-60 days after discharge): SSEQ, MBI, Short Physical Performance Battery, Geriatric Depression Scale, SF-12, patient and caregiver's satisfaction, Caregiver Strain Index. At T2 also: % of homecoming, lenght of stay, territorial services use.

Results UC phase: statistical analysis confirmed homogeneity of the 3 centers.

A structured TPE intervention was set up, defining contents, timing, modality (group and individual sessions directed by rehabilitation specialists). The program is an adaptation of the Chronic Disease Self Management Program (Stanford) for stroke patients and caregivers. The focus is the training on goal setting and problem solving.

Intervention phase: is ongoing; 165 patients recruited (43 RE+ 20 MO, 102 BO) until now; we'll present preliminary efficacy data.

Conclusion

Compliance to the program is high (90.2%); instrument of goal-setting (Action Plan) is widely used (99.8%). We'll present updated data.

No conflict of interest

ISPR7-0247

Neurological and Mental Health Conditions - Stroke

EFFECTS OF THE REGIONS OF BRAIN STRUCTURE ON COGNITIVE FUNCTIONS IN STROKE PATIENTS

Y. Kyojun¹

¹Chungnam National University Hospital, Department of Rehabilitation Medicine, Daejeon, Republic of Korea

Introduction/Background

To evaluate the degree to which the paralysis of a dominant hand affects to perform cognitive function in sub-acute stroke patients

Material and Methods

We first recruited 307 patients with sub-acute hemiplegic stroke to transfer to the rehabilitation department from January, 2015 to February, 2016. Finally, 131 patients were dichotomized into two groups according to the sides of lesion (left and right hemisphere). Group 1 consisted of 52 patients whose strokes affected the dominant hand. Group 2 consisted of 79 patients whose strokes affected the non-dominant hand. And we divided into the regions of the damaged brain (cortical and subcortical area). The former consisted of 37 patients whose regions of the damaged brain were cortical area and the latter consisted of 94 patients whose regions of the damaged brain were subcortical area. The primary outcome measure was Rey Complex Figure Test, Digit Symbol Coding (DSC) and Trail Making Test (TMT).

Results

In comparison to Group 1 and Group 2, we did not find any statistically significant differences between the groups in Rey Complex Figure Test, Digit Symbol Coding and Trail Making Test. (Ray raw; $p=0.286$, Ray Z; $p=0.613$, DSC raw; $p=0.129$, DSC Z; $p=0.344$, TMT A; $p=0.036$, TMT AZ; $p=0.128$, TMT B; $p=0.028$, TMT BZ; $p=0.222$). And, there was no significant differences between the groups in the cortical regions.

Conclusion

The effect of paralysis on the dominant hand and performing cognitive tests in patients with sub-acute hemiplegic stroke was significantly different from the effect of paralysis on the dominant hand for performing TMT A and TMT B. The regions of the damaged brain was not significantly different from the effect of paralysis on the dominant hand. Likewise previous references, we found that the paralysis of a dominant hand may affect to perform cognitive function test in sub-acute stroke patients.

No conflict of interest

ISPR7-0265

Neurological and Mental Health Conditions - Stroke

**IS THERE INFLUENCE OF THE LOAD ADDITION DURING TREADMILL TRAINING ON
CARDIOVASCULAR PARAMETERS AND GAIT PERFORMANCE IN PATIENTS WITH STROKE?
A RANDOMIZED CLINICAL TRIAL**

T. Ribeiro¹, T. Silva¹, R. Felipe¹, E. Silva¹, M. Lacerda¹, A.P. Spaniol¹, A.R. Lindquist¹

¹Universidade Federal do Rio Grande do Norte, Departamento de Fisioterapia, Natal, Brazil

Introduction/Background

Although exercises involving both lower limbs are indicated for aerobic training, stroke patients have shown expressive asymmetry between the paretic and non-paretic lower limb (NPLL). Performing activities that stimulate the paretic limb during aerobic exercise may optimize training results. The aim of this study is to evaluate if there is influence of load addition on NPLL during treadmill training on cardiovascular parameters and gait performance of subacute stroke patients.

Material and Methods

38 stroke subjects with gait deficits were randomized into experimental group, which underwent treadmill training with a mass attached on NPLL (equal to 5% of body weight), and control group, which underwent only treadmill training. Interventions lasted 2 weeks (9 sessions). Main outcomes were heart rate, arterial blood pressure, gait speed and distance covered. Assessments occurred at rest, 10th and 20th minutes of the session and immediately after each session.

Results

After nine sessions, there was improvement in speed and walking distance in both groups. All cardiovascular parameters had showed no changes compared to 1st and 9th sessions and there were no differences between groups within each session.

Conclusion

Load addition on NPLL did not alter cardiovascular parameters and gait training provide better gait performance of subacute stroke patients, which indicates this therapy can be considered useful and safe for these patients.

No conflict of interest

ISPR7-0268

Neurological and Mental Health Conditions - Stroke

REHABILITATION PRACTITIONERS' PERCEPTIONS OF CLINICAL PRACTICE GUIDELINES FOR STROKE MANAGEMENT WHEN WORKING IN RURAL PRIMARY CARE IN SOUTH AFRICA

K. Sekome¹

¹University of the Witwatersrand, Physiotherapy, Johannesburg, South Africa

Introduction/Background

Stroke is one of the top leading causes of death worldwide but the largest burden related to this condition occurs in low and middle income countries. In 2013, stroke accounted for 82.4% of all deaths in South Africa and in 2008 stroke was responsible for 95 000 years lived with disability. In the absence of a pathological cure for stroke, the most effective management remains rehabilitation. The use of clinical evidence-based practice helps to ensure a uniform level of care across all health sectors. Studies report that the use of clinical practice guidelines amongst health care practitioners is very low and the reason for this is not well understood. The aim of this study was to explore rehabilitation practitioners' perceptions of clinical practice guidelines for stroke management when working in rural primary care hospitals in the Bushbuckridge local municipality in Mpumalanga province, South Africa.

Material and Methods

A qualitative study using purposive sampling was undertaken at three primary care hospitals to include sixteen participants. Face to face in-depth interviews were conducted. Data were transcribed verbatim by an independent transcriber and verified by the researcher. An inductive approach to qualitative data analysis was used to generate common themes and sub-themes.

Results

Analysis of the data revealed a total of seven themes: 1) Familiarity and application, 2) Guideline functions, 3) Value of guidelines, 4) Patient management conducts, 5) Barriers affecting guideline utilization, 6) Communication, content and design improvements, 7) Evaluations and staff training.

Conclusion

Rehabilitation practitioners in rural Bushbuckridge municipality have little knowledge about the clinical practice guidelines for stroke management. The study also revealed that although therapists reported the use of clinical practice guidelines beneficial for patient rehabilitation, the uptake was very low. This study also revealed that most therapists were not aware of the difference between a clinical practice guideline and a clinical protocol.

No conflict of interest

ISPR7-0273

Neurological and Mental Health Conditions - Stroke

PREDICTORS OF EARLY AMBULATION IN ISCHEMIC STROKE INPATIENTS

H. Amorim¹, D. Amaral¹, A.R. Almeida¹, S. Magalhães¹, M.J. Festas¹, F. Parada¹

¹Centro Hospitalar de São João, Serviço de Medicina Física e de Reabilitação, Porto, Portugal

Introduction/Background

Stroke is widely recognized as a major cause for morbidity. Ambulation is related to functional independence. Our aim was to evaluate possible early ambulation predictors in ischemic stroke patients.

Material and Methods

We conducted a retrospective study of an ischemic stroke population admitted to an inpatient rehabilitation department during a two year period. Information on vascular risk factors, previous comorbidities (Charlson index), stroke severity and classification and patient ambulation status (new functional ambulation category scale - nFAC) was collected. Results were presented as mean(standard deviation) or percentages, if variables were continuous or categorical, respectively; we used qui-square testing for qualitative and ANOVA testing for quantitative variables.

Results

106 patients were included. Most were male (58,5%). Mean age was 60,4(12,6). Charlson index was 4,8(2,7). Initial NIHSS score was 10,8(6,4). Major vessel atherosclerosis was the main cause for stroke (51,9%), 46,2% affected the dominant hemisphere, total anterior circulation ischemic (TACI) strokes were present in 42,5%. 74,5% of the patients gained some ambulation capacity after the inpatient rehabilitation period. Ambulation gain was 2,2(1,9) according to the nFAC scoring. Patients who were employed, had better previous function, non-TACI stroke and lower initial NIHSS score had more probability of some ambulation improvement ($p<0,05$). Lower NIHSS and less comorbidity were also connected with a higher ambulation gain ($p<0,05$).

Conclusion

A previously active, healthy and autonomous lifestyle and a less severe stroke are associated to an early improvement in ambulation in acute stroke patients admitted an inpatient rehabilitation unit.

No conflict of interest

ISPR7-0274

Neurological and Mental Health Conditions - Stroke

THE IMPACT OF THE CHARLSON COMORBIDITY INDEX AS A PREDICTOR OF ISCHEMIC STROKE PATIENTS OUTCOME: A RETROSPECTIVE ANALYSIS

D. Amaral¹, H. Amorim¹, A.R. Almeida¹, S. Magalhães¹, M.J. Festas¹, F. Parada¹

¹Centro Hospitalar de São João, Serviço de Medicina Física e de Reabilitação, Porto, Portugal

Introduction/Background

Stroke is a major health problem worldwide. Understanding the factors that affect post-stroke outcome is important. Charlson Comorbidity Index (CCI) is a measure of comorbidity that has been used in the evaluation of stroke outcome.

The aim of our study was to evaluate the impact of CCI in the length of stay and discharge destination in ischemic stroke inpatients.

Material and Methods

We conducted a retrospective cohort study of inpatients with ischemic stroke admitted in our Physical and Rehabilitation Medicine (PRM) Department between September 1st 2014 and August 31th 2016. Age, gender, cardiovascular risk factors and stroke severity and classification were evaluated. For each patient, we analyzed CCI obtaining 2 groups: no/low comorbidity (CCI<3) and high comorbidity (CCI ≥3). The length of stay was calculated using the dates of hospitalization and discharge. Discharge destination was split between home discharge or transfer to other inpatient institution.

Results

106 patients were included, with a male gender predominance 62(58,5%). The mean age of the inpatients was 60,4(12,6). Total Anterior Circulation Infarct was the main type of stroke, 45(42,5%). The mean of the length of stay was similar among the groups CCI<3 and CCI ≥3, being 33,4 and 30,4, respectively. CCI didn't also have an impact in the discharge destination.

Conclusion

Several studies have analyzed the impact of CCI as a predictor of outcomes in post-stroke period but with no consensual results. In our study the CCI did not influence the length of stay and the discharge destination of acute stroke patients.

No conflict of interest

ISPR7-0282

Neurological and Mental Health Conditions - Stroke

EFFECTS OF ROBOT ASSISTED GAIT TRAINING THERAPY ON WALKING FUNCTION IN STROKE PATIENTS

M. Aktimur Yegin¹, B. Erhan¹, B. Gündüz¹

¹Istanbul Physical Medicine and Rehabilitation Training and Research Hospital, Physical Medicine and Rehabilitation, istanbul, Turkey

Introduction/Background

In this study we aimed to investigate and compare whether combined application of robot assisted walking therapy (using Locomat, Hocama Inc) and conventional exercise therapy provided additional benefits to gait velocity and functional outcome of patients with stroke. The study was designed as prospective, controlled, clinical trial.

Material and Methods

Forty eight patients who have been diagnosed hemiplegia after stroke for more than 3 months over stroke attack were included in the study. Patients were divided into two groups; Conventional exercise and 10 session of robot assisted gait therapy were performed for group 1, only conventional exercise therapy was performed in group 2. We used Functional Ambulation Scale (FAS), cadence and 10mt walking test, Time up and Go Test, Brunnstrom Motor Recovery, Modified Ashworth Scale (MAS), Barthel Index, Visual Analog Scala (VAS) for evaluation of walking function, motor development, muscle tone, daily living activities and pain before and after the treatment.

Results

There was no significant difference in sex, education, time after stroke, lesion side and lesion type. In both groups there was significant improvement for FAS, Brunnstrom Motor Recovery, Barthel Index, Time up and Go Test, 10 mt walking test and cadence but there was no significant changes in muscle tone and VAS. Difference in Brunnstrom, FAS, Time up and Go Test, Barthel Index, 10 mt walking test and cadence before and after therapy was higher in study group than control group. There was no significant difference in result parameters of VAS and MAS between two groups

Conclusion

We can say that robot assisted gait therapy combined with conventional exercise is effective in increasing gait velocity and functionality and gaining the independence in gait in hemiplegic ambulatory patients who have treated inpatient clinic. Further bigger and controlled studies are still required to know appropriate patient, time and protocol design.

No conflict of interest

ISPR7-0297

Neurological and Mental Health Conditions - Stroke

DEVELOPMENT OF A CLINICAL TOOL FOR MEASURING DYNAMIC BALANCE FUNCTION BY COG-COP RELATIONSHIP

M. Mukaino¹, F. Matsuda², R. Sassa³, K. Ohtsuka², N. Kumazawa⁴, S. Tanabe², E. Saitoh¹

¹Fujita Health University, School of Medicine- Rehabilitation Medicine I, Toyoake, Japan

²Fujita Health University, Faculty of Rehabilitation- School of Health Sciences, Toyoake, Japan

³Fujita Health University Hospital, Rehabilitation, Toyoake, Japan

⁴Fujita Health University, Graduate School of Health Sciences, Toyoake, Japan

Introduction/Background

Recent clinical studies have shown the complexity of the system for balance maintenance. Understanding of this system is still limited, especially for dynamic balance function, which might due to the lack of simple objective measurement of dynamic balance ability. Thus, the purpose of the present study was to develop an objective method to quantify balance ability.

Material and Methods

In this study, we attempted to develop a system for the objective measurement of dynamic balance function from the relationship between center of gravity (COG) and center of pressure (COP) of the patients. The subjects comprised 31 hemiparetic post-stroke patients and six healthy subjects. Simultaneous measurement of COG and COP was performed using a three-dimensional motion analysis system (Kinematracer, KisseiComtec, Japan) combined with force plate analysis. As indices to evaluate dynamic balance function, the averaged $|COP| - |COG|$ subtraction value during stance phase (ASV) were calculated. In order to evaluate the validity of the measurement, the Berg Balance Scale, a frequently used clinical balance scale, was used.

Results

The results showed significant differences between the healthy subjects and balance-impaired patients in ASV. The partial correlation coefficient removing the effect of step width was 0.76. A strong correlation was observed between COG velocity and ASV.

Conclusion

These results encourage further investigation into the feasibility of using COG-COP relationship for objective measurement of dynamic balance function.

No conflict of interest

ISPR7-0308

Neurological and Mental Health Conditions - Stroke

EXAMINING STRUCTURES AND PROCESSES FOR STROKE CARE DELIVERY: ARE WE MEETING RECOMMENDED STROKE BEST PRACTICES ?

L. Poissant¹, A. Rochette¹, S. Ahmed², M.C. Hallé²

¹Université de Montréal, School of Rehabilitation, Montreal, Canada

²McGill University, School of P&OT, Montreal, Canada

Introduction/Background

Strong evidence highlights the benefits of organized services from acute care to rehabilitation centres to offer optimal care management across the continuum. Despite published recommendations on stroke care, health structures and processes have been slow to adapt their care delivery. This study aims to describe the actual structures and processes in order to identify gaps with Canadian Stroke Best Practices.

Material and Methods

We developed an online survey based on structures and processes recommended by the Canadian Stroke Best Practices. For example, we documented utilisation of care protocols, team composition, care indicators (e.g. length of stay (LOS), frequency of interventions), patient participation to team meetings, etc. The survey was distributed to 63 stroke managers and 18 health professionals from a potential pool of 95 organisations.

Results

In total, 50 surveys were completed (6 were partially completed) for a 57% response rate. The majority of surveys (72%) were completed by managers working in acute care organisations (67%) and rehabilitation centres (33%). Preliminary analyses reveal that; 33% of acute care hospitals have a dedicated stroke unit, an average LOS of 15.06 (sd:9.62) days, and less than 50% met the recommended team composition. In comparison, rehabilitation centres reported a LOS of 61.82 (35.94) days, and over 75% had complete interdisciplinary teams. Both acute care hospitals and rehabilitation centers reported low utilisation of tele-stroke (29.3 and 33.3% respectively).

Conclusion

This study demonstrates the presence of gaps between service organisation and Stroke recommendations highlighting the need for additional support or resources to reach optimal stroke care delivery.

No conflict of interest

ISPR7-0323

Neurological and Mental Health Conditions - Stroke

EMG BIOFEEDBACK FOR UPPER LIMB REHABILITATION IN CHILDREN AND ADOLESCENTS WITH HEMIPARESIS

D. Valencia Valencia¹, O. Silva Caicedo²

¹Universidad Nacional De Colombia - Fundación Hospital La Misericordia, medicina física y rehabilitación, Bogota, Colombia

²Universidad Nacional de Colombia, medicina física y rehabilitacion, bogota, Colombia

Introduction/Background

Background and aims

EMG Biofeedback or neuromuscular reeducation seeks to improve motor function. It allows discrimination between different types of muscle activity demonstrating its effectiveness on motor function recovery, postural symmetry and treatment of spasticity.

Material and Methods

Methods

This study aims to approximate the impact of its application by measuring spasticity, range of motion and muscle contraction in upper limb in children and adolescents with hemiparesis. Surface electrodes were placed on the muscles and by visual (display) or audio (speaker) information the patient recognized the useful movement. Variables considered were the Ashworth scale, range of movement, and muscle contraction measured in mV. Statistical analysis was performed using SPSS 20. Variables were compared using the Student t test for paired samples and independent variables. The treatment took 20 sessions, variables were measured before and after. Children continued with the rehabilitation program in addition to intervention with biofeedback. **Results**

Results

5 children complete the criteria for inclusion and exclusion of the study; four girls and a boy. Average age 12.4 years (± 2.7). Less tone was found in two points on the Ashworth scale; improved shoulder flexion mobility arches on average 20 degrees and elbow flexion on 35 degrees. The improvement of the contraction of the muscles involved averaged 125 mV.

Conclusion

Conclusions

Decreased tone, improvement in range of movement and muscle contraction in the upper limb involved, meaning an effective tool in rehabilitation program of the upper limb in children and adolescents

No conflict of interest

ISPR7-0332

Neurological and Mental Health Conditions - Stroke

PHYSIOLOGICAL ISCHEMIC TRAINING PROMOTES BRAIN COLLATERAL FORMATION AND IMPROVES FUNCTIONS IN PATIENTS WITH ACUTE CEREBRAL INFARCTION

L. Xiao¹

¹The first affiliated hospital of Nanjing Medical University, Rehabilitation department, Nanjing, China

Introduction/Background

To study the effectiveness and mechanisms of physiological ischemic training (PIT) on brain cerebral collateral formation and functional recovery in patients with acute cerebral infarction.

Material and Methods

Twenty patients with acute cerebral infarction were randomly assigned to either PIT group (n=10) or control group (n=10). Both groups received 4 weeks of routine rehabilitation therapy, while an additional session of isometric handgrip induced PIT was prescribed for patients in the PIT groups. The Fugl-Meyer assessment (FMA), the Modified Barthel Index (MBI) and SF-36 were applied for the evaluation of motor impairment, activity of daily living and quality of life at the baseline and endpoint. MRI was applied to detect the collateral formation in the brain. The concentration of VEGF and EPCs number in plasma were also tested at the endpoint.

Results

As compared to the control group, the score of FMA and SF-36 in PIT group was significantly higher, while no significant difference was detected between groups in terms of MBI. The CBF level was even higher in the PIT group as compared to that in the control group after 4 weeks training. The same situations were also found in the plasma VEGF and EPCs assessment. In addition, positive correlations were found between FMA score and CBF level ($r=0.686$, $P<0.01$), CBF level and VEGF concentration ($r=0.675$, $P<0.01$), and VEGF concentration and EPC number ($r=0.722$, $P<0.01$).

Conclusion

PIT may be effective in improve the motor function through VEGF and EPCs induced brain collateral circulation formation.

No conflict of interest

ISPR7-0336

Neurological and Mental Health Conditions - Stroke

BALANCE TRAINING IN POST-STROKE HEMIPARESIS WITH VIRTUAL REALITY USE

G.M. MOREIRA¹, I.T. MACHADO¹, E.M.R.D. LIMA¹, G.F. DEVETAK², E.F. MANFFRA²,

A.P.C. LOUREIRO¹

¹Pontifícia Universidade Católica do Paraná, Physiotherapy department – School of Life Sciences, Curitiba, Brazil

²Pontifícia Universidade Católica do Paraná, Graduate Program on Health Technology, Curitiba, Brazil

Introduction/Background

The somatosensory and motor impairments caused by stroke compromise control of balance and increase the risk of falls. Virtual Reality (VR) has been associated to traditional Physical Therapy to promote motor rehabilitation in this population. The aim of this study was to investigate the effects of VR on balance of post-stroke hemiparesis.

Material and Methods

28 volunteers were distributed by convenience in experimental (EG) and control (CG) groups, both with n=14. The EG had 8 men, 6 women of 52.9 ± 16.0 years old and 21.1 ± 17.9 months post stroke. The CG had 7 men, 7 women with 59.1 ± 10.1 years old and 16.2 ± 20.1 months post stroke. Both groups completed 10 conventional physical therapy interventions of 40 minutes each, twice a week. The EG received 30 additional minutes of therapy with Nintendo® Wii Fit Plus equipment, playing three games: Tightrope, Balance Bubble and Penguin Slide. The volunteers were evaluated before (Ev.1) and after intervention (Ev.2) with the Postural Assessment Scale for Stroke Patients (PASS). The Mann-Whitney test was used to compare groups and the Wilcoxon test for comparing moments within each group. The level of significance was 0.05.

Results

The mean values of each group and moment are shown in Table 1.

Table 1 - Mean values of PASS score.

	Ev.1	Ev.2	
	Median (Min-Maxi)	Median (Min-Maxi)	p value (Wilcoxon Test)
Experimental Group	29 (17-35)	33 (26-36)	0,005
Control Group	23 (14-36)	29 (19-36)	0,005
p value (Mann Whitney Test)	0,104	0,044	

Conclusion

Given the increase in total scores of the EG, it is concluded that the use of RV associated with physical therapy contributes to improvement in balance of stroke patients after training.

No conflict of interest

ISPR7-0339

Neurological and Mental Health Conditions - Stroke

STARTLING ACOUSTIC STIMULI SUPPRESS MOTOR CORTICAL ACTIVITY AT REST, BUT NOT DURING VOLUNTARY CONTRACTION IN HEALTH AND STROKE SUBJECTS

S. Li¹, Y.T. Chen¹, S. Li¹, P. Zhou¹

¹The University of Texas McGovern Medical School, PM&R, Houston, USA

Introduction/Background

It is known that a conditioning Startling acoustic stimulus (SAS) at 50ms prior can cause a transient suppression of transcranial magnetic stimulus (TMS)-induced motor evoked potential (MEP) at rest in healthy subjects. The induced MEP reduction was attributed to reticulo-cortical inhibition. The purpose of this study was to determine whether a conditioning SAS has different effect at rest and during voluntary contraction in healthy and stroke subjects.

Material and Methods

TMS was delivered to the hot spot with and without a conditioning SAS (50ms prior) for left biceps in eleven healthy and non-impaired biceps in eleven stroke subjects. TMS-induced MEP, TMS-induced force increment and silent period were used to determine the effect of conditioning SAS.

Results

At rest, the MEP was smaller with a conditioning SAS for both healthy ($0.51 \text{ mV} \pm 0.36 \text{ mV}$ V.S. $0.72 \text{ mV} \pm 0.52 \text{ mV}$, $p < 0.05$) and stroke ($0.90 \text{ mV} \pm 0.77 \text{ mV}$ V.S. $1.14 \text{ mV} \pm 0.94 \text{ mV}$, $p < 0.05$) subjects. During voluntary elbow flexion tasks, there were no significant differences in the induced force increment and MEP for both healthy and stroke subjects with and without a conditioning SAS. However, a conditioning SAS resulted in a significant shortening of the MEP silent period for both healthy ($182 \text{ ms} \pm 23.89 \text{ ms}$ with SAS vs. $193.45 \text{ ms} \pm 31.27 \text{ ms}$ without SAS) and stroke ($173.18 \text{ ms} \pm 23.93 \text{ ms}$ with SAS vs. $182.45 \text{ ms} \pm 22.06 \text{ ms}$ without SAS) subjects ($p < 0.05$).

Conclusion

Our results showed a similar pattern of SAS-induced transient suppression of motor cortical activity at rest, but not during voluntary contraction in both healthy and stroke subjects. Furthermore, a similar pattern of silent period shortening in healthy and stroke subjects suggest that a conditioning SAS has a separate facilitatory effect on spinal motor neurons via activation of descending reticulospinal projections.

No conflict of interest

ISPR7-0355

Neurological and Mental Health Conditions - Stroke

RELIABILITY OF A GAIT EVALUATION METHOD.

F.G. Witte¹

¹*CIAREC, Physical Therapy, CABA, Argentina*

Introduction/Background

Gait is the natural way human beings move from one point to another. The pattern of gait is the outcome of a complex interaction between the many neuromuscular and structural elements of the locomotor system. Gait evaluation is a fundamental tool which allows an objective and quantitative assessment of this activity, in addition it has clinical applications in teaching and research analysis. Over time and because of technological breakthroughs, different gait evaluation methods have been developed, incorporating more complex systems, which -in turn- caused this tool to be used only in a few rehabilitation centers. Therefore, gait evaluation turned into something difficult to achieve, and may not be applied in rehabilitation daily practice.

Objective: To assess the reliability of a low-cost gait evaluation method.**Material and Methods**

A group of 33 individuals was evaluated, comprised by 18 females and 15 males, ranging from 20 to 59 years old, with an average of 34; none of them had neither diseases nor motor disorders that could affect gait at the time they were evaluated. The participants were filmed at their frontal and sagittal plane while completing 10 laps of walk across a path of 10 m, marching at a free and comfortable speed for them. Heart rate was recorded both at rest and after the physical activity.

Results

The average values obtained were: cadence: 120.5 steps/min; speed: 1.4 m/sec; stride: 1.4 m; cycle time: 0.99 sec; PCI: 0.22 beats/m.

Conclusion

The data obtained in this study proves the method is reliable, since the values are all within normal ranges, as per consulted literature.

No conflict of interest

ISPR7-0371

Neurological and Mental Health Conditions - Stroke

DEVELOPMENT OF A COMPUTERIZED ADAPTIVE TEST ASSESSING HEALTH LITERACY IN PATIENTS WITH STROKE

W.H. Hou¹, Y.J. Huang², C.Y. Li³

¹Taipei Medical University, School of Gerontology Health Management, Taipei, Taiwan R.O.C.

²National Taiwan University, School of Occupational Therapy- College of Medicine, Taipei, Taiwan R.O.C.

³National Cheng Kung University, Department and Institute of Public Health, Tainan, Taiwan R.O.C.

Introduction/Background

Health literacy (HL) not only enables stroke patients' effective communication, participation and cooperation with clinicians in healthcare processes, but is also a prerequisite for establishing patient-centered care. The 47-item European HL Survey Questionnaire (HLS-EU-Q47) is a comprehensive and recommended measure of HL. We aimed to develop a computerized adaptive testing system of the HLS-EU-Q47 (CAT-EHL) to efficiently and reliably assess HL in stroke patients.

Material and Methods

We first examined the model fitting of the HLS-EU-Q47 and calibrated the item parameters using Rasch analysis. Second, we conducted a simulation study to determine the stopping rules and explore the performance of the CAT-EHL. We compared the reliability and number of items needed for administration with the 5 pre-specified levels of limited reliability increase to examine the performance of the CAT-EHL. The results were used to determine the stopping rule of the CAT-EHL.

Results

A total of 311 stroke patients participated in the study. All 47 items fitted the Rasch model's assumptions. The LRI of 0.005 after testing an additional item performed best among the criteria and was used as the stopping rule. The CAT-EHL reached an average reliability of 0.90 (range: 0.66-0.94). Nearly all (99.3%) patients achieved good reliability (≥ 0.70) and about 3 quarters (73.6%) of the patients achieved excellent reliability (≥ 0.90). On average, 12.5 items were needed to administer the CAT-EHL.

Conclusion

The CAT-EHL showed efficient and precise assessment of stroke patients' HL. The CAT-EHL has great potential for improving the efficiency of clinical practice to assess the HL of patients with stroke.

No conflict of interest

ISPR7-0382

Neurological and Mental Health Conditions - Stroke

BALANCE IMPROVEMENT EFFECT OF NEWLY DEVELOPED 3-DIMENSION LUMBAR STABILIZATION TRAINING SYSTEM IN STROKE PATIENTS

H.N. Lee¹, M.H. Ko¹

¹Chonbuk National University Hospital, Physical medicine and rehabilitation, Jeonju-si, Republic of Korea

Introduction/Background

To investigate effect of newly developed 3-dimension Lumbar Stabilization Training System (Spine Balance 3D[®]) for balance ability in stroke patients.

Material and Methods

Prospective, randomized controlled trial was conducted. Twelve chronic (more than 6 months) hemiplegic patients who were capable standing with or without assistive devices participated in this study. The chronic hemiplegic patients were randomized into two groups: experimental or control group. In the experimental group of patients, balance training was performed using newly developed Spine Balance 3D. In the control group of patients, direction exercise was performed using well-known Biodex Balance System SD.

Participants were pre-evaluated with manual muscle test (MMT), Berg balance test (BBT), 10m walking test (10mWT), Time up and go test (TUG), Functional reach test (FRT), questionnaire about Korean version of fall efficacy scale-international (KFES-I) and balance score evaluated by Spine Balance 3D and Biodex Balance System SD. In Both groups, participants performed balance training using each machine for 30 minutes, three days a week for seven weeks and then, post-evaluation were performed.

Results

Seven subjects were randomly allocated to experimental group and five to the control group. BBT, 10mWT, FRT, TUG, KFES-I, and balance score evaluated by Spine Balance 3D were significantly improved in the experimental group ($p < 0.05$). While in the control group, only BBT, TUG and KFES-I were significantly improved.

Conclusion

In hemiplegic patients, newly developed Spine balance 3D training system showed much improvement in balance ability compared to conventional balance training system. In conclusion, newly developed 3-dimension spine balance is considered to be a useful system for functional improvement in hemiplegic patients.

No conflict of interest

ISPR7-0384

Neurological and Mental Health Conditions - Stroke

MALNUTRITION FOLLOWING STROKE IN A REHABILITATION UNIT: FREQUENCY AND ASSOCIATED RISK FACTORS

A.A. K uc kdeveci¹, D. R stemova Bayraktar¹, A.H. Elhan², S. Kutlay¹

¹Ankara University- Medical Faculty, Department of Physical Medicine and Rehabilitation, Ankara, Turkey

²Ankara University- Medical Faculty, Department of Biostatistics, Ankara, Turkey

Introduction/Background

Reported prevalence of malnutrition following stroke varies widely. The aim of this cross-sectional study was to investigate the frequency of malnutrition and its associated risk factors in stroke patients admitted for inpatient rehabilitation.

Material and Methods

Patients' nutritional status was determined by the amount of weight loss and body mass index. All patients were questioned and evaluated regarding the parameters which might be associated with malnutrition, including demographic, clinical, and biochemical data as well as functioning by Functional Independence Measure (FIMTM) and global disability level by Modified Rankin Scale.

Results

71 patients (mean age 60.2±13.8 years, 43% male, median time since stroke 6.2 months) were included. 22.5% of the patients were malnourished. In the malnourished group, time since stroke was shorter, motor functioning (motor FIM) and global disability levels were worse ($p<0.05$). Patients who had previous history of pneumonia or pressure sores, whose feeding method was Nasogastric/PEG and whose mid-upper arm circumference (MUAC) and serum prealbumin levels below the cut-off were more prevalent in the malnourished group ($p<0.05$). In univariate regression analysis, time since stroke (1-12 month), educational level (university or higher), previous history of pneumonia or pressure sores, MUAC (≤ 25.5 cm), method of feeding (Nasogastric/PEG) and serum prealbumin (≤ 0.18 g/L) were found to be significant risk factors. Multiple regression analysis revealed that time since stroke ($p=0.010$), MUAC ($p=0.007$) and serum prealbumin ($p=0.012$) were independent risk factors which could predict malnutrition risk.

Conclusion

Frequency of malnutrition was 22.5%. Time since stroke less than 12 months, MUAC, and serum prealbumin levels below the cut-off were found as independent risk factors for malnutrition.

No conflict of interest

ISPR7-0394

Neurological and Mental Health Conditions - Stroke

THE USE OF HELICOBACTER PYLORI RAPID TEST IN THE PATIENTS UNDERGOING STROKE REHABILITATION

I.S. Stratulat¹

¹"Gr. T. Popa" University of Medicine and Pharmacy, Medical Rehabilitation, Iasi, Romania

Introduction/Background

Asymptomatic digestive disorders in patients admitted to the rehabilitation services raise issues about diagnosis and treatment, especially in patients undergoing post stroke rehabilitation. The need for correct management in the first 24-48 h of hospitalization completes the treatment plan for digestive-masticatory function and metabolic support.

Material and Methods

We performed a retrospective cohort study of 32 ischemic stroke patients. We used a strip test (MedPharm® Rapid Test) for Helicobacter pylori infection, during post-acute rehabilitation. All patients have been informed about the test and signed an informed consent.

Results

From the 32 patients tested, 15 (48%) had digestive symptoms at admission and 16 (50%) were seropositive. Among the seropositive group, the average age was higher and there was a higher number of medical complications, co-morbidities and higher prevalence of digestive history and symptoms (56%).

Conclusion

The prevalence of Helicobacter pylori infection in patients with post-acute and chronic stroke demonstrates the utility of testing. In the absence of guidelines for the management of patients undergoing post-stroke rehabilitation, standardized procedures are needed. For digestive disorders, testing for Helicobacter pylori is an important first step in the evaluation and treatment of stroke patients. Testing for HP, along with the clinical examination and history, also optimizes the specific evaluation and treatment of stroke patients during rehabilitation, insuring both the biological and psychological individualized support these patients need.

No conflict of interest

ISPR7-0403

Neurological and Mental Health Conditions - Stroke

THE APPLICATION OF MI-VR-VISUAL FEEDBACK-BASED BCI-FES IN HAND REHABILITATION OF STROKE

S. Chen¹, Z. Qiu², J. Jin², J. Jia¹

¹Huashan Hospital- Fudan University, Rehabilitation Medicine, Shanghai, China

²East China University Of Science and Technology, Information Science and Engineering, Shanghai, China

Introduction/Background

Stroke is a disease with high morbidity all around the world. The patients commonly have motor dysfunction and some patients usually can't get good recovery. As is known to all, the hand dysfunction is a key and difficult point in treatment. Due to this demand, brain computer interface(BCI) is increasingly developing and constantly used in rehabilitation especially in hand rehabilitation of stroke.

Material and Methods

We use motor imagery-visual reality(MI-VR) visual feedback-based BCI functional electrical stimulation(FES) to treat the stroke patients with hand dysfunction. Using electroencephalogram(EEG) to recognize the analysis results and patients' positive motor imagery to control bilateral FES in forearms, it produces a tactile sense feedback by trigger motion of wrist extension.





Results

After a period of time of BCI training, the patient's recognition rate improves. The brain activation is enhanced and the cortex plasticity improves. The state of hand function of the patient recovers to some extent and the ability in ADL is also improved.



Conclusion

The MI-VR-visual feedback-based BCI-FES plays an important role in hand rehabilitation of stroke patients. By this means, patients have great interest and are more willing to participate in the treatment. It may be a good BCI intervention paradigm in the future.

No conflict of interest

ISPR7-0418

Neurological and Mental Health Conditions - Stroke

BALANCE AND GAIT IMPROVEMENT EFFECT OF NEWLY DEVELOPED 3-DIMENSION LUMBAR STABILIZATION TRAINING SYSTEM IN STROKE PATIENTS

H.N. Lee¹, J.Y. Chun¹, J.H. Seo¹, S.H. Park¹, Y.H. Won¹, G.W. Kim¹, M.H. Ko¹

¹Chonbuk National University Medical School, Physical Medicine and Rehabilitation, Jeonju, Republic of Korea

Introduction/Background

The aim of this study was to investigate the effect of newly developed 3-dimension lumbar stabilization training system (Spine Balance 3D[®]) for balance and gait abilities in stroke patients.

Material and Methods

Prospective, randomized controlled trial was conducted. Fourteen chronic (more than 6 months) hemiplegic patients were randomly assigned to two groups: experimental (n=14) or control group (n=14). In the experimental group of patients, balance training was performed using newly developed Spine Balance 3D. For control group, training was performed using well-known Biodex Balance System. In both groups, participants performed training using each machine for 30 minutes a day, three days a week for seven weeks. Berg balance test (BBT), 10m walking test (10mWT), Time up and go test (TUG), Functional reach test (FRT), questionnaire about Korean version of fall efficacy scale-international (KFES-I) and trunk muscle strength were evaluated before and after 7 weeks of intervention.

Results

10mWT was significantly improved ($p=0.001$) in experimental group (using the Spine Balance 3D[®]) but not in control, and core muscle strength was more improved in the experimental group. BBT, FRT, TUG, and KFES-I were improved in both group after 7-week balance training.

Conclusion

In hemiplegic patients, newly developed Spine Balance 3D[®] showed much more improvement in balance and gait function compared to conventional balance training system. We suggest the newly developed Spine Balance 3D[®] can be a useful therapeutic tool for balance and gait rehabilitation. To prove the effect of that system, a large scale randomized controlled study is needed.

(This research was supported by a grant of the Korea Health Technology R&D Project through the Korea Health Industry Development Institute (KHIDI), funded by the Ministry of Health & Welfare, Republic of Korea (grant number : HI15C1529).)

No conflict of interest

ISPR7-0436

Neurological and Mental Health Conditions - Stroke

THE ASSOCIATION BETWEEN HEART RATE VARIABILITY AND WALKING AMONG PATIENTS POST STROKE, SUB-ACUTE STAGE

O. Shapira-Vadler¹, M. Katz-Leurer², I. Treger³

¹Loewenstein Rehabilitation Center, Physical Therapy, Raanana, Israel

²Tel-Aviv University, Physical Therapy Department, Tel-Aviv, Israel

³Soroka Medical Center, Rehabilitation, Beer-Sheva, Israel

Introduction/Background

To describe and compare the rate of change of motor performance and heart rate variability (HRV) during the first month in rehabilitation post a stroke. To assess the contribution of HRV parameters assessed at the beginning of rehabilitation period to predict walking performance one month later.

Material and Methods

A total of 23 patients post first event ischemic stroke at the sub-acute phase participated in a follow-up study. All patients underwent motor, function, heart rate (HR) and HRV assessments, on average 20 days and 50 days post event.

Results

At baseline, positive, moderately strong associations ($0.4 < r_s < 0.5$) were noted between HRV values and motor and functional abilities. A significant improvement was noted in the functional parameters during the follow-up period, while no such change was noted in the HRV parameters. HRV values were the only baseline characteristics associated with the 6 minute walk test a month later. HRV parameters at baseline differed significantly between those who achieved functional walking distance (>400 m) (16.3 ± 7.6 ms') vs. those who did not (11.1 ± 5.7 ms') at the end of follow up ($p < 0.05$).

Conclusion

Patients post first event stroke exhibit a significant motor and functional improvement during the sub-acute phase, while no change was noted in their HRV parameters. In addition, time domain HRV parameters at baseline were the only parameters that predicted functional walking achievement at the end of follow up which indicates a need for future research.

No conflict of interest

ISPR7-0438

Neurological and Mental Health Conditions - Stroke

VASCULAR COGNITIVE IMPAIRMENT IN STROKE REHABILITATION

S. Maeshima¹, S. Okamoto¹, O. Hideto¹, S. Shigeru¹, O. Aiko²

¹*Fujita Health University, School of Medicine, Tsu, Japan*

²*National Center for Geriatrics and Gerontology, Rehabilitation Medicine, Obu, Japan*

Introduction/Background

Vascular cognitive impairment (VCI) is a major inhibitor of stroke rehabilitation, and it is an important factor that determines the outcome of stroke patients. However, there were few reports that discussed the frequency and etiology of the VCI in rehabilitation patients. To clarify whether there are how VCI, we investigated the physical and cognitive function of stroke patients at a convalescence rehabilitation ward.

Material and Methods

One hundred thirty-two patients with cerebral stroke referred to our rehabilitation hospital were evaluated. Their mean age was 66.2 ± 13.1 years, and patients with 76 infarction and 56 hemorrhage were included. The period from the onset to convalescent rehabilitation ward was 30.3 ± 14.0 days. We diagnosed the VCI in accordance with the criteria of the NINDS-AIREN. VCI was classified as mild cognitive impairment (VaMCI) and vascular dementia (VaD). Age, duration from stroke onset to transfer and length of hospital stay, neurological status, cognitive function (memory, attention, visuospatial, language, performance), activities of daily living(ADL) were examined.

Results

VCI was found in 101 people (76.5%). There were 68 patients with VaD and 33 patients with VaMCI (amnesic 27, non-amnesic 6). The cognitive impairment in VaD was 89.7% in memory, 82.3% in executive function, 70.6% in attention, in VaMCI in memory 81.8%, attention 21.2%, visuospatial function 18.2%, executive function 18.2%. Decreased ADL at admission and discharge as well as longer hospitalization were more prevalent in VaD patients than in VaMCI patients.

Conclusion

Because patients with VaD compared to VaMCI were elderly, had severe neurological status including the attention and executive function, we supposed that they affected their ADL.

No conflict of interest

ISPR7-0447

Neurological and Mental Health Conditions - Stroke

IMPORTANCE OF THE BARE FOOT AS A SOURCE OF SENSORIAL INPUT IN THE TREATMENT OF HEMIPLEGIC PATIENTS AFTER A STROKE

B. Solari¹, N. Simes¹, J. Fernandez Quintero¹

¹CIAREC, Physical Therapy, Ciudad Autónoma Buenos Aires, Argentina

Introduction/Background

One of the main goals of hemiplegic people post stroke treatment is to improve posture.

The usual treatment starts with the patient dressed and from his trunk.

Considering the results of this method, it is here analyzed if the same benefits can be achieved using a different approach involving the distal level: the bare foot.

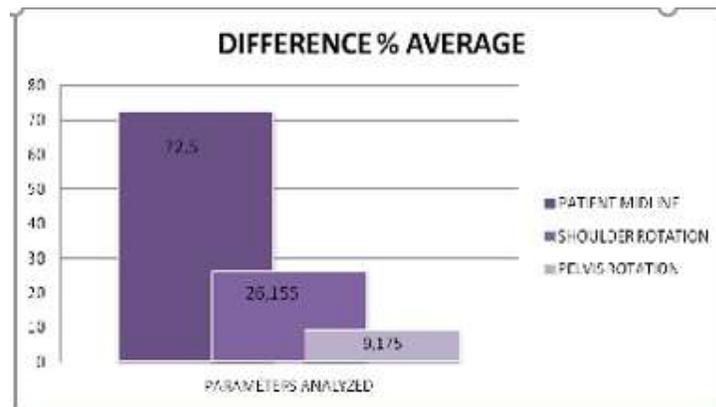
The purpose of this study was to determine whether sensory stimuli of foot could have an effect on postural alignment of the hemiplegic patient.

Material and Methods

Two hemiplegic patients were examined before and after receiving treatment only in the affected limb. Pumping was performed of ankle, talocalcaneal, tarsometatarsal and Lisfranc joints as well as foot toes. Passive mobilization, re-training of footholds and sensory stimuli at different positions were also carried out. Postural assessment was performed taking simultaneous photographs in the frontal and sagittal plane with the patients in standing position, analyzing them with KINOVEA software.

Results

From a total of two patients evaluated, the improvement over their midline is 72.5%; over shoulder rotation is 26.15 % and over pelvis rotation is 9,17%.



Conclusion

Treatment of sensory stimuli of the foot shows a positive trend as regards the postural alignment of patients, as it could be measured during one session. Taking into account that a sample of only two patients was analyzed, it is suggested to continue with this line of treatment in order to obtain conclusive results with higher statistics.

No conflict of interest

ISPR7-0455

Neurological and Mental Health Conditions - Stroke

CORRELATION BETWEEN VARIOUS INTRAVENTRICULAR HEMORRHAGE SCALES AND RECOVERY IN STROKE PATIENTS

B.J. Lee¹, J.M. Hwang², J.W. Huh², T.D. Jung³

¹Asan Medical Center- University of Ulsan College of Medicine, Department of Rehabilitation Medicine, Seoul, Republic of Korea

²Kyungpook National University College of Medicine, Department of Rehabilitation Medicine, Daegu, Republic of Korea

³Kyungpook National University Hospital, Department of Rehabilitation Medicine, Daegu, Republic of Korea

Introduction/Background

Presence of intraventricular hemorrhage (IVH) is an important prognostic factor in stroke patients. Various scales are currently used to measure amount of IVH. The purpose of this study is to find out relationship between IVH scales and recovery in stroke patients with IVH.

Material and Methods

Twenty stroke patients with IVH were included in this study. Inclusion criterias were as follows: (1) stroke prior to IVH; (2) rehabilitation program participation for at least 1 month; (3) able to complete evaluations regarding functional ability; and (4) without any underlying physical or mental condition that may effect patient's functional status. IVH volume (Table 1), Graeb scale and expanded Graeb scale (Table 2) were calculated using the patient's initial brain CT image. Functional evaluation was performed immediately after participants were transferred to rehabilitation department. Evaluations were as follows: Mini-Mental State Examination (MMSE) for cognition, Modified Barthel Index (MBI) for upper limb function, Berg Balance Scale (BBS) for lower limb function and Beck Depression Inventory (BDI) for emotional status. Patients were reevaluated immediately before discharge. The results were statistically analyzed in accordance with initial IVH scales.

Amount of blood	LV	3V	4V
none	0	0	0
>≤ 1/3	1	1	1
>1/3 to ≤2/3	2	1	1
>2/3	3	1	1
hydrocephalus		+1	

$IVHS = 3 \times (RLV + LLV) + 3V + 4V + 3 \times \text{hydrocephalus}$

$IVH \text{ volume (mL)} = e^{IVHS/5}$

LV: lateral ventricle, 3V: 3rd ventricle, 4V: 4th ventricle, IVHS: intraventricular hemorrhage score, RLV: right lateral ventricle, LLV: left lateral ventricle

Results

All IVH scales showed statistically significant relationship with patient's functional outcome (Table 3). IVH volume showed statistical relevance with MBI (p=0.021) and BDI (p=0.023) score improvement. Graeb scale and expanded Graeb scale showed significant relevance with MBI (p=0.045, 0.046) and BBS (p=0.003, 0.026) score improvement. All three scales showed significant relationship with MBI score improvement. MMSE showed no statistical relevance with any of three IVH scales.

	MBI	BBS	BDI
IVH volume			
Pearson correlation	.512	.422	.505
p-value	.021	.064	.023
Graeb scale			
Pearson correlation	.454	.634	.072
p-value	.045	.003	.762
Expanded Graeb scale			
Pearson correlation	.451	.496	.120
p-value	.046	.026	.615

Conclusion

This study demonstrates that IVH scales, which reflect severity of initial IVH, could be well correlated with patient's functional outcome. Further studies, with uniformed patient group and larger sample size, are needed to confirm the correlation between initial IVH severity and functional recovery of stroke patients.

No conflict of interest

ISPR7-0463

Neurological and Mental Health Conditions - Stroke 2

EVALUATION OF DISCHARGE WEIGHT IN THE LOWER LIMBS IN PATIENTS WITH POST STROKE HEMIPARESIS USING DIGITAL BAROPODOMETRY

I. Aladro¹, A. Vidal¹, A. Kermer¹, V.D. Pereyra Casado¹, D. Ponce¹, F. Astete¹, L. Viale¹

¹Centro Asistencial Universitario. Universidad Nacional de San Martín, San Martín, Buenos Aires, Argentina

Introduction/Background

Digital baropodometry provides information of the weight discharge. Healthy people distributes body weight equally in both legs. In patients with post-stroke hemiparesis has been described mayor weight transfer and discharge on the unaffected limb during stance and gait. The aim of this work is to study the biomechanics of standing and walking in patients with hemiparesis post-stroke.

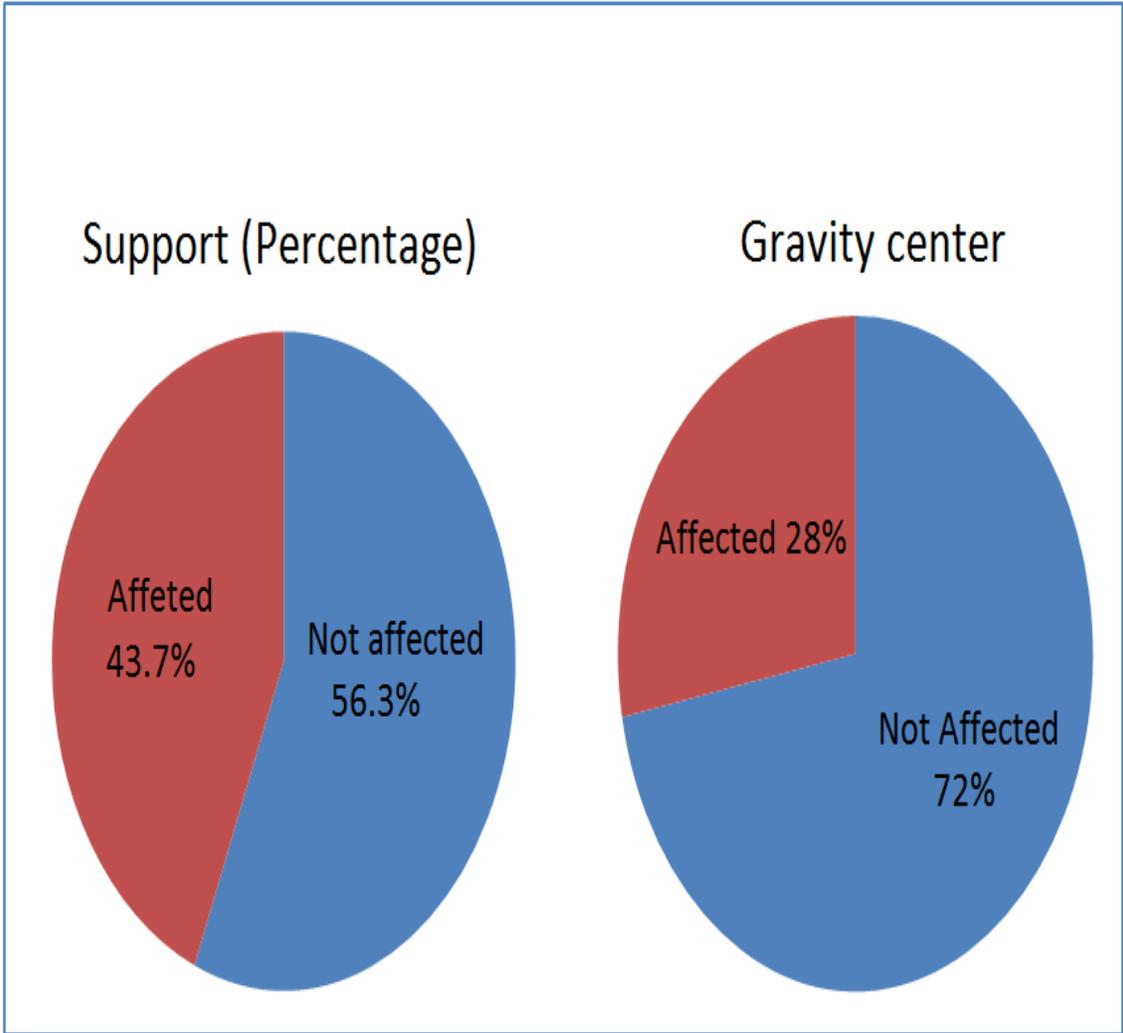
Material and Methods

In this Cross-sectional preliminary study were include 11 patients with a diagnoses of post-stroke hemiparesis between January 2016 and June 2016. All patients were evaluated with digital baropodometry (static and dynamic registration), modified Ashworth Scale (AS) and "7.5 meters walk "(walking speed).

Estático							Dinámica			
Datos	Izquierda	Derecha	34.6 %	52.5 %	17.9 %	31.8 %	61.7 %	29.9 %		
Tipo Pie	Normal	Normal					Tipo Pie	Plano	Normal	
Ratio de presión	42.12 %	57.88 %					Ratio de presión	52.90 %	47.10 %	
Ratio antepie	34.62 %	17.86 %					Ratio antepie	31.79 %	29.94 %	
Ratio retropie	7.50 %	40.02 %					Ratio retropie	21.11 %	17.16 %	
superficie	104.78 cm ²	121.28 cm ²					superficie	137.79 cm ²	152.14 cm ²	
movimiento	0.41 cm ²	0.73 cm ²					Ratio de marcha	52.78 %	47.22 %	
Arriba	10.62 mm	9.77 mm					Contención	0.00 %	9.09 %	
Abajo	10.01 mm	9.54 mm					Medioapoyo	0.00 %	75.76 %	
Izquierda	1.57 mm	1.94 mm					Propulsión	100.00 %	15.15 %	
Derecha	0.94 mm	2.88 mm					Hallux	35.86 Kpa	109.04 Kpa	
Presión media	72.86 Kpa	86.90 Kpa					2º-5º dedo	49.62 Kpa	67.08 Kpa	
Presión antepie	106.93 Kpa	48.70 Kpa					1er meta	31.71 Kpa	46.10 Kpa	
Presión retropie	28.72 Kpa	133.24 Kpa					2º-4º meta	101.12 Kpa	63.55 Kpa	
Hallux	86.14 Kpa	80.03 Kpa					5º meta	126.26 Kpa	61.69 Kpa	
2º-5º dedo	59.82 Kpa	16.43 Kpa					Puente	61.06 Kpa	28.44 Kpa	
1er meta	11.39 Kpa	4.93 Kpa					Talón medial	89.07 Kpa	78.52 Kpa	
2º-4º meta	116.61 Kpa	56.33 Kpa					Talón lateral	85.88 Kpa	57.78 Kpa	
5º meta	121.13 Kpa	51.72 Kpa					Tiempo de marcha	2.19 seg	1.96 seg	
Puente	29.66 Kpa	30.64 Kpa					Ángulo de marcha	5.22 °	16.48 °	
Talón medial	18.62 Kpa	156.63 Kpa					Ancho	119.09 mm	141.35 mm	
Talón lateral	23.34 Kpa	175.20 Kpa					Longitud	263.71 mm	282.70 mm	
			Tipo de arco: pie izquierdo[Normal] / pie derecho[Normal] Presión superior a [derecho] El punto máximo es izquierda [frontal] y derecho [trasero] El movimiento del COG (Centro gravedad) es más en [derecho] y [trasero] Analizando las zonas de presión, En el dedo: izquierdo [1er dedo] y derecho [1er dedo] son las zonas de mayor presión En el antepié : izquierdo[5o meta] y derecho[2º-4º meta] son las zonas de mayor presión En el talón : izquierdo[LATERAL] y derecho[LATERAL] son las zonas de mayor presión Según todos los datos sobre la postura el resultado es [74.0] (Mal: 0~60, Normal: 61~90, Excelente: 91~100)				Tipo de arco: pie izquierdo[Plano] / pie derecho[Normal] Presión superior a [izquierdo] Tiempo de marcha: izquierdo[2.19seg] / derecho [1.96seg] Analizando el ciclo de la marcha, Ciclo normal es contención:medioapoyo:propulsión=15:45:40 El resultado del test es izquierda[0 : 0 : 100] / derecha[9 : 76 : 15] Ángulo de la marcha: izquierda[5.2°] / derecha[16.5°] En el talón : izquierdo[Central] y derecho[Central] son las zonas de mayor presión According to the all datum the score of gait is [70.0] (Mal: 0~60, Normal: 61~90, Excelente: 91~100)			

Results

Patients mean age was 60.5 ± 9.8 in (range 47-73). Only 37.5% had suffered hemorrhagic stroke and 63% was affected on the right hemi body. The mean AS for the quadriceps was 1.2 ± 1 and 1.09 ± 1 for the gastrocnemius muscle. The percentage of support in the affected foot was 43% and 56% in the unaffected. The center of gravity moved to unaffected hemibody in 72% of the patients. The average percentage of support in the front part in the affected foot was 16%, and 26% for the posterior area; against 20% and 36% for the unaffected.



Conclusion

The majority of the patients evaluated presented the center of gravity displaced towards the unaffected side with a mayor percentage of support towards the same side, finding greater percentage difference at the posterior area. This information may be helpful for make accurate diagnosis and plan future treatments.

No conflict of interest

ISPR7-0478

Neurological and Mental Health Conditions - Stroke 2

CONTRALESIONAL MOTOR CORTEX DOES NOT CONTRIBUTE TO VOLUNTARY CONTRACTION OF THE IMPAIRED ELBOW FLEXORS IN STROKE SURVIVORS – A TMS STUDY

Y.T. Chen¹, S. Li¹, P. Zhou¹, S. Li¹

¹The University of Texas McGovern Medical School, Physical Medicine and Rehabilitation, Houston, USA

Introduction/Background

Reorganization of the lesioned hemisphere plays a major role in recovery after stroke, while the contribution of the contralesional motor cortex during voluntary contraction of the paretic limb is still not clear. The purpose of this study was to compare the transcranial magnetic stimulus (TMS) induced force increment between healthy and stroke subjects.

Material and Methods

Eleven healthy and ten stroke subjects performed isometric elbow flexion (right side of healthy subjects and impaired side of stroke subjects) at 10%, 30% and 60% of their maximum voluntary contraction (MVC). TMS was delivered to M1 ipsilateral to the contracting biceps at rest and during three contraction tasks.

Results

For both health and stroke subjects, normalized motor evoked potential (MEP) showed force-level dependent increase (for health: 10% MVC: 130% ± 42%, 30% MVC: 157% ± 58%, 60% MVC: 258% ± 119%; for stroke: 10% MVC: 182% ± 35%, 30% MVC: 236% ± 42%, 60% MVC: 304% ± 83%; $F(2,38)=22.85$, $p<0.05$). There were no significant effects of Group or Group × Force interaction.

The TMS-induced force increment was significantly greater in stroke subjects (7.94% ± 6.71%) than healthy subjects (1.61% ± 0.79%; $F(1,19)=5.86$, $p<0.05$). Furthermore, there was a Group × Force interaction. Post hoc analysis indicated that stroke subjects exhibited higher TMS-induced elbow flexion force compared with healthy subjects only during 10% MVC contraction task (15.49% ± 17.7% V.S 1.01% ± 0.46%), but not during higher force levels.

Conclusion

Our findings of force level dependent increase in contralateral MEP and non-force level dependent change in the ipsilateral force increment indicate that there are bilateral M1 activations during unilateral voluntary activation of elbow flexors. However, contralesional activation is not likely contributing to voluntary force production of the impaired biceps muscles in stroke subjects.

No conflict of interest

ISPR7-0482

Neurological and Mental Health Conditions - Stroke 2

PHARYNGEAL RESIDUE CLEARED BY EFFORTFUL SWALLOW AND MENDELSONN MANEUVER -KINEMATIC AND KINETIC ANALYSIS USING DYNAMIC CT AND HIGH-RESOLUTION MANOMETRY-

Y. Inamoto¹, E. Saitoh², Y. Ito², Y. Aoyagi², H. Kagaya², K. Aihara³, S. Shibata², J.B. Palmer⁴

¹*Fujita Health University, Faculty of Rehabilitation, Toyoake, Japan*

²*Fujita Health University, Department of Rehabilitation Medicine I, Toyoake, Japan*

³*Fujita Health University Hospital, Department of Rehabilitation, Toyoake, Japan*

⁴*Johns Hopkins University, Department of Physical Medicine & Rehabilitation, Baltimore, USA*

Introduction/Background

Identification of pharyngeal residue and determining an effective treatment are essential in swallowing rehabilitation. These efforts are hindered by the limited methods for measuring pharyngeal residue. Dynamic CT can provide quantitative volumetric measures. This study aimed to determine whether Effortful swallow (ES) and Mendelsohn maneuver (MM) effectively decrease pharyngeal residue using 320-row area detector computed tomography (CT) and high-resolution manometry (HRM).

Material and Methods

Subjects were three chronic dysphagic patients with bulbar palsy showing pharyngeal residue. Swallows of nectar thick liquid with regular swallow (RS), with ES, and with MM were evaluated by CT and HRM. Volume of pharyngeal residue, pharyngeal volume constriction ratio, and UES area were calculated from CT. Pharyngeal pressure and UES relaxation time were measured from HRM.

Results

Case 1: Residue volume was lowest in ES and was limited to the pyriform sinuses. Peak pharyngeal pressure at tongue base (TB) was highest in ES. Duration of UES opening and UES relaxation time were similar across the three swallows.

Case 2: Residue was lowest in MM. Duration of UES opening was longest in MM, with the greatest hyolaryngeal displacement. Peak pharyngeal pressure was higher in ES and MM, compared to RS.

Case 3: Residue was lowest in RS. Duration of UES opening and relaxation were longest in MM. Pharyngeal volume constriction ratio was smallest in MM. Pharyngeal pressure was similar across the three swallows.

Conclusion

The results varied among the three cases. Higher pharyngeal pressure with ES in case 1 and longer UES opening and higher pharyngeal pressure with MM in case 2 may have contributed to reduced pharyngeal residue. Our results suggest both ES and MM might decrease pharyngeal residue, but findings were not consistent across patients.

Conflict of interest

Disclosure statement:

Collaborative research with Toshiba Medical and Ziosoft.

ISPR7-0486

Neurological and Mental Health Conditions - Stroke 2

MOTOR OVERFLOW AFTER STROKE REVISITED: A PHENOMENON OF DISINHIBITION?

Y.T. Chen¹, S. Li¹, P. Zhou¹

¹The University of Texas McGovern Medical School, Physical Medicine and Rehabilitation, Houston, USA

Introduction/Background

The study aimed to investigate the mechanisms underlying motor overflow in spastic hemiparetic stroke.

Material and Methods

Eleven healthy adults (31.18±6.18 yrs) and 11 chronic spastic hemiparetic stroke survivors (63.6±6.4 yrs) participated in this study. Each subject performed unilateral isometric elbow flexion tasks at submaximal levels on each side. Surface EMGs from the contracting biceps muscle (iBiceps), the resting ipsilateral flexor digitorum superficialis (iFDS), the contralateral biceps (cBiceps), and FDS (cFDS) muscles were recorded. EMG-EMG coherence between iBiceps and other resting muscles was analyzed individually. Spasticity of elbow flexors was quantified. Correlation coefficients among spasticity, weakness and motor overflow were analyzed.

Results

Two unique patterns of exaggerated motor overflow were observed in stroke subjects as compared to healthy subjects. There was a greater motor overflow from the proximal iBiceps to distal iFDS during impaired side elbow flexion tasks ($p<0.05$). This was accompanied by a significant EMG-EMG coherence between iBiceps and iFDS EMGs in the Beta band (13-30 Hz). Thus this ipsilateral overflow was likely from a cortical origin. In contrast, a greater motor overflow from iBiceps to cBiceps and cFDS muscles and its associated significant EMG-EMG coherence in the alpha band (6-12 Hz) were observed during non-impaired side elbow flexion tasks ($p<0.05$). Furthermore, motor overflow from the non-impaired biceps to the impaired FDS was significantly correlated with the severity of spasticity ($p<0.05$). This contralateral motor overflow was probably mediated by brainstem mechanisms as a result of disinhibition.

Conclusion

Our results provide evidence of different mechanisms mediating ipsilateral and contralateral motor overflow to the impaired side in stroke subjects.

No conflict of interest

ISPR7-0488

Neurological and Mental Health Conditions - Stroke 2

EARLY GAIT REHABILITATION PROGRAM FOR STROKE PATIENTS IN A CHILEAN PUBLIC HOSPITAL: A PRELIMINARY STUDY

A. Salvatierra¹, D. Hernández², J. Gutierrez³

¹Universidad Mayor, Physical Medicine and Rehabilitation, Santiago, Chile

²Hospital El Carmen, Physical Therapy, Santiago, Chile

³Hospital El Carmen, Physical Medicine and Rehabilitation, Santiago, Chile

Introduction/Background

Stroke is a common and disabling global health-care problem. Independent walking after stroke is one of the main goals of rehabilitation.

The aims of this study are to carry out a preliminary evaluation of the results obtained after an early and intensive gait rehabilitation training program in stroke patients of a Chilean Public Hospital.

Material and Methods

Case series study. A total of 8 stroke patients with a gait disorder stroke were referred to the program during their hospitalization between August and September 2016 at El Carmen Hospital, Chile. The intervention was provided for 40 min, 5 days / week for a total of 4 weeks and consisted in treadmill gait training with partial weight support associated with visual and auditory feedback, facilitation of limb movement and balance training. Measurements at the beginning and at the end of the training were Fugl-Meyer Assessment (FMA), Functional Ambulation Category (FAC), 10 Meter Walk Test (10MWT), Berg Balance Scale (BBS) and Barthel index (BI).

Results

After four weeks of intervention, all patients presented improvement in motor control of the affected lower limb, gait velocity, balance, functional gait capacity and ADL independence.

Conclusion

An early and intensive gait rehabilitation program for stroke patients initiated during hospitalization period presents benefits measured with FMA, FAC, 10MWT, BBS, BI. More patients are needed to provide a greater level of evidence.

No conflict of interest

ISPR7-0492

Neurological and Mental Health Conditions - Stroke 2

USE OF ELECTROSTIMULATION AND CONVENTIONAL THERAPY FOR THE REHABILITATION OF NEUROLOGICAL PATIENTS WITH ORAL MOTOR DISORDERS. BOGOTA, 2016

M. Herrera¹

¹*Mobility Group, Bogota D.C, Bogota, Colombia*

Introduction/Background

Background: The most important oral motor disorders secondary to alterations in the Central and Peripheral Nervous System are Dysphagia and vocal pathologies, caused by alterations in tone, strength, mobility and synergy of structures. Interventions in patients with dysphagia secondary to neurological lesions, it has been determined that the use of neuromuscular stimulation reduces the risk of aspiration and sialorrhea^{1 2}. *Objectives:* To establish the benefits obtained through the application of conventional techniques combined with electrostimulation in patients with oral motor disorders.

Material and Methods

Methodology: An exploratory retrospective exploratory descriptive study in which the benefits obtained from the application of electrotherapy and the use of conventional techniques with oral motor disorders were documented, extracted from the databases of the Mobility Group in Bogotá, Colombia.

Results

Results: A total of 20 subjects (55% male, 45% female) were evaluated, with a range of 44.3 years of age. They were classified in three groups (vocal pathologies, swallowing disorders and both) to which descriptive statistics were applied to describe their behavior in aspects derived from the application of electrotherapy and clinical variables.

Conclusion

This study allowed documenting the improvement in patients with swallowing disorders and vocal pathologies after using electrostimulation as well as the application of conventional techniques.

No conflict of interest

ISPR7-0493

Neurological and Mental Health Conditions - Stroke 2

THE EFFECTS OF ROBOTIC GAIT TRAINING ON GAIT PARAMETERS IN STROKE PATIENTS

R. MUSTAFAOGLU¹, B. ERHAN², B. GUNDUZ³, I. YELDAN⁴, A. RAZAK OZDINCLER⁴

¹Istanbul University,

Faculty of Health Science- Division of Physiotherapy and Rehabilitation- Department of Neurologic Physiotherapy and Rehabilitation, ISTANBUL, Turkey

²Istanbul Aydin University- Faculty of Health Sciences- Division of Physiotherapy and Rehabilitation- Okmeydani Training Hospital-, Physical Medicine and Rehabilitation Clinic, ISTANBUL, Turkey

³Istanbul Physical Medicine and Rehabilitation Training Hospital, Physical Medicine and Rehabilitation, ISTANBUL, Turkey

⁴Istanbul University,

Faculty of Health Sciences- Division of Physiotherapy and Rehabilitation- Department of Physiotherapy and Rehabilitation, ISTANBUL, Turkey

Introduction/Background

Ambulation limitations can be an obstacle in patients' community integration after stroke. The aim of this study is to investigate the effects of robotic training on gait parameters in patients with stroke.

Material and Methods

Subacute and chronic 17 (6 women, 11 men) stroke patients older than 18 years, who can cooperate and have 3 or higher grade in Functional Ambulation Scale were included in the study and randomized into 2 groups. Both groups had a conventional stroke rehabilitation and gait training for 45 minutes daily, 5 days a week for 6 weeks duration. In group 2 (n:9) the patients had additional robotic gait training (45 minutes/session, 2 times a week, for 6 weeks duration). Locomat (Hocoma AG, Volketswil, Switzerland) was used in robotic gait training with 40% body weight reduced, and 1.5 km/h (0.42 m/sec) velocity. The Comfortable and The Fast Gait Speed Tests, cadance and step length, the distance walked in 1 minute were evaluated before and after the treatment.

Results

Age, body mass index values were similar in both groups. Improvement was found after treatment in The Comfortable and The Fast Gait Speed Tests, cadance and the distance walked in 1 minute parameters in both groups ($p < 0.05$). When the two groups were compared this improvement was statistically better in the robotic gait training group ($p < 0.05$).

Conclusion

Robotic gait training added to conventional gait training in stroke patients has improved gait parameters and increased gait speed. These parameters will have favorable effects on functional status and quality of life of the patient.

No conflict of interest

ISPR7-0507

Neurological and Mental Health Conditions - Stroke 2

RETURN TO WORK AFTER FIRST OCCASION OF A STROKE; A SIX-YEAR FOLLOW UP

K. Stibrant Sunnerhagen¹, E. Westerlind¹, H. Persson¹

¹Univ of Gothenburg, Neuroscience and physiology- Sect for clinical neuroscience and rehabilitation, Göteborg, Sweden

Introduction/Background

Stroke in the working age population is increasing in different parts of the world. An incomplete return to work (RTW) after sick leave post stroke entails negative consequences for the affected person and an economical burden for society. The aim of this study was to explore the RTW rate and factors associated with RTW in a six-year follow up post stroke.

Material and Methods

Data from one hundred and seventy-four persons 63 years or younger, with first ever stroke in 2009-2010 in Gothenburg were analyzed. Baseline characteristics were collected through medical records and the Swedish Health Insurance Office provided information on sick leave up to 6 years post stroke. Time-to-event was presented and cox regression as well as logistic regression were used to analyze risk factors for no-RTW.

Results

The RTW rate was 74.7 %, at the end of follow up. Participants continued to RTW until just over 3 years post stroke. Dependency at discharge (in the modified Rankin Scale) and sick leave prior to the stroke were significant risk factors for no-RTW after 1 year with odds ratio 4.595 and 3.585, respectively. The same factors were significant in time-to-event within six years post stroke with hazard ratio 2.651 and 1.929, respectively.

Conclusion

Not everyone will RTW after a stroke, however RTW is possible over a longer period of time than previously thought. More severe disability at discharge from hospital and sick leave prior to the stroke were shown to be risk factors for no-RTW. This knowledge can contribute to more individualized vocational rehabilitation.

No conflict of interest

ISPR7-0512

Neurological and Mental Health Conditions - Stroke 2

RELATIONSHIP BETWEEN THE NEUROLOGICAL STATUS AFTER AN ISCHEMIC STROKE AND THE LEVEL OF INDEPENDENCE AFTER A REHABILITATION PROGRAM

E.C. Damaris Francis¹, A.N. Rusell¹, B.S. Claudia¹, S.C. Linda¹

¹Universidad Autonoma de Yucatan, Licenciatura en Rehabilitación, Merida, Mexico

Introduction/Background

Background. Stroke is a current public health problem in Mexico; it is the third cause of death.

Aim. To determine the relationship between the neurological status after an ischemic stroke and the level of independence after a rehabilitation program.

Material and Methods

It was a probabilistic sampling. The sample consisted of 42 people aged 65 to 80 years, who met the inclusion criteria and signed an informed consent letter. Patients who had an ischemic stroke and were transferred to a hemiplegic patient rehabilitation program in a public hospital in Mérida, Yucatan, Mexico, were included. The patients were evaluated with the Functional Independence Measure (FIM) and with the National Institutes of Health Stroke Scale (NIHSS).

Results

Through a simple lineal regression model it was found a statistical significance ($p=.001$), in such a way that neurological status after a stroke, quantified with the NIHSS, is directly related to the level of independence, quantified with the FIM, after a rehabilitation program.

Conclusion

Rehabilitation is a limited process in time and it is oriented by goals to allow people with disabilities gain an optimal functional mental, physical and social level. This functional level can be evaluated through the FIM and the NIHSS, which have good evidence to provide reliable and valid information.

No conflict of interest

ISPR7-0515

Neurological and Mental Health Conditions - Stroke 2

HIGH INTENSITY STROKE REHABILITATION IN POOR PROGNOSIS HOSPITALIZED PATIENTS

*I. Eceizabarrena¹, X. Valencia¹, N. Perez¹, I. Gomez¹, N. Lizarraga¹, A. Gamio¹, M. Zabaleta¹,
A. Zabala¹, E.C. Martinez¹, I. Ruiz de Angulo¹, I. Carbajo¹*

¹H.U.Donostia, Physical Medicine and Rehabilitation, San Sebastian, Spain

Introduction/Background

The functional recovery for ADLs is one of the most important objectives of stroke rehabilitation.

Even a dose-response gain is described in many studies, there are few about the specific response of poor prognosis patients that are not eligible for acute rTPA or mechanical thrombolysis.

Our purpose is to analyze the response of those patients to high intensity stroke rehabilitation (HISR) in a hospitalized subacute phase and to compare the results with alcohol dependent patients' subgroup.

Material and Methods

This is a prospective observational study to measure the gain of function at discharge of poor prognosis stroke patients undergoing a HISR program (1 hour of physiotherapy, 30 minutes of occupational therapy and 30 minutes of logopedia if indicated).

The inclusion criteria was to be under 70 years and minimal collaborative skills (to be able to follow simple commands and to be able to be seated more than an hour).

We collected data of patients that were discharged between January 2015 and July 2015.

Basic information, Stroke characteristics and functional outcomes (as modified Barthel index (mBI) and mRankin) were collected from their electronic medical history.

Results

The first 6 months of 2015, 24 patients (average age: 60.04 years) received a HISR in our Hospital. The mean stay was 56.39 days.

They improved globally 26.1 points in mBI (initial mean 40.72 – at discharge 66.82) and 1.33 points in mRankin (initial mean 4.57– at discharge 3.24). That makes 0.47/day improvement in mBI during hospitalization.

75% of the patients (18) went home at discharge.

Conclusion

Most of the patients improve after the programme even the poor prognosis criteria.

We didn't find significant differences in alcohol dependent patients that could collaborate actively.

No conflict of interest

ISPR7-0530

Neurological and Mental Health Conditions - Stroke 2

RELATIONSHIP BETWEEN CORE STABILITY AND HAND FUNCTION RECOVERY PARAMETERS USING PHYSICAL THERAPY FOR PATIENTS AFTER STROKE

E. Milinavičienė¹, A. Juodžiukynaitė², S. Stakauskienė², D. Suvaizdytė², E. Lendraitienė¹

¹Hospital of Lithuanian University of Health Science,

Department of Rehabilitation- Lithuanian University of Health Sciences, Kaunas, Lithuania

²Medical SPA "Eglės" sanatorija, -, Kaunas, Lithuania

Introduction/Background

To evaluate core stability and hand function recovery parameters using different physical therapy methods for patients after stroke.

Material and Methods

44 patients after stroke were selected for this research. Patients were divided into two groups randomly, both groups consisted of 22 patients. First group received traditional physical therapy exercises for hand function and core stability and second group for the same functions received physical therapy exercises using S-E-T conception. Injury had to be in middle cerebral artery, and in the left cerebral hemisphere, patient's dominant hand had to be right, and patients had to be diagnosed with stroke for the first time. Hand movement repetition was measured by reactimeter and hand motor function was evaluated using motor activity test (Wolf), Motor assessment scale (MAS) was used for evaluation of combination movements in upper extremity and functional reach test was used to determine core stability.

Results

Physical therapy using S-E-T conception and traditional physical therapy improved reaction speed and reduced reaction unevenness of affected hand for patients after stroke ($p < 0,05$). But physical therapy using S-E-T conception was more effective for recovery of hand function. Physical therapy using S-E-T conception and traditional physical therapy improved core stability for patients after stroke ($p < 0,05$). There was established relationship between core stability, hand function and reaction speed ($p < 0,05$).

Conclusion

Physical therapy exercises for hand function and core stability using S-E-T conception and traditional physical therapy exercises for hand function and core stability are both effective in regaining lost function, reaction speed and strength of hand and core stability.

No conflict of interest

ISPR7-0551

Neurological and Mental Health Conditions - Stroke 2

IS VERY EARLY MOBILISATION BETTER THAN EARLY MOBILISATION AFTER STROKE? A NARRATIVE REVIEW

B.A. Cazarim¹, R. Cabiddu¹, E. Kabbach¹, C.I. Monteiro¹, R.G. Mendes¹

¹Federal University of São Carlos, Department of Physiotherapy, SAO CARLOS, Brazil

Introduction/Background

Stroke is a vascular condition that affects millions of people worldwide every year. In order to guarantee survival and reverse or limit the physical symptoms and activity limitations that stroke induces, patients should receive organized inpatient care. Early mobilisation (EM) is an essential component of rehabilitation; however, the ideal intervention time and dose is not well established yet. Therefore, the present narrative review was performed to compare the benefits between very early mobilisation (VEM) (within 24 hours) and EM (after 24 hours).

Material and Methods

A bibliographic search was conducted through PubMed, Medline and Cochrane Library. The search terms used were 'early mobilisation/mobilization post-stroke', 'early mobilisation/mobilization after stroke', and 'very early mobilisation/mobilization post/after stroke'. Any randomised controlled trial could be included, published from 2009 to nowadays, written in English, including patients of any age and gender, with any outcome measure, and comparing VEM and EM.

Results

276 studies were found, 8 of which were included in the present review. The outcomes presented in the analysed studies include complications, independence level, motor activity, walking, length of hospital stay and global functioning. The studies' findings suggest that, even though a VEM rehabilitation program is safe and feasible, it can reduce the odds of a favourable outcome 3 months after stroke, considering a class III and a level of evidence A.

Conclusion

We conclude that a very early rehabilitation program is not recommended and a standard care program is to be preferred.

No conflict of interest

ISPR7-0569

Neurological and Mental Health Conditions - Stroke 2

KINEMATIC ANALYSES OF AN UPPER EXTREMITY ROBOT: A COMPARISON BETWEEN NORMALS AND PERSONS WITH MILD, MODERATE AND SEVERE STROKE

M. O'Dell¹

¹Weill Cornell Medicine, Department of Rehabilitation Medicine, New York, USA

Introduction/Background

In stroke rehabilitation, upper extremity robotics have both a therapeutic role and as an assessment of arm kinematic parameters (KP). Despite its wide use, there are few data comparing InMotion 2® KP by stroke severity. We compare KP in normal adults (NL) to persons with varying severity of stroke.

Material and Methods

The upper extremity Fugl-Meyer Assessment (FMA) was used to define mild (MILD, >47), moderate (MOD, 20-47) and severe (SEV, 0-19) stroke, 11 subjects per group. Subjects completed a drawing task on the InMotion2® using their affected arm. KP for smoothness, joint independence, hold deviation, and displacement were calculated compared to data from 20 healthy adults. ANOVA with *post-hoc* pair-wise comparisons with Bonferroni correction compared all 4 groups.

Results

The four groups did not differ in age or gender ($p > .08$) but were in FMA (MILD=54.3±3.7, MOD=35.7±6.4 and SEV=10.3±3.7, all $p < .0001$) All KP in SEV group differed from all other groups ($p < .0001$). MOD was different from MILD and NL in only 2/4 KP ($p < .05$) and 3/4 KP ($p < .001$), respectively. MILD was *not* statistically different from NL in any KP ($p > .80$).

Conclusion

Our data suggests that KP on the InMotion2® have poor discrimination between NL from MILD, limited discrimination between MILD and MOD, and excellent discrimination between SEV and all other groups. More research is needed with a larger sample, but the device may be limited in its capacity to measure progress in the setting of mild, and perhaps moderate, motor deficits after stroke.

No conflict of interest

ISPR7-0593

Neurological and Mental Health Conditions - Stroke 2

NEURAL BASIS OF RECOVERY OF UPPER LIMB FUNCTION IN STROKE PATIENTS

S. Frenkel-Toledo¹, G. Friedberg², G. Bartur³, N. Soroker⁴

¹Loewenstein Hospital- Ariel University,

Department of Neurological Rehabilitation- Physiotherapy Department- School of Health Sciences, Ra'anana- Ariel, Israel

²Tel-Aviv University-, Sackler Faculty of Medicine, Tel-Aviv, Israel

³University of Haifa- Reuth Medical Center, Department of Physical Therapy, Haifa- Tel-Aviv, Israel

⁴Loewenstein Hospital- Tel-Aviv University,

Department of Neurological Rehabilitation- Sackler Faculty of Medicine, Ra'anana- Tel-Aviv, Israel

Introduction/Background

The hemiparetic upper limb (HUL) remains non-functional in a large proportion of stroke survivors despite all rehabilitation efforts. We assessed the short- and long-term impact of damage to different brain structures on HUL function.

Material and Methods

HUL function was assessed in 72 subacute and 31 chronic stroke patients using the FM and B&B tests. 20 subacute patients were re-assessed during the chronic phase. Voxel-based Lesion Symptom Mapping (VLSM) was employed for analysis of lesion impact using normalized lesion data processed with the ABLE module of the MEDx software.

Results

VLSM revealed a short-term impact on HUL function for damage to the precentral and postcentral gyri, superior frontal gyrus and supplementary motor area. Long-term impact on HUL function was found mainly for damage to the basal ganglia, thalamus, and descending corticospinal tracts. Analysis of delta scores (delayed recovery occurring between the subacute and the chronic stages) showed an impact for damage mainly to the precentral and postcentral gyri and adjacent posterior frontal cortical areas.

Conclusion

Some patients with poor HUL function by the end of the rehabilitation period (subacute stage) reveal significant delayed recovery afterwards. This fact may be explained by the above differences between the structural damage that impacts critically on HUL function in the different stages of the disease.

No conflict of interest

ISPR7-0594

Neurological and Mental Health Conditions - Stroke 2

A 5-DAYS PROGRAM OF PAIRED ASSOCIATIVE STIMULATION FOR STROKE PATIENTS DOES NOT IMPROVE PARETIC WRIST EXTENSION

P. Marque¹, M. Tarri², I. Loubinoux², D. Gasq³, N. Brimat², X. de Boissezon¹, E. Castel-Lacanal¹

¹CHU Toulouse, Physical medicine and reahbilitation, Toulouse, France

²Inserm, TONIC UMR1214, Toulouse, France

³CHU Toulouse, Physiology, Toulouse, France

Introduction/Background

Non Invasive Brain Stimulation (NIBS) has been proposed as a therapeutic adjunct for improving post-stroke upper limb motor impairment.

We proposed a NIBS protocol with Paired Associative Stimulation (PAS), applied during 5 days, combined to physical therapy, at the sub-acute post-stroke stage, in a randomized, double-blind placebo-controlled trial.

Material and Methods

The intervention consisted of a combination of 2 stimulations: an electrical peripheral on the wrist extensor muscle followed by a 25 ms later magnetic cortical stimulation on the wrist area at a frequency of 0.1 Hz over 30 min, the patient receiving 180 paired stimuli. In the sham group, the patient received the electrical peripheral stimulation and a sham magnetic stimulation. The changes in area of the Motor Evoked Potential (MEP), reflecting the changes in cortical excitability, and motor changes studied by the Fugl Meyer score were assessed until day 12.

Results

24 patients (16 men, aged 50 ±12 years, 13 with right lesion, 10±5 weeks post-stroke) were included and randomized into two groups (13 in PAS, and 11 in Sham). We found no significant difference between the two groups concerning the electrophysiological or motor parameters. However, repetitive PAS sessions had a higher impact on patients with a low initial cortical excitability.

Conclusion

We failed to induce lasting effect with PAS stimulation. There is a wide variability of results between patients. For future research, it would be interesting to select more precisely relevant patients.

No conflict of interest

ISPR7-0600

Neurological and Mental Health Conditions - Stroke 2

EFFECTS OF ROBOT-ASSISTED GAIT TRAINING ON SPASTICITY, FUNCTIONAL INDEPENDENCE, FUNCTIONAL AMBULATION, WALKING SPEED AND BALANCE IN PATIENTS WITH CHRONIC STROKE

D. Popa¹, R.N. Suci², A. Colciar³

¹Rehabilitation Hospital Felix Spa, Neurologic Rehabilitation, Oradea, Romania

²University of Oradea, Neuroscience, Oradea, Romania

³Rehabilitation Hospital Felix Spa, Neurologic Rehabilitation, Felix Spa, Romania

Introduction/Background

Stroke is a major cause of long-term disability due to gait impairment which can severely affect functional independence and quality of life. Therefore, one of the key goals for these patients is the recovery of balance and walking function. According to the current evidence, the modern approach in gait abnormalities due to a stroke, relies on neuroplasticity which could be elicited by intensive, repetitive task-specific movements as provided by treadmill training supported by robot driven gait orthosis. Lokomat therapy allows a gait training involving repetitive gait-like movements with body weight support over a longer period of time with increased intensity, at minimum risk. We investigated the effects of a robotic gait training program in conjunction with traditional Physiotherapy upon spasticity, functional independence, functional gait, gait speed and balance on low level ambulatory patients with chronic stroke.

Material and Methods

We have included in this study 80 patients with chronic hemiparesis after stroke, admitted in Rehabilitation Hospital Felix-Spa in 2016, randomly divided into 2 groups: the Lokomat group, who received 10 sessions of 30 minutes gait training with Lokomat device, in addition to the conventional physiotherapy program and the control group, which followed only the conventional physiotherapy program. Outcome measures were spasticity (Modified Ashworth Scale), functional independence (Barthel Index), functional ambulation (Functional Ambulation Categories Index), walking speed and balance, measured with TUG (Timed Up and Go).

Results

Results: After 10 treatment sessions, patients in both groups show higher walking speed, better balance and less spasticity in the lower paretic limb, while functional ambulation and functional independence were statistically significantly improved only in the Lokomat group, compared with the control group.

Conclusion

This study has several limitations related to research methodology, yet poorly structured. Despite this, the results are encouraging, demonstrating that robotic training is effective in hemiparetic gait in patients with moderate gait deficits.

No conflict of interest

ISPR7-0608

Neurological and Mental Health Conditions - Stroke 2

CAN SOUND ACTION OBSERVATION THERAPY BE MORE EFFECTIVE THAN OBSERVATION THERAPY ONLY, IN UPPER LIMB STROKE REHABILITATION?

A. Giattini¹, A. Levantesi¹, F. Morsuti¹, S. Cocci Grifoni¹, A. Caiazzo¹

¹Inst. S. Stefano, Rehabilitation, ASCOLI PICENO, Italy

Introduction/Background

Neurological disorders are very common in stroke survivors, including motor, sensory cognitive disorders. The rationale of this experimental protocol of study is the possibility of learning about the execution of observed movements (action observation therapy). As well, the execution of sonified movements observed have been studied and verified. The aim of this study is to verify the influence of sound stimuli in functional recovery accompanied by action observation therapy.

Material and Methods

We enrolled 28 patients affected by ischemic or hemorrhagic strokes with the involvement of their upper limb. Participants watch a video of no task upper limb movements (actions). The video will be accompanied by sounds in the experimental group (EG). The control group (CG) will be submitted to a treatment without sounds stimuli. Functional outcome measures were used. Three assessments will be made per patient. The final assessor will be blind.

Results

The subjects were randomly assigned to the experimental group (n=16) and to the control group (n=12). Data was analyzed with a t-test. Our protocol is more effective than the simple AOT protocol. In fact data shows statistically significant results for WMFT ($p = 0.0003$ IC 99%). Also, the other outcome measures examined support our results as is shown in Table 1. The post-intervention increase in WMFT is 61 ± 6.7 in the experimental group. The post-intervention increase is 37 ± 11 in the control group.

Conclusion

The significant improvement in the post-test and follow-up, leads us to think that the use of the protocol combined with conventional rehabilitation, can produce results in terms of mobility as well as functional recovery. Whereas the administration of the protocol is easy to access we would like the possibility of a network of structures that would ensure a sufficient population to obtain meaningful data for a real evaluation of effectiveness.

No conflict of interest

ISPR7-0628

Neurological and Mental Health Conditions - Stroke 2

CROSS EDUCATION COMBINED WITH BI-MODAL 'MIRROR' FEEDBACK – A NOVEL REHABILITATION STRATEGY FOR THE HEMIPARETIC UPPER LIMB

O. Ossmy¹, L. Mansano², S. Frenkel-Toledo³, E. Kagan¹, S. Koren¹, R. Gilron¹, R. Mukamel¹,
N. Soroker⁴

¹Tel Aviv University, Neuroscience- Psychological Sciences, Tel Aviv, Israel

²Loewenstein Rehabilitation Hospital, Neurological Rehabilitation, Raanana, Israel

³Loewenstein Rehabilitation Hospital, Neurological Rehabilitation, Raanana, Israel

⁴Loewenstein Rehabilitation Hospital- Sackler Faculty of Medicine- Tel Aviv University, Neurological Rehabilitation, Raanana, Israel

Introduction/Background

Current modalities for rehabilitation of the neurologically affected upper limb (UL) are generally of limited benefit. In the case of stroke-related hemiparesis, the majority of patients seriously affected in UL function remain with severe motor disability despite all rehabilitation efforts. Consequently, extensive research effort is dedicated to develop novel rehabilitation strategies aiming to improve the functional outcome of the affected UL.

Material and Methods

We have recently developed a novel training tool that exploits the voluntary control of one hand and provides real-time movement-based manipulated visual and proprioceptive feedback as if the other hand is the one that moves. Here we expand our results, obtained in a group of healthy subjects, to examine the utility of this training setup in the context of neuro-rehabilitation. We present an extensive account of behavioral gain and correlative fMRI dynamics following treatment with this setup in the case of patient LA, a young man with significant unilateral UL dysfunction stemming from hemi-parkinsonism. LA underwent daily intervention in which he trained intensively the non-affected UL in a sequence-learning task, getting online visual and somato-sensory feedback that created an illusory perception of movement in the affected upper limb.

Results

Improvement in motor capacity was accompanied by enhanced activation in the pre-frontal cortex and by a widespread increment in functional coupling in the brain.

Conclusion

Cross education combined with bi-modal (proprioceptive, visual) 'mirror' feedback may play a significant role in rehabilitation of the impaired UL when severe spasticity and minimal residual movement prevent physical treatment directly targeting the affected limb.

No conflict of interest

ISPR7-0661

Neurological and Mental Health Conditions - Stroke 2

**MOTOR FUNCTION, COMMUNITY REINTEGRATION AND RETURN TO DRIVING AMONG
COMMUNITY DWELLING STROKE SURVIVORS**

K. Nwankwo¹, O. Olaleye¹, K. Hamzat¹

¹University of Ibadan, Physiotherapy, Ibadan, Nigeria

Introduction/Background

Driving is an important indicator of independence after a stroke and a contributor to quality of life and social reintegration. Post-stroke motor impairments could affect driving leading to deficiencies in driving among stroke survivors compared to stroke-free people. This study investigated the difference in motor function, community reintegration and quality of life between stroke survivors who had returned to driving and those who had not.

Material and Methods

Stroke survivors with pre-morbid driving history participated in this survey. Motor function, community reintegration and health-related quality of life were assessed using the modified motor assessment scale, return to normal living index and Health-Related quality of life in stroke patients respectively. Return to driving was assessed using a researcher developed Return to Driving Questionnaire (RTD). Data was analysed using t-test and Chi square test at $p=0.05$

Results

Forty four stroke survivors (37 males; 7 females) aged 56.3 ± 8.9 years participated. About a third (34.1%) of the participants had returned to driving. There was a significant difference ($p < 0.01$) in motor function, community reintegration and quality of life between participants who have returned to driving and those who have not. There was no significant difference in the age ($p = 0.19$), time since stroke ($p = 0.97$) and driving experience ($p = 0.90$) between the participants

Conclusion

Stroke survivors who have returned to driving had better motor function, community reintegration and quality of life compared to their counterparts who had not. Therefore, return to driving should be included in rehabilitation of stroke survivors with pre-morbid driving history for improved clinical and social outcomes.

No conflict of interest

ISPR7-0672

Neurological and Mental Health Conditions - Stroke 2

ISCHEMIC STROKE IN AMYOTROPHIC LATERAL SCLEROSIS; CONSEQUENCE OR COINCIDENCE?

E. Alexeev¹, R. Minassian², C. Dohle³, M. Elashvili²

¹*Albert Einstein College of Medicine, Physical Medicine and Rehabilitation, Bronx, USA*

²*Burke Rehabilitation Center, Physical Medicine and Rehabilitation, White Plains, USA*

³*Burke Rehabilitation Center, Neurology, White Plains, USA*

Introduction/Background

49 yo M w/ PMH of ALS, HTN, HLD and Hypothyroidism. Diagnosis of ALS in 2013. He received Riluzole therapy. Patient suffered brainstem ischemic stroke on 6/11/2016 with consequent right hemiparesis, dysphagia and dysarthria. After staying in an acute rehabilitation facility, he regained most of his baseline function and was discharged home.

Material and Methods

ALS symptoms started in 2012 with slurred speech, tongue twitching, increased salivation, dry cough. His symptoms progressed to weakness of both upper extremities, fasciculation of shoulders, arms, and legs, and difficulty with fine motor skills, Bulbar symptoms worsened, but no gait problems. ALS diagnosis was made in 2013 with MRI, EMG and blood work. Tested negative for C9orf72 gene. Received IVIG for GM1 Antibody with negative results. Started on Glutathione and Methyl B12 supplementation, Riluzole therapy initiated and asked to gain 20 lbs to improve survivorship. In 2015, patient stopped driving and resigned from his executive job. In 2016, he was diagnosed with DM Type 2 shortly after which he suffered ischemic stroke. Started on Plavix and Lipitor, optimally controlled HLD, DM and HTN. PEG tube placed for dysphagia. Started PT/OT/Speech Therapy in an acute inpatient rehabilitation setting. Was modified independent with ADLs, transfers, and ambulation at the time of discharge. Went home on pleasure oral and PEG feeds. Post-discharge outpatient PT/OT/Speech continued.

Results

ALS is fatal rapidly progressive disease of upper and lower motor neurons where average survival is three to four years. Characterized by progressive muscle weakness due to wasting, difficulty chewing, swallowing and eventually breathing. Death typically from respiratory failure. Riluzole is gold standard treatment that extends life by several months.

Conclusion

This patient outlasted average survival expectations and became functionally independent with optimal medical management of ALS, Stroke, HTN, DM, HLD as well as rehabilitation of his functional deficits.

No conflict of interest

ISPR7-0676

Neurological and Mental Health Conditions - Stroke 2

BLOOD BIOMARKERS IN FUNCTIONAL PROGNOSIS AFTER STROKE

J. Branco¹, S. Oliveira¹, J. Ricardo Pereira², C. Nazareth¹

¹Centro de Medicina de Reabilitação da Região Centro - Rovisco Pais, Medicina Física e de Reabilitação, Coimbra, Portugal

²Centro de Medicina de Reabilitação da Região Centro - Rovisco Pais, Medicina Interna, Coimbra, Portugal

Introduction/Background

Stroke is one of the leading causes of disability. Early prediction of post-stroke disability using clinical models is of great interest, especially in the rehabilitation field. Acute stroke blood biomarkers measurement might improve the ability to predict functional outcome. Although some biomarkers and neuroimaging techniques have a potential predictive value, there is insufficient data to sustain a clinical useful functionality predictor model.

Aims: We hypothesized that acute phase blood biomarkers (CPR, D-dimer, fibrinogen and S100B) can predict functional outcome in stroke patients. **Material and Methods**

Prospective observational clinical study in a consecutive sample of adult patients with stroke. *National Institute of Health Stroke Scale* was calculated to evaluate stroke severity. Acute phase plasma levels of C-reactive protein, D-dimer, fibrinogen and S100B were determined. Functional status was accessed at 48 hours, 3 weeks and 12 weeks after the stroke, using the *modified Rankin Scale*.

Results

We engaged 131 patients with cerebrovascular event. Acute stroke S100B plasma level was significantly associated with admission NIHSS and mRS at 12 weeks. None of the other biomarkers showed a statistical association with functional outcome. S100B cut-off for poor functionality was $\geq 140,5$ ng/l (sensitivity 83,8%, specificity 71,4%, AUC 0,800 and AUC 95% CI (0.722-0.879).

Conclusion

According to our study, S100B can reflect acute stroke severity and predict functional outcome at 12 weeks, with a cut-off value of 140,5 ng/dl.

No conflict of interest

ISPR7-0677

Neurological and Mental Health Conditions - Stroke 2

NEUROIMAGING AND BLOOD BIOMARKERS IN FUNCTIONAL PROGNOSIS AFTER STROKE

J. Ricardo Pereira¹, J. Branco², C. Nazareth², S. Cardoso³

¹Centro de Medicina de Reabilitação da Região Centro - Rovisco Pais, Medicina Interna, Coimbra, Portugal

²Centro de Medicina de Reabilitação da Região Centro - Rovisco Pais, Medicina Física e de Reabilitação, Coimbra, Portugal

³Centro de Saúde, Medicina Geral e Familiar, Coimbra, Portugal

Introduction/Background

Stroke remains one of the leading causes of morbidity and mortality around the world and it is associated with an important long-term functional disability.

Predicting the functional prognosis during acute phase would allow more objective rehabilitation programs and better management of the available resources.

There is a growing interest from the scientific community in using neuroimaging and biomarkers as tools in the vital prognosis evaluation over functional prognosis.

Different neuroimaging resources, such as Computerized Tomography, Transcranial Doppler Ultrasound and Diffuse Magnetic Resonance Imaging, as well as certain peripheral blood or cerebrospinal fluid proteins, can give important information about etiology, therapeutic orientation, follow-up and functional prognosis of stroke ischemic patients.

Aim: To assess acute phase neuroimaging and blood biomarkers potential as functional recovery predictors after ischemic stroke. **Material and Methods**

Methodic review of several articles and studies published regarding the topics referred.

Results

Although some biomarkers and neuroimaging techniques have potential predictive value, none of the studies were able to support its use, alone or in association, as a clinically useful functionality predictor model. All the evaluated markers were considered insufficient to predict functional prognosis at three months, when applied in the first hours after stroke.

Conclusion

Additional studies are necessary in order to identify reliable predictive makers for functional prognosis after ischemic stroke.

No conflict of interest

ISPR7-0696

Neurological and Mental Health Conditions - Stroke 2

**VISUAL VERTICALITY PERCEPTION AFTER STROKE: A SYSTEMATIC REVIEW OF
METHODOLOGICAL APPROACHES AND SUGGESTIONS FOR STANDARDIZATION**

C. Piscicelli¹, D. Perennou¹

¹CHU Grenoble Alpes, Physical and Medicine Rehabilitation, Grenoble, France

Introduction/Background

Visual vertical (VV) are being increasingly used for routine clinical assessment of spatial cognition, to investigate otolithic vestibular function and identify altered verticality perception as a possible cause of postural disorders after stroke. Our objective was to synthesize knowledge of assessment methods for testing VV after stroke.

Material and Methods

This systematic review, following the PRISMA statement, involved a search for articles in MEDLINE via PubMed published up to November 2015 by using the search terms “visual vertical”, “verticality perception” and “stroke”. We included 61 studies (1,982 patients), only case (n=3) or group studies (n=58), on VV perception after hemisphere (n=43), brainstem (n=18) or cerebellar strokes (n=8). Two authors independently assessed data on patients’ and VV assessment characteristics, outcome measures, ranges of normality and psychometric properties.

Results

VV assessment procedures varied widely in paradigm, stimulus, patient’s posture, number of trials and outcome measures. However, some emerging guidelines recommend assessing VV in absolute darkness, with an even number of trials, from 6 to 10, with the body maintained upright. Under these conditions, normal VV orientation can be considered from -2.5° to 2.5° and is highly reliable for use in clinical practice and research. A difference $\geq 2^{\circ}$ between repeated measures for a given patient can be interpreted as a real change in VV perception.

Conclusion

This first review of VV assessment methods after stroke showed a great heterogeneity of procedures, settings and parameters, among which only some are eligible for standardization to limit measurement errors and better interpret the results.

No conflict of interest

ISPR7-0701

Neurological and Mental Health Conditions - Stroke 2

HAND FINE MOTOR SKILLS AND USE OF BOTH HAND AND ARM IN SUBJECTS AFTER STROKE: A SYSTEMATIC REVIEW.

J. Abudarham¹, M.E. Drault Boedo¹, S.A. Dilascio¹, S. Gallo¹, C.M. Sanchez Correa¹, L.A. Garcete¹, M.D. Kramer¹, M. Módica¹, M. Ostolaza¹, M. Maiarú¹, F.G. Peralta¹, A. Mendeleovich¹

¹Instituto de Rehabilitación Psicofísica, Belgrano, CABA, Argentina

Introduction/Background

The recovery of the paretic upper limb is essential in the prognosis and treatment of the neurological sequels in a patient who has gone through a stroke, thus the importance of its assessment during clinical practice. There is currently no systemic review that could identify assessment tools for the “fine use of the hand” (FUH) and “use of both hand and arm” (UHA) in patients who have gone through a stroke. The primary goal of this study is to identify observational tools which can assess the FUH and UHA in patients with stroke sequels. The secondary goal is to analyze bias risk in the included articles, describing and categorizing clinical utility, validity and reliability.

Material and Methods

An online research was carried out in sites such as Medline, LILACS, SciELO and Open Grey, including articles published until October 2015. Studies that validate assessing tools of the upper limb in subjects with stroke sequels which evaluate the FUH and UHA were included. The quality of them was assessed with Quality Assessment of Diagnostic Accuracy Studies 2 (QUADAS-2) tool.

Results

41 articles with 11 tools were identified. At least one type of validity or reliability was assessed in each study, and clinical utility was informed in 3 only studies. In regards to quality, in the reference trial domain, more than 80% showed high bias risk and more than 20% showed high level of concern.

Conclusion

11 tools have been selected. In every case validity and reliability have been reported, but clinical utility has been less considered. The studies that investigate these tools showed a high risk of bias in their development, in particular in the choice of the reference test. ARAT-19 showed lower bias risk, but when applicability and reference trial are taken into account, the level of concern is high.

No conflict of interest

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Neurological and Mental Health Conditions - Stroke 2

WHAT IS THE RELATION BETWEEN UNILATERAL SPATIAL NEGLECT AND VERTICALITY PERCEPTION BIASES AFTER STROKE?

M. Jaeger¹, E. Dupierrix², C. Piscicelli¹, A. Chrispin¹, P. Davoine¹, D. Pérennou¹

¹Grenoble Alpes Hospital, Physical medicine and rehabilitation, GRENOBLE, France

²Grenoble Alpes University, Laboratoire de Psychologie et Neuro-Cognition UMR 5105, GRENOBLE, France

Introduction/Background

Unilateral spatial neglect (USN) and verticality perception biases are frequently associated after right hemispheric cerebral stroke (Pérennou et al 2006). These troubles in spatial cognition present different clinical types, according to the space considered: personal (PN) and extra-personal neglect (EPN), and biases in the visual (VV) or the postural (PV) vertical. Here we hypothesized that PN is specially related to a biased PV, and that EPN could be more related to a biased VV.

Material and Methods

Forty-six patients (41 right-handed, mean age = 62) were submitted to neuropsychological and verticality perception assessment at 30, 60, and/or 90 days after a first right hemispheric stroke. A composite score for PN (based on Bisiach test, thumb and comb test, Fluff test and 4 items of the Catherine Bergego Scale, CBS) and EPN (based on bells cancellation test, copy of a landscape, text reading, and 4 items of the CBS). A diagnosis of PN or EPN required at least two abnormal tests. Verticality assessment comprised both VV and PV, considered abnormal for a contralesional bias over 2.5°. We tested the link between neglect and verticality perception by regression analysis.

Results

PN and EPN were found in 28 and 32 patients, respectively. A biased verticality perception was found in 24 patients for VV; among them, 5 without NSU, 12 had PN+EPN, 1 PN, 6 EPN and in 17 patients for PV; among them, 1 without NSU, 13 PN+EPN, 3 EPN. Regression analyses showed that PV was significantly associated to PN ($F=15.4$; $p<.001$) but also to EPN ($F=9.4$; $p<.01$). No significant effect was found for VV.

Conclusion

Findings confirm the link between neglect and verticality perception. Results showed that both EPN and PN severity predict a biased PV (but not a biased VV). The stronger links was found between PV and PN, in relation with the body space.

No conflict of interest

ISPR7-0735

Neurological and Mental Health Conditions - Stroke 2

EFFECT OF GAIT EXERCISE ASSIST ROBOT FOR CHRONIC STROKE PATIENTS: A PRELIMINARY STUDY

Y. Uchiyama¹, T. Ogino¹, M. Fukai¹, M. Kagoshima¹, Y. Wada¹, K. Domen²

¹Sasayama Medical Center Hyogo College of Medicine, Department of Rehabilitation, Sasayama City, Japan

²Hyogo College of Medicine, Department of Physical and Rehabilitation Medicine, Nishinomiya City, Japan

Introduction/Background

The aim of this study is to examine effect of robot-assisted therapy for chronic stroke patients applying Gait Exercise Assist Robot (GEAR) developed by Toyota Motor Corporation and Fujita Health University.

Material and Methods

The subjects were 9 stroke patients with hemiparesis admitted in Sasayama Medical Center Hyogo College of Medicine between Nov 2015 and Oct 2016. Robot-assisted gait exercise by using GEAR was performed for 40 minutes/day and 5 days/week for 4 or 8 weeks after admission in each patient. Functional assessments were performed before and after intervention by gait ability assessment (GAA), gait speed, cadence and stride length in comfortable gait speed, 10-m walking test (10MWT), 6-min walking distance (6MD), timed-up-and-go test (TUG), and total and locomotor scores in Functional Independence Measure (FIM). GAA assessed independency in 10-m walking according to FIM locomotor score.

Results

All subjects completed the interventions and assessments with no complications, but the 10MWT, 6MD, and TUG could not be assessed for all the subjects due to their dependency of gait. The cadence and stride length in comfortable gait speed improved significantly after intervention. However, no significant improvement was found in GAA, comfortable gait speed, 10MWT, 6MD, and total or locomotor scores in FIM.

Conclusion

The results in the present study suggest that robot-assisted gait training is effective for improving some gait parameters by changing gait patterns in chronic stroke patients with hemiparesis.

Conflict of interest

Disclosure statement:

The GEAR was onerously provided by Toyota Motor Corporation. This study was partly supported by a Grant-in-Aid for Scientific Research (B) from the Japan Society for the Promotion of Science (KAKENHI [26282158]).

ISPR7-0736

Neurological and Mental Health Conditions - Stroke 2

REACHING EXERCISE FOR CHRONIC PARETIC UPPER EXTREMITY AFTER STROKE USING A NOVEL REHABILITATION ROBOT WITH MOTOR-ASSISTED ARM SUPPORT AND CONCOMITANT ELECTRICAL STIMULATION AND VIBRATION

Y. Amano¹

¹*Kagoshima University Graduate School of Medical and Dental Science, Rehabilitation and physical medicine, Kagoshima, Japan*

Introduction/Background

Our group developed a rehabilitation robot to assist with repetitive, active reaching movement of a paretic upper extremity. The robot is equipped with a motor-assisted arm support and works in conjunction with neuromuscular electrical stimulation and vibratory stimulation to facilitate agonist-muscle contraction. In this before-and-after study, we assessed the feasibility of applying the robot to improve motor control and function of a hemiparetic upper extremity in patients who suffered chronic stroke.

Material and Methods

Six post-stroke patients with chronic hemiparesis were assigned to receive reaching exercise with the robot (YASKAWA Electric Corporation, Fukuoka, Japan) for 2 weeks at 15 minutes per day. We enrolled patients who, while sitting and without assistance, could reach 10 cm both vertically and horizontally with the affected upper extremity. Outcomes assessed before and after 2 weeks of intervention included the upper extremity component of the Fugl-Meyer Assessment (FMA-UE), the Action Research Arm Test (ARAT), the modified Ashworth Scale (MAS), and, during reaching movement, kinematic analysis.

Results

None of the patients experienced adverse events. Scores on the FMA-UE and ARAT improved significantly after the 2-week intervention. Changes in MAS scores were not statistically significant. Kinematic analysis showed that active range of motion at the elbow joint increased significantly during reaching movement, and trajectories of shoulder and wrist joints tended to decrease.

Conclusion

This robot-assisted modality is feasible and improves motor control and motor function after post-stroke chronic hemiparesis. The training may decrease compensatory trunk movement and may result in a smoother and straighter reaching trajectory.

Conflict of interest

Disclosure statement:

This work was supported in part by YASKAWA ELECTRIC CORPORATION.

ISPR7-0758

Neurological and Mental Health Conditions - Stroke 2

IS TIME SPENT USING CONSTRAINT INDUCED MOVEMENT THERAPY AN APPROPRIATE MEASURE OF DOSE? A CRITICAL LITERATURE REVIEW

A. Abdullahi¹

¹Bayero University Kano, Physiotherapy, Kano, Nigeria

Introduction/Background

Constraint induced movement therapy (CIMT) is used for upper limb rehabilitation following stroke. Evidence for its effectiveness has been reported on several outcomes, such as neurophysiological, behavioural and kinematic. The main components of CIMT are constraint of the unaffected limb and massed task practice with the affected limb for specific durations of time.

Material and Methods

Five databases and four recent systematic reviews were systematically searched. Studies of CIMT using duration in hours of time spent practising tasks and those using repetition of task practice as measures of dose were critically analysed.

Results

Most studies of CIMT use task practice duration in hours as the measure of dose. However, this way of determining dose seems arbitrary as dose is conceived differently in different studies. One randomised controlled trial (RCT) considered only the time spent practising tasks per session as task practice dose. A recent systematic review considered all factors of task practice duration (in hours per session, number of days per week and number of weeks practising task) as the task practice dose. Studies of neuroplasticity and motor learning in stroke reported that they are dependent upon number of repetitions of tasks practice. This number of repetitions is in the region of 300 and above; and this can provide an appropriate measure of dose of tasks practice.

Conclusion

While these findings can have immediate implications for clinical practice and can be easily adopted by the clinicians, more research needs to be undertaken using RCTs to establish a sound evidence base.

No conflict of interest

ISPR7-0763

Neurological and Mental Health Conditions - Stroke 2

RANDOMIZED SUPPLEMENTAL THERAPEUTIC CONVENTIONAL OR ROBOTIC UPPER LIMB EXERCISE IN ACUTE STROKE REHABILITATION

A. Esquenazi¹, S. Lee¹, T. Watanabe², A. Nastaskin³, S. Katherine³, J. O'Neill³

¹MossRehab, Gait and Motion Analysis Laboratory, Elkins Park, USA

²MossRehab, Physical Medicine and Rehabilitation, Elkins Park, USA

³MossRehab, Occupational Therapy, Elkins Park, USA

Introduction/Background

To maximize improvements on function and activity level in the recovery of the upper limb, we implemented a pilot study to determine the feasibility and impact of supplemental upper limb exercises in an acute stroke population.

Material and Methods

Design: Blinded, randomized pilot study.

Setting: Tertiary rehabilitation hospital, inpatient stroke unit.

Participants: Stroke patients with unilateral hemiparesis with minimum Fugl-Meyer Assessment (FMA) score of 8/66 or Modified Ashworth Score of <3 receiving usual minimum of 3 hours of daily therapy.

Intervention: Patients were randomized to conventional or robotic additional upper extremity exercise groups.

Main Outcome Measures: This study collects the number of completed sessions; withdrawals; serious/adverse events and functional parameters data: FMA, Functional Independence Measure (FIM) and FIM efficiency.

Results

Data on 15 acute post stroke patients of <2 months. Mean age was 66 years. More than half of the participants were male (64%) and most participants presented left sided paresis (79%). Embolic and ischemic strokes were similarly represented (36%) and 29% of hemorrhagic stroke. One patient withdrew for personal reasons prior to his first session. All 14 participants (8 robotic, 6 conventional) continued their training sessions until discharge. Of a total of 80 training sessions, 15 were incomplete. Adverse events ranged from upper limb pain; fatigue; gastrointestinal symptoms interfering with training and falls that occurred unrelated to their study participation.

Conclusion

This ongoing study depicts an acute stroke population that received additional upper extremity exercises. Based on the available data thus far, it is feasible to provide a supplemental functional exercise program to acute post stroke patients in an Inpatient Rehabilitation Facility (IRF) without serious adverse effects. We expect to complete and present data analysis on all 40 subjects including functional outcomes.

No conflict of interest

ISPR7-0779

Neurological and Mental Health Conditions - Stroke 2

**THERAPEUTIC EFFECTS USING SPEECH AND OCCUPATIONAL THERAPY
SIMULTANEOUSLY IN UPPER RIGHT EXTREMITY AND SPEECH DISORDERS FOR
NEUROLOGICALLY HOSPITALIZED ADULTS.**

C. Perez¹, M.I. Ferrera², T. Gutierrez²

¹Clinica Alemana de Santiago, Medicina Física y Rehabilitación, Santiago, Chile

²Clinica Alemana de Santiago, Medicina Física y Rehabilitación, Santiago, Chile

Introduction/Background

About 70% of the patients who have suffered left stroke perrolandic, struggle with speech and movement of the upper extremity. The primary motor area and the Broca area activate simultaneously when right hand movement and speech is triggered at the same time. Studies suggest that neurons, who are stimulated during upper right extremity movement, activate the language and mirror speech neurons. Physiological precedents may give place to the application of joint treatment, meaning the use of simultaneous therapy for both issues. No evidence has been found in the application of simultaneous therapy Speech Therapist (STL) and Occupational Therapist (OT) work in these patients

Material and Methods

Adults who suffer left stroke from medium cerebral artery, with Broca Afasia (Boston 3/5 points), Speech Apraxia and right hemiplejia (ARAT 0/57 points). Seventy two sessions were performed between STL and OT. The patients were sitting, while performing reaching exercise and naming objects.

Results

After 72 sessions, the patient presents quantitative and clinic changes, in lenguaje and right extremity , based in 36/57 ARAT Test points and 5/5 in Boston Test.

Conclusion

Simultaneous therapy enhanced rehabilitation observing more lexical access and speech functions. Recognized her right arm included it in a functional activity.

Our experience demonstrated a non-explored sinergy in rehabilitation between STL and OT in hospitalized patients with left stroke.

No conflict of interest

ISPR7-0794

Neurological and Mental Health Conditions - Stroke 2

SKELETAL MUSCLE AREA IS ASSOCIATED WITH TIBIAL BONE STRENGTH INDEX IN PEOPLE WITH CHRONIC STROKE: IMPLICATIONS FOR REHABILITATION

Z.H. Yang^{1,2}, M.Y.C. Pang¹

¹The Hong Kong Polytechnic University, Department of Rehabilitation Sciences, Kowloon, Hong Kong S.A.R.

²Guangdong Provincial Work Injury Rehabilitation Hospital, Department of Physical Therapy, Guangzhou, China

Introduction/Background

People with stroke often sustain increased bone loss and a higher fracture rate. Muscle health may be an important factor underlying bone quality post-stroke. The aim of the study was to examine the relationship between the bone strength index measured at the hemi-paretic tibial diaphysis and muscle cross-sectional area (a surrogate measure of muscle force) in people with chronic stroke.

Material and Methods

The 66% site of the tibia (at 66% of the total bone length measured from the distal endplate of tibia) on both sides was scanned using peripheral quantitative computed tomography (pQCT) in 70 participants with chronic stroke (mean±SD age: 62.5±7.8 years; mean time since onset of stroke±SD: 107.1±66.2 months). Bone parameters and muscle cross-sectional area values were generated by pQCT.

Results

The paretic tibial diaphysis had significantly lower cortical bone mineral density ($p=0.001$), cortical bone mineral content ($p<0.001$), cortical bone area ($p<0.001$), and bone strength index ($p=0.002$) than the non-paretic side. After adjusting for relevant demographic factors such as age, sex, body mass index and time since stroke onset, multiple regression showed that the muscle cross-sectional area remained significantly associated with the bone strength index of the tibial diaphysis on the hemi-paretic side, accounting for 11.6% of the variance ($p<0.001$).

Conclusion

Muscle cross-sectional area was significantly associated with the bone strength index at the hemi-paretic tibial diaphysis in participants with chronic stroke. The results highlight the potential importance of increasing muscle mass/strength in enhancing or maintaining bone strength, which will need further research.

Conflict of interest

Disclosure statement:

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ISPR7-0800

Neurological and Mental Health Conditions - Stroke 2

RELIABILITY AND VALIDITY OF SENSORY ORGANIZATION TEST IN DUAL-TASK CONDITION AMONG PEOPLE WITH CHRONIC STROKE

L. Yang¹, C. He², M. Pang³

¹*Sichuan University –The Hong Kong Polytechnic University, Institute of Disaster Management and Reconstruction, Chengdu, China*

²*West China Hospital- Sichuan University-, Department of Rehabilitation Medicine, Chengdu, China*

³*Hong Kong Polytechnic University, Department of Rehabilitation Sciences, Kowloon, Hong Kong S.A.R.*

Introduction/Background

Individuals with stroke often have impaired balance ability in dual-task condition. Reliable and valid assessment of dual-task balance function in individuals with stroke is essential. The aim of this study was to evaluate the reliability and validity of the sensory organization test (SOT) under dual-task condition in people with chronic stroke.

Material and Methods

Ninety individuals with chronic stroke (23 women, mean age: 62.5±7.8 years) participated in the study. Condition 1 (stable surface, eyes open), 2 (stable surface, eyes closed), 4 (sway-referenced surface, eyes open), and 5 (sway-referenced surface, eyes closed) of SOT were selected in our testing protocol, using the NeuroCom Balance Manager Systems. Each balance task (20 seconds in duration) was tested in a single-task condition (no imposed cognitive task) and two different dual-task conditions: (1) combined with a verbal fluency task, and (2) combined with serial-3-subtractions. Outcomes were the equilibrium score (ES) generated by the SOT, and the correct response rate (CRR) for the cognitive tasks. Those who had experienced one or more falls in the past 12 months were considered as fallers. To establish the test-retest reliability, forty-five of the participants were evaluated again 3-4 days after the first assessment.

Results

The test-retest reliability of ES (Intraclass correlation coefficient ($ICC_{2,1}$)=0.48-0.81) and CRR in dual-task conditions (verbal fluency: $ICC_{2,1}$ =0.59-0.68; serial subtractions: $ICC_{2,1}$ =0.64-0.78) was moderate. No significant difference was found in any of the dual-task SOT-derived outcomes between fallers and non-fallers ($p>0.05$).

Conclusion

The dual-task SOT demonstrated moderate reliability only in people with chronic stroke and was not useful in identifying fallers. More research is required to develop dual-task balance assessments with sound psychometric properties for use in individuals with stroke.

Conflict of interest

Disclosure statement:

Yang was supported by a PhD research studentship provided by the Institute for Disaster Management and Reconstruction, Sichuan University – Hong Kong Polytechnic University (grant number RTHV).

ISPR7-0822

Neurological and Mental Health Conditions - Stroke 2

THE EFFECT OF ORAL CARE INTERVENTION IN STROKE SURVIVORS

N. Ab Malik^{1,2}, S. Mohamad Yatim³, L.S.W. Li⁴, O.L.T. Lam⁵, C. Mcgrath¹

¹*The University of Hong Kong, Dental Public Health, Hong Kong, Hong Kong S.A.R.*

²*Universiti Sains Islam Malaysia, Dentistry, Kuala Lumpur, Malaysia*

³*Serdang Hospital, Rehabilitation Department, SELANGOR, Malaysia*

⁴*Tung Wah Hospital, Medicine, Hong Kong, Hong Kong S.A.R.*

⁵*The University of Hong Kong, Oral Rehabilitation, Hong Kong, Hong Kong S.A.R.*

Introduction/Background

Oral health care is often neglected among stroke survivors. Good oral hygiene has been shown to improve clinical oral health, and prevent the incidence of stroke-associated pneumonia. This study aimed to evaluate the effectiveness of an oral health care intervention in improving oral hygiene and decreasing oral opportunistic pathogens in patients after stroke.

Material and Methods

A randomized controlled trial was conducted among 86 stroke survivors. Patients were randomized into either the i) Test group: powered toothbrush and antimicrobial gel [1% chlorhexidine gluconate], or ii) Control group: conventional oral care (manual toothbrush and toothpaste). Oral assessments and oral microbial sampling were conducted at baseline, 3-months and 6-months.

Results

A total of 54 patients were assessed at the three-time points. Dental plaque scores were significantly lower at 6-months for both groups compared to baseline ($p < 0.05$).

Conclusion

Oral hygiene among the stroke survivors improved over the 6-month intervention period for both groups, and significantly lower levels of yeast and S.aureus were evident in the test group. The study showed that oral health care does reduce dental plaque, yeast and S.aureus counts among stroke patients. This has implications for stroke rehabilitation.

Conflict of interest

Disclosure statement:

The research was funded by The University of Hong Kong

THE EFFECT OF REPEATED BOTULINUM TOXIN TYPE-A INJECTIONS ON UPPER LIMB SPASTICITY IN POST-STROKE PATIENTS

S. Tuna¹, N. Balci¹

¹Akdeniz University School of Medicine, Department of Physical Medicine and Rehabilitation, Antalya, Turkey

Introduction/Background

The purpose of this study is to investigate whether repeated BT-A therapy has an increasing or decreasing effect according to first session BT-A therapy on distal and proximal upper limb spasticity in post-stroke patients.

Material and Methods

The fifty-four post-stroke patients with distal and upper limb spasticity treated with BT-A were included in the retrospective study. The average age of 54 patients (32M, 22F) was 50.54±15.13 years. The patients were evaluated before and after treatment with different scales. The severity of spasticity was evaluated by applying Modified Ashworth Scale (MAS) before and after treatment. Frency Arm Test (FAT) to assess arm functions and Brunnstrom Recovery Stage for neuro-physiological evaluation were used.

Results

The significant differences were found in MAS scores of elbow and wrist flexor muscles (p=0.001) but no significant differences were found in FAT and Brunnstrom recovery stage (p= 0.059, p=0.129,p=0.102) when the scores of the 5th injections were compared to those of 1st injections. (Table 1) There was no significant difference in terms of Brunnstrom recovery staging before and after BT-A treatment. (p= 0.051, p=0.305)

Table1..

	Before BT-A (54) Mean std	1 st season (54) Mean std	5 th season (14) Mean std	p	P (Before-1 st season)	p (1 st -5 th season)
MAS						
Elbow flexor	45 2.18±0.81	45 1.69±0.67	12 1.17±0.39	0.001*	0.001**	0.004**
Hand wrist flexor	48 1.77±0.75	48 0.62±0.67	11 0.52±0.83	0.001*	0.001**	0.001**
Finger flexor	47 2.64±0.76	47 1.83±0.76	7 1.14±0.38	0.002*	0.001**	0.129
FAT	0.17±0.50	1.08±1.11	2.17±1.94	0.014*	0.001**	0.102

* : p ≤ 0.05

** : p ≤ 0.017 (Bonferroni correction)

Conclusion

BT-A is an reversible and reliable agent and it is recommended as the first choice in the focal spasticity treatment. Also, the cumulative effect of regular repeated BT-A treatment in distal and proximal upper limb spasticity with post- stroke patients was observed.

No conflict of interest

ISPR7-0833

Neurological and Mental Health Conditions - Stroke 2

DISTURBANCES OF EGOCENTRIC REFERENCE FRAME AND POSTURAL BEHAVIOUR EARLY AFTER A STROKE

K. Jamal¹, S. Leplaideur¹, N. Senal¹, I. Bonan¹

¹SMPRA, CHU Rennes, Rennes, France

Introduction/Background

Asymmetrical postural behaviours are frequent after a stroke. They are due in part to the sensorimotor deficit, but they could also be related to a disorder of the representation of the body in space. The objective of this research is to determine whether the asymmetrical postural behaviours of stroke patients are correlated with the disruption of the perception of the egocentric axis

Material and Methods

30 volunteer stroke patients and 31 healthy subjects participated in the study. Postural asymmetry was detected by the evaluation of body weight repartition on a force platform (Weight Body Asymmetry) and the lateropulsion detected by the Scale for Contraversive Pushing (SCP) and was then correlated to the egocentric reference frame (assessed by testing the Longitudinal Body Axis (LBA) and the Subjective Straight Ahead (SSA) by a partial correlation with motor function and sensitivity as covariables.

Results

The results showed differences between the right brain damage (RDB) and the left brain damage (LBD) on both postural behaviour and egocentric reference frame. A relation was found between the WBA and the LBA ($r = -0.56$ $p = 0.04$) in the RBD group.

Conclusion

This study therefore points out a relation between disturbance of egocentric reference and WBA disorders in the RBD group but not between lateropulsion and disturbance of egocentric reference. This is an argument in favour of the fact that WBA, increased notably in the case of a right side lesion, which is partly due to a disorder of the egocentric body representation in space, and this could be not the case for the lateropulsion behaviour.

No conflict of interest

ISPR7-0845

Neurological and Mental Health Conditions - Stroke 2

UNDERSTANDING VARIATIONS IN STROKE CARE TRAJECTORIES

L. Poissant¹, C. Miéville¹, A. Rochette¹

¹Université de Montréal, School of Rehabilitation, Montreal, Canada

Introduction/Background

Despite strong evidence highlighting the benefits of organized services from acute care to rehabilitation centres, access to rehabilitation services post-stroke remains variable creating multiple care trajectories. A large audit of rehabilitation services provided to stroke survivors created an opportunity to identify factors that contribute to variations in stroke care trajectories across the continuum of care.

Material and Methods

A retrospective cohort of patients who suffered a stroke in year 2012-2013 was created and a chart audit was conducted. For each patient, we created care trajectories using the unique provincial identification number (NAM) and collected data at all transition points, from acute care hospitals to in/out patient rehabilitation organisations. We characterized patient's profile on functions, activity and environment related variables. We also collected data on care processes (e.g admission delays, length of stay (LOS)) and structures (e.g. volume of patients, team structures).

Results

Overall, more than 1700 charts have been audited. Preliminary data on a subset of charts indicate that, within a given region, a large proportion (65%) of patients have similar care trajectories. However, for a similar care trajectory (i.e. transfer to in-patient rehabilitation), acute care hospitals had significantly different length of stay and referred different patient profiles. Further analyses will be conducted to examine the influence of care processes (e.g. number of team meetings) and structures (e.g. representativeness of teams) of hospitals. Regional differences will be considered.

Conclusion

Care trajectories appear to remain variable and dependent upon which acute care hospital the trajectory begins with. This study will inform clinical teams and policy-makers on changes to be implemented to improve the quality of stroke care delivery.

No conflict of interest

ISPR7-0924

Neurological and Mental Health Conditions - Stroke 2

FEASIBILITY OF ACCELEROMETER USED FOR MONITORING UPPER EXTREMITY USE IN DAILY LIFE OF SUBACUTE STROKE PATIENTS

X. Wei¹, X. Wei², N. FONG²

¹Shenzhen Hospital of Southern Medical University, Department of Rehabilitation Medicine, Shenzhen, China

²The Hong Kong Polytechnic University, Department of Rehabilitation Sciences, Kowloon, Hong Kong S.A.R.

Introduction/Background

Accelerometer was employed by many studies for measuring upper extremity use in stroke patients, however, there is still no consensus on the feasibility in clinical practice. The objective of the study was to investigate the performance of unilateral accelerometer in these subacute stroke patients who just discharged from hospital.

Material and Methods

We recruited 24 participants from two local hospitals, and these subjects were instructed to wear accelerometer on their affected wrist for 4 weeks. In addition to the data recorded by the accelerometer based on the counting method used by previous studies, conventional assessments included Fugl-Meyer Assessment, Action Research Arm Test, Box and Block Test and Motor Activity Log were used as well at four occasions (4-week, 8-week, and 12-week). We used Friedman test and Spearman's rank correlation coefficients to evaluate the improvement of function and relationship between assessments.

Results

All of the conventional assessments showed significant improvement in observation period, and presented significant correlation between assessments. The parameters extracted from accelerometer appeared insignificant change throughout the 4 weeks of wearing, and showed insignificant correlation with any conventional assessments.

Conclusion

Accelerometer could not show the rapid improvement as the results revealed by conventional assessments, this might indicate that current counting method of accelerometer is not sensitive enough to detect the functional change, and ultimate strategy is required.

No conflict of interest

ISPR7-0103

Neurological and Mental Health Conditions - Traumatic Brain Injury

EFFECT OBSERVATION OF COMMUNITY REHABILITATION MODEL ON GENERIC SET OF ICF FOR PATIENTS WITH TBI

J. He¹, J. Chengsen¹, W. Qingchuan¹

¹West China Hospital- Sichuan University, Department of Rehabilitation Medicine, Chengdu, China

Introduction/Background

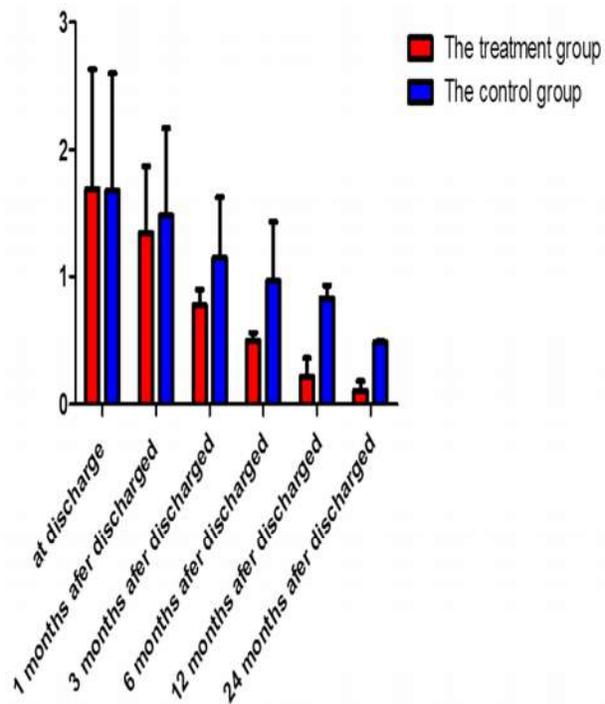
To observe the effects of Community Rehabilitation Model on Generic Set of ICF for Patients with TBI.

Material and Methods

A total of 60 inpatients with TBI in conscious period were randomly divided into the intervention group and the control group when they were discharged from rehabilitation department of West China Hospital .The baseline of the general data were no difference between the 2 groups. The patients in intervention group received Community Rehabilitation Model (included physical therapy, occupational therapy, environmental improvement) while the control group received Family Rehabilitation Model(self-training according to discharge rehabilitation program) . Both therapies were given or done 5 times a week and lasted for 3 months .Patients in both groups were followed up at 1 ,3,6,12,24 months after the patients were discharged from West China Hospital. They were assessed by Generic Set of ICF(included b130, Energy and drive functions ; b152, Emotional functions ; b280, Sensation of pain ; d230.Carrying out daily routine ; d450, Walking and d850, remunerative employment.

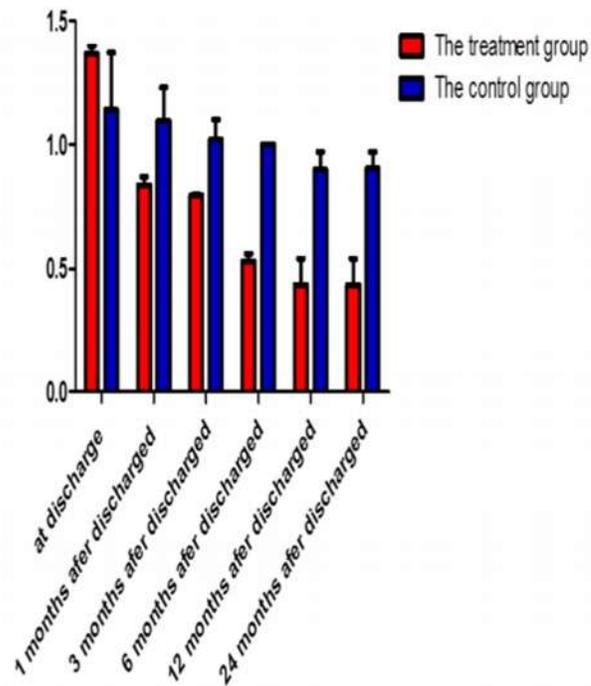
Results

Comparison the damaged degree of walking at different time points between the two groups

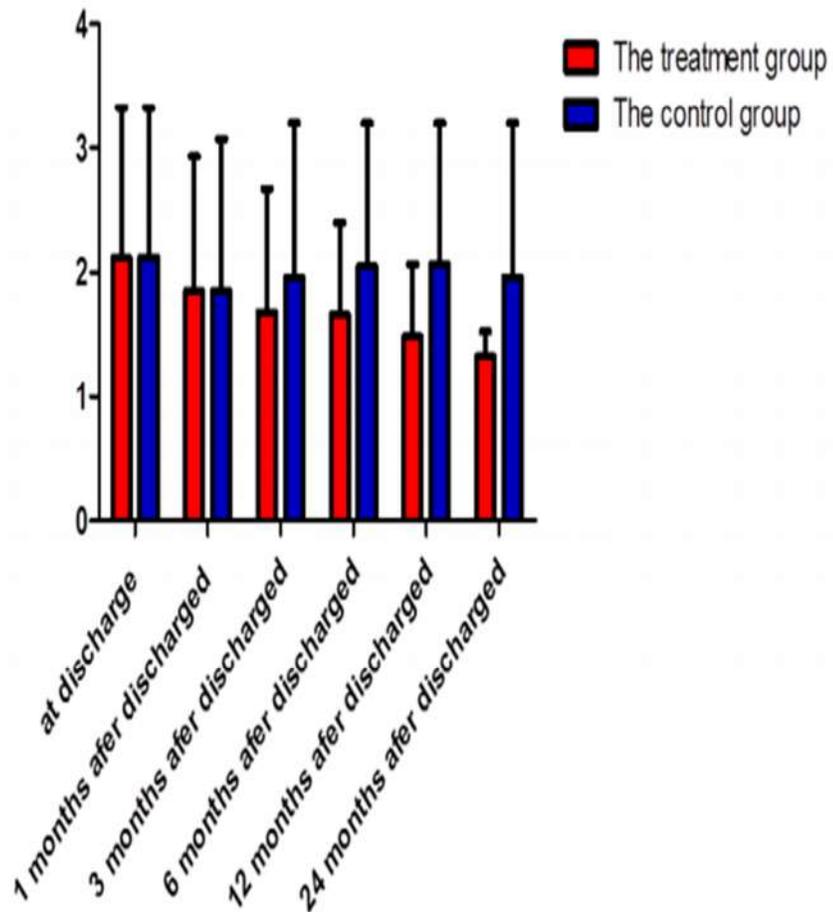


See figures

Comparison the degree of Sensation of pain at different time points between the two groups



Comparison the damaged degree of Carrying out daily routine at different time points between the two groups



Conclusion

Both Community Rehabilitation Model and Family Rehabilitation Model are helpful on improving b130, b152, b280, d230 and d450. However, Community Rehabilitation Model showed sooner and higher effects on improving b280, d450 and d230. No pleasant changing in d850.

No conflict of interest

ISPR7-0111

Neurological and Mental Health Conditions - Traumatic Brain Injury

LONG-TERM FUNCTIONAL AND PSYCHOLOGICAL OUTCOMES, IN PERSONS WITH MODERATE TO SEVERE TRAUMATIC BRAIN INJURY

B. Amatya¹, F. Khan¹, R. Judson¹, P. Chung¹, M. Truesdale¹, M. Galea²

¹Royal Melbourne Hospital, Department of Rehabilitation Medicine, Parkville, Australia

²University of Melbourne, Department of Medicine Royal Melbourne Hospital, parkville, Australia

Introduction/Background

The survival rates and functional outcomes of persons with traumatic brain injury (TBI) have improved, however, they often have long-term physical, cognitive and behavioural disabilities, residual neurological deficits, medical complications and lifestyle consequences. The aim of this study was to examine factors impacting long-term functional and psychological outcomes in persons with moderate to severe TBI.

Material and Methods

A prospective cross-sectional study assessed the long-term (up to 5 years) impact of TBI on participants (n=103 non-compensable patients registered in a tertiary hospital Trauma Database from 2009 to 2010) current activity and restriction in participation and caregiver burden using validated questionnaires.

Results

Participants' mean age was 48.6±7.9 years, majority were male (77%). The common causes of TBI were falls (42%) and motor vehicle accidents (27%); and TBI-related symptoms were: pain/headache (47%), dizziness (36%), bladder/bowel impairment (34%), sensory-perceptual deficits (34%). Participants reported minimal change in their physical function and cognition (Functional Assessment Measure FIM-FAM: motor (median (Md): 102, Inter Quartile Range (IQR): 93-111) and cognition (Md: 89, IQR: 78-95)). Participants were well-adjusted to community-living, however, reported high levels of depression. Factors significantly associated with poorer current level of functioning/wellbeing included: older age (≥60 years), presence of TBI-related symptoms, a lack of previous rehabilitation and those classified in 'severe disability categories' at admission. Caregivers reported high levels of strain and burden (55%).

Conclusion

Cognitive and psychosocial problems were commonly reported by TBI survivors in the longer-term than physical disability. More focus on participation and aging with disability in these persons is needed.

No conflict of interest

ISPR7-0143

Neurological and Mental Health Conditions - Traumatic Brain Injury

CRASH AND IMPACT! LET'S BE OPTIMISTIC FOR SEVERE TRAUMATIC BRAIN INJURY SURVIVORS ENTERING REHABILITATION

C. Martins Moreira¹, R. Seemann², A. Foster²

¹*Centro Hospitalar do Porto - Hosp Santo Antonio, Serviço de Fisiatria, Porto, Portugal*

²*ABI - Acquired Brain Injury Rehabilitation, ABI - Acquired Brain Injury Rehabilitation, Auckland, New Zealand*

Introduction/Background

Traumatic brain injury (TBI) is a heterogeneous disease with respect to severity and prognosis which causes considerable uncertainty in what regards to expected outcome of each patient.

The IMPACT and CRASH on-line tools are used in early assessment to predict outcomes at 6 months for persons with severe traumatic brain injury (TBI). We wanted to see how these tools might be applied to patients entering rehabilitation.

Material and Methods

CRASH and IMPACT prediction data were prospectively collected from a cohort of 96 patients admitted to our rehabilitation service in Auckland, New Zealand. Outcome data were collected at 6 months, using a modified version of the Glasgow Outcome Scale.

Results

We have found that applying these prediction tools to survivors of TBI entering a rehabilitation service post acute hospital care gave an unduly pessimistic assessment of outcome. For example, using the IMPACT tool, we found that the rate of poor outcomes was about 40% of that expected. By a simple reset of the parameters for these two on line tools, we found we could better utilize them to predict good rather than poor outcomes from the rehabilitation process at 6 months post injury. We were able to show, for instance, using the IMPACT, those with a score of 50% or less could expect a 98% chance of a good outcome.

Conclusion

We consider that this is positively framed information which would assist survivors and their families as they transition from neurosurgical to rehabilitation service. The IMPACT tool proved to be the better predictor of good outcomes.

No conflict of interest

ISPR7-0233

Neurological and Mental Health Conditions - Traumatic Brain Injury

**DEMOGRAPHICS AND FUNCTIONAL OUTCOMES OF TRAUMATIC BRAIN INJURY
REHABILITATION IN KOREA**

T.W. Kim¹, J. Lee¹, H. Lee¹

*¹National Traffic Injury Rehabilitation Hospital, Traumatic Brain Injury Rehabilitation Center,
Yangpyeong-Gun, Republic of Korea*

Introduction/Background

The aims of the present report are as follows; (1) to document the demographic characteristics and (2) to describe functional outcomes of patients with TBI in Korea. This may contribute to a better understanding and planning of TBI rehabilitation.

Material and Methods

A retrospective analysis using the clinical data warehouse of the first trauma rehabilitation hospital in Korea. We reviewed the electronic medical records and analyzed the functional rehabilitation outcomes (K-MBI, MMSE-KC, and Berg balance scale) of 134 patients with TBI for the period of about 2 years.

Results

The mean age was 44 years (9 to 84 years old) and 109 were male (81.3%). Two distinct causation groups; 102 road traffic injuries (76.12%) and 32 falls (23.9%). Discharge to acute care hospitals (20.1%) was not uncommon because of trauma-related complications and/or scheduled surgical procedures. On the K-MBI, MMSE-KC, and Berg balance scale, scores improved by the average of 11.1, 3.6, and 6.8 with comprehensive rehabilitation, respectively. All the functional outcome measurements indicated significant recovery within 2 years after injury.

Conclusion

Young, male, or road traffic injury victims may take the majority of moderate to severe TBI patients at the comprehensive rehabilitation stage in Korea. A fifth of patients who discharge to the acute care hospital may suffer from the interruption of rehabilitation. Lastly, Functional recovery with comprehensive rehabilitation may go on until about 2 years after injury.

No conflict of interest

ISPR7-0278

Neurological and Mental Health Conditions - Traumatic Brain Injury

FUNCTIONAL INDEPENDENCE STATUS OF PATIENTS WITH TRAUMATIC BRAIN INJURY AFTER ICU DISCHARGE IN A SOUTHERN CAPITAL OF BRAZIL

F.Z. Arêas¹, M. Ribeiro Zanela Arêas², G. Peixoto Tinoco Arêas³, R. Walz⁴

¹Universidade Federal do Amazonas, Faculty of physical education and physiotherapy, Manaus, Brazil

²Universidade Federal do Amazonas, Nursing school, Manaus, Brazil

³Universidade Federal do Amazonas, Institute of Biological Sciences, Manaus, Brazil

⁴Universidade Federal de Santa Catarina, medical sciences, Florianópolis, Brazil

Introduction/Background

The brain skull injury (TBI) is the leading cause of death in young adults throughout the world, in many countries the high incidence of TBI, beyond mortality, presents high rates of morbidity becoming a serious public health problem¹. The TBI is a chronic disease process that generates many sequels: Motor, sensory, cognitive, psychiatric that appear after months or years after the injury. These sequels will have great impact on the functionality of patients with great difficulty to return to the previous working. There are few epidemiological studies in Brazil on cranial trauma, few studies that show the segment of these patients with regard to their hospital and intra functional evolution and after discharge and this is crucial to better planning of public health policies in all health care areas.

Material and Methods

The study is a Cross sectional study, data were collected from all patients hospitalized with trauma severe brain injury in the period from 01/03/2015 to 06/22/2015 in Florianópolis. It was applied to Functional independence measure (FIM) in patients 72 hours after discharge from the intensive care unit. Of the 67 patients 15 died (22.4%) and 2 (3.0%) was transferred to another city, resulting in 49 patients evaluated.

Results

Clinical and demographic characteristics: the average age of patients is 41.06 (SD \pm 17.93) years, and 89.6% of patients (n = 67) are men. Of 49 patients, 19 were hospital A and 30 B of the hospital. The minimum value of the FIM obtained among patients was 18 and the maximum 126. The total average FIM was 35.71 ± 01.30 and $28.74 \pm$ hospital A 23.2 ± 33.4 and 40.13 of the hospital B. Standard deviation total of 30.19.

Conclusion

This study concludes that after discharge from the ICU the overall score of patients is low, pointing to a severe functional impairment.

No conflict of interest

ISPR7-0338

Neurological and Mental Health Conditions - Traumatic Brain Injury

MANAGING COGNITIVE AND BEHAVIORAL ISSUES AFTER TBI DURING THE ACUTE INPATIENT REHABILITATION PERIOD

M. Yochelson¹, P. Wolfe²

¹MedStar National Rehabilitation Network, Rehabilitation Medicine, Washington- DC, USA

²MedStar National Rehabilitation Network, Psychology, Washington- DC, USA

Introduction/Background

Managing complex cognitive and behavioural issues after a TBI can be challenging. Globally, there is great variability in patient access to dedicated brain injury programs with most patients having to go to a general acute rehabilitation programs or obtain their therapy in a skilled nursing facility or other facility with less expertise in managing such patients. The aim of this presentation is to discuss some of the more common cognitive and behavioural issues faced after TBI and how to manage them through both pharmacological and non-pharmacological means.

Material and Methods

The authors based this presentation on literature reviews and expert opinion.

Results

Recommendations for management of cognitive issues with a focus on therapeutic interventions as well as clinical education for nurses, therapists and physicians managing these patients will be provided. Discussion of options to manage neurobehavioral changes, including agitation, will be discussed. This will include an overview of medication management, appropriate use of restraints, therapy and environmental modifications.

Conclusion

The presenters will provide recommendations designed to help clinicians, particularly those practicing in an environment that does not specialize in TBI, manage the more complex cognitive and neurobehavioral challenges after traumatic brain injury.

No conflict of interest

ISPR7-0364

Neurological and Mental Health Conditions - Traumatic Brain Injury

ESTABLISHING THE INFANT MACAQUE HEMIPLEGIA MODEL AND IT'S BEHAVIOR DEVELOPMENT EVALUATION

T. Jiulai¹

¹Anhui Medical University, Pediatric Neurological Rehabilitation Center, Hefei, China

Introduction/Background

To apply partial resection of the macaque motor cortex for establishing infant macaque hemiplegia model and evaluation methods.

Material and Methods

Six individuals of 2-month-old macaques were randomly divided into normal control group and operation model group. Partial resection of the motor cortex was carried out in operation model group. The precentral gyrus cortex from above the right lateral cerebral fissure to the inter-hemicerebral fissure, together with the posterior- superior frontal gyrus (about 0.3 to 0.5cm in front of the anterior median sulcus) cortex were removed to the depth of 0.5 to 0.6cm. The operation process was simulated in normal control group, but no brain cortex was removed. In order to observe the dyskinesia of contralateral limb and the abnormal dynamic-static posture of different individuals, we used video to record the consecutive behaviors after the operation. We also used manual test and modified Ashworth scale to examine the manifestations of human spastic hemiplegia such as reflex dysplasia or muscle tone abnormality.

Results

We used video to record dyskinesia of contralateral limb and the abnormal dynamic-static posture of different individuals. The operation model group developed dyskinesia of the left limbs and left limb hemiplegia, meanwhile, the diet and activities were mainly completed by the right limbs. They were mostly in prone position at rest, and took activities at times but could not stand up. Activities increased after operation about 2 days, and macaques could walk with the support of the four limbs, and tilted to the left, with left limb claudication.

Conclusion

Partial resection of unilateral motor cortex allows for successful establishing of infant macaque spastic hemiplegic cerebral palsy models. Applying behavior study and manual test in examining changes of muscle strength and muscle tone, together with neurobehavioral score and changes of cerebral imaging allowed for accurate evaluation of establishing the infant macaque hemiplegia model.

No conflict of interest

ISPR7-0475

Neurological and Mental Health Conditions - Traumatic Brain Injury

PARTICIPATION IN LEISURE ACTIVITIES IN TRAUMATIC BRAIN INJURY PATIENTS 3 TO 4 YEARS POST INJURY

M. Ron¹, G. Vih¹, I. Almeida¹, V. Sosa¹

¹FLENI, Occupational Therapy, Escobar, Argentina

Introduction/Background

The aim of this research is to explore the change that occurs in leisure activities carried out by people who have suffered severe traumatic brain injury (TBI). A 3-4 years follow up from inpatient program.

Material and Methods

Design: descriptive study

Participants: 49 patients undergoing rehabilitation treatment at the Institute FLENI during the years 2012 and 2013 of which 23 met all inclusion criteria (age range 18-64), (19 men, 4 women).

Main outcome measure: Participation in Leisure Activities Inventory. The questionnaire was designed for this research and gives information related to the type, frequency and level of assistance in leisure activities performed before and after the injury. Subjects were contacted by phone calls.

Results

Pre-Injury most leisure activities included sports (52%) and social life/participation (26%) were carried out in groups (70%), outside homes (83%) and in an independent way. The frequency of participation in leisure and productivity activities was very variable.

3- 4 years post Injury most people engaged in recreational activities (30 %), inside their home (48%), practiced individually, with modified independence (66%). Most participants were not involved in productive activity at the time of the research.

Conclusion

The results of this study show that the main leisure activity in people who have had a severe TBI, 3 - 4 years after injury, experiences substantial changes according to type (increase of recreational activities and decrease of sports), frequency and level of assistance.

Knowing which aspects of activities change will allow to develop specific care programs for patients with TBI.

No conflict of interest

ISPR7-0511

Neurological and Mental Health Conditions - Traumatic Brain Injury

EARLY REHABILITATION IN ICU PATIENTS WITH SEVERE ACQUIRED CEREBRAL INJURY: IS MOBILIZATION EFFECTIVE?

M. Bartolo¹, S. Bargellesi², C.A.C. Castioni³, D.I. Intiso⁴, F.S. Scarponi⁵, D. Bonaiuti⁶

¹HABILITA Care and Research Rehabilitation Hospitals,

Department of Rehabilitation- Neurorehabilitation Unit, Zingonia di Ciserano- Bergamo, Italy

²Uls 9 Ca' Foncello Hospital,

Department of Rehabilitation Medicine- Severe Acquired Brain and Spinal Cord Injuries Rehabilitation Unit, Treviso, Italy

³S. G. Bosco Hospital, Unit of Anesthesia and Intensive Care B-DEA, Turin, Italy

⁴IRCCS Casa Sollievo della Sofferenza,

Physical Medicine and Rehabilitation- Neurorehabilitation Unit, San Giovanni Rotondo FG-, Italy

⁵S. Giovanni Battista Hospital, SSD Severe Acquired Brain Injury Unit Foligno PG-, Foligno PG, Italy

⁶S. Gerardo Hospital, Dpt Physical Medicine and Rehabilitation, Monza, Italy

Introduction/Background

Intensive Care Unit (ICU) patients due to prolonged immobilization may develop complications such as cardiovascular system damage and critical illness neuromuscular syndromes that have been associated with poor short-term outcome, including a delay in ICU/hospital discharge.

Early mobilization via the maintenance of muscle strength might counterbalance these effects, improving functional outcome, sedation levels and patients' quality of life.

In this field, studies on early rehabilitation are usually addressed to ICU patients suffering from cerebrovascular diseases (CVD) with scanty and conflicting results.

This study aimed at investigating if early mobilization performed in Intensive Care Unit (ICU) may influence functional outcome in severe Acquired Brain Injury (sABI) patients.

Material and Methods

In a prospective observational multicenter study, clinical, neurological and functional data, including Glasgow Coma Scale (GCS), Disability Rating Scale (DRS), The Rancho Los Amigos Levels of Cognitive Functioning (LCF), Early Rehabilitation Barthel Index (ERBI), Glasgow Outcome scale (GOS), Functional Independence Measure (FIM) were collected at the admission and every 3-5 days until ICU discharge. Depending on whether patients received mobilization or not, they were divided into MOB and noMOB group, and data were analyzed.

Results

67 patients entered the MOB group, 40 the noMOB group. At discharge both groups significantly improved at GCS, DRS, LCF, ERBI. MOB-group had a significantly better improvement for FIM cognitive, GOS and ERBI. No adverse events were reported in either group.

Conclusion

Even if early mobilization can be safely implemented in sABI patients in ICU, favoring clinical and functional recovery, it isn't a widely used practice and further studies are needed.

No conflict of interest

ISPR7-0631

Neurological and Mental Health Conditions - Traumatic Brain Injury

DEPRESSION AND MILD COGNITIVE IMPAIRMENT IN POST-TRAUMATIC HEADACHE: IS THERE A CORRELATION?

R. Iwanicki¹, C. Debert¹

¹University of Calgary, Clinical Neurosciences, Calgary, Canada

Introduction/Background

Approximately 15-20% of patients following mild traumatic brain injury (mTBI) have persistent symptoms beyond one month, meeting the WHO definition of post-concussion syndrome (PCS). The most common symptom in PCS is post-traumatic headache (PTH), but it can also involve depressed mood and mild cognitive impairment (MCI). This study aimed to determine whether there is a correlation between depression and MCI in patients with PTH.

Material and Methods

We did a retrospective chart review of 139 patients presenting to an outpatient brain injury clinic with PCS. The data extracted included demographic information, PTH diagnosis, Patient Health Questionnaire 9 (PHQ-9) score and Montreal Cognitive Assessment (MoCA) score. Patients were classified into two groups: PTH and no PTH. Statistical analyses were completed using a one-way analysis of variance, chi-square test, and logistic regression.

Results

Of the 110 patients included in the study, 46 were male (42.8%) and 64 were female (58.2%); 82 had PTH (74.5%), 94 had depression (85.5%), and 36 had MCI (32.7%). The prevalence of PTH was similar between males and females ($p=0.90$). Time since injury was significantly lower in the PTH group (9.3 months) compared to the no PTH group (15.6 months) ($p=0.01$). No significant association was found between PTH, depression and MCI (Pearson Correlation Coefficient = -0.28).

Conclusion

In patients with PCS, there were high rates of depression and MCI overall. The prevalence of PTH was similar between males and females. The PTH group had a shorter time since injury than patients without headache. There was no significant association between PTH, depression, and MCI.

No conflict of interest

ISPR7-0662

Neurological and Mental Health Conditions - Traumatic Brain Injury

**RECOVERY OF BALANCE AND GAIT IN SUBJECTS WITH CEREBRAL HYPOXIA:
COMPARISON WITH TRAUMATIC BRAIN INJURY.**

L.I. Culasso¹, M.E. Rivas¹, V. Jarmoluk¹, S. Broggi¹

¹FLENI, Kinesiologia, Escobar, Argentina

Introduction/Background

The balance is a determining factor in functional recovery in people with acquired brain damage. About 30% of this patients have balance problems and limitations in motor function including problems in the gait.

Objective: Compare the results of balance and gait in patients with hypoxia with those of patients with traumatic brain injury (TBI) hospitalized in rehabilitation.

Material and Methods

Comparative study with matched case-controlled design. We retrospectively reviewed records of all patients with cerebral hypoxia admitted to an inpatient rehabilitation TBI unit from January 2005 to December 2014. Procedure: Subjects who meet the inclusion criteria (n = 20) were paired to compare results at discharge, with TBI patients (n = 20).

Results

In hypoxia group, were observed statistically significant differences between the beginning and discharge for Berg Balance (BBS), Functional Ambulation Categories (FAC) and Functional Independence Measures (FIM) scales, respectively ($p < 0.001$, $p = 0.001$, $p = .$). With regard to the FAC, 8 (38.1%) patients with anoxia and 13 (61.9%) patients with TBI walked at discharge. Regarding the BBS no statistically significant differences ($p = 0.20$) between the beginning and discharge between the two groups were observed.

Conclusion

Both groups improve balance and gait after rehabilitation without differences in results between them. Future studies with large patient samples and other scales more sensitive to changes in gait and balance are needed to show differences between the two populations.

No conflict of interest

ISPR7-0707

Neurological and Mental Health Conditions - Traumatic Brain Injury

EPIDEMIOLOGICAL PROFILE OF BRAIN TRAUMATIC INJURIES OF CHILDREN SUPPORTED IN MPRF

S. Layouni¹, M. Gaddour¹, W. May¹, M. ayeb¹, S. Jemni¹, S. Frioui¹, F. Khachnaoui¹

¹University hospital center, physical medicine and rehabilitation, Sousse, Tunisia

Introduction/Background

Traumatic brain injuries are the causes of mortality as well as mortality, which are particularly common among children and teenagers. They require to be looked after as early as possible. Our study is to determine the epidemiological profile, the main complications among children with traumatic brain injury.

Material and Methods

Descriptive and retrospective study dealing with the file of children with traumatic brain injury hospitalized in MPRF department of CHU sahloul during a period of 4 years.

Results

Eight children were included in our study, representing 15.6% of traumatic brain. The most affected age bracket was from 2 to 10 years of age. The etiology was a public highway accident in 85% of cases.

The majority (62.5%) were initially taken at intensive care unit, then were transferred to the physiotherapy department.

The initial glasgow score was between 3 and 8 in 62.5% of cases. The intracranial lesions, were objectified among 62.5% of patients, including 37.5% of the frontal seat. A neurosurgical intervention was realized in 4 children (37.5%). In their admission to MPRF, three patients were spastic. When being taken into care, 50% of children have developed bedsores, the infections complications were isolated with 37.5% of patients. Neurogenic paraosteopathies were diagnosed and treated with a sole child. None of the population has suffered a thromboembolic complication.

Conclusion

The future of a children with brain injury is still marked by a gravity of neuropsychological disorders, often responsible for academic failure. The finding of specific structures improves their neuropsychological difficulties in terms of physiotherapy.

No conflict of interest

ISPR7-0877

Neurological and Mental Health Conditions - Traumatic Brain Injury

PROGETTO PONTE: BRIDGING THE GAP BETWEEN INPATIENT REHABILITATION AND SOCIAL REINSERTION AFTER SEVERE ACQUIRED BRAIN INJURY

P. Boldrini¹, V. Vettorello², R. Gherlenda³, C. Fontebasso⁴, M. Zamuner⁴

¹ULSS9-Ospedale Riabilitativo Motta di Livenza, Dept of Rehabilitation Medicine, Treviso, Italy

²ULSS9 TREVISO, Dept. of Rehabilitation Medicine, Treviso, Italy

³ULSS9 TREVISO, Health Care District North, Treviso, Italy

⁴AREP CODESS SANITA, AREP, Treviso, Italy

Introduction/Background

Severe Acquired Brain Injury (SABI) is a cause of long-term disability and a risk factor for community re-integration.

We describe a program addressing the needs of the persons with SABI presenting multiple disabilities, after discharge from the rehabilitation hospital.

The program is called "PONTE" ("bridge"); its aim is to help SABI persons to improve their functional abilities and social skills in everyday life and support their participation.

Material and Methods

The program is based on a comprehensive holistic model; treatments are delivered in a day-care setting 3 days/wk, 3 hrs/day, and include neuropsychological, occupational, physical, psychological, and educational-vocational interventions, delivered by a dedicated expert team. The overall duration varies between 6 and 24 months.

Persons with SABI are referred after discharge from a rehabilitation unit, and are admitted after an assessment of their difficulties, strengths and needs, and of the environmental factors, based upon the ICF framework.

Admission criteria are: age 18-55, moderate-severe cognitive impairment after SABI (LCF 4-7), medical stability, ability to live at home with different levels of support.

The individual Capacity and Performance in several items of the Activity/Participation list of domains was assessed on admission and at the end of the program.

Results

15 persons have been admitted since 2009 (9 with SABI of traumatic and 6 of vascular origin), mean age 38.3 (SD 18.3).

Most of the participants showed an improvement both in performance and participation, with a mean gain of 1.5 levels on the 5-point scale for qualifiers, with relevant differences across subjects.

2 participants achieved levels compatible with return to competitive work, and 3 to sheltered work.

Cognitive and behavioral impairments were factors related to the less favourable outcome.

Conclusion

Person with SABI can benefit from comprehensive post-discharge day care interventions to improve participation, although return to work is achievable in a minority of cases, and cognitive and behavioral difficulties may remain major disabling factors.

No conflict of interest

ISPR7-0946

Neurological and Mental Health Conditions - Traumatic Brain Injury

OLFACTORY DISTURBANCE AFTER TBI; THE SHEFBIT COHORT

R. Singh¹, T. Humphries²

¹Osborn Neurorehabilitation Unit, Department of Rehabilitation Medicine

²Sheffield Teaching Hospitals, Sheffield, UK

Medical School University of Sheffield, Sheffield

Background: Olfactory disturbance (OD) is a common sequela of Traumatic Brain Injury (TBI), ranging between 4-68%. However most studies have looked at very selective or convenience populations. This study aimed to assess the incidence of OD within a very large mixed TBI patient population and to assess to the relationship, if any, between the presence of OD and other TBI outcomes.

Methods: Consecutive TBI admissions to a large teaching hospital, were recruited to the Sheffield Brain Injury after Trauma observational cohort (SHEFBIT). Patients were assessed 6-8 weeks post-TBI and at 1 year using a number of assessment tools; Extended Glasgow Outcome Scale (GOSE), Rivermead Head Injury Follow-up Questionnaire, Rivermead Post-Concussion Symptoms and the Hospital Anxiety and Depression Score. In addition, assessment of olfactory function was also conducted with sensitivity to coffee granules.

Results: 774 TBI patients were consecutively enrolled over 2 years. At 1yr, 690 attended review. The incidence of OD was 19.7% which increased with TBI severity; mild(9.55%), moderate(20.01%), severe(43.5%). Multivariate logistic regression with OD as outcome, showed statistically significant relationships with TBI severity ($p < 0.001$) preexisting medical comorbidities ($p = 0.026$) and depression ($p = 0.006$)

Discussion: OD is common after TBI and associated with TBI severity, comorbidities and depression. The relationship between OD and depression may occur due to an anatomical mechanism and OD has been associated with other frontal lobe disorders. We suggest simple assessment for OD should be routinely carried out as OD may be a marker of increased injury severity in addition to raising the clinical suspicion of depression.

Document not received

ISPR7-0947

Neurological and Mental Health Conditions - Traumatic Brain Injury

HIGH PREVALENCE OF DEPRESSION AFTER TBI IN A PROSPECTIVE COHORT; THE SHEFBIT STUDY

R. Singh, S. Mason, F. Lecky, J. Dawson

ScHARR Health Services Research,

School of Health and Related Research University of Sheffield S1 4DA

Background Depression is a common sequelae of traumatic brain injury(TBI) and a major cause of disability and poor prognosis after TBI. Incidence varies hugely(15-77%) with large differences in study methods, populations, means of assessment and time since injury. We examined the prevalence of TBI depression at 1 yr in a prospective cohort of mixed TBI severity.

Method: consecutive A&E admissions over 2 years with TBI were assessed with Hospital Anxiety and Depression Scale and compared across a range of demographic, injury and outcome measures

Results: Out of 856 TBI admissions to A&E, 774 individuals were reviewed at a mean of 68.3 (SD 19.6)days after injury. Mean HADS-D score was 8.14 (SD 5.10). Using HADS-D >8 to represent a case, the prevalence of depression was 56.1%. At 1yr 690 individuals attended follow-up. Mean HADS-D was 5.57(SD5.27) and prevalence dropped to 41.2%. Several variables were associated with risk of depression($p<0.05$) on univariate testing. A multivariable analysis with the same independent variables found that female gender, CT scan findings, psychiatric history, alcohol intoxication at injury and return to work were significantly associated with depression risk. Injury severity was not. The multivariable model correctly classified 83.1% of cases.

Discussion: compared to population rates of 4.8-10.1%, depression is common after TBI and linked to several features though not severity. Our figures are at the higher end of previous studies (mean 32.1%, range 15-77%) The use of a mixed TBI population and a clearly defined hospital admission cohort are strengths of this study.

Document not received

ISPR7-0077

Neurological and Mental Health Conditions - Vegetative States, Minimally Conscious and Low Awareness States

CEREBRAL FDG-PET FINDINGS IN PATIENTS WITH TRAUMATIC DISORDERS OF CONSCIOUSNESS: PRELIMINARY RESULTS OF A PILOT STUDY

M.J. Russo¹, S. Vazquez², L. Urrutia², G. Falasco², F. Salierno¹, M. Ron¹, L. Bonamico¹, L. Olmos¹

¹FLENI, Rehabilitation, Buenos Aires, Argentina

²FLENI, Neuroimaging, Buenos Aires, Argentina

Introduction/Background

The basic diagnostic evaluation for differentiating unresponsive wakefulness syndrome (UWS) from minimally conscious state (MCS) consists of a standardized clinical examination. However, the rate of misdiagnosis is high. 18 F-fluorodeoxyglucose-positron emission tomography (FDG-PET) may help to establish the diagnosis.

Objective: To describe patterns of cerebral metabolism on FDG-PET in patients with UWS or MCS.

Material and Methods

FDG-PET images in the resting state were obtained from 10 patients, who were diagnosed with UWS (n=8) or MCS (n=2) with traumatic causes. All scans were viewed and analyzed by 2 nuclear medicine physicians, blinded to the clinical data of the patients. Based on the concentration of activity of FDG, the degree of cortical metabolism was determined.

Results

At the present time 10 patients were registered into the study. Their age ranged from 18 to 71 years old. Seven were men. The mean interval between TBI and PET scan was 10.7 (SD) months. Overall, 100% of participants exhibited a consistent pattern of global hypometabolism in supratentorial structures, 50% showed a global hypometabolism in infratentorial structures, and 50% showed crossed cerebellar diaschisis. Only 2 patients showed thalamic unilateral hypometabolism. FDG-PET hypermetabolism was demonstrated in 4 cases. Two of those subjects exhibited relative hypermetabolism in the superior temporal cortex; in one subject, hypermetabolism was exclusively located in right supplementary motor cortex and in the other one, left hippocampal structures showed higher activity compared to the rest.

Conclusion

Traumatic disorders of consciousness frequently manifests as FDG-PET hypometabolism, but focal hypermetabolism can also be observed. Cerebral FDG PET may aid the clinical diagnosis. However, it should be tested in a large sample and in combination with other potential biomarkers.

No conflict of interest

ISPR7-0602

Neurological and Mental Health Conditions - Vegetative States, Minimally Conscious and Low Awareness States

ASSESSING HEARING IN PATIENTS WITH PROLONGED DISORDERS OF CONSCIOUSNESS: A CLINICAL AUDIT

J. Haider¹, G. Rekalde¹, S. Dwamena¹, M. Kriger¹

¹Rookwood Hospital, Specialist Neurorehabilitation Centre, Cardiff, United Kingdom

Introduction/Background

We have previously encountered problematic cases of hearing impairment in patients undergoing Sensory Modality and Rehabilitation Technique (SMART) assessment. The Royal College of Physician guidelines on PDOC do mention addressing any hearing complications as part of the early medical management of PDOC.

Material and Methods

We undertook a retrospective audit looking at SMART assessments and assessments of hearing.

We reviewed case notes and SMART assessor reports, and collected data on diagnosis, management, medications, complications, SMART assessment and levels within the auditory domain. For those identified with level1 responses on auditory testing, we looked for specific documentation related to hearing or further medical assessment.

Results

21 SMART assessments for 15 patients were included. 7 were female and 8 were male. There was a wide age range of patients with the youngest being 16 and the oldest 69. 10 of these patients had suffered a hypoxic brain injury, 3 intracranial bleeds and 2 diffuse axonal injury. From the SMART assessments, 13 were judged to be in a vegetative state(VS), 5 were in a minimally conscious state(MCS), 1 was deemed borderline between VS and MCS, and 1 was in a cognitive impaired state. 1 was inconclusive. None of the patients had any pre-existing hearing impairments, although 2 had a known complication(hydrocephalus) affecting hearing and 1 patient was on a potentially ototoxic medication. 8 SMART assessments were identified to have a level 1 response on auditory testing, and of these, 2 had subsequent recommendations related to hearing. None of these 8 were medically assessed for their hearing.

Conclusion

We do not have an adequate pathway of confirming intact primary auditory pathways prior to SMART assessment within our neuro-rehabilitation department. These results have pushed us to explore AEP (Auditory Evoked Potentials) or OAE (Otoacoustic Emissions) testing if concerns are raised which will allow us to conform to national guidance.

No conflict of interest

ISPR7-0880

Neurological and Mental Health Conditions - Vegetative States, Minimally Conscious and Low Awareness States

DISORDERS OF CONSCIOUSNESS IN CHILDREN WITH TBI: DESCRIPTION OF OUTCOME AFTER AN INTENSIVE NEUROREHABILITATION PROGRAMME.

S. Laxe¹, D. León²

¹*Guttmann Institut, Brain Injury- Pediatric Rehabilitation, barcelona, Spain*

²*Guttmann Institut, Pediatric Rehabilitation, Badalona, Spain*

Introduction/Background

Disorders of consciousness are one of the most burdensome conditions in children after TBI and there is little knowledge about clinical outcome.

Material and Methods

Clinical records of children admitted in a neurorehabilitation unit were selected if their level of Rancho los Amigos at Admission was under 4. Data regarding sociodemographics, functioning status and measurement instruments that are systematically measured at the admission, discharge and follow up were gathered for the study.

Results

33 children (10 females) were admitted for rehabilitation with a disorder of consciousness. Mean age 12.91 SD4.2. Mean length of stay 165.52 days (SD 51.5). 12.1%(4)children were in UWS (unresponsive wakefulness syndrome) and 87,8% (29) in MCS (minimally conscious state) at admission. 5 children developed hydrocephalus and 4 needed a shunt. 8 children developed epilepsy and 21 had paroxysmal sympathetic hyperactivity (PSH) in the acute phase. 75.7%(25) of the children regained consciousness at discharge. Mean Disability Rating Scale at discharge was 15.91 (SD 5.8) meaning a severe disability. 15 children were able to walk though only one did not require any assistance. Cognitive and behavioural problems were found in children which emerged from the minimally conscious state. Only PSH was significantly correlated with poorer outcomes at discharge.

Conclusion

Recovery scenario after TBI showed that 3 out 4 children will gain consciousness, though the level of disability at discharge will be still very severe. We were not able to find any prognostic factor in our sample. Larger longitudinal and multicentric studies are recommended to provide families of the children and clinicians more information

No conflict of interest

ISPR7-0120

Paediatrics - Cerebral Palsy and Spina Bifida

EFFECT OF EMG-BIOFEEDBACK PLUS MOTOMED VIRTUAL SCENE TRAINING ON GROSS MOTOR FUNCTION AND ADL IN SPASTIC CEREBRAL PALSY

G. Jing¹

¹hospital, children rehabilitation, Huai'an, China

Introduction/Background

Cerebral Palsy (CP) refers to a group of disorders of movement and posture, causing activity limitation that is attributed to a non-progressive insult to the developing fetal or infant brain. CP is one of the most common causes of physical disability during childhood. In this report, we would like to investigate the effect of EMG-biofeedback plus MOTomed virtual scene training on gross motor function and ADL in children with spastic cerebral palsy.

Material and Methods

Forty-two patients with spastic cerebral palsy meeting the inclusion criteria were randomly allocated to a treatment group of 20 cases and a control group of 22 cases. The control group received routine rehabilitation therapy with MOTomed virtual scene training and the treatment group, EMG-biofeedback in addition. The 88-item version of the Gross Motor Function Measure (GMFM-88) was used to evaluate gross motor function, while the activities of daily living were assessed using the ADL in the two groups of patients before and after treatment.

Results

After treatment the total GMFM and ADL scores of both groups were better than before treatment ($P < 0.05$), but the treatment group's average score was significantly better than that of the control group ($P < 0.05$). The Change of ADL in the treatment group after intervention was also significantly different from that in the control group ($P < 0.05$).

Conclusion

EMG-biofeedback plus MOTomed virtual scene training can more markedly improve the GMFM and ADL in children with spastic cerebral palsy than simply add MOTomed.

No conflict of interest

ISPR7-0126

Paediatrics - Cerebral Palsy and Spina Bifida

OUR EXPERIENCE WITH MULTIFACTORIAL GAIT ANALYSIS IN THE MULTIDISCIPLINARY THERAPEUTICAL APPROACH OF THE GAIT DISORDERS IN CHILDREN WITH NEUROLOGICAL DISORDERS

L. Padure¹, A.I. Grigoriu¹

¹National Center of Neurological Rehabilitation for children "Dr. N. Robanescu", sector 4, Bucharest, Romania

Introduction/Background

Our aim is to highlight the importance of Multifactorial Gait Analysis in the therapy orientation and multidisciplinary approach of the gait problems in children with neurological pathologies. This is the first experience in our country regarding the Multifactorial Gait Lab.

Material and Methods

Our Multifactorial Gait Lab is one complex system with 8 infrared cameras, 6 force plates, 10-channels wireless dynamic EMG, 2 digital cameras that overlay the image from the camera and the position of the ground reaction force vector. This is a retrospective, descriptive study of the population of children evaluated in our Gait Lab between February 2015 and October 2016.

Results

Among the 247 patients recorded in our Gait Lab, 169 had a neurological pathology with gait anomalies secondary to chronic cerebral or peripheral disease or to an acute lesion of the central nervous system (brain or medullar trauma). Among these 41.4% had a unilateral paresis, 47.9% had a bilateral paresis of lower limbs. Regarding the spastic gait patterns, the dominant pattern in bilateral involvement of the lower limbs was "the crouch gait" (38.2%), while in spastic hemiparesis, 35.7% could not be included in one of the known kinematic patterns. The therapy indications (physical therapy, botulin toxin injections, orthosis, surgery) were considered in function of the gait anomalies identified.

Conclusion

The Multifactorial Gait Analysis is an important and accurate method of evaluation of gait disorders, with a major role in the therapeutic approach of neurological pathology in children.

No conflict of interest

ISPR7-0173

Paediatrics - Cerebral Palsy and Spina Bifida

STUDY ON TREATING OBSTETRICAL BRACHIAL PLEXUS PALSY OF INFANTS IN THE REPETITIVE MAGNETIC STIMULATION

N. Xiao¹

¹Children's Hospital of Chongqing Medical University, Department of Children Rehabilitation, Chongqing, China

Introduction/Background

To investigate the efficacy of repetitive magnetic stimulation to infants with obstetrical brachial plexus palsy.

Material and Methods

Ninety-three patients who were diagnosed with obstetrical brachial plexus palsy in our hospital from 2014.1 to 2015.1 were divided into intervention group of 47 cases and control group of 46 cases randomly. The intervention group were treated by repetitive magnetic stimulation and comprehensive rehabilitation, the control group were treated by comprehensive rehabilitation. After 12 courses of treatment, comparison and analysis were observed.

Results

The total effective rate of the intervention group (91.5%) is higher than the control (82.6%). In addition, the improvement degree is also better than the control such as the scores of muscle strength, shoulder joint, elbow joint, and the parameters of the axillary, musculocutaneous, median, ulnar, radial nerve. There were no adverse reactions in the intervention group.

Conclusion

Magnetic stimulation treating obstetrical brachial plexus palsy has definite therapeutic effect. It is safe and worth the clinical promotion.

No conflict of interest

ISPR7-0177

Paediatrics - Cerebral Palsy and Spina Bifida

AGREEMENT BETWEEN GENERAL MOVEMENTS ASSESSMENT AND VOJTA POSTURE REFLEX EXAMINATION IN HIGH RISK INFANTS

N. Xiao¹

¹Children's Hospital of Chongqing Medical University, Department of Children Rehabilitation, Chongqing, China

Introduction/Background

The study was aimed at investigating the agreement between general movements assessment and Vojta posture reflex assessment in high risk infants.

Material and Methods

Retrospective review was performed on 310 high risk infants who were diagnosed in Department of Rehabilitation in Children's Hospital of Chongqing Medical University from february 2012 to November 2014. The study record patient's demographics, high risk factors, general movements (GMs) assessment, Vojta posture reflex examination, Peabody development motor scale-2 assessment, and follow-up results of 1 year. The diagnose after 1-year-old was regarded as the golden standard. The SPSS 13.0 was used for statistical analysis.

Results

110 infants show fidgety movements and 8 show cramped-synchronised movements in GMs assessment. The predictive values of the examination for cerebral palsy were as following: sensitivity 87.27%, specificity 89.0%, positive predictive value 81.35%, positive likelihood ratio 2.40, negative likelihood ratio 0.04.2. 131 infants show normal in Vojta posture reflex examination and 179 show abnormal results. Of which 132 cases show minimal abnormal, 33 cases show medium abnormal, and 14 cases show serious abnormal. The predictive values of the examination for cerebral palsy were as following: sensitivity 98.18%, specificity 35.50%, positive predictive value 44.81%, positive likelihood ratio 2.93, negative likelihood ratio 0.45.3. The two methods to predict cerebral palsy were statistically significant differences, Kappa value=0.22.

Conclusion

GMs assessment and Vojta posture reflex examination have unsatisfactory consistency in the evaluation of the high risk infants with cerebral palsy. Serial test were recommend to predict cerebral palsy.

No conflict of interest

ISPR7-0341

Paediatrics - Cerebral Palsy and Spina Bifida

USE OF THERA TRAINER BALO 524 IN THE REHABILITATION OF CHILDREN WITH CEREBRAL PALSY.

Y. Sanchez¹, V. Cisneros²

¹hospital Julio Diaz, departamento docencia e investigaciones, La Habana, Cuba

²hospital Julio Diaz, Vicedireccion de Rehabilitacion, La Habana, Cuba

Introduction/Background

Objective: To evaluate the therapeutic efficacy of Thera Trainer Balo in the balance of patients with Cerebral Palsy treated at the Hospital "Julio Díaz".

Material and Methods

An experimental, longitudinal, prospective and applied explanatory study was performed during the period December 2014-September 2015. The universe consisted of all the patients admitted to the pediatric rehabilitation service with a diagnosis of Cerebral Palsy. The sample consisted of 15 patients, aged 10 to 18 years, classified in levels I, II and III of the gross motor function classification system, which were distributed in a study group and a control group applying the random method simple. The rehabilitation program was used according to the protocol of performance of the service for the control group and the patients of the study group were added the program of training with thera trainer Balo. The gross motor function and Ashworth scales were applied for spasticity in addition to assessing the static balance with the Cobs platform at the beginning and at the end.

Results

100% of the studied subjects showed alterations in some of the measured parameters; the most affected variables were the load and the symmetry index, which improved by 15% and 20%, respectively. The female gender predominated with 62% and the 10-12 year age group with a total of 38%, improved coordination and balance of the study group by 15% more than control.

Conclusion

It was demonstrated the high sensitivity of Thera trainer balo 524 in the diagnosis and treatment of the balance of children with cerebral palsy in the training of the same ones within a program of integral rehabilitation.

No conflict of interest

ISPR7-0345

Paediatrics - Cerebral Palsy and Spina Bifida

EVALUATION OF THE THERAPEUTIC RESPONSE OF THE COBS FEEDBACK PLATFORM ASSOCIATED TO ELECTRICAL STIMULATIONS IN THE REHABILITATION OF CEREBRAL PALSY

Y. Sanchez¹

¹, *La Habana, Cuba*

Introduction/Background

OBJECTIVE: To evaluate the therapeutic response of the Cobs Platform associated with neuromuscular electrical stimulation to improve the balance of patients with PC, Hospital Julio Díaz, February-December 2013

Material and Methods

Quasi-study With an intervention group and two control groups. Group 1, Intervention (n = 10), application of 20 training sessions in COBS platform simultaneously to fadodico electrical stimuli with pulses of 1 msec with 20 ms of pause and pulse trains of 1 sec and 3 seppause, in the anterior tibial region; Group 2, Control 1 (n = 10), faradic electrical stimuli plus the rehabilitation program according to the service's performance protocol; Group 3, Control 2 (n = 15), application of the program of action of the Service. Ashworth and GrossMotor Function scales were applied at the beginning and end of the treatment. The results obtained before and after in each group were compared using the Wilcoxon Sign Rank Test, declaring as a significant difference a value of $p \leq 0.10$. Previous informed consent of relatives and without ethical conflicts.

Results

Results: Average age (years) of Groups 1 and 2, 8.1; Group 3, 8.3. The most affected variable was percentage of load on the left, Group 1 (0.003); Group 2 (0.07); Group 3 (0.002) ($p < 0.1$). The loading percentage on the right ($p = 0.002$), the coordination index ($p = 0.004$) and symmetry ($p = 0.015$) varied significantly in Group 1.

Conclusion

The Cobs platform intervention demonstrated a good therapeutic response . A controlled, randomized clinical trial is required to determine the efficacy of this intervention

No conflict of interest

ISPR7-0413

Paediatrics - Cerebral Palsy and Spina Bifida

EFFECTS OF HYPOTHOTHERAPY IN POSTURAL CONTROL, BALANCE, GROSS-MOTOR FUNCTION AND QUALITY OF LIFE OF CHILDREN AND YOUTH WITH CEREBRAL PALSY

M. Mancini¹, J. Starling¹, A.P. Gontijo², J. Mambrini³, R. Sampaio¹

¹Universidade Federal de Minas Gerais, Graduate Program in Rehabilitation Sciences, Belo Horizonte, Brazil

²Universidade Federal de Minas Gerais, Physical Therapy, Belo Horizonte, Brazil

³Fiocruz, Saúde Coletiva, Belo Horizonte, Brazil

Introduction/Background

Background: Recent rehabilitation taxonomy has provided a structure for in-depth analysis of rehabilitation interventions. **Aims:** We used the Treatment Theory (TT) and Enablement Theory (ET) to analyze changes from six-months hippotherapy on postural control and balance, gross motor function and quality of life of children and youth with cerebral palsy (CP).

Material and Methods

31 children with CP (mean age=7.6 years; SD=2.1) from both sexes, of various types and GMFCS levels were followed for 6 months and measured 3 times on postural control and balance, gross-motor function and quality of life. Repeated measures analyses tested the changes.

Results

Significant improvements in all outcomes, regardless of children's age and characteristics of the CP condition were observed ($p < 0.05$).

Conclusion

We present a model based on the taxonomy of rehabilitation treatments (TT and ET) that allows in depth interpretation of the effects of hippotherapy in this clinical group, identifying the intervention's mechanisms of action, active ingredients, the target as well as the indirect outcomes, which extends the functional benefits of this therapy.

No conflict of interest

ISPR7-0496

Paediatrics - Cerebral Palsy and Spina Bifida

PSYCHOPHYSICAL COMMITMENT IN CAREGIVERS OF CHILDREN WITH CEREBRAL PALSY

M.D.M. Musazzi¹, L. Viale¹, A.F. Vidal¹, A.F. Aguiló¹, N.P. Catoira¹

*¹Centro Asistencial Universitario-Universidad de San Martín,
Instituto de Ciencias de la Rehabilitación, San Martín, Argentina*

Introduction/Background

Cerebral palsy (CP) describes a group of disorders of the development of movement and posture, causing activity limitation, that are attributed to non-progressive disturbances in the developing fetal or infant brain. The motor disorders are often accompanied by disturbances of cognition, behaviour and epilepsy. The person who plays the role of caregiver can sometimes compromise their psychophysical health. Our aim was to assess the quality of life, perceived stress, back pain and overload in caregivers of children with CP who attend at our center for rehabilitation treatment.

Material and Methods

Cross-sectional study of 32 caregivers of patients of both genders, 2-15 years old with a diagnosis of CP. Recruitment was between September 2014 and June 2016. Each patient was assessed with the Gross Motor Function Classification System (GMFCS). Each caregiver completed: Zarit scale (caregiver burden), numerical scale of pain, perceived stress scale (PSS) and quality of life inventory (WHO-QoL BREF).

Results

The mean age of caregivers was 37.22 years. 84.37% were mothers. The GMFCS average was 2.97 and this variable has positive correlations with low back pain ($p<0.01$), Zarit scale ($p<0.05$) and a negative correlation with quality of life ($p<0.05$).

Conclusion

We obtained local data about association between severity of motor involvement in CP patients and caregivers health. We found that the greater motor involvement, increased overload and back pain, in addition to deterioration in quality of life of caregivers. The study and treatment of these problems in this adult population should be taken into account as part of the strategy of the rehabilitation team.

No conflict of interest

ISPR7-0623

Paediatrics - Cerebral Palsy and Spina Bifida

ELECTRICAL STIMULATION DURING FUNCTIONAL TASKS IMPROVES GAIT OF CHILDREN WITH UNILATERAL CEREBRAL PALSY: A SINGLE-CASE DESIGN

M. Mancini¹, R. Gonçalves², P. Araújo², S. Fonseca²

¹, Belo Horizonte, Brazil

²Universidade Federal de Minas Gerais, Graduate Program in Rehabilitation Sciences, Belo Horizonte, Brazil

Introduction/Background

Children with unilateral cerebral palsy (UCP) walk slower than normal children, having difficulty to perform activities such as climbing/descending stairs, running and jumping. Their alternative gait pattern is resultant of reduced force of the plantar flexor muscles during impulsive phase of gait. *Aims:* to investigate the effect of functional electrical stimulation (FES) on gastrocnemius muscle during functional tasks on gait of children with UCP.

Material and Methods

Single case A-B with follow-up; phase A (4 weeks), phase B: intervention (8 weeks) and follow-up phase (4 weeks). Kinematic gait data of four children with UCP (3 girls and 1 boy; mean age: 5 years) were systematically measured, totaling 24 evaluations. Intervention consisted of FES administration associated with a task-oriented training program for eight weeks, 50 minutes/day, three times a week. Functional activities included moving from sitting to standing, standing calf raises against body weight, walking-up/down stairs and walking. The 2-standard-deviation–band method compared the outcomes between phases.

Results

Three children showed improvements on walking speed and step length. All children improved on impulsive torque during intervention, which were maintained during follow-up.

Conclusion

Activation of the gastrocnemius muscle during terminal stance phase of gait provided more efficient propulsion mechanism for advancement of the affected lower limb, resulting in longer step length on that side. The contextualization of the intervention in a task-oriented approach optimized the functional use musculoskeletal resources, such as capacity to generate force at the appropriate moment, so that the child with UCP could perform functional activities successfully.

No conflict of interest

ISPR7-0695

Paediatrics - Cerebral Palsy and Spina Bifida

COMPARISON OF CALF MUSCLE ARCHITECTURE BETWEEN CHILDREN WITH SPASTIC CEREBRAL PALSY AND TYPICALLY DEVELOPING PEERS

K. Xu¹, C. Ying¹, H. Lu¹, L. Jinling¹, T. Hongmei¹

¹Guangzhou Women and Children's Medical Center, Rehabilitation, Guangzhou, China

Introduction/Background

To compare the differences of muscle thickness, fascicle length, and pennation angle of gastrocnemius, soleus, and tibialis anterior muscle between children with spastic CP and typically developing peers.

Material and Methods

Participants were divided into three groups: hemiplegic CP (HCP) group (n=24), diplegic CP (DCP) group (n=24), and typically developing peers (TD) group (n=24). Ultrasound measurement of the calf was performed at the rest position of the ankle with the knee fully extended. Both legs of HCP and DCP groups, and the right leg of TD group were scanned. Analysis parameters included muscle thickness, fascicle length, and pennation angle. Clinical measure was social life ability scale.

Results

The difference of muscle thickness was statistically significant between targeted muscles of DCP and TD groups, as well as between tibialis anterior and lateral gastrocnemius of unaffected side of HCP and DCP groups, and among medial gastrocnemius of two sides of HCP and TD groups ($p<0.05$). The difference of fascicle length was statistically significant among targeted muscles of DCP, unaffected side of HCP, and TD groups, as well as between targeted muscles of affected side of HCP and TD groups, and between tibialis anterior and medial gastrocnemius of two sides in HCP group ($p<0.05$). The difference of pennation angle was statistically significant among medial gastrocnemius of TD and two sides of HCP groups, as well as between soleus of affected side of HCP and TD groups ($p<0.05$). Muscle thickness of all muscles, and length of gastrocnemius and soleus were significantly correlated with social life ability scale scores in all the children with CP ($r=0.316-0.488$; $p<0.05$).

Conclusion

Muscle thickness and fascicle length were reduced in the comparisons between affected and typically developing muscle and the affected and unaffected muscle across tibialis anterior, gastrocnemius, and soleus muscles. The reduction in muscle thickness and fascicle length may affect social life ability.

No conflict of interest

ISPR7-0745

Paediatrics - Cerebral Palsy and Spina Bifida

EVALUATION OF THE KNOWLEDGE OF NURSERY SCHOOL TEACHERS ABOUT CEREBRAL PALSY AND ORGANIZATION OF REHABILITATION

J. Milenovic¹, R. Skrbic², B. Popovic³, N. Milenovic⁴

¹Nursery School "Happy Childhood"- Novi Sad, Nursery "Cika Jova", Sremska Kamenica, Serbia

²Faculty of Medicine- University of Novi Sad, Department for Special Education and Rehabilitation, Novi Sad, Serbia

³Scope International, Scope International, Zrenjanin, Serbia

⁴Special Hospital for Rheumatic Diseases Novi Sad, Special Hospital for Rheumatic Diseases Novi Sad, Novi Sad, Serbia

Introduction/Background

Cerebral palsy (CP) is a group of non-progressive movement disorders and posture changes caused by abnormal development or damage to the parts of the brain with of different clinical expression. Aim is to evaluate the effect of knowledge about CP on the organization of rehabilitation process.

Material and Methods

Research was conducted on 90 teachers at Nursery School "Happy Childhood" from Novi Sad. Teachers filled in anonymous questionnaire focused on knowledge about different aspect of CP.

Results

Teachers knew that CP: is not contagious disease (98%), can not appear in adulthood (94%) and different than poliomyelitis (84%). Two statistically significant correlations were observed. Teachers who knew difference between CP and poliomyelitis ($p<0.05$; $r=0.33$) knew that CP is not contagious disease and teachers who knew that CP can not appear in adulthood knew that CP can be detected in childhood ($p<0.05$; $r=0.32$). Years of service, personal knowing person with CP and work with child with CP did not correlate with the possible positive answers. Only one statistically significant correlation ($p<0.05$; $r=0.37$) was observed between place of living and possibility that CP appears in adulthood which pointed that teachers from smaller place of living believed that CP appears in adulthood.

Conclusion

Our results show that is needed to enhance the knowledge about CP trough different educational workshops and lectures. This can be helpful for teachers of children with CP to organize the regular contemporary school program easier.

No conflict of interest

ISPR7-0764

Paediatrics - Cerebral Palsy and Spina Bifida

IMPROVED FUNCTIONING WITH LEGS IN CHILDREN WITH DYSKINETIC CEREBRAL PALSY

R. Thapa¹

¹Self-help Group for Cerebral Palsy- Nepal, Pediatric Neurology Clinic, Lalitpur, Nepal

Introduction/Background

In Nepal it has been noticed that percentage of dyskinetic Cerebral Palsy(CP) is nearly 3 times than in Developed countries¹. Here it was noticed that many dyskinetic, especially dystonics children prefer and are much better in accomplishing different task with their feet than with hands.

¹ Thapa R. Retrospective Descriptive Study of Cerebral Palsy in Nepal. Journal of autism and developmental disorders. 2016 July 1;46(7):2285-91.

Material and Methods

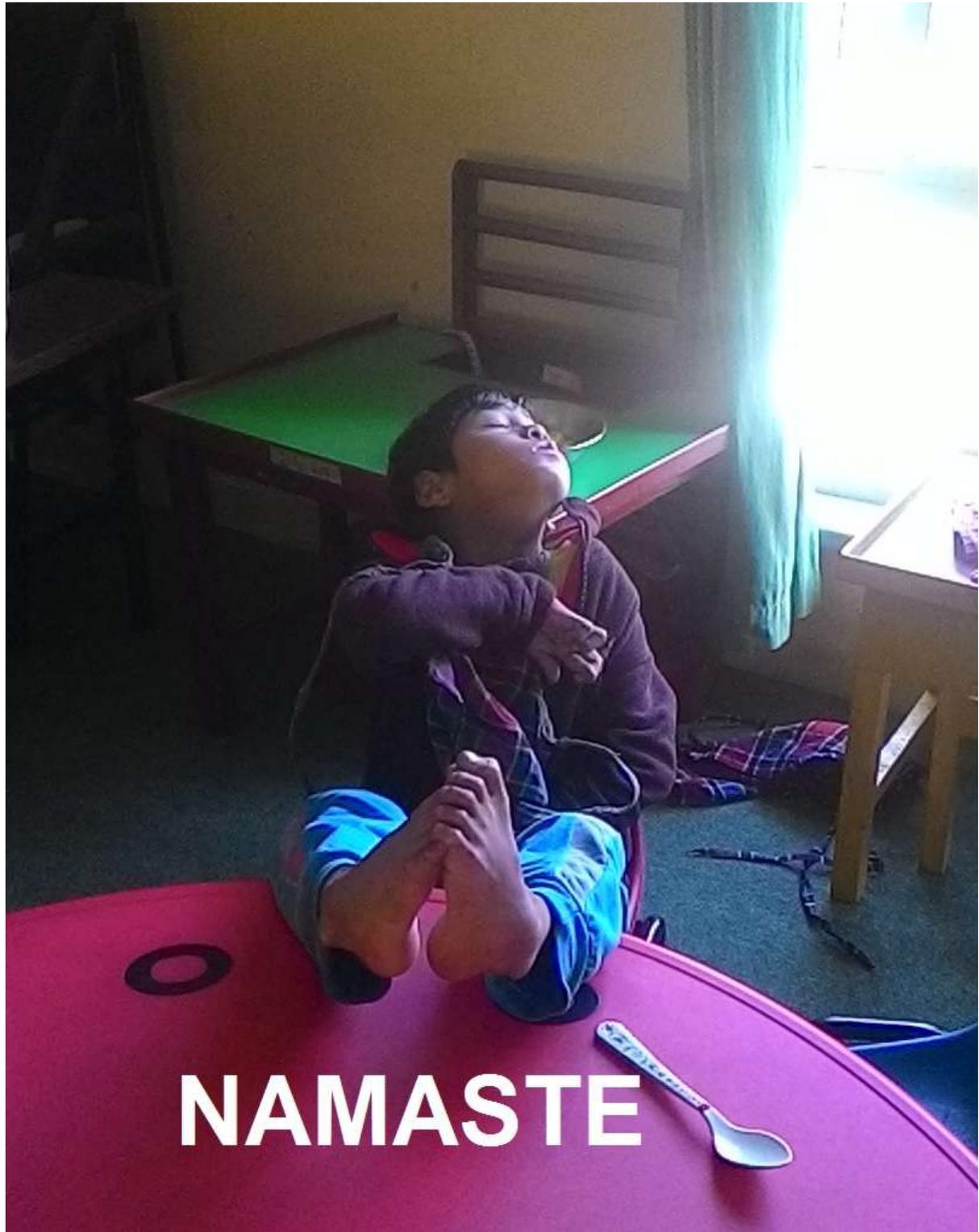
In a study group of 64 dyskinetic children (37 dysonics and 27 ataxic) MACS was measured with different functions separately using hands and feet. Also, the improvement after six months of physiotherapy was compared in the 37 dystonic children using COPM.

Results

Among the ataxic and dystonic, 2 and 15 children respectively and children expressed preference for using legs. When MACS was measured 2 ataxic and 17 dystonic had higher MACS score with legs than with hands. Among the 19 leg preferring children, 8 of the parents didn't want their children performing ADLs using legs, therefore making children wear shoes to prevent leg use. The 37 dystonic children after six months of rehabilitation/therapy showed that the 17 dystonic children with higher MACS legs had higher scores in COPM using legs.

Conclusion

For reasons not fully understood, it was observed in Nepal that many children with dystonic CP prefer and function better using legs for hand functions as eating, writing, playing, making gestures, etc. Therefore in such children motor function should be explored in legs as well and if promising then promoted as well.



No conflict of interest

ISPR7-0768

Paediatrics - Cerebral Palsy and Spina Bifida

MENTAL RETARDATION AMONG CHILDREN WITH CEREBRAL PALSY AS OBSERVED IN NEPAL AND A SMALL TRIAL WITH NOOTROPIC

R. Thapa¹

¹Self-help Group for Cerebral Palsy- Nepal, Pediatric Neurology Clinic, Lalitpur, Nepal

Introduction/Background

Cerebral Palsy(CP) presents a difficult situation with various facets to manage, more so, in an underdeveloped country like Nepal.

Material and Methods

438 children (3-16 years) diagnosed with CP were assessed. Severity of CP was classified by Gross Motor Function Classification System, Quality of Life(QoL) as per Cerebral palsy quality of life questionnaire for children manual and IQ as per Kaufman Assessment Battery for Children-II. Modafinil was used in 44 children with mild ID for 1 year.

Results

Among the CP children 48% (n=210) were found to have IQ below average, where 151 children had microcephaly. Intellectual Disability(ID) was more common in CP children with Epilepsy. 31% of dyskinetic, none of ataxic and 63% with spastic CP had ID. QoL was found to be directly proportional to the severity of CP and ID with highest scores on "Social wellbeing and acceptance" and "Emotional wellbeing and self-esteem domain" while lowest points in "Pain and Impact of disability".

Neuroimaging did not co-relate with the severity of CP or ID. Modafinil was associated with increase in IQ by a mean of 5(+1) points and parents reported that children responded better to external stimuli and paid more attention.

Conclusion

Severity was the determining factor for QoL. The increase in IQ by modafinil was not significant but may be tried for inattentive or drowsy children. However, more study is required regarding use of modafinil in CP. The cause of high incidence of microcephaly among children with CP also should be investigated.

No conflict of interest

ISPR7-0832

Paediatrics - Cerebral Palsy and Spina Bifida

RELATIONSHIP BETWEEN THE KINEMATIC MOTION ABNORMALITIES AND BIMANUAL PERFORMANCE IN CHILDREN WITH HEMIPLEGIC CEREBRAL PALSY

F. Gaillard^{1,2}, H. Rauscent¹, A. Cretual², T. Pasquet¹, S. Cordillet², R. Heyman¹, I. Bonan^{1,2}

¹University Hospital Center of Rennes, Rehabilitation Medecine, Rennes, France

²University Rennes 2 – ENS Rennes - UEB, M2S lab Mouvement Sport Santé, Bruz, France

Introduction/Background

Children with hemiplegic cerebral palsy (HCP) have upper-limb limited motion and decreased hand function. The aim of this study was to evaluate the relationship between the kinematic motion abnormalities of the impaired upper limb and bimanual performance.

Material and Methods

23 children with HCP (mean age 11.9 ± 2.7 years) were included. They were evaluated using the Assisting Hand Assessment (AHA) to score hand function and a 3D-analysis protocol containing seven standardized tasks to evaluate their upper-limb movements. Kinematic indexes such as the Global-Arm Profile score (APS) which summarizes the global movement abnormalities and the Global-Arm Variable scores (AVS) which represents the segmental abnormalities for a single joint, calculated according to Jaspers' method, were first compared to the data of 28 typically developing children (mean age 11.8 ± 2.2 years) and then correlated to AHA score.

Results

High correlation between Global-APS and the AHA score ($r = -0.75$) was found. The APS were highly correlated with the AHA during reach-to-grasp tasks ($r = -0.75$) and two of the three gross motor tasks ($r = -0.74$). Concerning the Global-AVS, which represents the deviation for a single joint angle, significant correlations were found for wrist flexion ($r = -0.85$), elbow flexion ($r = -0.61$) and pronation ($r = -0.47$).

Conclusion

As expected, the abnormality of upper limb movements was strongly correlated with the bimanual performance. This correlation is best demonstrated in reach-to-grasp or gross motor tasks. The particular influence of wrist and elbow abnormality confirms the importance of taking into account these distal limitations in therapeutics.

No conflict of interest

ISPR7-0843

Paediatrics - Cerebral Palsy and Spina Bifida

THE COMBINED EFFECT OF TRANSCRANIAL DIRECT CURRENT STIMULATION AND TREADMILL TRAINING ON MOBILITY IN A CHILD WITH CEREBRAL PALSY: CASE REPORT

N. Duarte¹, C. Machado², N. Sellis², P. Cruz², R. Lazzari¹, J. Palma³, C. Oliveira⁴

¹University Nove de Julho, Doctoral Student, São Paulo, Brazil

²University Nove de Julho, Physiotherapy- Student, São Paulo, Brazil

³University Nve de Julho, Master Degree Student, São Paulo, Brazil

⁴University Nove de Julho, Professor on Master and Doctoral Program in Science s of Rehabilitation, São Paulo, Brazil

Introduction/Background

Background and Aims: Cerebral palsy (CP) is characterized by motor development disorders, due to a primary brain injury, with secondary musculoskeletal impairment. In this context physical therapy becomes one of the fundamental stages in the rehabilitation of this population. The objective of this study was to evaluate the combined effect of the use of Transcranial Direct current stimulation (tDCS) with treadmill training on the mobility of a child with CP.

Material and Methods

Methods: A 9-year-old female, diagnosed with unilateral spastic cerebral palsy, performed 10 sessions (20 minutes, 2 weeks) of tDCS (1 mA) simultaneously to the treadmill training. The anode and cathode electrodes were positioned on the injured (C3) and contralesional motor cortex (C4), respectively. The child was evaluated in 3 moments: before, after and one month after the end of the intervention. No adverse effects after the intervention were observed or reported by the patient and responsible. The timed up and go test (TUG) was used to evaluate mobility.

Results

Results: The TUG showed a significant evolution of the mobility with a reduction in the time required to perform the activity in the final evaluation, with even better results in the follow-up evaluation (Mean initial time: 12.26s±0.63; Final mean time: 8.22±1.42 and Follow-up: 7.28±0.67).

Conclusion

Conclusions: The combination of the two intervention techniques can be considered to have shown promising and encouraging results on the mobility of the individual with maintenance of the effects even after one month of the end of the intervention. However future studies with larger sample sizes are required.

Conflict of Interest

The authors declares that they have not conflict of interest. **Acknowledgement**

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No conflict of interest

ISPR7-0926

Paediatrics - Cerebral Palsy and Spina Bifida

PREVENTION AND TREATMENT OF HIP DISLOCATION THROUGH THE APPLICATION OF BOTULINUM TOXIN IN CHILDREN WITH CEREBRAL PALSY.

*M. Arocena*¹

¹Hospital de Niños, Medicina física y rehabilitación, La plata, Argentina

Introduction/Background

Abreviaturas: Modified Ashworth Scale: ASH, Reime Index: IR, Gross Motor Functional Classification System: GMFCS, Botulinum toxin type A (BotoxR): BTX A. Cerebral Palsy: PC.

BACKGROUND AND AIMS: The purpose of this work is to study the therapeutic effectiveness of *Botulinum toxin type A (BotoxR)*(BTX A) in the prevention and / or treatment of hip dysplasia or dislocation in cerebral palsy. It has been carried out in the Department of Physical Medicine and Rehabilitation of the Interzonal Acute Hospital Specialized in Pediatrics (HIAEP) "Sor Maria Ludovica", in the city of La Plata, during the year 2016.

Material and Methods

METHODS: Children diagnosed with cerebral palsy, aged 0-14 years, who had been treated with BTX A in adductor hip muscles, were selected from January 2014 to September 2016. A total of 22 hips, were included. Three evaluations were performed in the pre-infiltration period and at 3, and at 6 months. It was considered a decrease or maintenance of *Reime Index (IR)* or increase of IR.

Results

RESULTS-CONCLUSIONS: 63% of the cases presented a good response and was not favorable in hips already luxated. The treatment with BTX A is effective in focal spasticity in adductor hip muscles in patients with CP; Although the decrease in spasticity in these muscles is not directly related to the good response in the IR. The motor start-up functionality measured by GMFCS is the best predictor of response to this treatment and it is independent of the initial IR. It is necessary to expand the sample in order to obtain conclusions of greater statistical significance

Conclusion

RESULTS-CONCLUSIONS:

No conflict of interest

ISPR7-0065

Paediatrics - Developmental Disorders

THE RELATIONSHIP BETWEEN MOTOR COORDINATION AND SENSORY DISTURBANCE IN CHILDREN

O. Nitta¹, T. Matsuda², K. Takayuki³

¹*Tokyo Metropolitan University, Faculty of Health Sciences, Tokyo, Japan*

²*Uekusagakuen University, Physical Therapy, Chiba, Japan*

³*Nihon University, Sports, Tokyo, Japan*

Introduction/Background

Neurodevelopmental disorder is widely recognized as communication and learning disabilities. However, motor development should also be meticulously evaluated. Some reports have indicated that children with motor developmental disabilities show lack of skill and stiffness. Sensory input problem has been regarded as a factor for such awkwardness of motor coordination. To design an effective motor instruction program for children with neurodevelopmental disorder, the relationship between sensory input and motor coordination in children must be clarified. The present study was designed to have a better understanding of the relationship between motor coordination and sensory disturbance in children.

Material and Methods

The subjects were 39 typically developing children (mean age 5.0, SD 0.80). Their parents were questioned about their children's tendency toward sensory disturbance in the past.

The children's motor coordination was estimated by the motor coordination evaluation scale. It composed of 25 items, consisted of throwing a ball, catching and kicking football. The details of the scale were reported in the 9th ISPRM in 2015. The analysis of the relationship between the presence of sensory disturbance of subjects and their score of motor coordination scale was performed by using t test.

This study was approved by the Ethics Committee of Tokyo Metropolitan University. **Results**

As for sensory disturbance, the following conditions were observed: 36.5% of the children whose score was significantly low showed reluctance to play in a sandbox.

Conclusion

The results of the present study suggested that sensory disturbance in children, which includes tactile sensation, is a factor in immature motor coordination.

No conflict of interest

ISPR7-0108

Paediatrics - Developmental Disorders

EFFECT OF SELF-INITIATED ROBOTIC MOBILITY EXPERIENCE ON INFANT POSTURAL CONTROL

H. Larin¹, K. Conmy¹, N. Schulte¹, S. Belen¹, S. Stansfield², C. Dennis³, N. Rader⁴, J. Pena-Shaff⁴

¹Ithaca College, Physical Therapy, Ithaca, USA

²Ithaca College, Computer Sciences, Ithaca, USA

³Ithaca College, Occupational Therapy, Ithaca, USA

⁴Ithaca College, Psychology, Ithaca, USA

Introduction/Background

Infant postural control in sitting has been linked with reaching behavior. Typically-developing infants explore their environment through self-initiated mobility. Infants with impaired postural control in sitting do not benefit from such experiences and are usually not considered for powered mobility until 18 or 24 months. Robotic technology presents an innovative approach to provide early sitting and mobility assistance within a secure set-up. Studies indicated that infants as young as 5 months old are capable of learning to use the WeeBot, a robotic mobility device controlled through weight-shifting while seated and motivated to reach out. The purpose of this study was to assess the effect of early self-initiated mobility experience using the WeeBot on the postural control of infants with and without impaired mobility.

Material and Methods

First, thirty typically-developing 5-month old infants, were randomly assigned to a locomotor (WeeBot) or non-locomotor group (stationary sitting). They participated in twelve videotaped play sessions following a standardized protocol, over an 8-week period. At each play session, parent completed a indicated the current sitting posture of their child. The images were coded, analyzed for each group, and the two groups compared. Second, a 10-month old child with hypotonia participated in twelve play sessions following the same protocol. At the end of each session, the child was videotaped during static and dynamic sitting; postural control was coded and analyzed.

Results

The parental report indicated small but important differences between the two groups. Infants in the locomotor group acquired postural control at a faster rate than the infants in the non-locomotor group. The sitting postural control of the child with hypotonia indicated a rapid improvement over a short period of time.

Conclusion

The use of the WeeBot, requiring self-initiated weight-shifting in sitting, may facilitate the development of postural control of children with varied motor impairments and possibly affect other developmental domains

No conflict of interest

ISPR7-0172

Paediatrics - Developmental Disorders

CRANIOVERTEBRAL JUNCTION ABNORMALITIES AS AN INDICATOR OF SURGICAL RELEASE FOR CONGENITAL MUSCULAR TORTICOLLIS

A.R. Ahn¹, Y.H. Park¹, S.Y. Yim¹

¹Ajou University School of Medicine, Department of Physical Medicine and Rehabilitation, Seoul, Republic of Korea

Introduction/Background

We have experienced that some subjects with severe congenital muscular torticollis(CMT) showed craniovertebral junction(CVJ) abnormalities. This study aimed to answer following questions: (1)Is there any relation between the severity of CMT and severity of CVJ abnormalities?; (2)Could CVJ abnormalities be one of indicators of surgical release for CMT?

Material and Methods

This is a retrospective case-control study including subjects with CMT which resulted in limitation of passive rotation of the neck despite adequate physical therapy. The sample consisted of 48 subjects with CMT who showed poor response to physical therapy. The CVJ was examined in terms of atlanto-occipital rotational angle, atlanto-axial rotational angle and lateral and anterior atlanto-dens intervals for evaluation of rotation of atlanto-occipital joint, rotation of atlanto-axial joint, and lateral and anterior shift of atlanto-axial joint, respectively.

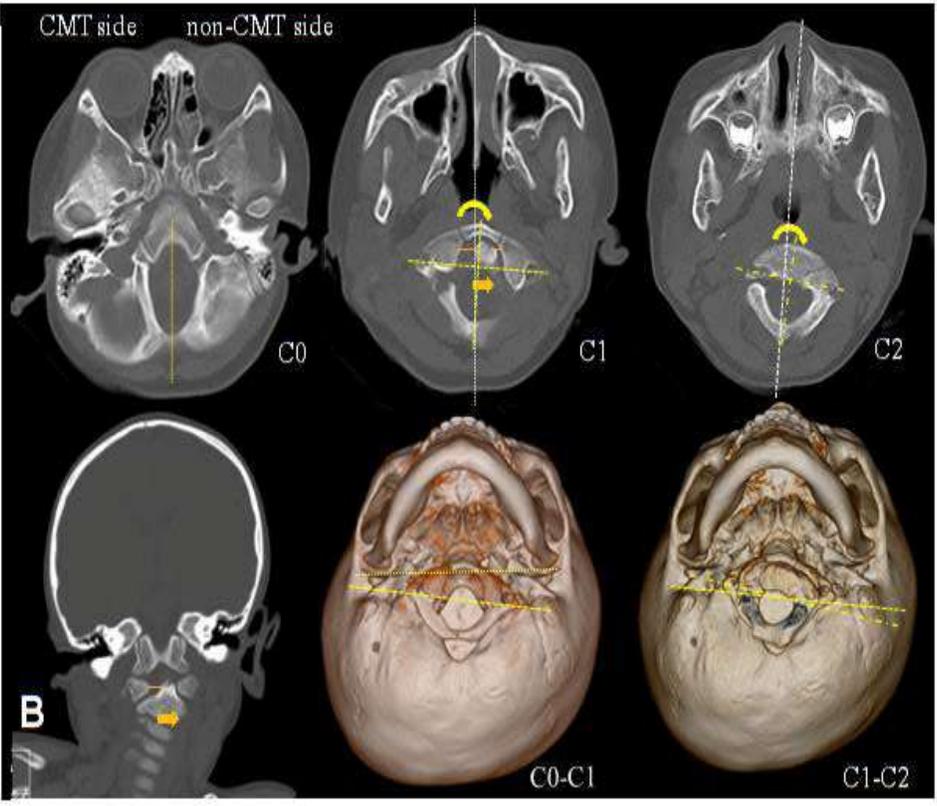
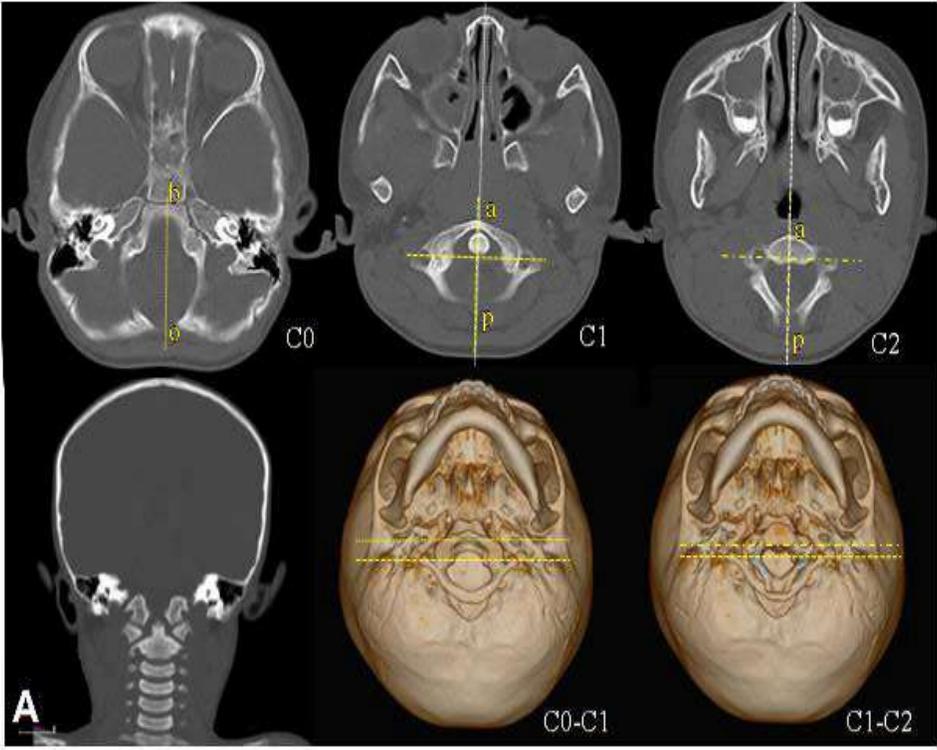


Fig. 1. Craniofacial computed tomography (CT) of the age-matched control and the patient with congenital muscular torticollis(CMT).

The correlation between CVJ abnormalities and the severity of CMT was assessed. Odds ratio was calculated between the presence of CVJ abnormalities and the need for surgery. The directionality of CVJ abnormalities was assessed in relation to CMT.

Results

The severity of CVJ abnormalities in terms of atlanto-occipital rotational angle were positively correlated with the severity of CMT measured in terms of cervico-mandibular angle in the subjects who underwent surgery(Fig. 2, $p < 0.05$).

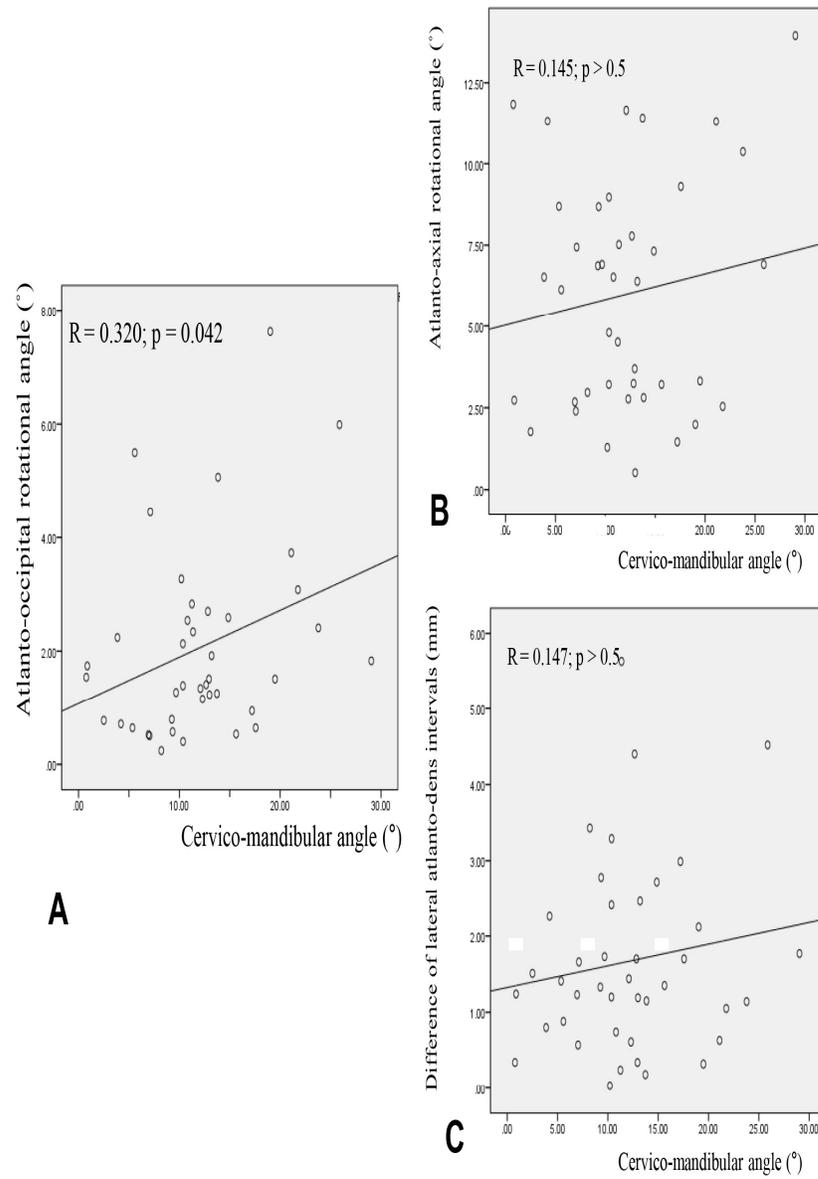


Fig. 2. Correlation between cervico-mandibular angle and degrees of each craniovertebral junction abnormalities among subjects who underwent surgery (n = 41).

Subjects with CVJ abnormalities required surgery for CMT significantly more than those without CVJ

abnormalities with an odds ratio of 6.042 (Table 1, p=0.031).

Table 1. Contingency table between the surgery for congenital muscular torticollis and the presence of craniovertebral junction abnormalities (n = 48)

Number of subjects	Number of subjects	
	Surgery for congenital muscular torticollis (+)	Surgery for congenital muscular torticollis (-)
Craniovertebral junction abnormalities (+)	29	2
Craniovertebral junction abnormalities (-)	12	5

Odds ratio = $(29/12) / (2/5) = 6.042$ (95% confidence interval 1.027–35.557; p = 0.031 by Chi-square test)

Conclusion

The severity of CVJ abnormalities showed good correlation with the severity of CMT. This implies that CVJ abnormalities might be used as one of indicators of surgical intervention for CMT.

No conflict of interest

ISPR7-0388

Paediatrics - Developmental Disorders

THE WINGING SCAPULA CAUSED BY OSTEOCHONDROMA :A CASE REPORT

P. Doruk Analan¹, E. Kaya¹, B. Leblebici¹

¹Baskent University Adana Medical And Research Center, Physical Medicine Rehabilitation, Adana, Turkey

Introduction/Background

Introduction

Winging scapula , is a condition of scapula's medial edge or inferior border which is displaced away from the rib cage. Scapular winging is a rare symptom and differential diagnosis can be misleading. This condition can be caused by dynamic problems secondary to nerve injuries or muscle dysfunctions around the scapula and also can be result of static problems as reported here in this case report.

Case presentation

A 5 -years- old girl presented to our clinic with history of gradually increasing asymmetry of upper back for last 2 months. There is no family history or trauma. She were not complain with rest pain or pain with movement. On physical examination there was asymmetry of right upper back with winging of scapula which was increasing with forward flexion of arm against resistance. Range of motion of right shoulder was normal. No other bony prominences were detected elsewhere in the body. Laboratory examination was normal. There was no nerve pathology and muscle dysfunction that could lead to the winging scapula.

Plain radiograph showed solitary mass arising from inferomedial margin of right scapula . Magnetic resonance imaging (MRI) showed solitary osteochondroma 2× 1,5× 0,5 cm arising from the inferomedial part of ventral surface of right scapula with exophytic extends towards the subscapular area. However there was no evidence of malignant transformation.

The exercise therapy was prescribed and patient was referred to orthopedics and traumatology clinic to be evaluated in terms of surgical procedures.

Material and Methods

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Results

Conclusion

Conclusion

In the presence of nontraumatic winging scapula in childhood period scapular osteochondromas should be considered. It can be easily diagnosed with a detailed examination and radiological methods and full recovery can be achieved with surgical excision.

No conflict of interest

ISPR7-0409

Paediatrics - Developmental Disorders

EARLY REHABILITATION AFTER EXTRA-ARTICULAR INTERVENTIONS ON THE HIP JOINT IN CHILDREN

O. Bortuleva¹, *A. Baindurashvil*², *V. Baskov*³

¹*The Turner Research Institute for Children's Orthopedics, Hip joint pathology clinic, Saint - Petersburg- Pushkin, Russia*

²*The Turner Research Institute for Children's Orthopedics, Director of the Institute, Saint - Petersburg, Russia*

³*The Turner Research Institute for Children's Orthopedics, Chief of the department of hip joint pathology, Saint-Petersburg, Russia*

Introduction/Background

At present for the fixation of bone fragments after extra-articular operations, a metal fixation is used, that allows to eliminate a one and a half spica cast. This makes it possible to carry out rehabilitation measures in the early postoperative period. Improving complex rehabilitation is feasible with the appearance and use of mechanotherapy.

Objective. To perform a comparative assessment of the dynamics of hip function recovery in the early postoperative period using mechanotherapy

Material and Methods

Patients were divided into two groups: the main group - 50 patients, their rehabilitation was carried out with the use of mechanotherapy, the control group - 30 people, mechanotherapy was not applied. During the period from the 2nd to the 15th postoperative day we analyzed the effectiveness of hip function recovery in patients aged 8 to 15 years old after the extra-articular operations on the hip joint. In the main group Artromot K1 and Hivamat were used. Hivamat performs sagittal reciprocating displacement of the entire thickness of the patient's body tissues, providing analgesic, decongestant and regenerative effects. Artromot K1 allows to have long-term dosage passive motions in the hip joint.

Results

Comparative analysis showed an increase in range of motion in the hip joint with the stable results in the group using mechanotherapy. Evaluation of the results was performed on the 14th day. In the main group the range of motion in the hip joint was 70-80°, in the control group - 40-50°.

Conclusion

Using Artromot K1 and Hivamat in the early postoperative period contributes to a significant increase in the range of motion and allows normalizing the stereotype of walk at the early stages.

No conflict of interest

ISPR7-0472

Paediatrics - Developmental Disorders

DECREASED STIFFNESS OF LOWER LIMB MUSCLES WHILE THE AMBULATION FUNCTION DECLINES IN INDIVIDUALS WITH DUCHENNE MUSCULAR DYSTROPHY- BY QUANTITATIVE ACOUSTIC RADIATION FORCE IMPULSE SONOELASTOGRAPHY

C. Lin¹

¹, Taipei city, Taiwan R.O.C.

Introduction/Background

To quantitatively evaluate the muscle stiffness alteration of Duchenne Muscular Dystrophy (DMD) patients in different ambulatory function stages by acoustic radiation force impulse sonoelastography

Material and Methods

Patients with DMD and sex matched controls were recruited, and DMD group were further divided into the ambulant and the non-ambulant subgroups. We used the Siemens ARFI technique with Virtual Touch Quantification to evaluate the muscle stiffness of bilateral tibialis anterior, rectus femoris, and medial gastrocnemius muscles in resting state. We utilized the 9 MHz probe to longitudinally scan the muscle fibers, and obtained the shear wave velocities in 5 different parts of each muscle group, while simultaneously applying the surface electromyography to ensure the muscles are in resting state. We performed the student t test compare the mean shear wave velocity between DMD and control groups, and between the sub groups in DMD. A p value less than 0.05 was considered statistically significant.

Results

35 male individuals with DMD (21 in ambulant subgroup and 14 in non-ambulatory subgroup), and 30 controls were recruited. The mean age of control group, DMD-ambulant subgroup, and DMD-non ambulant subgroup are 98.73 ± 42.78 months old, 93.00 ± 27.22 months old, and 169.29 ± 31.30 months old, respectively (Table 1). DMD group had higher shear wave velocity in bilateral medial gastrocnemius, bilateral rectus femoris, and right tibialis anterior muscles, than the controls (Table 2). However, the subgroup analysis revealed the shear wave velocity decreased in medial gastrocnemius and tibialis anterior muscles, but increased in rectus femoris muscles while the ambulatory function declines (Table 3).

Table 1. Demographic Data of Typically Developing Controls Group and Duchenne Muscular Dystrophy Group

Group	Numbers	Gender (Male: Female)	Age (months) (mean \pm standard deviation)
Typically Developing Controls (TDC)	30	30:0	98.73 \pm 42.78
Duchenne Muscular Dystrophy (DMD)	35	35:0	123.51 \pm 47.41
Ambulant subgroup	21	21:0	93.00 \pm 27.22
Non-Ambulant subgroup	4	14:0	169.29 \pm 31.30

Table 2. Shear Wave Velocity in Typically Developing Controls Group and Duchenne Muscular Dystrophy Group

	Duchenne Muscular Dystrophy (DMD) (N=35)	Typically Developing Controls (TDC) (N=30)	p-value
Shear wave velocity of Right Medial Gastrocnemius Muscle (m/s)	2.19 \pm 0.48	1.74 \pm 0.20	0.00
Shear wave velocity of Left Medial Gastrocnemius Muscle (m/s)	2.04 \pm 0.51	1.82 \pm 0.23	0.03
Shear wave velocity of Right Rectus Femoris Muscle (m/s)	2.26 \pm 1.01	1.76 \pm 0.29	0.01
Shear wave velocity of Left Rectus Femoris Muscle (m/s)	2.07 \pm 0.68	1.76 \pm 0.23	0.02
Shear wave velocity of Right Tibialis Anterior Muscle (m/s)	2.55 \pm 0.55	2.78 \pm 0.32	0.04
Shear wave velocity of Left Tibialis Anterior Muscle (m/s)	2.87 \pm 0.75	2.76 \pm 0.41	0.49

Table 3. Shear Wave Velocity in Subgroup of Duchenne Muscular Dystrophy Group

	Duchenne Muscular Dystrophy (DMD) Ambulant Group (N=21)	Duchenne Muscular Dystrophy (DMD) Non Ambulant Group (N=14)	p-value
Shear wave velocity of Right Medial Gastrocnemius Muscle (m/s)	2.33±0.47	1.98±0.43	0.034
Shear wave velocity of Left Medial Gastrocnemius Muscle (m/s)	2.06±0.46	2.02±0.60	0.86
Shear wave velocity of Right Rectus Femoris Muscle (m/s)	1.80±0.35	2.96±1.26	0.00
Shear wave velocity of Left Rectus Femoris Muscle (m/s)	1.81±0.51	2.46±0.74	0.00
Shear wave velocity of Right Tibialis Anterior Muscle (m/s)	2.62±0.55	2.44±0.57	0.34
Shear wave velocity of Left Tibialis Anterior Muscle (m/s)	3.13±0.66	2.50±0.75	0.01

Conclusion

There is increased muscle stiffness of lower limb muscles in patients with DMD compared with controls. However, the subgroup analysis in DMD disclosed that the muscle stiffness in tibialis anterior and medial gastrocnemius muscles decreased while their ambulatory function declined.

No conflict of interest

ISPR7-0543

Paediatrics - Developmental Disorders

REHABILITATION AND PROSTHETIC RESTORATION WITH A MODIFIED SYME'S PROSTHESIS FOR A CHILD WITH CONGENITAL ABSENCE OF FOOT AND ASSOCIATED BILATERAL HAND DEFICIENCIES: A CASE REPORT

M.N. Gelvosa¹, A.Z. Bondoc¹

¹Veterans Memorial Medical Center, Department of Rehabilitation Medicine, Quezon City, Philippines

Introduction/Background

Combined congenital deficiencies of the upper and lower extremities pose a great challenge to ambulation and activities of daily living of the affected child. This report aims to present a case of a 16 year-old boy with multiple congenital limb deficiencies and the physiatric interventions which resulted in an overall improvement in the patient's functional capacity.

Material and Methods

The patient was initially seen at the age of 6. He presented with hypoplastic hands with contracted left elbow and absent right foot. Radiographs of the hands show fused and deficient carpals, absent central rays, and a single developed finger on each hand. On the right lower extremity, there was a transverse deficiency of the right foot; tarsals, metatarsals and phalanges complete. Patient had an undesirable gait pattern with stooped posture at risk for musculoskeletal complications. He was fitted with a Modified Syme's prosthesis, which included a SACH foot and a socket serving as shank with anterior opening and Velcro straps. Addition of ankle block was done for his succeeding prostheses to adjust for his growth. His latest prosthetic appliance was modified with an additional proximal patellar-tendon bearing component due to skin ulcerations on the distal stump. Intensive physical therapy was done for gait retraining, as well as occupational therapy for further improvement of ADLs using his residual upper extremities.

Results

Patient became an unlimited community ambulator with corrected gait and good acceptance of the prosthesis. He has achieved modified independence in all ADLs.

Conclusion

A comprehensive rehabilitation program helps patients with congenital limb deficiencies achieve maximum functional capacity.

No conflict of interest

ISPR7-0582

Paediatrics - Developmental Disorders

ADOLESCENT IDIOPATHIC SCOLIOSIS: WHAT KIND OF EXERCISE IS ALLOWED AND BENEFICIAL FOR LATER OUTCOME

A. Oliveira Pegado¹, J. Monsanto², M.J. Costa³, R. Francisco³, D. Martins⁴, M. Silva⁴
¹, Lisboa, Portugal

²Centro Hospitalar Lisboa Ocidental, Medicina Física e Reabilitação, Lisboa, Portugal

³Centro Hospitalar Lisboa Central, Medicina Física e Reabilitação - HDE, Lisboa, Portugal

⁴Centro Hospitalar Lisboa Central, Medicina Física e Reabilitação, Lisboa, Portugal

Introduction/Background

Adolescent idiopathic scoliosis (AIS) is a persistent lateral, rotated curvature of the spine that arises in otherwise healthy children between 10-16/18 years old. Its etiology and pathogenesis remain unknown. Almost 10% of those with scoliosis will require treatment. Bracing and physiotherapeutic scoliosis-specific exercises are used to prevent the progression of the curve. While bracing has been demonstrated to be effective in reducing curve progression, it may have a potential secondary outcome: reduced rate of bone mineral accrual. Adolescents with AIS have consistently been shown to have a low bone mineral content (BMC) and bone mineral density (BMD), thereby increasing the risk of developing osteoporosis and related complications later in life.

Material and Methods

Systematic review of bibliography of the last 10 years concerning this subject

Results

Studies suggest that the prevalence of low BMD in adolescents with AIS is 20-38%. The impact of spinal bracing on physical activity has been poorly described in the literature and remains inconclusive. Studies show that adolescents with AIS or kyphosis, their overall step activity before and during brace treatment is lower than expected values for healthy peers. Importantly, it is high-impact/weight-bearing activity which appears to have the greatest effect on bone mineral accrual and structure during the growing years.

Conclusion

We concluded that adolescents with AIS treated with bracing, can and should be encouraged to participate in physical activity. However, there are no controlled studies that show the impact of the exercise, especially resistance training, in this population, which we strongly believe it would be beneficial for the bone mineral accrual and structure.

No conflict of interest

ISPR7-0640

Paediatrics - Developmental Disorders

OSTEOPATHY AS TREATMENT OF FUNCTIONAL DISORDERS

C. Rangel Gomez¹, C. Sanchez¹, N. Lara Arroyo²

¹Universidad Nacional de Colombia, Maestría en medicina alternativa - Osteopatía, Bogota, Colombia

²Universidad Nacional de Colombia, Medicina física y rehabilitación, Bogota, Colombia

Introduction/Background

Osteopathy is a complex medical system of alternative medicine and its principles speak of the interaction of the structure and function, the unity of body, life is movement, homeostasis and the law of the artery. Somatic dysfunction or osteopathic lesion are functional. It is defined by loss or decreased (physiological) normal movement of any body tissue. Here are a clinical case treated with craniosacral osteopathic maneuvers.

Material and Methods

Patient 5 months old, delivery at 37 weeks gestation, with no history of importance, diagnosed with postural brachycephaly. The patient received Craniosacral mobilization maneuvers to return the form to the skull. The maneuvers were applied 3 times per week for 2 months, the treatment was not restricted to the skull but extended to the spine, pelvis and lower extremities which contribute to the deformative sequence

Results

At the end of the osteopathic treatment, a significant improvement, given by the perimeters of the skull it was found. Finding a better distribution head and a position of the skull. Based on existing mobility in the cranial sutures.

Conclusion

Positional brachycephaly is a postural head deformity consisting of a flattening of the entire back of the head. Usually it is seen in babies who sleep long periods in supine (face up), different to craniosynostosis, and can be treated with osteopathic maneuvers.

No conflict of interest

ISPR7-0657

Paediatrics - Developmental Disorders

DEVELOPMENTAL COORDINATION DISORDER ASSOCIATED FACTORS AND CHANGES IN MOTOR CONTROL IN PATIENTS ASSIGNED TO TWO NEUROMOTOR TREATMENT MODELS

L.G. Prado Gonzalez¹

¹Instituto Nacional De Rehabilitacion, Rehabilitacion Pediatrica, Ciudad De Mexico, Mexico

Introduction/Background

Background: Developmental Coordination Disorder (DCD) is characterized by difficulty with gross and fine motor skills that affect daily life and scholarly achievement.

Objective: To recognize factors associated to DCD and motor control changes in patients assigned to 2 different neuromotor treatment models. **Material and Methods**

Methods: Prospective, longitudinal and analytic study of deliberate intervention, consisting of two parts, one of case and control group analysis and a second controlled, randomized and open clinical trial that includes patients with DCD of five to eleven years of age. We formed 2 groups: 1 experimental and 1 control group. The experimental group received treatment based on virtual reality (VR), and the control group received physical and occupational therapy (PT and OT), 3 times per week during a period of 12 weeks. Progression was evaluated by MABC-2 battery.

Results

Results: A comparison was made for the case and control phase by t-test and Mann-Whitney U test; with a sample of 73 patients, 44 cases with DCD and 29 controls (healthy patients); children with DCD had more exposure to premature threatened abortion; the risk increased for children of single parent families. The Hotelling trace statistic was used for the clinical trial, with a sample of 44 patients, 20 received treatment with RV and 24 with PT and OT. Both treatment strategies were associated to a significant increase in MABC-2 battery percentages ($p=0.0001$).

Conclusion

Conclusions: Premature threatened abortion and single parent family were demonstrated to be the main factors associated to DCD, with both treatment strategies being equally effective.

No conflict of interest

ISPR7-0694

Paediatrics - Developmental Disorders

NEMALINE MYOPATHY: CASE REPORT

A.Ú. Costa Martins¹, J. Silva², J. Matos², J. Gomes², C. Branco²

¹, Maia, Portugal

²Centro Hospitalar Entre Douro e Vouga, Department of Physical Medicine and Rehabilitation, Santa Maria da Feira, Portugal

Introduction/Background

Nemaline myopathy is a congenital, hereditary neuromuscular disorder. It has an estimated prevalence of 1/50000 live births and is the most common non-dystrophic myopathy. It is defined by muscle weakness and the presence of microscopic "nemaline bodies". Main symptoms are muscle weakness and hypotonia. The severity of the disease varies significantly between individuals, ranging from severe weakness and hypotonia in neonates, to individuals who only develop mild symptoms in adulthood.

Material and Methods

Case report: hereditary neuromuscular disorder and the impact of an early intervention.

Results

Case report

Male, 2years old. Dystocic delivery, APGAR 3/8 at 1st and 5th sec, with reanimation support. Medical history of hypotony, laryngomalacia, club foot and respiratory insufficiency after delivery. He was hospitalized for the first 2months, at the time NM diagnosis was done. He started Bilevel Positive Pressure Airway support(BPPA), 16hours/day, being accompanied by a multidisciplinary team including pediatrician, orthopedic, otolaryngologist, psychiatrist and rehabilitation team. He started a rehabilitation program during the hospital period, being continued in ambulatory regimen. The rehabilitation program was initially directed to neuromuscular rehabilitation and respiratory kinesiotherapy. It was thereafter included speech and occupational therapy, as well as physical therapy. Nowadays, he presents a better functional status, with good sitting balance and autonomy in alternating between sitting to standing, independent gait, although for short distances. He still maintains axial and limb hypotonia, keeping the BPPA during the night.

Conclusion

Patients with neuromuscular disorders require a precocious multidisciplinary approach, including a rehabilitation team to a better clinical support and to avoid functional status worsening. The rehabilitation program should be focused on supporting physical functions which are negatively affected by muscle weakness and respiratory support, if necessary. Swallowing and speaking should be assessed and accompanied by a speech therapist. The environment should be adapted to the needs of the individual and mobility aims should be prescribed if necessary.

No conflict of interest

ISPR7-0041

Paediatrics - Miscellaneous

ACUTE SENSORY NEURONOPATHY FOLLOWING ENTEROVIRUS INFECTION IN A 3-YEAR-OLD GIRL

C.C. Chiu¹

¹Taipei Veterans General Hospital, Department of Physical Medicine and Rehabilitation, Taipei, Taiwan R.O.C.

Introduction/Background

Acute sensory neuronopathy (SNN) is a type of rapid developing peripheral nervous diseases in which the major site of pathology is the sensory neuron in the dorsal root ganglion or trigeminal ganglion causing impairment of sensory axons. It is uncommon in childhood or adolescent, with review of literature disclosed only 3 cases, with the age of 9 as the youngest, and never reported to be associated to enterovirus infection.

Material and Methods

Case report

Results

Three-year-old girl initially presented with rashes on all extremities and ulcer over postpharynx area, with enterovirus infection diagnosed. Nine days later, which the symptoms already relieved, she started to present with ataxic and wide-based gait, and dysmetria over all extremities, with absence of all sensory nerve action potential (SNAP) tested among upper and lower limbs by nerve conduction studies. She was diagnosed with acute SNN based on criteria developed by Camdessanche JP et al in 2009, which is to be the youngest ever reported. Children with enterovirus are likely to develop into a variety of neurological complications, although motor neuronopathy (also known as acute flaccid paralysis) was documented, to the best of our knowledge, the association with SNN has not been reported.

Conclusion

Our case gives clues that acute SNN may be early onset as age of 3, and may be resulted from enterovirus infection.

No conflict of interest

ISPR7-0047

Paediatrics - Miscellaneous

RECENT PREVALENCE OF OVERWEIGHT AND OBESITY IN TUNISIAN CHILDREN AND ADOLESCENT

M. Rihab¹, S. Frioui², M. Gaddour¹, S. Jemni¹, F. Khachnaoui¹

¹HOPITAL SAHLOUL, physical and rehabilitation unit, Sousse, Tunisia

²SAHLOUL Hospital, physical and rehabilitation unit, Sousse, Tunisia

Introduction/Background

Obesity is a serious health problem. In our country few studies were interested in such subject. In this study we will try to determine prevalence of obesity in children in Tunisia

Material and Methods

Our study is an analytical cross-sectional study, conducted over a period of 5 months from December 2014 to April 2015, gathering students in Sousse city. This one was after having the access agreement for an epidemiological study in schools in near the regional office of education.

Evaluation includes a questionnaire about age, gender and leisure activities with a physical exam to determine the body mass index (BMI).

The weight profile was determined on BMI curves of French references, to which were added the 2 curves "International Obesity Task Force IOTF 25 and 30".

Results

We examined 444 children and adolescents, mean age 14.9 years (1.91 SD) [12 -18] years. Our study collected 201 boys and 243 girls.

The prevalence of obesity was 5.6 % and 8,3 % of children were over weighted.

Obesity increases with age, prevalence is 2,4% in the group aged from 12 to 14 years and 8,2% in children aged between 15 to 18 years old($p<0,001$). It is higher in girls with a prevalence of 8,6% and 2% in boys ($p<0,001$). It is higher in the group of children not practicing sports 7,7% and 5,5% in children having sports activities.

Conclusion

Prevalence of overweight in children in France and the world is about 4 %. In our country, figures vary between 2,6% to 26%. This can be explicated by the difference of curves used for definition of obesity. All studies confirm that obesity increases with age and it's higher in girls. Obesity in children is serious problem since 86% of children still obese at adult age. A longitudinal study is necessary to determine prevalence and its risk factors.

No conflict of interest

ISPR7-0050

Paediatrics - Miscellaneous

VOIDING DISORDER IN CHILDREN: DIAGNOSTIC AND MANAGEMENT

M. Rihab¹, S. Frioui¹, M. Gaddour¹, I. Bel hadj Youssef², E. Toulgui¹, W. Hadj Hamad¹, I. Loubiri¹, M. Guedria¹, S. Jemni¹, F. Khachnaoui¹

¹HOPITAL SAHLOUL, physical and rehabilitation unit, Sousse, Tunisia

²Hopital Sahloul, Physical and rehabilitation unit, Sousse, Tunisia

Introduction/Background

Voiding disorder in children is frequent. The purpose of our study is to analyze different types of such symptom in childhood and its management.

Material and Methods

A retrospective study including 49 children (36 girls, 13 boys) treated for voiding disorder from January 2013 to Jun 2016 in the

urodynamic unit of the physical medicine and rehabilitation unit in Sahloul Hospital, Sousse. The clinical history and urodynamic results as well as the neuroradiographic findings were recorded.

Results

Mean age of our study population were 10,3 years [4- 16]. Clinical history and exam were normal in 59% of cases, revealed spina bifida in 4 cases, multiple sclerosis in 2 cases and renal failure in 4 cases.

Urgency was the most common symptom (34,7%), and in the second place comes enuresis (28,6%).

The urodynamic explorations (urine flow measurement, cystometric, Urethral function) revealed an overactive detrusor in 56 % of cases associated to bladder sphincter dyssynergia in 15% of cases due to a poorly stabilized bladder.

Treatment was based on motivational therapy, bladder-training exercises in 73% of those cases associated to pharmacologic treatment as anticholinergics in 60% of cases and Desmopressine was prescribed in isolated nocturnal enuresis. Clean intermittent catheterization was prescribed in two cases.

Conclusion

Voiding troubles in children are frequent including in most cases a poorly stabilised or non-neurogenic bladder. A careful clinical and urodynamic evaluation is necessary to eliminate a neurologic disorder, evaluate the risk on the upper urinary tract and define a management program for each trouble.

No conflict of interest

ISPR7-0147

Paediatrics - Miscellaneous

OSTEOPOROSIS: TREATMENT PROTOCOLS IN NEUROMUSCULAR DISEASES IN PAEDIATRIC AGE

P. Caetano¹, C. Martins Moreira²

¹*USF Nova Via, Family Medicine, Gaia, Portugal*

²*CHP, Serviço de Fisiatria, Porto, Portugal*

Introduction/Background

Osteoporosis is an increasingly prevalent entity in the medical reality. Many factors have been identified in its pathogenesis (genetics, age, nutrition, physical activity) and several studies have been developed to outline the most effective treatment.

There are protocols in Primary Care, aimed at Osteoporosis diagnosis and precocious screening with a view to early treatment with higher morbidity evicition. However, these protocols are targeted at the general population, in adulthood, but it is known that the incidence of osteoporosis in paediatric age has been increasing.,

The purpose of this paper is to review the main signs and the correct therapeutic orientation, distinction between different neuromuscular diseases present in osteoporosis in paediatric age by the primary health care physicians.

Material and Methods

Bibliographic research in PubMed/Uptodate and authors experience during the internship in Physical and Rehabilitation service in Centro Hospitalar Porto

Results

In children and adolescents it is considered osteoporosis when BMD Z-score<-2 The factors must be taken into account risk (immobility, inflammatory diseasechronic active, corticosteroids).When the Z-score is between -1and -2 SD should keep the child under observation with periodic controls and monitoring BMD of risk factors.

Unlike what happens with adults, children stability or increased DMO not necessarily mean you are responding the treatment because they should physiologically increase bone mass relation to the natural evolution of growth. Performing determining BMDevery 12months seems to be sufficient for monitoring children and adolescents with osteoporosis. When there are risk factorsassociated control may be needed BMD frequently, for every six months.

Conclusion

In a demographic reality in which the family doctor is often the only clinical feature of a population in useful time, it is urgent that there is an effective knowledge of this pathologies, in particular osteoporosis treatment protocols for these special population, as the correct medical orientation can prevent or delay the loss of walking ability and morbidity.

No conflict of interest

ISPR7-0178

Paediatrics - Miscellaneous

PAEDIATRIC ANTI-N-METHYL-D-ASPARTATE RECEPTOR ENCEPHALITIS: THE FIRST CHINESE CASE SERIES

N. Xiao¹

¹Children's Hospital of Chongqing Medical University, Department of Children Rehabilitation, Chongqing, China

Introduction/Background

To investigate the clinical features and prognosis of 46 Chinese paediatric anti-NMDAR encephalitis for understanding of Paediatric anti-NMDAR encephalitis in Chinese population.

Material and Methods

We describe retrospectively a case series of 46 children who were diagnosed and hospitalized in Children's Hospital of Chongqing Medical University during the time from Sep 2010 to June 2015. Besides, the SPSS 16.0 was used for statistical analysis.

Results

1. Most patients were 3-12y, but Paediatric anti-NMDAR encephalitis can happen at any age. It is more prevalent in females. 2. Oncologic searches were given in 36 cases (78%) and all are negative. 3. The youngest group (<3 years) seems to have a less severe phenotype and a better outcome compared to older groups. There is no significant difference between other two groups in severity and outcome ($P<0.05$). 4. The rate of positivity of anti NMDAR Ab was higher in the CSF as compared to the serum. The MRI tests revealed no specific results, however, some patients can presented with reversible brain atrophy, which doesn't have to connect to a poor outcome. 5. Patients have a poorer outcome after failing first-line immunotherapy ($P<0.05$). 6. Rehabilitation may be helpful in paediatric anti-NMDAR encephalitis.

Conclusion

There are differences between the Chinese and the foreign in anti-NMDAR encephalitis such as the age structure, the rate of combined tumor and clinical manifestations. Rehabilitation may be helpful in Paediatric anti-NMDAR encephalitis

No conflict of interest

ISPR7-0183

Paediatrics - Miscellaneous

EFFECT OF REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION ON MOTOR FUNCTION IN RATS WITH KERNICTERUS

N. Xiao¹

¹Children's Hospital of Chongqing Medical University, Children Rehabilitation Department, Chongqing, China

Introduction/Background

To investigate whether repetitive transcranial magnetic stimulation (rTMS) can improve the motor function of rats with kernicterus.

Material and Methods

Twenty-nine five-day-old SD rats were divided into three groups: normal saline control group (n=7), kernicterus model group (n=11) and rTMS group (n=11). Model group and rTMS group was injected with bilirubin solution (10ug/g) in the cisterna magna, while control group was injected with equal volume of normal saline (1uL/g). At 19 days of age, Gait analysis was performed on the 3 groups. The first day after gait analysis (20 days of age), rTMS group received rTMS treatment daily for 7 days. 2000 stimulation from 16 trains in a day. Each train was applied at 25 Hz for 5 s with 13s intervals between trains, while Model group received sham-stimulation. No treatment was performed in control group. After 7 days of treatment, gait analysis was performed on the 3 groups again.

Results

At 19 days of age, left and right step length in model group and rTMS group were shorter than those in control group ($P<0.05$). After 7-days treatment (26 days of age), left and right step length in rTMS group were greater than those in Model group ($P<0.05$), but shorter than control group ($P<0.05$); difference value of step length in rTMS group was shorter than that in model group ($P<0.05$), but greater than control group ($P<0.05$).

Conclusion

rTMS can improve motor function of rats with kernicterus.

No conflict of interest

ISPR7-0185

Paediatrics - Miscellaneous

RETENTION RATE OF OXCABAZEPINE IN YOUNG CHILDREN WITH SYMPTOMATIC EPILEPSY

N. Xiao¹

¹Children's Hospital of Chongqing Medical University, Children Rehabilitation Department, Chongqing, China

Introduction/Background

To investigate the long-term retention rate of Oxcarbazepine in Chinese young children with symptomatic epilepsy and to evaluate the withdrawal causes of Oxcarbazepine.

Material and Methods

Clinical features of 89 cases (male/female: 48/41) from January.2009 to June.2015 were collected. Patients with symptomatic epilepsy who received mono- or adjunctive therapy with Oxcarbazepine. The initial dose was 10mg/kg/d twice a daily, 3-4 weeks to increased to the target dose. Oxcarbazepine doses ranged between 12-53mg/kg/day (mean dose: 34±8.59 mg/kg/day). An investigator recorded the antiepileptic drugs, seizure frequency, electroencephalogram and side effects for 3, 6, 12, 24, and 36 months during follow-up.

Results

A total of 89 patients were enrolled in this investigation. The retention rate of Oxcarbazepine in 3, 6, 12, 24, and 36 months were 95.5%, 87.6%, 75.3%, 56.2%, 25.8%, respectively. The predominant causes of withdrawal were lack of efficacy 36 (54.5%), end point 10 (15.2%), adverse effects 8 (12.1%), seizure-free 5 (7.6%), follow-up loss 3 (4.5%). COX analysis reveals that the age of onset was associated with treatment failure. In addition, patients with 50% reduction in seizure frequency in 6, 12, 24, and 36 months were 56.5%, 55.3%, 44.7%, 24.7%, and with seizure-free were 36.5%, 34.1%, 29.4%, 16.5%. In this research, 16 (18.0%) patients experienced at least one side effect. The most common side effects observed were drowsiness 8 (42.1%), rash 3 (15.8%), and most were mild in severity.

Conclusion

Our study demonstrates that Oxcarbazepine is safe and well tolerated in infants and very young children with symptomatic epilepsy. Whereas, for the purpose of better retention rate and therapeutic benefits, we should treat discretely depending on the complicated etiology and clinical features.

No conflict of interest

ISPR7-0191

Paediatrics - Miscellaneous

THE ROLE OF PHYSICAL MODALITIES IN THE TREATMENT OF CHILDREN WITH BLADDER AND BOWEL DYSFUNCTION

V. Živković¹, I. Stanković¹, L. Dimitrijević¹, H. Colović¹, M. Kocić¹, M. Spalević¹, M. Lazović², M. Vlajković³

¹*Medical Faculty of University Nis, Clinic of physical medicine- rehabilitation and prosthetics, Nis, Serbia*

²*Medical Faculty University of Belgrade, Rehabilitation Institute, Belgrade, Serbia*

³*Medical Faculty of University Nis, Department of nuclear medicine, Nis, Serbia*

Introduction/Background

The term “bladder and bowel dysfunction” (BBD) indicates that functional bowel and bladder disturbances are associated in children. These children complain of urinary frequency and incontinence, nocturnal enuresis, voiding dysfunction, recurrent urinary tract infections, chronic constipation and/or fecal incontinence. There is little evidence on the value of physiotherapy in the treatment of patients with BBD. Therefore, the aim of the study was to evaluate the effects of interferential electrical stimulation (IFS) and diaphragmatic breathing exercises (DBE) in children with BBD.

Material and Methods

Fifty children with dysfunctional voiding and chronic constipation who were failures of primary care interventions were included in the prospective clinical study. All the children had medical history taken, and underwent physical examination, urinalyses and urine culture, the ultrasound examination of bladder and kidneys and uroflowmetry with pelvic floor electromyography. Eligible children were randomly divided into two groups. In addition to education and behavioral modifications, children from both groups were assigned DBE for two weeks in the clinic. After DBE, group A (30 patients) additionally underwent IFS to the abdomen. All the children continued with the behavioral modifications and DBE at home for one month. Clinical manifestations, uroflowmetry parameters and postvoided residual urine were analyzed before and after six weeks of therapy.

Results

After therapy, defecation increased in 27 patients in group A ($P < 0.001$) and 5 group B patients. Fecal incontinence decreased in 5 out of 6 group A patients ($P < 0.05$) and only 1 out of 6 children in group B. LUTS were cured in 22 patients ($P < 0.001$) in group A and 5 group B patients. Uroflowmetry parameters did not show significant changes in both groups. In group A, 22 children demonstrated bell-shaped uroflow curve ($P < 0.001$).

Conclusion

IFS and DBE are beneficial in chronically constipated dysfunctional voiders. Further trials are needed to define the long-term effects of this program.

No conflict of interest

ISPR7-0244

Paediatrics - Miscellaneous

THE ROLE OF PATHOLOGICAL CAUSE ON PHYSICAL TREATMENT OUTCOME OF METATARSUS VARUS FOOT DEFORMITY IN CHILDREN

I. Petronic¹, D. Cirovic¹, D. Nikolic¹, J. Stojkovic¹, T. Knezevic¹, M. Adzic²

¹University Childrens Hospital, Physical Medicine and Rehabilitation, Belgrade, Serbia

²Clinical Centre of Montenegro, Physical Medicine and Rehabilitation, Podgorica, Montenegro

Introduction/Background

Various anomalies could be the cause of pes metatarsus varus (PMV) foot deformity in children. Aim of our study was to evaluate the influence of different pathological causes on rehabilitation treatment outcome in children with PMV.

Material and Methods

We have evaluated 152 children. The age at diagnosis and treatment inclusion was between 8 days to 3 months. All children were evaluated clinically and by diagnostic procedures: X rays, neurophysiological tests and ultrasound. We evaluated degrees of PMV severity: mild, moderate and severe. Physical treatment included thermo and kinesiological procedures, with corrective casts and electrotherapy in severe cases. Treatment outcome was assessed after one year of follow-up.

Results

The most frequent cause of PMV was congenital 117 (77%), vascular 12 (7.9%), spinal dysraphism 15 (9.9%), peroneal palsy 3 (2%) and syndromes 5 (3.2%). At the time of diagnosis there were 94 (61.8%) mild deformities, 41 (27%) moderate and 17 (11.2%) severe. Patients with congenital type of deformities had most frequently mild and moderate degrees of deformity, those with vascular causes and spinal dysraphism were frequently moderate and severe, while patients with syndromes had severe PMV deformity. After one year of treatment those with congenital anomalies had successful correction with regards to those with other evaluated anomalies.

Conclusion

Treatment choice and outcomes are influenced by pathological cause of PMV foot deformity.

No conflict of interest

ISPR7-0291

Paediatrics - Miscellaneous

THE QUALITY OF LIFE OF THE PARENTS OF DISABLED CHILDREN IN MOROCCO

A. Hajjioui^{1,2}, *M. Fourtassi*³, *N. Abda*⁴

¹*University hospital HASSAN II- Fez, Physical Medicine and Rehabilitation, Fez, Morocco*

²*University Sidi Mohammed benabdellah Fez, Physical and Rehabilitation Medicine, Fez, Morocco*

³*University Hospital Mohamed VI Oujda, Physical Medicine and Rehabilitation, Oujda, Morocco*

⁴*University Hospital Mohamed VI Oujda, Laboratory of Epidemiology and Clinical Research, Oujda, Morocco*

Introduction/Background

Families of children with disabilities (CWD) often face many difficulties which affect family functioning and quality of life (QOL) of its members, including parents. The objective of this thesis is to evaluate the QOL of parents of CWD, and to identify factors influencing the QOL.

Material and Methods

205 parents of children with different causes of disability, Arabic speakers met at the centers of rehabilitations in Oujda agreed to participate in our study. Sociodemographic data of parents and the child's clinical data were collected using a questionnaire. QoL was assessed using the PAR-QoL translated and validated in classical Arabic.

Results

88% of respondents were CWD mothers'. These CWD were aged 8 years on average, and suffered cerebral paralysis in 70% of cases. Their parents lived together in 95% of cases within a nuclear family in 69% of cases. 92% of CWD mothers were housewives, and were engaged almost exclusively in the CWD 82%. The fathers of CWD had professional activity in 81% and had a RAMED type of health coverage in 61% of cases. QOL of CWD parents was moderately impaired with a total score of PAR-QoL around 40/80, with a marked deterioration in the emotional score at the level of the adaptive score. This alteration of QOL was significantly associated with a number of children of 5 or more whose CWD, low socioeconomic status (RAMED affiliation), children's mental disorders (autism), and the severity of these disorders.

Conclusion

The child's disability is responsible for a substantial alteration of QOL of parents in the city of Oujda. This alteration could have serious consequences on the functioning of the family and all its members. These results are to be considered in any medico-social care of these children and their families.

No conflict of interest

ISPR7-0310

Paediatrics - Miscellaneous

MULTIMODAL APPROACH OF CHARCOT MARIE TOOTH TYPE 1

S. Domínguez Ibáñez¹, A. Teixeira Tabora¹, C. De Miguel Benadiba¹, L. de la Nuez Rodríguez-Batllori¹, N. Vitoria Pérez¹, P. Sánchez Tarifa¹

¹Ramón y Cajal Hospital, Rehabilitation, Madrid, Spain

Introduction/Background

Charcot Marie Tooth type 1 (CMT1) is a slowly progressive sensory-motor demyelinating peripheral neuropathy. It has an autosomal dominant inheritance pattern with an incidence of 10-30 per 100000 persons. 90% of the patients have ankle dorsiflexors and peroneal weakness and 72% suffer from muscle contractures that lead to tendon shortening originating cavus foot. It has been found that the best motor predictor of quality of life is independent walking and its initial approach is Rehabilitation.

The aim is to analyze options for orthopedic treatment of equino-cavo-varus foot in patients with CMT1.

Material and Methods

7 patients younger than 18 years old, with CMT1 and equino-cavo-varus foot, were attended in Rehabilitation room at Ramón y Cajal Hospital in Madrid. The analyzed parameters were cavus foot podoscopic classification (CFPC) and pain severity during activities of daily living by visual analog scale (VAS). Based on the formerly mentioned facts, strengthening and stretching exercises were given in early stages, combined or not with insoles, dynamic ankle foot orthosis (DAFO) and, some times, botulinum toxin infiltrated in soleus and gastrocnemius muscles. In case of no improvement, patients were referred to surgery to carry out an elongation of the rear compartment of the leg.

Results

Treatment	Rehabilitation program	Insoles	DAFO	Botulinum toxin	Surgery
Nº patients	7	7	5	3	4

	Mild pain	Moderate pain
VAS	0-3	4-6
Nº patients	5	2

CFPC	Grade 1	Grade 2	Grade 3
Nº patients	3	4	0

Conclusion

We emphasize that orthopaedic approach to CMT1 is multimodal and requires continuous monitoring during growth, in order to prevent foot deformities and achieve adequate mobility and gait patterns, avoiding surgical treatment.

No conflict of interest

ISPR7-0429

Paediatrics - Miscellaneous

THE ROLE OF ELECTRONEUROGRAPHY IN EVALUATION OF SUBCLINICAL FORMS OF DIABETIC POLYNEUROPATHY

D. Nikolic¹, I. Petronic¹, D. Cirovic¹, T. Knezevic¹, J. Stojkovic¹, M. Adzic², P. Pavicevic³, D. Dzamic¹

¹University Childrens Hospital, Physical Medicine and Rehabilitation, Belgrade, Serbia

²Clinical Center of Montenegro, Physical Medicine and Rehabilitation, Podgorica, Montenegro

³University Childrens Hospital, Radiology department, Belgrade, Serbia

Introduction/Background

Early diagnosis of subclinical diabetic polyneuropathy (SDP) is of great importance particularly in pediatric population. Timely electroneurography (ENG) is sensitive diagnostic tool in diagnosis of early polyneuropathic changes. Study aim was to evaluate sensitivity of ENG parameters in diagnosis of SDP in pediatric population.

Material and Methods

We have evaluated 34 patients with SDP, age between 5-12 years. The mean duration of SDP at ENG examination was between 3-14 months. Patients were clinically assessed and ENG examination was performed: motoric conduction velocities (MCV), distal motor latency (DML), sensory conduction velocities (SCV) and sensory latencies (SL). The following nerves were evaluated: median, ulnar, fibular, tibial and sural nerves.

Results

MCV for fibular nerve were prolonged in 2 (5.9%) patients, while for median, ulnar and tibial nerve MCV were in normative range for age and gender. DML for fibular nerve were prolonged in 5 (14.7%) patients, for tibial nerve in 2 (5.9%) patients, while for median and ulnar nerves values were in normative ranges for gender and gender. SCV for sural nerve were prolonged in 21 (61.8%) patients, SCV and SL for median nerve in 14 (41.2%) patients and ulnar nerve in 9 (26.5%) patients.

Conclusion

The most sensitive ENG parameter for SDP are SCV and SL, particularly changes for sural nerve. Presence of SCV and SL changes in median and ulnar nerve are more frequently present in those with longer duration of SDP. ENG is of great importance for timely diagnosis of SDP and monitoring the disease progression.

No conflict of interest

ISPR7-0434

Paediatrics - Miscellaneous

THE CARDIOPULMONARY EXERCISE CAPACITY OF CHILDREN WITH ACYANOTIC CONGENITAL HEART DISEASE: COMPARED TO THE NORMAL CHILDREN

Q. Du¹, J. Liang¹, X. Zhou¹, K. Sun²

¹Xinhua Hospital Affiliated to Shanghai Jiaotong University School of Medicine, Rehabilitation Department, Shanghai, China

²Xinhua Hospital Affiliated to Shanghai Jiaotong University School of Medicine, Pediatric Cardiology Department, Shanghai, China

Introduction/Background

Advances in medical and surgical care have contributed to an important increase in the survival rates of children with Congenital Heart Disease (CHD). Survivors often have decreased exercise capacity and health-related issues that affect their quality of life. This study aims to identify the cardiopulmonary exercise capacity in children with acyanotic CHD compared to the normal children.

Material and Methods

40 children average aged 74 ± 12.5 months with a diagnosis of acyanotic CHD as CHD group (18 males, 23 females, ASD, VSD, PDA, PS; NYHA: class I), 18 healthy children average aged 70 ± 4.1 months serving as control group (10 males, 8 females), were recruited in this study. All the children were instructed to walk as much as possible along a 30-m long corridor following the standards Six-Minute Walk Test (6MWT) proposed by American Thoracic Society Statement. The total distance travelled was measured at final, and the heart rate(HR), respiratory rate(RR), blood pressure(BP) were measured before and after 6MWT.

Results

The distances of CHD group and control group were 507.48 ± 76.54 m, 580.06 ± 54.17 m, relatively, which showed significant difference between both groups. The HR, RR, BP had no significant difference before 6MWT, but respiratory rate and higher blood pressure were increased in CHD group after 6MWT compared to control group.

Conclusion

Children with acyanotic CHD show a reduced exercise capacity than healthy children, they should increase proper physical activity, which is safe, efficient, following physicians' recommendations.

No conflict of interest

ISPR7-0440

Paediatrics - Miscellaneous

CLINICAL USEFULNESS OF CONDUCTING BOTH VIDEO FLUOROSCOPIC SWALLOWING STUDY (VFSS) AND SALIVARY GLAND SCAN (SGS) IN CHILDREN

G.E. Kim¹, J. Kim¹, E.J. Ko¹

¹Asan Medical Center, Department of rehabilitation medicine, Seoul, Republic of Korea

Introduction/Background

There are two studies used in children to evaluate swallowing function: a video fluoroscopic swallowing study (VFSS) to assess swallowing process, and a salivary gland scan (SGS) to detect salivary aspiration. Since there is no previous study investigating the usefulness of conducting both VFSS and SGS in children, the aim of this study is to show the correlation, reliability, and usefulness of VFSS and SGS.

Material and Methods

Children who conducted both VFSS and SGS simultaneously under the suspicion of aspiration or dysphagia were selected as subjects for the retrospective study. Age, gender, BMI, underlying disease, feeding method, findings in VFSS or SGS, and medical records suggesting aspiration pneumonia were reviewed.

Results

There were 110 children included in the study. Aspiration pneumonia was significantly correlated with ASHA-NOMS scores, abnormal findings in pharyngeal phase in VFSS and SGS.

More abnormal findings in the two studies showed statistically significant linear associations with the presence of aspiration pneumonia (Table 2). However, the findings of SGS were weakly consistent with those of VFSS (Kappa=0.21, p=0.03), which imply that both studies were not reliable enough to one another.

The results of VFSS correlated with aspiration pneumonia in children with normal results in SGS, and results of SGS tended to correlate with aspiration pneumonia in children with normal results in VFSS (Table 3).

Seventeen children had aspiration pneumonia although they had normal SGS results, and 10 of them (58.8%) had abnormal findings in VFSS. Likewise, 12 children had aspiration pneumonia although they had normal VFSS results, and 5 of them (41.7%) had abnormal findings in SGS (Table 3).

Table 1. Baseline characteristics

Characteristics	Values
Total number of children	110
Gender (Male : Female)	65:45
Age (month)	28.32±38.98
BMI (kg/m ²)	15.30±2.51
Time difference between two studies	2.91±2.53
Underlying disease	
None	3 (2.7)
Neurologic	52 (47.3)
Non-neurologic	55 (50.0)
Feeding method	
Oral	
Regular diet	34 (30.6)
Limited diet	10 (9.0)
Non-oral	
Nasogastric or orogastric tube	47 (42.3)
Gastro-or jejunostomy	11 (9.9)
Oral + non-oral	8 (7.2)

Values are presented as n (%), or mean ± standard deviation.

Table 2. Association of abnormal findings in SGS and/or VFSS with aspiration pneumonia

	Abnormal in two studies	Abnormal in one study	Normal in all studies	P-value
AP(+)	12 (66.7)	15 (37.5)	7 (13.5)	
AP(-)	6 (33.3)	25 (62.5)	45 (86.5)	<0.001*

Total n=110

Values are expressed as n (%).

SGS, salivary gland scan; VFSS, Video Fluoroscopic Swallowing Study; AP, aspiration pneumonia.

* p-value<0.05 by linear by linear association

Table 3. Relationship between VFSS/SGS and AP among normal SGS/VFSS group

Normal SGS group		VF abn (+)		VF abn (-)		p value	Odds ratio
AP(+)	10 (38.5)	7 (13.5)					
AP(-)	16 (61.5)	45 (86.5)					

Normal VFSS group		SGS abn (+)		SGS abn (-)		p value	Odds ratio
AP(+)	5 (35.7)	7 (13.5)					
AP(-)	9 (64.3)	45 (86.5)					

Values are expressed as n (%)

SGS, salivary gland scan; VFSS, Video Fluoroscopic Swallowing Study;

AP, aspiration pneumonia; abn: abnormal finding.

* p-value<0.05 by chi square test.

* Odds ratio(OR) was calculated using chi square test.

Conclusion

VFSS and SGS are valuable evaluation tools for dysphagia and aspiration pneumonia. Since one study may not be enough to predict aspiration pneumonia, conducting both studies will be useful in evaluating dysphagia and aspiration pneumonia in children.

No conflict of interest

ISPR7-0539

Paediatrics - Miscellaneous

LOWER LIMBS DYSMORPHIC FEATURES AND FUNCTIONAL DISORDERS: STUDY OF THE INFLUENCE OF GENERALIZED HYPERMOBILITY ON FOOT

M. Abid¹, Z. Kammoun², T. Emna³, S. JEMNI⁴, F. DEBBABI⁵

¹High School of Sciences and Technology of Health of Sousse, Podiatry, Sfax, Tunisia

²High School of Sciences and Technology of Health of Sousse- Sousse- Tunisia, Podiatry, Sfax, Tunisia

³Faculty of Medicine of Sousse, Physical rehabilitation SAHLOUL-SOUSSE, Sousse, Tunisia

⁴Faculty of Medicine of Sousse, Physical Rehabilitation Department Sahloul-SOUSSE, SOUSSE, Tunisia

⁵Faculty of Medicine of Sousse, Department of Occupational Medicine- Sahloul Sousse, SOUSSE, Tunisia

Introduction/Background

Dysmorphies of lower limbs can result in severe static and functional consequences within the child which explain the anguish of their parents and justify a specific evaluation. Therefore, the objective of our study is to determine the morpho-functional and static problems as well as their rates to draw a link related to the generalized hypermobility in order to provide the best care

Material and Methods

It is a transversal analytic study recruiting 65 children in kindergartens in Sousse, Tunisia (from January to May 2016), as free from neurological, congenital and collagen diseases. Each child was given a specific pediatric examination including an assessment of the morphology of the foot (Chippaux-Smirak Index...). The Beighton score was used to determine the generalized hypermobility

Results

Among 65 (130 foot) children, 53 % (N= 32) have flat foot, 49.2 % (67 flat foot) presents generalized hypermobility, 44.6 % (N= 25) have a genu valgum and 53 % (63 foot with valgus of rearfoot) of the children examined have an excessive valgus deviation of the rearfoot. There was no significant difference with demographic data and valgus angle (right foot $p=0.729$ and left foot $p=0,911$) between hypermobile group and the control group. However, a significant difference was found concerning the foot and angle range of motion in the two groups. Indeed, we found an association between the hypermobility and flat foot

Conclusion

Across this study, the generalized hypermobility within the children represents a common locomotion disorder which requires a rigorous evaluation, thus to prevent from the foot and ankle biomechanical alteration

No conflict of interest

ISPR7-0549

Paediatrics - Miscellaneous

FOOD REJECTION IN MULTI-INVADED CHILDREN

V. Ton¹, D. Gonzalez Moreira¹, J. Ahualli², S. Guerriero¹, C. Ciocchini¹, V. Silahian¹, C. Berystain¹, R. Sabena¹, N. Rivero², F. Boccadoro³

¹CIAREC, Speech and Language therapist, Buenos Aires, Argentina

²CIAREC, Occupational Therapist, Buenos Aires, Argentina

³CIAREC, Pediatrics, CABA, Argentina

Introduction/Background

Medical procedures performed in children with complex pathologies are highly invasive. Children experience very early aggressive stimuli like instrumentation of arial and digestive pathways for vital maintenance. These procedures comprise negative experiences for the oropharyngeal trac.

The oral sensoriality is highly connected to the oral function. When this is altered can impact on vital functions as is the feeding.

Objective:

To observe the existent relationship between food rejection and preceding arial and digestive instrumentation among a paediatric population in the CIAREC Clinic.

Material and Methods

The study was observational and retrospective. Twenty three tracheostomyzed children receiving enteral alimentation were included in the study, all of them hospitalized since 2014 to 2016 at the CIAREC Clinic. Data concerning these patients was obtained from their clinical records, and the specific registries from diverse areas (ocupational therapy phonoaudiology and paediatrics). The relation between the invasion of arial and digestive pathway, and food rejection was analyzed by a multivariate analysis using SPSS software (Chi-square test, significance level at $p < 0.05$).

Results

Results:

From 23 patients, 61% acquired suficiente clinical conditions to start food stimulation. From these patients, 64% showed food rejection. About 88% of these patients that suffered food rejection had been invaded since birth using multiple procedures.

Conclusion

From these results it is inferred that the patients that suffered multiple invasive procedures at their arial and digestive pathway, had a strong tendency to future food rejection.

No conflict of interest

ISPR7-0563

Paediatrics - Miscellaneous

PEDIATRIC TRIGGER THUMB – HOW TO MANAGE? EXPERIENCE OF A PEDIATRIC PRM SERVICE

J. Monsanto¹, A. Pegado², R. Francisco², M.J. Costa²

¹*Centro Hospitalar de Lisboa Ocidental, PRM, Lisboa, Portugal*

²*Centro Hospitalar de Lisboa Central, PRM, Lisboa, Portugal*

Introduction/Background

Pediatric trigger thumb is a different entity when compared to the stenosing flexor tenosynovitis of the adult, with different pathophysiology, natural progression and management.

It results from a disparity of the size of the flexor pollicis longus tendon and the A1 pulley, which results in an abnormal tendon gliding.

Usually parents report a history of triggering but, in most cases, the child presents with a fixed contracture.

Ideal treatment is controversial and most of the available literature is composed of small retrospective studies with limited follow-up. Some authors recommend early surgical release while others endorse the use of conservative treatment with splinting or stretching exercises.

With this study, we pretended to analyse how long should we treat a child conservatively, and which are the prognostic factors that suggest the need of surgical treatment.

Material and Methods

Retrospective study of a Paediatric PRM Service (2008-2016). Evaluated factors: age and severity of trigger thumb at presentation, duration and type of conservative treatment, prognostic factors and outcomes.

Results

123 children were analysed. Mean age of initial diagnosis was 27.7 months (0-62). 25% bilateral. All were treated initially with splinting and stretching exercises.

62% of the 123 children didn't need surgical release with a mean time to achieve 0° of extension without triggering of 2.9 months.

None of the thumbs became worse. 69% of bilateral trigger thumbs needed surgical treatment.

Conclusion

Statistical analysis show that bilateralism and high severity at presentation are relevant prognostic factors that may indicate early surgery recommendation. Presentation age has no influence on final outcome.

Prolonged conservative treatment does not change the post-surgery outcomes and can be an adequate option in the pediatric population.

No conflict of interest

ISPR7-0650

Paediatrics - Miscellaneous

PHYSICAL REHABILITATION MANAGEMENT OF A CHILD WITH PONTINE TUMOR AND HEMORRHAGE WITH CONSIDERATION OF INVOLVED BRAINSTEM TRACTS AND NUCLEI

R. Lazaro¹, A. Franceschi¹

¹Samuel Merritt University, Physical Therapy, Oakland, USA

Introduction/Background

This case report demonstrates the physical therapy examination and treatment of a pediatric patient with pontine tumor and hemorrhage. Due to the high probability of coma and resulting death, few patients with these diagnoses are seen for physical

Material and Methods

The patient is a twelve-year-old boy with increasing consciousness and motor function return following a medical diagnosis of high-grade brainstem glioma. Impairment of the medial and lateral vestibulospinal, medial corticospinal, dorsal column and cerebellar tracts were postulated to be contributory to the patient's lack of postural control. This information was then integrated into interventions that focused on developing segmental head and trunk control while sitting. In addition, the function of the intact tectospinal and dorsal column tracts were incorporated in the treatment to further optimize functional return.

Results

Medical interventions in addition to physical therapy resulted in an improvement of the patient's head and trunk control while sitting, with the patient achieving brief independent sitting and standing with support by the end of nine weeks of inpatient rehabilitation.

Conclusion

In a patient with neurological damage secondary to brainstem involvement, examination of the tracts and nuclei within the brainstem guided physical therapy interventions that optimized functional return. This case report demonstrates that treating the trunk using a segmental approach resulted in positive outcomes related to head and trunk control and supported standing. In addition, consideration of intact tracts and nuclei present can be capitalized on to drive change within an impaired brainstem.

No conflict of interest

ISPR7-0651

Paediatrics - Miscellaneous

DIAGNOSTIC YIELD OF OTOACOUSTIC EMISSIONS SCREENING IN CHILDREN WITH HIGH RISK OF HEARING LOSS: AN INTERIM REPORT

A. Torres-ortiz¹, D. Valencia²

¹Universidad Nacional De Colombia, Physical Medicine And Rehabilitation, Bogota D.C., Colombia

²Universidad Nacional De Colombia- Fundacion Homi Hospital De La Misericordia, Physical Medicine And Rehabilitation, Bogota D.C., Colombia

Introduction/Background

Hearing loss generate a health problem worldwide, with a high impact at child and family level. It's necessary an early diagnosis of this condition. Otoacoustic emissions (OE) are an objective, non-invasive method that allows early detection of hearing loss in newborns, but usually require diagnostic confirmation by evoked auditory brainstem potentials.

Objective: measure the diagnostic yield of auditory screening by otoacoustic emissions compared to the gold standard evoked auditory brainstem potentials; in children with high risk of hearing loss, with the purpose to demonstrate its suitability as screening test in prevention programs and early diagnosis.

Material and Methods

This is a longitudinal and ambispective study, including newborns admitted to NICU at Fundación HOMI Hospital de la Misericordia between 2008 and 2016. Otoacoustic emission test and evoked auditory brainstem potentials were performed. Sensitivity, specificity, predictive positive and negative value and likelihood ratios has been statistically analyzed.

Results

Preliminary results: from 147 children tested with otoacoustic emissions, at the moment we have comparative data with evoked auditory brainstem potentials in 40 cases; which were analyzed. We found that OE has sensitivity and specificity values of 81,5% and 50% respectively. The predictive values were: positive 66,7% and negative 69,2%. Finally the likelihood values were: positive 1,64 and negative 0,36 with a diagnostic odds ratio (DOR) of 4,55.

Conclusion

Despite otoacoustic emissions has a favorable diagnostic odds ratio, our data shows an unsatisfactory diagnostic yield of otoacoustic emissions screening in children with high risk of hearing loss. A possible explanation for these results could be the sample size.

No conflict of interest

ISPR7-0955

Paediatrics - Miscellaneous

PROCESS EVALUATION OF THE IMPLEMENTATION OF A HOME-BASED PHYSICAL ACTIVITY CURRICULUM IN CHILDREN WITH AND WITHOUT PRADER-WILLI SYNDROME

D.A. Rubin¹, K.S. Wilson¹, D.J. Rose¹, L.D. Wiersman¹, M.C. Dumont-Driscoll²

¹*Department of Kinesiology California State University Fullerton, Fullerton, CA, USA*

²*Department of Pediatrics, University of Florida Gainesville, Gainesville, FL, USA*

Background and aim: A 24-week home-based physical activity program was designed for youth with and without Prader-Willi Syndrome (PWS), a rare disorder resulting in obesity and motor, intellectual, and behavioral challenges. This study aimed to determine program feasibility and fidelity of program delivery. Methods: Participants included 45 youth with PWS (8-15 y), and 66 youth with obesity (8-11 y), and one parent per child. The program included prescribed sessions 25-60 min long of playground and interactive console games 4 days a week. Training and program materials were provided at baseline with follow-up communication every two weeks. Intervention attrition and compliance (>70% of prescribed session) were computed. Fidelity included duration and content (warm-up, strength exercises and selected games) of playground, Wii Fit Plus and Just Dance games sessions monitored using daily self-report checklists. Results: Completion was of 79.2% with 90% of the participants completing the intervention achieving compliance >70%. Compliance with days of playground games was 79.8% with a mean duration of 44 ± 23 min/session. For the days of Wii Fit Plus and Just Dance games compliance was of 75 % and 81.7 % respectively, with means of 55 ± 19 and 54 ± 20 min/session respectively. 30 ± 14 of 48 playground games sessions were completed as prescribed. For the interactive console-based games sessions, 16 ± 7 of 24 sessions were completed as planned using the Wii-Fit Plus and 19 ± 6 of 24 sessions using the Just Dance games. Conclusion: The low attrition and high compliance with activities suggests the intervention was feasibly implemented by parents at home.

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ISPR7-0146

Paediatrics - Traumatic Brain Injury in Children

PROGNOSTIC FACTORS OF LONG-TERM FUNCTIONAL OUTCOME AFTER PEDIATRIC TRAUMATIC AND ANOXIC BRAIN INJURY

S. Shaklai^{1,2}, R. Peretz¹, M. Simantov³, Z. Groswasser^{3,4}

¹Loewenstein Rehabilitation Hospital, Pediatric and Youth Department, Raanana, Israel

²Tel -Aviv University, Sackler School of Medicine, Tel-Aviv, Israel

³Tel -Aviv University, Sackler School of Medicine, Tel -Aviv, Israel

⁴Loewenstein Rehabilitation Hospital, -, Raanana, Israel

Introduction/Background

Scarce information exists regarding long-term functional out-come of rehabilitated pediatric survivors, with anoxic brain injury (ABI), in comparison to severe pediatric traumatic brain injury (TBI). In adults suffering ABI the long term prognosis is considered graver: reduced percentages gain consciousness or become independent in activities of daily living. This study aimed to compare long-term functional outcome and establish prognostic factors.

Material and Methods

A prospective historical study was conducted. 77 TBI & 27 ABI participants were followed for 5-10 years post injury. Data regarding injury, admission and discharge functional status were retrospectively collected from medical records. Current functional state was investigated via telephone interview. Outcome variables for positive and negative outcome were built and prognostic factors were delineated. Data was analyzed using SPSS v. 22.

Results

Significant predicting factors found were: length of unconsciousness up to 11 days (OR 0.95), Vegetative State(VS) at admission (OR 0.16), Glasgow Coma Scale >5 (OR 3.3), Functional Independence Measure at admission (OR 1.03), at discharge (OR 0.16), IQ at discharge (OR 1.07) and intact EEG at admission (OR 3.5). Admission to rehabilitation in VS was higher in the ABI subgroup: 40.7% vs.20.8% (p=0.004), with lower regain of consciousness 77.78% vs. 98.7% (p=0.001). Independent mobilization was higher in the TBI group: 70.7% vs.44.4% (p=0.009). Positive long-term out-come (imitating 'open market' situation) was similar in both TBI and ABI subgroups: 61.0% and 48.1% respectively(p=0.173).

Conclusion

Length of unconsciousness and VS at admission are the most significant long-term predicting factors, regardless etiology. Similar percentages achieve positive long- term out-come.Independent mobility and feeding is higher in the TBI subgroup. VS is more frequent after ABI with lower regain of consciousness during rehabilitation.

No conflict of interest

ISPR7-0643

Paediatrics - Traumatic Brain Injury in Children

TITLE: THE POTENTIAL OF TEAMWORK

A. Bertazza¹, L. haller², L. Geijo³, L. De andrea³, M. Galastegui⁴

¹Hospital de Rehabilitacion Manuel Rocca., Department of physical medicine and rehabilitation, ciudad autonoma de buenos aire, Argentina

²hospital de rehabilitacion manuel rocca, fonoaudiologia, ciudad autonoma de buenos aires, Argentina

³hospital de rehabilitacion manuel rocca, kinesiologia, ciudad autonoma de buenos aires, Argentina

⁴hospital manuel rocca, fonoaudiologia, buenos aires, Argentina

Introduction/Background

Children with neuropsychomotor disorders constitute a large population requesting assistance at our institution. While Cerebral Palsy is the prevalent disease, this team receives from general pediatric hospitals very heterogeneous referrals that propose new challenges facing the chronicity that characterizes these pathologies. Therefore two cases of rare diseases were selected for this presentation.

Objective: Show the team work's functioning through assessments and therapeutic interventions of two rare cases.

Material and Methods

These are two cases: Case 1: TEC and Case 2: Apert syndrome. The materials were: a protocol designed by this committee, toys to enhance the activity of patients during admission, tests and specific rehabilitation elements of different disciplines to carry out evaluations and treatments areas.

Both children underwent the joint team's admission. The admission protocol was completed too. Each case referrals were made by the corresponding discipline for further study and evaluation of the children. Once the evaluations were carried out, the criterion is defined to follow. In both cases treatments in the areas of kinesiology, occupational therapy, speech therapy and intervention of Social Services, and regular checks of Physical Medicine Children began.

Results

Both children had a favorable evolution in the psychomotor, cognitive, communicative aspects. They showed improvement in their daily activities' development favoring social integration too. Within the family there was an impact on the understanding of the health situation and adherence to treatment.

Conclusion

teamwork allowed to coordinate the professionals' actions, generating a comprehensive view of each situation that strengthen the treatments' result.

No conflict of interest

ISPR7-0009
Pain - Acute Pain

CLINICAL EFFECTS OF LOW LEVEL LASER THERAPY (LLLT) AND EXERCISE THERAPY IN PATIENTS WITH ACUTE NECK PAIN AFTER ACUTE ISCHEMIC STROKE

L. Nikcevic¹, M. Hrkovic², M. Lazovic², N. Mujovic³, D. Nikolic⁴, B. Georgievski-Brkic⁵, M. Savic⁶

¹Special Hospital St Sava for Cerebrovascular Diseases, Rehabilitation, Belgrade, Serbia

²Institut for Rehabilitation, Rehabilitation, Belgrade, Serbia

³Clinical Centre of Serbia, Rehabilitation, belgrade, Serbia

⁴University Children Hospital, Rehabilitation, Belgrade, Serbia

⁵Special Hospital St Sava for Cerebrovascular Diseases, Radiology, Belgrade, Serbia

⁶Special Hospital St Sava for Cerebrovascular Diseases, Neurology, Belgrade, Serbia

Introduction/Background

One of the the main problems after ischemic stroke is neck pain due to disturbed statics of the spine. The aim of our study was to determine effects of low laser therapy (LLLT) and exercise therapy (ET) in patients with acute neck pain in early rehabilitation after acute ischemic stroke.

Material and Methods

Prospective study included 90 patients with no neck pain six months previous to the stroke. Patients were divided in three groups. Group A: 30 patients (9 f and 11m mean age 60±8 years) treated with ET, XIV treatments; Group B: 30 patients (11f and 9m mean age 59±7,4 years) treated with LLLT (GaAlA Laser, 808nm, 200mW/cm², 90-100 Hz, 10 points 2J/cm on each), XIV treatments; Group C 30 patients (10f and 10 m mean age 64±8) treated by the combination of LLLT and ET, XIV treatments. All patients had individually designed kinesiio therapy. Outcome measures were intensity of the pain (assessed by VAS 0-10), and FIM score. Assessments were made at baseline, 7 and 14 days after the beginning of the therapy.

Results

There were highly significant improvements in pain intensity and FIM score in each group after 7 and 14 days of therapy (p<0,01). There were significantly faster reduction of pain and higher FIM score in group C, compared to groups A and B (One-way ANOVA p<0,01).

Conclusion

Combination of application of LLLT and ET has better effectiveness in early rehabilitation of the patients with acute neck pain pain after acute ischemic stroke than mono-therapy.

No conflict of interest

ISPR7-0203

Pain - Acute Pain

EFFECT OF CONTRALATERAL TENS ON POST-OPERATIVE PAIN AFTER HAND SURGERY

H. Yavuz¹, A. Cetin²

¹Hacettepe university Medical School, Department of Physical Medçsçne and Rehabilitation, Ankara, Turkey

²Hacettepe University Faculty of Medicine, Physical Medicine and Rehabilitation, ANKARA, Turkey

Introduction/Background

Transcutaneous electrical nerve stimulation (TENS) is used for the treatment of acute and chronic pain. A number of studies have recently shown that TENS applied to the contralateral limb can also be effectively reduce limb pain. The aim of this study is to evaluate whether contralateral TENS is effective or not in postoperative pain after hand surgery.

Material and Methods

Twenty nine patients between 18-65 years old who underwent unilateral upper extremity surgery were enrolled for this study. Patients randomized into TENS (15 patients) and sham-TENS (14 patients) groups. TENS and sham-TENS were applied to the patients (three times and for 20 minutes duration) during postoperative period. Visual analogue scale (VAS) was used to evaluate pain. First evaluation was done with in 3 hours after the surgery and final evaluation was done after 48 hours from the surgery. Anesthesia and surgery type were recorded. Analgesic consumption was also recorded during this period.

Results

Demographical properties were statistically similar in both groups. No difference was observed in anesthesia type and analgesic consumption between two groups. Pain scores were significantly decreased in both groups. Although there is a trend that pain scores were more reduced in TENS group than sham-TENS group, it didn't reach statistically significant value ($p>0.05$)

Conclusion

In conclusion this study shows that contralateral TENS application can be considered for patients that TENS can't be applied ipsilateral side for a reason like upper extremity surgery.

No conflict of interest

ISPR7-0351

Pain - Acute Pain

TITLE: SCHWARTZ-JAMPEL SYNDROME (CHONDRODYSTROPHIC MYOTONIA) TYPE 1

K. Alekseyev¹, J. Green², A. Iannicello³, M. Aalai³

¹, Staten Island, USA

²Woodhull Medical Center, PM&R, Brooklyn, USA

³Kingsbrook Rehabilitation Institute, PM&R, Brooklyn, USA

Introduction/Background

This is the case of a 33-year-old Hispanic female was diagnosed with Schwartz-Jampel Syndrome (chondrodystrophic myotonia) Type 1 in 1984. Her disease has been slowly progressive with a history of multiple corrective surgeries including, C1-C2 spinal fusion in 1985, reconstructive surgery to the eyelids and the adnexae in 1989, and bilateral anterior releases of extension knee contractures and genu recurvatum in 1995. She had classic features including blepharophimosis, short stature, puckered lips, and skeletal abnormalities. She had symptoms of myotonia in all 4 extremities, which is controlled with medication. The patient was admitted to a medical ward with fever, chills, productive cough with mucopurulent sputum, and myalgias. Chest CT scan was remarkable for multilobar pneumonia. Patient was started on ceftriaxone and azithromycin for community acquired pneumonia. Patient's condition improved and she was extubated on Day 24 of admission. She was then transferred to the inpatient rehabilitation facility for improvement of her range of motion, strength, endurance, ambulation, and ADLs/iADLs.

Material and Methods

Case report from an inpatient rehabilitation facility within an inner city New York hospital.

Results

Patient progressed through PT/OT without difficulty. Upon discharge, patient was able to either meet or exceed her long-term goals. She was able to walk 170 feet with single point cane with Trendelenburg gait and negotiate 20 stairs with use of handrails. Due to the hyperlordosis, patient's pelvis was tilted backwards. She was completely independent on swallowing and feeding. She was modified independent on grooming and toileting. She was independent on bed mobility. Her speech and cognition were grossly intact.

Conclusion

Schwartz-Jampel Syndrome (SJS), or chondrodystrophic myotonia, is an autosomal recessive disorder characterized by diffuse musculoskeletal disease, myotonia, abnormal facies, and blepharospasm. The prevalence of less than 1:1,000,000. The gene affected is known to encode for perlecan, which is responsible for heparin sulfate proteoglycan that results in abnormal myelination.

No conflict of interest

ISPR7-0387

Pain - Acute Pain

THE USAGE OF COLD PLASMA DEVICE IN THE TREATMENT OF ACUTE AND CHRONIC MUSCULOSKELETAL PAIN

I.S. Stratulat¹

¹"Gr. T. Popa" University of Medicine and Pharmacy, Medical Rehabilitation, Iasi, Romania

Introduction/Background

Musculoskeletal pain are one of the most frequent causes of disability in Physical Medicine and Rehabilitation. Acute and chronic conditions limit the patient's capacity to perform daily-living activities.

In addition to the three states of matter, solid, liquid and gas, physical plasma is described as a fourth state.

Material and Methods

In this paper we present a new treatment methodology that corresponds to the three indices listed above. These methodologies must be based on: 1) certainties and scientific evidence, 2) can treat various conditions of pain occurred, and 3) have a maximum satisfaction index of the patient. By ionizing the ambient air, the device creates cold plasma which provides a quick, safe and pain-free method to destroy germs without harming human tissue in the process. The plasma treatment also stimulates circulation and promotes cell division for lasting accelerated wound healing.

Results

We present different cases with various painconditions. We observed improved functionality and remission of pain in all cases we treated using cold plasma after one or two sessions.

Conclusion

Introduction of modern treatment methodologies in pain states and malfunctions occurred in the musculoskeletal system is a goal for the Physical Medicine and Rehabilitation doctors. All these three limit the financial costs of treatment in pain.

No conflict of interest

ISPR7-0668

Pain - Acute Pain

TREATMENT OF MYOFASCIAL PAIN IN PATIENTS SCHEDULED FOR HIP REPLACEMENT

L. Magario¹, C. Crema¹, A.P. Santos¹, L. Alves¹, T. Santana¹, F. Garcia¹, M. Riberto¹

¹Hospital das Clínicas da Faculdade de Medicina de Ribeirão Preto da Universidade de São Paulo- FMRP_USP, Medicina Física e Reabilitação, Ribeirão Preto, Brazil

Introduction/Background

Introduction: Hip osteoarthritis (HOA) severely impairs daily activities because of pain and limitations of mobility. Hip replacement (HR) is a very effective treatment approach for severe derangements of this joint, but in Brazilian public health system this surgical procedure may be delayed for years due to the small financial resources for surgical implants, clinical complications of these individuals and lack of skilled orthopaedic services. Thus, conservative interventions to reduce pain and improve functioning in these patients are mandatory.

Purpose: to test efficacy of the treatment of myofascial pain component compared to physical therapy in patients with severe HOA scheduled for HR in terms of pain control and functional improvement.

Material and Methods

Method: We performed a cross-over single blinded clinical trial in which subjects were randomly allocated to undergo 5 weekly sessions of myofascial trigger point blocks with 1% lidocaine (BL treatment) or 5 weekly session of physical therapy treatment (PT treatment). Subjects were assessed with Harris Hip Score (HHS) at baseline, week 6 and 12, and with Visual Analogue Scale (VAS) and pressure dolorimetry in every visit.

Results

Results: 17 hips from 15 subjects (8 men, 68.2 ± 4.6 yo) were subjected to treatment. VAS improvement was equivalent in both groups (BL: 0.65 x PT: 0.65; p = 0.96), as much as for muscle dolorimetry (BL: 2.48 x PT: 0.76; p = 0.38), however myofascial pain blocks resulted in significant improvement in functioning (BL: 7.66 x PT: 1.57; p = 0.03).

Conclusion

Discussion and Conclusion: Although joint abnormalities are the main feature of HOA, it is not clear which are the sources of pain and disability in such patients. These results demonstrate that the myofascial component is clearly related to decreased functioning in patients with severe clinical pictures and its treatment is efficacious when HR is not available.

No conflict of interest

ISPR7-0740

Pain - Acute Pain

EFFECT OF TRANSCUTANEOUS ELECTRICAL ACUPOINT STIMULATION ON ADL SCORE OF PATIENTS WITH HAND DYSFUNCTION AFTER STROKE

C. Lan¹

¹Huashan Hospital Affiliated to Fudan University, Department of rehabilitation medicine, Shanghai, China

Introduction/Background

In order to observe the effect of acupoint electric stimulation on the daily life ability of patients with hand dysfunction after stroke and the importance of hand function in daily life.

Material and Methods

40 patients with hand dysfunction after stroke were randomly divided into two groups, experimental group (n=20) received rehabilitation treatment and real transcutaneous electrical acupoint stimulation, the control group (n=20) received rehabilitation treatment and sham transcutaneous electrical acupoint stimulation, before treatment and 3 months after treatment, the patient's hand function and ADL score were evaluated, before and after treatment, the difference of ADL score and the relationship between hand function score and ADL score were compared.

Results

The change of ADL score and hand function score of the experimental group was significantly better than that of the control group.

Conclusion

Transcutaneous electrical stimulation has obvious improvement effect on stroke patients with hand dysfunction ADL, hand dysfunction is an important factor affecting daily life ability of patients.

No conflict of interest

ISPR7-0081

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

A NEW PARADIGM IN LOW BACK PAIN AND POST TRAUMATIC STRESS PATIENTS? A RANDOMIZED CLINICAL TRIAL TESTING PHYSIOTHERAPY WITH OR WITHOUT PSYCHOTHERAPEUTIC INTERVENTIONS

C. Manniche¹, *H. Ellegaard*¹, *B. Schioetz-Christensen*¹, *T.E. Andersen*²

¹*University of Southern Denmark, SpineCenter, Middelfart, Denmark*

²*University of Southern Denmark, Department of Psychology, Odense, Denmark*

Introduction/Background

Patients with back pain often demonstrate symptoms of Post Traumatic Stress Disorder (PTSD) following unpleasant incidents such as traffic accidents or violence [1], measured via the recognized and evaluated Harvard Trauma Questionnaire Scale (HTQ) [2]. Moreover, PTSD and pain may maintain each other [3]. In this study chronic low back pain (LBP) patients will be randomized to physiotherapy (Phys) or Physiotherapy + Psychotherapy (PhysPsyk).

Material and Methods

Consecutive patients with LBP referred to the Spine Center are screened for clinical or subclinical PTSD within last decade. 160 patients who meet the inclusion criteria will be randomized to 4-8 Physiotherapy sessions or to physiotherapy plus 6-12 psychotherapeutic sessions, that will include the trauma method 'Somatic Experiencing'. The inclusion criteria will be 18-65 years, clinical or subclinical PTSD, pain > 4 on a 0-10-box scale, and having experienced a traumatic event within the last ten years. Effect parameters are: pain, daily function, EuroQaL and Harvard Trauma Questionnaire (HTQ), anxiety and depression (HADS), fear avoidance (Tampa Scale for Kinesiophobia (TSK)) on entry, and at 6 and 12 months.

Results

Inclusion of patients in the project will take place April 2016 – April 2017. Preliminary data will be available April 2017.

Conclusion

In order to standardize the patient groups, only LBP patients who have experienced an incident within the last 10 years will be included. We expect that most patients will suffer from chronic pain, and that physical, psychological and social factors will be involved, creating greater complexity.

No conflict of interest

ISPR7-0086

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

COMPARISON OF EFFECTS BETWEEN ULTRASOUND-GUIDED INTERFASCIAL PULSED RADIOFREQUENCY AND ULTRASOUND-GUIDED INTERFASCIAL BLOCK WITH LOCAL ANESTHETIC IN PATIENTS WITH MYOFASCIAL PAIN SYNDROME ON TRAPEZIUS MUSCLE

M.C. Chang¹, I.T. Cho¹

¹Yeungnam University Medical Center, Physical Medicine and Rehabilitation, Daegu, Republic of Korea

Introduction/Background

Myofascial pain syndrome (MPS) on trapezius muscle (TM) is one of frequently occurring musculoskeletal disorders. However, its treatment is challenging. We prospectively investigated the effects of ultrasound (US)-guided pulsed radiofrequency (PRF) stimulation on the interfascial area of TM, and compared its effect with that of interfascial block (IFB) with 10mL of 0.6% lidocaine on TM interfascial area.

Material and Methods

Thirty five patients with MPS on TM were included and randomly assigned into two groups. Seventeen patients underwent PRF stimulation on interfascial area of TM (PRF group) and 18 patients underwent IFB with lidocaine on interfascial area of TM (IFB group) (fig 1). Pain intensity was evaluated using visual analogue scale (VAS) at pre-treatment, 2, 4, and 8 weeks after the treatment. At pre-treatment and 8 weeks after the treatment, quality of life affected by pain was assessed by Short Form-36 Health Survey (SF-36), which includes the physical component score(PCS) and the mental component score(MCS).

Results

Patients in both groups showed significant decrease of VAS score at 2, 4, and 8 weeks after treatments and significant increase of PCS and MCS of SF-36 at 8 weeks after treatments(fig 2). Two weeks after each treatment, the decrements of VAS scores were not significantly different between 2 groups. However, 4 and 8 weeks after the procedures, we found that VAS score was significantly more decreased in PRF group than that in IFB group. At 8 weeks after the treatments, PCS and MCS of SF-36 in PRF group were significantly more increased than those in IFB group.

Conclusion

For the management of MPS on TM, US-guided interfascial PRF had better long term effect on reducing the pain and the quality of life, compared with US-guided IFB. Therefore, we think US-guided PRF on interfascial area of TM can be a beneficial method to manage pain following MPS on TM.

No conflict of interest

ISPR7-0149

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

RECOVERY OF MEN AND WOMEN WITH LOW BACK PAIN AFTER MICRODISCECTOMY IS DIFFERENT

S. Pantelinac¹, G. Devecerski¹

¹Faculty of Medicine - University of Novi Sad - Serbia,

Clinic for Medical Rehabilitation Clinical Center of Vojvodina, Novi Sad, Serbia

Introduction/Background

Microdiscectomy is one of the surgical methods for the treatment of low back pain, caused by a herniated intervertebral disc. The aim of this study was assessment of pain intensity and functional disability in women and in men after microdiscectomy.

Material and Methods

A study was performed on 200 patients (96 men and 104 women), mean age 50.20 ± 26.10 years (men 51.32 ± 11.46 , women 49.28 ± 8.95). Examinations were performed after microdiscectomy: before the start of the rehabilitation treatment (0. month), after 1 month, then 3 and 6 months after microdiscectomy. For examinations were used: for intensity of pain - visual analogue scale (VAS); for functional disability - Oswestry Disability Index Questionnaire (ODI).

Results

VAS and ODI during the study period were significantly reduced in comparison with baseline values in all patients. However, all the time VAS was significantly higher in women group (W) than in men group (M), while ODI was higher in M than in W. VAS: 0. month W: 4.71 ± 0.98 - M: 3.80 ± 0.69 ($p < 0.01$); 6th month W: 1.12 ± 0.71 - M: 0.83 ± 0.62 ($p < 0.01$). ODI: 0. month: W: 45.12 ± 6.31 - M: 54.75 ± 5.82 ($p < 0.01$); 6th month W: 22.12 ± 4.83 - M: 28.11 ± 3.72 ($p < 0.01$).

Conclusion

The reductions of pain and functional disability after microdiscectomy were significant in both groups (women and men). However, in average the subjective sensation of pain was higher in women, and functional disability in men.

No conflict of interest

ISPR7-0276

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

INFLUENCE OF MENTAL DISORDERS ON MOTIVATION AND CAPACITY IN PATIENT WITH CHRONIC PAIN DURING AND AFTER A BEHAVIORAL ORTHOPEDIC INPATIENT REHABILITATION

V. Henschke¹, T. Kunze¹

¹MEDIAN Klinik Dahleener Heide, Orthopädie, Dahlen / Schmannewitz, Germany

Introduction/Background

The negative and widespread impact of mental disorders on human performance and abilities to participate is well investigated. Therapy of chronic low back pain in Germany is still unfocused on psychic comorbidity as upholding or even underlying factor. Psychological therapy is still underestimated due to fears or prejudice. Aim was therefore to find how mental disorders affect performance as well as motivational status in patients with chronic pain.

Material and Methods

During their behavioral orthopedic inpatient rehabilitation 72 patients have been pre, post and 1-year-follow up tested via self-assessment questionnaires concerning perceived capacity (PACT, 1996). Psychological diagnostics have been conducted. Patients with chronic pain but without mental health problems served as comparison group (N=194). Discharge diagnoses were recorded. The motivational status has been documented by a questionnaire adopted for rehabilitation-specific aims and motivation (FREM, 2006).

Results

Performance in PACT was sustainable significant lower in patients with chronic pain and mental disorders. Patients differ in their specific motivation only towards pension. Patients with chronic pain and additional psychic disorder scored significantly higher towards pension than pain patients with no psychic disorder.

Conclusion

Patients with chronic pain and mental disorder assessed themselves as much more impaired in performance until they stop therefore being able to earn their living independently. They refer to support from the social system by requesting early pension, which leads to shortage in medical care, when it is most appropriate and furthermore this is causing huge economic problems in funding because people are leaving the working process being still in working age.

No conflict of interest

ISPR7-0281

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

RESULTS OF A WORKPLACE TRAINING OF PATIENTS WITH CHRONIC BACK PAIN DURING A 3 WEEK ORTHOPEDIC INPATIENT REHABILITATION

T. Kunze¹, V. Henschke¹

¹MEDIAN Klinik Dahleener Heide, Orthopädie, Dahlen, Germany

Introduction/Background

Medical rehabilitation plays an increasingly important role in Germany. Reasons are the gradually rising retirement age and the growing shortage of skilled workers. Objectives of rehabilitation therefore are to maintain or increase performance in the work process.

Material and Methods

During a 3-week orthopedic inpatient rehabilitation of patients with chronic back pain an ergonomic workplace training was realised in addition to multimodal pain therapy. Taking into account parameters of social medicine such as employment and workability, patients assessed their abilities by PACT (1996) test at beginning, end and one year after rehabilitation, using FREM (2006) questionnaire to assess their motivational status and WKV (2006) questionnaire to evaluate their physical condition. In the study 253 rehabilitants (average age 50,4 years) were integrated.

Results

Employed patients estimated their performance significantly higher ($p < .001$) than unemployed patients. The patients who additionally trained ergonomic workout scored significantly higher in the PACT, showed up to be more trained and more mobile (WKV) and less motivated for getting a pension (FREM) compared to those without workout training ($p < .001$).

Conclusion

An ergonomically oriented workplace training is a sensible component in an orthopedic rehabilitation measure to improve the performance potential assessed by the patients and is also an important motivational element. People without work lose faith in their performance.

No conflict of interest

ISPR7-0307

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

PROLOTHERAPY IN MUSCULOSKELETAL CONDITIONS: A SINGLE-CENTER ONE-YEAR ANALYSIS

A. Carli¹, E. ATA¹, S. AKARSU¹, C. ACIKEL², L. Tekin¹

¹Saglik Bilimleri University Haydarpasa Sultanabulhamit Training Hospital, Physical Medicine And Rehabilitation, Istanbul, Turkey

²Gulhane Training Hospital, Public Health, Ankara, Turkey

Introduction/Background

The present study aimed to report our experience using dextrose prolotherapy (PT) to treat recalcitrant musculoskeletal conditions in a physiatry clinic during a 1-year period, and to determine its effectiveness and whether its use decrease the cost with regard to other most popular injection methods (ozone-oxygen therapy (OOT) and platelet-rich plasma (PRP)).

Material and Methods

Medical records of patients with chronic recalcitrant musculoskeletal disorders resistant to conventional treatment methods and received PT were retrospectively reviewed. Pain evaluation was performed using visual analogue scale (VAS) and quality of life (QoL) was assessed using the Short Form-12 (SF-12). Patient satisfaction with the treatment was measured on a 5-point Likert-type scale. The calculated cost was compared with the cost of the 2 other common injection methods.

Results

44 patients were included. The greatest decrease in pain was in patients with heel and low back pain, whereas pain decreased the least in patients with hand pain. There was significant improvement in VAS and SF-12 scores post-treatment, as compared to baseline, indicating improvement in pain and QoL. The level of satisfaction was also very high and no complications were observed during or after PT. Dextrose PT costs \$15.00 for the maximum number of 5 injections, the least expensive PRP kit and OOT session cost \$70.00 and \$50.00, respectively.

Conclusion

PT was beneficial in patients with various chronic recalcitrant musculoskeletal conditions. The cost of dextrose PT was shown to be lower than other injection techniques commonly used in daily clinical practice (PRP and OOT).

No conflict of interest

ISPR7-0340

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

CORRELATION OF PHYSICAL TESTS USED IN DOCTOR'S OFFICE WITH REVISED FIBROMYALGIA IMPACT QUESTIONNAIRE (FIQR)

D. Soto-Peña¹, M. Camacho-Bocanegra¹, F. Ortiz-Corredor^{2,3}, C. Mendoza-Pulido³, E. Ruiz-Ospina³, S.M. Castellar-Leones², J.N. Muñoz-Rodríguez², D.C. Hoyos-Castro²

¹*Instituto Ortopédico Infantil Roosevelt, Fisioterapia, Bogotá, Colombia*

²*Universidad Nacional de Colombia, Medicina Física y Rehabilitación, Bogotá DC, Colombia*

³*Instituto Ortopédico Infantil Roosevelt, Rehabilitación, Bogotá, Colombia*

Introduction/Background

Fibromyalgia is a common diagnosis on Physical Medicine and Rehabilitation Practice. Most of this patients besides pain have affection in different domains of function and daily living. Functional tests are used to evaluate the severity of physical alteration and the response to pharmacologic and non-pharmacologic treatments. Tests of physical functioning applied in doctor's office are part of functional evaluation.

Objective

To determine validity of physical tests applied at doctor's office in patients with fibromyalgia.

Material and Methods

Electronic database of patients with diagnosis of fibromyalgia treated in rehabilitation unit of our institute were revised. As part of evaluation functional tests and revised Fibromyalgia Impact Questionnaire (FIQR) spanish versión were applied in all patients.

Correlation of each one of these tests with FIQR score was determined using Spearman's correlation coefficient.

Results

325 patients were evaluated (94.5% female). Mean age of participants was 50.3 years old (SD=10,2) and duration of disease was 4,5 years (SD=4,6).

Most of tests showed a weak correlation but significant with FIQR (Table 1). Strongest correlation was found with the 30- second chair stand test

Conclusion

Physical functioning test, especially the 30- second chair stand test are correlated with revised Fibromyalgia Impact Questionnaire (FIQR). These tests are tools that can be used in a fast and easy way at doctor's office and serve as supplementary measures to the physical examination in patients with fibromyalgia.

No conflict of interest

ISPR7-0366

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

EXERCISE FACILITATION METHOD IN COMBINATION WITH COGNITIVE BEHAVIORAL THERAPY USING THE “REHABILITATION NOTEBOOK” IN PATIENTS WITH INTRACTABLE CHRONIC PAIN

S. Kimura¹, T. Harigai¹, N. Sanada¹, R. Murakami¹, N. Endo¹

¹Niigata University Medical and Dental Hospital, Rehabilitation Center, Niigata, Japan

Introduction/Background

The purpose of this study was to evaluate the effectiveness of a exercise facilitation method in combination with cognitive behavioral therapy using the “Rehabilitation Notebook” in patients with intractable chronic pain.

Material and Methods

The subjects were 5 males and 7 females (19-77 years of age, mean age 46) with chronic low back and/or lower extremity pain without specific lesions. Indications for using the notebook were as follows: 1) Numeric Rating Scale (NRS) for pain >3, and 2) the continuity of the pain >3 months. Patients were asked to write in their notebooks daily or once a week regarding their emotion, mood, anxiety, and exercise routine (muscle exertion, gait distance). Once every 2 weeks, the patients returned to the clinic to go over the notebook/journal. The evaluation contents were NRS, PDAS (Pain Disability Assessment Scale), HADS (Hospital Anxiety and Depression Scale), PCS (Pain Catastrophizing Scale), EQ-5D (EuroQol 5 Dimension), PSEQ (Pain Self Efficacy Questionnaire).

Results

The NRS, PDAS, PCS and EQ-5D, but not HADS and PSEQ, improved significantly 10 months after starting to use the notebook.

Conclusion

The “Rehabilitation Notebook/Journal” is a valuable tool to educate patients about the cause and treatment of pain and to actively facilitate CBT-based exercise.

No conflict of interest

ISPR7-0422

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

HYDROTHERAPY REDUCES THE NUMBER OF ACTIVE TRIGGER POINTS ON WOMEN WITH FIBROMYALGIA

M. Arias Avila¹, I.L. Ribeiro¹, F. Albuquerque-Sendín², A.R. Zamunér¹, P. Driusso¹, T.D.F. Salvini¹

¹Federal University of São Carlos, Physical Therapy Department, Sao Carlos, Brazil

²University of Cordoba, Sociosanitary Sciences- Radiology and Physical Medicine Department, Cordoba, Spain

Introduction/Background

Myofascial trigger points (MTrPs) are very prevalent in patients with fibromyalgia (FM); however, no studies have investigated if a global treatment such as hydrotherapy could influence the number of active MTrPs in these patients.

Material and Methods

Twenty women with FM were assessed for MTrPs in right and left upper trapezius, levator scapulae and infraspinatus. They were also tested for pressure pain thresholds (PPTs) for the same muscles, along with the Fibromyalgia Impact Questionnaire (FIQ) and the Visual Analogue Scale (VAS) for 4 pain statuses. Evaluations occurred 3 times before treatment (baseline) and at the end of treatment, which consisted of 16 weeks of hydrotherapy, performed twice a week, lasting 45 minutes each session. χ^2 test with Yates correction for the MTrPs, Wilcoxon matched-pairs test for the PPTs and Spearman Correlation Coefficient for correlations were used, along with Cohen d coefficient for effect sizes (ES). Significance level was set at 5%.

Results

Number of patients with active MTrPs was significantly reduced after hydrotherapy (Table 1). PPTs were increased after treatment (Table 2). FIQ and VAS presented better scores after hydrotherapy ($p < 0.05$, ES from -1.08 to -1.63). No correlations were found among these variables.

Table 1. Number of women presenting myofascial trigger points in each assessed muscle for both sides and all evaluations.

		Right Baseline	Right H16	Left Baseline	Left H16
Trapezius	Active MTrPs	14	7*	17	7*
	Latent MTrPs	0	0	0	1
	Non-MTrPs	6	13	3	12
Levator Scapulae	Active MTrPs	12	5*	15	4*
	Latent MTrPs	0	0	0	0
	Non-MTrPs	8	15	5	16
Infraspinatus	Active MTrPs	16	9*	17	7*
	Latent MTrPs	0	0	0	1
	Non-MTrPs	4	11	3	12

Values as expressed as the number of women (n) presenting myofascial trigger points located in each and all muscles. MTrPs indicates myofascial trigger points. *p<0.05 in the χ^2 test with Yates correction.

Table 2. PPT values (in kg/cm²) in each and all assessed muscles for both sides and all evaluations.

	Baseline	H16	Total difference	Cohen d Coefficient
Right Upper	1.83 (0.42)	2.32 (0.73) *	0.49	0.83
Trapezius	[1.64 ; 2.03]	[1.98 ; 2.66]	(26.8%)	[0.17 ; 1.45]
Right Levator	1.76 (0.47)	2.77 (0.91) *	1.01	1.39
Scapulae	[1.54 ; 1.98]	[2.34 ; 3.19]	(57.3%)	[0.67 ; 2.05]
Right	1.75 (0.35)	2.84 (0.90) *	1.09	1.59
Infraspinatus	[1.58 ; 1.91]	[2.41 ; 3.26]	(62.5%)	[0.85 ; 2.27]
Left Upper	1.75 (0.33)	2.25 (0.71) *	0.50	0.90
Trapezius	[1.60 ; 1.91]	[1.92 ; 2.59]	(28.4%)	[0.23 ; 1.53]
Left Levator	1.87 (0.39)	2.79 (0.87) *	0.92	1.36
Scapulae	[1.68 ; 2.05]	[2.38 ; 3.20]	(49.1%)	[0.65 ; 2.02]
Left	1.65 (0.35)	2.40 (0.79) *	0.75	1.23
Infraspinatus	[1.49 ; 1.81]	[2.03 ; 2.78]	(45.5%)	[0.53 ; 1.88]

Baseline: mean values of B1, B2 and B3. Values as expressed as mean (standard deviation) [95% Confidence interval]. Total difference stands for the difference between mean values of H16 and Baseline, presented as raw difference (percent difference). Effect sizes are presented as Cohen d coefficient [95% confidence interval for effect size]. *p<0.05 compared to baseline.

Conclusion

Hydrotherapy performed twice a week improved pain and quality of life on women with FM. Number of active MTrPs was significantly reduced even with a global protocol that did not focus only on upper limbs, however, these results do not correlate with improvements in PPT, suggesting different mechanisms for pain and quality of life improvement.

No conflict of interest

ISPR7-0477

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

CYCLOTRON BIO-RESONANCE (ELF MAGNETIC FIELDS) IN REHABILITATIVE MEDICINE

R.G. Bellomo¹, P. Tommaso², A.M. Centra², M. Supplizi³, G. Giuseppe³, G. Barassi⁴, R. Saggini¹

¹University "G. D' Annunzio" Chieti, Department of Medical Oral and Biotechnological Sciences-, Chieti, Italy

²University "G. D' Annunzio" Chieti, School of Specialty in Physical and Rehabilitation Medicine, Chieti, Italy

³University "G. D' Annunzio" Chieti, Lecturer Faculty of Physiotherapy, Chieti, Italy

⁴University "G. D' Annunzio" Chieti, Lecturer of Faculty of Physiotherapy, Chieti, Italy

Introduction/Background

Today ELF magnetic fields are used in many applications of rehabilitative medicine, as they accelerate the healing of fractures, possess antioxidant activity, anti-inflammatory, analgesic and anti-edema, stimulate healing of skin lesions (wounds); in regenerative medicine, in addition, ELF magnetic fields have been shown to strongly stimulate the processes of differentiation of human stem cells

Material and Methods

At the University Center of Rehabilitative Medicine were treated with cyclotron bio-resonance 89 patients (16 M, 23 F), average age 51.3 years (range 17-85 years), suffering from various conditions: non-traumatic musculoskeletal disorders, post-traumatic disorders, neuropathies, flebolinfedema, Parkinson's disease, multiple chemical sensitivity. The treatment sessions (10 in total) were divided according to the needs of the individual patient, from 2 to 5 times per week. The assessment of pain symptoms was evaluated at the beginning (T0), with an intermediate clinical evaluation (T1) and at the end (T2) of the treatment cycle. The scales used were the Numeric Rating Scale (NRS) and the McGill Pain Questionnaire. The beginning and end of the treatment cycle, patients were also assessed with FIM scale.

Results

Regardless of assessment scale used, the data show a significant reduction of pain in flebolinfedema, in musculoskeletal disorders, in Parkinson's disease; in patients with multiple chemical sensitivity, the observed variation does not appear to be significant.

Conclusion

There is a reasonable prospect that bioelectromagnetism may emerge as a separate biological discipline, having developed unique tools and experimental approaches in a search for essential order in living systems.

No conflict of interest

ISPR7-0601

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

INTENSIVE INTERDISCIPLINARY PAIN REHABILITATION PROGRAM INCREASES PATIENTS' ACTIVITY

M.F. Hurdle¹, S. Kurklinsky², E. Torres², M. Arroliga³, C. Sletten²

¹Mayo Clinic, Pain Medicine, Rochester, USA

²Mayo Clinic, Pain Medicine, Jacksonville, USA

³Mayo Clinic, Anesthesiology, Jacksonville, USA

Introduction/Background

Background and aims: Chronic pain is a complex clinical entity that can affect every aspect of a person's life. The physical consequences of chronic pain include deconditioning, loss of mobility, and loss of independence.

Material and Methods

Daily activity and sleep patterns were followed for 12 days before, 21 days during, and 12 days after the intensive, interdisciplinary program. Daily activities were monitored with a wristband fitbit. Patients took off their fitbits briefly for charging and downloading. Active minutes were calculated by using metabolic equivalents (METs), where moderate and intensive activities were at or above about 3 METs. Sleep patterns were recorded by patients in sleep diary. PRC: The Pain Rehabilitation Center (PRC) operates a 3-week outpatient day treatment program that utilizes an interdisciplinary team approach to treat people with chronic pain. The main treatment elements include physical therapy, occupational therapy, cognitive behavioral therapy and medication management. The physical therapists (PT) focus their treatment on moderate physical reconditioning. The occupational therapists (OT) teach and assist the group members to apply the concepts of moderation. Cognitive Behavioral Therapy group sessions, led by a Pain Psychologist, address the behavioral, cognitive and emotional co-morbidities of chronic pain. Physicians and physician assistants oversee the tapering and ceasing of opiate analgesics. This integrated team-based treatment approach is indicated when conventional approaches to pain relief have been exhausted.

Results

Seven patients were recruited for this study. Patient's activity level show increase during the PRC program from 4.1 minutes before the program to 12 min during the program and 5.6 min after the program. Patients sleep decreases and stabilized during the PRC program and after finishing the program, 529 min (8.8h) before PRC, 507min (8.4h) during PRC, and 502min (8.35h) after the PRC program.

Conclusion

Comprehensive interdisciplinary outpatient rehabilitation programs can significantly improve independently measured activity levels in people with chronic pain.

No conflict of interest

ISPR7-0724

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

THERMAL DYSREGULATION AFTER BREAST CANCER SURGERY: WHAT COULD BE?

A. Genç¹, D. Rüstemova², S.U. Çelik³, B.S. Tur²

¹Ankara University Haymana Vocational School, Physiotherapy Program, Ankara, Turkey

²Ankara University Faculty of Medicine, Physical Medicine And Rehabilitation, Ankara, Turkey

³Ankara University Faculty of Medicine, Department of General Surgery, Ankara, Turkey

Introduction/Background

Chronic fatigue syndrome (CFS) is a complicated disorder characterized by severe fatigue that is not relieved with rest and associated with physical symptoms such as sleep problems, headache, muscle pain or joint pain. We report a case of CFS in a woman, who presented with cold intolerance after breast cancer surgery.

Material and Methods

A 41-year-old woman presented with feeling of cold in the right half of the body, severe headache, non-refreshing sleep, fatigue and loss of some physical and social functions, which had been present for the past two years. The patient had a history of previous right breast cancer four years ago and underwent modified radical mastectomy. The diagnoses of fibromyalgia, depression, neurological, psychiatric and vascular disorders were excluded by appropriate clinical and laboratory investigations.

Results

The patient had been diagnosed with CFS, according to the Centers for Disease Control and Prevention criteria and using the Fatigue Severity Scale. An aerobic exercise therapy was scheduled for 30 minutes at least three days per week. At 6-month follow-up, her complaints were almost resolved and the patient regained her physical health and mental attitude.

Conclusion

Chronic fatigue syndrome is diagnosed on the basis of symptoms. It lasts longer than six months without an explained medical condition and limits the patients' ability to do ordinary daily activities. The etiology is unclear and is likely complex. Treatment options include cognitive behavior therapy, exercise therapy, and supportive-symptomatic treatment modalities. No pharmacologic or alternative medicine therapies have been proven effective.

No conflict of interest

ISPR7-0790

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

COMPARISON OF INTRA-ARTICULAR PULSED RADIOFREQUENCY AND INTRA-ARTICULAR CORTICOSTEROID INJECTION FOR MANAGEMENT OF CERVICAL FACET JOINT PAIN

L. Dong Gyu¹, M.C. Chang², G.K. Tae³

¹College of Medicine- Yeungnam University, Department of Physical Medicine and Rehabilitation, Taegu, Republic of Korea

²Yeungnam University Medical Center, Physical Medicine and Rehabilitation, Daegu, Republic of Korea

³Department of Physical Medicine and Rehabilitation, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Republic of Korea

Introduction/Background

Facet joint pain is responsible for approximately 50% of patients with chronic neck pain. Pulsed radiofrequency (PRF) stimulation with placing needle electrodes into the joint space has been recently reported for the management of joint pain. The aim of this study was to evaluate the effect of intra-articular (IA) PRF for the management of cervical facet joint (CFJ) pain. In addition, we compared the effect of IA PRF to IA corticosteroid injection.

Material and Methods

Forty patients with CFJ pain were prospectively included in the study and randomly assigned to one of two groups: the IA PRF group and the IA corticosteroid (ICI) group. There were 20 patients in each group. Pain intensity was evaluated using a numeric rating scale (NRS) at pre-treatment, and one, three, and six months after treatment.

Results

When compared to the pretreatment NRS scores, patients in both groups showed a significant decrease in NRS scores at one, three, and six months after treatment ($p = 0.000$). Changes in the NRS scores over time were not significantly different between groups ($p = 0.227$). Six months after treatment, 10 patients (50.0%) in the PRF group, and 12 patients (60.0%) in the ICI group reported successful pain relief (pain relief of $\geq 50\%$).

Conclusion

IA PRF stimulation is as effective as IA corticosteroid injection in attenuating CFJ pain. The use of PRF could decrease CFJ pain, while avoiding the adverse effects of steroids.

No conflict of interest

ISPR7-0814

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ASSESSMENT OF NEUROPATHIC PAIN USING DN4 QUESTIONNAIRE IN PATIENTS WITH PERIPHERAL NERVE DAMAGE

K. Boskovic¹, K. Terzic², S. Tomasevic-Todorovic¹, A. Knezevic¹, D. Simic-Panic¹

¹Clinical Center of Vojvodina- University of Novi Sad- Faculty of Medicine, Medical Rehabilitation Clinic, Novi Sad, Serbia

²University of Novi Sad, Faculty of Medicine, Novi Sad, Serbia

Introduction/Background

Neuropathic component of pain is often an integral part of pain in patients with peripheral nerve damage. The aim of the study was to assess the use of a questionnaire about pain - Douleur Neuropathique en 4 questions (DN4) in patients with peripheral nerve damage to estimate the presence neuropathic pain after medicamentous and physical therapy treatment.

Material and Methods

The study included 112 randomly selected outpatients with peripheral nerve damage. The experimental group (52 patients) received medicamentous therapy and electrotherapy, while the 60 patients in the control group were treated by medicamentous therapy. Neuropathic pain was evaluated using a questionnaire DN4, the intensity of pain was evaluated by VAS scale.

Results

In the experimental group that was recorded with the 69.3% of the patients before treatment was present neuropathic pain, and 30.7% of the patients were free of neuropathic pain. After the treatment 7.7% with the presence of neuropathic pain and 92.4% non-neuropathic pain. In the control group it was noted that there is a neuropathic pain of 53.3%, and non-neuropathic pain 46.7% before and after the treatment 26.7% patients with by the presence of neuropathic pain and 73.3% non-neuropathic pain. According VAS questionnaire for patients in the experimental group achieved a greater reduction in pain compared to the control group.

Conclusion

Based on the obtained results, we concluded that the combined medication and physical therapy ie. electrotherapy made a significant impact on the removal of neuropathic pain compared to the exclusively applied medicamentous therapy in patients with peripheral nerve injury.

No conflict of interest

ISPR7-0821

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

GAMETHERAPY EFFECTS IN FIBROMYALGIC PATIENTS

A. Kruger¹, J.A. Ruaro¹, M.B. Ruaro¹, A.C. Binda¹, A.R. Fréz¹, M.P. Baroni¹, C.R. Daniel¹

¹Universidade Estadual do Centro-Oeste, Physical Therapy Department, Guarapuava, Brazil

Introduction/Background

Fibromyalgia is a painful clinical syndrome associated with various symptoms, without a fully effective non-drug treatment. This study aimed to evaluate the implications of treatment with Nintendo Wii on sleep, depression, impact of disease and quality of life in fibromyalgic patients.

Material and Methods

The group was assessed before treatment and after 10 and 20 sessions, by means of application of four questionnaires: Medical Outcome Survey Short-Form 36 (SF-36), Center for Epidemiologic Studies Depression (CES-d) The Fibromyalgia Impact Questionnaire (FIQ) and Pittsburgh Sleep Quality Index (PSQI).

Results

After the intervention, we obtained significant improvement in the scores of PSQI and FIQ. There was no statistically significant progress in the scores of the SF-36 and the CES-D.

Questionnaire	Evaluation 1	Evaluation 2	Evaluation 3	p-value
CES-d	19.11±11.55	12.77±13.9	12.33±11.6	0.24
SF-36	48.14±7.8	56.65±10.27	58.17±9.6	0.06
PSQI	13.33±4.18	8.55±4.69	6.83±0.4	0.02
FIQ	60.15±17.96	36.22±20.80	33.69±9.93	0.016

Conclusion

The realization of virtual reality exercises may be beneficial for the treatment of fibromyalgia, bringing positive effects to the impact of the disease and sleep.

No conflict of interest

ISPR7-0829

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

DIAGNOSTIC PROFILE OF PATIENTS ANALYZED AT MEETING CHRONIC PAIN MANAGEMENT TEAM, INDISA CLINIC, SANTIAGO, CHILE

P. Doussang¹, L. Gambini¹, P. Ritter¹, A.M. Jacob¹, M. Cavada¹, L. Berna², V. Ferrada¹, C. Droguett¹, F. Paravic¹, R. Conte¹, D. Larrain¹

¹Clinica Indisa, Physical medicine and rehabilitation department, Santiago, Chile

²Instituto Teleton Valparaiso, Physiatry, Valparaiso, Chile

Introduction/Background

The chronic pain management unit, which relies on the Physical Medicine and Rehabilitation Service of Indisa Clinic, has been operating since 1998. A weekly meeting is held, with the assistance of professional rehabilitation team, and cases of patients entering the hospital with interdisciplinary management needs are discussed. In the present study, we show basic demographic and clinical profile of the patients admitted by pain team during the year 2014.

Material and Methods

Objectives: To analyze the frequency of diagnoses reviewed in pain management team. To determine the existence of demographic profile in relation to age and gender distribution.

Methodology: Retrospective descriptive observational study. Review of internal record of pain team. Preparation of Excel spreadsheet and statistics analysis.

Results

During 2014, 27 new clinical cases were discussed at a weekly meeting of the interdisciplinary team for the management of chronic benign pain. About 85% of the patients analyzed in this period were female, with an average age of 37.6 years. Diagnostic distribution was 48.1% for fibromyalgia, 11.1% for chronic low back pain, 18.5% for complex regional pain syndrome, 3.7 % for rheumatic diseases, and 25.9 % for miscellaneous diagnoses.

Conclusion

The analysis of pathology discussed with greater incidence in a weekly meeting of the interdisciplinary team of chronic pain may help in the future to focus on a specific therapeutic programme.

No conflict of interest

ISPR7-0888

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

**EFFECTIVENESS OF MESOTHERAPY IN THE TREATMENT OF NECK AND BACK PAIN –
MUSCULOSKELETAL DISORDERS**

A.M. Ferreira¹, J. Pires¹, J. Vilaça¹, R. Marques², F. Morais¹, F. Carvalho¹, J. Laíns¹

¹Rovisco Pais Rehabilitation Medicine Center, PRM, Cantanhede, Portugal

²Gândras Community Health Centre, Gândras Community Health Centre, Cantanhede, Portugal

Introduction/Background

Aim - Evaluate the effectiveness of mesotherapy in the treatment of nonspecific neck and back pain.

Material and Methods

Retrospective study with a convenience sample of 40 patients followed for nonspecific neck and/or back pain for more than 6 months, previously treated conventionally. They underwent a weekly session of mesotherapy in the pathological area with a fixed combination of drugs (piroxicam, thiocolchicoside, lidocaine). Pain intensity was assessed by using a numeric rating scale (NRS) and oral analgesic drugs were recorded, both at baseline and at the end of treatment.

Results

The mean age was 53.58±11.72 years, 30 (75%) were female, 29 (72.5%) had neck pain, 19 (55%) had back pain and 11 (27.%) had both. The average number of mesotherapy sessions was 3.5±1.13. The mean NRS of pain at baseline was 7.0±1.42 and at the end was 4.18±2.01 (p<0.01). Thirty patients (75%) were taking analgesic or anti-inflammatory medication: 5 (12,5%) regularly and as needed, 16 (40%) regularly, 9 (22,5%) as needed. At the end of treatment 27 (67,5%) were taking medication: 1 (2,5%) regularly and as needed, 18 (45%) regularly, 8 (20%) as needed. The number of patients not needing analgesia increased from 10 (25%) to 13 (32,5%). Of the 30 patients taking medication at baseline, 10 decreased its frequency.

Conclusion

NRS scores were statistically and clinically reduced at the end of mesotherapy resulting in a decrease of analgesic and anti-inflammatory drugs. This suggests that mesotherapy may be a valid complement to conventional therapy of refractory nonspecific neck and back pain.

No conflict of interest

ISPR7-0923

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

ALPHA LIPOIC ACID IMPROVES THE REHABILITATION TREATMENT OUTCOME IN PATIENTS WITH POLYNEUROPATHY

N. Naumovic^{1,2}, I. Damjan³, R. Bacikin²

¹University of Novi Sad- Medical faculty, Department of physiology, Novi Sad, Serbia

²Special hospital for rehabilitation Rusanda, Department for neurological diseases, Melenci, Serbia

³General Hospital „Djordje Joanović“, Department of neurology, Zrenjanin, Serbia

Introduction/Background

Alpha Lipoic acid (ALA) is essential cofactor for mitochondrial enzymes and according to in vitro and in vivo studies acts as a powerful micronutrient with diverse pharmacological and antioxidant properties, directly terminates free radicals, increases cytosolic glutathione and vitamin C levels and prevents toxicities associated with their loss. The aim of study was to investigate positive effects of ALA in improvement of rehabilitation therapy outcome in patients with polyneuropathy.

Material and Methods

Investigation included 30 patients with polineuropathy. Some of them (50%) were treated during two week with ALA, administrated in infusion (600 mg daily) in combination with B complex vitamins (1 ampoule, every third day) and with magneto-therapy and electrophoresis of B complex. For all patients were investigated EMNG, VAS scale for pain, MMT for functional ability and blood glucose level.

Results

Therapeutic treatment reduced damage caused by polyneuropathy, diminished symptoms as burning, pain, and numbness in the patients. Discussion: Those effects could be explained by increased release of acetylcholine, increased synthesis of glutathione and glucose uptake, inhibition of the hydroxyl radicals formation, and diminished inflammatory processes. legs and arms, improved functional ability and decreased blood sugar level.

Conclusion

Conclusion: This study demonstrates the synergistic effects of intravenous administration of alpha-lipoic acid, vitamins of B complex and appropriate physical therapy in the improvement of symptoms of peripheral polyneuropathy in relative short time and that such therapy could be recommended as an efficient measure in the treatment of polyneuropathy.

No conflict of interest

ISPR7-0964

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

EXTRACORPOREAL SHOCKWAVE TREATMENT OF CHRONIC PAIN

P. Novak¹

¹Director Product Management, Storz Medical AG, Lohstampfestr. 8, CH-8234 Tägerwilen

Background

Extracorporeal Shockwave Treatment, ESWT originates from the shock waves technology used successfully over 30 years in urology, ESWL (Extracorporeal Shockwave Lithotripsy). The key difference is the much lower intensity used which is not destructive, but stimulates the healing and regeneration process within the tissue. The first positive results in orthopaedics were achieved in the early 90ties. It started with the treatment of non-unions and continued with the treatment of chronic tendon pain.

Methods

The first dedicated devices for orthopaedic use were derived from small lithotripters, e.g. Ossatron from HMT, or Minilith SL1 from Storz Medical AG. Nowadays, compact and ergonomic devices are in use, like the Duolith SD1 from Storz Medical AG with lightweight focused handpiece with remote controls for optimal application.

With this device, chronic plantar fasciitis was treated in RCT: 246 patients, 3 sessions with 2'000 pulses each, 0.25mJ/mm².

Results

The pain relieve was evaluated with Analog Visual Scale (VAS), for the functional improvement Roles&Maudley score were used. In the Verum group, VAS improved by 73.2% and the Roles&Maudley score by 60%. The changes in the Sham group were significantly smaller: VAS 40.5% and Roles&Maudley score 40%.

Conclusions

The shockwave treatment of tendon related pain became meanwhile standard medical procedure. Further successfully treated indications emerged in the following years: temporary relieve of spasms, muscle pain, especially trigger point treatment, or pelvic pain syndrome (CPPS). The rehabilitation after spine injuries might be revolutionized, if the first positive results can be confirmed by RCT.

Document not received

ISPR7-0965

Pain - Chronic Generalised Pain Syndromes (including Fibromyalgia)

EXTRACORPOREAL SHOCKWAVE TREATMENT OF WOUNDS

P. Novak¹

¹Director Product Management, Storz Medical AG, Lohstampfestr. 8, CH-8234 Tägerwilen

Background

Extracorporeal Shockwave Treatment, ESWT originates from the shock waves technology used successfully over 30 years in urology, ESWL (Extracorporeal Shockwave Lithotripsy). The key difference is the much lower intensity used which is not destructive, but stimulates the healing and regeneration process within the tissue. The first positive results in orthopaedics were achieved in the early 90ties. It started with the treatment of non-unions and continued with the treatment of chronic tendon pain, the enthesiopathies. In the following years, detailed research of the basic working mechanism of shockwaves in soft tissue, the mechanotransduction took place.

Methods

Randomized Controlled Trials (RCT) proof the therapeutical effects. The modern shockwave devices provide ergonomic and efficient treatment. The Energy Flux Density ranges from 0.01-0.6mJ/mm².

Results

The pain reduction in the Verum group measured by Visual Analog Scale (VAS) ranges up 70-80%.It is significantly higher than for the Sham group, which is typically 25-40%.

Conclusions

The treatment of Plantar fasciitis, Achillodynia, Epicondylitis humeri radialis and ulnaris, Tendinosis calcarea, Medial tibial stress syndrome, Patellar tendinitis, or Grates trochanteric pain syndrome became meanwhile standard medical procedure. In the following years, further indication have been disclosed, like temporary relieve of spasms, muscle pain, especially trigger point treatment, or pelvic pain syndrome (CPPS).

In the future, the stimulation of nerve growth might be of great interest in the field of rehabilitation, if the first positive results in the treatment of spine injuries can be confirmed in RCT.

Document not received

ISPR7-0227

Pain - Complex Regional Pain Syndromes

NEUROPATHIC PAIN COMPONENT IN PATIENTS WITH OSTEOPOROSIS AND LOW BACK PAIN

V. Povoroznyuk¹, U. Pryimych²

¹D.F. Chebotarev Institute of gerontology NAMS Ukraine,
Department of Clinical Physiology and Pathology of Locomotor Apparatus, Kyiv, Ukraine

²D.F. Chebotarev Institute of gerontology NAMS Ukraine,
Department of Clinical Physiology and Pathology of Locomotor Apparatus, Kyiv, Ukraine

Introduction/Background

Neuropathic pain caused by the musculoskeletal diseases has recently been the focus of numerous studies.

The aim of this study was to estimate the structure of pain syndrome and reveal the presence of neuropathic pain component in patients suffering from the osteoporosis and low back pain.

Material and Methods

We've examined 107 patients aged 45-89 years (average age 68.1 ±1.2 years). Patients were divided into 2 groups: A – patients with osteoporosis (n=49), B – patients with low back pain (n=58). To assess the NP component, we used painDETECT, LANSS, DN4 questionnaires. To assess intensity of pain, visual analogue scale (VAS) was used. Patients completed Oswestry and Rolland-Morris Disability Questionnaires.

Results

Regression analysis shows correlation between the questionnaires: LANSS and painDETECT ($r=0.74$, $p<0.001$), DN4 and painDETECT ($r=0.8$, $p<0.001$). It was found correlation between the visual analogue scale (VAS) and screening scales of neuropathic pain: painDETECT and VAS ($r=0.4$; $p<0.001$). LANSS and VAS ($r=0.3$ $p<0.001$), DN4 and VAS ($r=0.3$; $p<0.001$). 6.1% of patients with osteoporosis examined by painDETECT were likely to have the NP component. LANSS scale: 14.3% were probably to have NP. DN4 scale: 24.5% probably had NP. 17.2% of patients with low back pain examined by painDETECT were likely to have NP. LANSS scale: 24.1% were probably to have NP. DN4 scale: 44.8% had probably NP.

Conclusion

In patients with osteoporosis and low back pain the pain syndrome may include NP features. Identification of these would promote a treatment strategy targeted at the NP.

No conflict of interest

ISPR7-0365

Pain - Complex Regional Pain Syndromes

COMPLEX REGIONAL PAIN SYNDROME TYPE II AFFECTING THE NECK AFTER CAROTID ENDARTERECTOMY

M. Cruz¹, R. Rivera-Cruz²

¹VA Caribbean Healthcare System, Physical Medicine & Rehabilitation, San Juan, Puerto Rico

²Universidad Central del Caribe, School of Medicine, Bayamon, Puerto Rico

Introduction/Background

Background:

Complex Regional Pain Syndrome (CRPS) has been described in patients with chronic pain, most commonly related to limb pain, and rarely described in other places than limbs. We report a patient with characteristics of CRPS-II after a prolonged carotid endarterectomy.

Objective:

Describe the occurrence of CRPS-II in the neck region, and the contributing mechanism.

Material and Methods

Methodology:

54 year-old female patient who underwent a left-side, high in bifurcation carotid endarterectomy and who developed CRPS-II at the neck. Pain started localized, although non-specific, one day post-op behind the left ear. Within three months, pain evolved to left diffuse neck pain, peri-auricular hypersensitivity, cheek numbness, and allodynia that extended from the left mastoid bone to the antero-lateral left neck base. It was described as severe, 10/10 on the Numeric Pain Scale (NPS), and not responsive to lidocaine patch, pregabalin, and tramadol. Onabotulinum toxin was used every three months to successfully treat allodynia and neuropathic pain.

Results

Results:

One year after the endarterectomy, patient started presenting post injection flushing, circumferential to the injection, not associated to respiratory complaints or itching, and lasted for hours before full resolution.

Conclusion

Conclusion:

Sympathetically maintained pain is characteristic in CRPS. This patient started presenting significant neuropathic pain improvement, but still the skin manifested signs suggesting peri-injection hyperactive SNS. The mechanism could be explained by coupling between non-lesioned postganglionic sympathetic and non-lesioned somatic sensory neurons, by denervation supersensitivity of the non-lesioned, unmyelinated afferents in the skin, and by the regeneration of the post ganglionic sympathetic nerve fibers of the skin.

No conflict of interest

ISPR7-0369

Pain - Complex Regional Pain Syndromes

THE EFFECT OF BOTULINUM TOXIN IN IMPROVING NEUROPATHIC PAIN AFTER CAROTID ENDARTERECTOMY

M. Cruz¹, R. Rivera-Cruz²

¹VA Caribbean Healthcare System, Physical Medicine & Rehabilitation, San Juan, Puerto Rico

²Universidad Central del Caribe, School of Medicine, Bayamon, Puerto Rico

Introduction/Background

This is a 54 year-old female patient on chronic anticoagulation who developed regional pain syndrome at the neck after a left-side, high in bifurcation carotid endarterectomy.

Symptoms started one day after the surgical procedure in the form of localized non-specific pain behind the left ear. Three months later symptoms included left diffuse neck pain, peri-auricular hypersensitivity, cheek numbness, and allodynia that extended from the left mastoid bone to the antero-lateral left neck base. Pain was described as severe and 10/10 on the Numeric Pain Scale (NPS); it did not responded to lidocaine patch, pregabalin, analgesics and tramadol. The region affected was not erythematous, but diffusely tender to palpation and swelled. Neck range of motion was severely compromised in all directions due to pain intensity.

Material and Methods

A 1:1 dilution of 100-unit vial of onabotulinum toxin was obtained by reconstituting with 1 cc of non-preserved normal saline solution. Fifteen units were injected subcutaneously (2 – 3 units per site) using a 26 - gauge needle along the distribution of the allodynic territory using a checkerboard pattern. Re-assessment of the intervention was done 4 weeks after.

Results

The patient presented significant improvements. Neck range of motion, allodynia and pain significantly improved; NPS change from 10/10 to 5/10.

Conclusion

Post-surgical regional pain syndrome can produce severe pain and impairment. In this case, traditional analgesic did not produce significant pain improvement; in addition, analgesic options were limited due to chronic anticoagulation. Onabotulinum toxin allowed significant pain improvement by decreasing neuropathic pain by 50% with a single intervention.

No conflict of interest

ISPR7-0895

Pain - Complex Regional Pain Syndromes

THE MYOFASCIAL COMPONENT OF PAIN IN THE HEMIPLEGIC SHOULDER PAIN SYNDROME AFTER STROKE

M. Riberto¹, M. Mourani²

¹University of São Paulo, Physical Medicine and Rehabilitation, Ribeirão Preto, Brazil

², Orlandia, Brazil

Introduction/Background

Hemiplegic Shoulder Pain Syndrome (HSPS) is very frequent after stroke, is multifactorially determined and interferes in quality of life and adherence to rehabilitation strategies. We have observed the myofascial component contribution to the pain. Objective was to evaluate myofascial pain in shoulder girdle muscles of patients with HSPS and to document the pain evolution after treatment.

Material and Methods

Observational series of ten subjects selected from Ribeirão Preto General Hospital with stable brain injury due to stroke and pain complaints in the hemiparetic shoulder related to movement. Pain was assessed with Visual Analogue Scale (VAS) and trigger points identified by muscle palpation. Treatment included 1% Lidocaine injections in trigger points, according to Fischer's technique. Subjects were evaluated after one and two weeks and the procedure repeated when necessary.

Results

At baseline, 100% had trigger points in at least one of the shoulder adductors muscles (mainly Subscapularis), 80% in Pectoralis Major and 70% in Trapezius. Pain intensity at baseline was 8.0 ± 1.3 . After one week was 5.5 ± 3.2 . After two weeks was 5.6 ± 2.4 . There was statistical evidence ($p < 0.05$) of pain relief between baseline and one week ($p = 0.04$), and between baseline and two week ($p = 0.01$). After treatment, most subjects and caregivers noted improvement when making activities of daily. One reported that the treatment resolved the pain for a period between 7 and 14 days. One reported that pain increased one week after treatment. Two reported that pain localization changed after treatment.

Conclusion

Myofascial treatment of trigger points with 1% Lidocaine injections was effective and allowed patients to resume their rehabilitation programs and receive care during the activities of daily living with less pain for some time.

No conflict of interest

ISPR7-0014

Pain - Miscellaneous

COMPARISON OF ACUTE EFFECTS OF SUPERFICIAL AND DEEP DRY NEEDLING INTO TRIGGER POINTS OF SUBOCCIPITAL AND UPPER TRAPEZIUS MUSCLES IN PATIENTS WITH CERVICOGENIC HEADACHE

A. Sedighi¹, N. Dr Nakhostin ansari¹, S. Dr Naghdi¹

¹Tehran university of medical sciences, rehabilitation faculty, tehran, Iran

Introduction/Background

Cervicogenic headache is a secondary headache, which means "head pain with a cervical source. The purpose of this study was to compare the acute effects of superficial and deep dry needling on trigger points of suboccipital and upper trapezius muscles in patients with cervicogenic headache.

.Material and Methods

30 participants (8 men, 22 women) aged 19 to 60 years (mean age SD, 39 y) with a clinical diagnosis of cervicogenic headache were randomly divided into superficial and deep groups. Headache index, trigger points tenderness, cervical range of motion(CROM), functional rating index was assessed at baseline, immediate and 1 week after the treatment.

Results

Two approaches of dry needling showed reduction in headache index and trigger points tenderness. Deep dry needling showed greater improvement of cervical range of motion ($p < .001$) and functional rating index ($p < .01$).

Conclusion

The application of dry needling into trigger points of suboccipital and upper trapezius muscles induces significant improvement of headache index, trigger points tenderness, functional rating index and range of motion in patients with cervicogenic headache. Deep dry needling had greater effects on CROM and function.

No conflict of interest

ISPR7-0039

Pain - Miscellaneous

**DOLOR CENTRAL POST STROKE EN PACIENTE CON SINDROME BULBAR LATERAL:
REPORTE DE CASO Y REVISION BIBLIOGRAFICA**

E. Diana¹, J.M. Mónaco², M. Zudaire³, D. Ricci¹, S. Güid⁴, E. Bendersky⁵

¹INAREPS, Servicio de Medicina Física y Rehabilitación, Mar del Plata, Argentina

²HIGA Dr. Oscar Alende, Sala de Neurología, Mar del Plata, Argentina

³HIGA Dr. Oscar Alende, Sala de Neurología, Mar del Plata, Argentina

⁴INAREPS, Sala de Psiquiatría, Mar del Plata, Argentina

⁵INAREPS, Servicio de Neurología, Mar del Plata, Argentina

Introduction/Background

Central Post-Stroke Pain Syndrome (CPSP) has a prevalence of 10.6% in Stroke patients. This entity treatment is often complex and tends to be characterized by its refractoriness or partial response. It prevents adequate rehabilitation and has a negative impact in Stroke's patient quality of life.

Material and Methods

We report the case of a 60-year old man with CPSP posterior to a lateral medullar stroke who responds to a combination of Carbamazepine and Gabapentin therapy. We discuss the new information available about the treatment of CPSP.

Results

It was evidenced an improvement on pain's intensity, frequency and its psychological and functional impact. This improvement was objective, reflected in the pain scales (verbal numerical scale, translated facial Penn scale) and function (FIM: ingress: 74/126, exit: 120/126; Barthel Test: ingress 35 / 100, exit: 100/100), allowing the patient to actively participate in the activities proposed in therapies and favoring his family and social reintegration.

Conclusion

In conclusion, CPSP is an entity of complex diagnostic and management and drug therapy is constantly being revised. Interfere in the rehabilitation treatment and negatively impacts the quality of life of the neurovascular patients. We believe that the multidisciplinary approach (Physical Medicine and Rehabilitation Medical Specialist, Neurologist, Psychiatrist) is the best approach to controlling symptoms. From the results obtained, we propose the combination of Carbamazepine + Gabapentin as a treatment scheme in case of intolerance to first-line drugs.

No conflict of interest

ISPR7-0051

Pain - Miscellaneous

PREVALENCE OF SPINAL SEGMENTAL SENSITIZATION (SSS) SYNDROME IN PATIENTS WITH CHRONIC MUSCULOSKELETAL PAIN (CMP) USING A PROPOSED SET OF DIAGNOSTIC CRITERIA

T. Nakazato¹, P. Quezada¹, G. Camacho¹

¹CEDOMUH, Clínica Especializada en Dolor Muscular y del Hueso, Lima, Peru

Introduction/Background

SSS is a regional CMP syndrome originated at the spine (named by Fischer AA, 1997). It is characterized by dermatome hyperalgesia/allodynia and segmental myotome, sclerotome and/or sympathetic hiperexcitability, without tissue pathology (as described by Gunn CC, 1996; and Maigne R, 1996). We propose a set of diagnostic criteria for this entity to determine its prevalence in patients with CMP.

Material and Methods

249 consecutive new patients attending a physiatric private practice for CMP (from Jan/June 2016, mean age: 52 ±18, 61% women). Two criteria for diagnosis:

A. Anamnesis: Chronic (≥ 3 months) segmental (≥2 related regions, at least one of them axial and one peripheral) musculoskeletal pain.

B. Physical exam: At least 4 of the following 6 signs (3-axial/3-peripheral). Signs must correspond to the segments described at criterion A:

- Dermatome: Pain at pinch-and-roll test.
 1. 10 cm midline (back).
 2. Extremities/anterior trunk
- Myotome: Trigger points palpation.
 3. Paraspinal muscles.
 4. Extremities/anterior trunk muscles.
- Sclerotome: Pain at palpation/mobilization.
 5. Interspinous ligament.
 6. Ligaments/tendons/bursae/joints (not related to the spine).

Results

68 (27.3%) patients had SSS according to our proposed set of diagnostic criteria. Most common regions: Lumbosacral L5-S1 (47.7%), lumbar L2-L4 and mid-cervical C5-6 (18.2% each).



Conclusion

More than a quarter with CMP had this syndrome. We need consensus-based diagnostic criteria to standardize research of SSS, which is a common cause of physiatric consultation.

No conflict of interest

ISPR7-0094

Pain - Miscellaneous

ASSOCIATION OF MANUAL THERAPY AND SURFACE HEAT TREATMENT REDUCES PAIN AND SELF-MEDICATION IN PATIENTS WITH TENSION-TYPE HEADACHE

M. Soares Gui Demase¹, K. Cristina da Silva², G. Santos Teixeira dos²

¹Einstein Integrated College of Limeira, Limeira, Brazil

²Einstein Integrated College of Limeira, Physical Therapy, Limeira, Brazil

Introduction/Background

Tension-type headache (TTH) has been the major public health problem. Trigger areas in the masticatory and certain neck muscles refer pain to the temporomandibular joint, face, and cranium according to specific patterns. Therefore, therapeutic procedures should be directed to myofascial trigger areas rather than to reference zones where pain is felt. In this regard, the massage therapy can provide effective results when combined with the surface heat, which increase local microcirculation, improving the perfusion of tissue and promote muscle relaxation. Here we investigated the effects of manual therapy associated with superficial heat therapy in pain management of patients with TTH.

Material and Methods

This was a single-arm study, with effect control period and follow-up (ethics committee approval #1.073.668), involving 13 volunteers with TTH (31.5±6.57 years), which were submitted to a three-month research protocol. In the first month (control effect), they were evaluated and complete the daily pain. The following month, the treatment protocol was applied (composed of 8 sessions of 45 minutes, applied twice a week, involving massage for skin desensitization, stretching and myofascial trigger point deactivation on masticatory and trapezius muscle after the surface heat). Then, in the last month (follow-up period), volunteers were instructed to fill out the daily pain once again.

Results

We observed a significant ($p < 0.05$) decrease of pain intensity, TTH episodes and medication intake, after treatment and it decrease persisted in follow-up ($p < 0.05$).

Conclusion

The combination of manual therapy protocol and surface heat reduced TTH pain, crises and self-medication.

No conflict of interest

ISPR7-0136

Pain - Miscellaneous

NEUROPATHIC PAIN AFTER SPINAL CORD INJURY DIAGNOSTIC BIOMARKERS USING A NOVEL MODALITY

J. Karri¹, S. Li¹, L. Zhang¹, Y.T. Chen¹, A. Stampas¹, J. Frontera¹, M. Davis¹, S. Li¹

¹McGovern Medical School, Physical Medicine and Rehabilitation, Houston, USA

Introduction/Background

Heart rate variability (HRV), the physiological variance in the heart's R-R interval length, can reflect various parameters of one's autonomic balance. HRV analysis may be used to capture autonomic aberrations associated with chronic neuropathic pain (NP) following spinal cord injury (SCI). This study assesses the capacity of HRV parameters to diagnose baseline NP and quantify treatment response in an SCI cohort.

Material and Methods

An electrocardiogram (ECG) was collected at rest for healthy controls (HC, n=15), patients with SCI-only (SCI-NP, n=14), and those with SCI and NP (SCI+NP, n=18). Breathing-controlled electric-stimulation (BreEStim), an evidenced analgesic for NP, and null breathing-only (Breathing-only) treatments were administered to 8 SCI+NP patients. Subjective pain scores and additional ECGs were collected in treated patients at 10 and 30 minutes following intervention. HRV parameters were analyzed using conventional time and frequency analysis.

Results

There were no baseline heart-rate differences amongst groups ($p=0.081$). However, SCI+NP patients demonstrated lower resting parasympathetic tone than either HC or SCI-NP groups, as evidenced by lower values for time-domain parameters SDNN, RMSSD, NN50, and pNN50 (all parameters: $p<0.010$). No autonomic differences were appreciated in patients with injuries located at T6,above vs. T7,below (all parameters: $p>0.050$). Compared to Breathing-only treatment, SCI+NP patients treated with BreEStim had decreased subjective pain scores at 10 and 30 minutes (for both: $p<0.010$). This BreEStim-associated analgesia was associated with a higher parasympathetic tone across time, as evidenced by higher RMSSD, NN50 and pNN50 (all parameters: $p<0.050$). No differences in frequency domain analysis were observed either at rest or after interventions.

Conclusion

Numerous HRV time-domain parameters have the capacity to capture the lower resting parasympathetic tone found in SCI+NP patients and quantify the increased parasympathetic tone associated with the analgesic effect in BreEStim-treated SCI+NP patients. HRV analysis is an innovative modality with the capacity for objective quantification of chronic NP in patients with SCI.

No conflict of interest

ISPR7-0157

Pain - Miscellaneous

INVESTIGATION OF THE EFFECTIVENESS OF COMPLETE DECONGESTIVE THERAPY AND KINESIOTAPING IN FEMALE PATIENTS WITH BREAST CANCER-RELATED UNILATERAL UPPER EXTREMITY LYMPHEDEMA

C. Basoglu¹, D. Sindel¹, M. Corum¹, A. Oral¹

¹Istanbul University- Istanbul Faculty of Medicine, Physical Medicine and Rehabilitation, Istanbul, Turkey

Introduction/Background

To investigate the effectiveness of complete decongestive therapy (CDT) and kinesiотaping (KT) on upper limb volume, functional status, and quality of life in female patients with breast cancer-related lymphedema (BCRL).

Material and Methods

The patients were randomized into two groups, the first group receiving CDT (n=20) and the second group receiving KT with lymphatic correction technique (instead of bandaging and manual lymphatic drainage) (n=20). Patients in both groups were evaluated before the treatment, at post-treatment (immediately after 4-week interventions), and at 4 weeks after the cessation of interventions using limb circumference, limb volume, shoulder range of motion, pain, and grip strength measurements and additionally functional status and quality of life assessments using Disabilities of the Arm, Shoulder and Hand (Q-DASH) and Functional Assessment of Cancer Therapy for breast cancer patients (FACT-B).

Results

In both groups, significant favorable changes were observed in all outcome measures at post-treatment. However, CDT was found associated with longer term volume reduction being apparent immediately after treatment and also at 4-week of follow-up ($p=0.001$). Whereas, significant volume reduction in the KT group was no longer observed at 4-week of follow-up. Functional gains and improvements in quality of life were similar in both groups at both follow-up points.

Conclusion

KT can be an alternative method to CDT in treatment of BCRL due to the ease of application; however, there is a need for further studies with more patients and longer follow-up time to better elucidate the utility of KT in BCRL.

No conflict of interest

ISPR7-0317

Pain - Miscellaneous

PHANTOM MOTOR EXECUTION TO ALLEVIATE PHANTOM LIMB PAIN

M. Ortiz-Catalan¹

¹Chalmers University of Technology, Signals and Systems, Gothenburg, Sweden

Introduction/Background

Phantom Limb Pain (PLP) is a chronic and debilitating condition from which no effective treatment has been found. Promotion of phantom motor execution is presented here as a novel approach which aims to restore altered cortical maps and functional connectivity between the different areas of the brain involved in motor control. It is motivated by the findings that central changes correlate with incidence and intensity of PLP.

Material and Methods

Motor volition in the missing arm is predicted using myoelectric pattern recognition (MPR). MPR exploits the synergistic activation of available muscles at the stump to decode intended actuation of distal joints lost due to the amputation. The resulting phantom motor intention is displayed in real-time by a virtual limb in augmented and virtual reality, as well as used for gaming. Different self-reporting measures to capture the intensity, quality, duration, and frequency of pain are included in the computerized system to facilitate the monitoring of pain.

Results

The presented technology overcomes methodological limitations of previous non-pharmacological treatments based in motor execution and visual feedback such as mirror therapy, or equivalent virtual reality approaches that require an able contralateral limb. A portable and user friendly system has been developed and currently use independently by therapist at six hospitals in four countries. Preliminary results of an ongoing clinical trial indicate that pain relief can be achieved within twelve session, and maintained for up to 6 months. The patients treated were known to be difficult chronic cases for whom other treatments had failed (N=14).

Conclusion

Phantom motor execution along with real-time visual feedback has shown potential for PLP relief. Further research is necessary to elucidate the underlying mechanism of PLP and its relief, as well as to validate the clinical outcomes of the proposed approach.

Conflict of interest

Disclosure statement:

This work has been founded by the Promobilia Foundation, VINNOVA, Jimmy Dahlstens Fond, Chalmers University of Technology, PisoSolve, and Integrum AB. Integrum AB aims to eventually commercialize the proposed technology.

ISPR7-0442

Pain - Miscellaneous

THE EFFICACY OF COMPLEX DECONGESTIVE THERAPY ON DISABILITY AND QUALITY OF LIFE OF PATIENTS WITH BREAST CANCER-RELATED LYMPHEDEMA

P. Borman¹, A. Yaman¹, S. Yasrebi¹

¹University of Hacettepe, Dept of Physical Medicine and Rehabilitation, Ankara, Turkey

Introduction/Background

Complex decongestive therapy (CDT) is the gold standard in lymphedema rehabilitation. The aim of this study was to evaluate the effects of CDT in patients with breast cancer-related lymphedema (BCRL), in regard to volume reduction, functional status and quality of life (QoL).

Material and Methods

Fifty patients with unilateral BCRL were included. The demographic variables were recorded. All patients received combined phase 1 CDT including skin care, manual lymphatic drainage, multilayer bandaging and supervised exercises, five times/week for three-weeks, as a total of 15 sessions. Patients were assessed by limb volumes and excess volumes according to geometric approximation derived from serial circumference-measurements of the limb, prior and at the end of third week. Functional disability was evaluated by quick disability of arm-shoulder-and-hand questionnaire (DASH). Quality of life was assessed by the European Organization-for-Research-and-Treatment of Cancer-Core-Cancer-Quality of Life Questionnaire (EORTC-QLQ-C30) and its breast cancer module (EORTC-QLQ-BR23).

Results

Fifty females with mean age of 53.22 ± 11.2 years were included. The median duration of lymphedema was 12 months. There were 22 patients in stage 1, 26 in stage 2 and 2 patients in stage 3. The mean baseline limb and excess volumes were significantly decreased at the end of therapies ($3262 \pm 753 \text{ cm}^3$ vs $2943 \pm 646.6 \text{ cm}^3$ and $31.36 \pm 16.5\%$ vs $19.12 \pm 10.4\%$, $p=0.000$, respectively). The DASH and EORTC-QLQ-C30 and BR23 scores were also decreased significantly ($p<0.05$). The improvements in volumes were related negatively with the duration of lymphedema, and grade of lymphedema.

Conclusion

: In conclusion CDT in a combined manner performed daily for 3 weeks, greatly reduces the volumes as well as improves the disability and QoL, especially when performed earlier.

No conflict of interest

ISPR7-0481

Pain - Miscellaneous

EFFECTS OF UPPER CERVICAL SPINE MANIPULATION OF THE SIGNS AND SYMPTOMS OF HEADACHE

T.A. Santana¹, A.C.D.D. Arruda¹, D.I. Sakabe², F.F. Sakabe²

¹Faculdades Integradas Einstein de Limeira, Physical Therapy, Limeira, Brazil

²Faculdades Integradas Einstein de Limeira, Prof. Dr. Physical Therapy, Limeira, Brazil

Introduction/Background

The relationship between headache and dysfunction in the upper cervical spine is clear, and the local joint manipulation can be a useful tool to improve the symptoms. The objective is to evaluate the effect of upper cervical spine manipulation on pain, mobility of the cervical spine, the impact of headache in ADLs and the neck disability index (NDI) of patients with headache.

Material and Methods

Thirteen volunteers participated of study (28.1 ± 6.9 years old), of both genders, with headache complaints, assessed by diary pain, MIDAS questionnaire (migraine disability assessment), NDI and neck movements measures (flexion, extension, inclinations and rotations). The intervention consisted of three sessions of manipulation of the upper cervical spine (bilaterally) with an interval of seven days between them. Statistical analysis consisted of the KS test, followed by ANOVA with post hoc Tukey with 5% significance.

Results

Regarding the daily pain, there was significant reduction in the number of headache attacks, the index and intensity of pain after the intervention. About the MIDAS questionnaire and the NDI there was significant reduction in the parameters evaluated after the intervention period. Regarding the mobility of the cervical spine, a significant improvement in flexion and bilateral rotation after 3 intervention sessions.

Conclusion

Three sessions of joint manipulation in the upper cervical spine were effective in reducing the frequency, intensity and pain index, the disability due to headache and neck disability, and improve the mobility of the cervical spine in patients with headache.

No conflict of interest

ISPR7-0671

Pain - Miscellaneous

ESSENTIAL ISSUES OF APPLYING REGULAR EXERCISES AND PHYSICAL ACTIVITIES IN SENIOR ACTIVITY CENTERS

C.S.U. Leong¹

¹Macao Polytechnic Institute, School of Health Sciences, Macao, Macau

Introduction/Background

Applying regular exercises and physical activities for the older population in senior activity centers definitely helps decrease the consumption of limited and expensive health-care resources, improve the quality of life of the aging, and benefit the physical, psychosocial and identity roles of the healthy aging development. Effective programs of exercises and physical activities reduce the risk of falls and other chronic health problems among older adults. The purpose of this study was to investigate the factors contributing to the health of the older adults by having regular exercises and physical activities provided by the senior activity centers.

Material and Methods

A qualitative study was implemented to explore the phenomenon among Macao residents aged 65 and over. Convenience sampling was used for the interview. Consent from all participants was sought and the information collected were kept anonymous and confidential. Participants' expressions were transcribed into verbatim to facilitate analysis and theme identification.

Results

56 participants aged 65 and over from four senior activity centers were interviewed in the past two years. They were alert and oriented to their daily activities, and were able to express their feeling and perception. Therefore, there was no limitation of their physical, psychosocial and mental development.

Conclusion

Older adults in the two senior activity centers providing regular exercises and physical activities were having better quality of life with more satisfaction in physical, psychosocial and mental development. The other two activity centers provided less or zero exercise program showed more chances of falls and health problems.

No conflict of interest

ISPR7-0688

Pain - Miscellaneous

TAPENTADOL PROLONGED RELEASE FOR CENTRAL AND NOCICEPTIVE PAIN CAUSED BY MULTIPLE SCLEROSIS

W. Reyes Campo¹

¹*Cali, Colombia*

Introduction/Background

Pain is a common symptom in multiple sclerosis and may be the most commonly treated. Patients present nociceptive and neuropathic pain syndrome and it has been proposed to manage it, with different kinds of medications. Tapentadol, a μ opioid agonist and norepinephrine reuptake inhibitor, has been found to be effective for some chronic pain conditions. However, it hasn't been report or study it's use in the managing of pain caused by multiple sclerosis. It is reported a patient's case with central and nociceptive pain associated with multiple sclerosis, who required different combinations of analgesics, both opioid and non-opioid; in who pain was controlled after using tapentadol prolonged released.

Material and Methods

Case report for an outpatient clinic.

Results

A 31 years old woman was diagnosed with multiple sclerosis in October 2011. Later, she began to suffer pain with neuropathic and nociceptive characteristics. Therefore, she started to receive gradually amitriptyline, pregabalin, tramadol prolonged release, transdermic buprenorphine, trandermic fentanyl, acetaminophen and desvenlafaxine, see figure 1. The patient only reached a complete analgesia, after tapentadol prolonged released was prescribed at dose of 250 milligrams per day

Conclusion

So far, there is no literature to support this analgesic indication, so it could be considered in the management of pain caused by multiple sclerosis, and clinical trials should be done to assess its effectiveness and efficiency.

No conflict of interest

ISPR7-0803

Pain - Miscellaneous

ALTERED CORE MUSCLE ACTIVATION AND POOR BALANCE CONTROL DURING POSTURAL PERTURBATION IN PEOPLE WITH NON-SPECIFIC CHRONIC LOW BACK PAIN

N. Mok¹, J. Ng¹

¹Hong Kong Polytechnic University, Rehabilitation Sciences, Hung Hum, Hong Kong S.A.R.

Background and aim

Poor postural control is evident in people with non-specific chronic low back pain (NCLBP). A trunk stiffening strategy by co-contraction of superficial trunk muscles is likely to explain the balance impairment in this population. Our study investigated the association between trunk muscle (both deep and superficial) control strategy and balance impairment in people with NCLBP.

Methods

The study was conducted in a controlled laboratory setting. Internal postural perturbation was induced with the voluntary arm movement in standing position. The activation of the superficial (rectus abdominis, and lumbar longissimus) and deep (lumbar multifidus, internal and external oblique and transversus abdominus) trunk muscles accompanying internal postural perturbation was examined with surface and indwelling EMG respectively. Control of postural stability was recorded with force platform.

Results

Our data showed an altered muscle activation pattern in participants with NCLBP; with a delayed muscle onset activation in the deep trunk muscle and a delayed muscle offset activation of the superficial trunk muscles. The altered muscle activation pattern is also associated with poor postural stability control.

Conclusion

The result suggested that the altered trunk muscle control (trunk co-contraction / stiffening strategy) coexist with poor postural recovery following postural perturbation in participants with NCLBP.

No conflict of interest

ISPR7-0824

Pain - Miscellaneous

EXPERIENCE WITH ABOBOTULINTOXIN A FOR INTRACTABLE NEUROPATHIC PAIN: A NINE-CASES REPORT. HOSPITAL DEL SALVADOR, SANTIAGO, CHILE.

P. Ritter¹, R. Fernández¹, M. Orellana¹, A. Rebolledo¹, L. Berna², M. Pellet³

¹Hospital del Salvador, Unit of pain relief and palliative care, Santiago, Chile

²Instituto Teletón Valparaíso, Physiatry, Valparaíso, Chile

³Pharmaceutical chemist, Hospital pharmacy of Hospital del Salvador, Santiago, Chile

Introduction/Background

The use of botulinum toxin type A subcutaneously or intradermally has been reported in the literature in the last decade. The mechanism of action for this use has not been fully elucidated, it is proposed that it would be a central effect of botulinum toxin through retrograde transport of the drug, however, it can not be excluded that there is a mechanism of peripheral action of botulinum toxin given the effect reported in relief of allodynia, paroxysmal pain and hyperalgesia. The report in the literature is with the use of onabotulinum toxin A. Objective: To analyze results in pain relief in 7 patients with intractable neuropathic pain treated with abobotulinum toxin A injections, in the Pain Relief Unit of a public hospital in the metropolitan region of Chile.

Material and Methods

Observational, retrospective and descriptive study. Clinical record analysis of 9 individuals with neuropathic pain considered refractory to combined pharmacological treatment for neuropathic pain at maximal doses, who had allodynia component and paroxysmal pain as a characteristic of neuropathic pain, and who received injection of subcutaneous or intradermal abobotulinum toxin A in the area of persistent allodynia. An Excel worksheet was prepared.

Results

7 patients out of 9 had expected outcomes, allodynia relief of at least 50% after the first dose, and 80% relief of incidental paroxysmal pain, and with relief of 80% allodynia after the second dose three months after the first. Of these, 5 were able to decrease the requirement of potent opioids. 2 patients out of 9 had no satisfactory results: 1 had no results, and 1 had a favorable outcome but with a short duration of effect. However, this case has concomitant severe psychopathology in psychiatrist control.

Conclusion

Subcutaneous or intradermal injection of abobotulinum toxin A may be an effective therapeutic tool in patients with neuropathic pain characterized by allodynia and paroxysmal pain.

No conflict of interest

ISPR7-0827

Pain - Miscellaneous

MEDICAL AND SURGICAL MANAGEMENT OF DIABETIC FOOT AT GUATEMALAN SOCIAL SECURITY INSTITUTE (INSTITUTO GUATEMALTECO DE SEGURIDAD SOCIAL)

L.J. Aragon Yanes¹

¹, Santa Catarina Pinula, Guatemala

Introduction/Background

Diabetes mellitus is a highly prevalent disease around the world. In 2011 the prevalence in the United States was 15.4% in younger than 45 years old and reach 29% in older than 75 years old (Margolis, 2011). The prevalence in Guatemala is 9.6% in general population (Barcelo, 2012). Diabetic foot syndrome is a common complication of diabetes mellitus. It is estimated that 25% of diabetic patients will present limb ulcers in any moment of their lives and 2/3 of non-traumatic amputations are related to diabetes mellitus complications (Anderson, 2007).

Material and Methods

This is a descriptive, prospective and observational trial in patients with diabetic foot diagnosis that received treatment at Hospital General de Enfermedades and Hospital Juan Jose Arevalo Bermejo from Instituto Guatemalteco de Seguridad Social between January 2014 and May 2015. We analyzed data using Anova (software Vassarstats 2016)

Objetives: To determine PEDIS status at admission, levels of glycosilated hemoglobin, initial antibiotic treatment, admission culture results and complementary diagnostic work-up.

Inclusion criteria: diabetic foot as main admission diagnosis

Exclusion criteria: congenital or acquired immunodeficiencies, actual therapy with steroids, chemotherapy or another type of immunosuppressive therapy and patients with diabetic foot who don't need admission.

Results

82% of admitted patients need surgical treatment. The most common initial antibiotic is moxifloxacin in 85% of cases. The most common isolated microorganisms are E. coli, P. aereginosa and E. fecaelis. At the time of admission 85% of patients meet sepsis criteria. Mean glycosilated hemoglobin at admission is 10%. More than 28% of patients were studied for peripheral vascular insufficiency but none received any vascular treatment (surgical non interventional) so the usefulness of vascular work-up is controversial. ANOVA analysis between groups showed no statistical difference (p: 0.19)

Conclusion

Diabetic foot syndrome represents a serious disease that almost all cases need surgical treatment and inpatient medical treatment in our hospital.

No conflict of interest

ISPR7-0030

Rehabilitation Addressing to Specific Issues - Management of Fatigue and Sleep Disorders

POST-STROKE FATIGUE AND RELATED FACTORS

A.P.C. Loureiro¹, H. Ihle-Hansen², B. Langhammer³

¹Pontifícia Universidade Católica do Paraná, Physiotherapy Department, Curitiba, Brazil

²Baerum Hospital, Department of Internal Medicine and Department of Medical Research-Vestre Viken, Baerum, Norway

³Akershus University College of Applied Sciences- Sunnaas Rehabilitation Hospital, Physiotherapy Department, Oslo, Norway

Introduction/Background

Fatigue is a common and debilitating complaint after stroke, and often manifests as physical and mental lack of energy. The aim of this study was to estimate the prevalence of fatigue three-months after the onset of stroke and to identify its relation to emotional factors.

Material and Methods

Twenty-nine people with first-ever stroke (mean age 72.9±10.8y) with relatively good neurologic recovery (community walkers) during the post-acute period and ten sex-matched healthy control subjects (age range 69.6±10.9 years old) were enrolled in the study. The main outcome measures for the fatigue was the Neurological Fatigue Index for stroke - (NFI-Stroke), while anxiety and depressive symptoms were evaluated using Hospital Anxiety and Depression Scale (HADS).

Results

Prevalence of fatigue was significantly greater in the stroke group than in the control group ($p=0.034$). There were no significant change in the physical dimension ($p=0.069$) but differences in the cognitive dimension ($p=0.034$) of NFI-Stroke. Statistically significant association was recorded in the stroke group between fatigue and anxiety ($p=0.023$). Among those who did not have anxiety median overall fatigue was 13 (6-21) and among those who had anxiety the median overall fatigue was 19 (14-26). It was found no association between fatigue and depression symptoms ($p=1.81$).

Conclusion

Prevalence of fatigue three months post-stroke was surprisingly high in this group of independent persons with stroke residing in the community. Furthermore, fatigue was associated with anxiety at the same time point.

No conflict of interest

ISPR7-0249

Rehabilitation Addressing to Specific Issues - Other Specific Functions

EFFECTS OF VALGUS POSTED INSOLE WITH ANKLE-FOOT ORTHOSIS ON PLANTAR PRESSURE AND GAIT PATTERN IN HEMIPLEGIC PATIENTS; PILOT STUDY

H. Ko¹

¹Chungnam National University Hospital, Rehabilitation Medicine, Daejeon, Republic of Korea

Introduction/Background

To investigate the effects of valgus posted insole with ankle-foot orthosis (VAFO) on plantar pressure and gait pattern compared with the effects of ankle-foot orthosis (AFO) alone in hemiplegic patients.

Material and Methods

Five Hemiplegic patients with dropped foot (with mild TP spasticity MAS G I, Supervision gait possible) were enrolled in this study. Plantar pressure was measured at the medial, central, and lateral forefoot; medial and lateral midfoot; and medial and lateral rearfoot using the Pedar-X in-shoe pressure system, while participants walking with following 3 conditions; (i) No orthosis, (ii) with AFO alone, (iii) with VAFO. The VAFO were manufactured through valgus posting on prefabricated FOs with longitudinal arch supports which have mechanical effect on pressure distribution. Also, patient was evaluated with Gait analysis plug in model. The kinematic data by the Vicon 3D motion capture system were compared Gait speed, cadence, step width, and stride length at each condition.

Results

Wearing VAFO while walking magnifies peak, mean plantar pressure at the medial midfoot, whereas AFO alone showed almost same peak, mean pressure at the forefoot, mid foot as no orthosis. It also showed the effect of increasing medial plantar pressure. while less influence on lateral plantar pressure.(Fig 2, 3). VAFO can be estimated to distribute the weight on the basis of the mean Rt. plantar maximal force and mean Rt. contact area on medial midfoot increase. As a result of the Gait analysis, patients With VAFO, significantly faster walking speed and shorter stride length, with significantly decreased stance was observed compared with AFO only. Significantly smaller ankle varus was seen from initial swing through mid-swing in the coronal plane. In transverse plane ankle external rotation were significantly smaller through midswing phase.

Conclusion

These results indicate that VAFO may have certain clinical benefits for the treatment of drop-foot gait compared to conventional ankle-foot orthoses

No conflict of interest

ISPR7-0262

Rehabilitation Addressing to Specific Issues - Other Specific Functions

INTENSIVE LLLT COMBINE WITH NMES IN TOTAL DENERVATION RADIAL NERVE PALSY PATIENT NORMAL IN 2 MONTH : A CASE SERIES REPORT

Y. Waluyo¹, A. Sahlan²

¹Faculty of Medicine Hasanuddin University, Physical Medicine and Rehabilitation, Makassar, Indonesia

²Faculty of medicine, Physical Medicine and Rehabilitation, Makassar, Indonesia

Introduction/Background

Radial nerve palsy typically occurs as a result of trauma or iatrogenic injury and leads to the loss of wrist extension, finger extension, thumb extension, and a reduction in hand function. Tendon transfer is one of the ways to return the function. However, before the surgical procedure, there is a period that conservative treatment should be done. The effectiveness of LLLT and neuromuscular electrical stimulation has been widely studied but the combination of these therapy intensively never been done before to the total denervation radial nerve palsy patient.

Material and Methods

Three patients A, B and C presented with radial nerve palsy total denervation (EMG-NCV review) after got injury and trauma at their elbow at dominant hand, 2 males 28 and 26 years old and 1 fifteen years female. Two of them underwent nerve repair procedure by orthopedics. we give 49 j at the wound lesion area radial nerve and Neuromuscular electrical stimulation at extensor wrist and fingers muscle group for 45 minute 6 times in a week, we also give exercise for the hand function

Results

Patient A recovery hand function with MMT 5 for wrist extensor and fingers extensors muscle and full ROM after 57 days, Patient B recover the hand function with MMT 5 and ROM full after 66 days and Patient C recovery in 72 days

Conclusion

An adequate dosage of simple therapy may bring an excellent result as this report show that the combination LLLT and neuromuscular electrical stimulation intensively everyday for the total denervation radial nerve palsy patient can progressively improve nerve motor function, which leads to significant functional recovery

No conflict of interest

ISPR7-0296

Rehabilitation Addressing to Specific Issues - Other Specific Functions

COMPARISON OF FIVE TECHNIQUES FOR COUGH ASSISTANCE IN PATIENTS WITH SPINAL CORD INJURY

Y.B. Nociti¹, D. Rossi¹, A. Cotoero¹, M. Ordoñez¹, M.A. Quijano¹, A.P. Bustamante¹

¹CIAREC, REHABILITACION, BUENOS AIRES, Argentina

Introduction/Background

Respiratory complications in patients with spinal cord injury are due to hypoventilation and mucus retention provoked by cough weakness. Cough effectiveness has been defined by a peak cough flow (PCF) of more than 160 L/min. Values of PCF minor than 270 L/min are correlated to the increase of respiratory complications.

Cough-assistance techniques are described, which include lung insufflation (LI) with resuscitation bag, manual and mechanical cough-assistance and electrical-stimulation of abdominal muscles. Variation in the PCF comparing five assistance techniques, in patients with spinal cord injury is determined.

Material and Methods

Cough-assistance techniques were compared:

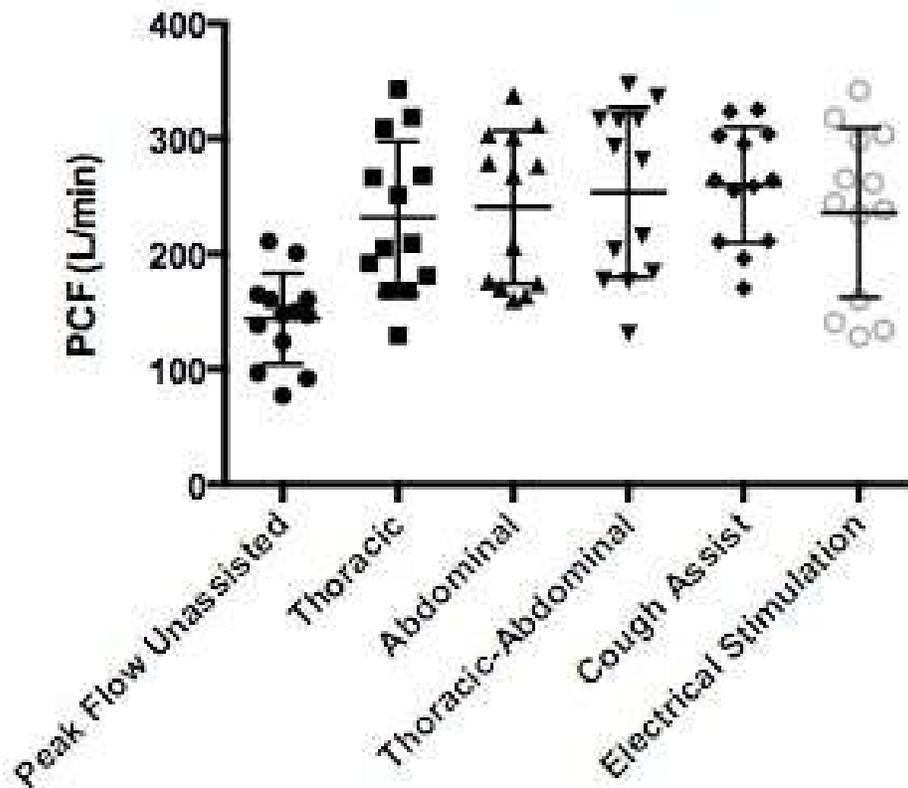
- 1) LI with manual abdominal assistance;*
- 2) LI with manual thoracic assistance;*
- 3) LI with manual thoracic-abdominal assistance;*
- 4) Mechanical assistance;*
- 5) LI with electrical-stimulation of abdominal muscles.*

Unassisted PCF was registered.

Patient preference was also registered for further analysis.

Results

Influence of the technique on peak cough flow



The mean age of the patients was 32 years old (± 13), twelve of them males. Four values were obtained through a cuffed tracheotomy tube and nine through a facial mask. Mean PCF at baseline was 143.8L/min (± 39.3 L/min).

All techniques provoked a significant increase in peak cough flow over baseline values.

No significant differences in peak flow values were obtained when techniques were compared.

Conclusion

Values of PCF over 160L/min were obtained with all techniques. Therefore, patient preference should be considered to select the technique.

No conflict of interest

ISPR7-0432

Rehabilitation Addressing to Specific Issues - Other Specific Functions

REHABILITATION AFTER STROKE IN SPECIALIZED REHABILITATION. AND SO, HOW DID IT GO?

B. Langhammer¹, *S. Sällström*², *K. Sunnerhagen*³, *J. Stanghelle*⁴

¹*Oslo and Akershus University College, Sunnaas Rehabilitation hospital, Oslo, Norway*

²*Sunaas Rehabilitation Hospital, research, Nesoddtangen, Norway*

³*University of Gothenburg, Department of Clinical Neuroscience, Gothenburg, Sweden*

⁴*Sunaas Rehabilitation Hospital- University of Oslo, research, Nesoddtangen, Norway*

Introduction/Background

Disability after stroke may impose severe consequences for the individual and for their families. The physical and cognitive disabilities may lead to long term rehabilitation. As a consequence, this may lead to inability work and, for the individual, a changed economic status and / or loss of income. This in turn may lead to increased dependence on family and / or social care support, which may also influence perceived life satisfaction.

Material and Methods

a prospective, descriptive study of disability after stroke and work related issues, in nine rehabilitation centers, seven countries at six and twelve months' post discharge. To explore what influenced return to work and financial situation a model containing age, gender, LiSat-11 item 1, baseline score NIHSS and mRS was analyzed.

Results

In total, 230 persons with stroke were enrolled consecutively in the study, overall baseline disability was mean 3.7 (SD 0.8) Modified Rankin Scale (mRS), severity by mean 7.8 (SD 4.4) National Institute of Health Stroke Scale (NIHSS). At 6 and 12 months' post discharge 200 and 182 patients were eligible for the interviews regarding their return to work, financial situation and life satisfaction. Preliminary results indicate that a majority had not been able to return to work, the financial situation depended on existing health care insurance and family support and life satisfaction was low. Return to work at 6 and 12 months were significantly related to age (β coefficient 0.25, $p=0.001$) and maintenance of financial situation to life satisfaction (β coefficient -0.24, $p=0.003$) and age (β coefficient -0.20, $p=0.009$).

Conclusion

The majority of persons in need of specialized rehabilitation in this study did not return to work, indicating dependence on family and existing private or public insurances, depending on country. Age was main explanatory factor relating to return to work, and age and life satisfaction to maintenance of financial situation.

No conflict of interest

ISPR7-0457

Rehabilitation Addressing to Specific Issues - Other Specific Functions

THE EFFECTS OF GAIT TRAINING USING GAIT EXERCISE ASSIST ROBOT (GEAR) ON GAIT PATTERNS IN STROKE PATIENTS

H. Tanikawa¹, D. Katoh², S. Hirano³, E. Saitoh³, J. Yamada⁴, H. Yamamori⁴, C. Yamashita⁴, Y. Kanada¹, M. Imaida⁵

¹Fujita Health University, Faculty of Rehabilitation- School of Health Sciences, Toyoake- Aichi, Japan

²Fujita Health University Hospital, Department of Rehabilitation-, Toyoake- Aichi, Japan

³Fujita Health University, Department of Rehabilitation Medicine I- School of Medicine, Toyoake- Aichi, Japan

⁴Fujita Health University Hospital, Department of Rehabilitation, Toyoake- Aichi, Japan

⁵TOYOTA Motor Corporation, Partner robot Division, Toyota- Aichi, Japan

Introduction/Background

Gait Exercise Assist Robot (GEAR) was developed by Fujita Health University and TOYOTA Motor Corporation to assist gait training for hemiplegia. The purpose of this study was to investigate the effects of gait training using GEAR on gait patterns in stroke patients.

Material and Methods

The subjects were 15 hemiplegia who received gait training using GEAR from the early after onset until they could walk with AFO by themselves. Comfortable overground gait velocity, spatiotemporal factors and the degree of 12 abnormal gait patterns obtained from a 3D treadmill gait analysis were evaluated when they left hospitals were compared with those in the control subjects. Each control subject corresponded to a hemiplegia from the database, with similar paresis (SIAS-motor) and time from onset.

Results

After the gait training with GEAR, the gait velocity, unaffected step length and the index values for insufficient knee flexion during the swing phase and hip hiking significantly improved.

Conclusion

GEAR can assist the stance and swing phase of the affected lower limb even if the patients were in an acute stage after the stroke. This could help the patients to practice many steps with suitable assistance and enough weight bearing. Consequently, the gait velocity and unaffected step length in the subjects improved. Insufficient knee flexion during the swing phase is an impairment, and hip hiking is a compensation for creating toe clearance during the stance phase. Therefore, gait training using GEAR has a possibility to reduce impairments and compensations.

No conflict of interest

ISPR7-0535

Rehabilitation Addressing to Specific Issues - Other Specific Functions

COMPARISON OF THE EFFICACY OF DIFFERENT BANDAGING METHODS IN PATIENTS WITH BREAST CANCER RELATED LYMPHEDEMA : PRELIMINARY REPORT

A. Yaman¹, P. Borman¹, A. Pınar¹, F. Kul¹, L. Özçakar¹, F. Dinçer¹

¹Hacettepe University, Department of Physical and Rehabilitation Medicine, Ankara, Turkey

Introduction/Background

Upper extremity lymphedema is a concerning complication occurred after treatment for breast cancer. The aim of this study was to evaluate the comparative efficacy of a new 3M Coban 2 system bandaging and conventional multi-layer short-stretch bandaging, in regard to volume reduction, ultrasonographic measurements, functional status and quality of life(QoL) in patients with breast cancer related lymphedema(BCRL).

Material and Methods

A randomized, prospective single-blind study was performed with 40 patients suffering from BCRL. Patients were randomly allocated to Group 1 (skin care, manual lymphatic drainage(MLD), traditional multi-layer short-stretch bandaging five times per week, and lymphedema exercises) or to Group 2 (skin care, MLD and 3M-Coban 2 system, which was applied two times per week for 3 weeks and lymphedema exercises). The difference in volumes, excess volumes, ultrasonographic measurements, QoL and functional assessment scores were evaluated at baseline and after three weeks in all patients.

Results

The demographic and clinical properties are shown in Table 1. The lymphedema characteristics are shown in Table 2. After 3 weeks of complex decongestive therapy(CDT), outcome measures were compared with baseline levels. The volumes and excess volume differences, ultrasonographic variables, functional and quality of life scores in regard to baseline and after therapy levels in both groups are shown in Table 3. There were significant improvements in volumes, excess volumes, ultrasonographic measures, functional scores and QoL scores in both groups, at the end of therapies.

Table 1. The demographic and clinical variables of the patients in both groups		
	Group 1n=18	Group 2 n=22
Age (years) (mean±SD)	55,11±6,65	55,23±9,62
BMI (kg/m ²) (mean±SD)	29,84± 4,78	32,44±5,89
Education		
Illiterate	0	0
Primary school	9 (50%)	12 (54,5%)
High School	7 (38,9%)	4 (18,2%)
University	2 (11,1%)	6 (27,3%)
Marital status- married		
Single	2 (11,1%)	4 (18,2%)
Widow	0	3 (13,6%)
Occupation - housewife		
Worker	0	0
Retired	6 (33,3%)	5 (22,7%)
Officer	1 (5,6%)	2 (9,1%)
Exercise habit Yes		
No	5 (27,8%)	(20%)
No	13 (72,2%)	8 (80%)
Type of surgery-		
radical Mastectomy	0	0
modified radical mastectomy	17 (94,4%)	19 (86,4%)
lumpectomy	1 (5,6%)	3 (13,6%)
Breast cancer stage 1		
2	2 (11,1%)	1 (4,5%)
3	13 (72,2%)	15 (68,1%)
3	3 (16,7%)	6 (27,3%)
Histopathologic diagnosis		
Infiltrative ductal	15 (83,3%)	14 (63,6%)
Infiltrative lobular	2 (11,1%)	5 (22,7%)
Others	1 (5,6%)	3 (13,6%)
Adjunctive therapies		
Chemotherapy	17 (94,4%)	20 (90,9%)
Radiation therapy	14 (77,8%)	17 (77,3%)
Hormonal therapy	15 (83,3%)	17 (77,3%)

Table 3: The outcome measures before and after the CDT in both groups			
	Before therapy	After therapy	p
Volumes (cm³) (mean±SD)			
Group 1	2977±542.5	2744±486.1	.000
Group 2	3196±787.8	2952±685.6	.000
Excess volume (%) (mean±SD)			
Group 1	27.57±6.06	17.07±5.75	.000
Group 2	28.85±5.78	18.82±6.63	.000
Ultrasonographic variables			
Soft tissue thickness			
Elbow point			
Group 1	0.53±0.28	0.43±0.22	.017
Group 2	0.50±0.24	0.38±0.18	.001
Proximal, 10 cm proximal to the el-bow point			
Group 1	1.57 ±0.55	1.24±0.56	.000
Group 2	1.80 ±0.61	1.42±0.55	.000
Distal, 10 cm distal to the elbow point			
Group 1	1.63±0.35	1.33±0.28	.000
Group 2	1.74±0.52	1.35±0.43	.001
Compliance			
Elbow point			
Group 1	0.75±0.16	0.82±0.16	.179
Group 2	0.82±0.16	0.89±0.17	.066
Proximal, 10 cm proximal to the el-bow point			
Group 1	0.54±0.11	0.53±0.23	.873
Group 2	0.60±0.15	0.64±0.14	.175
Distal, 10 cm distal to the elbow point			
Group 1	0.55±0.14	0.54±0.12	.880
Group 2	0.56±0.11	0.55±0.13	.895
DASH			
Group 1	47.85±17.71	45.83±17.06	.623
Group 2	47.84±21.56	48.86±24.19	.794
EORTC-QLQ-C30			
Functional Scales QoL			
Physical functioning			
Group 1	62.97±20.09	68.89±19.39	.004
Group 2	57.00±20.56	68.33±22.88	.050
Role functioning			
Group 1	68.52±27.34	72.22±23.57	.561
Group 2	60.83±33.88	63.34±24.54	.771
Emotional functioning			
Group 1	70.83±23.44	74.53±26.10	.619
Group 2	68.34±22.72	77.50±20.44	.074
Cognitive functioning			
Group 1	77.77±16.15	81.48±16.04	.408
Group 2	66.66±28.61	74.99±28.34	.115
Social functioning			
Group 1	65.73±29.95	65.75±29.96	.999
Group 2	62.50±30.05	72.50±24.93	.175
Global health status			
Group 1	62.03±17.67	65.74±19.78	.466
Group 2	54.58±26.69	65.83±24.31	.170
EORTC-QLQ-BR23			
Functional scales			
Body image			
Group 1	68.06±23.95	67.59±21.73	.932
Group 2	64.18±32.35	74.59±23.95	.109
Sexual functioning			
Group 1	21.28±26.68	14.80±17.96	.351
Group 2	9.99±16.56	12.50±20.14	.452
Sexual enjoyment			
Group 1	26.66±26.30	33.32±22.23	.168
Group 2	15.14±22.91	15.15±27.35	.998
Future perspective			
Group 1	50.00±28.59	48.15±32.79	.718
Group 2	41.67±33.99	55.00±39.40	.073
Symptom scales			
Systemic therapy side effects			
Group 1	28.83±16.69	26.18±18.41	.344
Group 2	33.09±26.91	26.18±21.48	.119
Breast symptoms			
Group 1	24.07±20.58	18.52±16.06	.145
Group 2	28.33±23.32	21.67±18.41	.189
Arm symptoms			
Group 1	53.08±22.09	40.11±26.45	.076
Group 2	56.66±32.03	41.11±25.75	.091
Upset by hair loss			
Group 1	44.45±27.23	27.76±25.09	.296
Group 2	72.23±38.96	66.6±42.16	.741
LYMQoL-Arm			
Function			
Group 1	1.88±0.73	1.76±0.62	.294
Group 2	2.10±0.91	1.96±0.60	.393
Appearance			
Group 1	2.20±0.87	2.21±0.89	.951
Group 2	2.43±0.92	2.09±0.63	.045
Symptom			
Group 1	2.04±0.63	1.98±0.72	.764
Group 2	2.33±0.82	2.11±0.58	.126
Emotion			
Group 1	1.72±0.53	1.55±0.38	.253
Group 2	2.07±0.90	1.76±0.56	.066
Overall			
Group 1	7.20±1.78	7.40±1.54	.705
Group 2	5.00±2.88	7.00±1.77	.100

Conclusion

In conclusion Coban 2 layer bandaging performed as a part of CDT twice a week, for 3 weeks, can greatly reduce the volume as well as improve the disability and impaired QoL, similar to conventional short-stretch multi-layer bandages applied as a part of CDT. In addition, treatment with the 3M Coban 2 system was enabled time consuming, easy and comfortable application of bandaging with increased mobility of the upper extremity.

No conflict of interest

ISPR7-0541

Rehabilitation Addressing to Specific Issues - Other Specific Functions

GET UP AND WALK! THE SOONER THE BETTER: STRUCTURED PHYSICAL ACTIVITY PROGRAM DURING HOSPITALIZATION

X. valencia murua¹, I. Eceizabarrena Matxinandiarena¹, E. Martinez¹, A. Zabala¹, N. perez iglesias¹, I. ruiz de angulo¹, M. zabaleta¹, P. barrera², I. carbajo¹

¹Hospital Universitario Donostia, RHB, Donostia, Spain

²Real Sociedad de Fútbol, medical department, Donostia, Spain

Introduction/Background

Bed rest while admission makes a decisive contribution to a functional loss and rise of complications. Furthermore, there is a close relation between functional loss and nursing home admission, hospital re-admission and mortality. On the contrary, early mobilization is known to be beneficial and safe for in-patients.

The aim of the program was to demonstrate the feasibility and efficacy of an structured exercise based program on acute care hospital in-patients.

Material and Methods

In-patients were encouraged to walk while they were in admission (as soon as the physician in charge allowed the patient) the sooner and the more the better, using a pedometer. Besides, half-squat exercises were prescribed daily for each patient.

Functional status was measured using SPPB test before and after the program and number of steps per day, length of stay and bed rest related complications were recorded.

Results

108 patients were recruited in 3 months. There was only 1 minor complication related with the exercise program.

The SPPB test, showed a significant improvement of more than 2 points. There was also a significant improvement of more than 3 seconds in the 4 m. walking test.

Conclusion

The results suggest that an exercise based program with in-patients is feasible and safe. According to different published results, the improvement of 2 pt in SPPB as well as 3" in the walking test, have clinical and functional relevance but further studies with a control group are needed to determine whether this program reduces LOS, complications and improves functional status beyond usual care.

No conflict of interest

ISPR7-0624

Rehabilitation Addressing to Specific Issues - Other Specific Functions

CLINICAL CASE: REHABILITATION AFTER HAND REPLANTATION

A. Oliveira Pegado¹, M. Silva², D. Martins², J. Simão², C. Caseiro², M. Moura²

¹, Lisboa, Portugal

²Centro Hospitalar Lisboa Central, Medicina Fisica e Reabilitação - HSJ, Lisboa, Portugal

Introduction/Background

Nowadays, the challenge of upper limb replantation after amputation became an achievable reality, thoroughly improved in last decades and in constant evolution. The surgical option for replantation should take into account not only the exclusive analysis of the feasibility of replantation, but specially the potential of long term hands functional recovery.

Material and Methods

We report a case of an 40-year-old man, left-handed, with no relevant medical background, transferred from another Hospital, victim of traumatic amputation of the right hand, while is was working.

The warm ischemia time was 5 hours and he underwent Orthopaedics and Plastic and Reconstructive Surgery (PRC) combined surgery for replantation. Subsequently, he was referenced earlier to Physical Medicine and Rehabilitation (PRM), to perform a sequential program of rehabilitation as soon as possible.

Results

10 months after the accident, the patient has made a huge progress, being able to use his right hand in daily activities.

The rehabilitation program is still going on, as we expect much more improvements in sensitivity, mobility and function of the hand. (couldn't upload videos and pictures that show the gains along the program)

Conclusion

The aim of this work is to emphasize the importance of an early, thorough and extensive rehabilitation program as a key of functional recovery and long-term prognosis in these lesions and its role in preventing complications.

No conflict of interest

ISPR7-0710

Rehabilitation Addressing to Specific Issues - Other Specific Functions

A HUNTING STORY

**E. CUGY^{1,2,3}, M. ENGELHARDT³, W. GAUCHON³, L. NOUARD³, G. MOUCHEBOEUF³,
L. DEBERGE³, P. GASSIE³, S. MILHE DE SAINT VICTOR⁴, P. DEHAIL³**

¹*CH Arcachon, Service de Médecine Physique et de Réadaptation, La Teste de Buch, France*

²*Université de Bordeaux, EA 4136, Bordeaux, France*

³*CHU Bordeaux, Service de Médecine Physique et de Réadaptation, Bordeaux, France*

⁴*CHU Bordeaux, Service d'Oto-Rhino-Laryngologie, Bordeaux, France*

Introduction/Background

Gunshot wounds of the internal carotid artery are associated with a high mortality rate, largely related to stroke.

Material and Methods

Case report

Results

A 74-year-old man was admitted after sustaining a single gunshot wound to the neck with an expanding and compressive hematoma on the left. Because of active bleeding, he was taken immediately to the operating room for exploration and hemostasis. The bullet was extracted from the bottom of the left pterygo-maxillary fossa. Pharynx exploration noted lacerations.

Computed tomography angiography demonstrated left internal carotid pseudo-aneurysm that required an endovascular exclusion treatment after demonstration of the effectiveness of the Willis polygon. The fracture of the mandible was treated surgically at day 10.

Because of swallowing disorders due to left cranial nerves palsies (V, VII, IX, X, XII), apparently related to trauma, and delay in the control of the right side (without ischemic lesion or hemorrhage on MRI), the patient was not able to speak and eat normally. Furthermore he experimented inhalation pneumonia, extubation failure and needed tracheotomy and enteral feeding.

We established a protocol whose originality is to involve a multidisciplinary rehabilitation team (physiotherapist, speech therapist, dietician) around transversal objectives: respect for nutritional status, improved respiratory capacity, tracheotomy decannulation (voice and cough training, salivary management) and oral intake improvement.

Speaking was started with a phonatory valve. Food trials began at day 125 by adopting a safety posture and gradually enlarged textures. Nutritional supplements made it possible to avoid undernourishment while adapting to muscular fatigability. The tracheostomy and gastrostomy were removed respectively at day 161 and day 171. He was discharged home after 176 days in good general condition. **Conclusion**

Combination of endovascular exclusion of the left internal carotid artery and specific rehabilitation enabled to achieve recovery of swallowing, speaking and motor functions.

No conflict of interest

ISPR7-0748

Rehabilitation Addressing to Specific Issues - Other Specific Functions

PARTIAL SACRECTOMY BY CHORDOMA: FUNCTIONAL REPERCUSSION IN FEMALE PATIENT - CASE REPORT

E. Fulgueiras Baci¹, G.M.L. Mollo¹, J.P. Carradori¹, N.M. Tolu¹, M.B. Jano¹, P. Piñeyro¹, G. Lemus Larraalde¹, A.D. Paradiso¹

¹Hospital Interzonal General de Agudos "Gral. San Martín", Physical Medicine and Rehabilitation Service, La Plata, Argentina

Introduction/Background

Chordomas and metastases affecting the sacrum are the most frequent signs of partial sacrectomy. The pathology evolution, together with any potential surgical procedures, can establish neurological compromise due to nerve root involvement and any change in the anatomy of the pelvic floor.

Material and Methods

Case Report: A 38-year-old female patient, diagnosed with sacral chordoma involving S3-S4-S5 vertebrae, 13 cm in diameter, and peritoneal injuries. Partial sacrectomy is performed with S2 root preservation, without pelvic floor reconstruction. Post-operative delayed adjuvant radiotherapy is performed.

Patient evaluation and follow-up are performed, as well as study of pelvic floor and organs involved with complementary methods. A bibliographic search is made on pelvic floor rehabilitation in similar cases.

The sequelae resulting from the intervention on nerve and pelvic structures and their rehabilitation options are analyzed, as well as their incidence on the quality of life of the patient.

Results

The patient presents sphincter disorders and sensory-motor alterations following surgery. There is little literature on pelvic floor rehabilitation in cases such as the one presented. *(Final results in process: post-radiotherapy re-evaluation still pending)*

Conclusion

(Conclusion in process: post-radiotherapy re-evaluation still pending)

No conflict of interest

ISPR7-0892

Rehabilitation Addressing to Specific Issues - Other Specific Functions

EFFECTS OF PULMONARY REHABILITATION ON EXACERBATION RATE

F. Pereira¹, A. Maia e Silva¹, O. Cardoso¹, M. Saavedra¹, A. Castro¹

¹Hospital da Senhora da Oliveira, Physical Medicine and Rehabilitation, Guimarães, Portugal

Introduction/Background

Pulmonary rehabilitation is an evidence-based, multidisciplinary and comprehensive intervention for patients with chronic respiratory diseases who are symptomatic and often have a declining capacity for activities of daily living. Our aim was to evaluate the effect of a Pulmonary Rehabilitation Program (PRP) on exacerbations rates in patients with chronic pulmonary disease.

Material and Methods

Retrospective analysis of patients with chronic lung disease submitted to PRP. We assess the number of emergency visits and hospitalizations one year before and after starting rehabilitation. It was used the IBM-SPSS (paired t test).

Results

We included 42 patients (11 women and 31 men) with a mean age of 60.26 years. 30 patients had chronic obstructive pulmonary disease. Most patients (85.7%) had at least one comorbidity. The number of emergency visits before and after the PRP were 1.76 and 0.76 respectively ($p = 0.008$). The number of hospitalizations were 0.74 and 0.33 ($p = 0.048$). The number of hospitalization days corresponded to 4.62 and 2.48 ($p = 0.0273$). There was a statistically significant association between the number of emergency visits and hospitalizations after PRP. There were no significant differences on the number of hospitalization days.

Conclusion

Pulmonary Rehabilitation Program had an effective intervention reducing exacerbations rates and hospitalizations.

No conflict of interest

ISPR7-0021

Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

**USING FUNCTIONAL GAIN (FIM+FAM) SCORES TO REVIEW OUTCOMES FOLLOWING
ADMISSION TO A SPECIALIST AMPUTEE REHABILITATION UNIT**

S. Ankolekar¹

¹Norfolk Community Health and Care NHS Trust, Specialist Rehabilitation, Norwich, United Kingdom

Introduction/Background

Specialist amputee rehabilitation units in United Kingdom provides treatment and care for people who have lost a limb, and who need further support before returning home from an acute hospital. People using prosthesis benefit from short periods at a specialist amputee rehabilitation unit when their mobility has reduced for any reason. Outcome measures are essential to evaluate the benefit of rehabilitation and no single measure is suitable for all settings.

The purpose of this study is to use the Functional Gain (FIM+FAM) scores to review outcomes following admission to a Specialist Amputee rehabilitation unit.

Material and Methods

FIM+FAM scores which include the Functional Independence Measure (FIM) is an 18 item measure of disability with each item being scored between 1 and 7. The Functional Assessment Measure (FAM) enhances FIM with an additional 12 items also scored between 1 and 7 largely looking at cognitive and psychosocial function. Higher scores indicate greater independence/less disability. We collected the FIM+FAM scores of all admission in 2014/15.

Results

In 2014/15 the unit had 66 admissions and 69 discharges. The mean length of stay was 29 days. The mean FIM+FAM motor score on admission and discharge was 72.7 and 86.7 while the mean FIM+FAM cognitive score on admission and discharge was 82.1 and 86.5 respectively.

Conclusion

Admissions to the Specialist Amputee rehabilitation unit lead to a mean FIM+FAM motor gain of 14 and Cognitive gain of 4.3. We conclude that people admitted to a Specialist Amputee rehabilitation unit show improvement in their FIM+FAM Motor score.

No conflict of interest

ISPR7-0028

Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

MOBILIZATION STATUS OF DIABETICS VERSUS NON-DIABETICS AFTER BELOW KNEE AMPUTATION: A COMPARISON

A. Saraf¹

¹Marwari Hospital, Orthopaedics, Amritsar, India

Introduction/Background

Mobility following below knee amputation has a direct impact on the quality of life. Early and independent mobilization develops confidence in the below knee amputee. This helps the patient to become psychologically, socially and economically independent. In this study we compared mobilization status of diabetics versus non-diabetics amputees. We also prepared a note of type of supports used and duration of prosthetic usage by both the groups postoperatively.

Material and Methods

This was a 2 years prospective and 10 years retrospective study. A total of 144 below knee amputees using various supports for mobilization were included in this study of which 63 were diabetics and 81 non diabetics. They were followed for a minimum period of 1 year. On follow up they were observed for the type of support used for mobilization.

Results

92 patients initially used crutches, 40 used walker, 7 used wheelchair and 5 remained bed ridden before they died. Of 92 patients who were using crutches, 22 were in diabetic group and 70 in non diabetic group. 31 patients of diabetes and 9 patients of non diabetic group used walker. 5 patients in diabetic group and 2 patients in non diabetic group could mobilize only on a wheelchair. All 5 bedridden patients were in diabetic group. 104 patients started using prosthesis for mobilization once their stumps had healed adequately of which 30 were in diabetic group and 74 in non diabetic. The result was statistically significant.

Conclusion

Non diabetics preferred crutches and prosthesis for mobilization in comparison to diabetics. More diabetics were bedridden or on wheel chair after amputation. Non diabetics were using prosthesis for longer time in comparison to diabetics. Major causes for this difference was preoperative lower ambulatory grading in diabetics, weaker muscle mass, old age, co-morbid conditions, increased incidence of infection and prolonged stump healing time.

No conflict of interest

ISPR7-0056

Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

FUNCTIONAL OUTCOME OF LOWER LIMB AMPUTEES WITH END-STAGE RENAL DISEASE

A.A. Tsur¹

¹Galilee Medical Center, Rehabilitation, Nahariya, Israel

Introduction/Background

The lower survival of the end-stage renal disease (ESRD) patients after amputation is not surprising in view of the overall mortality among them. Their potential for full rehabilitation following amputation is poor. Our aim was to evaluate the functional achievements at the end of the rehabilitation procedure, and the survival, among amputees treated by dialysis, compared to amputees without kidney disease.

Material and Methods

46 patients, 35 men and 11 women after lower limb amputation (LLA), were recruited; 19 were treated by dialysis and 27 did not suffer from chronic kidney disease (CKD).

The research and the control groups were divided in 3 sub-groups:

No. 1: included patients who achieved independence in their ADL, were able to walk on plane, up and down stairs, and assemble the prostheses by themselves.

No. 2: included patients which arrived only to partial independence in their ADL, were able to walk on plane, but expressing difficulty to use the stairs and to assemble the prostheses.

No. 3: included patients who did not achieved the ability to walk with the prostheses.

Results

The survival of the LLA treated by dialysis was shorter compared to those who did not suffer from CKD (Mantel-Cox, $p=0.018$).

The survival after the amputation among the patients who did not suffer from CKD and belonged to sub-groups no. 1 or no. 2, was significantly longer compared to the amputees who belonged to sub-group no. 3 (Mantel-Cox, $p=0.011$).

Among the patients who were treated by dialysis and belonged to sub-group no. 1, the odds of survival and the length of life after amputation were higher compared to sub-group no. 2 and sub-group no. 3 (Mantel-Cox, $p=0.034$)

Conclusion

Survival was significantly higher in LLA without CKD. The level of mobility and the independence in the ADL, had significant influence on the survival of those patients.

No conflict of interest

ISPR7-0361

Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

**PROFILE OF AMPUTEES PATIENTS PROSTHETIZED IN SANTA CASA DE SAO PAULO
REHABILITATION CENTER BETWEEN 2009-2015**

E. Rocha¹, E. Suzigan²

¹, Santo André, Brazil

²Santa Casa Sao Paulo, Rehabilitation, Sao Paulo, Brazil

Introduction/Background

Evaluate the age, gender and level of amputations of lower limbs in patients treated and prosthethized in the Rehabilitation Center of Santa Casa de São Paulo from 2009 to 2015.

Material and Methods

Evaluation of all patients records who received prosthetic prescription in lower limb amputee rehabilitation clinic from March 2009 to December 2015.

Results

Were evaluated 843 patients who received prostheses, 70% male and 30% female, with a mean age of 46.6 years, and 320 elderly patients (> 60 years). 329 prostheses were prescribed for transtibial amputations, 271 for transfemoral, 51 to disarticulation knees, and 43 others .

Conclusion

The amputee clinic of rehabilitation service of Santa Casa de São Paulo has a younger population than general literature, with a male predominance.

No conflict of interest

ISPR7-0427

Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ROBOTIC GAIT TRAINING GE-O SYSTEM IN PATIENTS WITH LOWER LIMB AMPUTATION: A PILOT STUDY

D. Jorge Filho¹, D. Mitiyo Odagiri Utiyama², C. Dias da Silva², C. Cardillo², A. Beas², C. Moreira², L.R. Battistella²

*¹Physical Medicine Institute – IMREA/HC/FMUSP,
Clinical Hospital of the University of Sao Paulo- Brazil, São Paulo, Brazil*

²Physical Medicine Institute, Clinical Hospital of the University of Sao Paulo, Sao Paulo, Brazil

Introduction/Background

After amputation of lower limbs, there is a decreased quality of life and difficulty to perform activities such as rising from a chair, walk and to go up or down stairs. People with above knee amputation feel unsafe and have balance deficit even with prosthesis. The robotic device G-EO System, for gait training, has shown good results and contributed to improving balance and gait's quality in patients with spinal cord injury and stroke.

Material and Methods

Were selected seven patients who performed IMREA rehabilitation's program. They were submitted, before and after treatment, to evaluations of muscle strength, ROM, sensitivity, TUG, ability to climb stairs and walking 10 minutes test. The training was performed 2 to 3 times per week for 20 minutes.

Results

There was a significant increase on gait speed with average from 0,93 km/h to 1.44 km/h ($p=0,005$). There was an increase of the steps' number from 717 steps in the beginning of program to 1210 at the end ($p = 0.0007$). Regarding the scales there was significant difference in walk test 10 m, beginning with 22.04 min and ending with 14.07 min ($p = 0.020$).

Conclusion

The running gear GE-O system, for robotic gait, seems an effective resource in the rehabilitation program of patients with lower limb amputation. The authors observed increases in various parameters such as: increased cadence and safety of gait.

No conflict of interest

ISPR7-0476

Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

EFFECT OF THE IN-PATIENT REHABILITATION ON THE FUNCTIONAL INDEPENDENCE IN THE LOWER EXTREMITY AMPUTEES

I. Vareka¹, T. Osladil², M. Jindra², E. Vanaskova¹, R. Varekova³

¹University Hospital and Medical Faculty- Charles University Hradec Kralove, Department of Rehabilitation, Hradec Kralove, Czech Republic

²University Hospital Hradec Kralove, Department of Rehabilitation, Hradec Kralove, Czech Republic

³Faculty of Physical Culture- University of Palacky, Department of Natural Sciences in Kinanthropology, Olomouc, Czech Republic

Introduction/Background

In our previous study, we scrutinized the effectiveness of repeated in-patient rehabilitation in the lower extremity amputees. The results were encouraging, so we repeated the study with more participants.

Material and Methods

The experimental groups consisted of 21 above-knee amputee men (MA group)(68.6 years, SD 6.1) and 23 below-knee ones (MB group)(64.7 years, SD 6.7) as well as 10 below-knee amputee women (WB group)(72.7 years, SD 8.3). We found the group of the above-knee amputee women (n=6) too small for statistic analysis. The Functional Independence Measure scale (FIM) was performed at the admission and the discharge both in the first and second in-patient rehabilitation (A1, A2, D1, D2). We used the Wilcoxon test ($p < 0.05$) to find out the significance of score changes between D1 and D2 in the selected FIM items (walking, stair climbing) or a group of the items (Self-care = ADL).

Results

In the MA group, the improvement was significant in the stair climbing only, walking and ADL stayed at the level of the first in-patient rehabilitation discharge. Both the MB and WB groups improved in walking and stair climbing, the difference was bigger in the WB group

Conclusion

The result confirmed the previous one – the repeated in-patient rehabilitation is beneficial in the lower limb amputees who reached the basic skills in the first rehabilitation.

No conflict of interest

ISPR7-0883

Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

ASSESSMENT OF LOWER LIMB AMPUTATION PATIENTS FOR THE INITIAL PROSTHETICS

A. Vetra¹, K. Lacis², G. Rajpalis², E. Legzdina³, V. Logins¹

¹Riga Stradins University, Rehabilitation Department, Riga, Latvia

²DDA Orthopaedics-Latvia, Orthopaedic Workshop, Riga, Latvia

³National Rehabilitation center Vaivari- Latvia, Outpatient Rehabilitation Department, Jurmala, Latvia

Introduction/Background

Demographic changes, such as aging society and increased numbers of diabetes patients, have led to an increase in amputations.

Material and Methods

It was analyzed primary selection prosthetics results.

Results

A study before 2010 for the prosthetics results of people with lower limb amputations in Latvia found that among 183 patients, 50% use their prostheses actively for more than 6 hours a day, 30% did not use them at all or used them for less than 3 hours a day, and 20% used them for 3-6 hours a day.

The next study, when a decision on prosthetics began multidisciplinary rehabilitation team, included 173 patients (two thirds with the above-knee amputations) with lower limb amputations who for initial prosthetics were evaluated with Amputee Mobility Predictor (AMP).

Of 173 patients who were evaluated, only 109 received a decision on primary prostheses, while in 51 cases the process was delayed for 1–3 months, in 12 cases, it was decided that prostheses would not be purposeful.

More than 25% of those who followed the recommended treatment and rehabilitation programme to prepare the amputation stump, reduced contracture and enhanced physical working abilities were declared to be appropriate for further prostheses. **Conclusion**

This indicates serious shortcomings in medical treatments during the early post-amputation period and importance of multiprofessional rehabilitation.

No conflict of interest

ISPR7-0910

Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

HALF PELVIS, WHOLE WOMAN. ABOUT A CASE

E. Fulgueiras Baci¹, M.B. Jano¹, A.D. Paradiso¹, G.M.L. Mollo¹

¹Hospital Interzonal General de Agudos "Gral. San Martín", Medicina Física y Rehabilitación, La Plata, Argentina

Introduction/Background

The most common causes of hemipelvectomy are malignant tumors and, to a lesser extent, infections and trauma. It is an infrequent level of amputation and difficult to fit out with a prosthesis.

Material and Methods

A clinical-physiatric assessment and follow-up of a 49-year-old female patient undergoing left hemipelvectomy due to different complications after a public road accident. The rehabilitation process from her amputation to the present is analyzed, taking into account the emerging socioeconomic and bureaucratic obstacles.

Results

The patient has achieved adequate functionality, independence and social reintegration.

Conclusion

Within our environment it is frequent to observe that prosthesis obtain times are affected by socio-economic and bureaucratic barriers. However, the patient's motivation and resilience are important in coping with his amputation, rehabilitation and such obstacles. It is also essential to measure the achievements with appropriate tests. Social reintegration is the ultimate goal of any rehabilitation process and it has been fulfilled in the case presented because of her resilience and ability to overcome adversity.

No conflict of interest

ISPR7-0942

Rehabilitation Addressing to Specific Issues - Rehabilitation after Limb Amputation

FACTORS THAT INFLUENCE THE USE OF THE PROSTHESIS IN PATIENTS WITH AMPUTATION OF UPPER LIMB, TREATED IN THE REHABILITATION SERVICE OF A ACUTE HOSPITAL

G.M.L. Mollo¹, C.I. Arriola¹, B.M. Bondar¹, P.E. Villarreal¹

¹Servicio de Rehabilitación del HIGA Gral. San Martín La Plata Buenos Aires Argentina

Objective:

"To know the factors that modify the performance of the use of the prosthesis in the Performance of basic daily activities, of patients with high level of amputation of lower limb ".

Materials and methods:

Non experimental exploratory qualitative study. Individual semi-structured interviews were developed and recorded in audio, then they were transcribed looking for possible factors involved in the non-use of the prosthesis. Variables are identified by identifying ten codes to find points in common in the interviews.

The target population was a group of patients with level amputation of Upper limb, who were attending the gymnastics service of Physical Medicine and Rehabilitation in our hospital, period from July to November in 2014; simple Of 7, equipped.

Results:

A significant percentage of the patients used the prosthesis only in the institution, and the rest was able to leave to their houses with the prosthesis.

Most of the patients did not require psychological help.

Conclusion:

Knowing these factors made it possible to implement different strategies for the purpose to integrate every aspect of patients, physical, psychic and spiritual, and not only the technical-biomechanical aspect for the use of the prosthesis

Document not received

ISPR7-0057

Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

THE EFFECT OF ADDITIONAL WHOLE BODY VIBRATION EXERCISES ALONG WITH HOME EXERCISE PROGRAM ON MUSCLE STRENGTH IN PATIENTS WITH POSTPOLIO SYNDROME

M. Topaloğlu¹, A. Ketenci¹

¹Istanbul University- Istanbul Faculty of Medicine, Istanbul, Turkey

Introduction/Background

The aim of this study is to investigate the effectiveness of whole-body vibration (WBV) exercises with home exercise program and patient education; on muscle strength, fatigue and quality of life in patients with postpolio syndrome (PPS) in comparison to home exercise program and patient education.

Material and Methods

We conducted a prospective, randomized, controlled trial involving 14 patients with PPS. Patients were randomized to two group: the first group (WBV group, n=7) whole body vibration, home exercise program and patient education; the second group (control group, n=7) home exercise program and patient education. Patients were evaluated knee isometric extension peak torque (IMEPT), isokinetic extension peak torque (IKEPT), isokinetic flexion peak torque (IKFPT), fatigue severity scale (FSS), fatigue impact scale (FIS), Nottingham Health Profile (NHP), serum creatine kinase (CK), aspartate aminotransferase (AST) ve alanine aminotransferase (ALT) between baseline and end of the treatment. Statistical tests were conducted at the 0.05 significance level for all outcome measures.

Results

At the end of treatment; home exercise program was effective to increase the muscle strength of the knee with PPS patients ($p < 0.05$). In the intervention group that WBV exercises with home exercise program was no significant difference on muscle strength parameters, fatigue and quality of life score. Muscle damage markers (CK, AST and ALT) were no significant difference in both group.

Conclusion

In our study, both exercise group increased the muscle strength. There is no significant difference between the two group. The long term follow-up studies are need for assess the effectiveness of WBV exercises with PPS patients.

No conflict of interest

ISPR7-0123

Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

EFFECTIVENESS OF VESTIBULAR REHABILITATION IN PATIENTS WITH INSTABILITY AND DISTURBANCES

M. Cerdan¹, W. Rosales¹, E. Flores¹

¹Hospital Universitario, Servicio De Rehabilitacion, Mendoza, Argentina

Introduction/Background

Vestibular Rehabilitation (VR) is used for patients with instability, dizziness and lightheadedness related pathologies balance system. The RV Stimulates: Neuroplastic compensation mechanisms that correct abnormalities of spatial orientation. The objective of this study was to evaluate the effect of vestibular rehabilitation on balance, risk of falls, Daily Activities and Participation of Patients with unstable peripheral origin.

Material and Methods

Patients (n= 18) with gait instability, with diagnosis of benign paroxysmal positional vertigo (BPPV), unilateral vestibular hypofunction and multisensory failure elderly Derivatives Service Rehabilitation University Hospital (UNCuyo) Between July 2014 and August 2016 , 72% women, average age 62 ± 17 . In BPPV repositioning maneuvers were performed and then 10 rehabilitation sessions with a frequency of three times a week with duration of 40 minutes. Vestibular Exercises habituation, adaptation, static equilibrium and dynamic is performed and the test, dizziness Handicap Inventory (DHI), the walk test Functional Index (FGA) and Clinical Testing Integration and Sensory Balance (CTSIB) were applied before and after the rehabilitation process . Finally to compare means Student test was used for the first two and Wilcoxon for third in function normal.

Results

Significant differences between the variables studied ALL before and after rehabilitation were found; DHI paragraph $p = 0.0009$, $p = 0.00001$ FGA, and $p = 0.004$ for CTSIB.

Conclusion

Vestibular rehabilitation has shown in this sample be significantly effective for improving balance, risk of falls, Activities and Participation in Everyday Life.

No conflict of interest

ISPR7-0171

Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

THE PROPRIETARY METHOD OF BALANCE CORRECTION IN PATIENTS WITH POST-STROKE ATAXIA

M. Abroskina¹, S. Ismailova², S. Kaygorodtseva², S. Prokopenko²

¹Krasnoyarsk State Medical University, Department of Nervous Diseases and Medical rehabilitation, Krasnoyarsk, Russia

²V.F. Voino-Yasenetskiy Krasnoyarsk State Medical University, Department of Nervous Diseases, Krasnoyarsk, Russia

Introduction/Background

Impairment of static and locomotor functions in patients with stroke develop in 38-46% of cases. The existing methods of balance correction is based on the training and targeted shift of the center of gravity in the frontal and horizontal planes.

Material and Methods

The article presents the results of the research on the effectiveness of the proprietary method of balance correction by using the dosed vertical oscillation procedure in patients with vestibular-atactic syndrome in the ischemic stroke recovery period. Inpatients (n=49) diagnosed with post-stroke ataxia were randomly divided into 2 groups. In the main (I) group (n=24) patients received traditional rehabilitation treatment and balance correction training using the proprietary method. The originality of method is based on activating the vestibular analyzer and postural synergies by shifting the center of gravity in the vertical plane. Group II (n=25) used the training on biofeedback (BFB) platforms alongside the traditional restorative treatment. Methods: Computer stabilometry (CS), laser analyzer of kinematic gait parameters (LA-1), Berg Balance Scale (BBS), ICARS, Dynamic Gait Index (DGI).

Results

In both groups a statistically significant decrease in the main parameters of the CS and LA-1, and statistically significant improvement of the DGI, BBS and ICARS were observed after the course of treatment. When comparing the data of CS, BBS and DGI no statistically significant differences were found between group I and II.

Conclusion

The proprietary method is effective in restoring balance and gait in post-stroke patients and comparable with training on BFB platforms.

No conflict of interest

ISPR7-0453

Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

ENHANCING BRAIN FUNCTIONS AND SLEEP ACTIVITY: INSIGHTS FROM MOTOR IMAGERY PRACTICE AND TRANSCRANIAL MAGNETIC STIMULATION DURING ARM IMMOBILIZATION

U. Debarnot¹, S. Virginie², G. Aymeric¹, P. Aurore², S. Sophie²

¹*Université Claude Bernard Lyon 1, Inter-university Laboratory of Human Movement Science- EA 7424, VILLEURBANNE, France*

²*University of Geneva, Department of Neuroscience- Faculty of Medicine, Geneva, Switzerland*

Introduction/Background

Short period of arm-immobilization contribute to reduce the excitability of the cortical motor representation of the immobilized part. Motor imagery (MI) is a cost-effective and relevant alternative to actual movement as a means to activate motor networks in patients with peripheral injury. This study aimed to investigate whether MI might compensate the adverse effects induced during 12 hours of arm-immobilization, and whether it may trigger subsequent sleep features.

Material and Methods

Mental rotation, transcranial magnetic stimulation (TMS) and polysomnographic recordings were used to respectively investigate changes in the sensorimotor representation, cortical excitability and sleep consolidation. After being tested following an ordinary day, participants (n= 14) were assigned either to MI training (5 X 15 minutes) or neutral activity following 12 hours of right arm immobilization.

Results

Results from the mental rotation task demonstrated that participants who benefited from MI training were faster to identify pictures of the right immobilized hand. Likewise, recruitment curves with TMS reliably showed that MI prevented the corticomotor reduction induced by immobilization. Finally, sleep consolidation was found to be modulated after exposition to MI practice.

Conclusion

These results provided evidence that MI prevents the slowdown of the sensorimotor processes as well as the maladaptive neuroplasticity induced by 12 hours of arm-immobilization. Practically, these data shed light on how scheduling relevantly motor imagery interventions and subsequent sleep periods for fruitful applications that could enhance rehabilitation outcomes.

No conflict of interest

ISPR7-0485

Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

DOES ANODAL TRANSCRANIAL DIRECT CURRENT STIMULATION BOOST THE EFFECT OF MOTOR IMAGERY PRACTICE ON POSTURAL CONTROL?

E. Saruco¹, F. Di Rienzo¹, S. Nunez-Nagy², M.A. Rubio-Gonzalez³, P. Jackson⁴, C. Collet¹, A. Saimpont¹, A. Guillot¹

¹Université Claude Bernard Lyon 1, LIBM, Villeurbanne cedex, France

²Universidad de Alcalá, Unidad de Fisioterapia, Madrid, Spain

³Facultad de Ciencias- UNED, Departamento Automática e Informática, Madrid, Spain

⁴Université Laval, Ecole de Psychologie, Québec, Canada

Introduction/Background

The possibility of adequately performing everyday tasks requires a fine postural control. In the case of severe motor impairment, postural control recovery is one of the main and first objectives of functional rehabilitation programs. Among the various range of training methods used to improve balance and postural stability, motor imagery practice (MIP), which is the repeated internal representation of a movement without engaging its physical execution and which shares a neurofunctional equivalence with physical practice, provided promising results. It has also been suggested that transcranial direct current stimulation (tDCS) applied over the primary motor cortex is likely to potentiate MIP benefits on upper-limb motor tasks. Yet, the advantages of combining both techniques has not been explored for lower-limb functional movements and postural control. This study aimed at investigating the impact of a MIP session and the additional effect of tDCS on postural control training.

Material and Methods

14 participants performed a dynamic postural task, which consisted in shifting their center of pressure to validate targets appearing on a screen, before and after two experimental (MIP+anodal tDCS and MIP+sham tDCS) and one control (control task+sham tDCS) counterbalanced conditions.

Results

Data revealed *i*) a significant decrease of the time required to perform the postural task after one session of MIP, and *ii*) additional performance gains when MIP was coupled with anodal tDCS, in particular when the task involved fine postural adjustments.

Conclusion

Present data highlight the short-term effects of MIP and suggest that combining both techniques might be an effective alternative to physical practice for postural control training among easily fatigable and motor impaired persons.

No conflict of interest

ISPR7-0529

Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

STRATEGIES AND DECISION MAKING IN PREVENTION AND MANAGEMENT OF NEUROMUSCULAR SCOLIOSIS

L. Labianca^{1,2}, M. Pane², E. Mercuri², F. Turturro³, A. Montanaro³, M. Fava⁴

¹Fondazione Sovena- IRIFOR- II Faculty of Medicine La Sapienza University of Rome-, Orthopedics and Traumatology, Rome, Italy

²Sacro Cuore di Gesù University- A.Gemelli Hospital- Rome, Child neuropsychiatry, Rome, Italy

³II Faculty of Medicine La Sapienza University of Rome, Orthopedics and Traumatology, Rome, Italy

⁴IRIFOR Institute of Research- Education and Rehabilitation, AAIEN, Rome, Italy

Introduction/Background

The therapy of neuromuscular scolioses has to be tailored to the needs to the individual patient; there are no universally valid schemes of treatment. Detailed knowledge of neuromuscular diseases and their course is essential. For this reason, an interdisciplinary team is desirable; only in this way can all medical and surgical aspects of the underlying disease--which interfere with the therapy of the scoliosis--be treated successfully.

Because neuromuscular scoliosis is caused by insufficiency of active stabilizers of the spine an early rehabilitation program is mandatory to avoid this impairment.

Material and Methods

Data of 213 patients affected by neuromuscular diseases(SMA,Duchenne,Cerebral Palsy)have been collected and analyzed about type and time of rehabilitation,surgical procedures,postural abilities.

A Quality of Life evaluation has been applied and Cobb angle has been calculated.

Patients underwent early rehabilitation program for scoliosis prevention was the study group,the others the control group.Statistical analysis has been performed with T-test and significance has been set at values <0,05

Results

A slight difference about scoliosis surgery has been demonstrated. Quality of Life score were significantly higher in the study group. The mean Cobb angle was significantly lower in the study group.

Conclusion

Continuously improving techniques of conservative management, comprising bracing and physiotherapy, together with correctly timed surgery incorporated in the process of rehabilitation, provide the optimal care for patients.

No conflict of interest

ISPR7-0565

Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

IDENTIFICATION OF FUNCTIONAL CONDUCTS AND QUALITATIVE OBSERVABLE COMPONENTS IN THE MOTOR TYPICAL AND ATYPICAL DEVELOPMENT OF MINOR BABY OF 14 MONTHS

M.I. Rodríguez Sáez¹, A. Moraga², F. Solís³, P. San Martín³

¹*Teletón Chile, Terapia ocupacional, Santiago de Chile, Chile*

²*Teletón Chile, Kinesiología, Santiago de Chile, Chile*

³*Teletón Chile, DIDE, Santiago de Chile, Chile*

Introduction/Background

Introduction: The tests that assess motor development in young infants answer different age ranges and only a few consider qualitative components of motor control, in various ways, showing difficulties in sensitivity detection of typical and atypical signs, shown in motor development. **Goal:** To identify through consensus, qualitative aspects of motor control that relate with postural development and functionality, to develop a qualitative assessment of motor development for infants between 2 to 14 months old, previously identified with DD or diagnosed with CP.

Material and Methods

Method: 31 professionals, including physicians, physiotherapists and occupational therapists, who met selection criteria, participated in a Delphi consensus, done by three rounds of surveys, with feedback and coding concepts using the software *Atlas.ti*. The test was also organized in structure and content, making a focus group, consensus during a third round between participants, measuring the results through frequency analysis.

Results

Results: A variety of qualitative components of motor control observed clinically were found in typical and atypical motor development. Alignment, movement and support base, selected through consensus, were integrated into a preliminary test, developed to detect functional motor behavior of motor development in infants between 2 to 14 months.

Conclusion

Conclusions: The consensus was reached in different qualitative components to observe typical and atypical development strategies of infants, which would allow to include this information in the construction of a specific qualitative assessment.

No conflict of interest

ISPR7-0633

Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

WHY GET WET? NEUROMUSCULAR CONTROL OF THE LOWER LIMB IN FUNCTIONAL EXERCISE IN WATER COMPARED TO ON LAND: IMPLICATIONS FOR CLINICAL PRACTICE

S. Heywood¹, E. Villalta², J. McClelland³, P. Geigle⁴, A. Rahmann⁵, R. Clark¹

¹University of the Sunshine Coast, Health and Sport Science, Sippy Downs, Australia

²St Vincent's Hospital Melbourne, Physiotherapy Department, Melbourne, Australia

³Latrobe University, Physiotherapy Department, Melbourne, Australia

⁴University of Maryland, Neurology, Baltimore, USA

⁵Australian Catholic University, Physiotherapy, Brisbane, Australia

Introduction/Background

The aquatic environment provides many unique advantages with exercise particularly related to the off-loading of compressive joint force due to buoyancy. Despite these benefits and growing evidence of effectiveness, there is a paucity of research examining muscle activation in aquatic exercises. The primary purpose of this study is to evaluate muscle activation produced during functional lower limb exercises commonly used in aquatic rehabilitation. This has not been investigated previously.

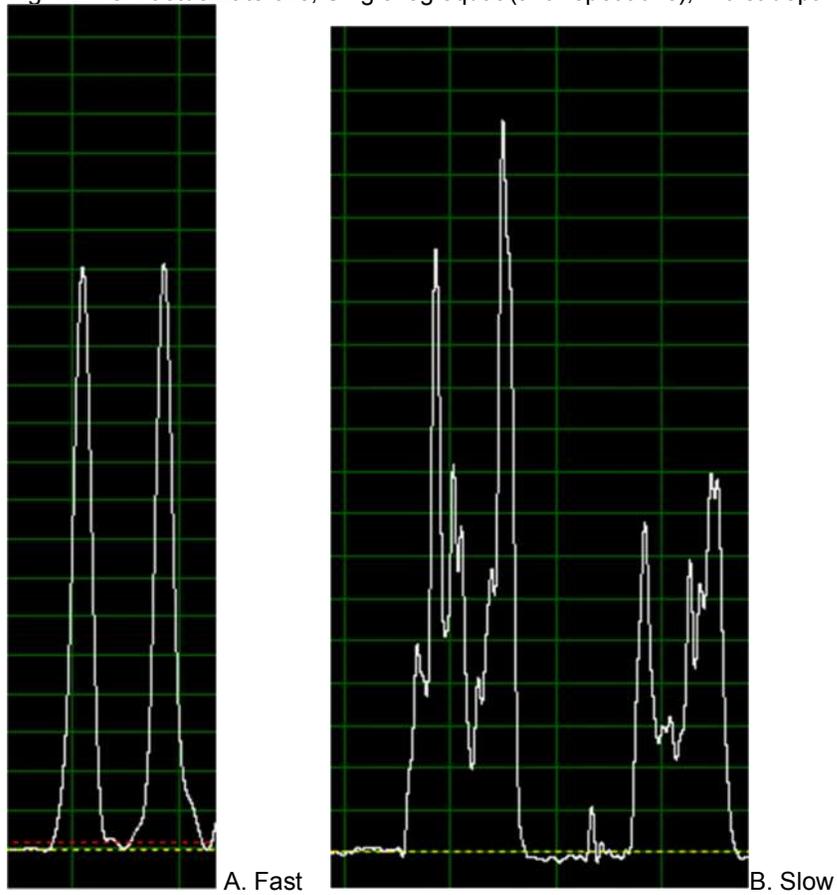
Material and Methods

Study design: Case series in healthy adults. Protocol and outcome measures: Muscle activation, including the pattern and intensity of muscle contraction, measured using surface electromyography (sEMG) in quadriceps, hamstrings and gastrocnemius. Each participant will complete functional exercises in water including squat and calf raise on land and in waist deep water at three speeds .

Results

Vastus Lateralis activation is very low in slow squats in water but can be increased five fold at faster speeds, taking the intensity to approximately half of that on land. Slow squats in water demonstrate a dip in activity in the middle part of the movement as the knee flexes and body is lowered into water and off-loaded. This dip in activity can be eliminated in faster movement in water.

Fig 1 EMG Vastus Lateralis; Single leg squat (two repetitions); Waist depth water A.fast B.slow



Conclusion

Prescription of speed with aquatic exercise is a key consideration . Faster movement with squats leads to more functional levels of quadriceps activity closer to than on land most likely due to increased drag force.

No conflict of interest

ISPR7-0678

Rehabilitation Addressing to Specific Issues - Sensory and Motor Control (including Postural Control)

FUNCTIONAL RECOVERY AFTER REHABILITATION FOR CEREBELLAR INJURIES

D. Hutanu¹, D. Craciunescu¹, A. Esposito¹, V. Afzali¹, C. De Backer¹, A. Catano¹

¹University Hospital Center of Charleroi, Rehabilitation Hospital « L. de Vinci », Montigny-le-Tilleul, Belgium

Introduction/Background

Cerebellar damages have a large variety of causes, including hereditary ataxias, congenital malformations, acquired and idiopathic conditions.

Different intensity levels and combinations of dysmetria, dyssynergia, hypotonia, dysdiadochokinesia, dysarthria and ataxia of stance and gait are often seen in patients suffering from cerebellar damage. Since there are no effective drugs available to treat ataxia, rehabilitation therapy is therefore considered to be an essential tool for the recovery of motor function and for reduction of impairment level.

Aim: The main purpose of this study was to quantify the benefit of different physical treatments in patients admitted to a rehabilitation hospital after suffering cerebellar injuries. Secondary aims were to characterize functional status between different etiological subgroups before and after rehabilitation therapy and to underline the eventual importance of new physical therapies for the treatment of ataxia.

Material and Methods

76 patients with cerebellar damage were included in this study. All of them had ataxia. The patients were treated with the best medical and physical treatments according to their conditions. Their clinical, therapeutic and demographic data were abstracted and analysed for each subgroup. Functional status was measured using the 18 components of The Functional Independence Measure (FIM), scored at admission (AFIM), discharge (DFIM), and follow-up (FFIM).

Results

Our results will be presented and commented.

Conclusion

Our results suggest that an individualized, multidimensional physical therapy treatment may significantly improve functional status in patients suffering from cerebellar ataxia.

No conflict of interest

ISPR7-0022

Rehabilitation Addressing to Specific Issues - Spasticity Management

USE OF THE PHYSIOTHERAPY ON THE TREATMENT OF THE SPASTICITY

O. Tondiy¹

¹Kharkiv Medical Academy of Postgraduate Education, Neurology and Child Neurology, Kharkiv, Ukraine

Introduction/Background

The effect of the physiotherapy complex (ultrasonotherapy, low-frequent variable magnetic field and balneotherapy) on the patients having spasticity was investigated.

Material and Methods

110 patients aged from 25 to 65 (71 males and 39 females) having spasticity of different etiologies (initial stages of multiple sclerosis, spastical paraplegies, myelopathies) were observed. The patients were divided into two groups. The first group (80 patients) received in addition their basic medication and physiotherapy with combination of ultrasonotherapy - variable sinusoidal high-tension (4-5 kV) high-frequent (22 kHz) low-intensive current (power 1-10 Watt), and low-frequent variable magnetic field (frequency to 100 Hertz, magnetic induction 27 mTesla) treatment of upper and lower extremities, with taking turn each other, and balneotherapy. Every procedure exposure was 12-15 min. The complete course was 10-12 procedures. The second group (control, 30 patients) received only the basic medication.

Results

The spasticity and subjective sensation of constraint extremities of the patients in the first group was reduced after 17-20 days of treatment (76,25% patients) compared to the control group, where muscle constraint reduced after 26-28 days of treatment (56,6 % patients), $p < 0,05$.

Conclusion

The addition of the complex (ultrasonotherapy, balneotherapy and the low-frequent variable magnetic field) to the treatment of spasticity of different etiologies resulted in earlier reducing of subjective sensation of constraint extremities.

No conflict of interest

ISPR7-0049

Rehabilitation Addressing to Specific Issues - Spasticity Management

SPASTICITY OR PERIODIC LIMB MOVEMENTS ?

J. Levy^{1,2}, S. Hartley³, E. Mauruc-Soubirac², A. Leotard², F. Lofaso^{1,4}, M.A. Quera-Salva³, D. Bensmail^{1,2}

¹Université de Versailles St-Quentin-en-Yvelines- UFR des Sciences de la Santé, UMR-1179, Montigny-le-Bretonneux, France

²APHP- Raymond Poincaré University Hospital, Physical Medicine and Rehabilitation, Garches, France

³APHP- Raymond Poincaré University Hospital, Sleep Unit, Garches, France

⁴APHP- Raymond Poincaré University Hospital, Physiology and Functional Testing, Garches, France

Introduction/Background

Spasticity and spasms are very frequent in patients with spinal cord injuries (SCI) and multiple sclerosis (MS). Some still complain of painful spasms despite maximal antispastic treatment. However spasms due to spasticity must be clearly differentiated from periodic limb movements (PLM), often accompanied by restless leg syndrome (RLS), as diagnostic confusion can lead to increasing doses of antispastic drugs without clinical improvement.

Objectives – i) to search for RLS with PLM in consecutive patients referred for uncontrolled spasticity despite treatment by nocturnal polysomnography (PSG); ii) to assess the efficacy of dopaminergic agonists on PLM in this population.

Material and Methods

i) Observational prospective study on a cohort of patients with MS and SCI, referred to our physical and rehabilitation medicine department from March 2014 to July 2016 for uncontrolled disabling spasticity prevailing at night, despite optimized treatment. Patients were assessed for RLS by clinical interview and questionnaires, and for PLM by PSG. ii) Patients with confirmed PLM (≥ 15 /hour of sleep) were treated with low dosage of pramipexole (0.09mg at 20:00) and were reassessed during a second night PSG.

Results

Forty-five patients were included. The diagnosis of PLM was confirmed in 39 patients. Median PLM index, and PLM related arousals were 45,9 [19,8-76,2] and 5,1 [1,5-15] events per hour respectively. Nine patients underwent a second PSG under pramipexole. PLM index and arousals significantly improved ($p=.0007$ and $.01$ respectively). Sleep architecture or sleep disordered breathing were not affected by treatment.

Conclusion

PLM are frequent, a possible explanation for so called persistent nocturnal spasticity in patients with SCI or MS, and respond to dopamine agonists. Based on our results and the review of the relevant literature, we discuss the hypothesis a spinal origin of PLMs.

No conflict of interest

ISPR7-0082

Rehabilitation Addressing to Specific Issues - Spasticity Management

COMBINING BOTULINUM TOXIN AND PHENOL TO MANAGE SPASTICITY IN ADULTS

S. Ramanathan¹

¹Addenbrooke's hospital, Neurorehabilitation, Cambridge, United Kingdom

Introduction/Background

The objective of this retrospective study was to investigate the safety of repeated multilevel injections of a combination of phenol and botulinum toxin A, in adults with neurological conditions. This also describes the specific techniques, dosage and sites involved in this procedure.

Material and Methods

Design: A retrospective case study.

Setting: A tertiary care hospital.

Participants: Patients in spasticity clinic

Intervention: Sixteen injection sessions combining botulinum toxin and phenol nerve block to manage spasticity.

Results

The Phenol dosage used was between 10 to 20 mL in 5% aqueous solution. The maximum botulinum toxin type A (Dysport) dose injected was 1000 units. Male to female ratio 50:50. The most frequently used combination was Bilateral obturator nerve block with botulinum toxins to hamstrings (36%) followed by unilateral posterior tibial nerve block with upper limb botulinum toxin (22%). Most common aetiology was Multiple sclerosis (37%) and Stroke (32%). The maximum number of muscles injected with botulinum toxin on a single occasion was 5. The outcome measures used were; Modified Ashworth Score pre and post treatment and patient satisfaction.

Conclusion

The combination of botulinum toxin and phenol injection allows many muscles to be injected at the same time to manage spasticity effectively in adults with neurologic conditions. This combination is cost-effective and has a good safety profile. As there are no studies showing outcomes currently in the literature, this would create awareness and encourage new clinicians to use this combination for effective treatment of spasticity in adults.

No conflict of interest

ISPR7-0107

Rehabilitation Addressing to Specific Issues - Spasticity Management

PATIENT REGISTRY OF SPASTICITY (PROS) CARE WORLD: DATA ANALYSIS BASED ON PHYSICIAN EXPERIENCE

A. Esquenazi¹, S. Lee¹, N. Mayer², R. Garreta³, A. Patel⁴, E. Elovic⁵, S. Koelbel⁶, G. Francisco⁷, I. Reuter⁸

¹MossRehab Gait and Motion Analysis Laboratory, Gait Laboratory, Elkins Park, USA

²MossRehab Gait and Motion Analysis Laboratory, Motor Control Analysis Laboratory, Elkins Park, USA

³Mutua Terrassa University Hospital, Rehabilitation Medicine, Catalunya, Spain

⁴Kansas City Bone and Joint Clinic, Physical Medicine and Rehabilitation, Overland Park, USA

⁵Salt Lake Regional Medical Center, Physical Medicine and Rehabilitation, Reno, USA

⁶Braintree Rehabilitation Hospital, Physical Medicine and Rehabilitation, Braintree, USA

⁷The University of Texas Health Science Center at Houston, Physical Medicine and Rehabilitation, Houston, USA

⁸Justus-Liebig-Universität Gießen, Neurology, Hesse, Germany

Introduction/Background

Proper use of botulinum toxin type A (BoNTA) and neurolytic agents require careful patient assessment, muscle selection and identification, proper dosing and realistic goal setting. The objectives of this registry are to describe clinical presentation and treatment patterns in patients with stroke or traumatic brain injury (TBI) and to assess the impact of clinical experience in the care provided.

Material and Methods

Design - Prospective, multicenter, international observational registry design. *Participants* - spastic muscle overactivity due to stroke or TBI ≥ 2 months duration treated with BoNTA or neurolytic agents. Physician experience was recorded. *Outcome measures* - Ashworth scores, pain and goal attainment scaling were used.

Results

627 participants with stroke and 132 participants with TBI assessed and treated by 17 more experienced physicians (MEP) and 12 less experienced physicians (LEP). Based on physician experience, onabotulinumtoxinA (onaBoNTA) doses were statistically different with larger mean doses injected by MEP in the upper limb (UL) (59.9 ± 39.0 , $p = .001$) and in the lower limb (LL) (101.8 ± 69.2 , $p < .001$). Treated deformities significantly differed ($p < .001$). Ashworth scores differed significantly in the equinovarus/equinus foot, thumb-in palm and adducted thighs; ($p < .001$, $p = .001$ and $p = .04$ respectively). LEP had statistically significant larger change in hand pain scores for clenched fist deformity compared to MEP ($p = .01$). Physician experience demonstrated a significant difference on patients reported satisfaction towards their secondary goal with higher scores for MEP ($p = .04$).

Conclusion

This international Registry provides clinical nuances of treatment based on physician clinical experience in a robust sample size.

No conflict of interest

ISPR7-0131

Rehabilitation Addressing to Specific Issues - Spasticity Management

PREVALENCE OF SPASTIC HYPERTONIA ON FIRST-TIME ADMISSION TO ACUTE INPATIENT REHABILITATION

N. Dragojlovic¹, M. Verduzco-Gutierrez^{1,2}, G.E. Francisco^{1,2}

¹*University of Texas Health Science Center- Houston, PM&R, Houston, USA*

²*TIRR Memorial Hermann, PM&R, Houston, USA*

Introduction/Background

Spastic hypertonia is part of an upper motor neuron syndrome often seen in patients following acute stroke, traumatic brain injury (TBI), and spinal cord injury (SCI). Most published studies describe the prevalence of spasticity in the subacute period, and focus on homogeneous populations that do not reflect the diversity of patients seen in acute inpatient rehabilitation.

Material and Methods

A chart review was performed on 285 patients (100 patients with stroke, 84 with TBI, and 101 with SCI) consecutively admitted to a freestanding academic rehabilitation hospital between January 1, 2013 and December 31, 2013. Patients with prior history of spastic hypertonia and under age 18 years were excluded. Physical and occupational therapists performed upper and lower limb muscle tone evaluations within 48 hours of admission and discharge using the Modified Ashworth scale (MAS). Data extracted were: demographics, admitting diagnosis, mechanism of injury, time since diagnosis, MAS scores at admission and discharge, Functional Independence Measure® scores at admission and discharge.

Results

Baseline patient characteristics are shown in Figure 1. The prevalence of MAS 1+, MAS 2, and MAS 3 spastic hypertonia in at least one joint on admission and discharge is shown in Figure 2. These values are greater than previously published studies in the same populations.

Figure 1
Baseline Patient Characteristics

Diagnostic Group	n	Age, y mean (SD)	Gender, male/female, n	LOS, d mean (SD)
Stroke	100	55 (14)	54/46	31 (17)
TBI	84	47 (17)	68/16	44 (18)
SCI	101	52 (19)	64/37	27 (12)

TBI = traumatic brain injury; SCI = spinal cord injury; SD = standard deviation; LOS = length of stay in acute inpatient rehabilitation.

Figure 2
Prevalence of Spastic Hypertonia During Acute Inpatient Rehabilitation

Diagnostic Group	MAS 1+		MAS 2		MAS 3	
	Admission	Discharge	Admission	Discharge	Admission	Discharge
Stroke	68%	50%	52%	37%	20%	21%
TBI	55%	30%	42%	24%	21%	14%
SCI	48%	46%	33%	33%	14%	12%

MAS = Modified Ashworth Scale grade; TBI = traumatic brain injury; SCI = spinal cord injury.

Conclusion

This represents one of the largest studies, to our knowledge, of the prevalence of spasticity during first-time admission to acute inpatient rehabilitation. Early recognition and management of spastic hypertonia requires significant resource allocation in order to prevent contractures, minimize pain, and maximize chances of functional recovery.

No conflict of interest

ISPR7-0139

Rehabilitation Addressing to Specific Issues - Spasticity Management

IMPROVEMENT OF GAIT PARAMETERS AFTER FUNCTIONAL SURGERY OF SPASTIC EQUINOVARUS FOOT IN HEMIPLEGIC STROKE PATIENTS

R. Stéphanie¹

¹Marseille, France

Introduction/Background

The aim was to describe the effects of neuro-orthopedic surgery of spastic equinovarus foot on gait, by evaluating, based on walking speed, quantified parameters in patients in the chronic stroke phase. The management of rehabilitation, including physiotherapy, prescription of equipment and / or walking aids, and botulinum toxin injections has also been described and compared in terms of evolution.

Material and Methods

This retrospective study was conducted in patients with gait disorders associated with a first episode of stroke occurring more than six months previously and who underwent surgical management of their spastic foot. The endpoint of the evolution of walking performance was walking speed.

Results

Fifteen patients were included, of whom 60% were women and 47% had ischemic stroke. Mean age at stroke was 49 +/- 8.0 years, mean age at surgery was 55.5 +/- 8.5 years, and mean time between stroke and surgery was 34 +/- 26 months. Walking speed barefoot improved after surgery (from 33.1 +/- 18.8 cm/sec before surgery to 40 +/- 20.6 cm/sec after surgery; p = 0.011). Shod, walking speed improved after surgery (from 35 +/- 23.7 cm/sec to 37.6 +/- 23.7 cm/sec; p=0.048). Furthermore, functional surgery allowed four patients to regain the ability to walk barefoot. It also allowed the discontinuation of orthotics for nine patients.

Conclusion

This study, although retrospective, provides arguments for the effectiveness of functional surgery of the spastic hemiplegic equinovarus foot in patients after stroke. Although surgery remains the last line treatment of these deformities, its action must always be discussed during interdisciplinary meetings and with the patient.

No conflict of interest

ISPR7-0359

Rehabilitation Addressing to Specific Issues - Spasticity Management

**THE ILIOPSOAS MUSCLE CHEMICAL BLOCK NEUROLYSIS – SANTA CASA TECHNIQUE
APPROACH**

E. Rocha¹, E. Suzigan², S. Lianza²

¹, Santo André, Brazil

²Santa Casa Sao Paulo, Rehabilitation, Sao Paulo, Brazil

Introduction/Background

Hip flexor spasticity is one of the biggest obstacle that the Physiatrist finds during the treatment once it interferes in daily living, orthostatism, positioning in bed, vestment and even during gait biomechanical. This study's aim is demonstrate Santa Casa's Technique of iliopsoas muscle chemical block neurolysis.

Material and Methods

Chemodenervation technique of Iliopsoas muscle through proper positioning demonstration by computed tomography and electrostimulation.

Results

The patient is positioned in lateral decubitus, with the side to be addressed always facing up o. It carried out the locations of anatomical references: the infiltration is done at the reference of the lumbar vertebrae L3-L4 , and for that, the best reference is the height of the iliac crests. Palpation of the iliac crest of the affected side and the spinous process of L4 vertebra. The puncture site is at about five centimeter laterally to the spinous process L4, and its location is confirmed with the aid of an electric current generator and was confirmed by use of computed tomography

Conclusion

The Santa Casa Approach of Iliopsoas chemodenervation for the treatment of spasticity is a simple and safe method.

No conflict of interest

ISPR7-0406

Rehabilitation Addressing to Specific Issues - Spasticity Management

REVIEW OF CHANGE OF PLANTAR FLEXION ANGLE AND MAS GRADING IN KNEE FLEXION AND EXTENSION AFTER PHENOL POSTERIOR TIBIAL NERVE BLOCK

H. Mee¹, F. Anwar²

¹, Ely, United Kingdom

²Cambridge University NHS Trust, Rehabilitation Medicine, Cambridge, United Kingdom

Introduction/Background

Spasticity can occur in patients who have an upper motor neuron condition and if left without treatment can lead to permanent contractures. Management of lower limb spasticity with phenol nerve blocks is well published. This study's aim is to review the potential benefit of a posterior tibial phenol nerve block on ankle dorsiflexion range of movement; the aim to be able to achieve ankle angle dorsiflexion to the neutral position (0) while the knee is in extension and then in flexion over a 6-month period and correlate with MAS scores.

Material and Methods

Patients with known spasticity in their lower limbs who had been assessed as being suitable for posterior tibial phenol nerve block had a 'Modified Ashworth Scale' (MAS) score recorded and ankle plantar-flexion angle assessed in knee flexion and extension pre phenol nerve block, then at 6 weeks and 6 months' post phenol nerve block.

Results

44 patients participated. A non-parametric Friedman test of differences among repeated measures was conducted from data at 0 weeks, 6 weeks and 24 weeks. MAS chi-square value 68.9 ($p < 0.01$). Ankle dorsiflexion with the knee flexion chi-square value 68.7 ($p < 0.01$) and with knee extension chi-square value 71.3 ($p < 0.005$). There was statistical difference in the ankle dorsiflexion range of movements at 6 weeks and 6 months in both knees flexed and extended position.

Conclusion

Phenol nerve block to the posterior tibial nerve is effective in reducing spasticity and achieving ankle dorsiflexion to neutral position over a 6-month period. The effects were maintained beyond 6 months.

No conflict of interest

ISPR7-0574

Rehabilitation Addressing to Specific Issues - Spasticity Management

PHENOL NERVE BLOCK FOR THE MANAGEMENT OF LOWER LIMB SPASTICITY-2 YEARS EXPERIENCE

A. Salvatierra¹, P. Vidal¹, S. Chahuan², M.J. Pizarro², L. Berna²

¹Universidad Mayor, Physical Medicine and Rehabilitation, Santiago, Chile

²Rehabilitation National Institute "Pedro Aguirre Cerda", Physical Medicine and Rehabilitation, Santiago, Chile

Introduction/Background

Phenol nerve block is a treatment option in individuals with focal spasticity of the lower limbs. The aims of this study are to report our experience and safety of nerve block with phenol as management of lower limb spasticity.

Material and Methods

A retrospective research of clinical follow-up results of phenol treatments for local management of spasticity in patients at the National Institute of Rehabilitation Pedro Aguirre Cerda between January 2014 and December 2015 was made. Neurolysis was performed using 6% phenol. Data were collected and analyzed in Excel spreadsheet 2011.

Results

Of the 30 patients, 60% were male and 40% female, with a mean age of 22.5 years (3-74). Patients with spasticity due to cerebral palsy (33.3%), spinal cord injury (23.3%), traumatic brain injury (10%), stroke (13.3%), and other etiologies (20%). A total of 61 nerves were neurolysed in 35 procedures: obturator nerve block (54.1%) and tibial nerve block (45.9%). The mean phenol dosage injected was 4.2mL, with a range of 2 to 9 mL. Complications were transient and included dysesthetic pain in 2 patients with tibial nerve block and one patient developed autonomic dysreflexia recovered (obturator nerve block). Rehabilitation goals: Increase in the Range of Motion (36.6%), decrease spasms and clonus (22%), reduce spasticity (17.1%) and others (24.3%). Only in one case the goals were not met.

Conclusion

Neurolysis with phenol (6%) would be a safe method for the management of spasticity of the lower limbs. We suggest future studies using ultrasound to evaluate whether decreases the number of complications with ultrasound-guided neurolytic blockade procedures.

No conflict of interest

ISPR7-0649

Rehabilitation Addressing to Specific Issues - Spasticity Management

SPANISH LANGUAGE WORKSHOP IN ULTRASOUND GUIDED INJECTIONS OF THE UPPER EXTREMITIES FOR SPASTICITY MANAGEMENT IN ADULT AND PEDIATRIC PATIENTS: PRACTICE UPDATES AND TECHNIQUES.

D. Cancel¹, K. Morice², R. Vazquez³, J. Sierra⁴, F. Bentz Brugal⁵

¹Montefiore Medical Center, Rehabilitation Medicine, Yonkers, USA

²Montefiore Medical Center, Rehabilitation Medicine, New York, USA

³University of Miami, Rehabilitation Medicine, Miami, USA

⁴Autonomous University of Honduras, Rehabilitation Medicine, Tegucigalpa, Honduras

⁵Universidad Iberoamericana UNIBE, Physical Medicine and Rehabilitation, Santo Domingo, Dominican Republic

Introduction/Background

Ultrasound guided imagery has become widely used in the management of spasticity in adult and pediatric populations. Research has demonstrated the advantages of Ultrasound use compared to traditional injection techniques, resulting in improved patient outcomes. This Spanish Language presentation and workshop will provide attendees with:

- Background on Ultrasound guided imagery
- Chemodenervation techniques using alcohol and phenol blocks
- Provide localization techniques
- Allow participants to practice techniques in an included workshop.

Material and Methods

The presentation will first discuss the basic principles of Ultrasound as a review/introduction. The lecture will then present the advantages of Ultrasound technology in localization and injection techniques. There will be a review of the latest research on the use of Ultrasound guidance. This will be followed by a discussion on chemodenervation using alcohol/phenol in the management of spasticity of the upper extremities. Selected case reports will be presented.

The presentation will then describe localization of selected nerves through the use of anatomic landmarks - both superficial and via Ultrasound. The selected nerves will be in the upper extremities. The selected injection sites will include: Musculocutaneous, Thoracodorsal and Median nerves.

Participants then practice these techniques on live models. Attendees will practice hands-on localization using an Ultrasound machine. They will first use surface anatomy to locate target sites, then use Ultrasound guidance to visualize specific nerves. At each station an instructor will demonstrate the technique and attendees then practice with supervision. There will also be time allotted for participants to practice injection techniques on gel models.

Results

Participants will learn and/or refine Ultrasound guided injection techniques. Participants will be able to use these techniques in their adult and pediatric spasticity management practice, with improved patient care, function and quality of life.

Conclusion

Research has demonstrated improved injection technique using Ultrasound guidance. Improved techniques can result in improved patient outcomes in function and quality of life.

No conflict of interest

ISPR7-0683

Rehabilitation Addressing to Specific Issues - Spasticity Management

CHANGES IN ACTIVITIES OF DAILY LIVING AFTER BOTULINUM TOXIN A TREATMENT FOR UPPER LIMB SPASTICITY

K. Fujimura¹, H. Kagaya², H. Onaka³, Y. Okochi³, T. Mizusawa³, S. Nakane³, N. Nagasawa³, H. Tanikawa¹, M. Yamada¹, Y. Kanada¹, E. Saitoh²

¹*Faculty of Rehabilitation, School of Health Sciences- Fujita Health University, Toyoake- Aichi, Japan*

²*Department of Rehabilitation Medicine I, School of Medicine- Fujita Health University, Toyoake- Aichi, Japan*

³*Department of Rehabilitation, Fujita Health University Hospital, Toyoake- Aichi, Japan*

Introduction/Background

Upper limb spasticity frequently impairs voluntary movement and activities of daily living (ADL). The purpose of this study was to evaluate ADL before and after Botulinum toxin A treatment for upper limb spasticity.

Material and Methods

Forty-seven patients (27 males and 20 females) who had spasticity in upper limb participated in this study. All patients gave written informed consents. The median age was 59 (18-79) years. Forty-three patients had stroke, 3 had cerebral arteriovenous malformation rupture, and 1 had Moyamoya disease. The median time from onset to treatment was 1,337 (117-5,617) days. The Botulinum toxin A (BOTOX; GlaxoSmithKline, Tokyo, Japan) was injected to the upper limb muscles by experienced physicians. ADL was assessed by using Disability Assessment Scale (DAS). DAS is divided into hygiene, dressing, limb position and pain subscale and each has 4 points (0-normal, 1-mild, 2-moderate, and 3-severe). In addition, Fugl-Meyer Assessment U/E (FMA-U/E) and Modified Ashworth Scale (MAS) were measured. All patients were evaluated just before the injection and at 2, 6 and 12 weeks after the injection.

Results

Hygiene, dressing and limb position in DAS and total and category A scores in FMA-U/E were significantly improved at 2 and 6 weeks after the injection. The median MAS scores were also significantly decreased after the injection.

Conclusion

Botulinum toxin A treatment for upper limb improves hygiene, dressing and limb position in ADL.

No conflict of interest

ISPR7-0693

Rehabilitation Addressing to Specific Issues - Spasticity Management

CASE REPORT TO IDENTIFY EFFECTIVE NEURO-PHYSIOTHERAPY TREATMENT OF SPASTICITY POST-STROKE FOCUSED ON PATIENT CENTRED GOALS, CARER SUPPORT AND USE OF BOTULINUM TOXIN

K. Saunders¹

¹, Gloucestershire, United Kingdom

Introduction/Background

Background & Aims

Despite wide-spread use of Botulinum toxin to treat focal muscle spasticity, there is a lack of clarity in describing the essential components of an effective follow-up neuro-physiotherapy program

To identify the key components of a neuro-physiotherapy program focused on achieving patient centred goals eg confident mobility, less dependence in ADL, and exploring movement recovery of non-functional arm

Material and Methods

Outcome measures

Photographs of left wrist resting posture

Video of visible left hand muscle contraction

Balance control during sit to stand transfers

Goal attainment scale (GAS)

Methods

Mrs M, age 79, diagnosed with right CVA 2014.

She participated in a course of neuro-physiotherapy comprising weekly sessions of 1.5 hours over a 7 week period in 2016.

Mrs M received botulinum-toxin injections into left upper limb : FDP, FDS, Bicep, Brachioradialis, FCR & FCU in 2016.

Treatment combined a "hands on" educational approach to assist Mrs M to become more conscious and aware of her left upper limb, to encourage active movement in left hand, and re-education of motor patterns to strengthen her left leg and improve balance and gait.

A home program of exercises was given to improve left upper limb awareness and balance. Her husband was also taught and assisted Mrs M with left arm, wrist and hand exercises. Mrs M also practised functional tasks, for example sit to stand, dressing with cardigan, getting in and out of car more independently and walking. Sensory stimulation of the left hand with mental imagery was also used.

Results

Visible left thumb movement with significantly reduced flexion of the left wrist. Improved awareness midline with more equal weight-bearing in both legs during transfers and gait. GAS scores improved in taking cardigan off herself.

Conclusion

In this case report, "hands-on" neuro-physiotherapy re-enforced with functional task practise at home enabled improvements in left wrist posture and functional task performance.

No conflict of interest

POSITIONS OF POSTSTROKE SPASTIC UPPER LIMBS IN PATIENTS SCHEDULED TO BOTULINUM TOXIN TREATMENT

A. Gomes¹, F. Mello¹, J. Cocicov¹, R. Marcelo¹

¹University of São Paulo, Physiatry, Ribeirão Preto, Brazil

Introduction/Background

The spastic is a common movement disorder after a stroke case and can result in a range of direct negative effects related to the daily life activities, mainly, when related to the upper limb members. Therefore, it is a usual target in the medical intervention during the physical enablement, either by the physiotherapeutic intervention, orthosis or botulinum toxin (TXB) application. The most important factor to use TXB is determine the muscles that will be treated, which is based in physical exam and treatment goals.

Material and Methods

At the Rehabilitation Center (CER) in Clinical Hospital (HC) of the University of São Paulo (USP), Ribeirão Preto, thirty-eight (38) patients with spasticity in upper-limb members following stroke, referred for treatment with botulinum toxin therapy, were examined and photographed in a standardized manner. After sign the consent form, their photos were analyzed according to the five categories of the Hefter's upper limb classification, by three separate appraisers which verified the reproducibility and the consensus outcomes. Afterwards, the intensity of spasticity of each upper-limb member groups were analyzed by the modified Asworth scale (MAS). The circumscription of EMA and of the treated muscle groups with TXB were made autonomous by medical assistants at CER. Accessing the medical record of the patients, it was treated to find a relation between the Hefter categories, the pattern described in EMA and the treated muscle.

Results

The agreement between the evaluators fluctuated among 67% - 100% when analyzing the patients in 90% of cases. The pattern 2 wasn't found. The pattern 3 can be subdivided regarding the shoulder osition because it interfered in the chosen treated muscle.

Examples of found patterns

					
Shoulder	Internal rotation/ adduction	Internal rotation/ adduction	Internal rotation/ adduction	Internal rotation/ adduction	Internal rotation/ retroversion
Elbow	Flexion	Flexion	Flexion	Flexion	Extension
Forearm	Supination	Supination	Neutral	Pronation	Pronation
Wrist	Flexion	Extension	Neutral	Flexion	Flexion

			I	II	III		IV	V
Hefter's classification			2,44% (1)	0	80,49% (33)		14,63% (6)	4,88% (2)
					Rotação externa	Rotação interna		
					34,15% (14)	46,34% (19)		
Modified Asworth scale (patients with muscle tone bigger than or equal to 2 in the upper-limb segments)	Shoulder	External rotation	100% (1)	—	57,14% (8)	68,42% (13)	66,67% (4)	—
		Abduction	100% (1)	—	50% (7)	57,89% (11)	50% (3)	—
	Elbow	Flexion	100% (1)	—	57,14% (8)	52,63% (10)	50% (3)	50% (1)
		Extension	100% (1)	—	71,43% (10)	63,16% (12)	83,33% (5)	100% (2)
	Forearm	Supination	—	—	50% (7)	52,63% (10)	16,67% (1)	50% (1)
		Pronation	—	—	50% (7)	47,37% (9)	16,67% (1)	—
	Handle	Flexion	—	—	50% (7)	47,37% (9)	33,33% (2)	50% (1)
		Extension	—	—	50% (7)	47,37% (9)	33,33% (2)	100% (2)
	Fingers	Flexion	100% (1)	—	85,71% (12)	42,11% (8)	33,33% (2)	100% (2)
		Flexion	—	—	78,57% (11)	36,84% (7)	16,67% (1)	50% (1)
	Thumb	Flexion	—	—	78,57% (11)	36,84% (7)	16,67% (1)	50% (1)
		Abduction	—	—	64,29% (9)	42,11% (8)	16,67% (1)	50% (1)
Treated muscles		PM	100% (1)	—	50% (7)	57,89% (11)	50% (3)	50% (1)
		LB	—	—	21,43% (3)	42,11% (8)	16,67% (1)	—
		SS	—	—	21,43% (3)	15,79% (3)	—	—
		BB	100% (1)	—	64,29% (9)	78,95% (15)	50% (3)	50% (1)
		TB	—	—	28,57% (4)	26,32% (5)	16,67% (1)	50% (1)
		PR	100% (1)	—	57,14% (8)	68,42% (13)	66,67% (4)	—
		CUF/FCR	100% (1)	—	21,43% (3)	26,32% (5)	—	—
		FSD	100% (1)	—	85,71% (12)	78,95% (15)	83,33% (5)	100% (2)
		FD	100% (1)	—	78,57% (11)	63,16% (12)	83,33% (5)	50% (1)
		FD	—	—	64,29% (9)	31,58% (6)	50% (3)	50% (1)
	AT	—	—	0%	31,58% (6)	16,67% (1)	—	

Conclusion

The image/presentation of the upper-limb member should not be the only parameter to determine the muscles to be treated. This choice must be ruled by physical exam of the intensity of the spasticity using MAS.

No conflict of interest

ISPR7-0810

Rehabilitation Addressing to Specific Issues - Spasticity Management

CASE REPORT: CLAW TOES IN POST-STROKE PATIENT; EVALUATION AND TIMELY TREATMENT WITH BOTULINUM TOXIN

J. Facello¹, M.A. Di Nardo¹, J. Diaz Peña¹

¹Instituto de Rehabilitacion Psicofisica IReP, Physical and Rehabilitation Medicine, Buenos Aires, Argentina

Introduction/Background

Within the multiple sequels occurring in post-stroke patients, spastic hemiparesis is the most frequent motor manifestation. In this complex situation, a common clinical issue is Claw-toes (reported in up to 46% in the first year post stroke). Paradoxically, is a frequently not treated sequel; when we analyze spasticity treatment with botulinum toxin (BT), which is a first line treatment in these cases, we found that muscles involved in claw toes are selected for local treatment with BT in approximately 10% of the cases, leading to a large number of patient untreated, what can evolve to complications.

Material and Methods

We present the case of a male patient with claw-toes within a spastic hemiparesis post-stroke. We propose a evaluation method designed to implement timely treatment. A follow up exam was performed after a month to evaluate results.

Results

A favorable outcome was obtained with less reported pain and better pressure distribution in the sole documented by podoscopy.

Conclusion

Beyond a single case report result with satisfactory results, It is necessary to develop further and larger studies concerning claw-toes physiopathology in post stroke patients, allowing timely and adequate treatment.

No conflict of interest

ISPR7-0953

Rehabilitation Addressing to Specific Issues - Spasticity Management

FOLLOW UP OF PATIENTS WITH LIFE-LONG CHRONIC SPASTICITY- A FIRST REPORT

I. Riener¹, O. Schuhfried², M. Herceg³, Y. Alacamlioglu¹, T. Paternostro- Sluga¹

¹Institute for Physical Medicine and Rehabilitation, Sozialmedizinisches Zentrum Ost- Donauspital, Langobardenstraße 122, 1220 Vienna, Austria

²Department of Physical Medicine and Rehabilitation, Medical University of Vienna, Währinger Gürtel 18-20, 1090 Vienna, Austria

³Stadlauer Straße 62/ OG 3, 1220 Vienna, Austria

Background: Spasticity is a chronic condition which often requires lifelong therapies. Functional impairments differ according to specific characteristics of spasticity which makes rehabilitative strategies highly individual.

Aim: The aim of this study is to assess changes of body functioning, activity and participation in patients with chronic spasticity to improvement of rehabilitation strategies.

Methods: Data collection is carried out during routine outpatient visits using structured examination protocols and questionnaires. Clinical data, functional scales and participation criteria are assessed. Statistical evaluation is done descriptively.

Results: 13 patients (9 male, 4 female; age: 21-72, \bar{x} =42,77, σ =±19,48) were included. until now. 5 patients need oral antispastic medication; 13 receive BTX A injections; 6 are wheelchair- dependent or use a walking stick; 7 use orthoses; 1 is independent of technical aids; 12 receive exercise therapies; 8 occupational therapy; 8 do sports; 10 have been admitted to rehabilitative stays; 5 report problems with coverage of costs of in- and outpatient rehabilitation treatment. Out of these 13 patients 4 are students, 1 is an employee, 1 patient works in a sheltered position and 7 are retired. Analysis of scales: Activities-Specific Confidence (ABC) Scale: \bar{x} = 56.85, range: 0-100%; Functional Ambulation Category (FAC): \bar{x} = 2.9, Range: 1-4 points; Modifizierte Rankin Scale: \bar{x} = 2.5, Range: 0-5 points. Quality of life predominantly has been assessed as satisfactory.

Conclusions: This study provides first results on the needs of patients with chronic spasticity to improve concepts of treatment.

Document not received

ISPR7-0160

Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

FEMALE URINARY INCONTINENCE REHABILITATION

M.A. Renzulli¹, M.P. Ginovart Fernandez¹, J. Pinol Beltran¹
¹Hospital Comarcal Amposta, Rehabilitacion, Amposta, Spain

Introduction/Background

It is aimed to present the results of an evaluation and rehabilitation protocol for female urinary incontinence, which has been implemented in our service.

Material and Methods

In this analysis 51 patients were included, who were treated from late 2014 to October 2016. Only 31 cases completed the protocol until now. As result measurements, the perineum motor index (IM), according to the Oxford modified scale, and ICIQ-SF score were assessed. For treatment, 2 groups were defined: Effort urinary incontinence (EUI) and urge or mix UI (UUI / MUI). The EUI group performed exercise therapy (ET) treatment. The UUI / MUI group, besides ET, was treated with posterior tibial nerve electrostimulation (PTNE). Patients were assessed at the beginning and in the end of treatment.

Results

EUI (N= 25) group obtained 28% muscular balance improvement, 60% ICIQ-SF score improvement and 24% total healing (ICIQ-SF = 0).

UUI / MUI (N= 6) group obtained 16,7% muscular balance improvement. In this group, the ICIQ-SF improved in 50% remaining the same in the other half.

Conclusion

The results of this study shows the usefulness of IM score and ICIQ-SF scale as simple and effective valuation methods for female urinary incontinence. It also reaffirm the rehabilitation techniques importance as initial approach to treatment: exercise therapy (ET) in EUI and ET in association with PTNE in UUI/MUI. In both treatment groups, the ICIQ-SF improvement was greater than IM improvement. This fact suggests the need to introduce a long-term follow-up in our protocol to seek muscular improvement and also to confirm ICIQ-SF score results.

No conflict of interest

ISPR7-0471

Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

LONG TERM COMPLIANCE TO BLADDER MANAGEMENT IN PATIENTS WITH SPINAL CORD INJURY REHABILITATED AT A TERTIARY CARE HOSPITAL IN SAUDI ARABIA

A. Alsaleh¹, Z. Abidin², A. Alhabtar²

¹, AlRiyadh, Saudi Arabia

²King Fahad Medical City, Rehabilitation hospital, AlRiyadh, Saudi Arabia

Introduction/Background

Data regarding spinal cord injury (SCI) in Saudi Arabia is very limited as there is no national SCI registry at present and there are only few studies published in the literature. The only Saudi epidemiological survey of SCI was published two decades back. Most common cause of SCI in the country is trauma which is practically affecting the young adult population. To date, there is no data available reporting bladder management in patients with SCI in the region. This study is aimed to determine the long term compliance of bladder management in patients with SCI in Saudi population and to identify factors involved.

Material and Methods

A cross sectional analytic study was carried out at King Fahad Medical City, Saudi Arabia. Bladder management of 50 patients with SCI during follow up was compared to bladder management upon discharge from inpatient rehabilitation. Data was collected using a questionnaire.

Results

28.6% of the patients who were discharged on clean intermittent catheterization (CIC) stopped using the catheter within three months of discharge from inpatient rehabilitation. The main reasons were access to catheters, lack of financial support and poor hand function.

Barrier	Percentage population affected
Financial limitation	85%
Lack of access to catheters within the region	39%
Lack of proper available size	66%
Number of patients who report not receiving proper education about bladder managing	49%
Numbers of patients getting catheters for free from governmental or societal agency	15%

Conclusion

CIC is the most common type of bladder management used in patients with SCI. The compliance to CIC can be improved by ensuring availability or access to obtain catheters post discharge and by improving community based rehab in the region.

No conflict of interest

ISPR7-0533

Rehabilitation Addressing to Specific Issues - Sphincter Dysfunction (including Incontinence)

URINATION DISORDERS : A PROSPECTIVE STUDY ABOUT 53 CHILDREN IN TUNISIA

I. Loubiri¹, I. Miri²

¹hospital center sahloul, rehabilitation physical medicine, Sousse, Tunisia

²Institut d'orthopedie mohamed kassab, rehabilitation physical medicine, Manouba, Tunisia

Introduction/Background

Urinary symptoms in childhood can translate varied anomalies. A good knowledge of urinary disorders type and therefore their epidemiological aspects is needed to properly conduct physical examination and diagnostic tests and ensure appropriate treatment.

The purpose of this work is to emphasize the diversity of etiologies from primary enuresis with neurogenic bladder and the importance of hierarchical diagnostic approach for adequate therapeutic decision.

Material and Methods

Descriptive prospective study of children who consulted for urinary problems in urodynamic unit of Physical Medicine and Rehabilitation of orthopedics kassab institute, which took place over a period of 3 months (February, March and April 2016). In addition to a full physical examination, diagnostic tests were prescribed. Urodynamic explorations results and therapeutic management were reported.

Results

53 patients, the average age was 9, 74 years with a female predominance. Diurnal continence acquired in 65% of cases. Enuresis 64%, daytime incontinence 75%, urgency 60%, dysuria 21%, repeated urinary infections (68%). urinary ultrasound done for 62% of children before PMR consultation. Retrograde urethra cystography (RUC) done in 36% of cases with vesicoureteral reflux (20, 7%). Neuro perineal exam done in 62%, abnormal 11%, scoliosis 13%, spina bifida 9, 4%. The urodynamic exploration was indicated for 30% of patients, detrusor over activity 18,5%, reduced bladder capacity 18,5%, bladder hypo compliance 18,5%, dysfunctional voiding 7,4%, chronic terminal kidney failure (2%). Aspecific hygienic and dietetic measures are prescribed for all patients, pelvic floor rehabilitation for 7 patients, medical treatment 70%, anticholinergic therapy 58, 5%. Partial response was obtained in 9, 4%.

Conclusion

The bladder sphincter dysfunction is a common reason for pediatric consultation. These micturition disorders have very different etiologies. Neurogenic bladder is a serious problem because it involve life threatening, hence the importance of urodynamic exploration in the management of urinary disorders. A well-conducted diagnostic approach provides an appropriate therapeutic decision.

No conflict of interest

ISPR7-0267

Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

EVALUATION AND FOLLOW-UP OF PRESSURE ULCERS (PU) IN PATIENTS WHO ENTER A REHABILITATION CENTER AFTER RECENT LONG TERM HOSPITALIZATION.

M.C. Torre¹, C. Diaz¹, M. Weinberg¹, M. Schapira¹, S. Jereb¹

¹Centro HIRSCH, Rehabilitación, Buenos Aires, Argentina

Introduction/Background

To determine the most frequent prevalence, stage and location of PU in patients in a rehabilitation center at admission and their evolution.

To describe the profile of the patient who presents PU (factors of risk), preventive practices in order to avoid new injuries and the therapeutic approach.

To relate the prevalence of PU and its stage with the nutritional state (biochemical and anthropometric parameters), cognitive state, diagnosis at admission and functional evaluation (FIM).

Material and Methods

Descriptive, retrospective study of a sample of 87 admitted patients between January 2015 and October 2016, 29 female patients and 58 male patients, of an average age of 61 with an average stay of 112 days in the rehabilitation center.

Results

There is a direct proportional relation between the functional and motor improvement of the patient and the healing process of the PU. In those patients whose MMSE was higher than 23, the evolutionary process showed better results than the ones who presented cognitive difficulties.

Conclusion

With respect to the sample selected it can be observed that the evolutionary tendency of injuries has been favorable as regards therapeutic measures and preventives established.

Therefore, those patients whose weight was stable or showed improvement in their nutritional status correlated better with a favorable evolution in the healing process.

Interdisciplinary work is essential to cover all aspects that influence the evolution of the PU.

No conflict of interest

ISPR7-0711

Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

CLINICAL EFFECT OF EXTRACORPOREAL SHOCK WAVE COMBINED WITH ALGINATE ABSORBENT DRESSING IN THE TREATMENT OF STAGE IV PRESSURE

H. Duan¹, N. Liu¹, Z. Li¹

¹First Hospital of Jilin University, physical medicine and rehabilitation, Changchun, China

Introduction/Background

To observe the clinical effect of extracorporeal shock wave combined with alginate absorbent dressing on stage IV pressure ulcers.

Material and Methods

The 15 patients with stage IV pressure ulcers were randomly divided into an alginate absorbent dressing (n=7) and a combined group (n=8). Both of groups with pressure ulcers were treated with conventional radical debridement. Besides regular treatments, patients in former group are treated by filling their pressure ulcers with alginate absorbent dressing as further step once two days, three times a week and the therapy should be insisted on for 12 weeks. Combined group on the basis of conventional treatment, combining extracorporeal shock wave with alginate absorbent dressing, extracorporeal shock wave parameters Settings: the pressure from 2.0~2.0 bar, 4~5 Hz frequency and the total number of pulse (200/300) + 100 times/ cm², 1 times a week, continuous treatment of 12 weeks. The therapeutic parameters such as PUSH, the degree of healing was monitored before and after the treatment for 6weeks, 12 weeks, respectively

Results

6 weeks after treatment, the combined group of patients with surface area, exudate, type of wound tissue and total score, respectively (6.84 ± 2.02), (1.35±0.41), (1.96±0.54) and (10.07 ± 3.49) are better than that of alginate absorbent dressing group (8.65±2.23), (1.71±0.49), (2.53±0.69) and (13.22 ± 4.93) (P < 0.05); 12 weeks after treatment, the combined group of patients with surface area, exudate, type of wound tissue and total score, respectively (3.46 ± 1.13), (0.52±0.26), (1.68±0.48) and (3.61 ± 2.90) are better than that of alginate absorbent dressing group (6.93±2.07), (1.34±0.42), (2.13±0.55) and (9.37 ± 3.40)(P < 0.05). Combined group after 12 weeks of healing rate 62.50% (5/8) was significantly better than alginate absorbent dressing group 14.29% (1 / 7)

Conclusion

Extracorporeal shock wave combined with alginate absorbent dressing is an effective method to improve stage IV clinical symptoms of pressure ulcers.

No conflict of interest

ISPR7-0887

Rehabilitation Addressing to Specific Issues - Wound and Pressure Sores Management

RETAINED DRESSING MATERIALS CAUSING NON- HEALING PRESSURE ULCERS IN SPINAL CORD INJURY PATIENTS – A CASE REPORT.

S.C. Budithi¹, S. Kostova¹, J.R. Chowdhury¹, A. Osman¹

¹Robert Jones and Agnes Hunt Orthopaedic Hospital, Midland Centre for Spinal Injuries, Oswestry, United Kingdom

Introduction/Background

Pressure ulcer is a significant cause of morbidity in spinal cord injured patients. It is common to manage these patients in community which helps reduce the high costs involved in hospital stay. Choosing the wrong type of dressing material to pack the wounds and loss of the material into the depths of the wounds will have disastrous consequences.

Material and Methods

We report two cases of retained dressing materials in the pressure ulcer resulting in a chronic non healing sinus. We also report the limitations of radiological investigations in identifying these foreign bodies.

Results

Clinical details: A 25 year old male with a chronic pressure sore was treated in community with regular dressing changes. The wound was packed with Carboxymethylcellulose dressings. As it was not healing, an MRI scan was performed which showed chronic inflammatory changes. Debridement revealed a retained dressing material in the depths of the wound.

A 28 year old male with grade 4, chronic right ischial pressure sore was treated in community with negative pressure therapy. MRI scan showed chronic osteomyelitis and abscess formation surrounding the ischium. Surgical debridement showed pieces of foam from the negative pressure dressing buried in the wound.

Conclusion

Clinicians should advise community health professionals managing pressure ulcers on the correct type of dressing material and technique. Community team involved in dressing changes should maintain a strict record of the number and type of dressings used and compare with those removed at dressing change. A high index of suspicion is needed to identify retained dressing materials in radiological investigations.

No conflict of interest

ISPR7-0090

Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

FACTORS INFLUENCING THE SUCCESS OF HOME MODIFICATION IN PARAPLEGIC SPINAL CORD INJURED INDIVIDUALS IN BANGLADESH

M. Hossain¹, L. Nahar¹, K. Nahar¹

¹Centre for the Rehabilitation of the Paralyzed CRP, Occupational Therapy, Dhaka, Bangladesh

Introduction/Background

1. To identify the factors assisting participants to complete successful home modifications.
2. To identify the barriers experienced by participants to complete home modifications.

Material and Methods

A qualitative study design was selected to explore the individual experiences of people living in the community post rehabilitation.

Results

Of the 30 participants, 15 were successful and fifteen were unsuccessful in the achievement of an accessible home environment. Factors presenting difficulties for the participants included: new and challenging environments, financial strains, insufficient space, poor understanding about modification, living in a rented home and inadequate support from family members and relatives.

Those participants who had made sufficient modifications had: engaged themselves in productive occupation, a tendency to be independent in all activities, good family and relative support, understood the importance of modification, received regular follow-up and held promising future plans. Those who had insufficient home modifications were seen to: have little involvement in any form of productive occupation, be residing in rural areas or in a rental house, be facing financial insecurity, be lacking in confidence and receiving poor family support. These participants also held no specific plan regarding home modification and were fully dependent on their family.

All participants reported a positive impression of the information gained from home modification classes at CRP. However, they offered suggestions regarding ways in which the service could be developed or improved. These included: the arrangement of a home visit prior to discharge, strengthening the follow-up visit, the provision of individual home designs and the inclusion of family members in counseling.

Conclusion

Following spinal cord injury successful home modification is affected by a number of factors such as challenging environment, financial strains and family support. Social awareness, community and local government support are essential to the process, and needs to be considered by any organization offering home modification services.

No conflict of interest

ISPR7-0091

Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

POST-REHABILITATION PARTICIPATION RESTRICTION OF SPINAL CORD INJURED PATIENT AT CENTRE FOR THE REHABILITATION OF THE PARALYSED (CRP)

M. Hossain¹, L. Nahar¹, K. Nahar¹

¹Centre for the Rehabilitation of the Parallzed CRP, Occupational Therapy, Dhaka, Bangladesh

Introduction/Background

The increasing life expectancy after spinal cord injury has given social participation a new recognition as one of the ultimate goals of a comprehensive rehabilitation process. The purpose was to find out factors influencing participation restriction of spinal cord injury patients living in the community.

Material and Methods

This was a descriptive type of cross-sectional study. Purposive sampling methods were chosen to collect data.

Results

Total 92 participants were selected on the basis of inclusion and exclusion criteria. Among the respondents, 82 male and 10 female; mean age 31.57 and standard deviation of $SD \pm 9.30$. In this study it has been shown that among the total respondents 43% had severe restriction, 23.7% had extreme restriction, 16.1% had moderate restriction, 8.6% had mild restriction and remaining 7.5% had no major restrictions in different activities mentioned in participation scale. The main barriers to participation reported were inaccessibility (77%), physical limitations (49%), poor family support (18%) and lack of self-confidence (11%). A majority of the respondents perceived their participation was sometimes sufficient in most activities such as opportunities for employment, domestic ADL, contributing financially to the family, participation in social and religious activities, gaining respect from others and maintaining their role in the family. A majority of the respondents also perceived one or more severe problems with their participation in these activities. The results suggest that it is important to consider access to social support along with other factors in the person-environment interaction and their influence on clients' participation in rehabilitation.

Conclusion

Although severity of injury and some social factors were found to be the most important factors that influence restrictions in participation, some other personal factors such as age at injury, education, and functional independence were also crucial factors influencing one's participation. On the other hand, the environmental dimension factor should be considered as having a significant influence on participation.

No conflict of interest

ISPR7-0720

Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

DEPRESSIVE SYMPTOMS MEDIATE THE RELATIONSHIP BETWEEN SUBJECTIVE COGNITIVE COMPLAINTS AND SOCIAL REINTEGRATION FOLLOWING STROKE

G. Kinsella¹, S. Kimonides², M. Cavuoto¹, L. DeSilva¹

¹*La Trobe University, School of Psychology and Public Health, Melbourne- Victoria, Australia*

²*Caulfield Hospital, Psychology, Melbourne, Australia*

Introduction/Background

For long-term stroke outcome, objective neuropsychological impairments and subjective cognitive difficulties are common, and may contribute to ongoing difficulties in community reintegration. However, subjective cognitive complaints have been as much associated with low mood as with actual cognitive performance. Therefore, the aim of our study was to investigate whether subjective cognitive complaints predicted community reintegration post-stroke, and whether this relationship would be mediated by emotional status.

Material and Methods

Patients with a primary diagnosis of stroke ($n = 102$; age range 25-89 years) were recruited if at least 6 months post-stroke and discharged home. Exclusions included a history of dementia, co-morbid psychiatric or neurological disorder, or significant aphasia. Assessments included the Subjective Cognitive Complaints Questionnaire, the Community Integration Questionnaire, and the Depression Anxiety and Stress Scale.

Results

Subjective cognitive complaints were common, with the most frequent being recall of names (56%) or telephone numbers (63%), multitasking (61%), sustaining attention (50%) and slowing in speed of processing (57%). Subjective cognitive complaints were significantly associated with social integration ($r = -.23, p < .05$). However, examination of relationships using statistical mediation revealed that depressive symptoms fully mediated the relationship between cognitive complaints and social integration.

Conclusion

Subjective cognitive complaints are common in long-term outcome following stroke and predict difficulty in community reintegration. However, this relationship is explained by variation in emotional status. Therefore, addressing cognitive complaints by focussing on interventions to improve mood (for example, building self-efficacy or confidence in using cognitive strategies) may also improve community reintegration post-stroke.

No conflict of interest

ISPR7-0812

Social Integration Programmes and Rehabilitation for Specific - Community Based Rehabilitation

USEFULNESS OF ORTHOSIS NOTEBOOKS IN COMMUNITY-BASED REHABILITATION

M. Katsutani¹, S. Nakajima¹, K. Emiko¹, T. Masao¹, K. Domen²

¹Nishinomiya Kyoritsu Rehabilitation Hospital, Rehabilitation, Nishinomiya-city, Japan

²Hyogo College of Medicine, Rehabilitation, Nishinomiya-city, Japan

Introduction/Background

Lower limb orthoses are important tools in stroke rehabilitation. The Japanese guidelines for the Management of Stroke 2015 recommend the use of lower limb orthoses. Most lower limb orthoses are prescribed by acute- or convalescent-stage hospitals. However, post-discharge chronic phase rehabilitation is covered by long- term care insurance, which means that lower limb orthoses covered by medical insurance may not be sufficiently adjusted or modified based on patients' functional changes.

Material and Methods

We distributed orthosis notebooks to patients to whom we prescribed orthoses so that they can visit hospitals and consult prosthetists smoothly when problems with the lower limb orthosis arise during the chronic phase of rehabilitation. Orthosis notebooks contain information about the prescribed orthosis, such as the prescribing medical institution, manufacturer, purpose of the orthosis, and adjustment and repair records.

Results

We began the distribution of orthosis notebooks in July 2013. As of March 2016, we have distributed notebooks to 1,249 patients. The numbers of cooperating medical institutions and prosthetic manufacturers have since increased to 33 hospitals and 5 manufacturers, respectively.

Conclusion

We started using orthosis notebooks to address problems that arise with the use of orthoses during the chronic phase. We expect that increasing the numbers of cooperating medical institutions and prosthetic manufacturers will allow for the smooth repair or remanufacturing of orthoses when problems occur, and for the seamless communication of information about the orthoses in the chronic phase.

No conflict of interest

ISPR7-0521

Social Integration Programmes and Rehabilitation for Specific - Disability Compensation

IMPACT OF EQUINE-ASSISTED THERAPY ON MOTOR FUNCTIONAL ABNORMALITIES IN CHILDREN WITH DOWN SYNDROME

C.A. de Oliveira Alberissi¹, L. Moraes de Aquino¹

¹São Camilo University Centre, Physiotherapy, São Paulo, Brazil

Introduction/Background

Down syndrome is a genetic disorder characterized by a chromosomal disorder. Children with Down Syndrome have delays in relation to other children because the process of maturation of the nervous system that is related to the degree of myelination, afforestation and formation of nerve cells of the Central Nervous System, characterizing functional changes. The development of these individuals depend on the maturation of the nervous system and the environment in which they are stimulated. It is suggested the hippotherapy as an effective rehabilitation to generate sufficient stimuli to the development of this child. The study aimed to check the impact of this therapy on functional changes in children with Down Syndrome.

Material and Methods

We conducted a literature review to studies of scientific articles in the databases PubMed, Lilacs, IBECs, Scielo, Cochrane Library and Peter. We used the descriptors equine-assisted therapy, Down syndrome, muscle tonus, gait and gross motor function. The boolean operator used was AND, in portuguese, english and spanish.

Results

We found 116 articles. Of these, 109 were excluded by leakage of theme or for not having availability in full, 1 article was doubled and 6 articles were selected and included. The hippotherapy aims to promote the development of patients who have mental the level of Central Nervous System, bringing benefits, especially in slow, muscle tone and motor function to thick these patients.

Functional Changes	Impact of the Hippotherapy
Gait	Acquisition of travel while working there in conjunction with the adjustments posture and the balance when performing integration with multiple systems. In addition, it is transmitted rhythmic pulses, which favors new experiences and tells the S.N.C to correct posture, preparing you for a walk.
Muscle tone	Standardisation of tone occurs due to the encouragement of co-contraction of muscles agonists and antagonists, by facilitating the reciprocal innervation in the assembly process.
Gross Motor Function	The ability of a child to perform activities increasingly more complex form plastic mechanisms of S.N.C and myelination of the cortex that strengthens the party guests for that performs its function.

Conclusion

Children with Down Syndrome benefit from working with the horse, especially in gait, tone muscle and gross motor function, since it reinforces the treatment in room and adds a motivational component that causes the child to participate more in their rehabilitation.

No conflict of interest

ISPR7-0393

Social Integration Programmes and Rehabilitation for Specific - Miscellaneous

**PATIENT PERSPECTIVES ON IMPROVING PERSON-CENTRED REHABILITATION:
IMPLEMENTATION AND EVALUATION OF A REHABILITATION SPECIFIC PATIENT
EXPERIENCE SURVEY; FACILITATORS AND BARRIERS**

A. Elmalik¹

¹Royal Melbourne Hospital, Rehabilitation Medicine, Melbourne, Australia

Introduction/Background

Routinely patients receive surveys sent by the hospital on the care that they experienced and any comments they would like to make; however these comments may be very broad.

This project is patient-centred rehabilitation study, which study the implementation and evaluation of a rehabilitation specific patient experience survey using the Modified Client-Centred Rehabilitation Questionnaire (CCRQ).

Furthermore; a further follow up single phone call to the participants to ask them to name the most important four (4) facilitators and four (4) barriers from their for person-centred rehabilitation

The aim of this study is to better characterise and determine barriers and facilitators to patient-centred experiences in inpatient rehabilitation, from a patient's perspective.

Material and Methods

Methods

Study design: Cross-sectional telephone survey;

Settings: Inpatient rehabilitation unit, Royal Melbourne Hospital

Participants: 100 consecutive admitted patients over six months.

Procedure:

After an informed consent was obtained, participants will be provided with the background of the survey at the start of the phone call, once the background has been provided, and then they were required to answer two questions on how we could improve their person-centred experience.

Results

Results

Participants were predominantly female (52%), mean age 68 ± 13 years. Almost one-half (43%) had neurological conditions and 41% musculoskeletal problems.

Elderly patients were generally grateful and reluctant to provide negative comments, however younger were more particular about their dislikes forthcoming with their comments.

Elder patients keen on interaction and socialising more; however younger group do treasure their privacy.

A few patients were disappointed by the lack of culturally appropriate dietary preparation, and room temperature control units.

The availability of free wireless internet was big bonus for younger patients

Conclusion

This short specific Questions and Answers survey has identified facilitators and barriers, which would essentially assist the rehabilitation multidisciplinary staff in delivering better and most needed patient-centred care.

No conflict of interest

ISPR7-0627

Social Integration Programmes and Rehabilitation for Specific - Miscellaneous

MAKING REHABILITATION MORE RELAXING. THE EXPERIENCE OF A RECREATIONAL SPORTS SOCIAL WORKSHOP IN A AMBULATORY REHABILITATION SERVICES

M. Weinberg¹, M.F. Colon¹, J.P. Sole¹

¹CEMIC - Centro de Educación Médica e Investigaciones Clínicas "Norberto Quirno", Rehabilitation, CABA, Argentina

Introduction/Background

Within a Ambulatory Rehabilitation Services, a weekly social recreational and sports activity was planned for patients with neurological damage at a sub acute or chronic stage, in order to reach the following objectives:

- To develop their creativity and imagination through experimentation of different activities within an art, sports and games framework.
- To improve or maintain their Basic Motor Skills, Motor, Non Motor, of projection and reception.
- Motor response by imitation and or through orders.
- Following simple instructions, complex instructions, explained, shown.
- Performance Learning known games, new games.

This space is planned by an interdisciplinary team made up of a Physical Education Instructor and a Social Worker, coordinated by a rehabilitation physician (physiatrist).

Material and Methods

The workshop was carried out weekly from 1 July to 31 October 2016.

14 patients took part, 8 men, 6 women, from 23 to 85 years of age.

FIM, MMSE, CIF standard scales were used for evaluation.

Social history, semi directed interviews, qualitative interviews, notes in field notebooks were carried out.

Bibliographical material and follow up through audiovisual material were used.

Results

The use of this modality of workshop has shown to benefit the generation of a greater following of the treatment, improving the psycho social well being of the patients, strengthening the intra institutional links, and among the participants the maintenance of the superior cognitive functions.

Through the different types of game a more favourable evolution is achieved over structured routines, as well as a group of pertinence and contention.

Conclusion

This programme has become part of the rehabilitation of the participants as a group meeting space, game and de-routinization of the rehabilitation process.

The interdisciplinary work has encouraged an integral approach of the participating group efficiently and productively, so achieving the best results through an exchange of information and approach techniques, creating a new protocol for the intervention.

No conflict of interest

ISPR7-0306

Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

EXPLORING THE TRAJECTORIES OF PARTICIPATION FOLLOWING TRAUMATIC SPINAL CORD INJURY: PEER MENTORING A MUST!

C. Joseph¹, J. Joseph²

¹, Cape Town, South Africa

²Cape Peninsula University of Technology, Department of Education, Cape Town, South Africa

Introduction/Background

The role of peer support in assisting newly spinal cord-injured (SCI) individuals making a positive adjustment is well documented, with further evidence emerging that may assert its role in 'fast-tracking' *participation*. However, this support service is not fully embedded within the health care and comprehensive rehabilitation model of South Africa. **Aim:** Given the challenges (e.g. resource constraints) facing the current system, a need exists to explore the role of peer mentoring in helping survivors reclaim meaning and participation.

Material and Methods

A qualitative design, using inductive thematic analysis, was used to explore the different trajectories of participation following SCI of those who received, and failed to receive, peer mentoring. Seventeen (17) survivors of TSCI were interviewed and asked these questions: how would you describe your experiences of the peer mentoring programme? How did the peer mentoring assist you with life following injury? Why do you think the peer mentoring worked for you?

Results

Trajectories to reclaiming meaning and participation was the overall theme, with the subthemes "a journey of liberation and celebration" and "a journey dominated by challenges". The first sub-theme emerged as participants described the role and impact of peer mentoring in terms of gaining the necessary knowledge and insights into dealing with the new body and engaging in an unsuitable environment. Further, the stories of their mentors succeeding with reclaiming a meaningful life demonstrated effective in eliciting internal motivation to dominate over their challenges. The second sub-theme emerged as participants who have not received peer mentoring, or only had access to it later in life, expressed accounts of always battling situations of life.

Conclusion

Routine peer mentoring appears to facilitate the process of reclaiming meaning and participation even when provided later on in life, and should therefore be considered a valuable part of the rehabilitation process.

No conflict of interest

ISPR7-0513

Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

THE INFLUENCE OF ARGENTINE TANGO IN FUNCTIONAL AND COGNITIVE REHABILITATION IN PATIENTS WITH PARKINSON DISEASE

C.A. de Oliveira Alberissi¹, L. Moraes de Aquino¹

¹São Camilo University Centre, Physiotherapy, São Paulo, Brazil

Introduction/Background

Parkinson's disease is neurodegenerative, chronic and progressive, which occurs the loss of neurons in the substantia nigra. These neurons are responsible for synthesizing dopamine, and its decrease causes several motor symptoms and functional damages. It is suggested that the tango is an effective therapy to enable motor recovery, body control and social interaction. This study aimed to check the influence of this therapy in the functional and cognitive rehabilitation of individuals with Parkinson disease.

Material and Methods

We conducted a literature review in the databases PubMed, Lilacs, IBECs, Scielo, Cochrane Library and Peter. We used the descriptors Parkinson's disease and dancing. The boolean operator used was AND, in portuguese, english and spanish.

Results

We found 55 articles. Of these, 16 were excluded due to leakage of theme or for not having availability in full, 23 articles were duplicated and 16 articles were included. The tango brings benefits in the balance, posture, bradykinesia, drops, spatial cognition, gait and mobility by allowing variations of movements, directions and rhythms, causing the patient to pay attention to movements, to the steps, the coordination of the body as a whole and to concentrate on the partner and in music.

EFFECTS INVOLVED IN TANGO	MECHANISM
Neurobiological Effects	There is a mechanism neurobiological induced by physical exercise in blood flow, in trophic factors and cytokines anti-inflammatory properties that can help protect dopaminergic neurons and synapses, creating an environment that facilitates the plasticity.
Cognitive Effects	There are cognitive effects that demonstrated improvements, since building measures a physical activity that relates to a task cognitive facilitates learning a given task and has the potential to reduce the speed of progression of the disease.
Psychological Effects	The therapy brings greater feelings of well-being, self-esteem and self-efficacy when patients experience a sense of accomplishment to master and learn certain movements of the dance and when the interactions with the partners are successful.
Neurophysiological Effects	The music provides various sensations through the activation of motor networks that give back the networks affected by the disease via cerebellum-thalamo cortical bone, and by the activation of brain areas specific such as amygdala and nucleus accumbens, cingulate cortex, hippocampus, hypothalamus, insula and cortex pre-front. This activation includes the launch of several biochemical mediators, among them the dopamine, which is a decrease in Parkinson's disease. This creates different effects cognitive, affective, reducing feelings of physical impossibility.

Conclusion

Because it is an attractive exercise, which combines dance techniques, motor learning, training of balance and physical activity, patients adherence better to the treatment, leading to symptoms management and concentration emphasis, coordination and social interaction for these patients.

No conflict of interest

ISPR7-0581

Social Integration Programmes and Rehabilitation for Specific - Support, Assistance and Independent Living

SELF ACCEPTANCE AND SEPARATION FROM THE "FORMER SELF" ASSESSMENT OF THE EFFECT OF GROUP THERAPY WITH PATIENTS DIAGNOSED WITH TRAUMATIC BRAIN INJURY (TBI)

D. Azerrad¹

¹Loewenstein Hospital - Rehabilitation Center, SOCIAL WORK, Raanana, Israel

Introduction/Background

Traumatic brain injury occurs suddenly and can change a person's life forever. It requires the survivor to go through a lengthy process of rehabilitation in order to rebuild abilities and independent functioning which were lost.

A person with TBI suffers from multiple problems – physical, cognitive, behavioral, and emotional which influence his rehabilitation and readjustment. These difficulties can remain for an extended period.

The poster will describe results of qualitative research with 12 patients diagnosed with TBI who participated in group therapy at the Loewenstein Rehabilitation Center.

The goal of the research was to present the main issues affecting self perception from the perspective of the participants.

Material and Methods

Qualitative interviews with the participants.

Results

Three themes emerged :

1. Acceptance of the changing sense of self (we are all in the same boat).
2. Mirroring as a means of developing self - awareness.
3. Coping with social stigma.

Conclusion

We found that participation in the group contributed to a sense of belonging to a peer group and to the ability to process the experiences related to the changing self as well as coping with the stigma of being brain injured.

No conflict of interest

ISPR7-0546

Social Integration Programmes and Rehabilitation for Specific - Vocational Rehabilitation

UPDATING THE EVIDENCE ON FUNCTIONAL CAPACITY EVALUATION METHODS: A SYSTEMATIC REVIEW

S. De Baets¹, N. Schalley¹, K. Vermeulen², L. Van Peteghem², S. Vertriest², D. Van de Velde¹

¹*Ghent University,*

Faculty of medicine and health care sciences - Department of rehabilitation sciences and physiotherapy - occupational therapy program, Ghent, Belgium

²*Ghent University Hospital, Rehabilitation Centre, Ghent, Belgium*

Introduction/Background

The purpose of this systematic review is to synthesize the recent evidence (published since May 2004) on the psychometrics of currently used Functional Capacity Evaluation (FCE) methods. This way, information from previous systematic reviews on this topic can be enriched with up-to-date evidence.

Material and Methods

A systematic literature search was conducted in nine databases. The resulting articles' title, abstract and full-text were screened based on predefined inclusion and exclusion criteria. Two reviewers independently performed this screening process. Included studies were appraised based on their methodological quality. Relevant data were extracted into extraction tables.

Results

The search resulted in 20 eligible studies of varying methodological quality, on nine different FCE methods. The Baltimore Therapeutic Equipment Work Simulator showed a moderate predictive validity and good diagnostic abilities. The Ergo-Kit (EK) showed moderate variability and high inter- and intra-rater reliability. Low discriminative abilities and high convergent validity were found for the EK. Concurrent validity of the EK and the ERGOS Work Simulator was low to moderate. Moderate to high test-retest, inter- and intra-reliability was found in the Isernhagen Work Systems (IWS) FCE. The predictive validity of the IWS was low. The Physical Work Performance Evaluation (PWPE) showed moderate test-retest reliability and moderate to high inter-rater reliability. Low internal and external responsiveness were found for the PWPE, while predictive validity was high. The predictive value of the Short-Form FCE was also high. Low discriminative and convergent validity were found for the Work Disability Functional Assessment Battery. The WorkHab showed moderate to high test-retest, inter- and intra-rater reliability. Its manual handling component's internal consistency was high.

Conclusion

Well-known FCE methods have been rigorously studied, but some of the research indicates weaknesses in their reliability and validity. Future research should address how these weaknesses can be overcome.

No conflict of interest

ISPR7-0061

Sports in Rehabilitation and Sports Rehabilitation

SPORTS AS REHABILITATION & CLASSIFICATION IN PARALYMPIC SPORTS

J. Maharaj^{1,2}

¹University of Sydney/Lourdes Hospital, Rehabilitation Medicine, Dubbo, Australia

²Sports Technical Committee, International Paralympic Committee, Bonn, Germany

Introduction/Background

Sports was introduced primarily as a mode of rehabilitation at the Stoke Mandeville Hospital for the spinal cord injured return servicemen and women from the Second World War. This eventually proliferated to involve many disability groups in international competitions requiring the development of a classification system to accommodate the spectrum of disabilities. Classification has become an integral part of the Paralympic Movement with some recent major re-orientations.

Material and Methods

A review and update of the use of sports as rehabilitation and the evolution of the models of classification systems within the Paralympic Movement is presented with particular reference to certain sports specific classifications.

Results

Sports' initially being utilized as a mode of rehabilitation has evolved into global Paralympic Movement. Over the years, classification in Paralympic sports has dynamically changed from an initial medical-based to now a sports specific functional model with specified eligible impairment based on the International Classification of Functioning, Disability and Health (ICF) framework. Paralympic sports must engage in development of evidence-based sports specific classification systems for their athletes. There is a conceptual framework to introduce objective measurements for classification assessments, and to possibly relocate the rigorous assessment process from competition into a laboratory-based out-of-competition activity.

Conclusion

Sports still play a major role in rehabilitation. There has been a huge paradigm shift in the classification systems for the Paralympic Movement and associated sports. This will include major changes and adjustments for the athletes, coaches, officials and spectators.

No conflict of interest

ISPR7-0112

Sports in Rehabilitation and Sports Rehabilitation

COMPARISON OF THE NATURAL TROCHANTER-TO-CRANK SPINDLE ANGLE IN WORLD TOUR VERSUS CATEGORY 3, 4, AND 5 BICYCLE ROAD RACERS

A.J. Haig¹, W. Haig²

¹, USA

²Stratton Mountain School, Bicycle racing team, Stratton Mountain- Vermont, USA

Introduction/Background

Biomechanical differences among athletes are thought to affect performance in most sports. The biomechanics of elite athletes are typically measured in laboratory situations. However their natural postures during competition may differ from laboratory situations. Therefore, it may be useful to compare biomechanical differences between high- and low-level athletes. For this study the hypothesis was that there was a difference in the trochanter-to-crank spindle angle between professional and amateur cyclists.

Material and Methods

We photographed and obtained from the internet lateral photographs of professional and amateur (Category 3, 4, 5) cyclists. We measured the angle between the horizontal line of the tops of the tires and the line from the trochanter to the crank spindle. Interrater reliability was determined on a subsample.

Results

Interrater-reliability on 31 professional cyclists was excellent (Pearson's $r=0.9015$), with a mean inter-observer difference of 1.73° . The trochanter angle in 31 professional was 102.7° and 23 amateurs was 110.2° , with the amateurs' trochanter angles more variable (s.d. 7.0° vs. 3.5°) and further back by 7.5° . (Student's $T=-4.67156$. $p=.000014$)

Conclusion

This simple methodology appeared reliable. Professional racers ride naturally further forward on their bicycles. This could be because the professionals obtain more power in this position, or have more even distribution of weight (thus better cornering); conversely, amateurs may not have as much power through 360° of cycling and the posterior posture may allow them to use more hip extension. This methodology can be generalized to many sports, providing athletes and coaches a true picture of performance differences that create excellence.

No conflict of interest

ISPR7-0129

Sports in Rehabilitation and Sports Rehabilitation

PREVENTION, DIAGNOSTICS, TREATMENT AND RETURN TO COMPETITION: ALGORITHM FOR DIAGNOSTICS AND THERAPY OF CONCUSSION IN PROFESSIONAL SPORTS

E. Froese¹, A. Gonschorek², J. Moock¹

¹VBG - German Social Accident Insurance, Rehabilitation, Hamburg, Germany

²BG Hospital Hamburg, Neurology, Hamburg, Germany

Introduction/Background

For the VBG (a German Social Accident Insurance), responsible for rehabilitation services in case of injuries in professional sports, the prevention of long-term consequences of concussions is an important goal. Thus, our project was aimed to develop an algorithm particularly focussing on multidisciplinary and the connection of prevention and rehabilitation.

Material and Methods

In January 2016 the VBG conducted a consensus conference to elaborate a concussion care algorithm. Experts were invited to clearly define current best practices for baseline testing, suspected diagnosis, continuative diagnosis, acute and post-acute treatment, and return to competition process (RtC) of sports-related concussion.

Results

Final algorithm comprises three main phases. (1) Pre-season: Unlike other guidelines baseline testing is an important part of the algorithm. Experts are convinced that comparison of post-injury with baseline results can assist health professionals in diagnosis, treatment and RtC. (2) Onfield/Sideline: Confirmation of concussion during a game can be conducted by health professionals and trainer with the Concussion Recognition Tool. A concussed player must be removed from game. Hospitalization for 24 hour observation is obligatory. (3) Following day(s): Depending on medical status additional diagnosis or treatment is appropriate and involvement of a neurologist is obligatory. RtC process should only start with the approval of the team physician in agreement with the neurologist.

Conclusion

For practical reasons the algorithm includes evidence-based and eminence-based knowledge and differs in specific issues from other guidelines. However, our goal was to obtain the actual best possible processes for our clients.

No conflict of interest

ISPR7-0264

Sports in Rehabilitation and Sports Rehabilitation

THE ANALYSIS OF LUMBAR SPINE, PELVIS AND HIP CHARACTERISTICS ASSOCIATED WITH LOW BACK PAIN IN ELITE TRAMPOLINISTS

W. Jiao¹, S. Xie¹, Y. Yang²

¹Beijing Sports University, Sport physical therapy and Training School, Beijing, China

²Beijing Sports University, Graduate School, Beijing, China

Introduction/Background

Currently, low back pain in athletes is not yet fully recognized. This study's aim is studying lumbar, pelvis posture, hip range of motion and lumbar coordination, and seeking the relationship of low back pain and these features, trying to find the characteristics of low back pain in elite trampolinists.

Material and Methods

In this study, 20 (male 10, female 10) Chinese elite trampoline athletes were observed with the inclusion criteria to back pain group (15) and non-low back pain group (5). The study indices were from trunk flexion, lateral flexion, rotation strength tests, lumbar activity test, hip range of motion of the test, the hip external rotation of the pelvis and lumbopelvic-hip coordination tests.

Results

In national trampoline team athletes, flexion-extension ratio (F / E) and the rotation ratio in athletes with low back pain was significantly greater than non-pain group ($p < 0.05$); F / E was correlated with pelvic tilt angle ($r = 0.69$, $p < 0.05$). The hip internal rotation ROM in pain group was significantly lower than in non-pain athletes ($p < 0.05$), the onset angle of lumbopelvic rotation in pain free side was significantly lower than in non-painful side ($p < 0.05$); The hip internal rotation angle when the pelvis starts rotation in low back pain group is less than the non- low back pain group ($p < 0.05$).

Conclusion

The limited hip rotation ROM is associated with low back pain in trampoline athletes. The pelvis and lumbar control among trampoline athletes is declined in chronic low back pain group, and the loss of pelvis during the rotation of hip is related to low back pain. The pelvic tilt angle among trampoline athletes differed from 5° to 16° . Trampoline athletes' pelvic tilt and lumbar flexion has no significant relationship, but the trampolinists whose pelvic tilt angle are greater have greater F/E.

No conflict of interest

ISPR7-0374

Sports in Rehabilitation and Sports Rehabilitation

INJURIES AND ILLNESSES IN THE ARGENTINIAN TEAM AT THE PARALYMPIC GAMES AT RIO DE JANEIRO 2016

N. Gagliardi¹, G.C. Gennuso², N. Devesa², A. Buey³, S. Falconi³

¹Argentinian Committee Paralympic, Medical Commission, Ciudad Autonoma de Buenos Aires, Argentina

²Argentinian Paralympic Committee, Medical Commission, Ciudad Autonoma de Buenos Aires, Argentina

³Argentinian Paralympic Committee, Medical Commission, Rosario, Argentina

Introduction/Background

Paralympic sports are growing continuously. This level of exigencies carries an element of risk. Epidemiological studies have been developed for years by the medical field of the scientific area of the International Paralympic Committee (IPC). Since the 2012 Summer Paralympics follow-ups of injuries and illnesses have been done during pre-competitive and competitive stages. The aim of this study is to foster innovation in sports medical assistance making use of technological devices of data acquisition.

Material and Methods

Data about injuries and illnesses that occurred during the 14-day Paralympic Games Rio de Janeiro 2016 was gathered using the WEB-IISS system (facilitated by the International Paralympic Committee) . 85 athletes were surveyed by the Argentinian national medical team. The "non-specific musculoskeletal discomfort" is also included. All data was related to the different sports

Results

The incidence rates of injuries (IR) was 33.61/1000 athletes -day. In the precompetitive period (only 3 days) there were more consultations about injuries than in the whole competitive period (11days). Recurring previous injuries accounted for 45% of consultations. The illness incidence rate was 9.2 / 1000-athletes days and the dermatologic system was the most affected one. 98% of all consultations did not affect any training or participation in competitions. A total of 79% of muscle pains were treated.

Conclusion

The precompetitive period was the time of greatest contact with athletes around the event. Lower limb injuries are related to the high number of standing players and contact sports. The high incidence of recurrent previous injuries generates an alarm in the rehabilitation of our athletes. Education, prevention, medical evaluations and strict monitoring by trained professionals is required in order to achieve greater competitive performances and to reduce the incidence of injury.

No conflict of interest

ISPR7-0375

Sports in Rehabilitation and Sports Rehabilitation

DEEP VEIN THROMBOSIS PRESENTING AS POSTERIOR KNEE PAIN AFTER PLAYING SOCCER: A CASE REPORT

A. Bhargava¹

¹Advanced Interventional Pain & Sports Medicine Center, Spine & Sports Medicine, Owings Mills, USA

Introduction/Background

Deep vein thrombosis (DVT) may lead to devastating results if not diagnosed and treated early. There are no specific clinical features to diagnose DVT. This case study DVT presented as posterior knee pain after playing soccer.

Material and Methods

IRB Exemption was obtained. A 32 year old male presented with right knee pain. 2 weeks earlier he had twisted left ankle following which he played soccer. Two days later he developed right knee pain. He felt that he was putting more stress on the right knee due to left ankle injury. Right knee felt stiff. There was tenderness at the popliteal fossa and posteromedial aspect of right thigh. Varus, Valgus and Lachman test was negative in right knee. There was no swelling. Right ankle dorsiflexion increased pain in popliteal fossa and stretching in the calf. MRI was ordered as patient was leaving for trekking in another country for 3 weeks.

Results

MRI findings were consistent with deep vein thrombosis involving the popliteal vein and low-grade ACL sprain. On further evaluation patient was found to have factor V Leiden. The patient was prescribed warfarin for 11/2 years. He was advised to take aspirin for long journey.

Conclusion

A sportsperson with posterior knee pain may be further evaluated for DVT. We do not recommend MRI immediately for knee pain. MRI was incidentally obtained to rule out any derangement of the knee before patient left for another country. There should be a high suspicion for DVT if patient presents with posterior knee pain.

No conflict of interest

ISPR7-0446

Sports in Rehabilitation and Sports Rehabilitation

ULTRASOUND ASSESSMENT OF TRUNK MUSCLES AND BACK FLEXIBILITY, STRENGTH AND ENDURANCE IN OFF-ROAD CYCLISTS WITH AND WITHOUT LOW BACK PAIN

P. Noormohammadpour¹, M. Rostami², M. Ansari³, M.A. Mansournia⁴, R. Kordj⁵

¹Sports Medicine Research Center, Tehran University of Medical Sciences, Tehran, Iran

²Department of Neurosurgery- Shariati Hospital, Tehran University of Medical Sciences, Tehran, Iran

³Spine Division, Noorafshar Rehabilitation & Sports Medicine Hospital, Tehran, Iran

⁴Department of Epidemiology and Biostatistics- School of Public Health, Tehran University of Medical Sciences, Tehran, Iran

⁵Department of Sports and Exercise Medicine- School of Medicine, Tehran University of Medical Sciences, Tehran, Iran

Introduction/Background

Low back pain (LBP) is a frequent complaint among athletes. While different studies have shown association between low back pain and abdominal and lumbar muscles thickness in general population, few articles have studied them in athletes. The aim of this study was to compare the thickness of lateral abdominal muscles and Cross Sectional Area (CSA) of lumbar Multifidus Spinae (LM) muscles of competitive off-road cyclists with and without Low Back Pain . We also aimed to compare the maximum isometric back strength and endurance, as well as flexibility of lower back in cyclists with LBP and in the controls.

Material and Methods

The thickness of Transversus Abdominis (TrA), Internal Oblique (IO) and External Oblique (EO) along with the CSA of LM muscles of 14 professional competitive off-road cyclists with LBP and 24 controls were measured by ultrasound (US) in hook-lying position on the examination table, and mounted on the bicycle. In addition, the back strength and endurance of the subjects and the flexibility of the participants were measured.

Results

Data showed a significantly lower thickness of Transversus Abdominis (TrA) and CSA of LM muscles in cyclists with LBP comparing to controls in all positions. No significant result regarding the flexibility of the subjects in case group comparing with the controls was found ($p = 0.674$). In addition, it was found that there is no significant difference in isometric back strength of the subjects between the groups ($p = 0.105$). However, we found that subjects with LBP have a lower endurance in back dynamometry with 50% of their maximum isometric back strength ($p = 0.016$).

Conclusion

In this study, useful information regarding possible factors associated with low back pain in off- road cyclists was found (lower thickness of TrA and LM muscles and decreased back endurance).

No conflict of interest

ISPR7-0452

Sports in Rehabilitation and Sports Rehabilitation

LOW BACK PAIN IN CHILDHOOD: ASSESSMENT OF SPORTS ACTIVITIES

S. Jemni¹, R. Moncer¹, M. Gaddour¹, M. Linda², F. Khachnaoui¹

¹Sahloul Hospital, physical and rehabilitation unit, Sousse, Tunisia

²CHU Farhat Hached, Rheumatology department, Sousse, Tunisia

Introduction/Background

Regarding low back pain (LBP) risk factors in childhood, the involvement of sports activities remains controversial. In this study, we focused on relationship between sports and LBP in Tunisian children.

Material and Methods

We conducted an analytical cross-sectional study in schools of Sousse, Tunisia, comparing children with and without back pain. Evaluation includes a questionnaire about sports activities, its type. Physical examination includes anthropometric assessment, evaluation of spine mobility, extensibility of sub pelvic muscles and the endurance of back muscles and quadriceps.

Results

Our Study gathered 444 students, 201 boys and 243 girls, with average age of 14.95 years. The prevalence of LBP was higher in the group not practicing sports (38.5%) compared to children having sports activities (22, 3%) ($p = 0.041$). Sport is a protective factor, it reduces the risk of developing LBP (Odds Ratio (OR) = 0.43%). The prevalence of LBP is more important in children practicing football, gymnastics or athletics. Physical evaluation shows that muscle endurance is higher in the group practicing sports with a lower prevalence of LBP.

Conclusion

Sports involvement in back pain during childhood remains a controversial subject. Physical activity reduces the risk of LBP 0,043 (OR). Instead, a high-level sports activity increases the risk of LBP. Symptoms increases with sports, putting in charge repeatedly lumbar spine or high risk of direct trauma of spine as in competitive sports.

No conflict of interest

ISPR7-0468

Sports in Rehabilitation and Sports Rehabilitation

THE EFFECT OF AGE, HAND DOMINANCE AND SOME ANTHROPOMETRIC CHARACTERISTICS ON HANDGRIP STRENGTH IN HEALTHY FEMALE ADULTS

H. Wang¹, J. Jia¹, J. Chen¹

¹Fudan University Huashan Hospital, Rehabilitation Department, Shanghai, China

Introduction/Background

Grip strength is a standard parameter for the evaluation of hand function and is considered as an important indication of general health and ability to perform daily living activities. Age, hand dominance and some anthropometric values such as weight, height, BMI or arm circumferences were reported as being predictive of maximal grip strength among different populations in previous studies. Thus, the aim of this study was to investigate those body measurements on handgrip strength in healthy female adults, which may help clinicians to assess the extent of functional loss after injury or disease.

Material and Methods

Three hundred and three unrelated, normal, healthy women aged from 20 to 79 were recruited. Maximal grip strength was measured according to a standardized protocol with dynamometers for both dominant and non-dominant sides. Several anthropometric data were also measured: height; weight and arm circumferences, commencing at the wrist and progressing proximally at 10 cm intervals to 40 cm. The mean values, standard deviations and percentiles were determined and the data were analysed by correlation analysis and multiple regression analysis.

Results

Although there was a large range of maximal grip strength in the population, there was a trend that the maximal grip strength decreased with increasing age. Both the maximal grip strength and arm circumferences were significantly affected by dominance and the arm circumferences were also affected by location along the arm. The results also showed that age and height were correlated with maximal grip strength for both hands, while there was no significant correlation between maximal grip strength and arm circumferences at any location along the arm.

Conclusion

Maximal grip strength cannot be predicted well using age, height, weight and arm circumferences alone in female adults.

No conflict of interest

ISPR7-0524

Sports in Rehabilitation and Sports Rehabilitation

THE FIFA 11 TRAINING PROGRAM AND FUNCTIONAL PERFORMANCE IN FUTSAL PLAYERS: TRAINING AND DETRAINING EFFECTS

J. Oliveira¹, M. Lopes², M. Rodrigues², R. Costa³, F. Ribeiro⁴

¹University of Porto- Faculty of Sport, Reserach Center in Physical Activity- Health and Leisure, Porto, Portugal

²University of Aveiro, School of Health Sciences, Aveiro, Portugal

³University of Aveiro, School of Health Sciences and CINTESIS.UA, Aveiro, Portugal

⁴University of Aveiro, School of Health Sciences and Institute of Biomedicine - iBiMED, Aveiro, Portugal

Introduction/Background

Although FIFA 11 enhances dynamic balance and agility and reduces the risk of injury, little is known about the effect of detraining after the completion of the FIFA 11 program. Hence, we examined the effects of the FIFA 11 training program and short-term detraining on agility, velocity, flexibility and vertical jump performance in futsal players.

Material and Methods

Eight-three male futsal players from seven amateur clubs were recruited and randomized to an intervention (N=24, age: 27.0±5.1 years old, BMI: 23.8±2.4 kg/m²) or a control group (N=24, age: 26.0±5.1 years old, BMI: 25.1±2.5 kg/m²). The intervention group was submitted to 12-week FIFA 11 training, 2 sessions/week, followed by a 12-week detraining period, while the control group performed the regular futsal training. During the detraining period both groups performed only the regular futsal training. Functional performance was assessed by measuring agility (T-test), speed (30 meters' sprint), flexibility (sit and reach) and vertical jump performance (squat jump).

Results

No difference between groups was found for functional performance at baseline. Neither group showed significant changes in speed, agility, flexibility and vertical jump performance during the periods of training and detraining. Furthermore, no difference between groups was found after the

program and after the detraining period in functional performance (Figure 1).

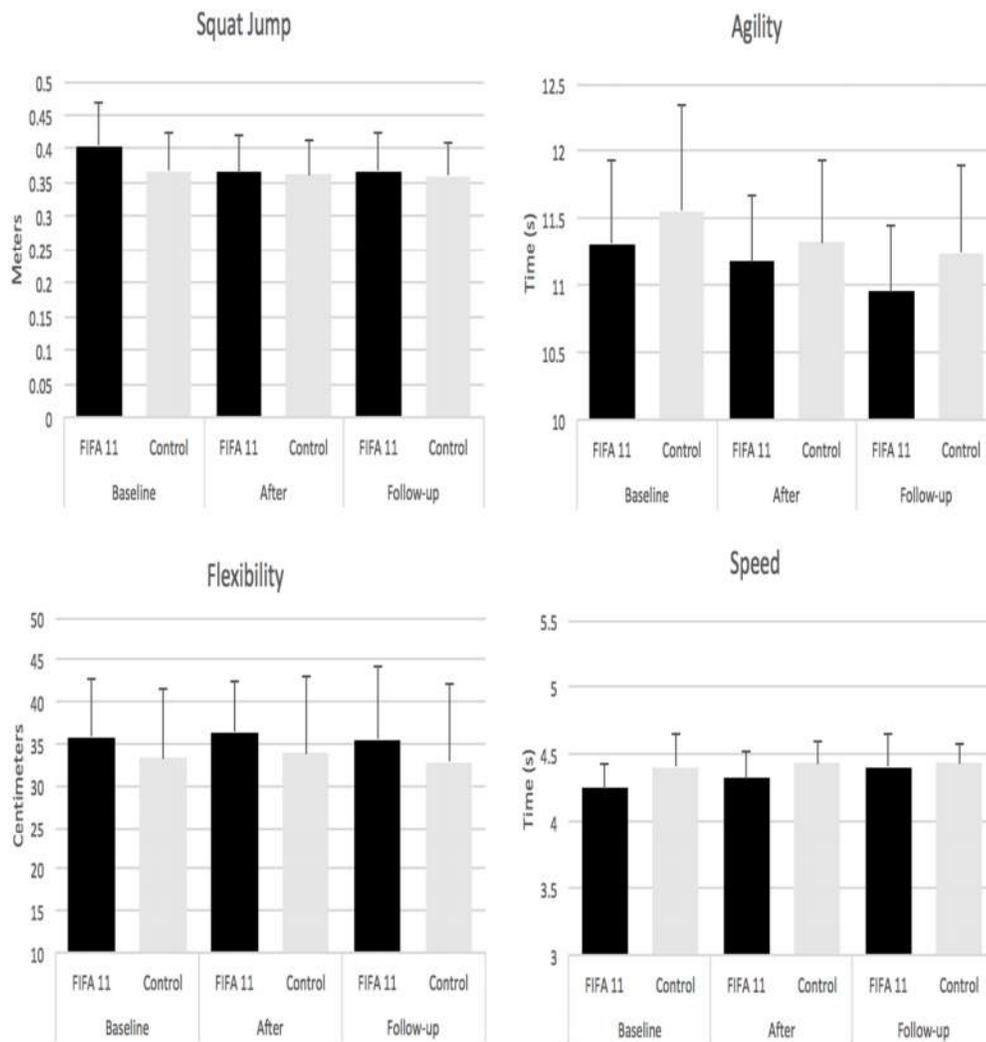


Figure 1. Pre-intervention, post-intervention and follow-up performance measurements

Conclusion

The results suggest that the FIFA 11 program performed only twice a week is ineffective to improve functional performance of amateur futsal players.

No conflict of interest

ISPR7-0579

Sports in Rehabilitation and Sports Rehabilitation

THE ROLE OF PHYSIOTHERAPIST IN TREATMENT IN FOOTBALL INJURES

B. Haxhiu¹, F. Gashi², E. Gara², Z. Durguti²

¹QKUK Qendra Klinike Universitare Prishtine, Physical Medicine and Rehabilitation, Prishtina, Kosovo

²Q.K.U.K, Physiotherapy, Prishtina, Kosovo

Introduction/Background

The role and responsibilities of Physiotherapist (PT) in Sports Medicine beside treatment, exercise program design and education of the football players regarding injuries is injury prevention. In some teams, the sports managerial leaders have lack of information regarding the role of PT in their teams.

Material and Methods

Our descriptive study used the available records from Club Licenses and official competitions Protocols, and statistical data about reported injuries in each team. Composition of Medical Staff members is recorded (number of MD, PT) in Super League and First League clubs of Kosovo during 2002, 2006, 2010 and 2014. All PT have implemented programs for injury treatment and prevention and their effect was monitored.

Results

For the first time, in 2006 2 PT are included in the Medical Staff (total 10.7%). Based on F-MARC classification of severity (number of days' absence) the number of minimal injuries was 8%, mild 19%, moderate 26% and severe 47%. Incidence of injury was 16,2 per 1000 hours/exposures matches and training. In 2010 more reliable data was obtained and among 28 teams 46.4% have hired PT as Medical Staff members, 53.3% in the Super League and 37.5% in First League. Based on severity category (number of days' absence) minimal injuries was 11%, mild 16%, moderate 29% and severe 44%. The incidence of injury was 12,8 per 1000 hours/exposures matches and training. In 2014 60.7% of Medical Staff members were PT in Kosovo football leagues, 75% in the Super League and 50% in First League. Based on severity category (number of days' absence) minimal injuries was 20%, mild 16%, moderate 37% and severe 27%. The incidence of injury was 8,4 per 1000 hours /matches and training mode.

Conclusion

This study demonstrates the importance of PT inclusion in the Medical Staff of football teams, and their important role in sports injury treatment and prevention.

No conflict of interest

ISPR7-0599

Sports in Rehabilitation and Sports Rehabilitation

INFLUENCE OF ADAPTIVE SPORTS ON THE MOOD OF THE PEOPLE WITH MOTOR DISABILITY

M.S. Querevalú Soria¹, L.A. Astocaza Miranda¹

¹Hospital Nacional Daniel Alcides Carrión, Lima, Bellavista, Peru

Introduction/Background

Sports are very important for a total development of human beings, especially in people with disabilities, because of their need of a social reinsertion; therefore, sports become a therapeutic instrument and a key point which influence the mood of this population. Rehabilitation Departments in Peru are putting into practice adaptive sports as therapeutic programs but that is just beginning in our country; and there are no studies on this issue. The aim of this study is to determine if there are changes in the mood of people with motor disabilities with the practice of adaptive sports.

Material and Methods

This study examines the mood profile of the patients from the Amputee Program in Carrion Hospital, Callao-Peru one week before and after the Adaptive Sports in October 2016. To measure the mood we used the abbreviated Spanish version of Profile Of Mood States (POMS).

Results

Our results show a stable pattern of non-emotional disturbance, although the degree of vigor was higher after the adaptive sports which respond to an "iceberg profile".

Conclusion

We conclude that the practice of adaptive sports changes the mood in favor of the vigor state and we recommend its inclusion as an important way of the rehabilitation therapy in people with disabilities.

No conflict of interest

ISPR7-0674

Sports in Rehabilitation and Sports Rehabilitation

ALTERATION OF GLYCEMIC, LIPIDIC AND HEPATIC PROFILES IN HIGH INTENSITY SPORTS PRACTICE

J. Pereira¹, J. Branco², C. Nazareth², S. Cardoso³

¹Centro de Medicina de Reabilitação da Região Centro - Rovisco Pais, Medicina Interna, Coimbra, Portugal

²Centro de Medicina de Reabilitação da Região Centro - Rovisco Pais, Medicina Física e de Reabilitação, Coimbra, Portugal

³Centro de Saúde, Medicina Geral e Familiar, Coimbra, Portugal

Introduction/Background

Sports practice is globally recognized as beneficial and potentiator to an adequate clinical health, namely for the normalization of glycemic and lipid profile in patients with moderate or high cardiovascular or diabetogenic risk, as well as its maintenance with the continuity of the exercise. However, in the practice of high-intensity and high-output physical activity, its influence on the above-mentioned parameters, as well as the potential risks involved, namely to the kidneys and liver, are not fully described.

Aim

The aim of this study is to evaluate the impact of high intensity sports practice in the short and medium term by analyzing glycemic, lipid, liver and renal function profiles.

Material and Methods

Analytical controls were performed in subjects with habitual and recurring practice of high-level physical activity over the course of a year, establishing a comparative analysis with individuals with moderate sports practice.

Results

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Conclusion

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No conflict of interest

ISPR7-0702

Sports in Rehabilitation and Sports Rehabilitation

ISOKINETIC EVALUATION OF THE HIP FLEXOR AND EXTENSOR MUSCLES: A SYSTEMATIC REVIEW

F.Y. Zapparoli¹, M. Riberto¹

*¹Hospital das Clínicas Faculdade de Medicina Ribeirão Preto USP,
Department of Biomechanics- Medicine and Rehabilitation of the Locomotor Apparatus,
Ribeirão Preto/ São Paulo, Brazil*

Introduction/Background

Isokinetic dynamometry testing is a safe and reliable method accepted as the “gold standard” in the evaluation of muscle strength in the open kinetic chain. Isokinetic hip examinations face problems in the standardization of the position of the equipment axis; in the individual being examined; in the adjustment of the lever arm and in stabilization strategies for the patients during the tests. Identification of the methodologic procedures with best reproducibility is also needed. The objective of this study was to review the literature to evaluate the parameters used for the isokinetic evaluation of the hip flexor and extensor muscles and its reproducibility.

Material and Methods

This is a systematic literature review of the Cochrane, LILACS, PEDro, PubMed, and SciELO databases. The inclusion criteria were papers on the evaluation of hip flexor and/or extensor muscular strength with an isokinetic dynamometer and papers that analyzed the ICC or Pearson's reproducibility. The information extracted was: positioning of the patient; positioning of the dynamometer axis; positioning of the lever arm; angular speed; type of contraction, ICC and Pearson's results.

Results

On the databases 204 papers were found, from which 14 were selected that evaluated hip flexor and extensor muscles, involving 550 individuals who were submitted to an isokinetic hip evaluation. Five papers obtained the best result in reproducibility and had their methodology analyzed.

Conclusion

In order to obtain better reproducibility of the isokinetic evaluation, following recommendations must be followed: the individual must be positioned in the supine position and the dynamometer axis must be aligned with the greater trochanter of the femur. The positioning of the lever arm must be in the most distal region of the thigh possible. The angular speed used to analyze torque peak and muscle work was 60°/s, and to evaluate the muscle power it was 180°/s, with concentric and eccentric contractions being analyzed

No conflict of interest

ISPR7-0703

Sports in Rehabilitation and Sports Rehabilitation

ISOKINETIC EVALUATION OF THE HIP ABDUCTOR AND ADDUCTOR MUSCLES: A SYSTEMATIC REVIEW

F.Y. Zapparoli¹, M. Riberto¹

*¹Hospital das Clínicas Faculdade de Medicina Ribeirão Preto USP,
Department of Biomechanics- Medicine and Rehabilitation of the Locomotor Apparatus,
Ribeirão Preto/ São Paulo, Brazil*

Introduction/Background

The literature on the isokinetic dynamometer to the muscle groups related to the movement of the hip is scarce and isokinetic hip examinations face problems in the standardization of the position of the equipment axis; in the individual being examined; in the adjustment of the lever arm and in stabilization strategies for the patients during the tests. Identification of the methodologic procedures with best reproducibility is also needed. The objective of this study was to review the literature to evaluate the parameters used for the isokinetic evaluation of the hip abductor and adductor muscles and its reproducibility.

Material and Methods

This is a systematic literature review of the Cochrane, LILACS, PEDro, PubMed, and SciELO databases. The inclusion criteria were studies on the evaluation of hip abductor and/or adductor muscular strength with an isokinetic dynamometer and studies that analyzed the ICC or Pearson's reproducibility. The information extracted was: positioning of the patient; positioning of the dynamometer axis; positioning of the lever arm; angular speed; type of contraction and ICC and Pearson's results.

Results

On the databases 204 articles were found, from which 11 were selected that evaluated hip abductor and adductor muscles, involving 376 individuals who were submitted to an isokinetic hip evaluation. Five articles obtained the best result in reproducibility and had their methodology analyzed.

Conclusion

In order to obtain better reproducibility of the isokinetic evaluation, recommendations must be followed: the individual must be positioned in the side-lying position with your back towards the dynamometer and the dynamometer axis must be aligned with the intersection of two straight lines, with the 1st line from the posterior-superior iliac spine to the knee and the 2nd line medial to the greater trochanter of the femur toward the midline of the body. The angular speed used to analyze torque peak and muscle work was 30°/s and to evaluate the muscle power was 210°/s, with concentric and eccentric contractions.

No conflict of interest

ISPR7-0704

Sports in Rehabilitation and Sports Rehabilitation

**VALIDATION OF THE PRESENTED BAREMOS OF THE COOPER TEST IN A POPULATION
APPLYING THE TEST IN HEIGHT**

I. Sanchez¹

¹Universidad Santo Tomas De Aquino, Facultad De Cultura Fisica Deporte Y Recreacion, Bogota, Colombia

Introduction/Background

Was based on the realization of a systematic review that allowed establish whether there today, studies reflecting the validation of scales or scales predicted the Cooper Test, in populations living at elevations where are exceeded 2000 m.

Material and Methods

Review is exploratory systemic type of document review using databases such as: Deporte.data Base, Dialnet, GSE, Pubmed, Scielo. Country, year, city application height of the city in relation to the meters on the level of: to collect information matrix data collection

Results

21 scientific papers corresponding to (67%) and 10 literary references of second and third order covering the (33%) of all the data collected were analyzed. According to the geographical distribution of the information, he found the total of reviewed articles that: Argentina, Brazil and Colombia each have 3 items validation test of cooper in their population groups; Cuba has 2 items, USA 4 publications, being one of the countries with greater application of this test, Spain, Finland, the Netherlands and Peru have one publication each. Of the total of 4 posts viewed items only validated the test over 2000 meters heights, using the same reference scales. Regarding the type of study and grades of recommendation 5 studios quasi-experimental type 1 experimental study cut 5 randomized experimental studies, 4 experimental nonrandomized, 4 publications review the subject and a single publication systematic review type is found, for a total of 20 articles reviewed and selected.

Conclusion

The Cooper Test is recognized as one of the field tests that allows me to set the level of aerobic fitness of an individual either trained or untrained easily. Its application has been traversal different populations without considering the height at which it is located; currently there are publications seeking to adjust the scales according to height levels and atmospheric pressure.

No conflict of interest

ISPR7-0726

Sports in Rehabilitation and Sports Rehabilitation

PATTERNS OF SPORT RELATED INJURIES IN A MAJOR TRAUMA CENTER IN UNITED KINGDOM

S. Ramanathan¹, F. Anwar¹

¹Addenbrooke's hospital, Neurorehabilitation, Cambridge, United Kingdom

Introduction/Background

Sports injuries usually refer to any kind of injury that is sustained during an athletic game. The number of sports injuries that occur in the UK is largely unknown. This is because epidemiological studies rarely examine sports injuries as a whole, investigating instead specific injuries (e.g. ankle sprains or fractures) due to sporting activities or injuries sustained through playing a particular sport (e.g. football).

Material and Methods

Our main objective of this was to determine the incidence, nature and severity of injuries related with different sports

Retrospective analysis of a prospectively collected data of 34 patients admitted in our major trauma center from October 2014 to November 2016. The variable analysed are age, gender, types of injuries sustained, initial Glasgow Coma Scale (GCS), types of injuries sustained and discharge destination.

Results

Age ranging from 14 to 71 Years. Initial GCS was 15/15 except for one patient with GCS of 3/15. Six patients had ICU admission. Most frequent type of sports injury was fall sustained from skating/rugby/skating board (26%) followed by rugby (23%) and football (14%). The most common orthopaedic fractures were open tibial fractures (9%) followed by pelvic(6%) and radius/ulna (6%) fractures. Interestingly, Thoracic vertebral fractures (12%) were the commonest vertebral injury followed by Lumbar/cervical

fractures(10%). 11% had Rib fractures. Subdural haematoma (12%) was the commonest intracranial injury.

Conclusion

Adolescent and adults are active in sports, which results in higher numbers of sports related injuries in this age group. In the professional game, head-to-head or neck contact, high-speed and high-impact tackles carry a greater propensity for injury similar to literature¹. Identification of type, mechanism and distribution of the injuries can help with the recognition of risk factors for injury. This may enable us to develop appropriate preventative measures to reduce the incidence and morbidity of such injuries and plan rehabilitation based on the mechanism of injury.

No conflict of interest

ISPR7-0792

Sports in Rehabilitation and Sports Rehabilitation

EXAMINATION OF THE NECESSARY LOAD FOR MAINTENANCE OF BONE IMPROVEMENT

S. Lee¹, K. Okai¹, N. Yamato¹, T. Suzuki¹

¹Aomori University of Health and Welfare, Department of Physical Therapy, Aomori, Japan

Introduction/Background

In this study, we examined the effect of the amount and intensity of physical activity on bone mineral density, and aimed to determine the necessary load to prevent a decrease in improve bone conditions.

Material and Methods

The study subjects were 66 women and were divided into three groups according to the osteo-sono assessment index (OSI). Bone mineral density was measured using calcaneal quantitative ultrasonography (QUS; AOS-100SA). The load was measured for 7 days by using an activity monitor HJA-750C (excluding bathing, sleeping, and swimming). The amount of physical activity was analyzed by calculating the execution time for an interval of 1 metabolic equivalent (METs) and conducting multiple comparisons.

Results

The amount of physical activity, including the daily mean footsteps and activity duration, did not significantly differ among the groups. In group 3, which had high bone density, the activity duration at 7.0-7.9 METs was higher than that in groups 1 and 2, with a 99.7% significance ($p < 0.05$, in each).

Conclusion

As such, to maintain healthy bone or improve bone conditions, an appropriate load higher than the moderate level was deemed more necessary than low loads or temporarily excessive loads.

No conflict of interest

ISPR7-0793

Sports in Rehabilitation and Sports Rehabilitation

EFFECTS OF GROUND REACTION FORCE AND BODY COMPOSITION ON BONE MINERAL DENSITY

S. Lee¹, K. Mikami¹, Y. Sato¹, J. Hashimoto¹, T. Suzuki¹

¹Aomori University of Health and Welfare, Department of Physical Therapy, Aomori, Japan

Introduction/Background

In this study, we examined the effect of body composition and ground reaction force generated when walking on bone mineral density to elucidate how reductions in bone mineral density can be prevented in youth.

Material and Methods

Body composition was measured using In Body720, a multi-frequency, multi-segment bioelectrical impedance meter. The measurement items were body weight, body fat, body fat percentage, muscle mass, skeletal muscle mass, lean body mass, body mass index, basal metabolic rate, and muscle mass for each segment of the limb. The ground reaction force was measured by using Force Plates OR6-6-2000 and Biosoft version 2.3.1 (AMTI), by determining contact time and the maximum value and impulse in three directions (Fz, Fy, Fx).

Results

Our results did not show a significant relationship between the ground reaction force from step taking and bone mineral density; however, they showed a significant relationship between the total ground reaction force over 1 day and bone mineral density.

Conclusion

Therefore, mechanical stress that provides a positive effect on bone mineral density may be related to the total amount of force, not to temporary intensity.

No conflict of interest

ISPR7-0826

Sports in Rehabilitation and Sports Rehabilitation

PHYSICAL FITNESS EVALUATION OF PHYSIOTHERAPY STUDENTS

J. Indriūnienė^{1,2}, A. Juocevičius^{1,2}, I. Muntianaitė¹

¹*Vilnius University Faculty of Medicine,*

The Department of Rehabilitation Physical and Sport Medicine, Vilnius, Lithuania

²*Vilnius University Hospital Santariškių klinikos, Rehabilitation Physical and Sport Medicine Center, Vilnius, Lithuania*

Introduction/Background

Understanding and upholding principals of healthy lifestyle in young age determines health, habits and physical activeness in later period. Although physiotherapy students are taught the principles of fitness and healthy lifestyle many of them are not engaged in health promotion behaviors.

The aim was to evaluate physical fitness of physiotherapy students.

Material and Methods

The research included 100 female physiotherapy students (mean age – 20.56 ± 1.40 y). Women's physical activity was evaluated using IPAQ. Body mass index (BMI), muscle – fat mass index (MFMI), VO₂max and vertical jump were evaluated. Knee flexors and extensors peak torque ratio was evaluated performing isokinetic test at 180°/s angular speed.

Results

33 % of the studied were very active or on the average intensively active at least 150 min/week. Women's average BMI was 21.59 ± 2.80 kg/m². 79 % of the women had normal BMI and 16 % of the women were overweight or obese. The average of students MFMI was 2.25 ± 0.66 . 35 % of the women MFMI was average, 29 % – lower than average. VO₂max was 37.37 ± 4.95 ml/kg/min. 58 % of students had average, 30 % - had poor and very poor VO₂max scores. Student's vertical jump result was 31.00 ± 6.52 cm. 9 % achieved average result, 91 % – lower than average. None of the women knee flexors and extensors peak torque ratio reached the recommended 76 % norm.

Conclusion

Physiotherapy student's physical fitness was insufficient. They should be more physical active to improve their physical and functional capacity.

No conflict of interest

ISPR7-0835

Sports in Rehabilitation and Sports Rehabilitation

THE EFFECT OF MODIFIED CHINESE TRADITIONAL EXERCISE WATER-BASED LIUZIJUE TRAINING ON PHYSICAL FUNCTIONS IN COPD PATIENTS

X. Liu¹, W. Wu², Z. Wang³, J. Liu², Q. Liu¹, X. Li¹, J. Hu¹, C. Shan¹, J. Yan⁴

¹Shanghai University of Traditional Chinese Medicine, School of Rehabilitation Science, Shanghai, China

²Shanghai University of Sport, School of Kinesiology, Shanghai, China

³Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Department of Respiratory Medicine, Shanghai, China

⁴Yueyang Hospital of Integrated Traditional Chinese and Western Medicine, Department of Rehabilitation Medicine, Shanghai, China

Introduction/Background

To verify whether the modified Chinese traditional exercise, i.e. water-based Liuzijue training (modulating breath and posture with pronouncing six Chinese characters in water pool), is more effective than routine Liuzijue training (on land rather than in water pool) on physical functions in chronic obstructive pulmonary disease (COPD) patients.

Material and Methods

60 COPD patients were randomized into three groups: modified water-based Liuzijue training (Group A), routine Liuzijue training (Group B) and control group (Group C, without Liuzijue training). Group A and B were instructed by experienced physiotherapist to do modified water-based or routine land-based Liuzijue training respectively with one 60 min session per week for 12 weeks. All three groups accepted comparable medical intervention except for Liuzijue. Cardiopulmonary exercise test (6-minute walk distances test, 6MWD), respiratory muscle function (P_Imax and P_Emax), lower limb muscle strength (30-second chair stand test, 30-CST) and upper limb muscle strength (30-second arm curl test, 30-ACT) were assessed before and after the training intervention.

Results

For 6MWD, Group A, not Group B and C, made significant improvement after 12 weeks' water-based Liuzijue training and was more effective than Group C. Only Group A attained significant promotion in both P_Imax and P_Emax, and was more effective than Group B and C in P_Imax, although Group B also made significant improvement in P_Emax. Both Group A and B made more improvement in P_Emax than Group C. As for 30-ACT, both Group A and B made significant progress. However, Group A had more gains than Group B and C. Understandably, Group B showed significant increase in 30-CST, not for Group A (with water support and less load on legs).

Conclusion

This modified water-based Liuzijue training has more effectiveness than routine Liuzijue training on physical functions in chronic COPD patients. This is the first report regarding water-based Liuzijue training for COPD patients.

No conflict of interest

ISPR7-0027

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ROLE OF MIRROR THERAPY FOR PHANTOM LIMB PAIN IN BELOW KNEE AMPUTEES

A. Saraf¹

¹Marwari Hospital, Orthopaedics, Amritsar, India

Introduction/Background

The pain caused by surgery is usually of a transient nature, however the perception of pain in an amputated limb often persists. This prolonged pain, which is often refractory to pain-killing medication, nerve block and surgical treatment may severely affect the patient's quality of life. The phenomenon of phantom limb pain has been investigated using neurological, neurophysiological and psychopathological approaches. In this study we analysed the role of mirror therapy for treatment of phantom limb pain in below knee amputation.

Material and Methods

96 patients who had phantom limb pain after below knee amputation were included in this study. They had to visit the hospital four times a week for a 15-minute treatment period. In this technique they performed movement of unaffected limb while watching its mirror reflection and thus creating a visual illusion of movement of affected limb. The degree of pain relief was measured on visual analog scale (VAS).

Results

70 patients out of 96 reported an improvement of 4 or more degrees of VAS score after 6 months of the treatment. The result was statistically significant.

Conclusion

Mirror therapy improves pain sensation of the amputated part when other treatment modalities fail. This therapy works on the principle of mirror neuron system. A mirror neuron fires both when a person acts or when a person observes same action performed by another. The mirror image of the normal body part helps reorganize and integrate the mismatch between proprioception and visual feedback of the removed body. This reorganization decreases the sense or emotion of phantom limb pain in the amputated part.

No conflict of interest

ISPR7-0036

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

PROTECTIVE EFFECT OF SWIMMING EXERCISE ON NEURONAL FUNCTIONS FOLLOWING INTRACEREBRAL HEMORRHAGE

H. Lu¹, S. Jiabing², X. Song¹, J. Ge¹, Z. Jiang³

¹The Second People's Hospital of Nantong, Rehabilitation Medicine, Nantong, China

²Affiliated Hospital of Nantong University, Neurology, Nantong, China

³The First Affiliated Hospital of Nanjing Medical University, Rehabilitation Medicine, Nanjing, China

Introduction/Background

To explore the potential roles of balanced exercise in neuronal injury of intracerebral hemorrhage (ICH), which may provide an effective therapeutic method for rehabilitation medicine.

Material and Methods

The rats were experienced a two-weeks swimming pretreatment before subjected to ICH. The locomotor functions of the left limbs after the injury, size of hematoma, brain edema, production of ROS and cellular apoptotic event were detected in rat model of ICH; value of Bcl-2/Bax and activation of caspase-3 was also detected in the rat ICH models.

Results

The results showed that rats pretreated with balanced swimming exercise effectively improved the locomotor functions; balanced exercise had no effect on alleviate the hematoma volumes, and the expansion of brain edema after ICH; balanced exercise obviously reduced the production of reactive oxygen species (ROS) after ICH, probably due to its antioxidant properties. Bcl-2/Bax, the important indicator of oxidative stress insult in mitochondria after ICH, exhibited increasing ratio in balanced exercise groups; activated caspase-3, the apoptotic executor, showed coincident alleviation in balanced exercise groups after ICH.

Conclusion

We speculated that balanced exercise might be an effective and potential rehabilitate medicine therapeutic for ICH.

No conflict of interest

ISPR7-0083

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

THERAPEUTIC ULTRASOUND TREATED CHRONIC MUSCLE PAIN VIA SUBSTANCE P PATHWAY

D.S. Han¹, C.C. Chen²

¹National Taiwan University Hospital BeiHu Branch,
Department of Physical Medicine and Rehabilitation, Taipei, Taiwan R.O.C.

²Academia Sinica, Institute of Biomedical Sciences, Taipei, Taiwan R.O.C.

Introduction/Background

Therapeutic ultrasound is widely used in pain control in the field of physical medicine and rehabilitation. However, its analgesic mechanism is still not known. Substance P is a neuropeptide, composed of 11 amino acid residues, and is secreted with noxious stimulation. It functions as a neurotransmitter in sensory neurons of the spinal cord. The objective of this study is to establish the rodent model of ultrasound therapy on chronic muscle hyperalgesia, and to reveal the mechanism of the analgesic effects of ultrasound in the rodent model of chronic muscle pain.

Material and Methods

We employed the chronic hyperalgesia mouse model proposed by Sluka et al. and determined the optimal ultrasound frequency, dosage, and timing. The withdrawal response of mouse hind paws was defined as foot lifting when a 0.2-mN von Frey filament was applied. Mice were injected with pH 4.0 saline on days 0 and 1. The withdrawal responses shown before and after i.m. acid injection confirmed acid-induced mechanical hyperalgesia for the following ultrasound treatment.

Results

Ultrasound at frequency of 3 Hz, intensity of 1W showed analgesic effect in chronic muscle pain model. The analgesic effect can be blocked by pretreatment of NK1 receptor antagonist—RP-67580. When applying ultrasound on Tac1^{-/-} mice, we did not observe analgesic effect. Besides, pretreatment with TRPV1 receptor antagonist—capsazepine at injection site cannot block the analgesic effect.

Conclusion

Intramuscular substance P induced by ultrasound therapy and acid injection could inhibit intramuscular nociceptor activation, and result an anti-nociceptive effect against chronic mechanical hyperalgesia. In the future, small molecules that can facilitate substance P production can be new candidate to treat chronic diffuse muscle pain.

No conflict of interest

ISPR7-0221

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

HAPTOGLOBIN, THE POTENTIAL TARGET OF EXERCISE CONDITIONING ACTIVATING NEUROPROTECTION AND NEUROREHABILITATION AFTER CEREBRAL ISCHEMIA?

C. Fan¹

¹Huashan Hospital, Rehabilitation, Shanghai, China

Introduction/Background

Previous studies have showed the neuroprotective effect of exercise preconditioning on cerebral ischemic injury. But these studies only focus on the effect of exercise preconditioning on pathophysiologic process after cerebral ischemia, instead of revealing the mechanism of systemic exercise preconditioning inducing neuroprotection. The present study aimed to investigate whether exercise preconditioning exerts the neuroprotective effect on cerebral ischemia and reperfusion injury via blood-borne change.

Material and Methods

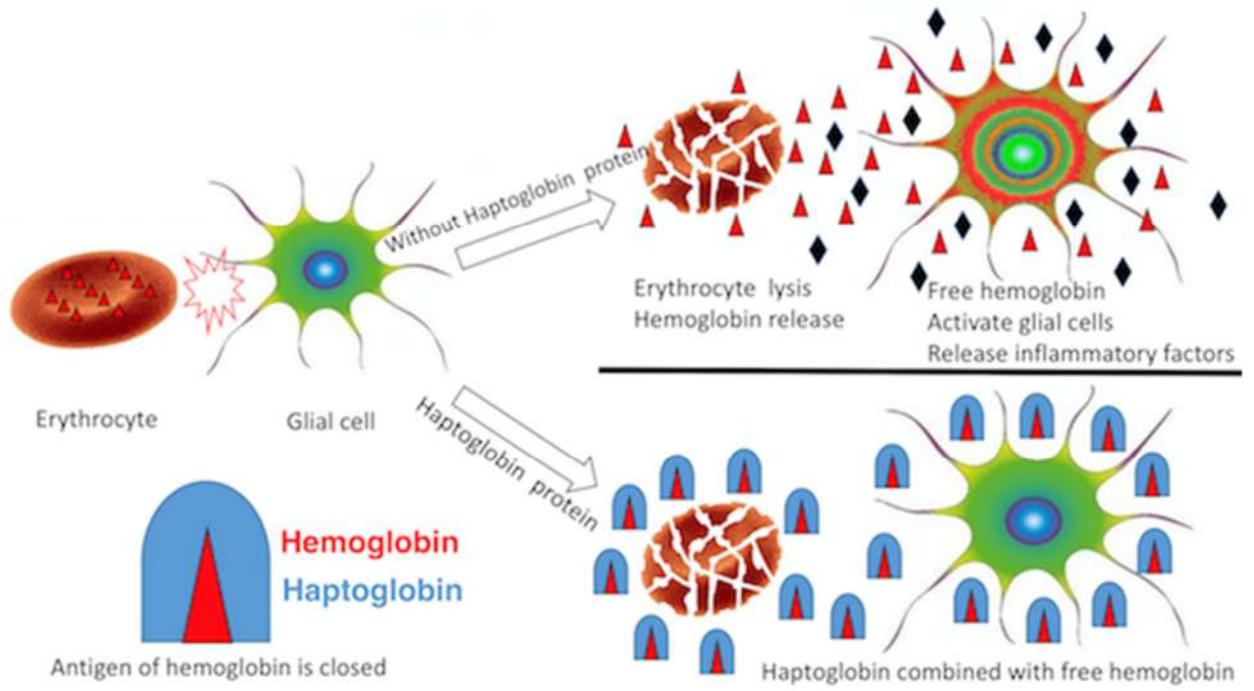
36 young SD rats (Y) and 36 senior SD rats (S) were divided into exercise preconditioning group (EX) and non-exercise group (NEX) respectively. After training (Y-EX group: 4 weeks treadmill training; S-EX group: 6 months treadmill training; NEX groups: obtain free activities), middle cerebral artery occlusion (MCAO) performed on the rats of all groups. The neurological behavioral scores, T2-weighted magnetic resonance imaging, diffusion weighted imaging (DWI) and Evans blue staining were performed on rats to evaluate degree of brain injury; the sera were collected to explore the differential proteins concerning exercise preconditioning and analysis the protein-protein interaction network.

Results

The neurological behavioral score, MRI (both T2 weighted imaging and diffusion weighted imaging) and the Evans blue exudation, all of the aspects above showed significant differences between EX group and NEX group no matter the rats in the group are juvenile or senior. The serum proteomics analysis of rats in S-EX and S-NEX groups found 63 differential proteins between. Among them, haptoglobin has the strongest interactive relationship with other differential proteins. The real-time PCR showed the hepatic haptoglobin mRNA level of rats in S-EX group was significantly higher than that in S-NEX group.

Conclusion

Exercise preconditioning can alleviate brain edema, blood-brain barrier and neurological deficit after cerebral ischemia and reperfusion injury in rats. Exercise preconditioning can up-regulate the level of Haptoglobin in rat serum and can promote the transcription of hepatic haptoglobin mRNA level in rats, which may contribute to neuroprotective effect of exercise preconditioning on cerebral ischemia and reperfusion injury.



No conflict of interest

ISPR7-0269

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

PULSED ELECTROMAGNETIC FIELDS IMPROVE SUBCHONDRAL BONE MICROSTRUCTURE IN KNEE OSTEOARTHRITIS RATS THROUGH A WNT/ β -CATENIN SIGNALING-ASSOCIATED MECHANISM

X. Yang¹, H. He¹, C. He¹

¹West China Hospital of Sichuan University, Rehabilitation Medicine, Chengdu, China

Introduction/Background

To determine whether pulsed electromagnetic fields(PEMFs) can successfully improve subchondral bone microstructure through a Wnt/ β -catenin signaling pathway in knee osteoarthritis(OA) rats induced by low-dose monosodium iodoacetate(MIA).

Material and Methods

Seventy-two 12-week-old male Sprague-Dawley rats were randomly assigned to three groups: OA (n=24), PEMFs (n=24), Control (n=24). Osteoarthritis was induced (OA and PEMFs groups) by injecting 0.2 mg MIA in the rat's right knee joint. The control rats received a single sterile saline injection in the right knee. Rats in the PEMFs group were exposed to daily 2-hour PEMFs exposure with 75 Hz, 1.6 mT for 4 weeks. After 4 weeks, micro-computed tomography, Real-time PCR and immunohistochemistry staining were performed.

Results

The PEMFs group increased BV/TV, Tb.Th, Tb.N, and suppressed BS/BV and Tb.Sp levels in the Micro-computed tomography analysis. Real-time PCR analysis showed that PEMFs promoted tibial subchondral bone's gene expressions of Wnt3a, β -catenin and OPG, but did not alter LRP5 and RANKL mRNA levels. Similar results involved tibial subchondral bone's protein expressions were observed in the immunohistochemistry staining.

Conclusion

These results suggest that PEMFs preserved the structural integrity of subchondral bone in knee OA rats by promoting the activation of Wnt/ β -catenin signaling and OPG/RANKL/RANK signaling.

No conflict of interest

ISPR7-0280

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

INTERMITTENT THETA BURST STIMULATION ACTIVATE BDNF-TRKB PATHWAYS IN A RAT MODEL OF MIDDLE CEREBRAL ARTERY OCCLUSION

J. Luo¹, H. Zheng¹, L. Zhang¹, L. Li¹, H. Xiquan¹

¹Affiliated 3rd Hospital of Sun Yat-san University, Rehabilitation Medicine, Guangzhou, China

Introduction/Background

Intermittent theta burst stimulation (iTBS) is a novel form of high-frequency repetitive transcranial magnetic stimulation (rTMS). iTBS has been reported to improve functional recovery after stroke. However, the underlying mechanism remains unknown. This study was performed to investigate whether iTBS can improve functional recovery and activate BDNF-TrkB pathways in a rat model of middle cerebral artery occlusion (MCAO).

Material and Methods

A total of 40 adult wistar rats after MCAO were randomly divided into two groups: iTBS group (n=16), control group (Sham stimulation group, n=16) and sham-operated group (n=8, filament was not inserted into the artery). The rats were sacrificed on the 7 and 14 days after evaluating the neurological function. Furthermore, BDNF/TrkB signaling pathways were performed by Western blotting and RT-PCR analysis.

Results

The results showed that iTBS significantly improved neurological function and reduced infarct volume. Moreover, the expression level of p-TrkB increased significantly in the iTBS groups at 7 and 14 days after MCAO, compared to controls or sham-operated animals. Consistent with this effect, levels of p-Akt and p-CREB, the downstream targets of TrkB, were also significantly increased. Furthermore, the protein and mRNA levels of BDNF were both significantly increased in response to rTMS in iTBS groups, compared to controls.

Conclusion

iTBS improves functional recovery and activates BDNF-TrkB pathways in a rat model of MCAO.

No conflict of interest

ISPR7-0416

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

THERAPEUTIC EFFECTS OF RHO KINASE INHIBITOR ON THE MYOFASCIAL TRIGGER POINT

T.S. Kuan¹, H. Pei-Chun², L. Wei-Chih², L. Yu-Ching¹, L. Ping-Yen³

¹National Cheng Kung University, Department of Physical Medicine and Rehabilitation, Tainan, Taiwan R.O.C.

²National Cheng Kung University Hospital, Department of Physical Medicine and Rehabilitation, Tainan, Taiwan R.O.C.

³National Cheng Kung University, Division of Cardiology- Department of Internal Medicine, Tainan, Taiwan R.O.C.

Introduction/Background

The characteristic of electromyographic recording from a myofascial trigger point (MTrP) is endplate noise (EPN). The prevalence of EPN in an MTrP has been shown to be correlated with the irritability of an MTrP. Our previous studies had shown that the activity of Rho kinase was correlated with the irritability of an MTrP. The objective of this study is to delineate the therapeutic effects of Rho kinase inhibitor for an MTrP.

Material and Methods

Eleven adult New Zealand rabbits were collected and the myofascial trigger spots (MTrSs; equivalent to the MTrPs in human) over the biceps femoris muscle were located. Rho kinase inhibitor (0.2 ml, 10 mg/kg) was injected in the randomized selected thigh, while the other side of thigh was injected with normal saline as the control group. EPN prevalence before, and after injection was measured. The Rho kinase activity in the MTrS was also measured.

Results

The results showed the mean values of EPN prevalence before and after Rho kinase inhibitor injection were: 17.19% and 4.69%; and the values before and after normal saline injection were: 12.22% vs 11.22%. It revealed that Rho kinase inhibitor could significantly decreased EPN prevalence in the MTrS ($p < 0.0001$), and the activity of Rho kinase was correlated with the prevalence of EPN.

Conclusion

Our study showed Rho kinase inhibitor significantly decrease the irritability of an MTrS, which means Rho kinase inhibitor has a role in the therapy of MTrP. Further studies on human will be needed.

No conflict of interest

ISPR7-0445

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

THE NEUROPROTECTIVE EFFECTS AND MOTOR FUNCTIONAL IMPROVEMENT OF PREGABALIN AFTER CEREBRAL ISCHEMIA BY OCCLUSION OF THE MIDDLE CEREBRAL ARTERY IN RAT

G.E. Kim¹, J. Kim¹, C.G. Kang¹, D.Y. Kim¹

¹Asan Medical Center, Department of rehabilitation medicine, Seoul, Republic of Korea

Introduction/Background

Activation of presynaptic voltage-gated calcium channels and release of glutamate play a central role in neuronal necrosis after cerebral ischemia. Pregabalin binds to the $\alpha 2\text{-}\delta$ subunit of voltage-gated calcium channels resulting in reduced glutamate release. The aim of this study is to evaluate the effect of pregabalin on cerebral outcome after cerebral ischemia through an established rat model.

Material and Methods

Male Sprague–Dawley rats were randomized to receive oral administration of 5 mg/kg of pregabalin or an equal amount of normal saline during 1 or 5 days after middle cerebral artery occlusion. Behavioral tests (wire hanging test, Garcia test, and beam balance test) were assessed at postoperative day 1, 7. Histologic examinations (immunohistochemistry with brain-derived neurotrophic factor, BDNF) of the peri-lesional cortex and ipsi-lateral hippocampus were performed at postoperative day 2, 8.

Results

In this study, total 34 rats were sacrificed. Ten rats were administrated with 5mg/kg of pregabalin during 1 day (P5D1), seven rats were administrated with an equal amount of normal saline during 1 day (SD1). Ten rats were administrated with 5mg/kg of pregabalin during 5 days (P5D5), and 7 rats were administrated with normal saline during 5 day (SD5). The outcomes of behavioral tests were not statistically different between P5D1 and SD1, P51 and SD5. In immunohistochemistry, more BDNF staining cell numbers in the peri-lesional cortex were found in the P5D1 group compared with the SD1 ($P = 0.001$), whereas no difference was observed in the ipsi-lateral hippocampus ($P = 0.282$). More BDNF staining cell numbers in the ipsi-lateral hippocampus were present in the P5D5 group compared with the SD5 ($P = 0.04$), whereas no difference was observed in the peri-lesional cortex ($P = 0.10$).

Table 1. Histologic and behavioral tests after 1 day administration

	Sham 1 day	5mg 1 day	p value
Total number	7	10	
BDNF staining cell numbers in the peri-lesional cortex	85.77 ± 9.58	114.00 ± 7.03	0.001*
BDNF staining cell numbers in the ipsi-lateral hippocampus	127.63 ± 17.28	137.64 ± 13.66	0.28
Wire hanging test (POD 1 day, seconds)	0.18 ± 0.37	0.90 ± 0.94	0.14
Garcia test (POD 1 day)	3.86 ± 1.57	5.30 ± 2.95	0.24
Beam balance test (POD 1 day, seconds)	0.75 ± 1.14	2.55 ± 3.32	0.15

The values are mean ± standard deviation

* p < 0.05 by Mann-Whitney test

BDNF: brain-derived neurotrophic factor, POD: post-operative day

Table 2. . Histologic and behavioral tests after 5 day administration

	Sham 5 day	5mg 5 day	p value
Total number	7	10	
BDNF staining cell numbers in the peri-lesional cortex	99.00 ± 26.83	122.34 ± 31.24	0.10
BDNF staining cell numbers in the ipsi-lateral hippocampus	116.23 ± 11.91	132.36 ± 14.56	0.04*
Wire hanging test (POD 1 day, seconds)	0.50 ± 0.85	0.65 ± 0.56	0.25
Wire hanging test (POD 7 day, seconds)	1.21 ± 0.88	1.20 ± 1.70	0.92
Garcia test (POD 1 day)	4.57 ± 3.15	5.90 ± 3.18	0.46
Garcia test (POD 7 day)	7.29 ± 4.15	8.40 ± 4.79	0.92
Beam balance test (POD 1 day, seconds)	1.61 ± 2.82	0.80 ± 0.98	0.60
Beam balance test (POD 7 day, seconds)	1.25 ± 1.85	1.23 ± 1.53	0.96

The values are mean ± standard deviation

* p < 0.05 by Mann-Whitney test

BDNF: brain-derived neurotrophic factor, POD: post-operative day

Conclusion

Preemptive treatment with oral pregabalin conveyed a beneficial influence on histologic cerebral outcome in rats after cerebral ischemia.

No conflict of interest

ISPR7-0466

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

NEURAL PLASTICITY OF BIMANUAL ANTI-PHASE AND IN-PHASE MOVEMENTS IN STROKE PATIENTS

Q. Lin¹, **D. Huang**¹, Y. Mao¹, H. Li¹, B. O'Young²

¹*the First Affiliated Hospital - Sun Yat-sen University, Department of Rehabilitation Medicine, Guangzhou, China*

²*Rusk Rehab at NYU Langone Medical Center, Rehabilitation Medicine, New York, USA*

Introduction/Background

Co-ordination of the left and the right upper limbs are required in everyday activities. The difficulty in the bimanual movement, especially in the anti-phase movement, can dramatically affect performance after stroke. The purpose of this study was to use functional magnetic resonance imaging (fMRI) to investigate brain activation and connectivity within brain network during unimanual and bimanual (in-phase and anti-phase) movement.

Material and Methods

Ten normal subjects (aged 55-63 years) and eight patients with at least 6-month stroke (aged 50-62 years) participated in this study. The subjects were all right handed. Before the start of the experiments, stroke patients were assessed on the upper limb Fugl-Meyer Scale for extent of motor impairment and Wolf Motor Function Test (WMFT) for motor ability. Then we assessed three movement conditions under block design fMRI to examine effects on cortical reorganization: (i) extension and flexion of the right elbow (unimanual right-elbow movement); (ii) extension and flexion of both elbow simultaneously (bimanual in-phase movement); and (iii) simultaneous extension of one elbow and flexion of the other elbow (bimanual anti-phase movement).

Results

In performing unimanual movements, patients with stroke showed less activity in the primary motor cortex and cerebellum but more activity in the premotor cortex compared with normal subjects. In performing bimanual asymmetric movement, patients with stroke showed less activity in the primary motor cortex but more activity in the supplementary motor cortex and cerebellum compared with normal subjects and patients in bimanual symmetric movement. Moreover, cerebellum was more strongly connected with the supplementary motor area in patients with stroke than in normal subjects.

Conclusion

Our study suggests that the supplementary motor area and cerebellum may play the crucial role in stroke patients during bilateral coordination movement.

No conflict of interest

ISPR7-0537

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

DENTAL PULP STEM CELLS PROMOTE MOTOR RECOVERY IN A RODENT CONTUSION MODEL OF SPINAL CORD INJURY

R. Battaglino¹, Y. Xu², N. Nguyen³, R. Zafonte⁴, L. Morse³

¹UC Denver, Physical Medicine and Rehabilitation, Aurora, USA

²Novartis, Immunology, Cambridge, USA

³Craig Hospital, Research, Englewood, USA

⁴Spaulding Rehabilitation Hospital, Spaulding-Harvard SCI Model System, Boston, USA

Introduction/Background

Dental pulp is a rich source of neural crest stem cells that can differentiate into functionally active neurons *in vitro*. We sought to quantify motor improvement following human tooth-derived stem cell transplantation in a rodent contusion model of SCI

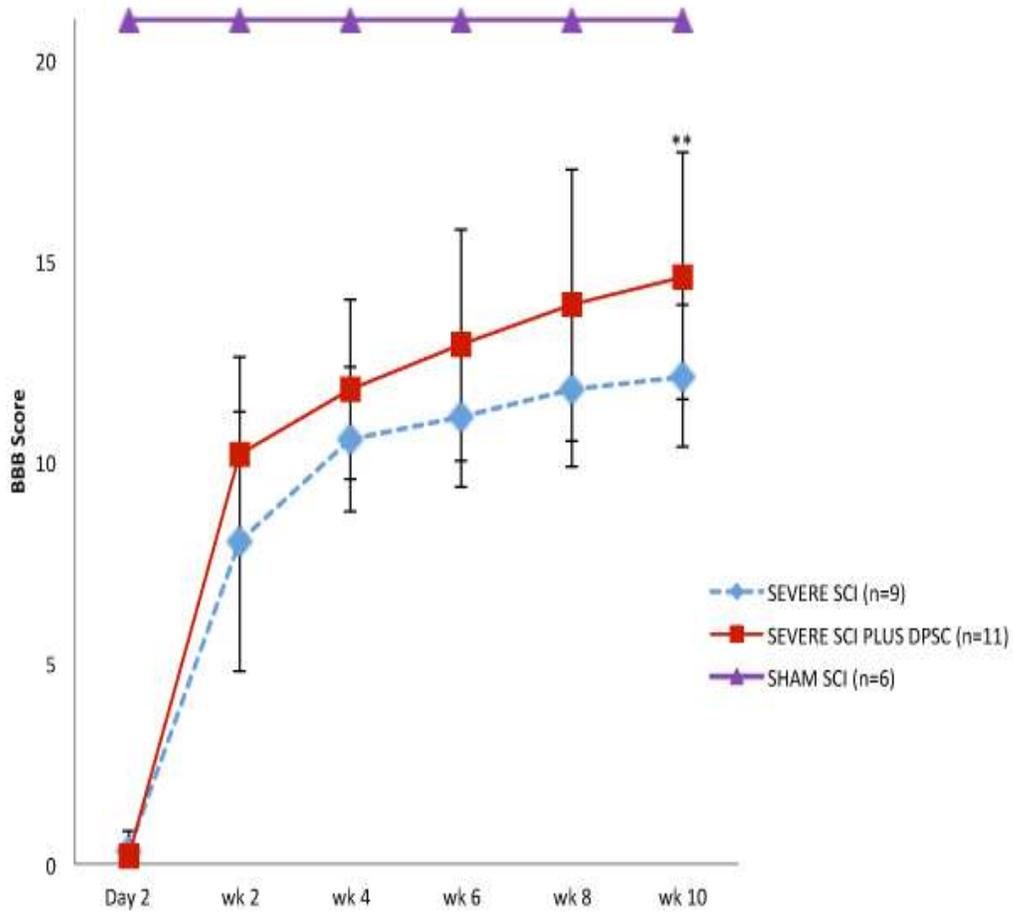
Material and Methods

Dental pulp stem cells were isolated from molars of healthy donors (10-38 yrs of age) extracted during routine dental care. Cell passage 4 was used for all experiments. 7-week-old adolescent male Sprague-Dawley (SD) rats (200-225 grams) were anesthetized and a severe T10 contusion injury or sham injury was produced utilizing the New York University (NYU) SCI impactor (10g X 50mm). Injured rats were assigned to 1) dental pulp stem cells plus micromyelotomy (n=11), 2) no stem cells (n=9). A midline micromyelotomy was performed and 1,000,000 cells in 20 microliters of media were injected into the lesion. The Basso, Beattie, Bresnahan (BBB) scale was performed by 2 blinded raters to determine injury severity. Differences in BBB scores were examined using two sample t-tests

Results

No neurological deficit was observed following sham surgery and severe SCI was confirmed in all injured rats. Dental pulp stem cell transplantation with micromyelotomy resulted in a significant 3-

point improvement in BBB score (9+/-1 vs 12 +/- 1.89, p=0.003)



Conclusion

We report significant neurorecovery due to dental pulp stem cells following contusion SCI. These findings support studies to accelerate or increase neurorecovery in response to dental pulp stem cell therapy

No conflict of interest

ISPR7-0556

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ELECTROACUPUNCTURE IMPROVES BRAIN ENERGY UPTAKE AMELIORATING COGNITIVE IMPAIRMENTS IN AD MICE

W. Liu¹, P. Zhuo², L. Li², H. Jin², J. Huang², S. Liang², J. Tao², L. Chen²

¹Fujian University of Traditional Chinese Medicine, Rehabilitation medicine colleage, Fuzhou, China

²Fujian University of Traditional Chinese Medicine, Rehabilitation Medicine College, Fuzhou, China

Introduction/Background

Electroacupuncture (EA) is a promising therapeutic target for controlling Alzheimer's disease (AD) which is an age-related neurodegenerative disorder leading to cognitive decline, amyloid- β -peptide (A β) deposition.

Material and Methods

Low-frequency EA at the DU20 acupoint was performed for once a day and 2 days rest per week for a period of 4 weeks in APP/PS1 transgenic mice. Cognitive function was tested by the Morris water maze. Brain energy metabolism was evaluated by ¹⁸F-Fluoro-2-deoxy-D-Glucose (¹⁸F-FDG)-micro positron emission tomography (PET).

Results

Animal behavior assessments showed that the mice spent more time in the target quadrant and increased the times of passing the hidden platform position after EA treatment. Simultaneously, an increase of ¹⁸F-FDG uptake appeared in the specific brain regions such as hippocampus (HIP), cortex (CTX), cingulate gyrus (CG), basal forebrain septum (BFS), brain stem, and cerebellum from the PET imaging. Moreover, EA increased the expression of phosphorylated adenosine monophosphate-activated protein kinase (p-AMPK) and whereas phosphorylated mammalian target of rapamycin (p-mTOR) decreased in the HIP and CTX regions. Furthermore, immunohistochemistry showed that EA could delay the accumulation of A β .

Conclusion

These findings from animal behavior and in vivo metabolic imaging led us to conclude that the treatment of EA may play a role in delaying the progression of AD, particularly in the learning and memory ability.

No conflict of interest

ISPR7-0584

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ELECTROACUPUNCTURE ALLEVIATES NEUROINFLAMMATION FOR NEUROPROTECTION OF POST-STROKE

J. Tao¹, J. Huang¹, X. You¹, C. Song¹, L. Chen¹

¹Fujian University of Traditional Chinese Medicine, Rehabilitation Medicine College, Fuzhou, China

Introduction/Background

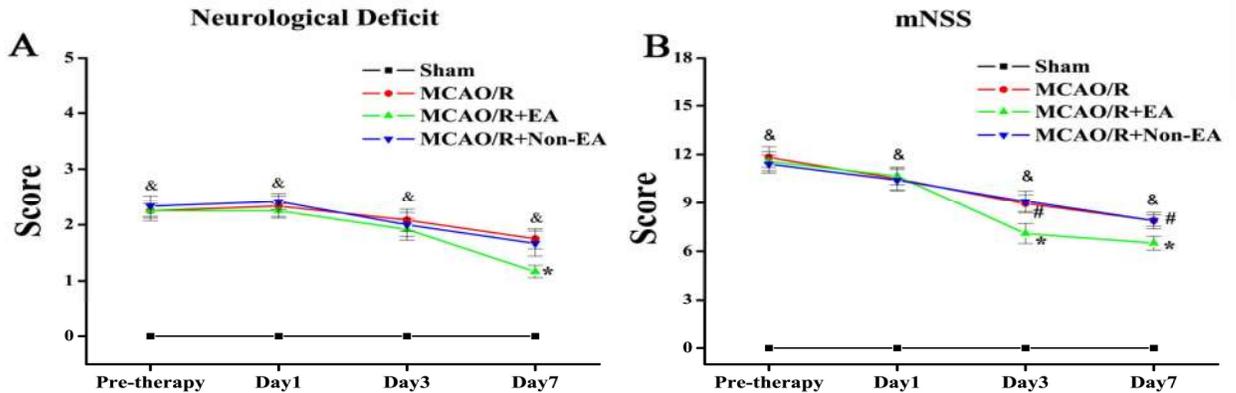
Microglial purinergic P2X7 receptor (P2X7R)-mediated neuroinflammation induced by ischemic stroke (IS) is likely either to initiate or aggravates hippocampal and cortical neuronal cell damage.

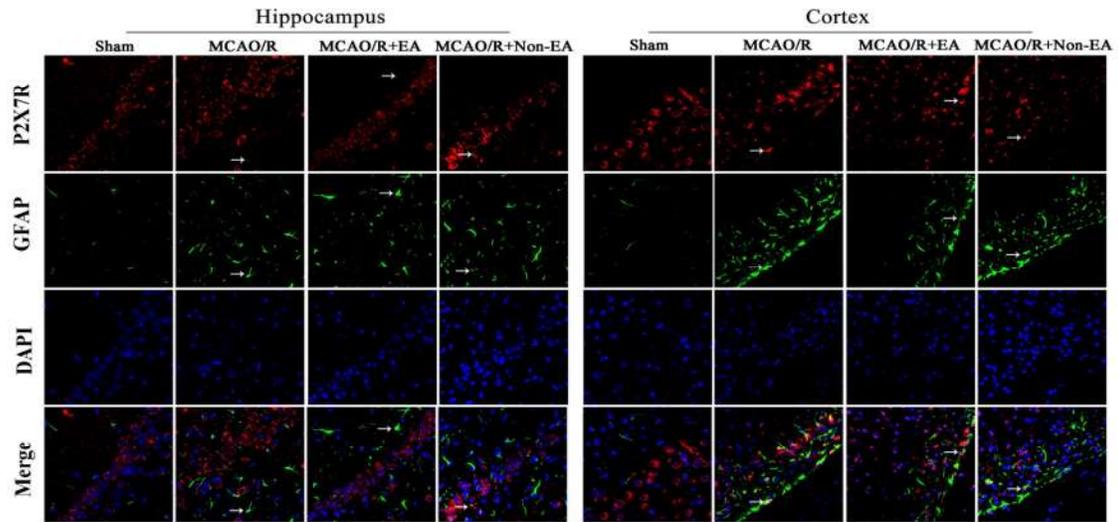
Material and Methods

Ischemia-reperfusion injured rat model was induced by middle cerebral artery occlusion and reperfusion (MCAO/R). EA treatment at the DU20 and DU24 acupoints was conducted to MCAO/R rats for 7 consecutive days. The neurological outcomes, infarction volumes and the level of reactive microglia, inflammatory cytokine and P2X7R in the peri-infarct hippocampal CA1 and medial prefrontal cortex were evaluated.

Results

The study demonstrated that EA treatment at DU20 and DU24 acupoints obviously inhibited activated microglia, and reduced the release of IL-1 β , whereas increased the level of IL-10 in peri-infarct hippocampal CA1 and medial prefrontal cortex compared with Non-EA treatment, accompanied by the reduced infarct volume and the improved mNSS and neurological deficit outcomes in MCAO/R injured rats. The up-regulation of P2X7R and the co-expression of P2X7R and ED1 at Days 3 and 7 were inhibited in peri-infarct hippocampal CA1 and medial prefrontal cortex by EA treatment compared with Non-EA treatment after MCAO/R injury consistent with the inhibition of activated microglia.





Conclusion

Microglial P2X7R-mediated neuroinflammation in peri-infract hippocampal CA1 and medial prefrontal cortex were attenuated by EA treatment after ischemic stroke accompanied by the improved behavior performance.

No conflict of interest

ISPR7-0663

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

TAI CHI CHUAN AND BADUANJIN CHANGES THE PATTERNS OF FRACTIONAL AMPLITUDE OF LOW-FREQUENCY FLUCTUATIONS IN AGING

J. Tao¹, X. Chen², J. Liu¹, N. Egorova³, X. Xue⁴, W. Liu¹, G. Zheng¹, S. Sun⁵, M. Li⁴, J. Wu¹, K. Hu¹, Z. Wang⁶, L. Chen¹, J. Kong⁵

¹Fujian University of Traditional Chinese Medicine, Rehabilitation Medicine College, Fuzhou, China

²University of Edinburgh, The School of Social and Political Science, Fuzhou, China

³Department of Psychiatry, Massachusetts General Hospital and Harvard Medical School, Charlestown, USA

⁴Fujian University of Traditional Chinese Medicine, Affiliated Rehabilitation Hospital, Fuzhou, China

⁵Massachusetts General Hospital and Harvard Medical School, Department of Psychiatry, Charlestown, USA

⁶General Hospital and Harvard Medical School, Department of Psychiatry- Massachusetts, Charlestown, USA

Introduction/Background

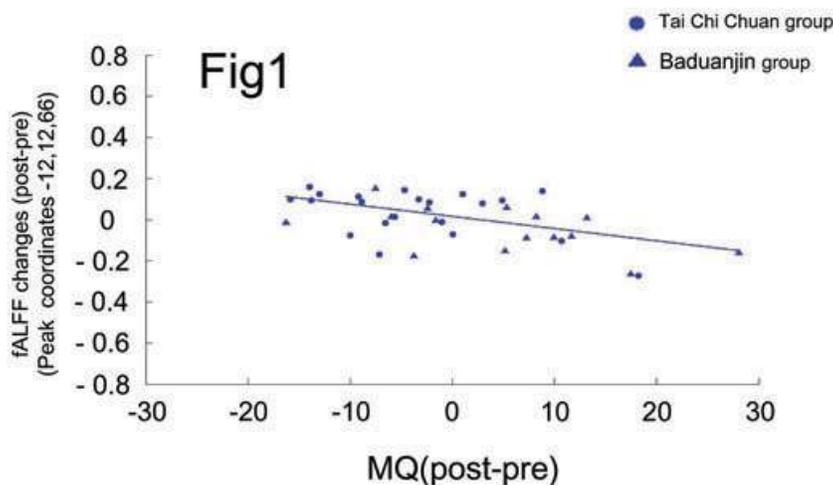
Age-related cognitive impairment is a significant public health concern throughout the world. In this study, we investigated if Tai Chi Chuan and Baduanjin practice can modulate the fractional amplitude of low-frequency fluctuations (fALFF) in different frequency bands and improve general memory function in elderly adults.

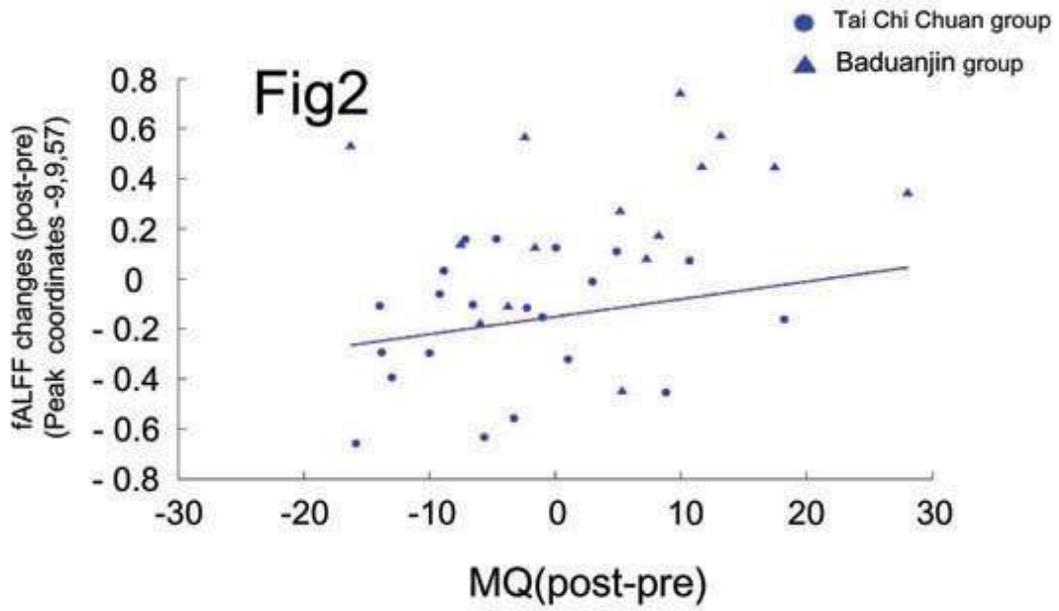
Material and Methods

Memory test and resting state functional Magnetic Resonance Imaging (rs-fMRI) were applied at the beginning and end of the experiment.

Results

We found that compared to the controls, 1) Tai Chi Chuan and Baduanjin groups demonstrated significant improvements in the memory function; 2) Tai Chi Chuan increased fALFF in the dorsolateral prefrontal cortex in the slow-5 and low-frequency bands; 3) Baduanjin increased fALFF in the medial prefrontal cortex in the slow-5 and low-frequency bands, and the increase was positively associated with memory function improvement in the slow-5 and low-frequency bands across the subjects in Tai Chi and Baduanjin group. No significant differences among three groups were observed in the slow-4 band.





Conclusion

Our results suggest that Tai Chi Chuan and Baduanjin might work through slightly different brain mechanisms, but both can be used to prevent memory decline in aging.

No conflict of interest

ISPR7-0690

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

EFFECTS OF CHRONIC MODERATE AND INTENSE EXERCISE ON RENAL DYSFUNCTION IN THE RATS WITH POLYCYSTIC KIDNEY

T. Miura¹, O. Ito¹, J. Qiu¹, Y. Sato¹, M. Abe¹, N. Mori¹, Y. Ogawa¹, M. Kohzuki¹

¹Tohoku University Graduate School of Medicine, Internal Medicine and Rehabilitation, Sendai, Japan

Introduction/Background

Polycystic kidney disease (PKD) is an inherited renal cystic disease characterized by the development of renal cysts and the decline of renal function. Several studies reported that chronic exercise (Ex) has renal protective effects in animal models of renal diseases. In ISPRM 2016, we reported the renal protective effects of moderate Ex (Exm) in the model rats of PKD. We assessed the effects of intense Ex (Exi) on renal function in the rats with PKD.

Material and Methods

Six-week-old, male PCK rats were divided into three groups, a sedentary (Sed) group (n=11), an Exm group (n=11) and an Exi group (n=11). The Exm and Exi groups underwent Ex with treadmill running for 8 weeks (20m/min and 28m/min respectively, for 60 min/day, 5 days/week). The rats were housed once two weeks in metabolic cages and their urine samples over 24 hours were collected. After 8 weeks, the rats were killed by decapitation and trunk blood was collected.

Results

Body weight significantly lowered in the Exm group after 10-week-old and in the Exi group after 8-week-old than in the Sed group. Kidney weight/body weight or systolic blood pressure were not different between three groups. In laboratory data, urinary protein excretion significantly lowered in the Exm and Exi groups than in the Sed group (150.2±26.2 vs.64.8±12.6 and 37.6±6.8 mg/day at 14-week-old, P=0.011 and P=0.004 respectively) as well as blood urea nitrogen (18.1±0.5 vs.15.6±0.5 and 16.1±0.4 mg/dl, P=0.004 and P=0.019 respectively), there was not significantly different between the Exm and Exi group. Serum creatinine or creatinine clearance were not significantly different between three groups.

Conclusion

Exi as well as Exm has renal protective effects in the PCK rats independently of systemic blood pressure.

No conflict of interest

ISPR7-0708

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

COMPARISON OF NEUROTROPHIC FACTOR UPREGULATION BETWEEN ELECTROACUPUNCTURE AND MANUAL ACUPUNCTURE IN THE TELOMERASE KNOCKOUT MICE CORTEX: THE ROLE OF JNK-CREB SIGNALING PATHWAY

L. Lin¹, D. Lin¹, Q. Wu², C.V. Borlongan³

¹Fujian University of Traditional Chinese Medicine, Acupuncture College, Fuzhou, China

²Fujian University of Traditional Chinese- Medicine, Acupuncture College, Fuzhou, China

³University of South Florida, Department of Neurosurgery and Brain Repair, Tampa, USA

Introduction/Background

Accumulating evidence has documented that acupuncture affects neurodegenerative processes in the central nervous system. Acupuncture has shown promise in affording neurotrophic effects on the cortex, but up to this date the mechanism of action still remains unclear.

Material and Methods

All telomerase knockout mice were randomized into the control (CON) group, electroacupuncture (EA) group, and a manual acupuncture (MA) group (n=6 for all groups). The CON had no treatment associated with it. The EA group received insertion of stainless-steel needles, which were 0.3 mm in diameter and 3 mm in length, into the bilateral ST-36 acupoint on both legs for approximately 30 minutes with a frequency of 2/100 HZ and intensity of 0.5-1.2 mA. The acupoint is located between the tibia and fibula. The MA group also received insertion of similar stainless-steel needles, but without any electric current, into the bilateral ST-36 acupoint on both legs for 30 minutes. EA and MA groups received treatments once per day for four days. The left side of the brain was used for immunostaining, while the right side was used to harvest the hippocampus and cortex for western blot assays.

Results

Telomerase knockout mice in the EA group showed a significant increase in immunostaining of P-JNK, JNK, P-CREB, and CREB expression in the cortex compared to the CON group (p<0.05).

Conclusion

EA, but not MA, of the ST36 acupoint, upregulated BDNF in the mouse hippocampus. The BDNF-ERK signaling pathway may be partially involved in this acupuncture-mediated neurotrophic factor effects in the hippocampus.

No conflict of interest

ISPR7-0846

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

THE SYNERGISTIC EFFECT OF ANTIBACTERIAL PHOTODYNAMIC THERAPY AND CARBAPENEM TO EXTENDED SPECTRUM BETA LACTAMASE (ESBL) ESCHERICHIA COLI

Y. Waluyo¹, F. Hamid²

¹, Makassar, Indonesia

²Faculty of Medicine Hasanuddin University, Microbiology Department, Makassar, Indonesia

Introduction/Background

Low Level Laser Therapy have been used for treatment some of medical condition that require stimulation of healing, relief of pain and inflammation, and restoration of function for example, soft tissue injuries and wound healing. However, bacterial species may colonize these injuries or wound. Extended Spectrum -lactamase are enzymes hydrolyzing most penicillins and cephalosporins, but not cephamycins and Carbapenem. ESBL production mostly in enterobacteriaceae, particularly Escherichia Coli. The Aim of this study was to analyze the synergistic effect of LLLT and Carbapenem Antibiotic on bacterial growth in vitro.

Material and Methods

Bacterial Strains Including ESBL Escherichia Coli were suspended in saline solution, the density of the suspension is compared to the 0.5 McFarland turbidity standard , after that the suspension were spread on the surface of petri plates, exposed to laser irradiation With (850nm Laser) diode specification at fluences of 0 J/cm² (control), 2 J/cm² ,planting ertapenem antibiotic disc at the petri plate and incubated at 37°C for quantification of colony forming unit. After 24 hour the Clear Zone diameter was measured. Bacterial strains from this petri disc suspended in the new saline solution and do the same thing above until 3 Days and repeated 3 time.

Results

Laser irradiation increasing the the sensitivity of Ertapenem from 32 mm(control) to 33 mm at day 1, 34mm at day 2, and 35 mm at day 3 where the clear zone of control still the same as day 1

Conclusion

The Increasing of Clear Zone diameters of Ertapenem at the irradiation petri plate showed that the sensitivity of antibiotic increase. That indicating synergistic of LLLT and Carbapenem antibiotic . especially at the ertapenem

No conflict of interest

ISPR7-0927

Biological Mechanism of Interventions (e.g. Pain Relief, Motor Learning)

ROLE OF EYE MOVEMENTS DURING MOTOR LEARNING BY IMITATION

B. Rivero¹, K. Muñoz¹, P. Burgos², P. Maldonado¹

¹*Universidad de Chile,*

Laboratorio de Neurosistemas- Programa de Fisiología y Biofísica- Facultad de Medicina, Santiago, Chile

²*Universidad de Chile, Departamento de Kinesiología- Facultad de Medicina, Santiago, Chile*

Introduction/Background

The motor learning by deferred imitation, has been little studied, especially in long space sequences involving global body movements. Our hypothesis is that the pattern of eye movements performed during a task deferred imitation, determines the degree of motor learning.

Material and Methods

The design of the task consists of a first stage of stimulus presentation, which allows free visual exploration of the video, where the eye behavior of subjects is recorded by the Eye Tracker system, and a second stage of execution of the motion sequence presented, which is recorded by the system Myomotion and allows a quantitative biomechanical analysis concentrated on the ranges of motion. 5 successive blocks of the procedure are studied. The motion sequence consists of 10 body positions and lasts 26 seconds, followed by free time to motor execution, a total of 18 healthy subjects were evaluated.

Results

We found a preference of visualization by the target of the task, reflected in the heat map by the concentration of warmer colors in areas of interest like face, trunk and upper limbs, besides an increment in duration of eye fixations, coincidence in a greater number of frames of the task between the area of preferential interest for a given movement and the eye position, and finally, an increase in the distance between the area of interest and the position of the eye, correlates with a better performance in the imitation of the task presented, mainly in movements involving the left and right shoulder, which reflects a higher degree of motor learning.

Conclusion

We conclude that there is a correlation between certain parameters of the eye movements and a better performance in a task of motor imitation, reinforcing the concept that the optimization of obtaining information through the visual pathway is a determining factor in motor learning.

No conflict of interest

ISPR7-0137

Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

THE HEMISPHERE-LIMITED EFFECT OF PRIOR TRANSIENT ISCHEMIC ATTACK ON FOLLOWING STROKE IN AN OPTIMIZED RAT MODEL

Z. He¹, L. Zhang¹, W. Niu¹, C. Fan¹, P. Shao¹, L. Ding¹, J. Jia¹

¹Huashan Hospital- Fudan University, Department of Rehabilitation Medicine, Shanghai, China

Introduction/Background

Transient ischemic attack (TIA) is a risk factors but also a neuroprotective pre-conditioning of subsequent stroke. We assume the indeterminacy of pre-TIA is associated with recurrent location of latter stroke.

Material and Methods

In present study, we performed a rat TIA model, by transient middle cerebral artery occlusion (tMCAO), followed by permanent MCAO (pMCAO). We explored proper ischemia duration for TIA model, and then we investigated the role of pre-TIA in following ipsi-hemisphere or contra-hemisphere stroke, via neurobehavioral evaluation, brain infarct volume determination, magnetic resonance imaging, and assessments of biomarkers of blood-brain barrier disruption, inflammation, oxidative stress and apoptosis.

Results

5 minute tMCAO was optimized for TIA model without obvious cerebral infarct and neurological deficits. At 24 hours after pMCAO which was performed 7 days after tMCAO, brain infarct volume of ipsi-TIA was no significant different from the contra-TIA, we still found alleviated brain edema and better neurobehavioral in ipsi-TIA stroke group. The levels of MMP-9, IL-1 β , iNOS mRNAs were lower in ipsi-TIA than contra-TIA, but no significance in TNF- α mRNA. Apoptosis-related proteins, like BAX and p-p38, were lower in ipsi-TIA.

Conclusion

The present study established an optimized rat TIA model. The positive effects induced by pre-TIA may be hemisphere-limited in the following stroke.

No conflict of interest

ISPR7-0235

Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

THE EFFECT OF LOW FREQUENCY WHOLE BODY VIBRATION ON BEHAVIORAL PERFORMANCE AND NEUROGENESIS AGAINST CEREBRAL ISCHEMIA

D. Huang¹, Z. Yang², P. Wang³, Y. Qu³

¹West China Hospital of Sichuan University, Department of Rehabilitation Medicine, Chengdu, China

²Sichuan University-, Core Facility of West China Hospita, Chengdu, China

³West China Hospital- Sichuan University, Departement of rehabilitation medicine, Chengdu, China

Introduction/Background

Whole body vibration (WBV) has been proved to have potential therapeutic effect on motor and sensory function in stroke patients recently, but its effect on behavioral recovery post-stroke is still controversial.

Material and Methods

In this study, we tried to explore the effect of WBV (f=15Hz, A=5mm, T=30min/d, 5days/ week) for 4 weeks on behavior, brain structure, and cell proliferation after 90min ischemia of middle cerebral artery in adult rats.

Results

WBV didn't show significant improvement in weight and comprehensive neurological deficit, but in coordination at 14d, 21d and 28d (P<0.05) and muscle strength of upper limb at 21d (P<0.05) and 28d (P<0.001). WBV didn't alleviate brain damage in ipsilateral ischemic cortex or decrease the number of necrotic neurons in penumbra, but enhanced the number of BrdU⁺ cells at 3d (P<0.05) and 14d (P<0.001), BrdU⁺/nestin⁺ cells at 14d (P<0.01) and BrdU⁺/NeuN⁺ cells at 21d and 28d (P<0.001), and promoted the proliferation of astrocytes and processes thicken post 14d. The expression level of neural markers proteins, as DCX, MAP2, GFAP, in ipsilateral cortex were up-regulated on the whole after WBV exposure.

Conclusion

In all, low frequency WBV may have no significant improvement in behavior performance, brain damage, or neurogenesis against cerebral ischemia in short term, but it has the potential to reduce neurological deficits and promote the neurogenesis after long-term exposure.

No conflict of interest

ISPR7-0238

Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

NON-INVASIVE LIMB ISCHEMIC POSTCONDITIONING STIMULATES NEUROGENESIS AFTER CEREBRAL ISCHEMIA IN ADULT RATS

D. Huang¹

¹West China Hospital of Sichuan University, Department of Rehabilitation Medicine, Chengdu, China

Introduction/Background

The therapeutic utility of remote ischemic postconditioning after stroke is limited by a poorly elucidated mechanism of action and adverse effects. Here, we explored the therapeutic effects of non-invasive limb ischemic postconditioning (NLIP) on neurological deficits and neurogenesis against focal cerebral ischemia for 28 days.

Material and Methods

Sprague–Dawley rats were treated with NLIP, three 10-min cycles of non-invasive ischemia/reperfusion at the bilateral hind limbs, immediately after MCAO. Neurological deficit scores, infarct size and protein levels of nestin, GFAP and MAP2 were evaluated in ipsilateral DG and cortex. BrdU was used to label cell proliferation, and neural cells co-labeled with BrdU and immunohistochemistry were analyzed in ipsilateral DG and ischemic penumbra.

Results

The results showed that NLIP improved neurological outcome, reduced infarct size, enhanced the neural expression levels of biomarker proteins compared with the control group in the DG and cortex. Nestin⁺/BrdU⁺ cells in DG and ischemic penumbra were increased between days 7 and 21 and declined thereafter; these increases were enhanced in the NLIP group. Increased numbers of DCX⁺ immature neurons in the DG were observed in the first 2 weeks after cerebral ischemia and enhanced by NLIP. The numbers of GFAP⁺ astrocytes and NeuN⁺/BrdU⁺ neurons showed similar patterns of change, increasing between days 14 and 28 in a manner enhanced by NLIP.

Conclusion

These findings highlight the potential for NLIP to promote neural stem cell proliferation and differentiation for at least for 4 weeks after ischemic injury.

No conflict of interest

ISPR7-0567

Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

**THE CORRELATION BETWEEN HDAC9 GENE SNPS AND LARGE VESSEL
ATHEROSCLEROSIS-INDUCED ISCHEMIC STROKE IN THE HAN CHINESE IN BEIJING**

W. Liu¹, J. Huang², J. Tao², L. Chen²

¹Fujian University of Traditional Chinese Medicine, Rehabilitation medicine colleage, Fuzhou, China

²Fujian University of Traditional Chinese Medicine, Rehabilitation Medicine College, Fuzhou, China

Introduction/Background

To investigate the correlation between histone deacetylase 9 (HDAC9) gene susceptible SNPs and genotype and its phenotype in atherosclerotic ischemic stroke.

Material and Methods

Using haploview software and thousands of human genome project (HapMap) provides data on genetics, the HDAC9 gene single nucleotide polymorphisms (SNPs), minimum allele frequency (MAF), single domain and haplotype and tag SNPs were analyzed.

Results

A total of 75 SNPs in the Chr7:18930kb--19020kb regions of HDAC9 gene were determined, of which 51 SNPs accord with Hardy-Weinberg balance $p>0.05$, and MAF $p>0.05$. Based on confidence intervals, four Gamete rule and solid spine of LD were constructed 11, 14 and 8 single domain, of which rs2717356 sites with low LD, within a single domain become HDAC9 gene recombination hotspots. A total of 30 SNPs were determined htSNPs accord with R^2 is more than or equal to 0.8, and LOD is more than or equal to 3.0, and that showed that MAF were greater than 0.10. The rs2526630 [C/T] site locs in HDAC9 3'UTR region, and binding with hsa-miR-545, hsa-miR-616.

Conclusion

30 htSNPs as HDAC9 SNPs gene susceptibility sites for screening and repeated verification. The effects of HDAC9 gene rs2526630 locus on miRNA in the atherosclerotic ischemic stroke play an important role.

No conflict of interest

ISPR7-0666

Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

EFFECTS OF PAS ON MOTOR CORTEX EXCITABILITY AND FUNCTIONAL RECOVERY IN RATS WITH CEREBRAL INFARCTION

X. Zhang¹, T. Guo¹

¹Tongji Hospital- Tongji Medical College- Huazhong University of Science and Tech, Rehabilitation Medicine, wuhan, China

Introduction/Background

To observe the effects of PAS on motor cortex excitability and functional recovery after cerebral infarction and explore underlying mechanisms

Material and Methods

Thirty Sprague-Dawley rats were randomly divided into sham operation group, model group and PAS group. All the rats underwent transient MCAO, with those in sham operation group left without real occlusion. PAS treatment was given to PAS group 24h after MCAO, while no special intervention was given to sham operation group and model group. Before and 1, 7, 14 and 28d after operation, RMT, MEP amplitude and behavioral performance were recorded.

Results

Motor cortex excitability

RMT didn't change over time in sham operation group and model group, but decreased to the lowest at 7d in PAS group. At 28d, RMT in model group was significantly higher than sham operation group. At 14 and 28d, RMT in PAS group were lower than model group.

MEP amplitude didn't change over time in sham operation group, but decreased to the lowest at 7d in model group and increased to the highest at 14d in PAS group. MEP amplitude of model group was lower than sham operation group at 14d. At 14d and 28d, MEP amplitudes of PAS group were higher than model group.

NSS

NSSs of model group and PAS group were significantly higher than sham operation group. NSSs of PAS group were lower than model group at 14d and 28d.

Relationship among changes of MEP amplitudes, RMT and NSSs

Changes of MEP amplitude and RMT between 14d and 1d after operation were negatively and significantly correlated. Changes of MEP amplitude between 28d and 1d after operation were also negatively correlated with NSSs. There exist negative correlation between changes of MEP amplitude and RMT.

Conclusion

PAS regulates motor cortex excitability and improves functional recovery after MCAO. Changes of cortex excitability significantly correlate with functional recovery.

No conflict of interest

ISPR7-0717

Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

THE RESEARCH ON THE INTERVENTION OF ELETROACUPUNCTURE COMBINED WITH ENRICHED REHABILITATION TRAINING ON NERVE REGENERATION AFTER CEREBRAL ISCHEMIA BY REGULATING NOGO RECEPTOR COMPLEX

W. Tang¹, Y. Zhang¹, Z.H. Chen¹, M.X. Li¹, W. Lan¹

¹Anhui University of Chinese Medicine, Clinical College of Acupuncture and Moxibustion, Hefei, China

Introduction/Background

To investigate the mechanism of electroacupuncture combined with enriched rehabilitation on nerve regeneration after cerebral ischemia by regulating Nogo receptor complex.

Material and Methods

The focal cerebral ischemia model in rats were established by thread embolism method. A total of 50 SD rats (males, clean grade) were randomly divided into 5 groups: sham operation group, model group, electro-acupuncture group(EA), enriched rehabilitation group(ER) and electroacupuncture combined with enriched rehabilitation group(EE), 1 times a day, a total of 14 days of intervention. The Nerve function defect score was used to observe the rat's nerve function defection; The transmission electron microscope was used to observe the ultrastructure of neurons and synapses of cerebral cortex and hippocampus; The immunohistochemical method was used to observe expression of Nogo receptor complex(NgR, LINGO-1, p75NTR, TROY) in the rat's cerebral cortex and hippocampus.

Results

The scores of neurological deficits in the electroacupuncture-rehabilitation group were significantly lower than those in model group, EA group and ER group ($P<0.05$); The protective of neurons and synaptic ultrastructure in ER group was better than those in model, EA and ER groups. The expression of NgR, LINGO-1, p75NTR and TROY protein in the ER group were lower than those in model, EA and ER groups ($P<0.01$)

Conclusion

Electroacupuncture combined with enriched rehabilitation therapy can down regulation the expression of NgR, LINGO-1, p75NTR and Troy in the ischemic cortex and hippocampus of rat, reduce Nogo receptor protein complex formation, prevent axonal growth cone collapse and promote nerve growth, which is the probably mechanism of electroacupuncture combined with enriched rehabilitation therapy promote nerve function remodeling after cerebral ischemia.

No conflict of interest

ISPR7-0766

Cell and Tissue Adaptation and Maladaptation (e.g. Plasticity, Molecular Mechanisms and Mediators)

ELUCIDATION OF GENE EXPRESSION PATTERNS IN THE BRAIN AFTER SPINAL CORD INJURY

H.C. Lee¹, S.H. Kim¹, A. Baek¹, S.R. Cho²

¹*Yonsei University Wonju College of Medicine, Rehabilitation medicine, Wonju, Republic of Korea*

²*Department and Research Institute of Rehabilitation Medicine- Yonsei University College of Medicine, Rehabilitation medicine, Seoul, Republic of Korea*

Introduction/Background

The objective of this study is to investigate the progression of the brain injury after spinal cord injury (SCI) at acute phase (3 hours post-injury) and subacute (2 weeks post-injury) by gene expression patterns using transcriptome analysis.

Material and Methods

Male mice of seven weeks of age were used, and randomly classified into three groups: sham-control brain group; 3 hours (acute) post-SCI brain group; 2 weeks (subacute) post-SCI brain group. Mice received a dorsal laminectomy at the 9th thoracic vertebral level to expose the spinal cord and then a moderate T9 contusive injury by the Infinite Horizons device (Precision Systems and Instrumentation, Lexington, NY, USA). The sham control mice received only a dorsal laminectomy without contusive injury. Isolated brains and spinal cord tissues were frozen at -70°C and processed for RNA isolation.

Results

1.5-fold up- and down-regulated genes were counted and summarized in Figure 1. The black and white bars mean up-regulated and down-regulated genes each other.

Specifically, in oxidative phosphorylation, there were 2 up-regulated genes (ATP6V0C, COX7B2) and 1 down-regulated gene (COX7B) at acute phase compared to sham-control (Fig. 2A, Fig. 3A). The result of gene expressions at subacute phase compared sham-control in cytokine-cytokine receptor interaction, chemokine signaling pathway and antigen processing and presentation is as follows (Fig. 2B, Fig. 3B). Also, these at subacute phase compared acute phase in antigen processing and presentation, MAPK signaling pathway, and cytokine-cytokine receptor interaction are follows as Fig. 2C, Fig. 3C.

Conclusion

Our study provided gene expression patterns in the brain after spinal cord injury in pathophysiological processes. In the brain after SCI, mitochondria dysfunction occurred at acute phase, sequentially inflammatory response and ER stress aroused at subacute phase. Finally, these stress environments led to activation of MAPK signaling pathway at subacute phase compared to acute phase (Fig. 3).

Our results suggest that SCI is closely associated with brain injuries.

No conflict of interest

ISPR7-0023

Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

CRYOTHERAPY EFFECT ON THE CROSS-SECTIONAL AREA AND GENE EXPRESSION OF SOLEUS AND TIBIALIS ANTERIOR MUSCLES IN RATS

C. Ramírez¹, E. Herrera¹, D.M. Camargo¹

¹*Universidad Industrial de Santander, Escuela de Fisioterapia, Bucaramanga, Colombia*

Introduction/Background

Cryotherapy is used for the treatment of acute joint inflammation, but its effect on muscles related to the injured joint has not been studied. Aim: to evaluate cryotherapy effect on muscle cross section area (CSA) and gene expression of atrogina1 and MuRF-1 in the soleus and tibialis anterior (TA) muscles of rats.

Material and Methods

Thirty-two Wistar rats were divided into four groups: 1)Control, 2)Inflammation, 3)Inflammation+cryotherapyA, 4)Inflammation+cryotherapyB. Inflammation was induced by i-carrageenan injection in the tibiotarsal joint in the groups 2, 3, and 4. Immediately, after 24 and 48 hours, the inflammation+cryotherapyA group received 20 minutes of cryotherapy on the ankle joint. By the other hand, the inflammation+cryotherapyB group immediately received cryotherapy on the ankle joint for 20 minutes followed by two additional applications with 20 minutes interval between them, this was repeated at 24 and 48 hours. Seventy-two hours after the joint inflammation induced, the soleus and TA were dissected with the animals alive and anesthetized. RNA was extracted and amplified by RT-PCR; the morphometric evaluation was conducted in the ImageJ®-software. ANOVA-one-way followed by Tukey's test were performed to compare the groups ($p<0.05$).

Results

The soleus muscle CSA decreased significantly in all experimental groups. The TA CSA decreased significantly in Inflammation and CryotherapyB groups, while the CryotherapyA group remained as the Control group. No changes in gene expression were detected between experimental groups.

Conclusion

Application of cryotherapy once a day for three consecutive days attenuates atrophic effect of acute joint inflammation on TA muscle, indicating the importance of cryotherapy for control of the deleterious effect of acute joint inflammation on fast-twitch muscle. Future studies are necessary to evaluate the mechanism involved in that response.

No conflict of interest

ISPR7-0216

Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

THE HEMISPHERE-LIMITED NEUROPROTECTIVE ROLE OF PRIOR TRANSIENT ISCHEMIC ATTACK IN A NOVEL RAT TIA-MCAO MODEL

L. Zhang¹

¹*huashan hospital, rehabilitation, shanghai, China*

Introduction/Background

Transient ischemic attack (TIA) is a high risk factor for stroke occurrence. However, it remains controversy that TIA can alleviate brain injury from subsequent serious stroke. Our current study first explored the appropriate duration of TIA ischemia, the interval time between TIA and following stroke, and then we examined the effects of TIA precondition on the ipsilateral or contralateral cerebral hemispheres.

Material and Methods

24 male SD rats(5 groups) were underwent various short-time tMCAO or sham surgery;32 male SD rats(4 groups) were underwent 90-min tMCAO(1,3,5 and 7 days after short-time ischemia); SD rats were performed short-time tMCAO (n=20) for TIA precondition, and followed by 90 minutes tMCAO on their left cerebral hemispheres.Laser Speckle Imaging (LSI),Diffusion weighted imaging (DWI),2,3,5-triphenyltetrazolium chloride staining,T2-Weighted Resonance Imaging,modified Garcia score,tilting-plane were used to evaluate degree of brain injury.The mRNA of MMP-9,IL-1 β , iNOS,TNF- α ,and the proteins of Bax,p-p38 of injured hemispheres were examined by RT-PCR or Western blotting as well.

Results

The reperfusion following 5 minutes ischemia was optimized for the TIA model without obvious cerebral infarction.Performing tMCAO at 7 days after short-time ischemia were chosen for further studies, due to the highly mortality resulted from the shorter interval time between TIA and normal tMCAO.We found that cerebral edema alleviated in ipsilateral-TIA stroke animals versus contralateral-TIA stroke.The levels of MMP-9, IL-1 β , iNOS mRNAs, Bax and p-p38 were lower in ipsilateral-TIA stroke hemisphere than contralateral stroke one,although the TNF- α mRNA was at the similar level in both injured groups.

Conclusion

Our data demonstrated that 5 minutes cerebral ischemia-reperfusion could simulate TIA as short-time ischemic precondition, without obvious cerebral injury. Ischemic tolerance effects induced by TIA performed positive effects on ipsilateral hemisphere when the subsequent stroke attack occurred. These findings may contribute to the therapeutic emphasis and prognostic judgment of stroke patients who had TIA before.

No conflict of interest

ISPR7-0392

Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

INFLAMMATORY MARKERS IN SYNOVIAL FLUID PATIENTS WITH KNEE OSTEOARTHRITIS AND APPLICATION OF BOTULINUM TOXIN TYPE A

L.M. Allen Hermosillo¹, A. Cruz Sapien², L.H. De La Garza³, J.C. Tamez Montes⁴, J. Castro Garza⁵, E.F. Fabela Bernal⁶, S. Gonzalez Hernandez⁵

¹instituto mexicano del seguro social, unidad de medicina física y rehabilitación no. 1, monterrey, Mexico

²instituto mexicano del seguro social, rehabilitation, cd. juarez, Mexico

³instituto mexicano del seguro social, investigación, MONTERREY, Mexico

⁴instituto mexicano del seguro social, traumatología y ortopedia, MONTERREY, Mexico

⁵instituto mexicano del seguro social, Centro de Investigación Biomédica del Noreste, MONTERREY, Mexico

⁶instituto mexicano del seguro social, ortopedia y traumatología, MONTERREY, Mexico

Introduction/Background

Knee osteoarthritis is a degenerative disease, consequence of catabolism matrix components of articular cartilage due imbalance between synthesis and degradation. The most important inflammatory mediators are catabolic interleukins, which induce target cells to produce more degradation; They include IL-1, IL-6, IL-8, IL-17, IL-18, TNF, Botulinum toxin applying intraarticular knee has been observed reduces pain and improves functionality of patients, but has not been demonstrated potential impact on pathophysiology.

The goal is to determine level of inflammatory markers in synovial fluid before and after application botulinum toxin type A in patients with knee osteoarthritis.

Material and Methods

18 patients were evaluated during January to March 2015 with diagnosis of knee osteoarthritis GIII, 45-75 years old, without having received viscosupplementation and no history knee intra-articular fracture. 6 patients were selected randomly by sealed envelope for sampling of synovial fluid. The study group he extracted a sample of 1.5 ml synovial fluid in knee by arthrocentesis for baseline study and using same route we apply 100 units of onabotulinum toxin A diluted 1.5 ml of saline (NaCl 9%). They are cited a month later to take another sample.post-application. It is analyzed qualitatively and quantitatively the presence of cytokines present in samples (IL-1, IL-2, TNF) with ELISA before and after application.

Results

IL 1 post application significantly decreased at month of application (P 0.045); interleukins IL6 and TNF decreased substantially, but without significance (P0.528). changes clinical improvement in pain and function were observed in all patients.

Conclusion

Botulinum toxin type A applied intra-articular knee osteoarthritis, decreases concentration of inflammatory markers in synovial fluid

No conflict of interest

ISPR7-0739

Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

HEALTH RELATED QUALITY OF LIFE AND IMMUNE CELLS IN CHRONIC MUSCULOSKELETAL PAIN PATIENTS

D. Dimmek¹, C. Korallus¹, F. ten Brink¹, S. Buyny², C. Gutenbrunner¹, R. Jacobs², B. Nugraha¹

¹Hannover Medical School, Rehabilitation Medicine, Hannover, Germany

²Hannover Medical School, Clinical Immunology and Rheumatology, Hannover, Germany

Introduction/Background

Immune systems have been known to be involved in pathomechanisms of chronic pain. Further studies are needed to elucidate the correlation of immune cells (ICs) in different types of chronic musculoskeletal pains with their clinical parameters, such as health related quality of life (QoL). This study aims to determine subset of ICs in chronic pain patients and compare them with healthy subjects (HS). Additionally, correlation between clinical parameters (pain, QoL) and ICs in each group of chronic pain patients (osteoarthritis (OA); chronic low back pain (cLBP); and chronic widespread pain (CWP)) were determined.

Material and Methods

This study was approved by local ethics committee (Nr. 6554). Three different types of pain patients who had history of pain (visual analogue scale (VAS) ≥ 4 during the past week) for at least three months, were recruited: OA, cLBP, and CWP (18-70 y.o). In total, 59 patients and HS were recruited. QoL were assessed by using SF-12, Epworth Sleepiness Scale (ESS), fatigue severity scale (FSS), and PHQ-9, respectively.

Different types of ICs were determined by using fluorescence-activated cell sorting.

Results

There are significant differences with regard to pain and QoL between chronic pain patients and HS ($p < 0.001$). Regarding ICs parameter the differences were found in: CD3+CD4+, ($p < 0.05$); CD3-CD56+dim ($p < 0.05$) and CD3-CD56+ ($p < 0.05$) lymphocytes. Correlations of ICs with QoL were observed in: OA: CD3-CD56dim ($p < 0.05$), CD3-CD56+ ($p < 0.05$); CLBP: CD3+CD56+ ($p < 0.05$), CD8+NKcells ($p < 0.05$); CWP: CD3+CD4+ ($p < 0.05$).

Conclusion

Taken together, it seems ICs play a role in pathomechanism of chronic musculoskeletal pain and is associated with QoL.

No conflict of interest

ISPR7-0815

Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

LOCALIZED HIGH-FREQUENCY VIBRATION (LMV) CHANGES QUADRICEPS MOTOR UNIT RECRUITMENT PATTERN IN KNEE OSTEOARTHRITIS-RELATED MUSCLE ATROPHY: A COIMPARISON STUDY OF LMV VERSUS NEUROMUSCULAR ELECTRICAL STIMULATION (NMES)

R. Casale¹, G. Boccia^{2,3}, M. Benedetti⁴, **G. Buttacchio**¹, A. Rainoldi³

¹Habilita, Care & Research Rehabilitation Hospital, Zingonia, Bergamo, Italy

²CeRiSM Research Center for Sport, Mountain, and Health, University of Verona, Roverto (TN), Italy

³Department of Medical Sciences, Motor Science Research Center,

NeuroMuscular Function research group, SUISM, University of Turin, Italy

⁴Physical Medicine and Rehabilitation Unit, Istituto Ortopedico Rizzoli, Bologna, Italy

Background & Aim

Neuromuscular electrical stimulation (NMES) and high-frequency localised muscle vibration (LMV) are both used for muscle strength maintenance and recovery. Aim was to compare changes in QM motor unit recruitment induced by LMV vs NMES in patients with knee osteoarthritis-related muscle atrophy (OA).

Methods

30 OA patients (aged 18-65) randomly divided in: study group (Vibra Plus®, ACircle, Italy: 150 Hz with a constant contact force of 20-25 N) and control group (NMES, Compex®: stimulation sequence: 2' at 6 Hz then 20' at 85Hz in bursts of 4' separated by 8'' at 8 Hz and followed by a recovery phase of 3' at 3Hz). Surface EMG signals (sEMG, LISiN, Italy) were recorded from QM before treatment (T0); at the end of treatment (T1) during isometric contractions. Initial values and rate of change in mean spectral frequency (MNF), and muscle fiber conduction velocity (CV) were calculated.

Results

ANOVA (two way repeated measure) showed significant treatment × time interaction ($F=3.2$, $p=0.04$) for rate of change (RC) of CV. RC was not different between two groups at T0 ($p>0.05$) whereas it was steeper in NEMS ($-0.011\%/s$, $p=0.03$) than in LMV group ($-0.001\%/s$) at T1. No significant interaction treatment × time interaction was detected for the initial value of CV ($F=0.05$, $p=0.81$), and for RC of MNF ($F=2.4$, $p=0.2$).

Conclusion

LMV increases the activation of fast motor units (greater myoelectric manifestations of fatigue) more than NMES, Vibratory conditioning seems induce a pronounced response of fast motor units showing potential utilization in a rehabilitation context.

Note : these data are part of a broader study submitted for publication on EJPRM.

Document not received

ISPR7-0855

Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

MOBILIZATION PROMOTES HEALING FASTER THAN IMMOBILIZATION OF PARTIAL TEAR OF ACHILLES TENDON IN MICE AND ITS CORELATION WITH THE ROLE OF LLLT : HISTOPATHOLOGY STUDY

Y. Waluyo¹, N. Mayasari²

¹, Makassar, Indonesia

²Wahidin sudirohusodo Hospital, Physical medicine and Rehabilitation, Makassar, Indonesia

Introduction/Background

Achilles tendon injury mostly occurs to 30-50 year old-patient, and approximately 35% of all tendon injury cases. Caused by the specific placement of tendon structure, the athletes tend to have flat feet and often pull the soleus repeatedly, which leads to increase injury. Until now, tendon injury therapy becomes controversial. Some articles mentioned that the best treatments are open surgery and some are conservative approach depend on its severity. in conservative, casting (immobilization) is common used in acute phase. LLLT becomes such an alternative therapy, reduces inflammation and helps recovery process in acute phase. Therefore, this research aims to understand the differences of collagen fibers in partial rupture of Achilles tendon in mice using Laser in casting compare with free mobilization

Material and Methods

The pure strains mice divided into 2 groups followed a seven-day adaptation, given a tenotomy and appropriate treatment based on its group. In the next seven days, the mice were given LLLT therapy for 4,28J/cm in three minutes alternately. grup 1 we apply casting and group 2 free mobilization Afterwards, the mice were taken to the laboratory for microscopic assessment. The mice were also stained and analyzed in its collagen fibers formation

Results

The result showed that the mice with free mobilization gained better collagen fibers formation than the immobilization ones.

Conclusion

Histopathology study shows that free mobilization condition promotes healing faster combine with LLLT therapy in partial tear of Achilles tendon

No conflict of interest

ISPR7-0931

Mechanisms of Tissue Injury (e.g. Inflammation, Repetitive Strain) and Development of Organ Dysfunction (e.g. Atrophy, Spasticity, Chronic Pain)

THE PHYSIOLOGY OF WEATHER AND PAIN

M. Young¹, B. Bukovitz²

¹*Maryland State Department of Education, Division of Rehabilitation Services, Pikesville, USA*

²*University of Wisconsin - Oshkosh, Biology, Oshkosh, USA*

Introduction/Background

Despite the pervasive belief that changes in weather influence pain, research exploring the relationship between weather patterns and aggravation of chronic pain has yielded equivocal results, even when studying the same illness.¹⁻⁴ The effects of barometric pressure and temperature are especially ambiguous – many studies report a correlation between these two variables and arthritic pain,^{2,5,6} while others do not.^{7,8} The biological mechanisms that aggravate pain as a result of changing meteorological conditions are not clearly elucidated, and few scientific endeavors have investigated possible explanations. A better understanding of the underlying physiology has important implications for patients suffering from chronic pain, physicians in their ability to recommend pain management treatments, and researchers in their capacity to identify targets for pharmaceutical interventions.

Material and Methods

Chronic constriction injury of the sciatic nerve or spinal nerve ligation of the left L5 spinal nerve were used to model neuropathic pain in rats; sham-operated control rats had the respective nerve exposed, but not operated on. To simulate arthritic conditions, rats were injected with complete Freund's adjuvant into the left tibio-tarsal joint; control rats were injected with saline. Responses to drops of 7°C or 20 mmHg in climate-controlled rooms were measured using the von Frey test and paw withdrawal duration.

Results

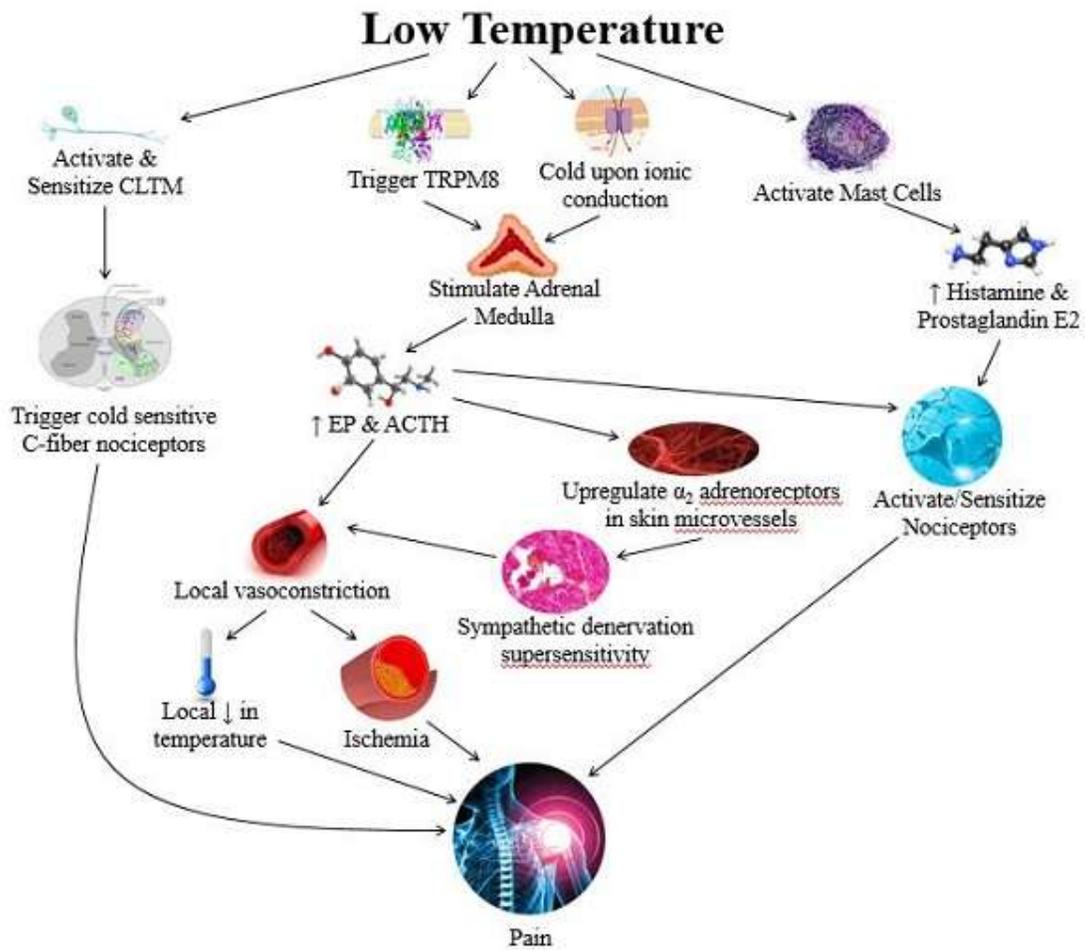


Figure 2. Schematic illustrating how low temperatures may aggravate chronic pain conditions. TRPM8, transient receptor potential cation channel subfamily M member 8; CLTM, C-fiber low threshold mechanoreceptor; EP, epinephrine; ACTH, adrenocorticotropic hormone.

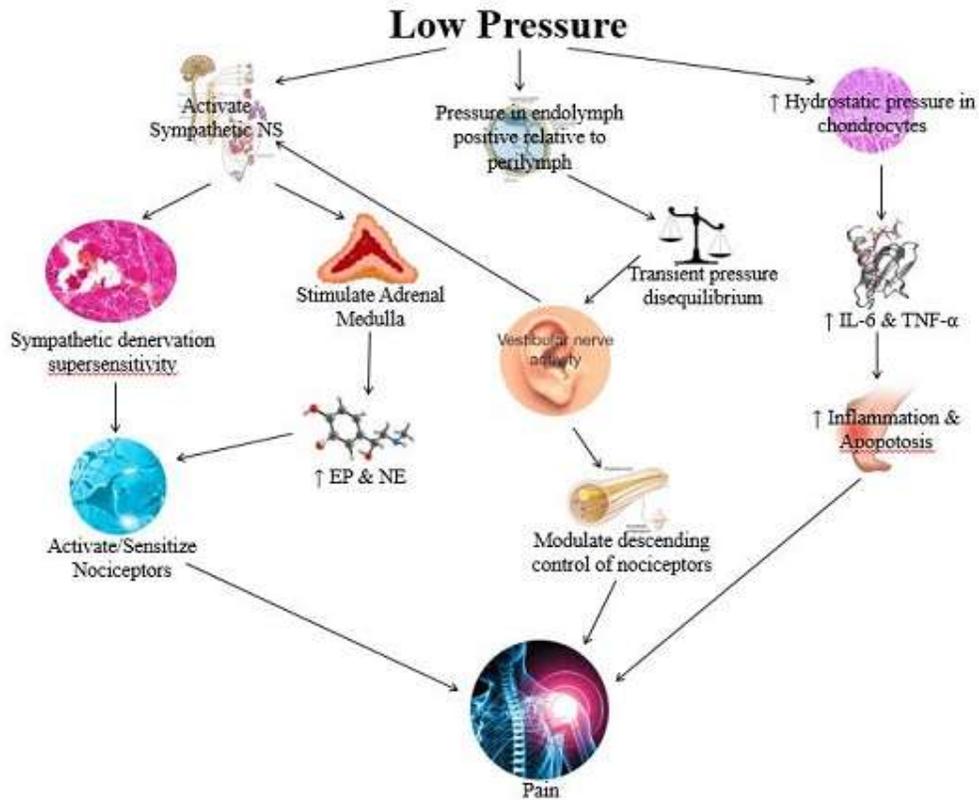


Figure 3. Proposed schematic overviewing how different mechanisms aggravate pain when pressure decreases. IL-6, interleukin-6; TNF- α , tumor necrosis factor alpha; EP, epinephrine; NE, norepinephrine.

	Allodynia?	Hyperalgesia?	Induction Time	Lumbar sympathectomy inhibition?	Sympathetic effects	Humoral catecholamines	Notes
Low Temperature	Yes for neuropathic, limited for arthritic	Yes	Slow	No	Sympathetic response evident, but effects may be masked, SDS	ACTH, EP	CLTM and mast cells may be involved
Low Pressure	Yes	Yes	Fast	Yes for allodynia, no for hyperalgesia	↑ renal and lumbar sympathetic activity, SDS	EP, NE	Inner ear may play an important role

Table 1. Summary of low temperature and low pressure effects on neuropathic and arthritic animal models. SDS, sympathetic denervation supersensitivity; ACTH, adrenocorticotropic hormone; EP, epinephrine; NE, norepinephrine; CLTM, C-fiber low threshold mechanoreceptors.

Conclusion

Our results identify several plausible mechanisms explaining how drops in temperature or barometric pressure may aggravate rheumatic or neuropathic pain. However, the extent of available data is sparse, and more research is required to adequately determine how weather influences pain.

No conflict of interest

ISPR7-0042
Miscellaneous

UPPER LIMB AND HAND RECOVERY IN C4 AND C5 SCI PATIENTS TREATED WITH CELLULAR THERAPY AND INTENSIVE REHABILITATION.

M.T. Moviglia Brandolino¹, M.D.L.A. Spinelli¹, J. Garcia¹, J. Ferrey¹, O. Maedo¹, J.A. Lopez Arrubla¹, F. Mamud¹, I. Guerra¹, P. Carro¹, B. Bolsoni¹, N. Fiorini¹, D. Couto¹, G. Albanese¹, L. Giunta¹, S. Piccone¹, G. Moviglia¹

¹Universidad Maimónides, Centro de Investigacion en Ingenieria de Tejidos y Terapia Celular, CABA, Argentina

Introduction/Background

Between January 2013 and October 2016, 7 patients with C4 and C5 chronic and complete SCI underwent a combined therapy: Cell Therapy and intensive rehabilitation.

Each patient received 2-4 cell implants in the spinal cord with 12 month in between. Once they showed electrical recovery (positive electromyography) in previously committed muscles, muscular progenitor cells were implanted in to those muscles. Each muscle was implanted 4-6 times

Material and Methods

7 chronic and complete SCI patients were treated (4/7 C5 and 3/7 C4) Cell therapy was applied to treat the spinal cord first (intra artery infusion of neural progenitor cells co cultured with effector T Lymphocytes) and the affected muscles in a second time. The muscular implant consisted in a co culture of Autologous muscular progenitor cells and effector T Lymphocytes.. Intensive rehabilitation program included 3 hours per day of hand and upper limb work. Implanted muscles were: In C4 patients: deltoid, triceps, biceps, supinador; In C5 triceps, ulnaris, Palmaris, heminencia thenar, interosseous

Results

All implants were well tolerated. Improvement in muscle strength and range of motion were observed in implanted muscles. Deltoid, biceps and triceps in C4 patients were from 0 to 2 in the muscle testing scale. The same results were observed in Ulnaris and Palmaris in C5 patients. Triceps in C5 patients recovered up to 4 in the muscle testing scale.

Conclusion

According to these results, cellular therapy (applied in both spinal cord and muscular tissue) combined with intensive rehabilitation helps to improve upper limb and hand motor function in C4/C5 SCI patients

No conflict of interest

ISPR7-0372
Miscellaneous

SPHERES OF MESENCHYMAL STEM CELL TRANSPLANTATION PROMOTE REGENERATION OF INJURED SPINAL CORD IN MICE

M.E. Chung¹

¹St. Paul's Hospital- College of Medicine- The Catholic University of Korea, Rehabilitation Medicine, Seoul, Republic of Korea

Introduction/Background

Cell therapy is a promising strategy to promote regeneration of central nervous system in spinal cord injury. Although several researches have shown that mesenchymal stem cells promote regeneration of spinal cord, the degree of improvement has not been satisfying. We have developed a culture strategy of three dimensional spheres of mesenchymal stem cells to improve outcome of transplantation of mesenchymal stem cells in spinal cord injury.

Material and Methods

We used a culture strategy of three dimensional spheres of mesenchymal stem cells to improve outcome of transplantation of mesenchymal stem cells in mice with spinal cord injury. We transected the thoracic spinal cord in mice and created a 2-mm gap. Transplantation of mesenchymal stem cell spheres or transplantation of mesenchymal stem cells as suspended single cells was performed immediately after the spinal cord transaction. The effect of transplantation was evaluated using behavioral, electrophysiological and histologic methods.

Results

Motor function was assessed by Basso Mouse Scale. Improvement was found in all groups of transplanted mice and most improvement of motor function was found in spheres of mesenchymal stem cell transplantation group.

Conclusion

Spheres of mesenchymal stem cell may promote regeneration of injured spinal cord in mice.

No conflict of interest

ISPR7-0376
Miscellaneous

ENVIRONMENTAL INFLUENCE ON THE AUTONOMIC REGULATION OF RESPONSE TOWARDS SENSORY STIMULI IN CHILDREN

I.N. Gomez¹, C. Lai¹, H. Tsang¹

¹The Hong Kong Polytechnic University, Department of Rehabilitation Science, Kowloon, Hong Kong S.A.R.

Introduction/Background

Regulation of response towards sensory stimuli is integral towards adaptive functions in children. Autonomic activity between the parasympathetic (PNS) and sympathetic (SNS) nervous systems has been suggested to support such regulatory mechanisms. Several factors influence the autonomic activity (i.e. age, gender, developmental conditions, etc.). However, the role of the environment in influencing autonomic activity is yet to be fully understood. In this research, it is aimed to look at how the physical environment can influence autonomic regulation in children in the face of sensory stimuli.

Material and Methods

Forty typically-developing male children ages (n=40) 7-12 years old, 20 in each group, from the same ethnic background but living in different geographic conditions were subjected to a sensory laboratory paradigm (SLP) while consecutively measuring heart rate variability (HRV) and electrodermal activity (EDA) to index autonomic activity of the PNS and SNS respectively. The SLP comprised of a resting baseline, auditory sensory stimulation and recovery conditions.

Results

MANOVA results suggests significant differences in autonomic activity at resting baseline ($p = .02$) and stimulation conditions ($p = .02$); and difference approaching significance for the recovery condition ($p = .08$). Autonomic availability and the capacity to respond to sensory stimuli seems to be influenced by the geographic environments where children lives.

Conclusion

Regardless of similarity in ethnic background, the environment has the ability to influence autonomic activity related to the regulation of response towards sensory stimuli and promote adaptation. Challenges in adapting to sensory in the environment should therefore consider the geographic environments where children are living. Indexing children's autonomic activity might be a useful measure of regulation of adaptive functions. The results of this study has implications on the development of context-sensitive evaluation and rehabilitation services for children with known difficulties in sensory regulation. However, results still need to be tested among clinical population.

No conflict of interest

ISPR7-0444
Miscellaneous

**CORTICAL ACTIVITY, BODY MIDSAGITTAL REPRESENTATION IS THERE ONE OR MANY
EGOCENTRIC SPACE NEURAL COMPUTATION MECHANISM?**

I. Bonan¹, A. Raillon², E. bannier³, L. chochina⁴, K. jamal⁴, J.C. ferre⁴, S. leplaideur⁴

¹CHU Pontchaillou, 35, Rennes, France

²hospital Boulogne sur mer, 62, boulogne sur mer, France

³unité INSERM VISAGE Rennes 1, 75, rennes, France

⁴Centre hospitalier universitaire, 35, rennes, France

Introduction/Background

Subjects use different referentials for the elaboration of spatial representation but body-centered coordinates systems are probably the most widely used. We wonder whether there are different neural basis for the spatial body centered representation process according to the part of space engaged. The aim of the study was therefore to investigate the difference in the activations during spatial body centered task in personal and extrapersonal space.

Material and Methods

17 right-handed healthy subjects (50.4 +/- 14.9 years) were tested using fMRI during the realization of 2 egocentric spatial tasks: the perception of the midsagittal plane in extrapersonal space (straight ahead task) and in personal space (longitudinal axis task).

Results

: For both tasks, cerebral activations dominated largely in the right hemisphere and interest essentially the right frontoparietal network. However the straight ahead task showed more specific activations in temporoparieto-insular cortex and thalamic areas than the longitudinal axis task.

Conclusion

The activations areas found in the personal and extrapersonal egocentric tasks are superimposed with predominance in right frontotemporal-parietal network suggesting that they share large neural basis. However the straight ahead task activates additionally several multisensory regions that demonstrated its higher level characteristics. These regions are similar to the areas activated for visuospatial representation such as visual vertical, which suggests a common network for spatial perception for extracorporeal space, bodycentered or not.

No conflict of interest

ISPR7-0498
Miscellaneous

SPECTRAL ANALYSIS OF HEART RATE VARIABILITY IN PARAPLEGICS

A. Kyriakides¹, I. Panagiotopoulos², E. Chroni³

¹*University Hospital of Patras, Spinal Unit, Patras, Greece*

²*University Hospital of Patras, Orthopedic, Patras, Greece*

³*University Hospital of Patras, Neurology, Patras, Greece*

Introduction/Background

The purpose of this study was to compare heart rate variability (HRV) in response to the sit up maneuver (SUM) in paraplegics with intact autonomic control of the heart and able-bodied controls. In the paraplegic group, we also attempted to examine the effects of different types of training on cardiac autonomic control at rest and during provocation.

Material and Methods

Eleven (11) male subjects with motor and sensory complete spinal cord injury (SCI) below the mid thoracic level and ten (10) able-bodied controls were studied at rest and after SUM. The paraplegic group included six (6) paraplegic wheelchair athletes ('active' subgroup) and five (5) paraplegics who are involved in regular orthostatic training ('orthostatic' subgroup). HRV was measured by power spectral analysis using a fast Fourier transformation. A three lead ECG was used to obtain heart rate (HR), two spectral components [low frequency (LF) component and high frequency component (HF)] and their ratio reflecting the sympatho-vagal balance (LF/HF).

Results

In the control group the LF spectral component and the LF/HF ratio was significantly higher demonstrating a marked sympathetic response to SUM, whereas in the group with paraplegia neither the LF nor the sympathovagal ratio were significantly increased. Between the two paraplegic subgroups the 'orthostatic' one demonstrate lower resting HR and better sympathetic response to the SUM compared to the 'active' one.

Conclusion

Frequency domain analysis is a simple and sensitive method to demonstrate differences between paraplegics and able-bodied individuals. It appears that in paraplegics, although sympathetic innervation of the heart was expected to be anatomically intact, its function has been compromised. The lesser sympathetic response to the provocation in the 'active' paraplegia sub-group compared with the 'orthostatic' sub-group implied that baroreceptor control might be downregulated possibly due to reduced orthostatic challenges despite the regular involvement to wheelchair sports.

No conflict of interest

ISPR7-0632
Miscellaneous

ASSOCIATION OF GENETIC FACTORS IN PATIENTS WITH CEREBRAL PALSY (CP) WITHOUT NEUROLOGICAL RISK FACTORS

M. Arias Franco¹, N.D. Lara², D. Valencia³, N. Navarro⁴

¹Neuroconexion, Quindío, Armenia, Colombia

²Universidad Nacional de Colombia, Cundinamarca, Bogotá, Colombia

³Universidad Nacional de Colombia, Cundinamarca, Bogotá, Colombia

⁴Instituto Nacional de Rehabilitación, Ciudad de Mexico, Ciudad de Mexico, Mexico

Introduction/Background

In most cases the cerebral palsy (CP) etiology is unknown but a wide range of associated factors are attributed, such as perinatal asphyxia, but It is necessary to identify genetic factors associated with CP in children in whom there are no factors that may confuse or interfere in the results by epigenetic factors.

Objective: To determine the presence of genetic factors related to cerebral palsy in patients without neurological risk factors

Material and Methods

Ambispective study, carried out during the period from January 2014 to December 2015, in a third level hospital. A total of 723 patients with a diagnosis of CP were analyzed. Of these, 1 case fulfilled the criteria of cerebral palsy without associated neurological risks factors and normal brain magnetic resonance. In this case, a new generation analysis was carried out through exomic sequencing of the sample, in order to determine new or preexisting genetic associations in our population. The analysis of the sample was carried out through new generation gene sequencing in Switzerland.

Results

The clinical characteristics of the patient are related to a dystonic PC phenotype. When analyzing the sample, two variants were found in the gene related to spinocerebellar ataxia 40: CCDC88C: NM_001080414: exon25: c.4430C> G: p.S1477C, CCDC88C: NM_001080414: exon3: c.199G> A: p.V67I, Which have been related to cerebellar hypoplasia and spinocerebellar ataxia type 40. Both neurological lesions, related to brain damage, which in turn is related to the type of patient phenotype.

Conclusion

The mutation found is related to alterations in the central nervous system, an important aspect because the patient's phenotype presents with a motor incapacity of central origin. In Colombian population, this is the first time that this kind of finding has been determined, associated with similar clinical manifestations. This contributes both to national databases and global databases. Giving a light about the genetic participation in PC.

No conflict of interest

ISPR7-0957
Miscellaneous

APPLICATION STATUS OF REHABILITATION ASSESSMENT OF TEMPOROMANDIBULAR DISORDERS

C. Wen-hua¹

¹Department of Rehabilitation, Shanghai First People's Hospital, Shanghai 200080, China

Background and aims The etiology and prevalence of temporomandibular disorders are complex, and different kinds of assessment scales are used in the process of its diagnosis and treatment. Looking forward to summing up experience, and exploring a more reasonable implementation of the rehabilitation of temporomandibular disorders. **Methods** Accessing literature about the rehabilitation assessment of temporomandibular disorders in the nearly 10 years from Pubmed, NEJM, VIP, CNKI Journals and some other database, and summarizing an overview of the status. **Results** Relevant evaluation indexes include to pain assessment (visual analogue scale, short form McGill Pain Questionnaire), activity evaluation (temporomandibular opening index), the synthetic evaluation index (helkimo index and fricton's index), psychological assessment (self rating Anxiety Scale, depression self rating table and symptom self rating symptom checklist 90, Minnesota Multiphasic Personality Inventory, Eysenck Personality Questionnaire), quality of life (in the oral health impact assessment table OHIP-14). **Conclusions** Comprehensive and targeted use of these scales, playing a vital role in the diagnosis, rehabilitation treatment, efficacy evaluation and clinical trial study of temporomandibular disorders.

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ISPR7-0324

Interventions Research - Muscle Training

THE IMPACT OF STATIC VERSUS DYNAMIC STRETCHING ON AGILITY PERFORMANCE AMONG HOCKEY PLAYERS IN SOUTH AFRICA

V. Chetty¹, S. Lawler², S. Kunene³

¹University of KwaZulu-Natal, College of Health Sciences, Durban- KwaZulu-Natal, South Africa

²University of KwaZulu-Natal, College of health sciences, Durban, South Africa

³University of Witwaterstrand, Physiotherapy, Johannesburg, South Africa

Introduction/Background

Hockey is a sport played worldwide and as in all sports warm up enhances maximal agility performance. Controversy between which warm up stretching technique is best remains an enigma in literature and frames the aim of this study which is the investigation of the effects of static stretching versus dynamic stretching on agility in hockey players.

Material and Methods

An experimental design investigating the effects of performing static stretching, dynamic stretching or a combination of the two on agility in individual hockey players was conducted at two College hockey clubs in Kwa-Zulu Natal, South Africa using the Illinois agility test. Data was analysed using Shapiro-Wilke W test for normal data with significance set at p-values less than 0.05

Results

Twenty-six hockey players participated in the stretching protocols. The agility test times of each stretching protocol was compared to the other and the pre-intervention testing. Males had quicker agility time than the females. There was no significant difference in age. There was no significant difference between the pre-intervention and the static protocol ($p = 0.6$), as well as with the dynamic protocol ($p = 0.8$). However, there was a significant difference between the pre-intervention test and combination protocol ($p = 0.004$). The difference between the static and the combination protocol ($p = 0.006$) was also significant. There was also a significant difference between the dynamic and the combination protocol ($p = 0.004$).

Conclusion

The protocol that had a significant difference to the pre-intervention test was the combination protocol which remains controversial in literature aimed at effectiveness of stretching protocols for optimal warm-up of hockey players.

No conflict of interest

ISPR7-0959
Miscellaneous

THE IMMEDIATE AND DELAYED EFFECT OF LOCAL VIBRATION ON MOTOR CORTEX OF PATIENTS WITH STROKE

Z. Gan¹, G. Xu¹, Z. Yin¹, D. Meng¹, H. Wang¹

¹Department of Rehabilitation Medicine, the First Affiliated Hospital of Nanjing Medical University, Nanjing, Jiangsu, China

Objective: To investigate the effects of local vibration-induced on motor cortex activity in the patients with stroke.

Subjects and Methods: Twenty patients with stroke were randomly divided into group A(10 cases) and group B(10 cases). Group A were received low frequency local vibration treatment (7hz, 7mm), while group B were given high frequency local vibration treatment (14hz, 7mm). The MEP-induced cortex latency and CMCT of these two groups were recorded before, after and 1 hour after treatment by using repetitive transcranial magnetic stimulation (rTMS). Comparisons were between pre-treatment, post-treatment or pretreatment and 1 hour after treatment.

Results: Compared with pre-treatment, CMCT recorded 1 hour after treatment of group A was significantly lower. However, other index of group A had no significant changes after treatment. MEP-induced cortex latency and CMCT of group B were reduced after local vibration treatment. However, MEP-induced cortex latency in post-treatment had no significant differences.

Conclusion: Local vibration stimulations could increase the activity of damaged Cerebral cortex in the patients with stroke. High-frequency local vibration has more efficient.

Document not received

ISPR7-0277

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Assessment of Health Perception and Quality of Live

THE OVER-TIME CHANGES OF KNEE MUSCLE STRENGTH AND PAIN PERCEPTION AFTER SPORT KNEE INJURY

D. Marn-Vukadinovic¹

¹University Rehabilitation Institute Soča, Rehabilitation for injured patients, Ljubljana, Slovenia

Introduction/Background

Lack of data about relations between knee muscle strength and athlete's perceived performance yielded the research (i) to describe overtime changes of the knee muscle strength and (ii) to assess the ability of a health questionnaire to predict knee muscle strength improvement during rehabilitation after acute unilateral knee injury in recreational sports.

Material and Methods

43 patients took part in an observational clinical study. At the end of the outpatient rehabilitation programme they performed isokinetic dynamometry and filled in the Short Form Health Survey (SF-36) before and after 4,1 months of instructed home strengthening program. Improvement was analysed using exact Wilcoxon signed-rank test and objective changes were compared with perceived ones through Pearson correlation (r) and Receiver operating characteristic (ROC) analysis.

Results

Peak torque deficit (PTD), dynamic control ratio (DCR) of the injured knee, all of the SF-36 Physical Health subscales (except General Health) significantly improved ($p \leq 0.001$) after the program. On the other hand DCR of the non-injured knee was initially lower compared to the standard and remained unchanged. Advance in PTD of extensors positively correlated with gain on the SF-36 Body Pain (BP) subscale ($r = 0.51, p < 0.001$). ROC analysis indicated that a reduction of perceived pain by at least 9 points (from 100) predicted at least 10% reduction of knee extensors PTD. The BP subscale overtime change showed poor (56%) sensitivity and high (86%) specificity.

Conclusion

Primary low DCR of knee muscles might serve as an increased risk of knee injury. My results also indicated that diminished perceived pain predicted strength development of the injured knee extensors with poor sensitivity and high specificity.

No conflict of interest

ISPR7-0743

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Assessment of Health Perception and Quality of Live

EFFICACY OF THERMAL REHABILITATION (TR) ON QUALITY OF LIFE IN SUBJECT AFTER TOTAL HIP REPLACEMENT

M. Di Pumpo¹, G. Pranovi², P. Sale², S. Masiero²

¹, Padua, Italy

²Azienda Ospedaliera, Medicina Fisica e Riabilitativa, Padua, Italy

Introduction/Background

The purpose of this study was to investigate the effectiveness in term of the improvement of mood and quality of life in subjects that underwent physical therapy program through thermal rehabilitation (TR) compared with standard rehabilitation treatment after total hip Replacement (THA).

Material and Methods

We conducted a preliminary prospective clinical trial. Twelve consecutive patients were quasi-randomized versus experimental group (EG) or control group (CG). Five subjects with THA (EG), 80% female (aged 73.2 ± 13.4 years), received TR and conventional physical therapy (experimental group) versus 7 subjects with THA (CG) 43% female (aged 75.0 ± 7.48 years) that underwent only conventional physical therapy for the same time and day respect the EG. Outcomes used were Visual Analog Scale for pain, hip active range of motion, Short Form 12 (SF-12) Health Survey, Harris Hip Score (HHP), and Numerical Rating score for Mood (NRS_m) and EQ-5D health state measurements. All measures were collected at baseline (T0) and at the end of the intervention (T1).

Results

No relevant baseline differences were observed between groups. Both treatments produced improvements on Pain VAS (EG -71% and CG -85%), active range of motion (Flexion EG +14% and CG +49% Abduction EG +36% and CG +50%), NRS_m (EG +46% and CG +28%) and HHP (EG +12% and CG +32%). At the end for EQ-5D only EG showed a statically improvement (t0 vs t1) and versus CG (t1 vs t1) (EG +21% and CG +0%).

Conclusion

Both treatments were effective at improving pain, functional status and quality of life, in patients with primary THA. In addition to conventional physical therapy, TR improved perceived Mood status and Quality of Life more than conventional therapy.

No conflict of interest

ISPR7-0072

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Cardiovascular, Haematological, Immunological, and Respiratory Systems

CEREBRAL DESATURATION IN HEART FAILURE: PHYSIOLOGIC BASIS AND POTENTIAL PROGNOSTIC VALUE

Y.J. Chen¹, S.C. Huang¹, J.S. Wang², C.L. Tsai³

¹*Chang Gung Memorial Hospital, Physical Medicine and Rehabilitation, Taoyuan city, Taiwan R.O.C.*

²*Chang Gung university, Graduate Institute of Rehabilitation Science, Taoyuan city, Taiwan R.O.C.*

³*Chang Gung university, Medical school, Taoyuan city, Taiwan R.O.C.*

Introduction/Background

Cerebral tissue oxygen saturation (SctO₂) reflects cerebral perfusion and oxygenation whereas its physiological significance remains unclear. Systolic heart failure (HF) represents systemic hypoperfusion while stroke causes a disruption of cerebral blood flow. We aimed to investigate its association with known prognostic factors, and to find physiologic variables that determine SctO₂.

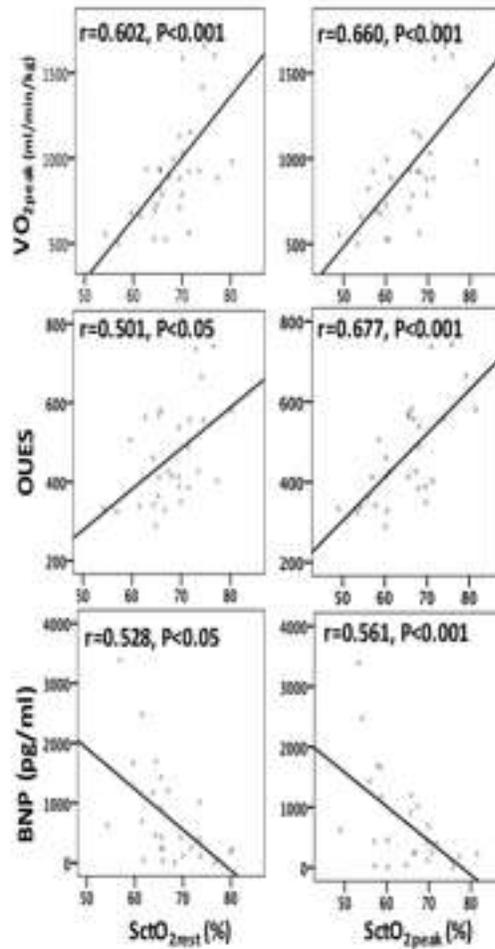
Material and Methods

33 HF patients, 28 stroke individuals and 12 healthy controls had cerebral oxygenation and cardiac hemodynamic measured simultaneously during a maximal incremental cardiopulmonary exercise test. Near-infrared spectroscopy was used to monitor cerebral tissue oxygenation at bilateral hemispheres. Plasma level of brain natriuretic peptide (BNP) and hemoglobin (Hb) were also collected.

Results

SctO_{2rest} and SctO_{2peak} are lower in HF (66.3±13.3; 63.4±13.8) than stroke (72.1±4.2; 72.7±4.5) and control (73.1±2.8; 72±3.2) group. In HF group, SctO_{2rest} and SctO_{2peak} were correlated with BNP, peak oxygen consumption, and oxygen uptake efficiency slope (OUES) ($r= 0.501 \sim 0.677$, $p<0.05$). Moreover, SctO_{2rest} was determined by PETCO_{2rest}, end-tidal oxygen pressure at rest (PETO_{2rest}), mean arterial pressure_{rest}, and Hb ($r=0.978$, $p<0.05$), while SctO_{2peak} was mainly affected by peak carbon dioxide production (VCO_{2peak}) ($r=0.678$, $p<0.05$) in patients with HF. SctO_{2peak} lost asymmetric pattern in HF patients as observed in control and stroke groups (left lower than right hemisphere). Notably, uni-hemisphere vascular lesion in the stroke group did not change this asymmetric pattern.

Figure. Scatter plots of SctO₂ (cerebral tissue oxygen saturation) and significant known prognostic factors



SctO_{2rest} and SctO_{2peak} were correlated with BNP (brain natriuretic peptide), peak oxygen consumption (VO_{2peak}), and oxygen uptake efficiency slope (OUES) (r= 0.501 ~ 0.677, p<0.05), particularly SctO_{2peak}

Conclusion

SctO₂ is associated with known prognostic factors in HF, suggesting its potential prognostic value, particularly SctO_{2peak}. SctO_{2rest} is determined by PETCO_{2rest}, PETO_{2rest}, MAP_{rest}, and Hb, while SctO_{2peak} was affected primarily by VCO_{2peak} among HF patients. This study provides physiologic basis of cerebral desaturation and its possible clinical application in patients with systolic heart failure.

No conflict of interest

ISPR7-0956

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Digestive, Metabolic, and Endocrine Systems

METABOLIC RESPONSES DURING WALKING IN CHILDREN WITH PRADER-WILLI SYNDROME

D.A. Rubin¹, F. Chavoya¹, F. Vanroo¹, A. Hyde¹, A. Amaro¹, W. Beam¹

¹Department of Kinesiology, California State University Fullerton, Fullerton, CA., USA

Background: Walking is the most common physical activity in individuals with Prader-Willi Syndrome (PWS) and is often used to help manage body weight. This study compared metabolic responses during treadmill walking between PWS and controls. **Methods:** Participants included eight children with PWS (age = 11.1±0.8 y; height [H] = 147.8±8.2 cm; body mass [BM] = 44.7±11.7 kg), seven on growth hormone replacement therapy. Controls were nine obese (OB) (age= 10.6±1.1 y; H = 151.1±9.6 cm; BM = 62.1±14.6 kg) and nine normal weight (NW) (age= 9.8 ± 2.0 y; H= 142.9±20.5 cm; BM= 35.4±11.3 kg) children. Participants completed three 5-min bouts on a treadmill at 3.2, 4.0, and 4.8 kph in randomized order with 6-min seated rest periods in between. Expiratory gases for the last 2 min at each speed were analyzed for oxygen uptake (VO₂) and substrate utilization (respiratory exchange ratio [RER]). Statistical differences were set at p<0.05. **Results:** At 3.2 and 4.8 kph, PWS had higher VO₂ ml×kg⁻¹×min⁻¹ than OB (p<0.05) while at 4.0 kph PWS demonstrated a trend towards statistical significance compared to OB (p=0.09). No differences were observed for VO₂ between PWS and NW. At 4.8 kph, PWS also had a higher RER than OB (p<0.05). **Discussion:** Despite the commonly described lower metabolic activity in PWS, it appears that walking at low to moderate speeds represents the same or higher metabolic cost for youth with the syndrome as without the syndrome. This knowledge is important when considering caloric allowances based on calories spent during walking.

Document not received

ISPR7-0271

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Functions of the Skin and Related Structures

LINFOCARE: THE USE OF TELEMEDICINE IN LIMPHEDEMA AFTER BREAST CANCER

M. Martín López de Abajo¹, C. De Miguel Benadiba², S. Pérez de la Cámara³, A. Burgos Llamo³, J.L. García Pacheco³, P. Sánchez Tarifa², A.L. Castro Serrano³

¹Hospital Asepeyo, Rehabilitation, Madrid, Spain

²Hospital Ramón y Cajal, Rehabilitation, Madrid, Spain

³Instituto Carlos III, Unidad de Telemedicina, Madrid, Spain

Introduction/Background

Lymphedema is a potential side effect of breast cancer surgery and chemo and radiotherapy that causes severe physical and psychological morbidity.

These patients require a comprehensive approach through information, prevention, treatment and close monitoring.

The Authors have developed an on line platform (Linfocare) for comprehensive management of upper limb lymphedema, including its early detection, a practical-theoretical training and the possibility of contacting with the doctor for quick reference doubts and new symptoms.

Linfocare would avoid unnecessary visits, shorten waiting lists and increase patient adherence.

Material and Methods

In the structure of the website, there are general and specific contents, determines the degree of patient satisfaction and assesses adherence.

The platform includes educational content, exercises, videos and guidelines for monitoring signs and early symptoms of adverse effects.

The proposed therapy can be monitored by doctors and physiotherapists through the application.

This direct communication channel would also facilitates early diagnosis of new cases.

The software prototype and website have been developed by a multidisciplinary team formed by highly experienced physiatrists, physiotherapists and telecommunications and computer engineers.

Results

Telemedicine brings the possibility to assess, diagnose and monitoring patients therapy without the need of face-to-face consultation. This option allows patients to choose place and moment for their therapy, avoiding absenteeism.

Conclusion

Linfocare contents seems a good way to prevent the disability associated to lymphedema.

The website aims to provide convenient information about prevention, offer treatment options and be a fast doctor/physiotherapist-patient communication tool.

No conflict of interest

ISPR7-0087

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

ANKLE MUSCLE COACTIVATION IN PATIENTS WITH EARLY STAGE MULTIPLE SCLEROSIS

M. Galea¹, L.E. Cofre Lizama¹, A. Bastani¹, M. Zoghi¹, F. Khan²

¹The University of Melbourne, Medicine Royal Melbourne Hospital, Parkville, Australia

²Royal Melbourne Hospital, Rehabilitation, Parkville, Australia

Introduction/Background:

Early signs of gait deterioration have been observed in patients with MS (PwMS) with low EDSS scores (

Material and Methods:

Eight PwMS with EDSS

Results:

The project is still in progress. However, the current data show that PwMS exhibit greater 74% more coactivation time and 13% more intensity of coactivation of ankle dorsi/plantarflexor muscles than controls.

Conclusion:

Increased coactivation of ankle muscle groups during walking in PwMS indicates an early deterioration of motor control. This strategy, however, may serve to increase stability but also increase the energy cost of walking. Further research will explore whether this increased coactivation is also produced in knee and hip flexors and extensors and while walking at different walking speeds.

No conflict of interest

ISPR7-0158

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

FROM A REGULAR WALKER TO A SMART WALKER WITH INSTALLATION OF VARIETY OF SENSORS

H. Liu¹, Y. Salem¹, H. Huang², A. Nana³, T. Truong¹, L. Nunez², J. Pena¹

¹University of North Texas Health Science Center, Physical Therapy, Fort Worth, USA

²University of Texas at Arlington, Mechanical Engineering, Arlington, USA

³University of North Texas Health Science Center, Orthopedic Surgery, Fort Worth, USA

Introduction/Background

Rolling walker (RW) is the most commonly used ambulatory device by older adults in senior communities. However, the rate of falling is still high in these RW users. This might be caused by improper gripping on the RW, different strains on each RW leg, and poor alignment during walking between the RW and the user. This study was to modify a regular RW with smart technology to quantitatively identify the incorrect RW use.

Material and Methods

Torque sensors, pressure sensors, and strain gauges, and accelerometers were adopted or designed, instrumented, tested and installed on different parts of a regular RW. An accelerometer was also tightly attached on a belt near the RW user's L4 spinous process. Data from these sensors were acquired by the Data Acquisition Device (DAD) and wirelessly transmitted to a PC for monitoring how the RW was using.

Results

Five young healthy subjects had participated in trial of this smart walker. After adjustment to avoid sensor interference, these sensors provided instant real time data on grip force in what angle on the handgrips, and postural change reflected by the ground-reaction force and strain distribution on each RW leg. Two accelerometers identified properly alignment during ambulation between the RW and the user. All data collected in two different days were highly reliable and consistent.

Conclusion

This smart walker could be a valuable instrument for real-time strength, posture and gait evaluation. Longitudinal periodic quantitatively assessment with it would assist clinicians to identify and analyze changes in the walker users and provide appropriate interventions accordingly.

No conflict of interest

ISPR7-0174

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

THREE-DIMENSIONAL MOTION ANALYSIS OF CHEST WALL IN PATIENTS WITH CHRONIC CERVICAL SPINAL CORD INJURIES

K. Hanayama¹, T. Sugiyama¹, A. Tsubahara¹, M. Hyodo², S. Shimizu¹, T. Hiraoka¹, H. Abe¹

¹*Kawasaki Medical School, Department of Rehabilitation Medicine, Kurashiki, Japan*

²*Tokai University School of Medicine, Department of Rehabilitation Medicine, Isehara, Japan*

Introduction/Background

Patients with cervical spinal cord injury show the intercostal muscles palsy even if the diaphragm is spared. This is the reason why patients with cervical spinal cord injury (SCI) sometimes show paradoxical chest wall movement in acute phase of post-injury. Although intercostal muscle palsy lasts after acute phase, there is little attention for such inefficient breathing pattern in chronic phase. The aim of this study is to clarify the breathing pattern of chronic tetraplegia patients by focusing on the chest wall movement using optoelectronic plethysmography (OEP).

Material and Methods

We analyzed the respiratory motion of 7 chronic traumatic cervical SCI patients and 3 healthy volunteers. Chest wall kinematics in supine position were measured using OEP system with 6 video cameras and a set of reflective markers (45 markers on the front and 4 reference markers on the bed), then were utilized to measure the variation of chest wall volume and its compartments (upper thorax(UT), lower thorax (LT) and abdomen (AB)). Each Subject was measured for quiet and deep breaths.

Results

During deep breathing, the cervical SCI patients showed poor synchronization between chest and abdominal movement, whereas all healthy volunteers showed synchronized breathing pattern. Three patients out of 7 showed decrease in UT volume during inspiratory phase of deep breathing.

Conclusion

Inefficient breathing pattern was observed during deep breathing in patients with cervical SCI even in chronic phase.

No conflict of interest

ISPR7-0210

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

FEMORAL NERVE SOMATOSENSORY EVOKED POTENTIALS: A COMPARISON OF THREE STIMULATION SITES FOR MONITORING DURING TRANSPSOAS LUMBAR LATERAL INTERBODY FUSION

C. Mendoza-pulido¹, S. Castellar-leones¹, F. Ortiz-corredor²

¹*Instituto de Ortopedia Infantil Roosevelt, Department of Rehabilitation Medicine, Bogota, Colombia*

²*Universidad Nacional de Colombia,*

Facultad de Medicina- Departamento de Medicina Física y Rehabilitación, Bogota, Colombia

Introduction/Background

Femoral nerve lesion is a frequent complication during transpsaos direct lateral approach to the lumbar spine. The saphenous nerve is a sensory branch of the femoral nerve and somatosensory evoked potentials techniques for this nerve attempting to diminish the incidence of femoral nerve lesions during spine surgery have been described by Silvestein. The aim of this study is to compare the thalamocortical amplitudes of three FN-SSEP techniques.

Material and Methods

The FN-SSEP were obtained during corrective surgery of 11 children with idiopathic scoliosis. Three stimulation sites were used: 1.femoral nerve just bellow the inguinal ligament and lateral to the femoral artery pulse; 2.saphenous nerve between the *vastus medialis* and the *sartorius* muscles according to Silverstein.; and 3.ultrasound located saphenous nerve in the distal third of the thigh. Three derivations according to the 10-20 system were used for recording: 1.CPz-Fz, 2.CP3-CP4 and 3.CPZ-CP4. For a final somatosensory potential trace, 300 stimuli were averaged. Five traces were obtained for each of the three derivations and the mean amplitude was calculated. A repeated measures one-way non-parametric ANOVA (Friedman test) was used for comparing mean thalamocortical amplitudes of the three FN-SSEP techniques. A *post hoc* analysis was used for identifying differences.

Results

At least one mean thalamocortical amplitude of the three techniques was significantly different (Friedman $X^2=13.65$, $df=2$, $p=0.001$). The *post hoc* analysis showed that the amplitudes of the FN-SSEP stimulating at the inguinal ligament were statistically bigger than the amplitudes of the other two techniques ($p=0.004$ with the anatomic technique, $p=0.01$ with the ultrasound technique). No difference was found between the two techniques for the saphenous nerve ($p=0.945$).

Conclusion

Instead of stimulating the saphenous nerve for preventing femoral nerve lesions during transpsaos lumbar spine surgery, stimulating the femoral nerve at the inguinal ligament may be a more suitable approach as amplitudes for the later technique are larger.

No conflict of interest

ISPR7-0250

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

SERUM LEVELS OF MUSCULOSKELETAL MARKERS IN LUNG TRANSPLANTATION RECIPIENTS

G. Ebenbichler¹, K. Kersch-Schindl², U. Föger-Samwald³, S. Kudlacek⁴, J. Patsch⁵, P. Jaksch⁶, W. Klepetko⁶, P. Pietschmann³

¹*Vienna Medical University, Physical Medicine & Rehabilitation, Vienna, Austria*

²*Medical University of Vienna, Physical Medicine & Rehabilitation, Vienna, Austria*

³*Medical University of Vienna,*

Pathophysiology and Allergy Research- Center of Pathophysiology- Infectiology- and Immunology, Vienna, Austria

⁴*Barmherzige Brüder Hospital, Medicine, Vienna, Austria*

⁵*Medical University of Vienna, Radiology, Vienna, Austria*

⁶*Medical University of Vienna, Thorax Surgery, Vienna, Austria*

Introduction/Background

Muscle function and bone mineral density may remain impaired in lung transplantation (LuTX) recipients. This study sought to investigate the potential use of muscle and bone markers in identifying impaired bodily and respiratory function in these patients.

Material and Methods

All biomedical, bodily and lung function variables were assessed in 37 LuTX recipients at discharge from acute hospital stay and approximately nine months later. Biochemical blood markers were myostatin, follistatin, sclerostin, dickkopf-1, and periostin. Bodily function measures comprised of muscle strength, mobility, and exercise capacity testings. Lung function variables were forced expiratory volume in 1s, vital capacity, and total lung capacity, respectively. The biochemical markers were also assessed in 30 health, age and sex matched healthy controls.

Results

Compared to their healthy controls, LuTX recipients had higher myostatin levels both at baseline and the follow-up. No such differences were observed for its opponent follistatin. In LuTX recipients, serum levels of sclerostin were found reduced, whereas dickkopf-1 levels were elevated; periostin was elevated at baseline only. Myostatin and follistatin, as well as sclerostin and two function tests were positively related to each other. Although LuTX recipients' bodily and lung functions had clearly improved as at the nine months' follow-up examination, myostatin, sclerostin, dickkopf-1, and periostin levels still differed from those observed in healthy controls.

Conclusion

Among the biomarkers tested, myostatin, sclerostin, dickkopf-1, and periostin appeared potential indicators of impaired musculoskeletal function in LuTX recipients, with sclerostin and dickkopf-1 being the most promising ones. All these biomarkers, however, failed to appropriately assess the degree of functional impairment or to monitor rehabilitation outcome in these patients.

No conflict of interest

ISPR7-0399

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

A MULTI-DIMENSIONAL VISUAL HAND FUNCTION REHABILITATION QUANTITATIVE ASSESSMENT METHOD IN STROKE

S. Chen¹, Y. Lu², X. Lu², J. Jia¹

¹Huashan Hospital- Fudan University, Rehabilitation Medicine, Shanghai, China

²Shanghai University, Communication and Information Engineering, Shanghai, China

Introduction/Background

Nowadays, the hand measurement methods are not precise. All around the world, physicians use manual methods to measure the range of motion (ROM) of hands and scales to assess the hand function in stroke patients. Assessment of patients' motor function is based on some qualitative or semiquantitative scales but there is no quantitative assessment method.

Material and Methods

Our team proposes a quantitative method. Advanced optical and visual cameras are used to catch the 3D position of hand. And then we can quantitatively measure the patient's both hands' ROM and assess some functional motions. By comparing one hand to another, a score is produced.

Results

The engineering prototype can gather the normal ROM of the hand physiological motions. For some motions such as wrist extension, pronation and supination, the assessed data is matched with scales. Also, there is one score for the patient. It can be used to evaluate the rehabilitation effect of the patient.



Conclusion

As the gathered data is matched with the manual assessed results and the scales, the system has feasibility in ROM measurement and functional assessment. It is worth being used in clinical practice.

No conflict of interest

ISPR7-0433

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

A CLOSED-LOOP BCI SYSTEM FOR REHABILITATION OF THE HEMIPLEGIC UPPER-LIMB: A PERFORMANCE STUDY OF THE SYSTEMS ABILITY TO DETECT INTENTION OF MOVEMENT

J. Hurtier¹, L. Van Dokkum², S. Dalhoumi², A. Coffey³, G. Dray⁴, J. Froger⁵, T. Ward³, C. Jourdan⁶, I. Laffont⁷, F. Coroian

¹Univ. de Montpellier, CHU Montpellier, MONTPELLIER, France

²Laboratoire EUROMOV, Montpellier, Montpellier, France

³National University of Ireland Maynooth, Department of Electronic Engineering, Maynooth, Ireland

⁴Ecole des Mines, Montpellier, Alès, France

⁵CHU Grau du Roi, Nîmes, Montpellier, France

⁶CHU Montpellier, Montpellier, Montpellier, France

⁷CHU Montpellier, Rééducation, Montpellier, France

Introduction/Background

Using a simple EEG-based brain computer interface (BCI) we aimed to stimulate rehabilitation of the severely attained upper-limb by closing the sensori-motor loop and thereby stimulating cerebral plasticity. When participants try to execute a wrist flexion movement, but fail to induce efficient movement, the system will inflate a pneumatic glove that supports the execution of the intended movement. The main objective was to evaluate the BCI system's classifying performance.

Material and Methods

10 patients post-stroke (>3 months) and 10 healthy controls were included in the study. All patients showed severe or complete paresis of the upper-limb. We used a g.tec 27 channel EEG, which was linked to a CSP classifier. The sample frequency was 256Hz, and filtered with a 5th order Butterworth filter. Participants performed twice a series of 40 randomized trials: 20 rest, 20 movement. There paretic hand was placed in the pneumatic glove with the wrist in neutral position and the fingers slightly extended.

Results

First, the BCI classifier was capable to distinguish between movement and rest with equal performance and equal levels of true positive and negatives for patients (78% vs 77%) and controls (81% vs 80%). Second, the standard implemented CSP classifier used a wide 8-30Hz frequency band filter to evaluate the EEG activity. By cutting this large band in smaller sub-units, we showed that the systems' performance can be optimized by implementing subject-specific smaller frequency bands. Finally, participants indicated that the pneumatic glove was comfortable to wear, but a lighter material allowing flexion of the fingers in resting position would be preferable.

Conclusion

The present closed-loop BCI-system for rehabilitation of the paretic upper-limb was well able to recognize intention of movement in the brain. Its practical interest for rehabilitation post-stroke needs to be confirmed by a longitudinal efficiency study.

No conflict of interest

ISPR7-0670

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

QUANTIFICATION OF MOTOR FUNCTION IN ACQUIRED INJURIES OF THE THUMB IN ADULT PATIENTS.

D. Craciunescu¹, D. Hutanu¹, A. Esposito¹, V. Afzali¹, A. Catano¹

¹University Hospital Center of Charleroi, Rehabilitation Hospital, Montigny le Tilleul, Belgium

Introduction/Background

The hand is crucial for daily life activities as it plays a decisive role in manipulating objects. Pathologies of the thumb commonly impair daily life activities. Fractures, arthrosis, "trigger finger" and ulnar collateral ligament thumb injury often cause difficulties in buttoning a shirt, pulling a zipper, tying shoelaces, cutting food, opening a bottle or a package, making a grip to hold a container, writing a text message on a smartphone, ...

Despite the high frequency of involvement of the hand in patients, clinicians still lack a simple test to assess the performance of repetitive motor task implying the thumb. Kinematic analyzes can be performed, but they remain complex and they cannot be easily applied at the patient's bedside. Therefore, we aim to develop a non-invasive test to study the motor function of the thumb in adult patients treated in our Department of Rehabilitation.

Material and Methods

The procedure consists of a succession of fast movements of flexion and extension of the thumb by pressing clicks on a mechanical counter. Data obtained in 50 affected thumbs will be compared with those of the unaffected side and to normative values obtained in 50 matched healthy subjects. We will assess laterality with the Edinburgh Handedness Inventory and functional capacity of the hand with the Cochin Hand Function Scale.

Results

Our results shall be presented and commented.

Conclusion

The procedure seems to provide an easy and simple tool of evaluation of the thumb function.

No conflict of interest

ISPR7-0853

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

THE USE OF BODY WORN SENSOR TECHNOLOGY TO MONITOR ARM USE IN ADULT BRACHIAL PLEXUS INJURY

S. Brown¹, T. Bhargava¹, K. Kern¹, L. Rasmussen², G. Madan¹, K. Chung², L. Yang²

¹University of Michigan School of Kinesiology, Movement Science, Ann Arbor, USA

²University of Michigan, Department of Neurosurgery, Ann Arbor, USA

Introduction/Background

Clinical assessment of functional recovery following surgical repair in brachial plexus injury (BPI) typically involves strength, range of motion and subjective evaluation of daily activities. However, these measures provide limited information regarding arm use in more natural settings. This study examined the use of body-worn sensor technology to quantify patient-initiated arm movements in a home/work environment.

Material and Methods

Adult BPI patients who underwent surgical reconstruction for elbow flexion were included for study. All were at least one year post surgery. Clinical assessments included active range of motion (AROM) and the Disability of Arm, Shoulder and Hand (DASH) questionnaire. Tri-axial accelerometers worn on each wrist were used to remotely monitor arm use. Participants were instructed to wear the devices during their awake hours over a one week period. Arm use was quantified by calculating the magnitude and direction of arm accelerations in three planes of motion for both the affected and unaffected arms.

Results

Daily arm use was successfully recorded over a 7 day period in all participants and the devices were well tolerated. In the patient group, magnitude of arm use was significantly lower in the affected compared to the unaffected arm ($p < .001$) compared to no differences in the control group. The degree of arm use asymmetry was variable with the ratio of arm use (affected:unaffected) ranging from .2 to .7 compared to ratios of .9 to 1.3 in controls. Affected arm use scores strongly correlated with both the DASH ($r = .92$) and elbow active ROM in adduction ($r = .91$) and abduction ($r = .56$). DASH scores also correlated with unaffected arm use ($r = .69$).

Conclusion

These preliminary results demonstrate that body worn sensors may provide a better understanding of patient-initiated arm use following treatment for peripheral nerve injury conditions such as adult BPI. Such information has the potential to lead to improved therapies which may facilitate recovery of function.

No conflict of interest

ISPR7-0925

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Neurological, Musculoskeletal and Movement Related Functions (including Gait Analysis, Posturography)

VIRTUAL FEEDBACK, ¿A CONTRIBUTION TO MOTOR LEARNING?

P. Villalobos¹, G. Varas²

¹Los Coihues Clinic, Physiatry, Santiago, Chile

²Los Coihues Clinic, Center for Integrated Studies in Neurorehabilitation, Santiago, Chile

Introduction/Background

Therapeutic strategies and virtual feedback have been systematically associated with significant improvement in the sensory-motor learning processes in several therapeutic contexts.

Objective: Evaluate the impact on kinematic and spatial-temporal parameters of gait training on a treadmill using virtual feedback in subjects with neurologic sequelae of stroke.

Material and Methods

All subjects with a subacute and chronic stroke diagnosed, underwent a gait training protocol that included a pre-test phase to set the ideal walking speed for each subjects on HP-Cosmos treadmill. At the end of the pre-test, participants performed gait on treadmill for 5 minutes without any feedback, then completed a 15-minute rest phase and finally gait on treadmill for 5 minutes with virtual feedback by Zebris system. The kinematic and space-time parameters of the gait were recorded in the two conditions using inertial sensors of movement that each counted with an accelerometer, gyroscope, and magnetometer. The sensors were positioned in 4 limbs, upper trunk and lumbar region and the signal was analyzed through software Mobility Lab and Matlab. $P < .005$ was considered statistical significant.

Results

We evaluated 12 subjects. The treadmill gait training protocol with virtual feedback showed an increase from baseline; in gait cycle time ($p = 0.015$), cadence ($p = 0.001$), percentage of gait cycle in double support ($p = 0.018$), step length ($p = 0.041$), and osteomuscular ranges of trunk ($p = 0.035$).

Conclusion

The treadmill gait training using virtual feedback showed a positive impact on space-temporal and kinematic parameters. Therefore, the combination may be a useful tool to improve motor learning in neurorehabilitation.

No conflict of interest

ISPR7-0557

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Sensory Functions and Pain

NEUROMA OR MYOFASCIAL PAIN? PODOBAROMETRIC ASSESSMENT, INSOLE TREATMENT AND EXTRACORPOREAL SHOCKWAVE THERAPY: A CASE STUDY

D. Jorge Filho¹, R. Silva Martins², L.R. Battistella³

*¹Physical Medicine Institute – IMREA/HC/FMUSP,
Clinical Hospital of the University of Sao Paulo- Brazil, São Paulo, Brazil*

²Physical and Rehabilitation Medicine Institute General Hospital- Medical School- University of Sao Paulo, General Hospital- Medical School- University of Sao Paulo, Sao Paulo, Brazil

*³Physical and Rehabilitation Medicine Institute,
General Hospital- Medical School- University of Sao Paulo, Sao Paulo, Brazil*

Introduction/Background

Pedobarography is an exam that collects plantar pressure measurements and the oscillation of the center of pressure during gait. It allows more accurate prescriptions of insoles for patients with neuropathic feet, haemophilia, rheumatoid feet or foot pain in general. Insoles redistribute pressure, relieving it under plantar regions at risk. This case study presents a 52 years old woman, who reported intense pain in the plantar region of her forefoot, was diagnosed with Morton's Neuroma, classified as 10 using the Visual Analogue Scale (VAS), and already had a neuroma removal surgery scheduled. Muscle palpation revealed trigger points in her right leg. When submitted to computerized pedobarography, both an insole treatment and extracorporeal shockwave therapy were prescribed

Material and Methods

The patient was physically examined and plantar pressure was scanned using computerized pedobarography. An insole was prescribed to relieve plantar pain. A new computerized pedobarographic exam showed a better gait pattern, but she still reported pain in her right forefoot (VAS=7). Desensitization of trigger points was made possible by three sessions using radial ESWT, once a week.

Results

After three radial ESWT weekly sessions and insole use during three weeks, a new computerized pedobarographic examination showed complete normalization of the gait pattern and no sign of plantar pain (VAS=0).

Conclusion

The association between pedobarographic assessment and physical examination enabled the permanent relieve of pain, full recovery of the gait pattern, and avoided Morton's Neuroma surgery.

No conflict of interest

ISPR7-0750

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Sensory Functions and Pain

**AVAILABILITY OF QUANTITATIVE SENSORY TESTING IN DIABETES MELLITUS
POLYNEUROPAHTY**

J. Ji Yoon¹, K. Ji Hyun¹

¹Yonsei University Wonju College of Medicine, rehabilitation, Wonju, Republic of Korea

Introduction/Background

Pain can be a major indicator of human's physiologic status, evaluation can be difficult due to it's multiple subjective factors). Due to recent studies about evaluation methods to quantify senses, we designed this study to find out the availability of Quantitative sensory testing(QST) in diabetes mellitus patients with neuropathic pain.

Material and Methods

32 patients with diabetes mellitus(DM) was enrolled in the study. QST was evaluated in each patient when electrical stimulation was applied to the left forearm using PV-300 (Painview®, Ossein, Korea). Current perception threshold(CPT) and pain equivalent current(PEC) was measured 3times and was recorded as their mean value. Every participants was tested with Nerve conduction study(NCS) and Pain-related evoked potential(PREP) in all parts of their limbs. All patients was asked to participate tests such as Visual analogue scale(VAS) to evaluate their subjective pain and SF-36v2® Healthy Survey for their quality of life.

Results

As a result, the PEC had significant correlation with VAS and the physical function (surveyed with SF-36v2®) (P=0.002). The QST had no correlation with NCS, but the CPT of QST and PREP showed significant relationship. (P=0.003)

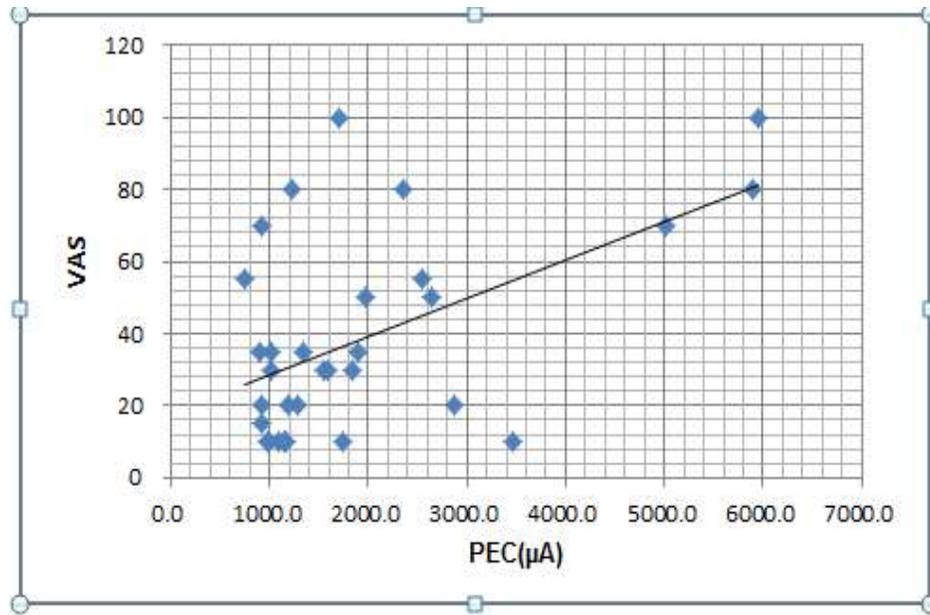


Figure 1. Correlation between VAS score of QST and PEC. (Correlation coefficient : 0.526, p-value : 0.002)

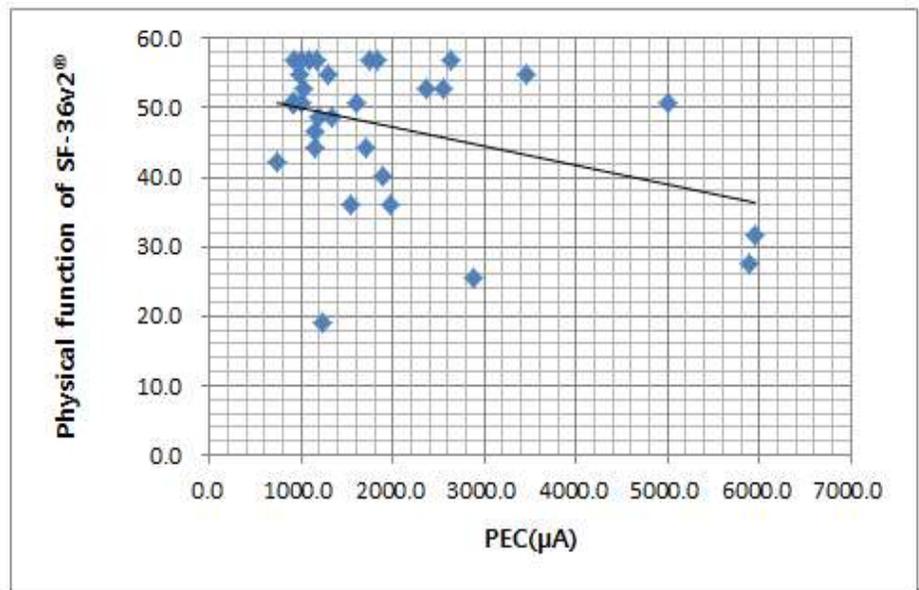


Figure 2. 와 SF-36v2®의 physical function Correlation between the PEC of QST and the physical function derived using SF-36v2® (Correlation coefficient : -0.373, p-value : 0.035)

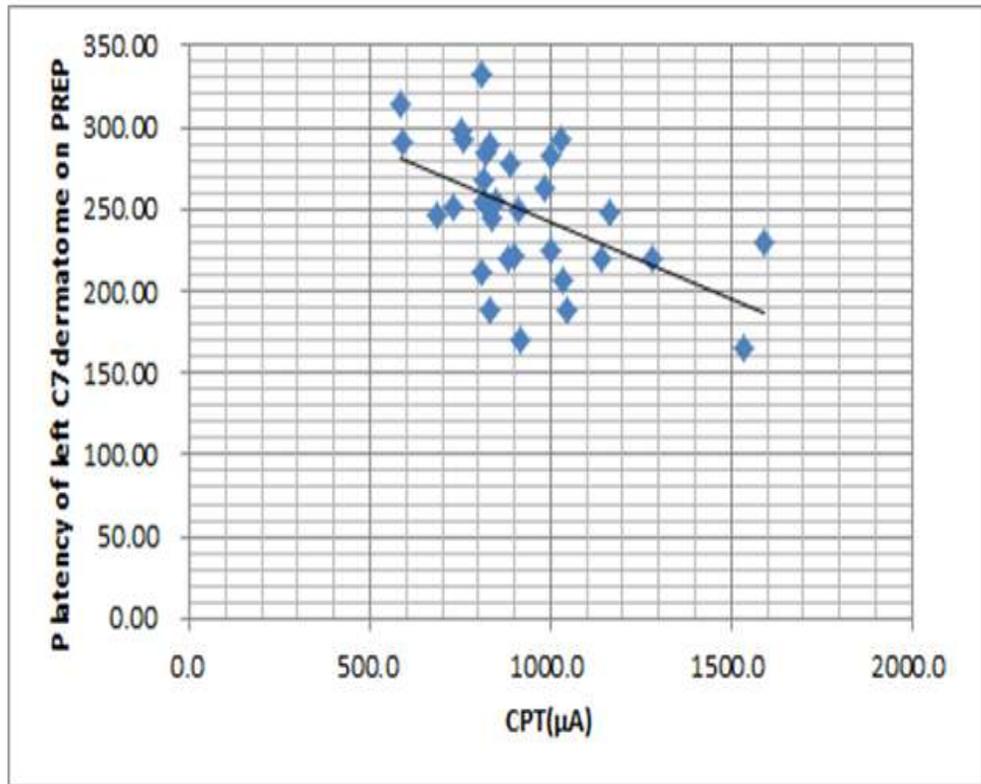


Figure 3. Correlation of the CPT of QST and P latency of C7 dermatome of left side of the body.

(Correlation coefficient : -0.511, p-value : 0.003)

Conclusion

Therefore the QST can be a mean to evaluate the pain amount in DM polyneuropathy, in evaluating their subjective pain and also may be useful for the assessment of diabetic small-fiber neuropathy

No conflict of interest

ISPR7-0673

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Voice and Speech Functions

THE IMPACT OF TRANSCRANIAL DIRECT CURRENT STIMULATION (TDCS) ON STROKE PATIENTS WITH APHASIA

P. Karagounis¹, G. Vissarakis¹

¹Filoktitis Rehabilitation Center- Koropi- Attica, Physical And Rehabilitation Medicine, Koropi, Greece

Introduction/Background

Transcranial direct current stimulation (tDCS) is a non-invasive neuromodulation technique, which induces prolonged brain excitability changes and promotes cerebral plasticity. In the current study we examined the role of tDCS in the treatment of post-stroke aphasia. The available scientific data suggest that tDCS over language-related brain areas modulate linguistic abilities in healthy individuals and improve language performance in patients with aphasia. tDCS combined with rehabilitation speech-therapy techniques seems a promising and valuable therapeutic complementary option for patients with aphasia.

Material and Methods

12 participants with stroke-induced aphasia (10 males and 2 females), median age 62.3 ± 3.8 y.o., were investigated for the potential of tDCS to improve word retrieval deficits. The main therapeutic protocol was determined by the application of tDCS (electrode size 5×5), placing the anodal electrode over the perilesional area with the cathodal over the contralateral hemisphere. The duration of the treatment was 12 weeks, with 5 consecutive sessions/week, 20' of duration/session and with intensity of 2mA. Each patient participated testing anodal stimulation tDCS over the perilesional area during a picture-naming task (main task). During the tDCS treatment, all participants followed a regular speech and motor rehabilitation program.

Results

The accuracy on the picture-naming task presented a statistically significant improvement (32.7%), with a complementary significant improvement in the speed of answer (22%). Male participants presented the greater improvement (39%), with no statistically significant correlation between gender and age factors and the grade of improvement.

Conclusion

tDCS is a simple, low cost, and great promise therapeutic device in the field of rehabilitation. The therapeutic protocol is suggested to be combined with a systematic and intensive speech and motor rehabilitation program, in order to achieve the maximum results for stroke-induced aphasia patients.

No conflict of interest

ISPR7-0733

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Voice and Speech Functions

UNILATERAL NEGLECT IN PATIENTS WITH RIGHT PUTAMINAL HEMORRHAGE AT REHABILITATION HOSPITAL

R. Funahashi¹, S. Maeshima¹, S. Okamoto¹, I. Fuse¹, K. Yagihashi¹, N. Asano¹, S. Tanaka¹, H. Hori¹, S. Hiraoka¹, H. Okazaki¹, S. Sonoda¹

¹Fujita Health University Nanakuri Memorial Hospital, Rehabilitation Medicine II, Tsu, Japan

Introduction/Background

The aim of this study was to clarify the prevalence and factors responsible for severity of unilateral neglect and in patients with right putaminal hemorrhage.

Material and Methods

Fifty-seven patients with right putaminal hemorrhage were studied. Age ranges from 30 to 88 years old, 33 men, 24 women. The duration from the onset to hospitalization is 29.9 ± 16.0 days. Hematoma type and volume were evaluated from the CT at the stroke onset.

Neurological severity was evaluated using National Institute of Health Stroke Scale (NIHSS) and cognitive function was evaluated using the Mini-Mental state examination (MMSE) on admission.

For detection and evaluation of unilateral neglect, the conventional test in Behavioural Inattention test (BIT) was used and the factors involved in unilateral neglect were investigated.

Results

Unilateral neglect was found in 51 out of 57 patients (89.5%). The most sensitive conventional test was the copying that detected 42 of 51 (82.4%) patient with unilateral neglect. By combining some of the conventional tests, 47(94.1%) in letter cancellation and copying, and 37 (88.2%) in star cancellation and copying could be detected. The total score of BIT conventional tests showed a high correlation with age, hematoma volume, NIHSS, and MMSE.

Conclusion

We revealed that right putaminal hemorrhage frequently causes unilateral neglect. We also suggested that age and residual cognitive function might be related to severity of unilateral neglect.

No conflict of interest

ISPR7-0828

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Voice and Speech Functions

ADD-ON EFFECTS OF INHIBITORY REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION TO HOMOLOGOUS LANGUAGE REGIONS ON POST-STROKE APHASIA: A META-ANALYSIS OF RANDOMIZED CONTROLLED TRIALS

J. Wu^{1,2}, X. Li^{2,3}

¹Shanghai University of Traditional Chinese Medicine, School of Rehabilitation Medicine, Shanghai, China

²The Second People Huaian Hospital- Xuzhou Medical College, Department of Rehabilitation, Huaian- Jiangsu, China

³Heilongjiang University of Traditional Chinese Medicine, School of Rehabilitation Medicine, Harbin- Heilongjiang, China

Introduction/Background

Inhibitory transcranial repetitive magnetic stimulation (rTMS) over the unaffected non-dominant hemisphere may enhance the effects of conventional speech and language therapy on post-stroke aphasia. Applying inhibitory rTMS to specific homologous language regions may induce neural reorganization and reduce inter-hemispheric competition. The objective of this study was to perform a meta-analysis of studies concerning the add-on effects of inhibitory rTMS on post-stroke aphasia.

Material and Methods

We searched Pubmed, Embase and ClinicalTrials.gov for randomized controlled trials (RCTs) published before November 2016. Two reviewers independently screened and selected all RCTs comparing effects of inhibitory rTMS versus sham rTMS on post-stroke aphasia. PEDro scale was selected to evaluate the quality of these articles. The outcome measurements included naming, repetition, writing, comprehension, changes in brain excitability and adverse events. We used the random-effects model to assess the standardized mean difference (SMD) and 95% confidence intervals (CIs) for the outcome measurements.

Results

Nine eligible trials were involved in this meta-analysis. Data synthesis showed that differences were significant with respect to naming (SMD 0.52; 95% CI, 0.25–0.78), repetition (SMD 0.39; 95% CI, 0.11–0.68), writing (SMD 0.73; 95% CI, 0.30–1.15) and changes in brain excitability (SMD 1.30; 95% CI, 0.74–1.86) without heterogeneity ($I^2=0\%$). The changes in comprehension (SMD 0.42; 95% CI, 0.00–0.85) were not significant with moderate heterogeneity ($I^2 = 27\%$, $P = 0.24$). None of the included trials reported adverse effects. The effect size did not change significantly when using the random-effects model instead of the fixed-effects model to test the SES except for repetition.

Conclusion

Inhibitory rTMS to homologous language regions over the unaffected non-dominant hemisphere showed a positive effect on language recovery in patients with post-stroke aphasia to modulate neural language networks and optimize language recovery. It needs to be confirmed in a larger series of controlled studies with a more homogeneous group of patients and a longer follow-up.

No conflict of interest

ISPR7-0166

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Miscellaneous

COMPARISON OF BODY SEGMENT SWAY DURING SINGLE-LEG STANCE

H. Liu¹, Y. Salem¹, T. Truong¹, M. Pennucci¹, D. Dillard¹

¹University of North Texas Health Science Center, Physical Therapy, Fort Worth, USA

Introduction/Background

A force platform is a commonly used instrument to evaluate body sway. However, such a platform is not able to analyze how different body parts respond during static single-leg stance. The purpose of this study was to use 2 small wearable gyroscope-based balance assessment instrument, balance gear (BG), to investigate how different body parts respond during static single-leg stance.

Material and Methods

Nineteen (10 males and 9 females) healthy young graduate students were screened and recruited for this study. The BG was secured at two locations: spinal process (SP) of L4 level and tibial tuberosity (TT) of the standing leg. Subjects were asked to stand on the dominant leg for 30 seconds. Data of the subject's trunk and leg sway (direction, range, velocity, and acceleration) were recorded and transmitted wirelessly to a computer for analysis.

Results

Subjects with the BG at TT showed a statistically significant difference than at SP in body sway range, velocity, and acceleration in the sagittal plane ($p < .05$), but no such difference was found in frontal or axial planes ($p > .05$). More specifically, the TT location showed significantly larger range, velocity and acceleration compared with SP location ($p < .05$). No other differences were identified.

Conclusion

It is the very first report of how different body segments may response during single-leg stance. Wearable instrument is much more convenient and economy than the bulky platform for balance assessment. Such data may assist clinicians to provide more targeted therapeutic interventions for patients with balance deficit.

No conflict of interest

ISPR7-0490

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Miscellaneous

EVALUATION OF ARM VOLUME IN HEALTHY SUBJECTS: A COMPARISON BETWEEN A PORTABLE LASER SCANNER 3D METHOD AND CIRCUMFERENTIAL METHOD

M. Invernizzi¹, N. Fusco², S. Bosari², C. Cisari¹, A. Baricich¹

¹University of Eastern Piedmont 'A. Avogadro', Department of Health Sciences, Novara, Italy

²Fondazione IRCCS Ca Granda- Ospedale Maggiore Policlinico- University of Milan, Division of Pathology, Milan, Italy

Introduction/Background

Tailored treatment of the upper limb lymphedema requires reliable techniques to diagnose and monitor volume alterations. Lately, laser scanner 3D methods (LS3D) emerged as promising alternative tools that can be employed instead of traditional empiric methods to standardize the measurement of the arm volume. Regrettably, the only LS3D described in literature is substantially unmovable, with subsequent crucial limitations in its routinary clinical use. Here we sought to evaluate the reliability of a portable LS3D (p-LS3D) for arm volume characterization in comparison with the classic circumferential measurement (CM).

Material and Methods

15 healthy adults (age 25 ± 3.4 ; BMI 23 ± 1.8 ; Sex 9M/6F;) were enrolled in this study. For each subject, two experienced physical therapists measured the upper limb volume using both CM and p-LS3D. CM arm volume was calculated as a proxy of a cone frustum, according to validated guidelines. Levels of agreement, together with the intra- and interobserver reproducibility of both systems were recorded.

Results

Both the p-LS3D and CM showed comparable rates of inter- and intra-rater reliability, with good levels of agreement between the two systems, suggesting that p-LS3D might be a valid alternative method in the upper limb volume characterization, akin LS3D.

Conclusion

This is the first study aiming to evaluate the in vivo efficacy of a p-LS3D device in arm volume measurement. The results of this proof-of-concept provide evidences to suggest that p-LS3D technologies can be important clinical tools to measure and monitor patients with lymphedema of the upper limb, such as breast cancer related lymphedema patients. This innovative tool combines precision, reproducibility, ease-of-use, and portability. Furthermore, p-LS3D provides critical additional information on the specific limb shape, fostering precision medicine for a substantial proportion of patients.

No conflict of interest

ISPR7-0095

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Mental Functions (including Neuropsychological Assessment)

FACIAL PAIN IS CORRELATED WITH PSYCHOLOGICAL DISTRESS IN DIFFERENT PAIN MANIFESTATIONS

M. Soares Gui Demase¹, C.M. Rizzatti-Barbosa²

¹Einstein Integrated College of Limeira, Department of Physiology, Limeira, Brazil

²Piracicaba Dental School- State University of Campinas/UNICAMP, Department of Prosthesis and Periodontology, Piracicaba, Brazil

Introduction/Background

Pain involves both sensation and emotion. Physical pains are linked with emotional responses, and emotional pains are linked with physical responses. Whether psychological distress aspects (as depression symptoms and somatization) were correlated with facial pain, regardless of the group with different manifestations of pain, these findings could help to understand the process of Temporomandibular Disorders (TMD) pain chronification. Here we investigated possible correlations between facial pain intensity with depression and somatization in patients with different facial pain manifestations and controls.

Material and Methods

This was a cross-sectional study that investigated a control group and a case with myogenous facial pain with and without widespread pain. Parameters of psychological profiles (depression and somatization) and characteristics pain intensity (CPI) for facial pain analyses were obtained from the Research Diagnostic Criteria for Temporomandibular Disorders RDC/TMD, axis II history questionnaire. Data was analyzed through residual correlations in order to exclude the effect of the groups.

Results

It was investigated 38 free-TMD healthy controls, 37 localized TMD patients and 39 TMD patients with widespread pain. We found positive correlations between CPI and psychological profiles, showing the greater the chronic facial pain characteristics, the higher the values reported for depression symptoms and somatization ($p < 0.05$).

Conclusion

Regardless of the group, there was a positive correlation not only between facial pain and depression, but also with somatization, suggesting that these psychological distress factors could be related with TMD chronification process.

No conflict of interest

ISPR7-0922

Physical and Rehabilitation Medicine Diagnostics as Related to Organ Systems and Body Functions - Diagnosis and Assessment of Mental Functions (including Neuropsychological Assessment)

THE ALFA PARAMETER OF THE COLE-COLE MODEL AS INDICATOR OF FIBROMYALGIA

E. Colina-Gallo¹, C.A. González-Correa², D.A. Miranda³

¹Universidad de Caldas, Departamento de Acción Física Humana, Manizales, Colombia

²Universidad de Caldas, Departamento de Ciencias Básicas, Manizales, Colombia

³Universidad Industrial de Santander, Escuela de Física, Bucaramanga, Colombia

Introduction/Background

Fibromyalgia (FM) is a condition characterized by widespread chronic pain and generalized tenderness, accompanied by fatigue, sleep disturbances, and cognitive difficulties. The diagnosis is merely clinical, as no confirmatory objective method is available so far. Several types of muscle abnormalities have been reported in FM, at the tissue, cellular and subcellular level, that could eventually alter the passive electrical response of the muscle.

Material and Methods

we evaluated the brachial musculature using the multi-frequency electrical impedance myography and obtaining the characteristic parameters according to the model of Cole-Cole in a group of subjects with FM (n=21) and a control group without it (n=20).

Results

The parameters obtained did not show statistically significant differences, except for the α parameter ($p = 0.008$), the mean alpha value for the FM group was 0.21 ± 0.05 and for the control group 0.17 ± 0.05 .

Conclusion

The higher values for alpha parameter in FM group may suggest that the behavior of the cell membrane in FM is more resistive and therefore more permeable to the ions than in healthy subjects. The differences in the parameter α seem to be a promising finding, although larger studies are needed to confirm the possibility of using it as an objective biomarker for FM.

No conflict of interest

ISPR7-0473

PRM Interventions Research - Acupuncture and Complementary and Alternative Therapies

THE INFLUENCE OF BLOOD FLOW VELOCITY BY ELECTRIC ACUPUNCTURE TREATMENT IN DIFFERENT FREQUENCY OF STROKE PATIENTS' HANDS

P. Shao¹, J. Jia²

¹Fujian University of Traditional Chinese Medicine, College of Rehabilitation Medicine, Fuzhou, China

²Huashan Hospital- Fudan University, Department of Rehabilitation, Shanghai, China

Introduction/Background

The objective of this paper is to explore the blood flow changes of stroke patients after electric acupuncture treatment by using the electroacupuncture technology and the hand blood flow velocity meter. Also, the correlation between the different frequency of the electric acupuncture treatment and their influences were analyzed.

Material and Methods

Fifty-five stroke patients were randomly assigned into two groups. Both groups received electroacupuncture therapy, whose frequency were 2Hz and 10Hz respectively. All patients were acupunctured on upper hand acupoints Shousanli and Waiguan 20min every day. The treatment lasted for two days. A hand blood flow velocity meter was used to collect the variation curve characteristic parameters about patients' hand blood flow velocity before and after hand electroacupuncture treatment. Meanwhile, the matched software LDIHandV1 was used to get the real-time dynamic images of blood flow velocity from the back of patients' hands.

Results

There was no obvious linear relation between hand function and blood flow velocity. But we found patients with higher Brunnstrom stage demonstrated better hand function and slower blood flow velocity. The data also indicated that electroacupuncture therapy can significantly increased blood flow velocity for both hands, and low frequency electrical stimulation(2Hz) were with better outcomes than high-frequency (10Hz) electrical stimulation.

Conclusion

There was no obvious linear relation between hand function and blood flow velocity. But we found patients with higher Brunnstrom stage demonstrated better hand function and slower blood flow velocity. The data also indicated that electroacupuncture therapy can significantly increased blood flow velocity for both hands, and low frequency electrical stimulation(2Hz) were with better outcomes than high-frequency (10Hz) electrical stimulation.

No conflict of interest

ISPR7-0025

PRM Interventions Research - Electrotherapy (including Functional Electrophysiological Stimulation)

TRANSCRANIAL MAGNETIC STIMULATION IN THE TREATMENT OF ALIEN HAND SYNDROME

Y. Su¹, C.K. Chang²

¹Far Eastern Memorial Hospital, Physical medicine and rehabilitation, New TaipeiCity, Taiwan R.O.C.

²Taipei Veteran General Hospital, Rehabilitation Center, Taipei, Taiwan R.O.C.

Introduction/Background

Alien hand syndrome (AHS) is an uncommon disease, defined as involuntary but seemingly purposeful movement of the limbs. The most common cause is cerebrovascular accident. A precise definition of this syndrome is pending. Conventional rehabilitation programs showed limited effects with these kinds of cases. Repetitive transcranial magnetic stimulation (rTMS) holds promise to enhance neuroplasticity and augment traditional neurorehabilitation, and might be helpful for patients with AHS.

Material and Methods

We reported a 78-year-old male with AHS who was treated with repetitive transcranial magnetic stimulation (rTMS). We applied low-frequency inhibiting stimulation on the premotor cortex of the sound side for 10 consecutive days. During his hospitalization, physical therapy, occupational therapy, and speech therapy were also arranged.

Results

Neurophysiologic studies were arranged and showed decreased resting motor threshold over lesion side after treatment (from 75% to 65 %); whereas mild increased over sound side was found. (from 83 to 90%). Ipsilateral silent period (iSP) increased from 66.5ms to 73.3ms, whereas contralateral silent period decreased from 165.8ms to 113.0ms after treatment. Functional evaluation was also arranged. The patient was assessed using the Functional Index Measure (FIM) and block box test (BBT), which all showed improvement after sessions of therapy.

Conclusion

Neuroplasticity over the lesion side might develop after the sound side was inhibited. Repetitive transcranial magnetic stimulation may be an effective way to modulate neuroplasticity over alien hand syndrome patients. With more studies, we can know more about the neurophysiologic mechanism of alien hand syndrome and a better way of treatment.

No conflict of interest

ISPR7-0787

PRM Interventions Research - Electrotherapy (including Functional Electrophysiological Stimulation)

EFFECT OF TRANSCRANIAL DIRECT CURRENT STIMULATION ON THE RECOVER OF REACH AND GRASP FUNCTIONS IN STROKE-RELATED UPPER LIMB PARESIS

J. Lowenthal Raz^{1,2}, N. Soroker^{1,2}, J. Friedman³, D.G. Liebermann³

¹Tel-Aviv University, Sackler Faculty of Medicine, Tel Aviv, Israel

²Loewenstein Rehabilitation Hospital, Neurological Rehabilitation Dept., Ra'anana, Israel

³Tel-Aviv University, PT Dept. - Sackler Faculty of Medicine, Tel Aviv, Israel

Introduction/Background

Upper-limb paresis is associated with poor chances for motor recovery post-stroke. Recent research suggests that transcranial direct current stimulation (tDCS) induces modulatory effects on intra/inter hemispheric dynamics, causing focal excitatory/inhibitory activity, which presumably enhances neural plasticity and, combined with physical training, benefits motor function.

Objectives: To define the effect of tDCS on motor learning involving reach and grasp movements in stroke patients and healthy subjects

Material and Methods

21 healthy subjects (age=55±5.2ys) and 13 stroke patients (age=61±3.1ys) performed proximal (reach) point-to-point movements on a graphic-tablet and a distal (grasp) task involving object-lift towards a target, before and after anodal (excitatory, a-tDCS), cathodal (inhibitory, c-tDCS) and sham tDCS (s-tDCS) in counterbalance order, applied over left and right motor cortices (mixed design). Grip accuracy and endpoint spatiotemporal kinematics were analyzed offline. Parameters derived from a minimum-jerk description were used to evaluate pre- and post-training effects in all tDCS modalities (straight-line path deviation, movement duration, number of peaks in the velocity profile).

Results

tDCS induced weak pre-post differences. Healthy individuals presented fewer peaks when a-tDCS was applied on the hemisphere contralateral to the trained arm. Straight-line deviations and movement durations decreased, but differences did not achieve statistical significance. In stroke patients, a-tDCS on both hemispheres resulted in fewer peaks, straighter paths and shorter movement durations. Sham stimulation caused smaller and more variable effects.

Conclusion

a-tDCS (either on the affected or opposite hemisphere) may have beneficial effects on arm motor recovery. Our preliminary observations challenge the widely-held conception underlying tDCS interventions; i.e. tDCS may help to restore inter-hemispheric balance.

No conflict of interest

ISPR7-0901

PRM Interventions Research - Electrotherapy (including Functional Electrophysiological Stimulation)

EFFECTS OF AEROBIC INTERVAL EXERCISE WITH FES-CYCLING ON LABORATORY PARAMETERS OF METABOLIC SYNDROME IN PATIENTS WITH SPINAL CORD INJURY

R. Smith^{1,2,3}, M. Douglas³, R. Silvestre³

¹*Hospital Clínico Mutual de Seguridad C.Ch.C., Emergency Service, Santiago, Chile*

²*Teletón Chile, Adapted Physical Activity and sport, Santiago, Chile*

³*Universidad Mayor, Facultad de Ciencias, Santiago, Chile*

Introduction/Background

BACKGROUND: Compared with the general population, people with spinal cord injury (SCI) have a higher prevalence of metabolic diseases because due to their motor deficits, being impossible for them to exercise big muscle groups. The aim of the study was to quantify metabolic changes in lipid profile and oral glucose tolerance test (OGTT) caused by a protocol of interval aerobic exercise with functional electrical stimulation cycling (FES-cycling) in patients SCI.

Material and Methods

Prospective, quasi-experimental research, before-and-after. 10 male patients with chronic SCI and neurological level between T4 and T12, users Law 16.744 on Occupational Accidents and Occupational Diseases of the Chilean Constitution, treated at the Hospital Clínico Mutual de Seguridad C.CH.C. 30 sessions in a maximum of 12 weeks, structured with 5 minutes of heating followed by 10 repetitions of 1 minute of exercise with FES-cycling and 2-minute break, ending with a 5-minute cool down.

Results

Nine patients completed the study. One patient leaves for increased neuropathic pain. Statistically significant changes were observed for triglycerides ($p=0,043$) and OGTT for the 30min ($p=0,048$), 60min ($p=0,041$) and 90min ($p=0,039$). No changes were observed for HDL ($p=0,398$), LDL ($p=0,779$), VLDL ($p=0,933$), total cholesterol ($p=0,623$) and OGTT for 0min ($p=0,195$) and 120min ($p=0,945$).

Conclusion

The aerobic interval exercise with FES-cycling in patients with SCI can be a useful tool to improve the metabolism of carbohydrates and triglycerides.

No conflict of interest

ISPR7-0084

PRM Interventions Research - Ergonomics

THE ENERGETICS OF ROWHEELS: A COMPARATIVE STUDY

L. Sanches Rocha¹, B. Mortenson², S. Bonita³

¹International Collaboration on Repair Discoveries, Occupational Therapy, Vancouver, Canada

²University of British Columbia, Occupational Science and Occupational Therapy, Vancouver, Canada

³University of British Columbia, Orthopaedics, Vancouver, Canada

Introduction/Background

Rowwheels are novel, geared wheelchair wheels that allow the user to pull backwards on the wheels to move forward. Theoretically, this utilizes larger muscle groups compared to conventional wheeling and may prevent repetitive stress injuries. This study compared the gross mechanical efficiency (GME), perceived effort and energy expenditure (En) of propelling the wheelchair using two types of Rowwheels (0.75:1 gear ratio and 1:1.31 gear ratio) and standard forward propulsion wheels.

Material and Methods

A within participants repeated measures ANOVA design was used involving 10 able-bodied males. The order of the wheels evaluated was randomly assigned for each participant. Drag tests were conducted to measure the total external resistance of the wheelchair-participant combination. Participants' En was measured using a metabolic cart, while propelling at steady state on a treadmill (velocity = of 0.97m/s) using a metabolic cart. GME was calculated using drag test and En values. Borg Scale was used to rate participants' level of perceived exertion.

Results

Nine participants perceived the standard wheels to require less effort whereas the 0.75:1 geared wheels were hardest to propel. Likewise, standard wheels required the least En during all trials for nine participants. GME values were similar for standard and 1:1.31 geared wheels; both were more mechanically efficient than 0.75:1 geared wheels propelling on level treadmill.

	Standard wheels	0.75:1 geared wheels	1: 1.31 geared wheels	p-value*
Borg Scale	9.70 ± 2.98	13.50 ± 2.99	12.50 ± 2.22	.001
GME (%)	5.47 ± 1.22	4.18 ± 0.93	5.48 ± 1.21	.002
En (W)	278.5 ± 66.39	397.76 ± 81.22	367.97 ± 83.44	.001

*Denotes significance at $p < 0.05$. Means ± standard deviations

Conclusion

Further research is needed to determine whether 0.75:1 geared wheels would be more mechanically efficient going up inclines and whether additional training would be a way to reduce En of 1:1.31 geared wheels compared to standard wheeling.

No conflict of interest

ISPR7-0243

PRM Interventions Research - Ergonomics

SYSTEMATIC REVIEW OF THE IMPACT OF WORKSITE WELLNESS PROGRAMS

I. Moreira-Silva¹, J. Mota², S. Abreu²

¹Faculdade de Desporto da Universidade do Porto, CIAFEL, Porto, Portugal

²Faculdade de Desporto- Universidade do Porto, CIAFEL, Porto, Portugal

Introduction/Background

Employers have increasingly offered worksite wellness programs to employees and their families to decrease their cost of providing healthcare coverage and improve their employees' productivity. The goals of these programs are to promote healthy lifestyles and prevent disease with educational (eg, diet counseling) and motivational (eg, provision of incentives for lifestyle changes) approaches.

The aim of this study was to review the effectiveness of Physical Activity (PA) interventions in the workplace to reduce musculoskeletal pain in employees and assess the effect size of these programs with meta-analysis.

Material and Methods

Four databases (PubMed, EBSCO, Web of Science, and Cochrane) were searched for trials among employees for the period of January 1990 and March 2013, which included comparison groups that assessed physical activity programs, musculoskeletal pain and health-related behaviours. We examined articles with comparison groups that assessed Physical Activity programs, musculoskeletal pain and health-related behaviours.

Results

The meta-analysis estimates of standardised mean differences (Hedges g) present significant evidence of pain decrease in intervention groups in studies of general pain $g = -.40$ with a 95% Confidence Interval ranging from -0.78 to -0.02 and in neck and shoulder pain $g = -.37$ with a 95% Confidence Interval ranging from -0.63 to -0.12 . The few studies covering low back pain and arms, elbows, wrists, hands or fingers pain do not present sufficient statistical significant evidence.

Conclusion

There is consistent evidence that workplace PA interventions significantly reduce general musculoskeletal pain and neck and shoulders pain. More studies are required to provide clarification of the effectiveness of work related PA interventions in arms, elbows, wrists, hands or fingers and low back pain.

No conflict of interest

ISPR7-0348

PRM Interventions Research - Ergonomics

ARMREST EFFECT ON CUSHION / SKIN INTERFACE PRESSURE DISTRIBUTION IN PEOPLE WITH SPINAL CORD INJURY

C.M. Lemes Ponzó Ribeiro¹, F.G. Lopes¹, P. Dall "Agnol"²

¹SARAH Network of Rehabilitation Hospitals, Spinal Cord Neurorehabilitation, Belo Horizonte, Brazil

²SARAH Network of Rehabilitation Hospitals, Neurological Rehabilitation, Belo Horizonte, Brazil

Introduction/Background

Introduction: The publication of comparative studies that assess armrest interference on pressure distribution in the sitting position for individuals with tetraplegia and paraplegia has been scarce. The purpose of this study was to investigate the effectiveness of the wheelchair armrest on cushion / skin interface pressure distribution in people with spinal cord injury.

Material and Methods

Methods: This is a cross-sectional study that evaluated 52 people with spinal cord traumatic injury, neurological level from C4 to T12, AIS: A or B, with at least 6 months of spinal cord injury, who move only by wheelchair. Data were collected from November 2015 to September 2016. The participants were placed in the wheelchair with the armrest at the proper height and elbows bent at 90°. It was then made a pause to restore blood perfusion, after which the patient was evaluated without the armrest. Imaging equipment FSA 4,1 was used to map the pressure in the sacral, ischial and trochanteric regions. This study has been approved by the SARAH Network of Rehabilitation Hospitals's Research Ethics Committee and all patients have signed free and informed consent forms.

Results

Results: Pressure on the tetraplegic individuals was higher than on the paraplegic ones. The point of greatest pressure was the ischial, followed by the trochanteric and the sacral regions. The armrest was efficient to reduce the pressure.

Conclusion

Conclusion: According to the sample, the armrest was proven effective to reduce the pressure exerted by the body on the seat, regardless of the topography and the affected region.

No conflict of interest

ISPR7-0522

PRM Interventions Research - Ergonomics

ERGONOMIC EVALUATION OF TURKISH MANICURISTS WITH QUICK EXPOSURE CHECK

N. Kesiktaş¹, M. ozarslan², B. dernek³

¹, *istanbul, Turkey*

²*imae, neurology, istanbul, Turkey*

³*istanbul prm edu hosp, prm, istanbul, Turkey*

Introduction/Background

Introduction Musculoskeletal discomfort, pain or injury among manicurists is common and results in reduced job performance and productivity, increased time off work, and even early retirement. Manicurist is a high-risk occupation associated with back pain that results in morbidity and reduced production. The manicurist is an occupational group which tends to have a bad working posture for a long time. Quick Exposure Check (QEC) is one of the few observational risk assessment techniques. Purpose/Aim The aim of this study is to assess ergonomic risks, pain and investigate the relationship of pain with posture among manicurists.

Material and Methods

Materials and Methods Methods: Data of study were collected from 45 manicurists whose mean age is $25,37 \pm 7,19$. The participants filled the assesment form which consists of occupational information, pain and QEC worker part. Physician evaluated manicurist workplace and manicurist with QEC. Data analysis was done by SPSS 10.0.

Results

Results All participants were female and right handed. It was reported that they had been working mean $61, 92 \pm 11,09$ hours a week, for $122,75 \pm 62,39$ months and they had 11 ± 5 customers a day and pain complaints for $53,97 \pm 36,51$ months. There is a strong significant positive correlation between pain complaints and spending time in the occupation ($p=0,000$) and between weekly working hours. Most painful area was back region (85%). We defined four work for ergonomic risk evaluation with QEC. These were manicure, pedicure, unwanted hair removals, correction of eyebrow. Each work had full of bad postures, repetitions. And especially most of them were scored in very high risk categorisation for back static positions (more than 29 point). Only the task of 'using vehicle' did not evaluated during the assessments, because none of the workers were not used vehicle at work.

Conclusion

This study can be helpfull for ergonomic interventions that includes engineering, administrative or behavioural (or personal).

No conflict of interest

ISPR7-0213

PRM Interventions Research - Miscellaneous

KINESIOLOGY TAPE APPLICATION DOES NOT DELAY KNEE JOINT FATIGUE IN HEALTHY SUBJECTS

N. Campbell-Kyureghyan¹, Y.W. Wang²

¹University of Wisconsin-Milwaukee, College of Engineering and Applied Science, Milwaukee, USA

²University of Wisconsin-Milwaukee, College of Engineering and Applied Science, Milwaukee, USA

Introduction/Background

It is generally believed that kinesiology tapes (KT) are capable of enhancing the performance of the muscle/joint by delaying fatigue and reducing pain. The aim of this study was to quantify the effect of KT application on the knee joint during fatiguing isotonic flexion/extension exercise in healthy subjects.

Material and Methods

Fourteen males (20-25y/o) with no previous history of knee injuries volunteered to participate in a 4-day long study (2 days with no tape, 2 days after KT application). The isotonic strength, time to fatigue (TTF), number of cycles and rate of knee extension/flexion exercises, with a resistance of 45lbs, were measured for 4 consecutive days using a dynamometer (Biodex Shirley, NY). A commercially available KT was randomly applied on the 3rd day to one knee joint based on the manufacturer's recommendation, while the second knee was kept as a control. A paired t-test was performed on the results with the alpha value for significance set at 0.05.

Results

No statistical differences ($p>0.05$) were observed due to KT application (changes between Day 2&4) with respect to TTF, number of cycles or the rate of the knee flexion/extension. Similar results between the taped and control joint were observed in most subjects ($p>0.05$). The increase in number of cycles (~4%) and the rate (~6%) did not affect the outcome, but rather can be explained by the learning curve.

Conclusion

In conclusion, none of the quantified parameters measured in this study can support plausibility of the KT claims for enhancement of knee joint performance during isotonic exercise.

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No conflict of interest

ISPR7-0309

PRM Interventions Research - Miscellaneous

TECHNOLOGIES FOR STROKE REHABILITATION: NEEDS AND OPPORTUNITIES

L. Ortiz¹, M. Anastassova³, A. Gutierrez Ruiz^{1,2}, S. Boulland⁴, C. Magnusson⁵, M.P. Abaitua¹

¹*Cruces University Hospital, Rehabilitation Unit, Baracaldo, Spain*

²*BioCruces Research Institute, BioCruces Research Institute, Baracaldo, Spain*

³*COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES, DRT/LIST/DIASI/LISA, Gif-sur-Yvette Cedex, France*

⁴*Fondation Hopale, Fondation Hopale, Berck-sur-mer, France*

⁵*LUNDS UNIVERSITET, Design Sciences, Lund, Sweden*

Introduction/Background

According to the World Health Organisation (WHO), 15.000.000 people/year worldwide suffer stroke. Number of strokes in Europe is likely to increase from 1.100.000 strokes/year (2.000) to more than 1.500.000 strokes/year (2025), solely because of demographic changes. 1/3 strokes die and 1/3 are left disabled: sensorimotor, cognitive, psychological, language impairments.

The aim of our study is to determine the needs and opportunities of new-technology for stroke survivors.

Material and Methods

Literature review in Medline and Embase (1997-2015). Several multidisciplinary meetings were developed looking for consensus from professionals from seven countries.

Results

To improve the function it is needed a multidisciplinary rehabilitation work, which could be assisted by technology in the rehabilitation centres or at home. There are several professionals implicated in the implementation of technology for stroke patients in the last years. In the last ten years, treatment periods are changing, getting to reduce the inpatient treatments and prolonging the outpatient treatment period, as well as the home treatment period that in the future it is expected to increase even more.

Not only the function should be the goal, prevention of a secondary stroke it is needed. The risk factors prevention is where STARR® (The Decision Support and self-mAnagement system for stRoke survivoRs) project is working on nowadays, trying to develop tools to help stroke patients, caregiver and clinicians.

Conclusion

Rehabilitation medicine is on its way to focus on maximizing value for patients: that is achieving the best outcomes at the lowest cost. The health care system should be focused around what patients need.

New technology for intensity, physiology and feedback might be essential.

No conflict of interest

ISPR7-0742

PRM Interventions Research - Nutrition and Diet

PROLONGED INTERMITTENT FASTING: EFFECT ON QUALITY OF LIFE AND CREATININE

S. Khoshandam Ghashang¹, I. Hamdan¹, C. Gutenbrunner¹, B. Nugraha¹

¹Hannover Medical School, Rehabilitation Medicine, Hannover, Germany

Introduction/Background

Prolonged intermittent fasting, including Ramadhan Fasting (RF) is practiced by million Muslims worldwide. Researches have shown associations between fasting and mood enhancement. Creatinine is known to be representative for renal function regarding glomerular filtration rate and is known to be influenced by dietary intake. This study aimed to determine the effect of fasting on young, healthy males who fasted in Germany during Ramadan 2015 health-related Quality of Life (QoL).

Material and Methods

54-male participants (age>18 y.o) were recruited and divided into two groups: fasting (FG), healthy, and planning to fast 30 days and non-fasting healthy (NFG). These groups were recruited at different time points. T1: one week before Ramadhan, T2: 1-week after the first day, T3: last week and T4: 1-week after Ramadhan, respectively. In NFG, the determinations were at T1 and T3. Assessments: QoL: including fatigue and mood; level of serum creatinine. (Statistics evaluation was done with SPSS 23. $\alpha < 0.05$ was set for significance).

Results

The results revealed that there were no significant differences between the participants in the FG and the NFG at T1 or T3. FG demonstrated significant improvement from T2 to T4 in fatigue (fatigue severity scale: $p < 0.01$), mood (Beck's Depression Index-II: $p < 0.05$), and sleepiness during day time (Epworth Sleepiness Scale, $p < 0.01$). In the FG, BDNF changed significantly at T1 compared to T2, T2 compared to T3 and T3 compared to T4 ($p < 0.05$). Significance was found between T2 and T4 regarding creatinine in FG.

Conclusion

Prolonged fasting may improve QoL and has no negative effect on renal function.

No conflict of interest

ISPR7-0540

PRM Interventions Research - Pharmacological Interventions (e.g. Pain, Spasticity, Anti-Inflammatory Drugs)

USEFULNESS OF ULTRASOUND AS GUIDE IN TRICEPS SURAE INJECTION WITH BOTULINUM TOXIN A (BTA) AS MANAGEMENT OF SPASTIC EQUINOVARUS FOOT.

S. Chahuan¹, M.J. Pizarro¹, L. Berna¹, A. Sithoul², V. Ferrada¹

¹Instituto Nacional de Rehabilitación Pedro Aguirre Cerda, Peñalolén, Santiago, Chile

²CONICYT, Santiago, Santiago, Chile

Introduction/Background

The success of local treatment with BTA in spasticity depends on both right choice of target muscle and its location during the injection. Anatomical guide could be acceptable to locate large and superficial muscles and ultrasound guide it is suggested to be used on deep and/or small muscles. However, there are current reports about frequent mistakes on *triceps surae* location related to depth injection using just anatomical guide.

Objective: To compare clinical outcomes about spastic equinovarus foot (SEF) management using ultrasound guide for *triceps surae* injection with BTA versus anatomical guide.

Material and Methods

Retrospective-controlled descriptive study. Database of up to 20-year-old patients treated with BTA for SEF management at Spasticity Unit of "Pedro Aguirre Cerda National Rehabilitation Institute" (INRPAC), between January and October 2016 was reviewed. Patients with only anatomic guide were compared with those in whom ultrasound guidance was used. Infiltration results were measured at 15 days using the Goal Achievement Scale (GAS). Summary statistics and Chi-square were used.

Results

24 procedures for SEF from different etiologies, between 1 to 20 year-old-patients, were performed. The following characteristics on age, gender and GAS were found:

	Nº Patients	Age mean (years)	Gender	Result (GAS)
Anatomical Guide	12	4,9	41% F 58% M	66% 0 (expected) 33% -1 (less than expected)
Ultrasound guide	12	7,5	37% F 62% M	84% 0 (expected) 8% 1 (better than expected) 8% 2 (much better than expected)

Chi-square test: 0,101.

Conclusion

Ultrasound guide could have a role improving results on *triceps surae* infiltration as SEF management, although been a large and superficial muscle. The above, beyond the results of statistical test that showed an independence between the studied variables, when observing percentages of objective obtained through infiltration procedure with ultrasound guide.

No conflict of interest

ISPR7-0907

PRM Interventions Research - Pharmacological Interventions (e.g. Pain, Spasticity, Anti-Inflammatory Drugs)

APPLICATION PROFILE AND REFERRED EFFECTS ON WALKING IN CEREBRAL PALSY CHILDREN (2-12 YEARS) AFTER HIGH DOSE INJECTIONS OF BOTULINUM NEUROTOXIN A

L. Camara¹, M. Starling¹, L. Arruda-Botelho¹, L. Granero¹, R. Tanaka¹

¹UNIFESP, Setor Bloqueio Químico, São Paulo, Brazil

Introduction/Background

Botulinum Neurotoxin A (BoNT-A) has been widely used as an effective treatment in children with spasticity due to Cerebral Palsy (CP). Scientific data about early interventions in children younger than 12 years, using high dose, to aggressively treat spasticity is scarce. The main objective of present research was to verify the high dose BoNT-A application profile in children younger than 12 years with CP, and its referred influence on different walking patterns.

Material and Methods

a retrospective research and review of medical files (2007-2011), searching for procedures with high dose use (>30 UI /Kg) (500U) was conducted. All patients must have been reassessed after 1-2 months of injection. Parents impression about walking speed, increase of step length, and stair climb hability were registered in standardized quiz sheets

Results

Fourty one patients were found (Hemiparesis, n= 10, 24,4% / Diparesis, n= 31, 75,6%), 24 boys (58,5%) and 17 girls (41,5%). The means of founded data were: age: 6,2 years ($\pm 1,2$); weight: 19,3 Kg ($\pm 4,8$); total dose: 831,2 U ($\pm 197,3$); proportional dose: 44,0 U/Kg ($\pm 9,2$). Increased walking speed reports occurred in 80,5% of cases (n=33), increased step length in 53,7% (n=22) and, increased stair climb hability in 51,2% (n=21). It has not been referred improvements on walking speed, step length and stair climb hability in 19,5%, 46,3%, 48,8% (respectively). There were no referred cases of worsening in previous functions of the evaluated patterns.

Conclusion

Hgh BoNT-A dose injections, in children with CP (2-12 years) had, in majority of cases, positive effects on parents referred impressions about walking speed, increase of step length, and stair climb hability. No impairments on previous functions evaluated were referred by parents after procedure.

No conflict of interest

ISPR7-0916

PRM Interventions Research - Pharmacological Interventions (e.g. Pain, Spasticity, Anti-Inflammatory Drugs)

REFERRED EFFECTS ON WALKING OF CEREBRAL PALSY CHILDREN (2-12 YEARS) AFTER COMBINED HIGH DOSE INJECTIONS OF BOTULINUM NEUROTOXIN A AND PHENOL

L. Camara¹, M. Starling¹, L. Arruda-Botelho¹, L. Granero¹, R. Tanaka¹

¹UNIFESP, Setor Bloqueio Químico, São Paulo, Brazil

Introduction/Background

Chemical blockade, including Botulinum Neurotoxin A (BoNT-A) and Phenol, has been used as therapeutic intervention to treat cerebral palsy (CP) children with walking impairments due to spasticity. Data about early interventions in children younger than 12 years, using high dose of BoNT-A and combined Phenol, to aggressively treat spasticity is scarce. The main objectives of present study was to verify the combined chemical blockade application profile in young CP patients, and its referred influence on different walking patterns.

Material and Methods

a retrospective review of medical files (2007-2011), searching for procedures with high BoNT-A dose use (>30 UI /Kg) (500U) combined with Phenol, was conducted. All patients must have been reassessed after 1-2 months of injection. Parents impression about walking speed, increase of step length, and stair climb ability were registered in standardized quis sheets.

Results

Fifty nine patients were found (Hemiparesis, n= 9, 15,3% / Diparesis, n= 50, 84,7%), 34 boys (57,6%) and 25 girls (42,4%). The means of founded data were: age: 5,8 years ($\pm 2,0$); weight: 18,1 Kg ($\pm 6,1$); total dose: 821,6 U ($\pm 235,3$); proportional dose: 46,4 U/Kg ($\pm 9,6$), Phenol 3,9 ml ($\pm 2,0$). Increased walking speed reports occurred in 79,7% of cases (n=47), increased step length in 45,8% (n=27) and, increased stair climb ability in 44,1% (n=26). It has not been referred improvements on walking speed, step length and stair climb ability in 20,3%, 54,2%, 55,9% (respectively). There were no referred cases of worsening in previous functions of the evaluated patterns.

Conclusion

Combined Chemical blockade with Phenol and high BoNT-A dose in children with CP had positive effects on majority of parents referred impressions about increasing on walking speed. However, increase of step length, and stair climb ability were referred in less than a half of CP patients.

No conflict of interest

ISPR7-0275

PRM Interventions Research - Prosthetics and Orthotics

3D-PRINTED HAND IN ADOLESCENTS WITH CONGENITAL HAND AMPUTATION: STUDY OF 5 CASES

P. Nahuelhual¹, J. Dote², R. Cubillos³, G. Fuentes³, C. Giaconí¹, J. Zuniga⁴

¹Teletón Chile, Investigación y Desarrollo, Santiago, Chile

²Teletón Chile, Laboratorio de Órtesis y Prótesis, Santiago, Chile

³Teletón Chile, Unidad de Tecnología Asistiva, Santiago, Chile

⁴University of Nebraska at Omaha, Department of Biomechanics, Omaha, USA

Introduction/Background

3D technology currently allows develop prosthesis. The aim of this study was to describe the of the 3D-printed hand prosthesis Cyborg Beast in the functionality of the upper-limbs (UL) in adolescents with congenital hand amputation

Material and Methods

Five patients between 12 and 17 years were selected with congenital hand amputation at the Teleton Institute of Santiago, Chile. Patients were trained in the use of the prosthesis for 4 sessions. Hand function was evaluated at the beginning, without prosthesis, at 1 month and 4 months of using the hand prosthesis using the Modified Bilan 400 points, the perception of UL function, with and without the prosthesis, was evaluate by the Upper Extremity Function Index (UEFI). In addition, semi-structured interviews were conducted with parents and patients to describe the perception of the use of this prosthesis.

Results

At 1 month and 4 months of use, the percentage change of the median hand functionality (Bilan) was -11% and -4% for the unaffected limb and -9% and -2% for affected respectively. The percentage change of the median for the perception of functionality (UEFI) was -62%. Patients and their parents reported that the prosthesis did not meet their expectations of functionality and use hindered the activities already performed without prosthesis.

Conclusion

The use of the 3D printed hand prosthesis Cyborg Beast was not a functional solution for the 5 patients with congenital hand amputation. Further research is needed to improve the functionality of 3D printed hand prostheses.

No conflict of interest

ISPR7-0480

PRM Interventions Research - Prosthetics and Orthotics

RETURN TO SURFING USING AN ADAPTED PROSTHESIS : A CASE REPORT

E. Schwirtz¹

¹*Service de MPR- Pr Delarque- Pr Viton- Pr Bensoussan- hôpital La Timone, PMR, Marseille, France*

Introduction/Background

Surfing with transfemoral knee prosthesis requires flexion of the hip, knee and ankle and balance between flexibility and stiffness of the prosthetic limb. We report on Mr. D a transfemoral amputee who wanted to surf again.

Material and Methods

Technical specifications were based on Mr. D complaint. The prosthesis is salt water-resistant and combines a shock absorber associated with elastic tendons to permit the knee to bend easily and to facilitate eccentric braking. Surfing was observed using videos of movements and subjective analysis of compensations

Results

Mr. D uses this prosthesis for surfing with good results and got back to his former level by using compensations. During the take off, he cannot shorten his left leg. He makes a circumduction movement to put his leg in front of the board.

Conclusion

This prosthesis is adapted for surfing and allows precise adjustments to surfing conditions.

Data concerning adapted sport prostheses are scarce and this equipment is expensive and reserved for athletes. This is the first description of a prosthetic leg adapted to surfing.

No conflict of interest

ISPR7-0804

PRM Interventions Research - Prosthetics and Orthotics

A NEW DYNAMIC ANKLE FOOT ORTHOSIS WITH 3D TECHNOLOGY

S.C. Chen^{1,2}, C.C. Hsu^{1,2,3}, Y.F. Ko^{1,3}, Y.K. Huang^{2,3}, C.H. Laj^{1,2}, F.S. Jaw³

¹Taipei Medical University Hospital, Physical Medicine and Rehabilitation, Taipei City, Taiwan R.O.C.

²Taipei Medical University,

Department of Physical Medicine and Rehabilitation- School of Medicine- College of Medicine, Taipei, Taiwan R.O.C.

³National Taiwan University, Institute of Biomedical Engineering, Taipei City, Taiwan R.O.C.

Introduction/Background

Ankle foot orthoses (AFOs) have been widely used in stroke hemiplegic patients. Most of static AFOs are used to correct abnormal ankle posture, however the effect is not satisfactory. How can AFO not only correct abnormal motion but also facilitate good gait pattern is a big issue. A novel dynamic AFO for facilitating a better gait motion by using 3D technology has been developed by our team. The aim is to introduce the novel dynamic AFO (TMU-I), and to demonstrate the preliminary result of clinical trial.

Material and Methods

TMU-I-AFO is a newly designed dynamic AFO with characters of adjustable, customized, fast manufacture by 3D technologies. In addition to correction of abnormal posture, it can also facilitate motion during walking. In this study, we conducted gait analysis, measured ambulation functions to compare effects of the newly designed AFO, static traditional AFO, and without AFO.

Results

The gait were much more improved by using the newly designed dynamic AFO than static traditional AFO in the measured gait biomechanical parameters, 6 meter walking distance, and 10 meter walking time. TMU-I AFO is also capable of customization for patients with various conditions. Users can choose appropriate dynamic device components for handling different conditions. TMU-I AFO can maintain ankle range of motion in early stage of stroke, and correct gait pattern in later stage through changing components.

Conclusion

This study demonstrated the beneficial effects of TMU-I AFO with 3D technology in manufacture and clinical implementation

No conflict of interest

ISPR7-0328

PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

CHARACTERIZATION OF PLANTAR PRESSURES IN ATHLETIC RACE WALKING A PILOT STUDY

O. Silva Caycedo¹, P.A. Escobar Mahecha.¹, D. Valencia Valencia¹

¹*Universidad Nacional De Colombia, Medicina fisica y Rehabilitacion, Bogota, Colombia*

Introduction/Background

BACKGROUND. Race walking is a kind of sport that shares characteristics between gait and race walking. The plantar pressure measurement is an electronic technique for assessing the specific loads that supports the plantar surface of an individual during different activities. The system evaluated plantar pressures.

OBJECTIVE: Characterize plantar pressure athletes race walking, registration League Athletics Bogotá; in order to assist decision-making, implementation of measures to prevent injury and promote high performance sports practice..

Material and Methods

MATERIALS AND METHODS: Prospective cohort study conducted in athletes race walking belonging to the Bogotá Athletics League, who attended the UCAD, from January 2013 to June 2014. A convenience sample of 22 athletes who met criteria inclusion.

Results

RESULTS: 19 athletes, average age of 17.53 years, 63.2% male, 36.8% female, the medial heel region is presented was the location of the maximum peak pressure on both feet in 33% (n=6) of cases.

Conclusion

CONCLUSION: The region location of peak pressure, presented statistically significant correlation with the pressure found in the lateral heel region ($p = 0.00019$) of both feet.

No conflict of interest

ISPR7-0400

PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

DEVELOPMENT OF SPEECH TRAINING SERIOUS GAME FOR PEOPLE WITH SPEECH DISORDERS

G.W. Kim¹, Y.J. Jo², J.H. Seo³, S.H.P. Park³, Y.H.W. Won³, H.N. Lee³, Y.B. Oh³, H. You⁴, M.H. Ko³

¹Chonbuk National University Hospital, Department of Physical Medicine & Rehabilitation, Jeonju-si, Republic of Korea

²Graduate Program in Speech-Language Therapy- Chonbuk National University, Speech therapy, Jeonju-Si, Republic of Korea

³Department of Rehabilitation Medicine- Chonbuk National University Hospital, Department of Physical Medicine & Rehabilitation, Jeonju-Si, Republic of Korea

⁴Department of Industrial and Management Engineering, Pohang University of Science and Technology, Pohang-Si, Republic of Korea

Introduction/Background

Speech disorder is characterized by the abnormal production and/or absence of vocal quality, pitch, loudness, resonance, or duration. Motivation and fun are important for effective speech therapy; the conventional speech therapy is often conducted by using a textbook which can be boring to the speech-handicapped. The present study is to develop speech training serious game for the people with speech disorders.

Material and Methods

To improve effective treatment of language disorders, speech training serious game was developed in the present study through the following approach.

- Benchmarking analysis of 8 speech therapy systems: We have been identified that requires speech therapy systems with specific features and contents.
- Analysis of existing patents and technologies: Needs to content developed for quantitative analysis and enjoyment.
- Game scenario development: Specify game objectives and how voice parameters control game elements.
- Interface design: Design a user interface and game elements including characters and objects.
- Program building: Use the Unity3D game development engine and C# language.

Results - Development of the framework and contents of the speech training serious game.

The speech training serious game are a vocal training program to aid in speech therapy, which is composed of a three categories (voice continuity, loudness, and pitch) and five games were developed for each category. It is possible to repeatedly, funny, and intensive treatment through a game and can use quantitative analysis. **Conclusion**

The smart speech game contents in the study was developed easy to use, quantifying the therapeutic effect. There is also fun, interesting, increasing motivations, inspires achievement, and enhances the training experience throughout a game. We will conduct clinical trials to see the clinical utility of smart speech programs. (This paper was supported by Fund of Biomedical Research Institute, Chonbuk National University Hospital)

No conflict of interest

ISPR7-0419

PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

HEAD (HUMAN EMPOWERMENT AGING AND DISABILITY) PROJECT: AN INFORMATION COMMUNICATION TECHNOLOGY PLATFORM FOR COGNITIVE AND MOTOR REHABILITATION

F. Molteni¹, C. Gramigna¹, S. Canobbio¹, M. Peverelli¹, S. Aggujaro¹, D. Proserpio¹, D. Liberali¹, M. Rossini¹

¹Valduce Hospital, Villa Beretta Rehabilitation Center, Costa Masnaga, Italy

Introduction/Background

In Upper Motor Neuro Syndrome (UMNS) the rehabilitation program is a continuum and variable process that must take account of functional, cognitive and emotional aspects. Tailored rehabilitation programs, continuum of care and sustainability are crucial in order to achieve maximum effectiveness.

The main aim of this project is to implement a customized related life experience motor and cognitive rehabilitation exercises using a platform able to deliver treatment for in and outpatients. The interaction between the subject and the platform is realized using selected video coming from National TV broadcasting contents and low cost movement detection devices. Secondary aims are to measure the impact of technology on the motivation, on the clinical functional outcomes and the system usability.

Material and Methods

Participants were UNMS chronic subjects with different level of disabilities. 29 subjects was recruited (14 male and 15 female), 11 stroke, 8 Parkinson and 10 Multiple Sclerosis. Each subject performed inside hospital 12 rehabilitation session of 1 hour, 2/3 times per week using the platform. Clinical assessment was measured at the beginning and at the end of the training sessions.

Results

The clinical assessments show an increase in the functional outcomes (Nine Hole Peg Test +5%, Box and Blocks test +8%, 2 minute walking test +5%). The usability measured with System Usability Scale is higher than 70%. Due to this we implement a second step of home rehabilitation.

Conclusion

Usability and positive functional outcomes show that the platform could represent a valid rehabilitation tool both in hospital and at home.

No conflict of interest

ISPR7-0876

PRM Interventions Research - Rehabilitation Technology, including Implants, Prosthesis, Orthoses

KINECT-BASED RAPID MOVEMENT THERAPY TO PREVENT FALLS IN STROKE SURVIVORS

M. Junata¹, K.C.C. Cheng², H.S. Man¹, K.Y. Tong¹

¹The Chinese University of Hong Kong, Electronic Engineering Department, Shatin, Hong Kong S.A.R.

²The Chinese University of Hong Kong, Sports Science and Physical Education Department, Shatin, Hong Kong S.A.R.

Introduction/Background

Stroke survivors have higher risks of falling compared to healthy older adults. About 50-75% of stroke survivors have fallen at least once within 6 months after discharge. Rapid stepping and reaching-to-grasp movement are critical to recover balance. With reduced limb control, postural stability and coordination, stroke survivors have impaired rapid balance recovery reactions and increased fall risk. Previous studies have shown that postural response delay can be trained by perturbation/speed training, and Kinect can be used to train range-of-motion (ROM) and detect older adult's stepping and reaching time. The objective of this study is to investigate the feasibility of Kinect-based Rapid Movement Therapy (RMT) to train faster response/movement time and larger ROM in stroke survivors.

Material and Methods

Chronic stroke survivors with balance impairment are recruited to undergo 20 RMT sessions. The system prompts the subjects with limb (arm/leg) and direction cue on a screen, and then tracks their movement 3D trajectory and time. Subjects are encouraged to perform rapid arms and legs movement in different directions (arm=4/leg=7).

Results

Preliminary results of the first 10 sessions of 4 subjects (age(years)=59.8±2.1, duration of stroke(years)=7.8±2.8, Berg Balance Scale=49.8±1.3) have been collected. Complete results from 10 subjects will be presented in the conference. Both movement time and ROM showed trends of continuous and similar improvement on both the paretic and non-paretic arms and legs (Fig.1).

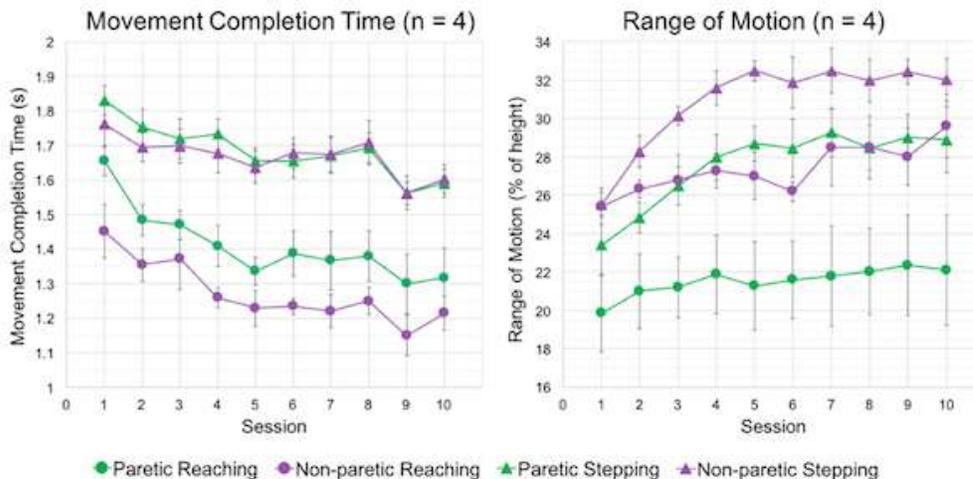


Figure 1. Movement Completion Time and Range of Motion in 10 sessions

Conclusion

Preliminary results suggest that Kinect-based RMT might be useful in improving movement completion time and ROM in arms and legs of chronic stroke survivors.

No conflict of interest

ISPR7-0074

PRM Interventions Research - Robots, Aids and Devices

THE USE OF ROBOT-ASSISTED TRAINING IN STROKE REHABILITATION TO REGAIN THE ABILITY TO WALK AND CLIMB STAIRS

R. Aggujaro¹, **N. Smania**², **A. Waldner**³

¹Reha Technology AG, Clinical Affairs, Basel, Switzerland

²Neuromotor and Cognitive Rehabilitation Research Center CRRNC- University of Verona, Department of Neurological and Movement Sciences, Verona, Italy

³Private Hospital Villa Melitta, Department of Neurological Rehabilitation, Bolzano, Italy

Introduction/Background

Developed with the purpose of helping stroke survivors regaining mobility, the use of end-effector devices has proven to deliver excellent results in multiple applications

Material and Methods

The talk provides a review on the use of end effector in floor walking and stairs climbing in sub-acute and chronic stroke patients.

This includes a Cochrane review (Mehrholz 2013), a randomized controlled trial (Hesse 2012), and a pilot randomized controlled trial (Smania 2016) where the effectiveness of the use of end-effector in combination with physiotherapy are compared with conventional physiotherapy or other robotic interventions. A total of 11 trials (9 Cochrane Review + 1 RCT + 1 PRCT) including 490 stroke patients subacute and chronic (470 + 15 + 5) used an end-effector as the experimental intervention.

The primary outcome observed is the ability to walk independently (FAC) Functional Ambulation Category (Holden 1984). Walking speed, endurance, as well as the time required to climb 9 stairs - ascending and descending - are also assessed.

Results

In the Cochrane review the use of end-effector increased the chance of walking independently on the floor (OR (random) 2.17, 95% CI 1.07 to 4.43; P = 0.03; level of heterogeneity, I² = 48%).

In the RCT the use of end-effector lead to walking independently on the floor and on the stairs for seven non ambulatory patients. As per the PRCT the use of the end-effector led to an improvement for the time required to climb stairs up (P=0.06) and down (P=0.06).

Conclusion

Patients who have received electromechanical-assisted training in combination with physiotherapy after stroke are more likely to achieve independent walking and the ability to climb stairs. Specifically, people in the first three months after stroke seem to benefit most. Furthermore the use of the end/effector on chronic ambulatory stroke may reduce the time required to climbing the stairs.

Conflict of interest

Disclosure statement:

I work for Reha Technologz AG, manufacturer of end effector technologies used in the clinical trial mentioned in the abstract.

ISPR7-0144

PRM Interventions Research - Robots, Aids and Devices

GAIT TRAINING USING AN END EFFECTOR ROBOT IN SUBJECTS WITH CHRONIC STROKE: RESULTS OF A MULTICENTER RETROSPECTIVE STUDY.

D. Bonaiuti¹, *S. Mazzoleni*², *N. Bergaglio*³, *A. Waldner*⁴, *C. Spagnuolo*⁵, *M. Franceschini*⁶

¹*S. Gerardo Hospital, Physical Medicine & Rehabilitation, Monza, Italy*

²*Biorobotic Institute, University Pisa, Pisa, Italy*

³*ASL4 Chiavarese, Physical Medicine & Rehabilitation, Sestri Levante, Italy*

⁴*Villa Melitta, Rehabilitation Medicine, Bolzano, Italy*

⁵*S. Stefano Riabilitazione, Physical Medicine & Rehabilitation, Macerata, Italy*

⁶*IRCCS San Raffaele pisana, Physical Medicine & Rehabilitation, Rome, Italy*

Introduction/Background

The diffusion of robotics in poststroke rehabilitation is motivated by the evidence of effectiveness but is not supported by sufficient knowledge on specific indications and protocols.

This study aims: 1) to verify the effectiveness of treatment using an end-effector system on chronic stroke patients, without any other treatment, 2) to verify the effectiveness in specific disorders.

Material and Methods

Inclusion criteria: chronic poststroke hemiparesis. Exclusion criteria: cognitive or cardiorespiratory impairment and any other disorder that would prevent the training. The G-EO robotic system (Reha Technology AG, Switzerland) which allows active and assisted exercises on the ground and stairs was used. The outcomes were: 6MWT, 10MWT, Timed up & Go Test (TUG), Modified Ashworth Scale (MAS), Motricity Index (MI), Functional Ambulation Classification (FAC), Walking Handicap Scale (WHS).

Results

100 patients underwent training in 5 rehabilitation centers. 83 patients had $FAC \geq 3$, 17 $FAC < 3$: treatment was effective for both groups. More disabled patients improved significantly in TUG and MI, less severe in all measures. 50% of the most severe patients achieved the MCID in TUG and 61% of the less severe in 6MWT. The most severe patients only improved after 20 sessions; less severe after 10 sessions in TUG and 6MWT, but only after 20 sessions in all outcomes. The subjects achieving the MCID in 6MWT passed from 7 to 21.

Conclusion

This study, the largest carried out using a gait robot end-effector without any other treatment, shows that it is effective in chronic poststroke patients with some differences relating to the protocols.

No conflict of interest

ISPR7-0164

PRM Interventions Research - Robots, Aids and Devices

USING BALANCING AIDS IN KINESIOTHERAPY ON PATIENTS WITH RADICULAR SYNDROMES IN THE LUMBAR AREA

E. Ziakova¹, E. Vaska², N. Sladekova¹

¹Slovak Medical University, Faculty of Nursing and Professional Health Studies, Bratislava, Slovak Republic

²The University of Ss. Cyril and Methodius, Faculty of Social Sciences, Trnava, Slovak Republic

Introduction/Background

This paper deals with the questions of using balancing aids in kinesiotherapy on patients with radicular syndromes in the lumbar area. The goal was to analyze the influence of physiotherapy with balancing aids TOGU® roller, on the perception of pain and postural muscle activity deep stability system (DSS) on patients with pain in the lumbar area.

Material and Methods

A prospective study included 30 patients, including 17 women (56.67%) and 13 men (43.33%). They underwent physiotherapy with balancing aids TOGU® roller 3 times a week, total 20 x, duration 30 minutes. As an evaluation tool we have chosen an Oswestry standardized questionnaire and three tests DSS by Kolář. Before starting the exercise, we tested the patients and had them complete the Oswestry questionnaire. After completion of the entire therapy we repeated the testing procedure. For statistical evaluation we have used the Wilcoxon's rank test and the Mann-Whitney's U test.

Results

The whole set showed pain decrease of 24.55 %, SD 0.05, $p = 0.000$, in the evaluation of test diaphragm improvement was reported of 46.67%, SD 0.07, $p = 0.002$, in extent test 60.01%, SD 0.1, $p = 0.000$, in intraabdominal pressure test 63.33%, SD 0.03, $p = 0.000$.

Conclusion

The results have shown that the use of a TOGU® roller balancing aids has an effect on the improvement of the DSS function and also it reduces the perception of pain by the patient.

No conflict of interest

ISPR7-0187

PRM Interventions Research - Robots, Aids and Devices

IMPACT OF A NOVEL KINEMATIC BIOFEEDBACK SYSTEM IN MOTOR PERFORMANCE AFTER STROKE: A RANDOMISED CROSS-OVER TRIAL

F. Correia¹, F. Santos¹, A. Nogueira¹, A. Branquinho², C. Candeias³, P. Quintaneiro⁴, S. Cunha⁵, A. Almeida⁶, V. Bento²

¹*SWORD Health, Clinical Department, Porto, Portugal*

²*SWORD Health, Algorithms Department, Porto, Portugal*

³*CMM Murtosa, Physiotherapy Department, Murtosa, Portugal*

⁴*CMM Aveiro, Physiotherapy Department, Aveiro, Portugal*

⁵*CMM Viseu, Occupational Therapy Department, Viseu, Portugal*

⁶*CMM Viseu, Physiotherapy Department, Viseu, Portugal*

Introduction/Background

Stroke rehabilitation literature highlights the need for high intensity, repetitive task-specific practice with feedback on performance. Biofeedback tools can improve accuracy, increase engagement and reduce the need for constant supervision. We aimed to study the impact of a novel kinematic biofeedback system - SWORD Phoenix® - in the motor performance of patients after stroke.

Material and Methods

This study was a randomised control trial with a cross-over design. Inclusion criteria: >18 years; stroke involving anterior circulation; >2 weeks after event; score 0-2 in NIHSS item 5b. Exclusion criteria: severe aphasia, dementia, otherwise unable to comply. Patients were randomized in two groups. Both performed one exercise (shoulder flexion with elbow flexion at 90°) for 4 minutes, with and without biofeedback. SWORD Phoenix was used to record movement data. Group 1 performed the exercise without biofeedback first, followed by the exercise with feedback, with a washout period of >24 hours. Group 2 performed the opposite.

Results

Thirty patients were enrolled (73.3% male); mean age 65 years (sd=13); 83.3% with stroke involving left ACM territory (83.3%); mean time after stroke of 203 days (sd=189) and NIHSS of 3 (sd=2). In the sessions performed with feedback there was a significant increase in the number of correct movements ($p=0.02$) and reduction in wrong movements ($<.001$). With feedback, there was also less movement variability, which was statistically significant between the 3rd and 4th minute ($p=0.002$). There was no difference in the number of total repetitions in both sessions.

Conclusion

This study validates SWORD Phoenix® as a biofeedback tool that can be used independently in selected patients after stroke to modulate motor performance, increasing correct movements, decreasing errors and movement variability over time. Further studies are necessary to confirm clinical benefits.

Conflict of interest

Disclosure statement:

Fernando Correia and Virgilio Bento are executive managers of SWORD Health and possesses company shares. Filipe Santos, André Branquinho, André Nogueira are employees of SWORD Health but do not possess company shares. Catia Candeias, Patrick Quintaneiro, António Almeida and Sabrina Cunha do not have any conflicts of interest to disclose.

ISPR7-0190

PRM Interventions Research - Robots, Aids and Devices

A NOVEL BIOFEEDBACK SYSTEM BASED ON INERTIAL MOTION TRACKERS FOR HOME BASED-REHABILITATION: A CASE STUDY

A. Nogueira¹, F. Correia¹, V. Bento²

¹SWORD Health, Clinical Department, Porto, Portugal

²SWORD Health, Algorithms Department, Porto, Portugal

Introduction/Background

Access to physical rehabilitation is still far from ideal, resulting in potentially preventable disability. Solutions that promote patient independence and allow home-based rehabilitation may be a solution. SWORD Phoenix® is a certified kinematic biofeedback system based on inertial motion trackers that allows home-based independent rehabilitation sessions under remote clinical monitoring. We present the case of a patient who performed her rehabilitation program at home using SWORD Phoenix®.

Material and Methods

51-year-old female, suffering from pain and functional limitation due to a lateral patellar deviation, submitted to realignment surgery in 27/06/2016. Ten weeks after surgery, while still waiting for a PRM appointment, she volunteered to try SWORD Phoenix® at home. After clinical assessment, a tailored rehabilitation program was prescribed. The patient performed two daily sessions of therapeutic exercise for 8 weeks. Complete assessments were carried out at baseline, 4 weeks and 8 weeks. The following parameters were evaluated: SF-36, Knee Injury and Osteoarthritis Outcome Score (KOOS) and Lysholm-Tegner, as well as range of motion (ROM) in each one of the prescribed exercises, pain and fatigue in each session.

Results

There was significant increase in the ROM of all of the prescribed exercises, improving up to 202% in some movements, as well as marked improvement in the score of each one of the scales: SF-36 – improved in every category except in the limitations due to emotional problems; KOOS – from 67,3 to 85,1; Lysholm-Tegner – from 48 (poor) to 85 (good). Patient engagement remained high during the entire process. No adverse events were reported.

Conclusion

This case study demonstrates that providing home-based rehabilitation with SWORD Phoenix® is feasible, and that it may represent a safe and effective alternative/complement to conventional rehabilitation.

Conflict of interest

Disclosure statement:

Fernando Correia and Virgilio Bento are executive managers of SWORD Health and possesses company shares. André Nogueira is an employee of SWORD Health but does not possess company shares.

ISPR7-0289

PRM Interventions Research - Robots, Aids and Devices

POSTURAL STABILITY EVALUATION USING ELECTRONIC PLATFORMS PHYACTION BALANCE IN PATIENTS WITH VERTEBROGENIC PAIN SYNDROME

E. Ziakova¹, E. Vaska², N. Sladekova¹

¹Slovak Medical University, Faculty of Nursing and Professional Health Studies, Bratislava, Slovak Republic

²The University of Ss. Cyril and Methodius Trnava, Institute of Physiotherapy Balneology and Medical Rehabilitation, Piestany, Slovak Republic

Introduction/Background

The main goal was to analyse the influence of combined kinesiotherapy on postural stability using the Phyaction Balance (PB) electronic platform (Uniphy – Belgium) in patients with Vertebrogenic Pain Syndrome (VPS).

Material and Methods

The group consisting of 10 women and 10 men aged 25-60 years with VPS. The patients underwent kinesiotherapy aiming to strengthen deep stabilizing system (DSS) and sensorimotor training 2-3 times per week, 30 minutes per session, for a period of 6-7 weeks. Overall, there were 12 measurements with each patient at the PB, each test took 60 seconds and underwent tests by Kolar.

Results

The results showed that the assessment of postural stability by using PB has improved the measured parameters in 18.6 patients. In the anteroposterior direction of PB were 15 patients better, but independent of the visual feedback ($p = 0.0765$). In mediolateral position of PB a significant relationship has been found in the measured parameters with visual controls ($p = 0.0042$) in 17 patients. We have not noticed any connection between gender ($p=0.290$) and age ($p=0.515$) in PB results. Assessment of overall results following a rating scale shows that better postural stability measured at the PB were reached by men $\Sigma 11.8$. Results in tests by Kolař showed improvement in 12.8 patients and no change in 5.4 patients.

Conclusion

The results show, that the selected combination therapy had a positive effect on the improvement of the postural stability and the synchronous interplay of muscles of deep stabilizing system of the spine, and it is helpful in kinesiotherapy of the VPS.

No conflict of interest

ISPR7-0435

PRM Interventions Research - Robots, Aids and Devices

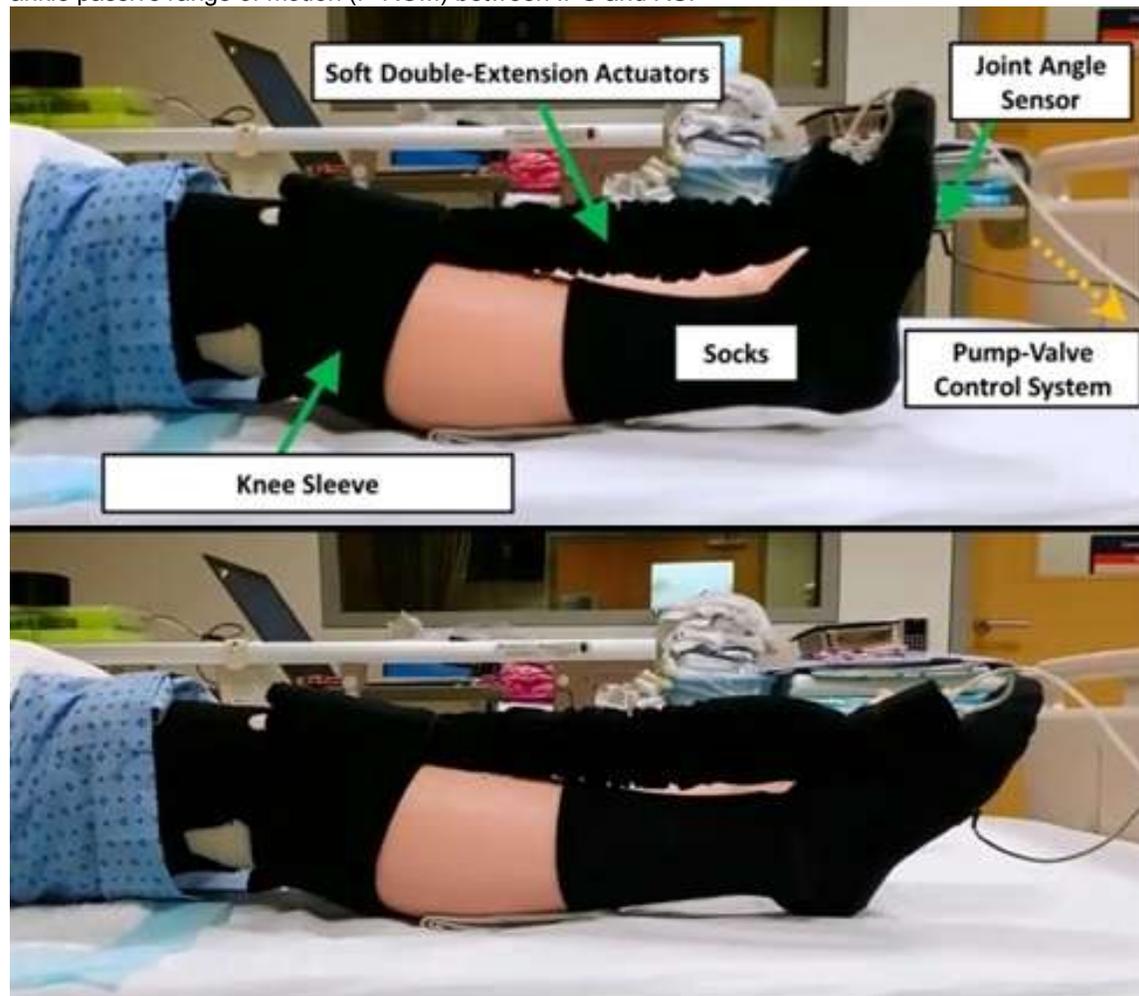
ROBOTIC SOCK TECHNOLOGY FOR PREVENTION OF DEEP VEIN THROMBOSIS AND JOINT CONTRACTURE

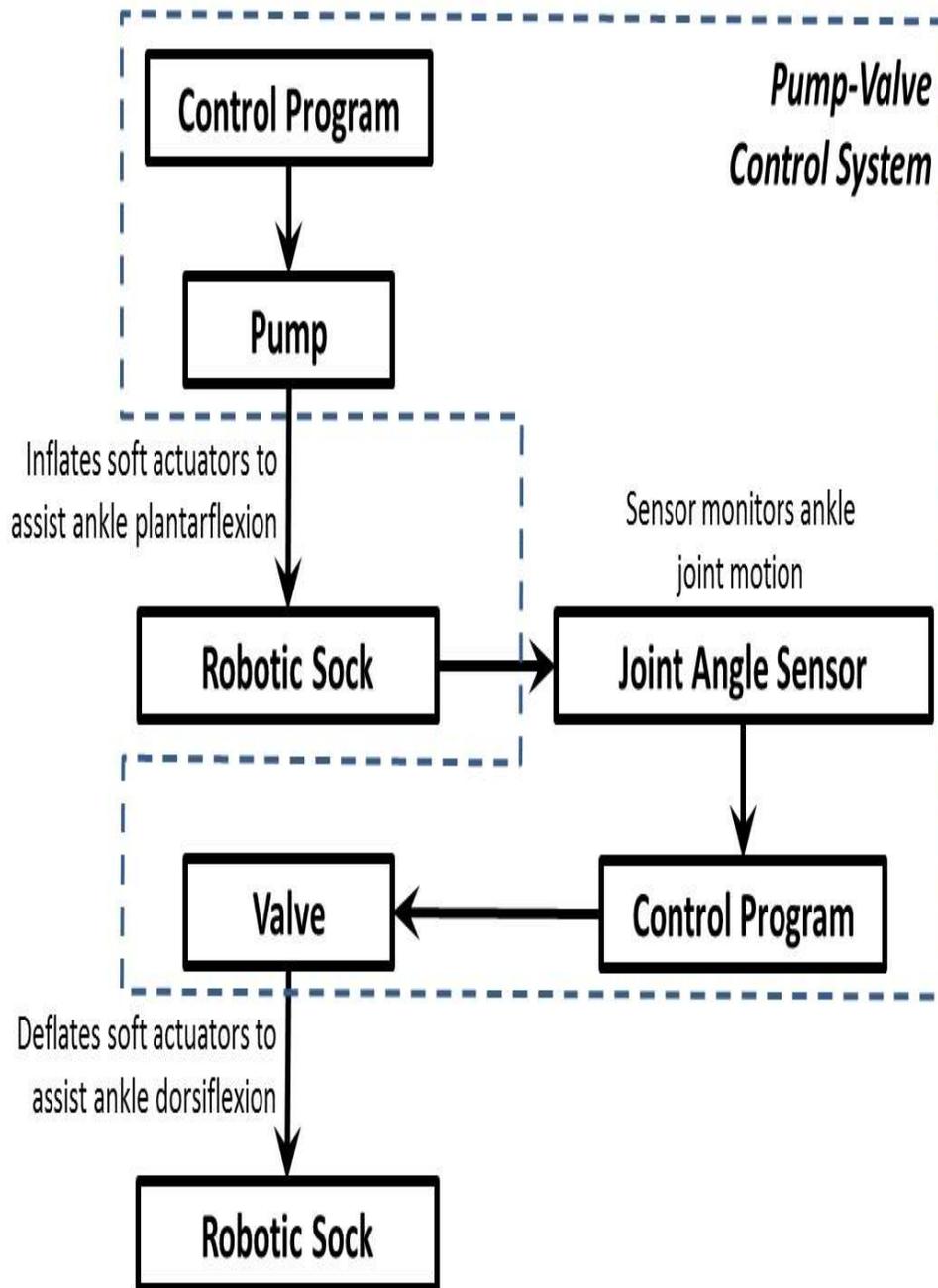
J.H. Lim¹

¹National University Hospital, Medicine, SINGAPORE, Singapore

Introduction/Background

Bedridden patients have increased risk of developing blood clots in their deep veins due to prolonged immobility, leading to deep vein thrombosis (DVT) and ankle contracture. Various pharmacological (anti-coagulant drugs) and mechanical (compression stockings, intermittent pneumatic compression (IPC), ankle foot orthosis) measures can produce undesirable side effects or show poor efficiency in prophylaxis of DVT or contracture. Therefore, we developed a robotic sock (RS, Figure 1 and 2) using soft pneumatic actuators to provide automated assisted exercise to the foot-ankle by mimicking how therapists assist patient's ankle motion to promote lower extremity blood flow and prevent contracture. The purposes of this pilot study are to compare the effect in facilitating venous circulation and eliciting ankle passive range of motion (P-ROM) between IPC and RS.





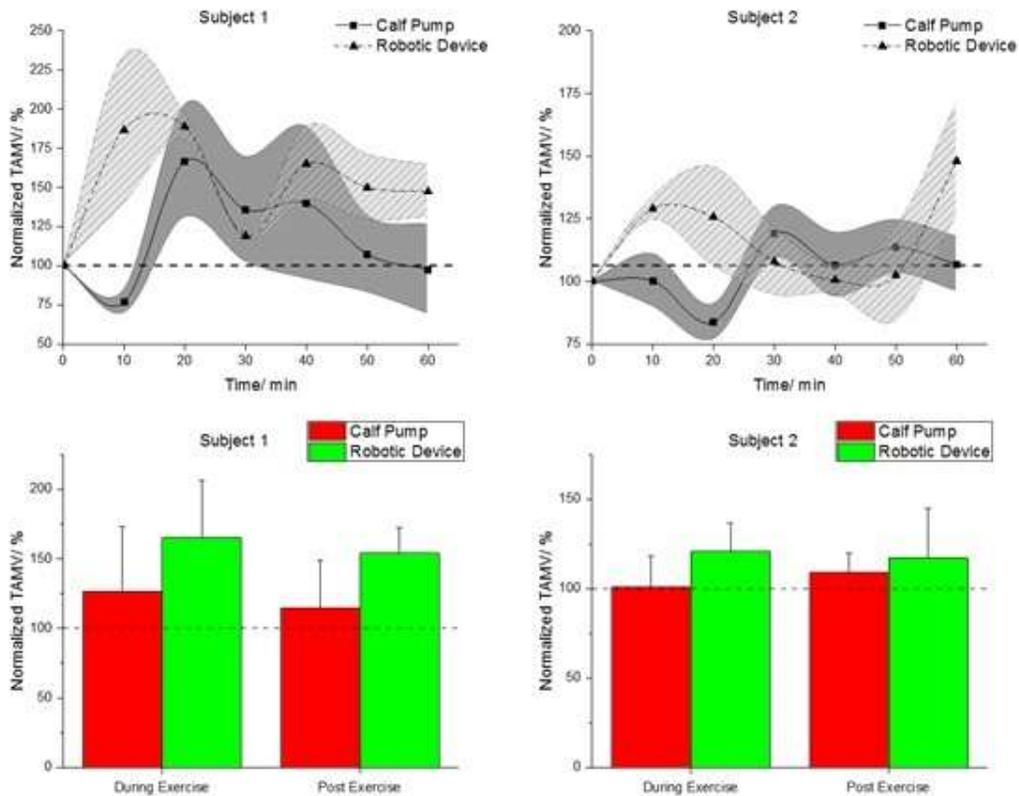
Material and Methods

We recruited two flaccid stroke patients, who underwent two sessions of testing. On day-1, we donned the IPC device on the patient and measured the time averaged mean velocity (TAMV) on the

superficial femoral vein using Ultrasound Doppler. The device was worn for a 30-min duration, followed by 30 minutes of post-exercise phase-off with TAMV measurements taken at 10-minute interval. On day-2, we replaced the IPC device with the RS device and repeated the same procedure as day-1. P-ROM was captured by an embedded joint-angle sensor and transmitted to a remote computer before and after the individual sessions.

Results

RS produced an increase in TAMV during exercise and post-exercise: 20-40% higher blood flow velocity compared to IPC (Figure 3). P-ROM (degree) was 3.1 (before) and 3.0 (after) for IPC and 19.8 and 21.3 for RS, respectively.



Conclusion

Though a well-designed clinical trial should be implemented to confirm the merits of RS over IPC in prevention of DVT and ankle contracture, current data suggest promising outcome of this new intervention mobilizing the ankle joint.

No conflict of interest

ISPR7-0505

PRM Interventions Research - Robots, Aids and Devices

ADAPTED TOILET FOR PEOPLE WITH PHYSICAL DISABILITIES: BIDESAM

M.D.M. Musazzi¹, A.F. Vidal¹, G. Tomaciello¹, C. Lucero¹, D. Pereyra Casado¹, S. Lorandi¹, G.M. Lamura Guillermo Mario¹, N.P. Catoira¹, L. Viale¹

¹Centro Asistencial Universitario-Universidad de San Martín, Instituto de Ciencias de la Rehabilitación, San Martín, Argentina

Introduction/Background

Motor disability occupies the first or second place in frequency in our country. Although there are many laws that protect this population, we have scarce toilets adapted for handicapped people. Our aim was to create and design a low cost, portable, adapted toilet, which can sanitize and dry the perineal area of the patient with motor disability.

Material and Methods

Bidesam was developed together with the School of Science and Technology of our University within the framework of a National Research grant.

Results

Bidesam combines sanitizing and drying, avoiding unnecessary transfers from the patients wheelchair to the toilet or bidet, allowing a greater level of independence. On one side of the toilet, the cleaning device is located. Besides, the toilet lid has a fan that allows drying of the perineal area. The system is activated by two ultrasound sensors driven by the patient's head movements. Bidesam can be installed in any bathroom faucet without the need for other pipe connections. It's built in plastic and epoxy fiber, being easily transportable by the patient or the caregiver. It is powered with domestic electricity network and it is attached to an electrical transformer for safety reasons.



Conclusion

We have built a cost effective, adaptable and portable device that needs only water connection and an electric source to be used. Our device, by promoting an autonomous care in adults and children with motor disability, improves their quality of life.

No conflict of interest

ISPR7-0561

PRM Interventions Research - Robots, Aids and Devices

CORTICAL ACTIVITY AND CONNECTIVITY MODULATION AFTER EXOSKELETON OVERGROUND GAIT TRAINING IN CHRONIC HEMIPLEGIC STROKE PATIENTS: PRELIMINARY RESULTS

A. Del Felice¹, E. Guanziroli², S. Masiero¹, E. Formaggio¹, A. Bosco¹, F. Molteni²

¹University of Padova, Department of Neuroscience-SNPRSS, Padova, Italy

²Valduce Hospital, Villa Beretta Rehabilitation Center, Costa Masnaga, Italy

Introduction/Background

Robot-assisted movement has a modulatory effect on brain oscillations and connectivity. This has been studied extensively for upper limb; data on lower limb are lacking. The aim of this study was to identify possible short-term plasticity induced by a single session of over-ground gait training with an exoskeleton (Ekso™) in post-stroke patients.

Material and Methods

Twelve post-stroke patients were enrolled and undertook to 5 minutes of 64-channels EEG recording in a resting state condition before walking (T0), after 10m unassisted walking (T1), and after 10m Ekso-assisted walking (T2). Exoskeleton parameters were set according to individualized EMG pattern response acquired during a previous session.

Results

At T1, right sided hemiparetic subjects showed a slight increase in node strength of the vertex region in all sensorimotor bands. The node strength increased even more, although not significantly, at T2. BC decreased over the same area at T1 and T2 in alpha2, focalizing over Cz at T2. Left sided hemiparetic subjects displayed a different activation pattern, with a node strength decrease in alpha1 and alpha2 bands, over the contralesional sensorimotor area and the ipsilesional prefrontal cortex at T2. BC increased over the contralesional prefrontal cortex and to a lesser extent over ipsilesional motor areas.

Conclusion

The results of this study provide evidence of short-term plastic modulations of brain activity and connectivity after robotic over-ground gait training in chronic post-stroke patients. Identification of subject-specific neural response patterns to over-ground gait training, may allow the definition of a customized setting of exoskeleton, necessary to optimize subjects' potential recovery.

No conflict of interest

ISPR7-0607

PRM Interventions Research - Robots, Aids and Devices

WEARABLE POWER-ASSIST LOCOMOTOR - MEDIAL SYSTEM BRINGS PRACTICAL SOLUTION FOR PARAPLEGIC WALK RECONSTRUCTION -

S. Hirano¹, E. Saitoh¹, S. Tanabe², M. Katoh³, T. Tsunoda¹, Y. Kanan¹, Y. Shimizu¹, I. Fuse¹, T. Gotoh³, A. Furumoto³, S. Koyama², H. Tanaka⁴, T. Takemitsu⁵, A. Uno⁶

¹Fujita Health University, Department of Rehabilitation Medicine I- School of Medicine, Toyoake, Japan

²Fujita Health University, Faculty of Rehabilitation- School of Health Sciences, Toyoake, Japan

³Fujita Health University Hospital, Department of Rehabilitation, Toyoake, Japan

⁴Chubu Rosai Hospital, Department of Rehabilitation, Nagoya, Japan

⁵ASKA Corporation, Development and Engineering Department, Toyota, Japan

⁶Tomei Brace Co.- Ltd., Orshopedic Services Division, Seto, Japan

Introduction/Background

Paraplegics can walk with bilateral Knee-Ankle-Foot Orthosis (KAFO) with hip joint when they receive sufficient amount and quality of exercise. However paraplegic walk using orthosis is far from being practical because of excess burden of U/E. To solve this problem, we have developed a new gait-assist robot named "Wearable Power-Assist locomotor (WPAL)". WPAL is thought to make walk with lower energy consumption avoiding excess use of U/E for pushing-up, because motor knee flexion at swing reduces lateral truncal shift to opposite side, and makes it possible to walk continuously. The purpose of this study is to compare walking distance and energy consumption between WPAL and orthosis.

Material and Methods

Paraplegic patients who could walk with no or minimal assistance by using orthosis and WPAL were recruited. Study 1: Patients walked in their comfortable speed with orthosis and WPAL, and continuous walking distance (CWD) were measured. Study 2: The subjects walked with orthosis in their comfortable speed, and the walking velocity with WPAL was set at the same speed. Heart rate was measured every 30 seconds in the first 6 minutes and physiological cost index (PCI) was calculated.

Results

Seventeen patients participated in study 1. CWD with orthosis and WPAL were 138 ± 216 and 352 ± 436 m, respectively. Six patients participated in study 2. PCI of orthosis increased more rapidly than that of WPAL. There was a significant difference between orthosis and WPAL in both studies.

Conclusion

Our results suggested that paraplegics could walk longer with lower burden when they used WPAL. WPAL is thought to bring practical solution for paraplegic walk reconstruction.

No conflict of interest

ISPR7-0771

PRM Interventions Research - Robots, Aids and Devices

COGNITIVE, SENSORY AND MOTOR REHABILITATION OF HAND FUNCTIONS AFTER STROKE

F. Molteni¹, M. Colombo¹, E. Guanzioli², E. Canzoneri³, G. Cannaviello¹, D. Liberali¹, D. Proserpio¹, A. Crema⁴, S. Micera⁴, A. Serino³, O. Blanke³

¹*Ospedale Valduce - Villa Beretta, Villa Beretta Rehabilitation Center, Costa Masnaga, Italy*

²*Villa Beretta Rehabilitation Center- Valduce Hospital, Villa Beretta Rehabilitation Center, Costa Masnaga, Italy*

³*École Polytechnique Fédérale de Lausanne,*

Laboratory of Cognitive Neuroscience- Center for Neuroprosthetics, Lausanne, Switzerland

⁴*École Polytechnique Fédérale de Lausanne,*

Translational Neural Engineering Lab- Center for Neuroprosthetics, Lausanne, Switzerland

Introduction/Background

Body representation depends on the integration of multisensory signals from different parts of body. Stroke very frequently impacts on patients' motor and somatosensory function. Reduced somatosensory processing from the contralesional limb may result in distorted body perception and representation that influence motor rehabilitation. Hand sensory-motor neurorehabilitation seems to achieve a better overall outcome and quicker regain of residual capabilities, but it is also related to changes in patients' perception of their own hemiplegic limb. Little is known about how body representation is affected in chronic stroke patients, and how such representations are updated depending on the recovery of residual motor abilities after neuro-rehabilitation. The aim of this study was to develop a new method for the evaluation of body representation in chronic stroke patients.

Material and Methods

Patients underwent nine weeks rehabilitative treatment using 4 different treatment protocols: conventional, robotic, FES, FES+robotic. Residual motor abilities of the upper limb and body representation were tested in forty-five chronic stroke patients before starting the treatment, at half, at the end, and 4 weeks follow-up. In order to assess body representation, we investigated the perceived shape of the upper limb, both explicitly and implicitly, and the extent of multisensory integration around the upper limb.

Results

Preliminary results showed that upper limb representation is affected in chronic patients, but it dynamically updates depending on the type of neurorehabilitative treatment.

Conclusion

We propose a new method of upper limb chronic stroke patients' evaluation through the assessment of multisensory information to verify the effect of different clinical treatment protocols.

No conflict of interest

ISPR7-0842

PRM Interventions Research - Robots, Aids and Devices

LONG-TERM EFFECTS OF EXOSKELETON ANKLE ROBOT ON LOWER-LIMB FUNCTIONALITY AND GAIT PATTERN OF CHRONIC STROKE PATIENTS

L.F. Yeung¹, J. Melisa¹, C. Ockenfeld², M.K.P. Pang³, H.W. Wai³, O.Y.Y. Soo⁴, S.W.L. Li⁵, K.Y.R. Tong¹

¹The Chinese University of Hong Kong, Department of Electronic Engineering, Shatin, Hong Kong S.A.R.

²The Hong Kong Polytechnic University, Multidisciplinary Division of Biomedical Engineering, Hung Hom, Hong Kong S.A.R.

³The Hong Kong Polytechnic University, Industrial Centre, Hung Hom, Hong Kong S.A.R.

⁴The Chinese University of Hong Kong, Department of Medicine & Therapeutics, Shatin, Hong Kong S.A.R.

⁵The University of Hong Kong, Department of Electronic Engineering, Sheung Wan, Hong Kong S.A.R.

Introduction/Background

Recent developments of powered ankle-foot-orthosis (AFO) opened up the possibilities of robotic assistance in paretic ankle joint. However, the need for tethered power supply and bulky designs prevented existing powered AFO from daily-wear applications. We have engineered a lightweight (~0.5kg) and portable (standalone) exoskeleton Ankle Robot for providing foot clearance in varying environments. Motion and force sensors acquired kinematic and kinetic gait pattern for classifying walking over-ground or ascending/descending stairs. Servomotor generated appropriate torque outputs to assist ankle joint in swing phase. It was developed as a training device to facilitate active walking of stroke patients adapted to walking intention. The high-intensity and repetitive walking assistance provides appropriate afferent feedback to promote brain relearning and motor recovery. The aim of this study was to investigate the long-term effect of the Ankle Robot on lower-limb functionality of chronic stroke patients.



Material and Methods

Fifteen chronic stroke patients who could walk independently participated in 20-session robotic gait training. They wore the Ankle Robot throughout each session, walked on level ground for 2x10 minutes and climbed up/down stairs for another 10 minutes. Clinical assessment of lower-limb functionality was performed before (Pre) and after (Post) the 20-session gait training and after 3-month (Follow-Up). Nine of the subjects had the changes in gait pattern recorded. Subjects were tested without wearing the Ankle Robot.

Table 1: Demographic characteristics

	Characteristics (n=15)
Age (years)†	57.4±11.2
Gender (male/female)	10/5
Affected side (left/right)	8/7
Stroke type (ischemic/haemorrhagic)	10/5
Duration of stroke (years)†	5.3±3.2
Duration of gait training (weeks)†	6.7±1.9
Mini-Mental State Examination (MMSE)†	29.3±0.9

†: values present in mean±SD.

Results

Clinical assessment results showed stroke patients had improvement in gait independency and voluntary control of lower-limb by Wilcoxon signed-rank test on FAC ($Z=12.3$, $p=.002$) and FMA-LE for volitional movement ($Z=13.8$, $p=.001$). They could walk longer distance in 6MWT ($F=6.84$, $p=.004$). Significant improvements were kept even after 3-month Follow-Up. Temporal spatial gait parameters showed no significant changes.

Tables 2: Clinical assessment scores of lower-limb functionality before and after robotic gait training with 3-month follow-up. Friedman test with repeated measures was used to test the difference between Pre, Post, and Follow-Up scores.

	Outcome Measures (n=15), mean (SD)				
	Pre	Post – Pre	p	Follow Up – Pre	p
FAC (<i>max. 6</i>)	5.0 (0.8)	+0.3 (0.8)	* .025	+0.5 (0.5)	* .005
FMA-LE (<i>max. 34</i>)					
<i>reflex activity</i>	3.5 (1.2)	+0.0 (1.4)	1.000	+0.0 (1.4)	1.000
<i>volitional movement</i>	10.7 (3.1)	+2.1 (2.9)	* .001	+1.9 (2.4)	* .011
<i>coordination/speed</i>	2.4 (1.7)	+0.3 (1.4)	.499	+0.7 (0.9)	.110
MAS (<i>max. 4</i>)	1.5 (0.4)	-0.1 (0.4)	.349	-0.3 (0.6)	* .038
BBS (<i>max. 56</i>)	49.9 (5.7)	+0.2 (7.0)	.634	-0.6 (5.3)	.292
Timed 10MWT (<i>m/s</i>)					
<i>self-selected velocity</i>	0.54 (0.27)	+0.02 (0.26)	.739	+0.04 (0.23)	.442
<i>fast velocity</i>	0.65 (0.32)	+0.04 (0.33)	.209	+0.07 (0.30)	.309
6MWT (<i>meter</i>)	176.1 (85.3)	+15.8 (90.5)	* .054	+41.6 (78.1)	* .036

*: $p \leq .05$

NOTE. – FAC=Functional Ambulation Categories; FMA-LE=Fugl-Meyer assessment for Lower-Extremity; MAS=Modified Ashworth Scale; BBS=Berg Balance Scale; 10MWT=Timed 10-Meter Walk Test; 6MWT=Six-Minute Walk Test.

Conclusion

Long-term powered assistance in ankle dorsiflexion can promote lower-limb motor recovery. The synchronized proprioceptive feedback provided by the Ankle Robot might play a role in stimulating the brain plasticity.

No conflict of interest

ISPR7-0219

PRM Interventions Research - Virtual Reality

PIONEERING INTRODUCTION OF ENHANCED REALITY FOR LONG-LASTING ANALGESIA AFTER TOTAL KNEE ARTHROPLASTY: PROSPECTIVE, RANDOMIZED CLINICAL TRIAL

K.I. Koo- Ph.D.¹, D.K. Park- M.D.², Y.S. Yum- Ph.D.- M.D.³, S.D. Cho- Ph.D.- M.D.³, C.H. Hwang- Ph.D.- M.D.²

¹University of Ulsan, Department of Biomedical Engineering, Ulsan, Republic of Korea

²Ulsan University Hospital- University of Ulsan College of Medicine, Physical Medicine and Rehabilitation, Ulsan, Republic of Korea

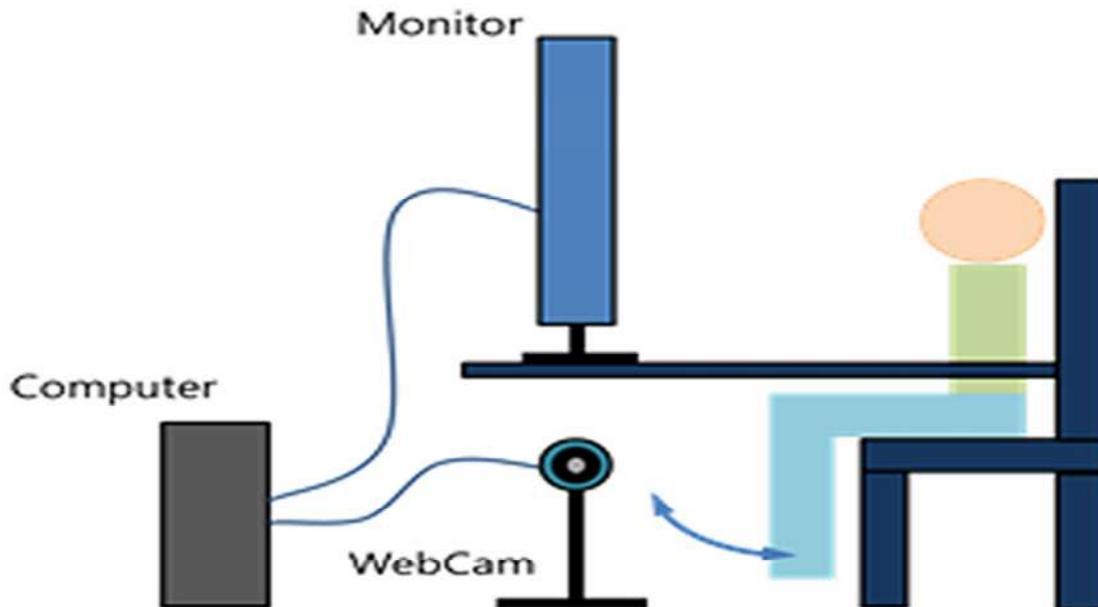
³Ulsan University Hospital- University of Ulsan College of Medicine, Orthopedic Surgery, Ulsan, Republic of Korea

Introduction/Background

Virtual reality (VR) and mirror therapy (MT) can induce brain plasticity, but show the different mechanisms. All of the past trials about the VR distraction analgesia focused on only an immediate or simultaneous analgesia instead of long-action or disease-modification. To overcome this limitation, authors developed a system providing combination of the VR, real-time motion capture, and the MT that was the first prototype in the world. Supposing that our system would show such high grade presence of the VR and embodiment of the MT, authors evaluated whether it might induce a synergistic or additive pain-relief and long-term analgesia or not.

Material and Methods

157 patients were screened and 60 patients were allocated to two groups; patients in the one group (FTI) were provided with the intervention five times a week during two weeks, and patients in the other group (HTI) with the same intervention during one week only. VAS while at resting and moving, active ROM of flexion and extension, Western Ontario and McMaster Universities Osteoarthritis Index, graded ambulation distances, 6 minute walk test, and timed-stands test were collected three times.







Results

Pre-interventional evaluation was performed at averagely 6.9 days after surgery and the intervention started 12.4 days after the surgery. The first, second, and third endpoint was at 17.4, 24.4, and 47.2 days after the surgery respectively. Analgesia in the FTI (22 patients) lasted 22.8 days ($p=0.000$, F: 23.65) after completion of the intervention in contrast of only seven days ($p=0.010$, F: 6.90) in the HTI (20 patients). No major or minor side-effect happened. Large drop-out (18 of 60), deviated sex ratio (female: 76%), no approval of neuroplasticity, and no generalizability were the main limitations.

Conclusion

This first new idea, enhanced reality, induced the seven week-lasting analgesia showing the dose-dependency and no habituation.

No conflict of interest

ISPR7-0397

PRM Interventions Research - Virtual Reality

MOTOR AND COGNITION IMPROVEMENT EFFECTS OF NEWLY DEVELOPED VIRTUAL REALITY-BASED REHABILITATION TRAINING SYSTEM IN CHRONIC STROKE PATIENTS

Y.B. Oh¹, N.S. Kim¹, J.H. Seo¹, S.H. Park¹, Y.H. Won¹, G.W. Kim¹, M.H. Ko¹

¹Chonbuk National University Medical School, Physical Medicine and Rehabilitation, Jeonju, Republic of Korea

Introduction/Background

We developed virtual reality-based tangible training system (Joystim[®]) that is training tool for activity of daily living linked with virtual reality contents. Patients carry out physical activities of daily living with affected upper extremity using tangible tools according to the method presented in the screen. The aim of this study is to evaluate the effect of the newly developed virtual reality-based tangible upper extremity training and cognitive rehabilitation system (Joystim[®]) in chronic stroke patients.

Material and Methods

Ten stable chronic stroke out-patients attended in the virtual reality-based tangible upper extremity training and cognitive rehabilitation program with Joystim[®] for 6 weeks (30 minutes per day, 3 days per week). Upper extremity function (Fugl-Meyer assessment, hand coordination test), strength (manual muscle test, hand grip), spasticity (Modified Asthworth Scale) of affected upper limb and cognitive function (Mini-Mental State Evaluation) were evaluated.

Results

After the training, the upper Fugl-Meyer assessment improved significantly from 33.50 to 40.50, and their proximal and distal sub-scores also improved significantly from 23.90 to 28.40 and from 4.70 to 6.00 respectively. In a view point of hand function, grip strength and Box and block score were significantly enhanced from 11.70 kg to 13.88 kg, from 16.50 to 20.05 respectively. Moreover, MMSE was improved from 26.80 to 28.40.

Conclusion

On the basis of the results, the function of the affected upper extremity, hand functions and cognition could be improved after 6-week Joystim[®] training in the chronic stroke patients. We suggest that the newly developed Joystim[®] can be a useful therapeutic tool for stroke patients. To prove the effect of that system, large scale randomized controlled study is needed.

(This research was supported by a grant of the Korea Health Technology R&D Project through the Korea Health Industry Development Institute (KHIDI), funded by the Ministry of Health & Welfare, Republic of Korea (grant number : HI15C1529).)

No conflict of interest

ISPR7-0448

PRM Interventions Research - Virtual Reality

VIRTUAL REALITY-BASED EXERCISE GAMES FOR FINGER REHABILITATION FOLLOWING STROKE

H.W. Park¹, Y. Kim¹, H.M. Lee²

¹Soonchunhyang University, Department of ICT Convergence Rehabilitation Engineering, Asan, Republic of Korea

²Soonchunhyang University, Department of Computer Software Engineering, Asan, Republic of Korea

Introduction/Background

The finger exercise is known to have the biggest impact on brain. Since the functions of fingers include moving and sensing, fingers are necessary for daily activities such as wearing clothes and eating food. This study aims to develop virtual reality-based exercise games for finger rehabilitation intended for chronic stroke patients by combining Real Sense that is a finger movement sensor, and Unity 3D that is a game development engine.

Material and Methods

The proposed game is a serious game to achieve a specific purpose of finger rehabilitation by adding various activities. This game is developed in multiple difficulty levels using various game contents such as counting with fingers, playing the piano, Rock Paper Scissors game, and so forth.

Results

We have developed a familiar game format rather than a rigid screen to induce voluntary participation of the patients in rehabilitation without boredom. This game helps the patients to improve the brain activities by balanced use of fingers.

Conclusion

While existing rehabilitation treatments cause inconvenience for the patients to visit hospitals and to purchase expensive equipment, we suggest the use of inexpensive, light-weighted Real Sense for the purpose of rehabilitation treatment without the limitation of time and space.

No conflict of interest

ISPR7-0655

PRM Interventions Research - Virtual Reality

VIDEO GAMES FOR REHABILITATION IN CHILDREN WITH NON-PROGRESSIVE MOTOR IMPAIRMENT OF CENTRAL NERVOUS SYSTEM ORIGIN: SYSTEMATIC REVIEW

L.H. Lugo-Agudelo¹, C. Rodriguez-Guevara², P.A. Ramirez³, M. Giraldo-Prieto³

¹, Medellín, Colombia

²Clinica Las Americas, Medicina Física y Rehabilitación, Medellín, Colombia

³Universidad de Antioquia, Grupo Rehabilitación en Salud, Medellín, Colombia

Introduction/Background

The use of Video games for rehabilitation has exploded lately(1–4). To assess the effectiveness of videogames (VG) for the rehabilitation of children with non-progressive motor impairment (NPMI) to improve function, independence in activities of daily living (ADL) and participation

Material and Methods

MECIR, PRISMA and Cochrane criteria were applied. PICOT: children with NPMI (cerebral palsy or acquire brain damage); intervention included commercial and non-commercial VG, immersive or non-immersive virtual reality(5) with feedback; controls received all types of conventional therapies; outcomes were prioritized under the GRADE methodology(6) by three researchers; RCT in English, Spanish, French from 2006 to August 2016 were included. Brain or spine tumors, spinal cord injury or peripheral nervous system diseases were excluded

Results

The selected outcomes were: critical= independence on ADL, participation; important= upper extremity function (UEF), motor skills, manual dexterity, gross motor function, functional gait, balance. PubMed, Embase, Cochrane and manual searches retrieved 93 publications that were filtered for two independent reviewers (n=9): ADL (n=3), UEF (n=6), balance (n=3), motor function (n=2), gait (n=1). Any publication assessed participation. The best effects were obtained with higher frequency of VG, when combined with other therapy, or mild disability or VG for balance. Six studies showed high risk of bias, with blinding of participants and allocation concealment as the most problematic

Conclusion

VG for rehabilitation in children with NPMI seem to be promising for certain types of patients, under certain conditions and depending on the selected outcomes. The results must be interpreted according to each particular RCT with caution

No conflict of interest

ISPR7-0658

PRM Interventions Research - Virtual Reality

VIDEOGAMES FOR STROKE REHABILITATION: QUALITY ASSESSMENT OF THE SYSTEMATIC REVIEWS USING AMSTAR

M. Giraldo-Prieto¹, C. Rodríguez-Guevara², P.A. Ramírez³, L.H. Lugo-Agudelo³

¹Universidad de Antioquia, Grupo de Rehabilitación en Salud, Medellín, Colombia

²Clínica Las Americas, Medicina Física y Rehabilitación, Medellín, Colombia

³Universidad de Antioquia, Grupo Rehabilitación en Salud, Medellín, Colombia

Introduction/Background

A growing trend of trials of videogames-based rehabilitation has been published for stroke.

To assess the efficacy of videogames and the methodological quality of systematic reviews for the rehabilitation in patients with stroke

Material and Methods

MECIR, PRISMA and Cochrane Criteria were used to capture the SR about videogames (VG) in stroke rehabilitation. Intervention included commercial and non-commercial VG, immersive or non-immersive virtual reality (VR) with feedback; controls received conventional therapies; RCT in English, Spanish, French from 2006 to August 2016 were included. Brain/spine tumors, spinal cord injury or peripheral nervous system diseases were excluded. The AMSTAR checklist was used to assess the methodological quality of included Systematic Review (SR)

Results

PubMed, Embase, Cochrane and manual searches retrieved 24 reviews that were filtered by two independent reviewers (n=16, 6111 patients). Distribution measures for AMSTAR (11 items) were: range (4-10), median (7), mean (7), interquartile range (5.25 - 9). The reported outcomes were balance (n=9), gross/lower limb motor function (n=7), gait (n=7), activities of daily living (n=6), upper motor function (n=4), participation (n=1) and quality of life (n=1). The majority of studies reported results favoring VG and VR for stroke in chronic stage and short follow up; conflicting results were reported for upper motor function, balance, gross motor function and gait velocity, mainly at long term follow up

Conclusion

The methodological quality of the systematic reviews is acceptable or good, although the Risk of Bias of original RCTs and heterogeneity might explain conflicting results. VG and VR seem to improve motor function in patients with stroke

No conflict of interest

ISPR7-0196

Comprehensive Rehabilitation Intervention Research - Miscellaneous

DECANNULATION PROCESS IN ADULT PATIENTS WITH TRACHEOSTOMY FROM HOSPITAL CARLOS VAN BUREN VALPARAISO

C. Cortés¹, M.J. Gálvez¹

¹Hospital Carlos Van Buren, Physical Medicine and Rehabilitation Unit, Valparaíso, Chile

Introduction/Background

tracheostomy is a habitual procedure in the intensive care units, and once the patient doesn't require it anymore, the goal is to reestablish the normal function of the airway. For this to happen, there are certain requirements to be met as to assure success in the decannulation process. The goal of this research is to perform a descriptive analysis of the decannulation process based in a protocol and associated to an adult inpatient rehabilitation program at Hospital Carlos Van Buren.

Material and Methods

the current study was made with a total of 18 cases in the Medical-Surgical Medium-Complexity Unit and Neurosurgery Unit, which were assessed and trained to comply with the basic conditions of the decannulation process.

Results

the number of decannulated patients was 15, equivalent to 83.3%, with 35 days of rehabilitation plan required, mainly to the presence of several degrees of dysphagia, in average the tracheostomy canula was removed after 50 days, and a 16.6% failed in the process, corresponding to 3 cases, without response to the therapeutic strategies of rehabilitation.

Conclusion

the profile of the neurological or neurosurgical patient requires intensive training or rehabilitation to accomplish the decannulation process

No conflict of interest

ISPR7-0266

Comprehensive Rehabilitation Intervention Research - Miscellaneous

BUILDING UP AN INTERDISCIPLINARY TEAMWORK IN A NEUROMOTOR REHABILITATION CENTRE - CERI APPACE JUJUY ARGENTINA.

S.L. Sandoval¹, L. Graffigna¹, S. Nieva¹

¹Integrative Rehabilitation Centre of the Association for the Protection of Cerebral Palsy People, General Manuel Belgrano, San Salvador de Jujuy, Argentina

Introduction/Background

Working in rehabilitation fields presupposes an interdisciplinary team model to achieve the objectives and aims of a group of professionals. In order to do this its members must be motivated, have values and resources which allow them to work in an efficient and autonomous way in challenging settings. The following proposal is done at a Neuromotor Rehabilitation Centre in San Salvador de Jujuy with the aim of fostering these competences.

Material and Methods

Qualitative design participatory action- research, of 35 medical professionals, physiotherapists, speech therapists, occupational therapists, psychologists, nurses and social workers. It is developed in three phases: **diagnosis, development and impact assessment**. Closed surveys about the work environment, user's satisfaction, interviews and group dynamics were used in different instances.

Results

Surveys were generally satisfactory, trouble spots in time management, communication, initiative and sense of belonging were noticed. Based on group dynamics and interviews, social ability weaknesses which demand assertive communication, empathy, and conviction about group cohesion values could be detected.

Conclusion

Therefore, in the CERI-APPACE centre, effective interdisciplinary team work is a collective effort that is built up every day. It finds its strengths in the knowledge and skills of each discipline, and its weaknesses in the social competences for its practice. Thus, we continue building up a collective achievement by means of individual effort.

No conflict of interest

ISPR7-0573

Comprehensive Rehabilitation Intervention Research - Miscellaneous

WORKPLACE PRACTICES AIMED AT PREVENTING PROLONGED WORK DISABILITY IN WORKERS COMPENSATED FOR WORK-RELATED MUSCULOSKELETAL DISORDERS

I. Nastasia¹, M.F. Coutu², M.J. Durand³, A.M. Castro-Sanchez⁴

¹Institut de recherche Robert-Sauvé en santé et en sécurité du travail IRSST, Research in Work Rehabilitation, Montréal, Canada

²Université de Sherbrooke Faculté de médecine et des sciences de la santé, École de réadaptation, Longueuil Québec, Canada

³Université de Sherbrooke- Faculté de médecine et des sciences de la santé, École de Réadaptation, Longueuil Québec, Canada

⁴University of Almeria, Department of Nursing- Physical Therapy and Medicine, Almeria, Spain

Introduction/Background

For employees having suffered work-related musculoskeletal disorders (WRMDs), returning to work (RTW) is a complex process involving many actors and implying several activities. The objective of this paper is to document the actual workplace practices pertaining to RTW employees with WRMDs, and to discuss how they reflect the clinical recommendations made by the literature.

Material and Methods

Firstly, we overviewed the RTW literature and identified recommended practices. Subsequently, we conducted a multiple case study in two sectors of activity: health care and manufacturing. Each case encompassed the RTW management procedures and practices of a specific organisation. Four sources of data were used in order to document each case. Content analyses were completed in order to explain convergences and divergences through intra and inter organisation analyses.

Results

Among the strategic components identified through the literature as effective in workplace settings, concerted action and collaboration between clinicians and workplace actors involved in the RTW process are important in the RTW process. While some of these aspects were set by formal procedures in the participant organisations, they were unevenly formalised, lacking precision. The roles of clinicians were not always clearly defined or consistently understood. So, the collaboration between workplace and healthcare actors was not optimal.

Conclusion

Contrasting the theoretical bases of RTW workplace interventions with the reality as observed by the case studies allows us to better understand the gap at the practical level between what it is recommended and what is done in practice, and the realities of the practical contexts of implementation of the RTW procedures.

No conflict of interest

ISPR7-0617

Comprehensive Rehabilitation Intervention Research - Miscellaneous

EXPERIENCE IN THE RESOLUTION OF CONFLICTS IN A SPECIAL CARE UNIT

M. Weinberg¹, E. Schenk¹, M.F. Colon¹, L. Zarattini¹

¹Centro Hirsch, Rehabilitation, Buenos Aires, Argentina

Introduction/Background

In the context of the reorganization of the Assistance and Nursing Area of a Rehabilitation Centre while facing emerging conflicts of the above-mentioned organization, a multi topic approach related to the management of patient and their family is proposed for everyday institutional work.

It is proposed to work on this conflict from a point of intervention in the assistance and nursing area as well as the family.

Material and Methods

Semi-structured interviews with staff from each sector (nursing and assistants).

-Multifamily interviews.

- Field notebooks.

- Surveys.

Results

During the work carried out throughout the different meetings both with the nursing staff and the families, we have succeeded in reducing the conflicts arising from daily work with patients in the Special Care Unit.

Conclusion

When facing the conflicts which arose during the institutional reorganization the opportunity to open spaces for exchange / dialogue / supervision / transmission of information, favours the resolution of conflicts which interfere with daily work.

This programme of intervention not only improves the quality of the patient care but also contributes to their well-being and of their families.

No conflict of interest

ISPR7-0636

Comprehensive Rehabilitation Intervention Research - Miscellaneous

CLINICAL AND FUNCTIONAL PROFILE OF PATIENTS ATTENDED IN INTENSIVE REHABILITATION PROGRAM AT HIGH COMPLEXITY HOSPITAL (HCH), 2013 -2015. ARAUCANIA SUR HEALTH CARE SERVICES (ASHCS), CHILE

E.L. Prado Pacheco¹, C.V. Carolina Elizabeth², O.N. Yosseline²

¹, Temuco, Chile

²Hernán Henríquez Aravena Hospital, Physiatrist, Temuco, Chile

Introduction/Background

By ministerial provision, in 2013 is implemented "Project of intensive rehabilitation in Critical Patients Unit (CPU)", in 6 HCH of Chile. In August 2013 begins to work in HCH of ASHCS, focused on neurological patients, under a care protocol with an interdisciplinary team. The objective is to provide continuity during hospitalization, improve functionality and prepare the discharge.

Material and Methods

A retrospective, descriptive and observational study of patients admitted to intensive rehabilitation program of ASHCS, including mid and high complexity patients, between 2013 and 2015, collecting data from the clinical files. For statistical analysis we use an Excel spreadsheet, using parametric tests (average, minimum and maximum), tables and graphs.

Results

557 patients were admitted: in 2013 (August-December): 33 patients (6.6/month); in 2014: 126 patients (10.5/month); in 2015: 398 patients (33/month). 58% are men. Average age 58 years. 43.5% admitted to CPU, with high dependence and need for care. Most frequent diagnosis was stroke with 77.44%. Average gain on the Barthel Index: 20 points. Main destination at discharge was domicile with a good socio-family network. 25 people died during hospitalization (4.5%). Average days of care in program: 17 (minimum 1 and maximum 168). 96% of patients is discharged with some degree of dependence.

Conclusion

Early, intensive and integral rehabilitation allows greater functionality, in addition to permanent education to patients and families, stimulate socio-family inclusion with continuity of care in rehabilitation. Many patients are discharged with different degrees of dependence, given their initial severity, which necessitates rehabilitation devices with quality attention.

No conflict of interest

ISPR7-0647

Comprehensive Rehabilitation Intervention Research - Miscellaneous

CLINICAL AND FUNCTIONAL PROFILE OF PATIENTS SERVED IN A SOCIO-SANITARY SERVICE (SSS), ABRAHAM GODOY PENA HOSPITAL (AGPH), ARAUCANIA SUR HEALTH CARE SERVICE (ASHCS), CHILE

A.U. Beroiza Carrasco¹, E.L. Prado Pacheco², V.I.D.L.A. Campos Saéz³, B.A. Lillo Ferrada⁴, C.E. Carmona Valenzuela⁵, V.P. Bachamann Barrón⁶, L.D.C. Castillo Novión⁷

¹Abraham Godoy Peña Hospital, Nurse, Lautaro, Chile

²Araucania Sur Health Care Service, Psychiatrc, Temuco, Chile

³Abraham Godoy Peña Hospital, Physical Therapist, Lautaro, Chile

⁴Abraham Godoy Peña, Social worker, Lautaro, Chile

⁵Araucania Sur Service Health Care Service, Psychiatrc, Temuco, Chile

⁶Abraham Godoy Peña Hospital, Speech Therapist, Lautaro, Chile

⁷Abraham Godoy Peña Hospital, Occupational therapist, Lautaro, Chile

Introduction/Background

The AGPH is in the commune of Lautaro, in its old dependencies, the ASHCS implements 20 basic beds for the attention of socio-sanitary patients (SSP) with integral rehabilitation approach. SSP is the one who is able to leave the hospital, but the social and/or family network is deficient, presenting rehabilitation and social needs at the same time. Inclusion/exclusion criteria are established for patient admission, disseminated through a reference/counter-referral protocol.

Material and Methods

Observational, descriptive study. Prospective data collection, from May to October 2016: socio-demographic, clinical and functional characteristics. For the statistical analysis an Excel spreadsheet was made. Parametric tests (average, minimum and maximum), tables and graphs were used.

Results

Table 1 presents demographic characteristics of 23 patients. Degree of dependence according to Barthel Index (BI) at admission was: 13% low, 13% moderate, 39.1% severe and 34.8% total. There have been 10 discharges (functional results in table 2), 90% reinserted in their family context, with a gain in BI of 41.42 points. Of the hospitalized patients at the cut-off date, 21.7% are waiting for insertion in long-stay institutions.

Table 1: Demographic and clinical characteristics (23 patients)

Average age/min-max (years)	65.6/40-87
Gender	78% Men 22% Women
Demographic distribution	52,17% Rural 47,8% Urban
Main diagnosis	Brain Stroke : 52,18%
	Traumatic brain injury: 13,04%
	Spinal tumors: 8,7%
	Others: 26,08%
Deficits associated	Motor disorders: 100%
	Sensory disorder: 60,8%
	Swallowing disorders: 56,5%
	Communication and motor speech disorders: 52,7%

Table 2: Functional Results (10 patients discharge)

Average days of stay	47,6 days
Average Barthel admission/Discharge	25/55
Degree of dependency admission/ Discharge	Low: 20%/60%
	Moderate: 10%/10%
	Severe: 30%/0%
	Total: 40%/30%
Gain in GUSS	6 points
Gain in Tinetti	8.8 points

Conclusion

Incorporate intensive and integral rehabilitation in patients with weak or absent socio-familiar network, allows to improve functionality and independence; Favoring their reincorporation to the community, or their better insertion in long-stay institutions. This must be accompanied by a strong work of activating social and family networks that allow the patient leave to the community.

No conflict of interest

ISPR7-0648

Comprehensive Rehabilitation Intervention Research - Miscellaneous

IMPLEMENTATION OF NEUROREHABILITATION UNIT IN NUEVA IMPERIAL INTERCULTURAL HOSPITAL (NIIH), ARAUCANIA SUR HEALTH CARE SERVICE (ASHCS), IX REGION, CHILE

C.E. Carmona Valenzuela¹, P.P. Elizabeth Lorena², G.L. Daniela³

¹, Temuco, Chile

²Hernan Henriquez Aravena Hospital, *Physiatric, Temuco, Chile*

³NUEVA IMPERIAL INTERCULTURAL HOSPITAL, *Neurology, Nueva Imperial, Chile*

Introduction/Background

In view of the long stay of neurological patients with need rehabilitation in high complexity hospitals (HCH), the ASHCS allocates resources to enable a Neurorehabilitation Unit in a medium complexity hospitals and implements 11 beds with rehabilitation care since November 2015. Objective is to provide integral and intensive rehabilitation to improve functionality, promote family and social reintegration, releasing beds days in high complexity.

Material and Methods

Descriptive study. Revision of reference/counter-referral protocol with inclusion/exclusion criteria for admission, proceedings of diffusion in establishments of sanitary networks. For statistical analysis we use an Excel spreadsheet, using parametric tests (average, minimum and maximum), tables and graphs.

Results

Attention Flow Figure 1. Qualitative and quantitative patient follow-up with scales (Table 1). During 11 months, 121 admissions were recorded (Table 2). Average age: 63.6 years (minimum 16, maximum 91). Average days stay: 22 (Minimum 3, maximum 60). Tracheostomy is withdrawn in 70% of patients and nasogastric tube in 84% of them. Average profit Barthel: 20 points. Of 113 discharges: 86% high at home, 6% died, 8% derived to other devices.

Figure 1: Attention flow

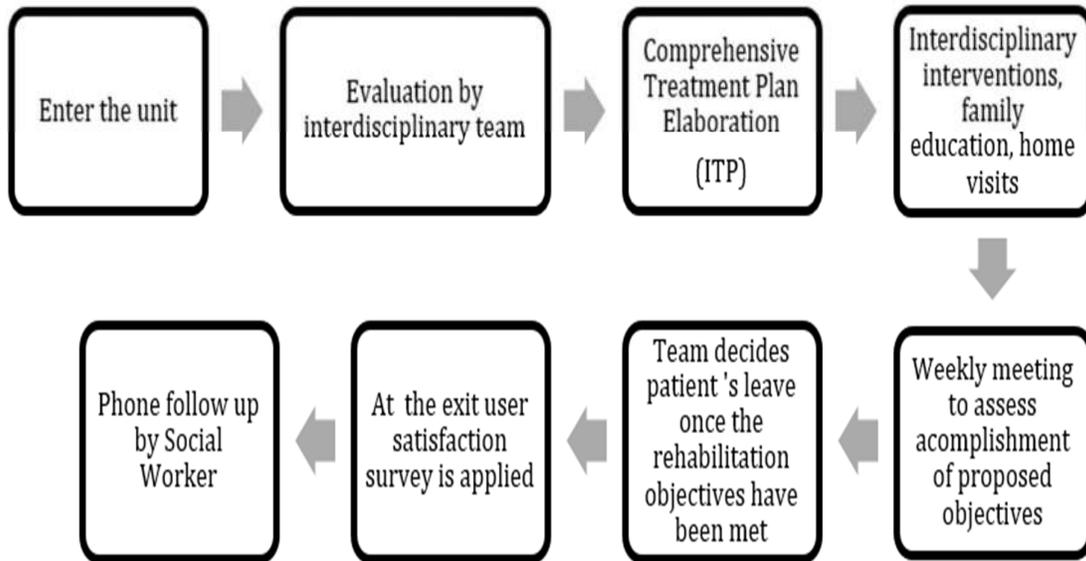


Table 1: Evaluation Applied Scales

Functional Activities of daily living	Barthel
Equilibrium and March	Tinetti
Swallowing	Fujishima Scale; Protocol of swallowing of Rafael Gonzalez
Speech and Language	Rafael González's Agenda, Boston Test
Risk Assessment Pressure ulcers	Braden
Risk Rating	Downton

Table 2: Characteristics of admitted Patient (121 people)

Average age	65.6 years
Sex	65% Male 35% Female
Diagnosis of admission	71% Stroke
	9% Traumatic Brain Injury
	9% Spinal cord injury
	5% brain injury
	6% other
Establishment of origin	52.5% High complexity
	47.5% Medium complexity

Conclusion

This unit offers intensive integral rehabilitation with an interdisciplinary biopsychosocial approach; Providing education to patients and families, enhancing physical, cognitive skills, favoring functionality and autonomy for family and community reinsertion. It also ensures continuity of patient rehabilitation and empowerment in its present condition. The implementation of this unit has allowed to reduce days beds in hospital of high complexity.

No conflict of interest

ISPR7-0104

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation
(e.g. Home-Based Rehabilitation)**

RESEARCH OF REHABILITATION PATTERN FOR SINGLE-LEVEL LUMBAR DECOMPRESSION SURGERY

J. Liu¹, M. Zhou¹

¹Peking University Third Hospital, Department of Rehabilitation Medicine, Beijing, China

Introduction/Background

Lumbar decompression surgery (LDS) is often used to treat lumbar degenerative disease. However, some patients do not get satisfied outcomes and continue suffering from pain and dysfunction. Rehabilitation is usually recommended for patients following lumbar surgery. In China, perioperative rehabilitation needs to be improved and many hospitals have no perioperative rehabilitation intervention. In the present study, we aimed to evaluate the outcome of different rehabilitation intervention patterns for patients with LDS, put into practice the suitable perioperative rehabilitation pattern.

Material and Methods

A total of 1190 patients in nine hospitals in Beijing who received their first single-level (L4-5, L5-S1) LDS because of lumbar degenerative disease were assigned to one of the two groups: 1) control group: received the common postoperative treatments without rehabilitation clinicians involved, or 2) trial group: received perioperative rehabilitation with team approach including rehabilitation clinicians. A total of 455 patients were assigned to the control group, while 735 patients were in the trial group. Visual analogue scale (VAS) was assessed before surgery, and then at 3-5 days, 12 and 24 weeks post-operatively. The Modified Oswestry Disability Index (ODI) was assessed before surgery, and at 12, 24 weeks post-operatively. The complications and whether the patient returned to work were also observed.

Results

The VAS of the trial group at 3-5 days, 12 and 24 weeks after surgery showed significantly more pain relief, compared to the control group. Additionally, ODI scores resulted in a significant reduction in the trial group in both 12 and 24 weeks after surgery, and significantly more patients returned to work in trial group. The complications rate showed no significant difference between groups.

Conclusion

Compared to the common postoperative treatments, perioperative rehabilitation intervention in team approach improves the patients' chances of recovery and pain relief as well as the functional outcomes after LDS, which is suitable for perioperative lumbar diseases.

No conflict of interest

ISPR7-0295

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation
(e.g. Home-Based Rehabilitation)**

EVALUATION OF THE PERCEPTION OF BEHAVIORAL AND EMOTIONAL EFFECTS OF BRAIN ACQUIRED DAMAGE

I. Arias Paz¹, A. Bertani²

¹*Ciarec, Neuropsychology, Buenos Aires, Argentina*

²*Ciarec, Neuropsychology, capital federal, Argentina*

Introduction/Background

Background brain acquire damage implicates a deterioration of the patient's health and life quality. This sort of damage results in multiple cognitive, behavioral and emotional difficulties neuropsychology tends to prioritize cognitive difficulties and in lesser extent, emotional and behavioral ones. These complications produce disruptive conducts. That act as an obstacle in the process of rehabilitation.

Although the health team focuses on the patient, when dealing with rehabilitation, the companion has a main role in this matter. Thus, the importance of what the companion perceives in term of disruptive conducts.

Objective: this work targets at assessing the disruptive behavior that the patient might present and the stress they produce in companions/caretakes. We consider these conducts obstruct rehabilitation.

Material and Methods

Methods: We established a score in order to determine patient's and companion behavior. We assessed the behavioral and emotional impact in patients with acquired cerebral damage³ the Spanish version of the head injury behavior scale. The scale consists of 20 behavioral items and has a version for each, patient and companion. They are both interrogated on a determined behavior, and asked if this particular conduct results in stress, the aftermath is a double score, one indicating number of problems and the other one a stress score.

Results

Results show discordance varies between 20-50% among the given responses. Sometimes this discordance is systematic (the companion always perceives the conduct as if more severe) but in other cases it appears to be random (no slant of discordance is observed).

Conclusion

Based on these results, it would be useful to implement this instrument in order to understand in what cases it is necessary to design a complementary strategy concerning the companion, in order to achieve a better rehabilitation for the patient.

No conflict of interest

ISPR7-0479

Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation
(e.g. Home-Based Rehabilitation)

EFFECTS OF AN INDIVIDUALIZED GAIT TRAINING PROGRAM OVER KINEMATIC PARAMETERS IN PARKINSON'S DISEASE: A PILOT STUDY

I. Peña¹, D. Santos¹, P. Gallardo¹, A. Rey², V. Pomar³, T. Camarot⁴

¹Hospital de Clínicas - Universidad de la Republica, Rehabilitation, Montevideo, Uruguay

²Hospital de Clínicas - Universidad de la Republica, Rehabilitation - Occupational Therapy, Montevideo, Uruguay

³Hospital de Clínicas - Universidad de la Republica, Rehabilitation - Neurology Parkinson Disease, Montevideo, Uruguay

⁴Hospital de Clínicas - Universidad de la Republica, Rehabilitation, Montevideo, Uruguay

Introduction/Background

The gait disorders clinically known as arrhythmokinesia are quite relevant in the Parkinson's Disease (PD). There is little evidence on the long-term impact of gait training with visual cues, over the kinematic parameters of the gait.

Our aim is to assess the effect of an individualized gait training with visual cues over time in PD.

Material and Methods

One patient with Parkinson disease, age 74, (stages 2.5 of Hoehn and Yahr modified classification), attended a 12 sessions training program, followed by a 1 month home training program without supervision. The sessions consisted in walking over transverse floor lines set at determined distances from each other. During the first five sessions the distance was 10% longer than the average step length previously calculated by 3D gait analysis. From sixth to twelfth sessions and home training, the distance was 20% longer. The training frequency was 3 sessions (30 minutes each) per week.

Results

Table 1. Kinematic parameters at start, after 12 sessions and after 1 month home training.

	Initial		After 12 sessions		After home training	
	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>	<u>Left</u>	<u>Right</u>
<u>Step time (S)</u>	0.54±0.04	0.52±0.04	0.52±0.01	0.55±0.01	0.50±0.01	0.52±0.01
<u>Step length (m)</u>	0.51±0.02	0.46±0.02	0.55±0.01	0.50±0.01	0.61±0.02	0.59±0.01
<u>Step time CV* (%)</u>	7.86	6.87	1.81	2.47	2.17	1.65
<u>Step length CV* (%)</u>	3.99	4.66	2.32	4.81	2.67	2.32
<u>V (m/s)</u>	0.93±0.05		0.99±0.04		1.2±0.03	

*Coefficient of Variation

The CV can be associated with the arrhythmokinesia in PD. In this study, the variability of both step

time and step length had a tendency to decrease. Also the gait speed consecutively improved after 12 sessions and after home training without supervision.

Conclusion

An individualized training program set in the conditions presented in this work, improved the kinematic parameters of gait in a patient with PD. We are already planning to increase the size of the sample in future studies.

No conflict of interest

ISPR7-0863

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Programme Evaluation
(e.g. Home-Based Rehabilitation)**

**IMPROVEMENT IN UPPER LIMB FUNCTION FOLLOWING VIDEO GAME EXERCISES IN
CHILDREN AND ADOLESCENTS WITH NEONATAL BRACHIAL PLEXUS PALSY**

L. Phillips¹, K. Kern¹, L. Yang², S. Brown¹

¹*University of Michigan School of Kinesiology, Movement Science, Ann Arbor, USA*

²*University of Michigan, Department of Neurosurgery, Ann Arbor, USA*

Introduction/Background

We recently demonstrated improved arm and hand function in neonatal brachial plexus palsy (NBPP) following a home-based sensorimotor training program (Brown et al., 2015). Video gaming is another method of delivering exercise in a home setting which may lead to improved functional outcomes. The aim of this study was to determine whether video game play would improve arm function in NBPP.

Material and Methods

Fifteen participants with NBPP (mean age: 8.5 yr) were provided with a Kinect-based home video game system which required pushing an object along a path displayed on a video screen. Different paths requiring different arm movement patterns were included and participants and game play averaged 35-45 min a week. Pre and post testing included the Nine Hole Peg Test (NHPT), the Jebsen Hand Function Test (JHFT) and a timed test of forearm supination.

Results

Twelve of the 15 participants completed the JHFT during both testing sessions using their affected arm. Total JHFT scores showed a mean 13 percent improvement. Analysis of individual JHFT components revealed significant improvements in some but not all tasks. The ability to lift and place light cans improved in all but one participant, leading to a significant 18% improvement in task time ($p < .01$). Smaller improvements were seen when lifting heavy cans ($p < .01$). A 17% improvement in the simulated feeding task was also observed ($p < .01$). NHPT performance improved by 20% in 10 of the 13 patients who completed the NHPT with a similar improvement (21%) observed in the forearm supination test.

Conclusion

These results indicate that brief periods of video game play can lead to functional improvement in NBPP. Further research is needed to determine those factors which may contribute to functional gains in this population such as the types of movement patterns utilized during video game play as well as play duration.

No conflict of interest

ISPR7-0048

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation
(including Acute, Post-Acute and Community Rehabilitation Services)**

DISPARITIES IN CARDIAC REHABILITATION ENROLMENT AFTER AN ACUTE CORONARY SYNDROME: IS IT SEX AND/OR GENDER-RELATED ISSUES?

S. Cossette^{1,2}, A. Cournoyer³, M.A. Maheu-Cadotte², G. Fontaine², T. Mailhot², J. Kayser², J. Dupuis⁴, M. Juneau⁴

¹*Montreal Heart Institute, Research Center, Montreal, Canada*

²*University of Montreal, Nursing, Montreal, Canada*

³*University of Montreal, Medecine, Montreal, Canada*

⁴*Montreal Heart Institute Research Center, Medicine, Montreal, Canada*

Introduction/Background

There is still disparity between men and women among patients entering cardiac rehabilitation (CR) programs despite their proven benefit to reduce risk factors and cardiac event recurrence. The present study aims to describe sex- (clinical) and gender-related (socio-emotive) variables that may contribute to CR entry.

Material and Methods

This is a secondary analysis of the Transit-UC clinical trial (35 women and 207 men post-cardiac event). In the present study, bivariate relationships between CR entry and 3 categories of variables were explored (transportation, sex-related and gender-related variables) using chi-squared tests and t-tests. Variables with $\geq 10\%$ difference (diff.) with CR entry or p-values ≤ 0.10 were included in a multivariate model. Interactions between men-women and variables predicting CR entry were tested.

Results

Closer distance to the CR center (22% diff. $p < 0.001$), radial site of catheterization (13% diff. $p = 0.050$), absence of diabetes (13% diff. $p = 0.080$), living with someone (10% diff. $p = 0.21$), prior regular physical activity (RPA) (18% diff. $p = 0.007$), and mean family support ($p = 0.043$) were associated with higher CR entry. In the multivariate model, closer distance to the CR center (odds ratio [OR] 3.20, 95% confidence interval [CI] 1.58-6.47; $p = 0.001$) and RPA (OR 1.95, 95% CI 1.00-3.78; $p = 0.049$) predicted CR entry. A significant statistical interaction between the men-women variable and RPA ($p = 0.009$) was found: 41% (51/125) of the RPA men entered CR compared to 19% (14/73) of non-RPA men whereas 39% (9/23) of RPA women entered CR compared to 50% (5/10) of the non-RPA women.

Conclusion

Transportation was a barrier in the present sample despite patients reporting being capable of travelling to the CR center at study enrolment. Deeper evaluation of transportation capabilities as well as individualizing motivational intervention to enhance CR entry depending on prior RPA in men and women is recommended.

No conflict of interest

ISPR7-0315

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation
(including Acute, Post-Acute and Community Rehabilitation Services)**

**PARTICIPATORY DEVELOPMENT OF AN E-PRO SYSTEM FOR THE CARE OF INDIVIDUALS
WITH CHRONIC PAIN: INITIAL STEPS**

D. Zidarov¹, R. Visca², A. Gogovor¹, S. Ahmed¹

¹McGill university, School of Physical and Occupational Therapy, Montreal, Canada

^{2,3} McGill Integrated University Health Network RUIS Centre of Expertise in Chronic Pain,
Clinical Epidemiology, Montreal, Canada

Introduction/Background

Electronic patient reported outcomes (e-PROs) offer unique insight into the physical, emotional, and social health needs of patients; yet significant patient, clinician and organizational barriers to the implementation of these need to be overcome. The **aims** of this study were to explore healthcare providers' (HCPs): 1) interest in an e-PRO system; 2) perceived advantages, barriers and facilitators to the implementation and use of such a system.

Material and Methods

HCPs working in chronic pain (CP) programs completed an electronic survey comprising open-ended questions addressing perceived advantages, barriers and facilitators to implementation. Deductive content analysis based on the Consolidated Framework for Implementation Research was used to categorise advantages, barriers and facilitators.

Results

92% (n=22) of HCPs participated in the survey. 55% of HCPs were very interested in using an e-PRO system. HCPs reported numerous advantages at the clinical (e.g.: real-time access to information by all team members) and program level (e.g.: evaluating program effectiveness). Perceived barriers and facilitators were related to the: 1) e-PRO system characteristics (e.g. availability of diverse devices with adaptable features to meet patient needs); 2) organizational context (e.g. lack of time and IT support to implement and use e-PRO) and 3) patients' and HCPs characteristics (e.g. low level of literacy of some patients; use of an e-PRO system could preclude building a therapeutic relationship).

Conclusion

HCPs in CP programs are interested in implementing and using an e-PRO system in clinical practice with the caveat that they are 1) involved throughout the development and implementation process; 2) trained in the use of the system and 3) supported by human and technical resources.

No conflict of interest

ISPR7-0326

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation
(including Acute, Post-Acute and Community Rehabilitation Services)**

**STARTING A PHYSICAL MEDICINE AND REHABILITATION SERVICE IN GHANA, A
DEVELOPING COUNTRY: CHALLENGES AND THE WAY FORWARD**

A. Tannor¹, A. Haig², A. Christian³, S. Smith⁴, C. Odonkor⁵, K. Spangenberg¹

¹Komfo Anokye Teaching Hospital, Family Medicine, Kumasi, Ghana

*²Mary Free Bed Rehabilitation Hospital, Physical Medicine and Rehabilitation,
Grand Rapids- Michigan, USA*

³Good Shepherd Rehabilitation Hospital, Physical Medicine and Rehabilitation, Pennsylvania, USA

⁴The University of Michigan, Physical Medicine and Rehabilitation, Ann Arbor- Michigan, USA

*⁵The Johns Hopkins University School of Medicine, Physical Medicine and Rehabilitation,
Baltimore- Maryland, USA*

Introduction/Background

Like many low resource countries, Ghana has no Physical Medicine and Rehabilitation (PMR) physicians. 2.7 million Ghanaians however have significant disabilities. Without multidisciplinary rehabilitation, many are unemployed (87%), abandoned by relatives and without economic resources. PMR is a necessity for Ghana. Physiotherapy was formerly the only rehabilitation service. In 2015 a multidisciplinary PMR service was started at Komfo Anokye Teaching Hospital (KATH). We aim to summarize the challenges faced in starting a PMR service in a developing country and measures taken to solve it.

Material and Methods

A multidisciplinary PMR team involving a Family Physician with MSc Rehabilitation, nurse, physiotherapist, orthotist/prosthetist, dietician and a health educator was formed in 2015 with support from the International Rehabilitation Forum (IRF). Telemedicine rehabilitation training by distant American specialists, augmented by in-person training, was started for the physician and nurses. Inpatient ward rounds began on an acute stroke ward with weekly outpatient clinics at KATH's physiotherapy unit.

Results

The training, with development of a 132-topic curriculum, has been successful with prompt discussion of cases. Formal accreditation by the Ghana College of physicians has delayed, deterring physicians from joining the program. Poor understanding of PMR led to few referrals by physicians and concerns about loss of autonomy resulted in resistance from physiotherapists. Lack of a speech and language therapist, an occupational therapist, rehabilitation equipments/logistics also made it difficult to provide comprehensive patient services.

The outpatient clinic was moved from the physiotherapy unit, presentations on PMR need were made to doctors and an occupational therapist mentored by IRF was employed. Rehabilitation equipment is being solicited locally with plans of establishing an in-patient rehabilitation ward. WHO support through the country's representative is pending. Speech and language therapy training is yet to begin in Ghana.

Conclusion

There is the need to train more PMR doctors to lead multidisciplinary teams across Ghana. The IRF has been instrumental. Strong support from WHO's official liaison for PMR, the ISPRM, is however needed and can expedite the accreditation of local PMR fellowship training programs.

No conflict of interest

ISPR7-0380

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation
(including Acute, Post-Acute and Community Rehabilitation Services)**

DECREASING THE FALL RISK IN A WARD FOR COMMUNITY REHABILITATION IN JAPAN

E. Takano^{1,2}, T. Teranishi², K. Aimoto¹, N. Itoh¹, I. Kondo¹

¹National Center for Geriatrics and Gerontology,

Center of Assistive Robotics and Rehabilitation for Longevity and Good Health, Obu, Japan

²Fujita Health University, Graduate School of Health Sciences, Toyoake, Japan

Introduction/Background

We have started a ward for community rehabilitation in this center since October 2014. Many patients were hospitalized with a hip fracture or a compression fracture of spin, and treated rehabilitation for 45 minutes a day. The aim of this research was to examine whether the patients could decrease the fall risk in the ward.

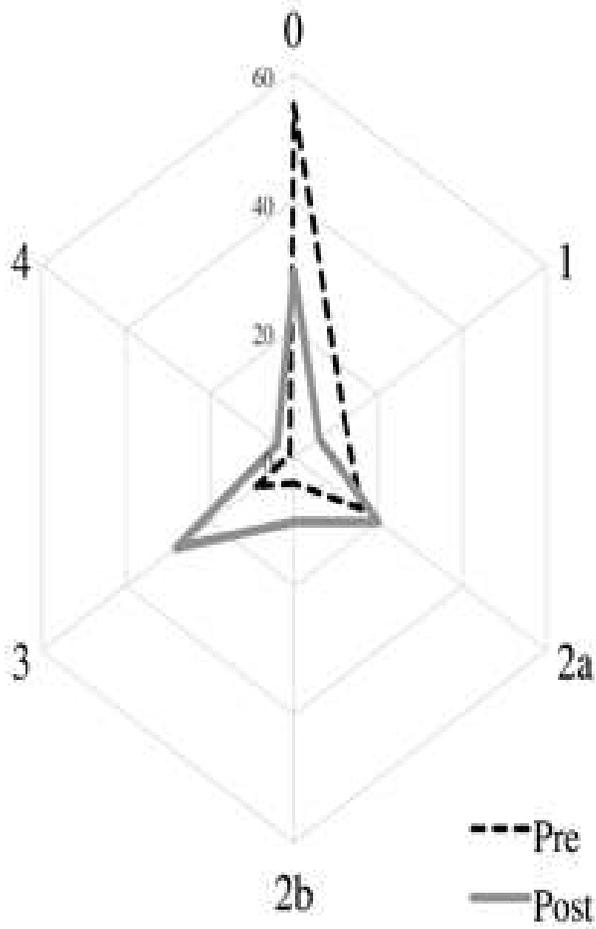
Material and Methods

The number of subject was 204 inpatients who were diagnosed with the fracture and treated rehabilitation between October 2014 and September 2016. We investigated age, sex, a length of stay, a discharge destination, a functional independence measure (FIM) and a standing test for imbalance and disequilibrium (SIDE). We compared indices of the admission (Pre) with the discharge's (Post) using a paired t test or χ^2 test ($P < 0.05$).

Results

Excepting missing values, the number of the analysis was 97 (24 men, 73 women; age 82 ± 9 years). The length of stay was 48.7 ± 62.5 days. 83% of inpatients discharged to their home. There were significant differences within Pre and Post in FIM (Pre, 78.3 ± 32.8 points; Post, 86.4 ± 32.9 points; $P < 0.001$) and SIDE ($P = 0.001$).

SIDE (n = 97)



Conclusion

The number of SIDE level 0 and 1 that had the high fall risk decreased and the number of SIDE level 2b, 3 and 4 that had the low risk increased in the ward. It was suggested that the fall risk decrease in the ward.

No conflict of interest

ISPR7-0770

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation
(including Acute, Post-Acute and Community Rehabilitation Services)**

**PROCESS BASED REHABILITATION MANAGEMENT IN PATIENTS WITH SPINAL CORD
INJURY AND DEEP PRESSURE ULCER - DEVELOPMENT AND IMPLEMENTATION AS A
QUALITY ASSURANCE PROGRAM**

A. Scheel-Sailer¹, K. Koligi¹, C. Meier², A. Gemperli³, R. Wettstein⁴, K. Schmitt⁵

¹Swiss Paraplegic Centre, Acute Care and Rehabilitation, Nottwil, Switzerland

²Swiss Paraplegic Centre, Research Rehabilitation Quality Department, Nottwil, Switzerland

³Swiss Paraplegic Research, Health Service Research, Nottwil, Switzerland

*⁴University Hospital Basel, Department of Plastic- Reconstructive- Aesthetic and Hand Surgery,
Basel, Switzerland*

⁵Swiss Paraplegic Centre, Rehabilitation Quality Department, Nottwil, Switzerland

Introduction/Background

Deep pressure ulcer (PU) in persons with spinal cord injury (SCI) require complex inpatient acute care and rehabilitation. The clinical management follows standardized processes and respects individual situation to reduce complication rates and increase quality of treatment. The aim of the study was to describe the development and implementation of a clinical decision support system (CDSS) in an interdisciplinary treatment concept of PU in SCI patients.

Material and Methods

Clinical and scientific observation of the development and implementation in an acute and rehabilitation clinic specialized in SCI using diary documentation.

Results

Between August 2015 and November 2016 the core team met weekly one hour for coordination. Specialists were integrated in 4 consensus meetings for use-case description including milestones and dependencies in the treatment process, diagnoses, assessments as well as specific additional consultation and sub-processes as debridement and flap surgery. After transformation the workflow in Business Process Modeling Notation (BPMN), pilot testing was performed in 3 treatment processes. An interdisciplinary training using a specific designed manual was offered. Ongoing adaptation of the CDSS was necessary (feedback connection and time structur of sub-processes). Process analyses showed that some of the milestones were not realistic (assessments, consultation) and consecutively were changed consensus based.

Conclusion

This study showed the proof of principles of an implementation process and the needed Adaptation from medical and CDSS standpoint. CDSS allowed for quality control and supported clinical Management. Due to the time consuming development, a wise choice for CDSS development in treatment processes became obvious.

No conflict of interest

ISPR7-0795

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation
(including Acute, Post-Acute and Community Rehabilitation Services)**

**IMPLEMENTATION OF AN EVIDENCE BASED HEALTH INTERVENTION FOR PEOPLE WITH
HEARING DISABILITY IN COMMUNITY RESIDENCES**

Y.S. Kim¹, S.H. Ho¹, G.G. Kim¹, H.R. Lee¹, S.D. Eun²

¹*Korea National Rehabilitation Center, Department of Rehabilitation Standard & Policy, Seoul,
Republic of Korea*

²*Korea National Rehabilitation Center, Department of Clinical Research on Rehabilitation, Seoul,
Republic of Korea*

Introduction/Background

The aim of the current study is to investigate the effectiveness of a novel and complex intervention to improve diet and physical activity for person with hearing disability(PHD) in community residences

Material and Methods

The study design is a single group uncontrolled trial. It is based on Intervention Mapping(IM) theory and takes 10 weeks to complete. The intervention includes three components: 1)The intervention is consisted of five health improvement session; 2)The intervention is implemented by consultation with managers, training of health educators, a physical director, a senior clinical nutritionist, and coaching of health ambassadors; 3)All subjects participated in the once-a-week, ten-week program combining exercise, stress management, health education information, and nutrition components for 60 min. The data were collected at the Korea National Rehabilitation Research Institute. Program outcomes were assessed using body composition analysis, blood pressure, blood test, and pulse. Functional performance was measured by the forced vital capacity(FVC), the Forced expiratory volume 1(FEV1), One leg standing with eyes open, hand grip, and sit-to-stand test. Quality of life was estimated using the EuroQol 5-Dimension Questionnaire(EQ-5D). Stress was estimated using the Brief encounter psychosocial instrument(BEPSI-K).

Results

A total number of 34 community residences expressed an initial interest in participation but five loss, leaving 29 residences for baseline measurements. A total of 29 participants, 15 men and 14 women aged 15-74 years. Body composition(fat, TBW, muscle) and functional performance(HDL-C, FVC) showed significant improvements in the baseline.

Conclusion

This innovative intervention was effective in improving physical activity of PHD. It is likely that even greater effects could be achieved by improved implementation strategies for higher compliance.

Conflict of interest

Disclosure statement:

This research was supported by the Ministry of Health & Welfare

ISPR7-0858

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Service Evaluation
(including Acute, Post-Acute and Community Rehabilitation Services)**

**NEED FOR INPATIENT REHABILITATION FOR RHEUMATOLOGY PATIENTS- A SERVICE
EVALUATION STUDY**

S.C. Budithi¹, A. Menon²

*¹Robert Jones and Agnes Hunt Orthopaedic Hospital, Midland Centre for Spinal Injuries, Oswestry,
United Kingdom*

²Haywood Hospital, Rheumatology, Stoke-on-Trent, United Kingdom

Introduction/Background

Rheumatological conditions are a leading cause of morbidity and disability. Multi-disciplinary assessment and management of physical, psychological and social problems is of paramount importance in improving the outcomes and quality of life for patients with rheumatological conditions. Multi-disciplinary rehabilitation services have the potential to improve care in patients with disabling chronic rheumatological problems.

The aim of the study is to evaluate the specialist multidisciplinary inpatient rehabilitation services in a community hospital for patients with rheumatological conditions.

Material and Methods

All the admissions to the specialist Rheumatology rehabilitation ward during a period of 12 months from Jan to Dec 2014 were included in the evaluation. Demographics, waiting time, mode of admission, diagnosis, duration of stay, interventions, procedures and complications were analysed. Information was collected from electronic patient records.

Results

A total of 263 admissions were analysed. Female: male ratio was 1.9:1. Most of the patients (61%) were in 50-80 years age group. Admissions from the clinics predominate (57%) and patients reviewed in other medical wards contribute to about 23% of the admissions. Two thirds of the patients were admitted within 72 hours of presentation. Mean waiting time was 4.95 days (range, 0-42 days). Average duration of stay was 11.78 days (range 0-64 days).

The most common cause of admission was flare up of rheumatoid arthritis. 72% of patients had intervention in the form of intraarticular steroid injection. Complications during inpatient stay occurred in 6% of the cases and urinary tract infection and hospital acquired pneumonia were the most common.

Conclusion

There is a need for specialised multidisciplinary rehabilitation units for rheumatological patients. This also provides an excellent source of learning for trainee doctors and allied health care professionals.

No conflict of interest

ISPR7-0063

Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

MEDICAL REHABILITATION IN NATURAL DISASTERS IN THE PACIFIC ISLAND COUNTRIES: THE CHALLENGES AND WAY FORWARD

B. Amatya¹, F. Khan¹

¹Royal Melbourne Hospital, Department of Rehabilitation Medicine, Parkville, Australia

Introduction/Background

Pacific Island Countries (PICs) are one of the most natural disaster-prone regions in the world, mainly due to seismically active fault lines, major ocean basins, major typhoon tracks and susceptibility to hydrological disasters (flood, wet mass movement) due to climate change-related events (such as rising seas, increasing drought and rainfall etc.). The aim of this presentation will be to highlight a regional overview of medical rehabilitation status in natural disaster settings.

Material and Methods

Narrative review of the literature was conducted to provide an overview current status of rehabilitation in natural disasters in PICs and to highlight some of the gaps/challenges.

Results

In disaster settings, acute response and care protocols focusing on saving lives and treating acute injuries get most attention, whilst, rehabilitative needs are not prioritized in many cases. Overall, the regional disaster management capacities and collaboration have improved in recent years and the PICs recognise the importance for disaster planning and management initiatives. However, in most PICs, rehabilitation medicine is still in infancy stage. Operational/managerial factors seem to most impact rehabilitative care of disaster victims in the PICs, these include: lack of systems and care protocols; limited provision of effective rehabilitation inclusive education, training and awareness-raising programs, funding issues, poor leadership, planning and communication, infrastructure, human resources, and poor institutional arrangement.

Conclusion

The challenge ahead is developing a comprehensive, targeted and integrated rehabilitation-inclusive disaster management plan for longer-term management of disaster victims stretching across all government and non-governmental sectors and jurisdictions, and vulnerable communities

No conflict of interest

ISPR7-0109

Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

CULTURAL FACTORS INFLUENCING THE UPTAKE OF PULMONARY REHABILITATION BY MAORI IN NEW ZEALAND: A GROUNDED THEORY INVESTIGATION

W.M.M. Levack¹, B. Jones¹, R. Grainger¹, P. Boland², M. Brown¹, T. Ingham¹

¹University of Otago, Medicine, Wellington, New Zealand

²University of Limerick, Clinical Therapies, Luimneach, Ireland

Introduction/Background

There is a lack of research on the experiences of rehabilitation among indigenous people in colonized countries (370 million people worldwide). The aim this New Zealand-based study was to examine the influence of cultural factors on uptake of pulmonary rehabilitation (PR) – an important intervention of known effectiveness for people with chronic obstructive pulmonary disease (COPD).

Material and Methods

Grounded theory (a qualitative method) nested within kaupapa Māori methodology (a research framework developed by Maori, the indigenous people of New Zealand). Transcripts were analyzed from interviews and focus groups with 15 Maori and, for comparison, 10 non-Maori who had been invited to attend PR for COPD. Participants had either attended a mainstream hospital-based program, a community-based program designed 'by Maori, for Maori', or had experience of both. Data collection focused on factors that facilitated or hampered uptake of PR.

Results

Several factors were found to influence uptake of PR for all participants regardless of ethnicity: 1) past experiences of exercise and healthcare systems, 2) attitudes and expectations, 3) access issues (e.g. time, transport), and 4) initial program experiences. In addition, several cultural factors specific to Maori participants were also identified. Central to these was the concept of 'whakawhanaungatanga' (the making of culturally-meaningful connections with others). Whakawhanaungatanga is intimately connected with other core concepts in Maori culture: 'wairua' (spirituality), 'whakapapa' (genealogy), 'whanui' (extended family), 'kaupapa' (the principals of shared work). The degree to which such factors were acknowledged and incorporated in PR services influenced the meaningfulness of PR to the Māori participants, and therefore their willingness to engage.

Conclusion

All rehabilitation occurs within a cultural context. Lack of attention to cultural factors in the provision of rehabilitation can impede its uptake by indigenous, minority ethnic groups.

No conflict of interest

ISPR7-0506

Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

EARTHQUAKE 2016 IN CENTRAL ITALY

G. Pestelli¹

¹*SIMFER, SIMFER, Forli, Italy*

Introduction/Background

The central Italy was hit by a massive earthquake (6.1 Richter) 24 August 2016 in which the countries of Arquata del Tronto and the township, Accumoli and Amatrice place famous for medieval history and spaghetti all 'amatriciana' were almost destroyed .

Material and Methods

There were 394 dead people and 500 wounded treated in the main Italian cities from Rome to Florence to Ancona. SIMFER was in the earthquake crater with 2 his doctors after a few days to make operating agreements with healthcare executives and civil safeguard. Five days after the earthquake in the Marche region began the activity of SIMFER.

Results

Subsequently, agreements were made to manage the rehabilitation both in Umbria and in Lazio with some operational difficulties due to the big Italian state bureaucracy . We worked on both elderly and disabled people prior to the earthquake and also on the injured because of EQ. After two months (30 Oct.) a new strong earthquake (6.5 Richter) hit the Marche and Umbria regions, in particular the medieval towns of Norcia and Cascia important religious centers. Simfer departed immediately with the tent of "listening and rehabilitation " to support the hospital field army raised in Cascia. In this second earthquake there were no fatalities but extensive damages to houses and public buildings .

Conclusion

At the time to send the abstracts we are working in Cascia and Norcia. In three months there have been over 30,000 shocks superior to 3.0 Richter.

No conflict of interest

ISPR7-0806

Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

NATURAL DISASTER PREPAREDNESS OF PEOPLE WITH DSABILITIES: A SYSTEMATIC REVIEW OF THE LITERATURE

J. Reinhardt¹, Z. Han¹, H. Li¹, J.E. Gosney¹

¹Institute for Disaster Meanagement and Reconstruction, Disaster Health Sciences, Chengdu, China

Introduction/Background

The United Nations' Sendai Framework calls for significant efforts of state parties to reduce disaster risk. It emphasizes an inclusive approach recognizing the particular needs of persons with disabilities. We aimed to systematically review the literature on natural disaster preparedness of individuals with disabilities as well as households with disabled family members. We identified interventions used to improve disaster preparedness of people with disabilities, measures of disaster preparedness, studies comparing the preparedness of persons with disabilities with the general population, and research examining determinants of preparedness.

Material and Methods

We systematically searched medical as well as social sciences databases for empirical studies related to disability and natural disaster preparedness. Eligible were all studies related to the topic that used a quantitative measure of preparedness.

Results

Various measures of disaster preparedness were identified. Studies showed that people with disabilities were less prepared than the general population. Few interventon studies were found.

Conclusion

Interventions to increase the preparedness of people with disabilities with regard to natural disasters are of pivotal importance. Respective intervention research is however lacking and warranted in the future.

No conflict of interest

ISPR7-0905

Comprehensive Rehabilitation Intervention Research - Rehabilitation Strategies for Specific Issues (including Rehabilitation Strategies for Developing Countries and Rehabilitation after Natural Disasters)

ASSESSING FUNCTIONING IN PERSONS WITH DISABILITIES IN EARTHQUAKE AREAS IN UMBRIA IN ORDER TO DEFINE ASSISTIVE TECHNOLOGIES, HOUSING ADAPTATION AND PLANNING REHABILITATION

A. Bellanti¹, G. Capitò¹, M. Porzi¹, M. Zampolini¹

¹USL Umbria 2 Italian NHS, Department of Rehabilitation, Foligno, Italy

Introduction/Background

People with disabilities in earthquake areas have a high risk of fragility. Changes in living conditions, housing, social life and health services, can determine a reduction in quality of life, independence, assistance skills of families, participation and social inclusion.

We intended to identify all people with disabilities living in earthquake areas; to systematically assess problems related to their disability in order improve support.

Material and Methods

The project involves the Rehabilitation Department of USL Umbria 2, the Assistive Technology Products Centre, in collaboration with Health Districts and Municipalities of Norcia-Cascia and the Italian Civil Protection.

The ICF profile was applied to the disabled people living within the area. We compared the goals obtained from the general information already recorded, and the goals obtained from the application of ICF.

This protocol is in agreement with the CFDS Civil Protection protocol:classification of the function, disability and health of persons for transitional housing in emergency.

Results

In the first phase, we included 277 persons, 24 of them showed disability, 12 of whom with physical limitation requiring new adapted wooden houses. The application of ICF changed their previous generic information where the information regarded just 1 person, instead of 12. This activity led to changing the plan to order new houses from 1 to 12 adapted new houses and 3 larger houses due to the presence of an external caregiver not considered before.

Conclusion

The application of ICF assessment allowed optimization of the planning regarding disability after an earthquake avoiding errors. The identification of problems related to disability permitted the identification of rehabilitation needs. The study shows the importance of standardising the assessment of disability in a more complete biopsychosocial framework, not only social for the support of disability in disaster areas. Over the next few weeks we plan to apply the assessment to 2,400 people in the earthquake area.

No conflict of interest

ISPR7-0300

**Comprehensive Rehabilitation Intervention Research - Rehabilitation Technology Assessment
(e.g. Tele-Rehabilitation)**

SELF-MANAGEMENT SYSTEM FOR STROKE SURVIVORS PROJECT FIRST STEPS: WHAT DO THE PATIENTS, CAREGIVERS AND MEDICAL STAFF NEED? THE USABILITY OF TECHNOLOGY FOR STROKE REHABILITATION

L. Ortiz¹, A. Gutierrez Ruiz^{1,2}, M. Anastassova³, S. Bouilland⁴, C. Magnusson⁵, J.A. Alava¹

¹*Cruces University Hospital, Rehabilitation Unit, Baracaldo, Spain*

²*BioCruces Research Institute, Rehabilitation research, Baracaldo, Spain*

³*COMMISSARIAT A L ENERGIE ATOMIQUE ET AUX ENERGIES ALTERNATIVES, DRT/LIST/DIASI/LISA, Gif-sur-Yvette Cedex, France*

⁴*Fondation Hopale, Fondation Hopale, Berck-sur-mer, France*

⁵*LUNDS UNIVERSITET, Design Sciences, Lund, Sweden*

Introduction/Background

To detect the needs of stroke survivors (SS), caregivers (CG) and medical staff in neuro-rehabilitation, we recorded and analysed the main aspects of everyday life, characteristics of SS and their general attitude towards new technologies.

Material and Methods

Descriptive observational research done from February to June 2016 in our University Hospital.

Directed face-to-face interviews done in consultation by 2 different medical doctors specialized in neuro-rehabilitation. All signed informed consent.

Results

23 interviews: SS, CG and health workers related with stroke.

7 workers. 43% doctors. 4:3 F:M. Mean age 47,28 years (R31-63). They worked a mean of 16 years.

Reluctance to innovative products/working ways.

All recorded medical information, previous functional activities and were using technology. Patient motivation was important.

8 SS. 3:5 F:M. Mean age 59 years (R35-77). 4 espouse.

In everyday life: they changed activities and needed help.

All were motivated, wanted help with medication and technology.

They weren't ready to install home devices, but they wanted other tools.

Information sharing with doctors/CG.

7 CG. Mean age 63,5 years (R51-74). Mean time from stroke 35 months (R1,5-74m).

43% wife.

All wanted to take part and help the patient.

Neither all were properly informed about stroke, nor knew roll.

Stroke changed their life, gave up activities.

Conclusion

These results support the need for a self-management solution such as STARR® (The Decision Support and self-management system for stroke survivors) project.

Platform should include indoor/outdoor rehabilitation exercises, games and virtual reality. Also information about related risk factors, complications, medication reminders.

Nevertheless, it's not well accepted the use of cameras and information sharing what can suppose a usability limitation.

No conflict of interest

ISPR7-0874

Education and Training in Rehabilitation - Continuous Medical Education and Professional Development

THE INTERNATIONAL STANDARDS FOR NEUROLOGICAL CLASSIFICATION OF SPINAL CORD INJURY (ISNCSCI) KNOWLEDGE AMONG RESIDENT DOCTORS

S.C. Budithi¹, A. Seymour¹, B. Balain², J.R. Chowdhury¹

¹*Robert Jones and Agnes Hunt Orthopaedic Hospital, Midland Centre for Spinal Injuries, Oswestry, United Kingdom*

²*Robert Jones and Agnes Hunt Orthopaedic Hospital, Spinal Disorders Department, Oswestry, United Kingdom*

Introduction/Background

Resident doctors are responsible for the initial examination and documentation of the level and severity of neurological deficit in patients with spinal cord injury (SCI). The International Spinal Cord Society (ISCoS) recommends that trainees should have the competencies to 'Examine the acutely injured patient and complete a detailed neurological examination including level and density of the lesion according to ISNCSCI'.

The aim of the study is to assess knowledge and awareness of The International Standards for Neurological Classification of Spinal Cord Injury among resident doctors.

Material and Methods

We designed a questionnaire with 10 questions related to sensory examination, dermatomes, components of neurological examination and identification of neurological level, completeness, ASIA Impairment scale (AIS) and Zone of Partial Preservation (ZPP). An example ISNCSCI neurological chart showing a T7, Complete, AIS A neurological injury was used.

Results

Eighteen resident doctors involved in assessment of SCI patients in a Major Trauma Centre participated in the study. Fifteen (83.3%) had familiarity with ISNCSCI chart. Ten (55.5%) mentioned correct method of testing light touch sensation. None could identify correct location of testing C5 dermatome according to ISNCSCI.

The number of residents who correctly identified the sensory, motor and neurological level were 11 (61.1%), 1 (5.5%) and 9 (50.0%) respectively. Sensory ZPP was correctly identified by 5 (27.8%) and none could identify Motor ZPP. The completeness of the injury was correctly identified by 50% of participants; only third of these assigned it to the correct AIS.

Conclusion

We recommend that the neurological examination according ISNCSCI should be included in the Specialty Training Curriculum for resident doctors.

No conflict of interest

ISPR7-0335

Education and Training in Rehabilitation - Specialist Training

PORTALEIR: IMPROVEMENT IN RESIDENT DOCTOR'S TRAINING MANAGEMENT IN ANDALUCIA

I. Díaz-Cano Carmona¹, B. Rendón Fernández¹, C. Echevarría Ruiz de Vargas¹

¹Hospital Virgen del Rocío, Physical Medicine and Rehabilitation, Sevilla, Spain

Introduction/Background

In the year 2006, inside the Strategic Plan for Training in Andalucía's Health System, the platform Portaleir.es is created as a tool for management in specialized training and as an educational platform for the resident doctor in Andalucía (Spain). The experienced changes in our Clinic Management Unit since its implementation are presented here.

Material and Methods

Description of the implemented changes in the process of training and tutoring of resident doctors since the implementation of the Portaleir.es platform: teaching planification through training programs; modification of the teaching program and evaluation from the teacher as well as self-evaluation from the training doctor; development of teaching skills with a tutor's educational program; creation of work groups with a shared interest; and management of the training process in an innovative way.

Results

Ten years ago Portaleir.es was consolidated as an essential tool for management in training of residents doctor in our hospital's Rehabilitation Management Unit. It has been used by a total of 32 members in the unit (4 tutors and 28 residents) and it has been gradually implemented in the training and evaluation process of tutors and residents through use of virtual sites.

Conclusion

The implementation of the Portaleir.es tool in management of training and tutoring has become a complete improvement of said process, besides helping with the communication between residents, tutors and teaching units.

No conflict of interest

ISPR7-0381

Education and Training in Rehabilitation - Specialist Training

IDENTICAL EDUCATION AND TRAINING IN PHYSICAL MEDICINE AND REHABILITATION

T. Uddin¹

¹BSM Medical University, PMR, Dhaka, Bangladesh

Introduction/Background

Background and introductions: Bizarre nomenclature of Physiatry or Physical Medicine and Rehabilitation (PMR) with contents and duration of the course-curriculum of the specialty at present time creates confusion among the residents, fellow colleagues and the patient population.

Material and Methods

The evidence: We learn from the famous Dr. Krusen's diary how much they struggled to organize the specialty, to unite the fields of physical medicine and rehabilitation. European White book of PMR, SAARC Rehab forum activities and other recent reports urge to address for an identical education and training in PMR.

Results

The challenge: Today, PRM at Europe, PMR in the US, Medical Rehabilitation at UK and Medical Rehabilitation and Rheumatology in the Middle East etc creates controversy among fellow colleagues and the patient population. Again, Title with duration of the courses and the contents of the curriculum varies widely which is much influenced by regional and political factors. The situation is even worse at Asian countries where they do not have any regional entity of the specialty like in the Europe or in the US. A consensus on the issue is hence is a time demanded for identical training and education in PMR

Conclusion

Conclusions: There is no straight way out of the problems; however, a uniform nomenclature of the specialty with globally identical courses and curriculum keeping provisions of national flexibility may be recommended. Updating the contents of PMR medical education keeping pace with the changes of the environments and technological explosions are the Millennium requirements.

No conflict of interest

ISPR7-0576

Education and Training in Rehabilitation - Specialist Training

PERCEPTIONS ON DELIVERY OF INFORMATION ABOUT THE FUNCTIONAL PROGNOSIS IN CHILEAN PHYSIATRISTS

N. Gonzalez¹

¹, Concepción, Chile

Introduction/Background

Physiatry is closely related to personal and family bereavement for long periods of time. It is commonly thought that academic preparation is not enough to provide patients with hard disability an adequate delivery of information about the functional prognosis (DIFP). There are no studies that evaluate whether physiatrists get an adequate formation and how this activity impacts their health.

Goals: To analyze the perception of Physiatrists regarding their academic formation, and the emotional impact generated by DIFP to adult patients who suffer severe neurological damage.

Material and Methods

Descriptive Study, developed in 24 Chilean rehabilitation centers. An online survey was designed, validated and applied. The statistical analysis was performed including descriptive and inferential statistics χ^2 to analyze association between variables. For qualitative analysis the Empirically Based Theory was used.

Results

43 surveys were completed. 79.1% of the Physiatrists answered that they had not received adequate preparation to perform DIFP, 95.3% identified the need for a formal preparation, 67.4% considered this activity as a stress source and 86% as emotional impact. The main factors associated with stress are the available resources and conditions of the professional team. The most common feeling described after DIFP is sadness.

Conclusion

The physiatrists consider they have not received adequate formation to perform DIFP, identifying the need for a training during specialization. This activity is described as stress generator with a significant emotional impact, being this perception greater in the younger medicals. This study suggest that improvements should take place regarding the physiatrists formation and management of rehabilitation teams.

No conflict of interest

ISPR7-0618

Education and Training in Rehabilitation - Specialist Training

CRITICALLY APPRAISED TOPICS SESSION AS A TRAINING TOOL FOR MEDICAL INTERNAL RESIDENT OF PHYSICAL AND REHABILITATION MEDICINE

*I. Díaz-Cano Carmona¹, J.M. Fernández Torrico¹, J. Rodríguez García¹,
C. Echevarría Ruiz de Vargas¹, M.N. Montón², D.A. Lo Tartaro²*

¹Hospital Virgen del Rocío, Physical Medicine and Rehabilitation, Sevilla, Spain

²Instituto de Rehabilitación Psicosfísica, Servicio de Fisiatria, Buenos Aires, Argentina

Introduction/Background

Critically Appraised Topic (CAT) is an important tool in a resident training to face the scientific and new technological Evidence-based Medicine (EBM). In our clinical daily activities we wonder about some clinical questions we use to answer/treat in the same way as 15-20 years ago in an Experience-based Medicine way. In other occasion are the patients who ask to us about some weird treatment they have been informed to related to their pathologies. However, do they have any medical evidence? The aim of this study is to introduce you this kind of session and its importance to a well evidence-based medicine practice.

Material and Methods

Most of the famous medical browsers are revised in order of answering a clinical question, using the latest reviews/articles in a good methodological way thanks to CASP (Critical Appraisal Skill Programme Oxford) tools, which determines the studies we are able to use. Best methodological studies are included in this critical appraisal skill in order to answer the question we wonder firstly, each one with an evidence level. To get a conclusion we sum the answer with a recommendation grade strong based on that quality studies in which we reinforce our treatment.

Results

CATs have been the most important research tool in our service since 10 years ago and an essential tool for management in training of residents doctor in our hospital's Rehabilitation Management Unit. It has been used by a total of 28 residents and around 20 specialists in our service have reviewed the process. We also have trying to implement this research tool in other departments of our hospital in which we are deeply in contact.

Conclusion

CATs clinical sessions are an optimal tool to teach the residents in the use of evidence-based medicine methodology and encourage all of us to improve our skills in Physical Medicine and Rehabilitation.

No conflict of interest

ISPR7-0644

Education and Training in Rehabilitation - Specialist Training

ACADEMIC EXPERIENCE OF A MODEL FOR TRAINING HIGHLY SPECIALIZED PHYSICIANS IN GERIATRIC REHABILITATION IN THE NATIONAL INSTITUTE OF REHABILITATION LUIS GUILLERMO IBARRA IBARRA IN MEXICO

M.L. Enríquez Sandoval¹, B.L. Jiménez Herrera², R. Sandoval Vega Gil³, J.H. Ruiz Zavala⁴, K. Tolentino Bazán⁵

¹Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Dirección de Educación en Salud, Ciudad de México, Mexico

²Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Servicio de Rehabilitación Geriátrica, Ciudad de México, Mexico

³Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Subdirección de Educación Médica, Ciudad de México, Mexico

⁴Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Servicio de Archivo Clínico, Ciudad de México, Mexico

⁵Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Rehabilitación Ortopédica, Ciudad de México, Mexico

Introduction/Background

In Mexico, the percentage of population over 60 years will be of 14.8% in 2030. The 26% of older adults have a disability. The aim of this research is to promote the academic experience of a model for training highly specialized physicians in geriatric rehabilitation in the National Institute of Rehabilitation in Mexico.

Material and Methods

It is a descriptive study of the educational model for training highly specialized physicians in geriatric rehabilitation in the NIR from 2004 to 2016. The information was obtained from a review of the records of the educational model, as well as the records of the residents who were trained in this course and by a questionnaire that was sent to the graduates.

Results

In Mexico, the highly specialized course in geriatric rehabilitation was proposed to the National Autonomous University of Mexico in 2004 by the National Institute of Rehabilitation by the initiative of Dra. Matilde L. Enríquez Sandoval. The course lasts 12 months and has a total of 150 credits. The graduates are highly specialized physicians in geriatric rehabilitation which are working in different cities of our country in the rehabilitation services of public and private institutions, where they apply the knowledge and skills acquired during their training in this institution for the attendance of the older adults.

Conclusion

The people over 60 years require the support of rehabilitation medicine with specific training in geriatrics. The biggest challenge that faces this educational model is create more areas for training a greater number of highly specialized physicians in geriatric rehabilitation.

No conflict of interest

ISPR7-0656

Education and Training in Rehabilitation - Specialist Training

RESULTS OF A DEPRESSION DETECTION PROGRAM IN RESIDENTS OF REHABILITATION MEDICINE AT A HOSPITAL IN MEXICO CITY

M.L. Enriquez Sandoval¹, Y. Orozco y Farrera², X. Hernández López², E. Arch Tirado³, A. Verduzco Mendoza³, R. Sandoval Vega Gil²

¹Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Dirección de Educación en Salud, Ciudad de México, Mexico

²Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Subdirección de Educación Médica, Ciudad de México, Mexico

³Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Laboratorio de Neurobiología, Ciudad de México, Mexico

Introduction/Background

In the academic context, it has been shown that medical residents have significant levels of depression, anxiety and stress, which may be associated with academic performance. The aim of this research is to show the results of a depression detection program in residents of rehabilitation medicine at a hospital in Mexico City.

Material and Methods

There were reviewed the files of the 88 residents of rehabilitation medicine that were admitted in a highly specialized hospital at Mexico City from 2009 to 2014. The sociodemographic variables, the results of the Hamilton Test and the academic performance were analyzed. The analysis was made with descriptive statistics and chi square test.

Results

21 (23.86%) rehabilitation residents were diagnosed with depression. There were 3 (14.3%) male and 18 (85.7%) female, the average age was 25.8 years old, 19 (90.5%) were singles and 2 (9.5%) married, 8 (38.1%) were from Mexico City and 13 (69.9%) from others cities; 14 (66.67%) had mild depression and 7 (33.33%) moderate. 6 (28.57%) residents received counseling and 15 (71.43%) refused to receive it. χ^2 test was performed to determine the association between psychological support and academic performance. No significant differences between the association of these variables were found.

Conclusion

In the academic performance there was no significant difference between who received counseling and who's not. It is necessary to detect the depression in the rehabilitation residents and to create effective programs to promote mental health in them.

No conflict of interest

ISPR7-0605

Education and Training in Rehabilitation - Training in Science and Research

EFFECTS OF DIFFERENT NON-INVASIVE VENTILATION MODES ON HEMODYNAMIC PARAMETERS IN HEALTHY YOUNG MEN DURING THE STEP TEST

P.A. Ricci¹, R. Cabiddu², L.D. André¹, R.G. Mendes¹, R. Trimer¹, K.T.L. Zangrando¹, A.M. Bonança¹, A. Borghi-Silva¹

¹*Universidade Federal de São Carlos, Fisioterapia, São Carlos, Brazil*

²*Universidade Federal de São Carlos, Departamento de Fisioterapia, São Carlos, Brazil*

Introduction/Background

Background and aims: Non-invasive ventilation (NIV) is an important adjunct in rehabilitation programs. However, the effects of different NIV modes on the cardiovascular responses during exercise still need to be investigated. Our objective was to compare hemodynamic parameters in response to different VNI protocols in healthy young men during exercise.

Material and Methods

Methods: 15 healthy men underwent 3 NIV modes: Binivel (PS: 8-12, PEEP: 5-6 cmH₂O), PS (PS: 5-6, PEEP: 5-6 cmH₂O) and Sham (PEEP: 3 cmH₂O). After 6 minutes at rest, the step test was performed, followed by 6 minutes of recovery. The heart rate (HR) was collected (PolarS810i). The systolic (SBP) and diastolic blood pressure (DBP) were collected. Delta values peak-rest and recovery-peak were calculated. Data were analyzed by SigmaPlot (significance: $p < 0.05$).

Results

We did not find significant differences when we considered the delta values peak-rest for any of the three modes for HR: Binivel ($46,20 \pm 13,99$), Sham ($46,26 \pm 18,32$) and in PS ($48,4 \pm 8,11$); SBP: Binivel ($48,66 \pm 17,58$), Sham ($55,46 \pm 21,47$) and PS ($55 \pm 21,36$) and for DBP: Binivel ($2,50 \pm 11,15$), Sham ($1,33 \pm 10,72$) and PS ($0,80 \pm 9,98$). Moreover, we did not find significant differences when we considered the delta values recovery-peak for any of the three modes for HR: Binivel ($31,80 \pm 17,90$), Sham ($34,4 \pm 18,86$) and in PS ($34,66 \pm 17,15$); SBP: Binivel ($46 \pm 15,40$), Sham ($48,13 \pm 25,98$) and PS ($50,06 \pm 17,02$) and for DBP: Binivel ($4 \pm 12,56$), Sham ($0,5 \pm 7,64$) and PS ($1,33 \pm 8,84$).

Conclusion

We observed that different VNI modes applied during exercise did not influence the hemodynamic fluctuations from rest, to peak, to recovery in healthy young men. We conclude that cardiovascular responses to exercise are independent of the VNI mode.

No conflict of interest

ISPR7-0329

Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

LANDSCAPE OF PHYSIOTHERAPY CLINICAL EDUCATION AT A TERTIARY INSTITUTION IN SOUTH AFRICA

V. Chetty¹, S. Lawler¹, S. Cobbing¹, N. Pefile¹

¹University of KwaZulu-Natal, College of Health Sciences, Durban- KwaZulu-Natal, South Africa

Introduction/Background

Clinical education within rehabilitation sciences remains a challenge for health professional's education. Challenges include the translation of theoretical knowledge into clinical practice and poor curriculum design. There is a paucity that is evident in physiotherapy clinical education in Africa. Consequently, to bridge the gap this study sought to explore the perceptions of final year physiotherapy students, community service physiotherapists and clinical supervisors on the physiotherapy curriculum offered at a tertiary institution in South Africa.

Material and Methods

A qualitative case study approach was used to triangulate the information from the 3 groups. Two focus group discussions with physiotherapy students as well as semi-structured interviews with physiotherapy clinical supervisors as well as community service physiotherapists were conducted. Data was analysed using conventional thematic analysis and reflected as themes and sub-themes and illustrative quotes from participants.

Results

Twenty-two final year physiotherapy students, nine community service physiotherapists and nine physiotherapy clinical supervisors were recruited using maximum variation purposive sampling. Five themes emerged following the triangulation of data; preparedness for professional practice, institutional barriers, curriculum redress, personal inhibitors and recommendations for physiotherapy clinical education. Students perceived that they lacked adequate exposure in certain aspects of physiotherapy; whilst clinical supervisors expressed that some students were not active engagers in the teaching and learning physiotherapy experience. Retrospectively, community service physiotherapists believed the undergraduate programme provided a fair foundation of knowledge and clinical experience to manage rehabilitation practice in community placement areas.

Conclusion

Many barriers to adequate clinical training within the programme were identified including curriculum re-design, lack of resources and time constraints. Recommendations by participants included a transformation of teaching strategies to a more dynamic bedside approach, and improved relationships between educator and student which was believed to provide an enabling tertiary learning platform.

No conflict of interest

ISPR7-0682

Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

**OUTCOMES DIFFERENCE BETWEEN GRADUATE-TRAINED PHYSIOTHERAPIST AND NOT:
THE IMPLICATION ON QUALITY OF LIFE AND ITS IMPACT ON THE HEALTH CARE SYSTEM.**

J. Di Leo Razuk¹, M. Aziz¹

¹*P.I.A., Physiotherapy, San Isidro, Argentina*

Introduction/Background

Background: rehabilitation is the least invasive and expensive utilization of the health-care system when it comes to production, work force and societal wellbeing. Since 1999-2000 there has been a focus on physiotherapy graduate training in an attempt to produce better, more professional and evidence-based clinicians. The use of evidence in clinical decision-making is promoted among many health professions in response to a documented practice variation and increasing health care cost, as well as in response for improved quality of care. This review presents the data on how the impact of more professional rehabilitation's educational cost is far offset by the benefits on quality of life for patients, their re-insertion in society, the avoidance of litigation with its financial and emotional cost and the prevention of long term disability.

Material and Methods

Method: literature search and outcomes measure tools data.

Results

Results: Fellowship-trained physiotherapists achieve greater clinical changes and are more efficient than their counterparts.

Conclusion

Conclusions: fellowship training may lead to improvement in differential diagnosis, treatment outcomes and utilization efficiency.

No conflict of interest

ISPR7-0889

Education and Training in Rehabilitation - Training of Other Rehabilitation Professionals

ONCOLOGY REHABILITATION CONTENTS IN UNDERGRADUATE PHYSIOTHERAPY STUDY PLANS IN CHILEAN UNIVERSITIES

L. Torres¹, P. Araya²

¹Universidad San Sebastián, Escuela de Kinesiología, Santiago, Chile

²Universidad San Sebastián, Facultad de Ciencias de la Salud, Santiago, Chile

Introduction/Background

Cancer is a major public health issue and its incidence is increasing in Chile. Cancer survivors have specific functional limitations that must be addressed by multidisciplinary health teams. The aim of this study was to describe the contents of Oncology Rehabilitation in the study plans of Physiotherapy at Chilean Universities by year 2016.

Material and Methods

A descriptive study was conducted during October, 2016. Physiotherapy study plans were obtained from all Chilean Universities that teach this career and analyzed. Universities were classified into three groups: 1 – Universities with the specific course of “Oncology Rehabilitation”; 2 – Universities with the course “Specialties in Physiotherapy”; and 3 – Universities with none of the two courses mentioned before. All Physiotherapy Undergraduate Directors were contacted and asked to answer a validated electronic questionnaire about their Universities.

Results

43 Universities had a Physiotherapy Undergraduate program. 39 of them met inclusion criteria, from which 28 accepted to participate (69%). 11 Universities reported to teach contents of Oncology Rehabilitation for undergraduate students, and only 1 University had a specific course of Oncology Rehabilitation. The number of academic hours for this topic in these Universities is described in table

1.

Table 1: number of hours of Oncologic Rehabilitation in Physiotherapy Undergraduate Programs in Chilean Universities

Number of hours for Oncologic Rehabilitation in Physiotherapy undergraduate programs	Number of Universities	%
0	16	57.1%
1 – 10	2	7.1%
11-20	2	7.1%
21-30	1	3.6%
31-40	0	0%
>40	4	14.3%
No answer	3	10.7%
TOTAL	28	100%

Conclusion

Most of Chilean Universities do not include Oncology Rehabilitation in their Physiotherapy undergraduate programs, and there is a high variability among those Universities who declare to teach this topic. A standard should be developed for future Chilean Physiotherapists to be prepared to properly face this Public Health issue.

No conflict of interest

ISPR7-0425

Education and Training in Rehabilitation - Undergraduate Medical Education

ATTITUDE TOWARDS DISABLED PERSONS IN 6THYEAR MEDICAL STUDENTSIN MOROCCO: EFFECTS OF TEACHING A MODULE ON DISABILITY

A. Hajjioui^{1,2}, A.A. Alfari³, M. Sokona³, M. Fourtassi⁴

¹University Sidi Mohammed ben Abdellah, Laboratory of Epidemiology- Clinical Research, Fez, Morocco

²University Hospital HASSAN II, Physical and Rehabilitation Medicine, Fez, Morocco

³University Sidi Mohammed ben Abdellah, Physical and Rehabilitation Medicine, Fez, Morocco

⁴Faculty of medicine and pharmacy, Physical and Rehabilitation Medicine- University Hospital, Oujda, Morocco

Introduction/Background

In developing countries, persons with disabilities (PWDs) are experiencing enormous difficulties in social integration. Negative attitudes of non-disabled people towards disability have been reported in several publications. This restriction of access of PWDs to benefit society, especially in the field of health, made the introduction of a module on disability in the new reform of medical studies in Morocco in 2015.

The aim of this study is to assess, theAttitude of 6th year medical students in the faculty of medicine of Fez towards disabled persons before and after the theoretical teaching of the disability module

Material and Methods

This is a cross-sectional study comparing the behavior of 6thyear medical students towards disabled Persons before and after the teaching of a module on disability.

The translated and validated "Attitudes towards disabled persons (ATDP)"questionnaire was used in the study. The ATDP score includes 33 items, with a total score that varies between 33 and 198.

Results

207 students took part in the study with a 94.5% participation rate with a male predominance (58.5%). The average age of participants was 24.11 years [23-29], and 6 students (2.5%) suffered fromdisability. 42 students (17.4%) had at least one member of their family disabled, 27 students (11.2%) reported having taken care of a PWDat least once in their lives.

The ATDP survey revealed negative attitudes towardsPWDs before teaching a module on disability. The negative perception of the students changed after teaching a module on disability.

The average score ATDP before teaching was of 97.58 +/- 16.24 and after teaching 94.51 +/- 17.23.

Conclusion

Teaching a module on disability to medical students improves the perception of future doctors towards PWDs, which might help in banningsocial barriers and achieving optimal care and a social inclusion of PWDs.

No conflict of interest

ISPR7-0637

Education and Training in Rehabilitation - Undergraduate Medical Education

EVALUATION OF SATISFACTION IN MEDICAL STUDENTS OF THE CLINICAL COURSE OF REHABILITATION IN THE NATIONAL INSTITUTE OF REHABILITATION LUIS GUILLERMO IBARRA IBARRA

*M.L. Enríquez Sandoval*¹, *R. Sandoval Vega Gil*², *J.H. Ruiz Zavala*³, *S.I. Macías Hernández*⁴, *E. Marín Monterroso*⁵, *M.D. Zamora Contreras*⁴, *K. Tolentino Bazán*⁴, *R. Noriega Martínez*⁵

¹*Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Dirección de Educación en Salud, Ciudad de México, Mexico*

²*Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Subdirección de Educación Médica, Ciudad de México, Mexico*

³*Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Servicio de Archivo Clínico, Ciudad de México, Mexico*

⁴*Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Rehabilitación Ortopédica, Ciudad de México, Mexico*

⁵*Instituto Nacional de Rehabilitación Luis Guillermo Ibarra Ibarra, Medicina de Electrodiagnóstico, Ciudad de México, Mexico*

Introduction/Background

Higher education in Mexico grows in an environment of competition and joins education policy of quality. The aim is to describe the degree of satisfaction in medical students of the clinical course of rehabilitation.

Material and Methods

Observational and descriptive study of medical students over 18 years, both sexes, who completed during 2015 and 2016 the course of rehabilitation. The information was obtained from the self-application of a questionnaire. The sample size was calculated to be at least of 150 students. Descriptive statistics and association tests were performed.

Results

Included a total of 317 students. The average age was 22 years; 43.5% were men and 56.5% female; 0.9% were married, 98.4% unmarried and 0.5% in free union. The highest percentage of the students reported values very favorable on four characteristics of the satisfaction as described below: in general terms the course seemed excellent to the 51.4%, the 75.4% considered it very innovative and interesting, the 70% reported it as a course very clear, it generated much interest in the 61.8% and the 46.7% of the students considered it as an option to perform the specialty of rehabilitation medicine.

Conclusion

It was shown that students had a high satisfaction in this clinical course. It is recommended to develop more projects to investigate the variables that influence in the satisfaction of students and thus be able to design programmes and interventions in order to improve the quality of medical education and promote the teaching of rehabilitation in the medical career.

No conflict of interest

ISPR7-0462

Rehabilitation Management and Administration - Rehabilitation Service Management
(including Integrated Care and Service Concepts)

**VALIDATION OF A QUESTIONNAIRE MEASURING PATIENTS' LOYALTY AND/ OR
COMMITMENT TOWARD MEDICAL REHABILITATION CLINICS OF THE GREEK NATIONAL
HEALTH SYSTEM**

M. Pyrgeli¹, A. Sarri¹, S. Anastasiadou²

¹*UOM, Business Administration, Thessaloniki, Greece*

²*UOWM, Early Childhood education, Florina, Greece*

Introduction/Background

Background and Aims: Evaluate patients' loyalty to medical rehabilitation clinics of the Greek National Health System and identify factors influencing patients' loyalty.

Material and Methods

Method: Cross-sectional, population-based study was conducted during 2013, between patients suffering from disabilities (according to ICF) treated in Medical Rehabilitation Departments of the Greek National Health System.

Results

Results. Explanatory Factor Analysis revealed that items are loaded on four factors: (a) quality-loyalty, (b) cost - loyalty, (c) satisfaction-loyalty, (d) loyalty. All items loaded more heavily on their corresponding constructs rather than on other constructs, Discriminant Validity was satisfied. The square roots of all AVEs were larger than correlations among constructs. This means satisfying Discriminant Validity. All AVEs value above the cut-off point of 0.50 for the four factors implies Convergent Validity. Cronbach's α is 0.907 fact that verifies internal consistency of PaLoSc (Patients Loyalty Scale). Composite Reliability (CR) values for the 1st, 2nd, 3rd, and 4th factor is equal to 0.893, 0.872, 0.924, 0.819, are above the threshold of 0.7, fact that revealed that all factors were reliable.

The scree test produces (Figure 1) the following graph, which proceeds to a graphic representation of eigenvalues and guides us, to the determination of the number of the essential factorial axes. The following graph (Figure 1) shows a distinct break up to the sixth factor, whereas, after the seventh one, it follows a linear part of the eigenvalue curve.

Conclusion

Conclusions. The results suggest that PaLoSc (Patients Loyalty Scale) is a valid and reliable instrument.

No conflict of interest

ISPR7-0407

Rehabilitation Management and Administration - Structures and Processes in Rehabilitation Institutions

ROLE OF RAPID ACCESS ACUTE REHABILITATION FOR MULTIPLE TRAUMA PATIENTS

H. Mee¹, F. Anwar²

¹, Ely, United Kingdom

², Rehabilitation Medicine, Cambridge, United Kingdom

Introduction/Background

Major trauma is associated with increased morbidity and can lead to severe physical, neurological as well as psychological impairments. The system of major trauma centres lead to integrated care of the trauma patient's right from the scene of the accident to long term rehabilitation.

On this background, the aim of the study was to look at the role of rapid access acute rehabilitation service, developed as part of major trauma centre, and its effectiveness in providing rehabilitation at a very early stage.

Material and Methods

All major trauma patients admitted to rapid access acute rehabilitation unit from October 2012 to July 2014 were included in the study. Clinical data was collected as part of trauma rehabilitation prescription (mandatory requirement for best practice tariff).

Results

A total of 439 patients admitted to rapid access acute rehabilitation unit. Vehicle collision was the most common cause of admission to a major trauma centre. 61.7% of patients had a predicted ISS of more than 15 indicating severe injuries. Majority of patients were discharged home from the rapid access acute rehabilitation unit despite have severe injuries. The length of stay data indicated that 86% of patients were discharged within 28 days.

Conclusion

The rapid access acute rehabilitation provide appropriate environment as well as therapy input for major trauma patients to recover from their injuries and achieve maximum potential for recovery.

No conflict of interest

ISPR7-0918

Rehabilitation Management and Administration - Structures and Processes in Rehabilitation Institutions

PROCEDURAL GUIDES DEVELOPED BY AN INTERDISCIPLINARY TEAM OF A REHABILITATION HOSPITAL ABOUT TREATMENT OF PATIENTS ADMITTED WITH SEVERE OR MODERATE TRAUMATIC BRAIN INJURY

M.J. Von Zeschau¹, M. Kurcgor¹, M. Shaferstein¹, J. Luccon¹, M.E. Canda¹, V. Groba¹, C. Rochina¹, M.C. Balbiani¹, J. Di Mattia¹, A.M. Felipez¹, M.E. Boix¹, L. Perez¹, S. Nembrini¹, M. Stefanolo¹, A. Calb¹, M.D.L.M. Romero¹, L. Yonadi¹, S. Tucci¹, P. Pablo¹, A. Policella¹

¹Hospital De Rehabilitacion M.Rocca, Departamento De Medicina Fisica Y Rehabilitacion, Buenos Aires, Argentina

Introduction/Background

In our hospital, the "Early and Interdisciplinary Rehabilitation Program for Patients with Severe and Moderate Traumatic Brain Injury admitted in hospital" is developed with professionals from different disciplines who specialized in the management of this pathology. It includes activities with the patient and his primary group of support and continuous training for the interdisciplinary group. Later on, we developed guides based on experiences of similar centers and our own experiences.

Material and Methods

It works within the framework of annual practical theoretical course, directed and developed by and for professionals of the Interdisciplinary Team of TBI of the HRMR.

The professionals analyze and standardize the main diagnostic and therapeutic processes that are performed in this hospital in the different evolutionary stages that these patients present.

- Admission and departure
- Inclusion of family and / or caregivers
- Planning and use of free time
- Use of social and community resources, family, social, educational and work reintegration.
- Management of alterations of:
 - swallowing
 - movement
 - sensory deficits
 - communication
 - cognition and behavior
 - sleep and wakefulness
 - neuroendocrine disorders

Results

We present the norms that were thought from consensus, in each of the mentioned points, a guiding idea, simple and clear, that guides the whole team to work, each one from its discipline and in consonance with the others, looking for a common goal.

Our priority is to avoid immediate complications and then progress and deepen the integral approach of the patient to obtain as good results as possible.

Conclusion

Norms were developed in order to follow an idea which organizes our activities, establishes priorities, supports and guides the professional action and allows the training of professionals from other institutions.

No conflict of interest

ISPR7-0038

Rehabilitation Systems and Services Research - Community-Based Participation Research

HEALTH RELATED REHABILITATION OF DISASTER VICTIMS, BANGLADESH PERSPECTIVE

S. Rahman¹, A.K.M. SALEK¹

¹Bangabandhu Sheikh Mujib Medical University, Physical Medicine and Rehabilitation, Dhaka, Bangladesh

Introduction/Background

Disasters result in significant numbers of disabling impairments. Bangladesh is a disaster prone country. Floods and cyclones killed millions of people in Bay of Bengal during last centuries.

Poor peoples of coastal areas were major victims. Deadly earthquakes are rare. Non-compliant building collapse had major casualties during recent past. Landslides during heavy rain in hilly areas also cause many deaths. The traditional health system response to disasters largely neglects health-related rehabilitation as a strategic intervention. Inadequate preparedness and insufficient equipment for rescue are major causes of death and disability. This review intends to emphasize the need of health related rehabilitation of disaster victims at low resource setting in Bangladesh.

Material and Methods

We have gone through the recent events of natural disasters in Bangladesh, and observed the health related rehabilitation on the sufferers. We have also analyzed the national plan for disaster management 2010-2015 of government of Bangladesh to see the pattern of health related rehabilitation in disaster. We reviewed literatures on health related rehabilitation during a disaster to see our status in this regard.

Results

Results of our review were disappointing. Health related rehabilitations in recent calamities were grossly neglected during rescue operations and management. National plans were not inclusive of health related rehabilitation. Rescuers and local hospital staffs were not well trained about transfer and initial management. Shelter centers and local hospitals were not equipped with essential equipment.

Conclusion

Health-related rehabilitation potentially results in decreased morbidity due to disabling injuries sustained during a disaster. Health related rehabilitations are grossly neglected. Challenges to effective delivery of health related rehabilitations during disaster include a lack of trained responders, preparedness and system settings at site. We recommend the training of community based health workers for transfer and acute care management of disaster victims.

No conflict of interest

ISPR7-0217

Rehabilitation Systems and Services Research - Community-Based Participation Research

THE EXPERIENCES OF COMMUNITY HEALTHCARE WORKERS AND PEOPLE LIVING WITH HIV WHO PARTICIPATED IN A STUDY INVESTIGATING A HOME-BASED REHABILITATION INTERVENTION IN KWAZULU-NATAL, SOUTH AFRICA

S. Cobbing¹

¹*University of KwaZulu-Natal, Department of Physiotherapy, Durban, South Africa*

Introduction/Background

South Africa has the highest number of people living with HIV (PLHIV) globally. With an increased uptake of ART, PLHIV are living longer lives but this is accompanied by an increased risk of disabilities. Effective management of disability requires rehabilitation interventions. Rehabilitation professionals are in short supply in South Africa's public sector, which makes it challenging to deliver rehabilitative care close to patients' homes.

Material and Methods

This study employed a qualitative research design. Following a four month randomised controlled trial of a HBR intervention designed for PLHIV and disability in KwaZulu-Natal province, South Africa, interviews were conducted with the community health care workers who worked in the intervention, as well as with PLHIV who received rehabilitation in their homes. The questions interrogated the participants' experiences of being involved in the HBR study. Thematic content analysis was employed to identify common themes emerging from the transcribed data.

Results

The results of this qualitative enquiry revealed four overarching themes namely; enablers, inhibitors, participants' feelings of empowerment and recommendations for future interventions of this nature. Both the healthcare workers and PLHIV described improved physical and mental well-being, despite the various challenges they faced during the four month intervention. Participants made a number of practical suggestions that could prove useful in the design and implementation of future HBR programmes for PLHIV, including a greater involvement of patients' families and community members in HBR programmes.

Conclusion

Innovative strategies are required to meet the rehabilitation needs of PLHIV, particularly in resource-poor communities where HIV is endemic and access to institution-based rehabilitation is limited. This study demonstrated the effectiveness and safety of a novel home-based rehabilitation intervention for PLHIV in one such community. The findings of this study should be considered when employing a task shifting approach in the development and implementation of HBR interventions for PLHIV.

No conflict of interest

ISPR7-0461

Rehabilitation Systems and Services Research - Community-Based Participation Research

VALIDITY OF THE JAPANESE VERSION OF QOLIBRI-OS (QUALITY OF LIFE AFTER BRAIN INJURY-OVERALL SCALE)

M. Suzuki¹, M. Naito², K. Ota³, I. Kondo⁴

¹*Fujita Health University, Department of Health Sciences, Toyoake, Japan*

²*Nagoya University, Graduate School of Medicine, Nagoya, Japan*

³*International University of Health and Welfare, Department of Rehabilitation Medicine, Nasushiobara, Japan*

⁴*National Center for Geriatrics and Gerontology, Department of Rehabilitation Medicine, Obu, Japan*

Introduction/Background

The QOLIBRI, which was developed by von Steinbüchel et al, provides a profile of health-related QOL of patients with traumatic brain injury, where higher percentages represent better QOL. The QOLIBRI, a cross-cultural instrument, could provide a useful QOL index of TBI patients in Japan. We examined the validity and reliability of the Japanese version of the QOLIBRI overall scale (QOLIBRI-OS), which is a brief summary measure.

Material and Methods

All the 129 Japanese TBI patients (mean age 41.8 years) were assessed by the QOLIBRI, SF-36, and HADS. Of them, 61 were re-tested by the OS at an interval of two weeks. The degree of recovery from TBI was assessed with the GOSE.

Results

The retest showed Cronbach's $\alpha=0.95$. The total OS scores were positively correlated with GOSE, QOLIBRI and SF-36 scores ($r=0.23$ to 0.82 , $P<0.01$) and negatively correlated with HADS scores (anxiety: $r=-0.45$, depression: -0.68 , $P<0.01$). The average OS score, $30.76\pm 21.33\%$, was lower than the previously reported $71.82\pm 17.24\%$.

Conclusion

The QOLIBRI-OS, which was developed to be used as a brief index, seems to have factors common to the QOLIBRI. The OS scores, positively correlated with SF-36, support the validity of the OS as a health-related QOL index. Anxiety and depression can cause poor QOL. Improved anxiety and depression after traumatic brain injuries, therefore, seemed to contribute to high QOL. Lower OS scores among Japanese TBI patients may be due to the higher percentage of severely disabled patients than that in the previous report.

No conflict of interest

ISPR7-0614

Rehabilitation Systems and Services Research - Community-Based Participation Research

CBR IN ITALY

G. Pestelli¹, I. Mattozzi²

¹*SIMFER, SIMFER, Forli, Italy*

²*Health public system, HPS, Bagnoregio, Italy*

Introduction/Background

Italy is a country in which MDs in rehabilitation preferred to bring up medical rehabilitation instead of social rehabilitation. For a long time medical rehabilitation into the hospitals was signed as the true rehabilitation for the best doctors. The system forgot community and territories thinking that "poor" doctors was able only for poor people. Recently Italy discovered to do a real and efficacy rehabilitation in the communities.

Material and Methods

In the last years, thank to the activity of SIMFER, Italy discovered to do a real and efficacy rehabilitation in the communities. SIMFER edited a pamphlet in which declared the guide lines for the rehabilitation out of the hospitals and recently edited a new document about cronichal model of care.

So we start to think about the possibility to develop community rehabilitation. In our country, so as in all the world, the problems of poor people are present and we have the necessity to give answers with activities without burocracy and near the needs of disabled.

Results

The first experience of CBR in the village of Bertinoro in Emilia Romagna started in 2012. MDs in rehabilitation and physiotherapists, start to teach something about rehabilitation to a group of volunteers. The teachers had experience in low resourches countries.

Conclusion

We try to be active in the places of poor people. We think that medical and social rehabilitation must have the same objective: to develop quality of life of disable people and give a chance of participation for all. And work all togheter. Our words are: "To arrive where it is difficult to arrive"

No conflict of interest

ISPR7-0538

Rehabilitation Systems and Services Research - Health Strategies in PRM

PROFESSIONAL BARRIERS AND FACILITATORS TO USING STRATIFIED CARE APPROACHES FOR MANAGING NON-SPECIFIC LOW BACK PAIN

F. Al Zoubi¹, N. Mayo¹, S. French², A. Patey³, A. Bussières¹

¹McGill University, School of Physical & Occupational Therapy, Montréal, Canada

²Queen's University, School of Rehabilitation Therapy, Kingston, Canada

³City University London, School of Health Sciences, London, United Kingdom

Introduction/Background

Recent clinical practice guidelines on the management of non-specific low back pain (NSLBP) recommend using stratified care approaches (SCAs). Multiple barriers may prevent clinicians from routinely using SCA to manage NSLBP. To date, these factors have not been explored in Canadian primary care settings. This study contrasted barriers and facilitators to using SCAs for NSLBP among Canadian physiotherapists (PTs) and chiropractors (DCs).

Material and Methods

Individual telephone interviews underpinned by the Theoretical Domains Framework (TDF) explored beliefs about and barriers to using SCAs for managing NSLBP in a purposive sample of 13 DCs and 14 PTs. Interviews were digitally recorded, transcribed verbatim and analysed by two independent assessors using thematic content analysis.

Results

Five and eight TDF domains were identified as likely relevant for PTs and DCs respectively. Key beliefs for PTs included: incompatibility with achieving other objectives (*Goals*); lack of time, cost, and expertise (*Environmental Context and Resources*); chronic patients with important psychological overlay (*Emotions*); and consulting experts (*Social Influences*). Key beliefs for DCs included: *Environmental Context and Resources*; *Emotions*; confidence in using SCAs (*Beliefs about Capabilities*); *Social Influences*; intention to use SCAs (*Intentions*); awareness and agreement with SCAs (*Knowledge*); assessment of readiness for change and intentional planning behaviour (*Behavioural Regulation*); and accelerating the management of patients and the uptake of evidence-based practice (*Beliefs about Consequences*).

Conclusion

Both disciplines appear to be influenced by a number of factors. Findings may help inform the design of a theory-based KT intervention to help implement SCAs into clinical practice.

No conflict of interest

DEVELOPMENT OF THE INTEGRAL REHABILITATION NETWORK IN ARAUCANIA SUR HEALTH CARE SERVICE (ASHCS), NINTH REGION, CHILE

C.E. Carmona Valenzuela¹, P.P. Elizabeth Lorena², O.N. Yosseline Andrea³

¹, Temuco, Chile

²Hernán Henríquez Aravena Hospital, Physiatric, Temuco, Chile

³Hernán Henríquez Aravena Hospital, Medical doctor, Temuco, Chile

Introduction/Background

ASHCS is organized territorially in 5 areas, a high hospital, four medium hospitals and twelve low complexity hospitals, besides primary care facilities. Rehabilitation benefits aren't necessarily comprehensive. Integral rehabilitation strategies are developed, precocious, intensive in hospitals with objective of continuity of care until return to APS with better functional results.

Material and Methods

Descriptive study based on unstructured interview with professional strategists. Survey of professionals who develop interventions, to gather data: work modality, intervention time, network coordination, tracing, available resources. The data obtained are analyzed qualitatively.

Results

August 2013 begins intensive multidisciplinary rehabilitation program from Critical Patient Unit, high complexity hospital. November 2015 implementation Neurorehabilitation Unit (NRh), with medium complexity beds in secondary hospital. May 2016 implementation Sociosanitarias Beds Unit (SSBU), beds for rehabilitation of low complexity patient in secondary hospital. Devices have multiprofessional teams who work preparing the discharge, educating patient and family, evaluating the need for rehabilitation for referral to network devices or home and subsequent follow-up. According to the patient's needs, there are transfers from high or medium complexity to the NRh Unit; or a weak support network are transferred to CSS, for functional rehabilitation and community reintegration. Characteristics of the devices in Table 1.

Table 1: Characteristics implemented strategies

		INTENSIVE REHABILITATION IN HIGH COMPLEXITY	NEUROREHABILITATION UNIT	SOCIO-HEALTH BEDS UNIT
COMPLEXITY LEVEL		High	Median	Low
ATTENTION TIME		Variable (days of hospitalization)	4-6 weeks	3-6 months
NUMBERS AVAILABLE		20	11	20
HUMAN RESOURCES (44 HRS)	Physiatrist	1	0,25	0,25
	Kinesiologist	4,5	1	1
	occupational therapist	1	0,5	1
	speech therapist	1	0,5	1
	social assistant	1	1	1
	psychologist	0,5	0	0
	nurse	0	1 + work shift	1 + work shift
	nurse technician	0	2 work shift	1 + 2 work shift

Conclusion

Existence of rehabilitation devices in different complexity levels, articulated with each other, allow greater hospital functionality, better family and community reinsertion, allows the release of beds in high complexity, maintaining quality of care. It's necessary to promote integral rehabilitation model in all establishments of the network, ensuring continuity with a biopsychosocial perspective.

No conflict of interest

ISPR7-0809

Rehabilitation Systems and Services Research - Health Strategies in PRM

COCHRANE REHABILITATION FIELD: EVIDENCE TO REHABILITATION AND REHABILITATION EXPERTISE TO COCHRANE

C. Kiekens¹, C. Arienti², W. Levack³, F. Grubišić⁴, E. Ilieva⁵, F. Gimigliano⁶, T. Meyer⁷, J. Patrick Engkasan⁸, F. Rathore⁹, A. Malmivaara¹⁰, S. Negrini²

¹University Hospitals Leuven, Department of Physical and Rehabilitation Medicine, Leuven, Belgium

²University of Brescia - Don Gnocchi Foundation, Department of Clinical and Experimental Sciences, Milano, Italy

³University of Otago, Department of Medicine, Wellington, New Zealand

⁴University Hospital Center "Sestre Milosrdnice",

Department of Rheumatology- Physical Medicine and Rehabilitation, Zagreb, Croatia

⁵Medical University of Plovdiv, Department of Physical and Rehabilitation Medicine, Plovdiv, Bulgaria

⁶University of Campania, Department of Mental and Physical Health and Preventive Medicine, Napoli, Italy

⁷Hannover Medical School,

Integrative Rehabilitation Research Unit- Institute for Epidemiology- Social Medicine and Health Systems Research, Hannover, Germany

⁸University of Malaya, Department of Rehabilitation Medicine, Kuala Lumpur, Malaysia

⁹Bahria University Medical and Dental College, Department of Rehabilitation Medicine, Karachi, Pakistan

¹⁰National Institute for Health and Welfare, Centre for Health and Social Economics, Helsinki, Finland

Introduction/Background

Based on an initiative of the European Society of Physical and Rehabilitation Medicine (ESPRM), the idea of a Cochrane Rehabilitation Field was supported by a number of organisations, including the International Society of Physical and Rehabilitation Medicine (ISPRM). After approval by Cochrane Steering Group, Cochrane Rehabilitation has been launched on December 2016. The aim of Cochrane Rehabilitation is to bridge between Cochrane and Rehabilitation stakeholders, systematically identifying and spreading evidence, but also improving its quality and quantity production per clinical needs.

Material and Methods

Cochrane Rehabilitation is a network of individuals, coming from all continents. Therefore, a clear and well-structured organisation is required to make Cochrane Rehabilitation function effectively.

Results

Up to now 230 people from 49 countries expressed their willingness to collaborate. The Figure summarises the proposed organisational solution. The Field Director will be directly responsible for the Knowledge Translation strategy and will be assisted by the Executive Committee. The Field Coordinator will ensure the implementation of a networking strategy, daily planning, organisation and coordination of activities between the Committees (Communication, Education, Methodology, Publication and Rehabilitation Reviews), Units and individual members. The Advisory Board will include key persons from different international stakeholders as well as recognised opinion leaders in rehabilitation.

Conclusion

Cochrane Rehabilitation will drive, on one side, evidence and methods developed by Cochrane to the world of Rehabilitation and, on the other, convey priorities, needs and specificities of Rehabilitation to Cochrane. Join us: www.rehabilitation.cochrane.org.

No conflict of interest

ISPR7-0105

Rehabilitation Systems and Services Research - Miscellaneous

ADVANTAGES OF PROBABILITIES OVER ODDS RATIOS AS MEASURES OF EFFECT SIZE IN REHABILITATION RESEARCH: THE EXAMPLE OF COMPARING TREATMENT EFFECTIVENESS ACROSS GROUPS

*P. Brzoska*¹

¹*Chemnitz University of Technology, Behavioral and Social Sciences- Epidemiology Unit, Chemnitz, Germany*

Introduction/Background

It is common in rehabilitation research to report odds ratios (ORs) when the outcome of interest is dichotomous. Because of unobserved heterogeneity, ORs, however, have limitations when it comes to the comparison of the results across nested models. In this study, this is illustrated using the comparison of the effectiveness of rehabilitation between two population groups (Germans and non-Germans) as an example. A probability-based measure (average marginal effects, AMEs) is presented as a more robust alternative to ORs.

Material and Methods

A random sample of 2013 routine data on all rehabilitations following diseases of the circulatory system in Germany was utilized (n=3,101). By means of logistic regression, the role of demographic/socioeconomic factors in explaining differences in the effectiveness of treatment between German and non-German nationals was assessed. The occupational performance, routinely evaluated at rehabilitation discharge following standardized guidelines, was used as a measure of effectiveness.

Results

Non-German nationals had almost double the chance of a poor treatment effectiveness than Germans (OR=1.96; 95%-CI=1.33-2.88). The OR adjusted for demographic/socioeconomic factors was only slightly lower (OR=1.92; 95%-CI=1.25-2.95), corresponding to a 2.9% decrease based on the underlying beta-coefficients. The respective AMEs were 0.095 (95%-CI=0.040-0.149) and 0.078 (95%-CI=0.027-0.130), corresponding to a 17.2% decrease.

Conclusion

In the present example, ORs underestimate the role that demographic/socioeconomic factors have for explaining differences in the effectiveness of rehabilitation between Germans and non-Germans. AMEs suggest that the decrease in effect size between the crude and adjusted model is considerably larger (17.2% vs. 2.9%). Probability-based measures such as AMEs can therefore provide a more accurate picture of true differences between crude and adjusted effects.

No conflict of interest

ISPR7-0200

Rehabilitation Systems and Services Research - Miscellaneous

FEASIBILITY OF AN INTERNATIONAL MULTIPLE SCLEROSIS REHABILITATION DATA REPOSITORY: PERCEIVED CHALLENGES AND MOTIVATORS FOR SHARING DATA

P. Feys¹, E. Held Bradford², M. Finlayson³, I. Baert¹, J. Wagner²

¹Hasselt University, REVAL - BIOMED, Hasselt, Belgium

²SLEW, Department of Physical Therapy and Athletic Training, St-Louis, USA

³Queens University, School of Rehabilitation Therapy, Kingston, Canada

Introduction/Background

MS rehabilitation evidence is limited due to methodological factors that may be addressed by a data repository. The purpose of this paper is to describe the perceived challenges, motivators, interest in and key features of an international MS rehabilitation data repository.

Material and Methods

A multi-method sequential investigation was performed with the results of two focus groups, using nominal group technique, informing the development of an online questionnaire. Percent agreement and key quotations summarized questionnaire findings. Subgroup comparisons between clinicians and researchers and between participants in North America and Europe were made.

Results

Rehabilitation professionals from 25 countries participated [focus groups n=21, questionnaire n=166]. The top 10 challenges (C) and motivators (M) identified by the focus groups were: 1) database control/management (C), 2) ethical/legal concerns (C), 3) data quality (C), 4) time, effort, and cost (C), 5) best practice (M), 6) uniformity (C), 7) sustainability (C), 8) deeper analysis (M), 9) collaboration (M), and 10) identifying research needs (M). Percent agreement with questionnaire statements regarding challenges and motivators to sharing data, interest in participation, and key features to a successful repository was $\geq 80\%$, $\geq 85\%$, $\geq 72\%$, and $\geq 83\%$ respectively. Questionnaire subgroup analysis revealed a few differences ($p < 0.05$), including clinicians more strongly identified with improving best practice as a motivator.

Conclusion

There are motivators to contribute to an international MS rehabilitation data repository but also challenges that need to be addressed through focus on high quality standards and transparent operational procedures for database control and management while minimizing time and cost.

Conflict of interest

Disclosure statement:

Peter Feys is faculty of the EXCEMED program. Joanne Wagner is employed by Accorda since 2016.

The Progressive MS Alliance funded this project with an infrastructure challenge award in 2014-15.

ISPR7-0251

Rehabilitation Systems and Services Research - Miscellaneous

PERFORMANCE PARAMETERS AND BLOOD PROFILE OF THE FEMALE SOCCER PLAYERS

J. Greve¹

¹HCFMUSP, Ortopedia e Traumatologia, Sao Paulo, Brazil

Introduction/Background

BACKGROUND AND AIMS: Physical capacity diagnostics of soccer players is a necessary part of the professionally conducted training process. To optimize the physical fitness process, it is necessary to have an insight into the current state of all soccer players' skills, especially their functional capacity. The aim of this study was to identify the performance parameters and blood profile found among female soccer players. The second aim was to examine if there were any systematic differences between players assigned to different playing positions

Material and Methods

METHODS: Thirty-six players (age: 23.7 ± 3.5 y; weight: 61.9 ± 5.7 kg; height: 165.7 ± 6.2 cm) underwent a set of laboratory tests (cardiopulmonary exercise test, skinfold measurements, Wingate test, sit-and-reach test, and blood biochemical tests).

Results

RESULTS: maximal oxygen consumption (53 ± 3.9 mL·kg⁻¹·min⁻¹), second ventilatory threshold (11.5 ± 0.8 km·h⁻¹), body fat percentage ($14.1 \pm 2.9\%$), Wingate anaerobic test (peak power: 9.5 ± 0.8 w·kg⁻¹; mean power: 7.3 ± 0.4 w·kg⁻¹ and fatigue index: $55.5 \pm 4.9\%$), flexibility test [sit-and-reach] (18.1 ± 2.9 cm) and biochemical parameters of blood (Hb: 13.9 ± 0.3 g·dl⁻¹; iron: 85.2 ± 12.6 μ·dl⁻¹; calcium: 9.2 ± 0.5 mg·dl⁻¹; total cholesterol: 204.7 ± 34.7 mg·dl⁻¹; HDL-c: 50.7 ± 3.6 mg·dl⁻¹; LDL-c: 125.8 ± 23.3 mg·dl⁻¹; triglycerides: 96.8 ± 18.5 mg·dl⁻¹)

Conclusion

CONCLUSIONS: The current results indicate that present elite players' physiological characteristics are similar to those previously shown, despite the rapid changes of the female soccer game in worldwide. However, data showed that different playing positions had different physiological and anthropometrics differences.

No conflict of interest

ISPR7-0254

Rehabilitation Systems and Services Research - Miscellaneous

BLOOD LACTATE AND OXYGEN CONSUMPTION IN FOOTBALL PLAYERS: COMPARISON BETWEEN DIFFERENT POSITIONS ON THE FIELD

J. Greve¹

¹HCFMUSP, Ortopedia e Traumatologia, Sao Paulo, Brazil

Introduction/Background

BACKGROUND AND AIMS: maximum and sub-maximal aerobic capacity of professional football players in different positions on the field does not affect the production of lactate after intense exercise. We hypothesize that in players with better aerobic fitness, lactate production was not inhibited after high-intensity exercise, regardless of the footballer's position on the field.

Material and Methods

METHODS: Sixty professional male football players performed cardiopulmonary exercise tests in a respiratory gas exchange metabolic analyzer on an ergometric treadmill, with measurement of their blood lactate levels at peak effort, using a portable device. The heart rate response was determined by computerized EKG. The training sessions took place over an average of ten hours per week, and the players had 6.8 years of experience in competitive football. The players were tested a third of way into the season. The positions tested were (center-back, fullback, midfielder and striker).

Results

The following results were obtained: mean peak oxygen consumption of $58.8 \pm 4.5 \text{ mL} \cdot \text{Kg}^{-1} \cdot \text{min}^{-1}$, blood peak lactate of $12.3 \pm 1.6 \text{ mmol} \cdot \text{L}^{-1}$; maximum heart rate of $193 \pm 3.3 \text{ beats} \cdot \text{min}^{-1}$; oxygen consumption in the second ventilatory threshold of $49.6 \pm 5.0 \text{ mL} \cdot \text{Kg}^{-1} \cdot \text{min}^{-1}$; running speed in the second ventilatory threshold of $13.3 \pm 0.8 \text{ km} \cdot \text{h}^{-1}$ and percentage of oxygen consumption in the second ventilatory threshold of $84 \pm 6\%$. There was no correlation between maximum aerobic level ($r = -0.031$; $p = 0.812$) and submaximal aerobic level ($r = -0.146$; $p = 0.335$) in the positions tested, and peak lactate concentration.

r). Conclusion

CONCLUSION: Better or worse aerobic profile of game positions in football players does not influence peak lactate levels following high-intensity exercise, and confirms the study hypothesis.

No conflict of interest

ISPR7-0930

Rehabilitation Systems and Services Research - Miscellaneous

THE PRACTICE OF PHYSICAL MEDICINE AND REHABILITATION IN PUERTO RICO: TRENDS, DEMOGRAPHICS AND PERCEIVED CHALLENGES FOR THE FUTURE

L. Sanchez¹, M. Mas², R. Arias¹, C. Lopez¹, W. Micheo¹

¹University of Puerto Rico- Medical Sciences Campus,

Department of Physical Medicine- Rehabilitation and Sports Medicine-, San Juan, Puerto Rico

²University of Texas Health Science Center. TIRR Memorial Hermann,
Physical Medicine & Rehabilitation, Houston, USA

Introduction/Background

Background and Aims: Up to now, there is scarce information describing Physiatrists practice in Puerto Rico. In this study, we aimed to describe the demographics, practice tendencies and most important concerns of current practicing physiatrists in Puerto Rico.

Material and Methods

Methods: A questionnaire, using an Internet platform, was sent via email to 120 physiatrists in Puerto Rico. The survey included questions that explored practice setting and hours, patient demographics, clinical expertise, malpractice cost, Medicare participation, clinical focus, medical practice concerns in Puerto Rico, among others.

Results

Results: Our preliminary results establish a Puerto Rican physiatrist profile, where 60% are male, 51-60 years old. The majority of physiatrists have private practice, principally in Puerto Rico's metropolitan area (59%). It comes to our attention that only 61 % of practitioners are ABPMR Board certified. Moreover, 74% did not have a sub-specialty. The majority of patients seen in the practice have musculoskeletal (97%), pain (82%) and neurological (78%) disorders, among others. Only 43% of physiatrists give services to patients under government-paid health insurance. More than 80% offer services to patients with a private health insurance, Medicare or Medicare Advantage. Among the major concerns reported are the health insurance costs, low-rate reimbursement and poor retention of physiatrists trained in Puerto Rico.

Conclusion

Conclusions: In Puerto Rico, mostly ABPMR board-certified doctors carry out the PM&R practice, although most of them do not have a sub-specialty. There are concerns about the amount of young physiatrists retention in Puerto Rico, medical insurance contracts and reimbursements rates.

No conflict of interest

ISPR7-0948

Rehabilitation Systems and Services Research - Rehabilitation Economics

ARE WE MAXIMISING PATIENT POTENTIAL? - IDENTIFYING THE UNMET NEED FOR SPECIALIST REHABILITATION FOLLOWING NEUROSURGERY

R. Singh¹, **S. Sinha**², **A. Bill**³, **L. Turner-Stokes**⁴

¹*Osborn Neurorehabilitation Unit, Department of Rehabilitation Medicine, Sheffield Teaching Hospitals, Sheffield, UK*

²*Department of Neurosurgery, Sheffield Teaching Hospitals, Sheffield, UK*

³*UK Rehabilitation Outcomes Collaborative (UKROC), London, UK*

⁴*Department of Palliative Care, Policy and Rehabilitation, Faculty of Life Sciences and Medicine, King's College London, London, UK*

Background/Aims: The benefit of Specialised Rehabilitation(SR) is proven but provision in the UK is still patchy compared to the rest of Europe. Determining the proportion of neurosurgical patients requiring SR would help to quantify the gap in services. We aimed to identify these needs and to determine if these were met and also to estimate the potential cost benefits of meeting any unmet rehabilitation needs

Methods: prospective study of non-day case admissions to a regional neurosurgical ward over 3 months. Assessment of SR needs was made with the Patient Categorisation Tool and the number of patients referred/admitted for rehabilitation calculated.

The unit's patient data was used to estimate lifetime savings by reduced community care compared to the cost of rehabilitation.

Results: there were 223 non-day case admissions over 3 months. 156 (70%) had SR needs. Only 20(16%) patients eligible for local SR, were referred and only 11(8.8%) admitted, with a mean transfer time of 70.2 (range 28-127 days).

The mean cost of rehabilitation episodes was £28,000 and the mean weekly reduction of community cost was £568. Assuming a 10-year reduction in life expectancy, a lifetime saving of £590,000 for each treated patient was estimated. Additional bed capacity in SR could generate savings of £3.6M/bed-year.

Discussion: the majority of neurosurgical patients required SR. The potential cost savings of SR should make the provision of such services an economic priority as well as help patients to fulfil their potential for recovery.

Document not received

ISPR7-0260

Rehabilitation Systems and Services Research - Rehabilitation Service organisation

INTERPROFESSIONAL TEAM CHARACTERISTICS INFLUENCING COORDINATION OF HEALTH CARE DELIVERY

M. Hustoft^{1,2}, **O. Hetlevik**³, **S. Gjesdal**³, **J. Assmus**⁴, **S. Storkson**⁵, **E. Biringer**⁶

¹*Haukeland University Hospital, Centre for Habilitation and Rehabilitation, Bergen, Norway*

²*University of Bergen, Department of Global Health and Primary Health Care, Bergen, Norway*

³*University of Bergen, Department of Global Health and Primary Health Care, Bergen, Norway*

⁴*Haukeland University Hospital, Centre for Clinical Research, Bergen, Norway*

⁵*Fonna Health Authority, Health West IKT, Bergen, Norway*

⁶*Fonna Health Authority, Section of Research and Innovation, Haugesund, Norway*

Introduction/Background

Interprofessional teamwork is positively associated with increased quality of care. High degree of Relational Coordination (RC) within teams has shown a positive influence on the quality- and coordination of care. The aim of this study was to investigate RC in interprofessional teams and assess associations between RC in teams and team characteristics.

Material and Methods

This was a cross-sectional study using data from 23 care processes in six somatic- and six psychiatric units in Western Norway. RC was measured using Relational Coordination Survey (RCS), distributed to 503 team members (N=301, 60% response rate). A multilevel linear analysis with RCS scores as outcome and team and team member characteristics as explanatory variables was employed.

Results

Mean RCS total score was 3.6, (95% confidence interval (CI); 3.51-3.61). RCS mean communication score was 3.4 (95% CI; 3.50-3.55), and mean relationship score was 3.8 (95% CI; 3.71-3.78). RCS communication was higher with a higher fraction of women in teams; $\beta=1.33$ ($p=0.005$). In teams having a clinical procedure or one under development the mean RCS total score was; 3.6 (95% CI; 3.48-3.67) and 3.9 (95% CI; 3.71-4.02), compared to teams with no procedures implemented, in which mean RCS score was 3.3 (95% CI; 3.17-3.42). However, these differences were not significant ($p=0.55$). There were no differences in RCS total score related to number of team members, age, age difference or fraction of physicians in teams.

Conclusion

This study shows that a higher fraction of women has a positive effect on (the) team coordination in specialised health care.

No conflict of interest

ISPR7-0321

Rehabilitation Systems and Services Research - Rehabilitation Service organisation

INITIAL ASSESSMENT OF REHABILITATION NEEDS OF PERSONS WITH DISABILITIES: A QUALITATIVE STUDY ABOUT PERSON-CENTEREDNESS

K. Hanga^{1,2}, *D.M. DiNitto*³, *J.P. Wilken*⁴, *L. Leppik*¹

¹*Tallinn University, School of Governance- Law and Society, Tallinn, Estonia*

²*Astangu Vocational Rehabilitation Center, Rehabilitation Competence Center, Tallinn, Estonia*

³*University of Texas, Alcohol Studies and Education University Distinguished Teaching Professor, Austin, USA*

⁴*HU Utrecht University of Applied Sciences, Research Centre for Social Innovation, Utrecht, Netherlands Antilles*

Introduction/Background

The Estonian government is modernizing its social rehabilitation service by introducing a new person-centered, initial rehabilitation needs assessment process conducted face-to-face by case managers. The new process is aimed at identifying an individual's situation, determining whether the individual qualifies for rehabilitation services, and, if so, targeting necessary services. The four-part assessment instrument includes (1) participants' background information, (2) previous disability-related assistance, (3) the World Health Organization Disability Assessment Schedule 2.0 (WHODAS 2.0), based on the International Classification of Functioning (ICF) with enhancements, and (4) a summary that includes participants' rehabilitation goals and determination of services. This new assessment process culminated from a series of studies conducted from 2010 - 2015.

Material and Methods

The study reported here is based on the qualitative, phenomenological portion of the research, which was conducted with 12 individuals who participated in pilot testing of the new rehabilitation process. In depth semi-structured interviews were conducted to gather participants' perceptions of the assessment questionnaire and procedures. These insights were used in refining the design of the new assessment process.

Results

Participants identified five important aspects of person centeredness in the new assessment process: (1) useful information about opportunities and choices; (2) opportunity to talk and to be heard; (3) understanding of their situation, acceptance of themselves in rehabilitation service planning; (4) partnership; practical and emotional support, (5) empowerment and hope.

Conclusion

Assessment is a complex intervention that should be grounded in a person-centered approach and implemented as a quality component in providing disability services.

Research was implemented by Astangu Vocational Rehabilitation Centre, and funded by the European Social Fund (no 1.3.0330.12-0132).

No conflict of interest

ISPR7-0489

Rehabilitation Systems and Services Research - Rehabilitation Service organisation

PATIENTS' EXPERIENCES AND PERSPECTIVES OF PHASE 1 CARDIAC REHABILITATION FOLLOWING CORONARY ARTERY BYPASS GRAFT SURGERY

S. Maddocks¹

¹University of KwaZulu-Natal, Physiotherapy, Durban, South Africa

Introduction/Background

Cardiac rehabilitation (CR) is globally recognized as an effective means of preventing disability and prolonging life in post-CABG patients. However, little is known about patients' perceptions of the implementation of CR in South Africa. This study aimed to explore the experiences and perceptions of patients post Coronary artery bypass graft (CABG) to phase 1 cardiac rehabilitation (CR) at a public hospital in South Africa.

Material and Methods

A descriptive qualitative study design was employed with nine purposively selected participants (mean age of 56 years), who had all received individual CR post-CABG only, or in combination with group CR exercise. The participants were stratified into focus groups of attenders and non-attenders of the group CR exercise classes. The four attenders were all males, while there were three male and two female non-attenders. Interviews were transcribed verbatim and subjected to thematic analysis.

Results

The three main themes that emerged were communication challenges between health care professionals and patients, the patient's experience of physiotherapy and patients' recommendations for future service delivery.

Conclusion

Patients' perceptions of the current delivery of phase 1 CR (as individualized only or in combination with CR group exercises) at this study setting emphasized that improvements need to be made in areas of patient-centered care, equality of access to programs and appropriateness of program content. Results indicate a limited awareness and participation in inpatient and outpatient CR programs by patients. Research into the improved design of CR programs in South Africa is required in consultation with patients and the multidisciplinary health care team.

No conflict of interest

ISPR7-0500

Rehabilitation Systems and Services Research - Rehabilitation Service organisation

CONCEPTIONS AND EXPECTATIONS OF DEPARTMENT EMPLOYEES, STATE-LEVEL PARTNERS, AND HOSPITAL MANAGEMENT REGARDING THE ESTABLISHMENT OF THE NEW REHABILITATION DEPARTMENT IN SOROKA UNIVERSITY MEDICAL CENTER

I. Treger^{1,2}, L. Kraun³, S. Lihi Mesika³, P. Feder-Bubis³, N. Neuman-Heiman^{1,2}

¹Soroka University Medical Center, Rehabilitation Department, Beer Sheva, Israel

²Ben-Gurion University of the Negev, Faculty of Health Sciences, Beer Sheva, Israel

³Faculty of Health Sciences & Guilford Glazer Faculty of Business and Management Ben-Gurion University of the Negev, Department of Health Systems Management, Beer Sheva, Israel

Introduction/Background

There is a dearth of empirical research on the establishment of rehabilitation departments in general hospitals. Determined to minimize inequalities in access to rehabilitation services, Soroka University Medical Center in Beer Sheva, Israel, established a rehabilitation department. Soroka is the only major hospital in Southern Israel, consistently providing health care to more than one million people. The aims of the study was to identify and explore the perceptions and expectations of stakeholders involved in the establishment of the rehabilitation department in Soroka University Medical Center.

Material and Methods

During the establishment of the rehabilitation department in Soroka University Medical Center, we conducted two rounds of qualitative interviews (N=22) with rehabilitation department clinicians, hospital management, and state-level stakeholders. Data collected was transcribed verbatim and analyzed using grounded theory.

Results

We found resemblances between the perceptions and expectations of hospital staff and managers in relation to the rehabilitation department development. All three groups of stakeholders related to three fundamental issues in the establishment and functioning of the rehabilitation department: family as a full partner in the rehabilitation process, multidisciplinary teamwork, and continuity of care before, during, and after hospitalization. These categories were found in both interviews rounds.

Conclusion

This study sheds light on fundamental issues worth considering when setting up a new rehabilitation department, and rehabilitation as a discipline in a general hospital. Stakeholder collaboration and staff motivation significantly improves the implementation process.

No conflict of interest

ISPR7-0504

Rehabilitation Systems and Services Research - Rehabilitation Service organisation

NEURO REHABILITATION PROGRAM BY INTERDISCIPLINARY WORK TEAM FOR ADULT PATIENTS. CARLOS VAN BUREN HOSPITAL, VALPARAISO

C. Bastidas Moscoso¹, C. Bravo¹, N. Jorquera¹, A. Lagos¹, P. Huerta¹, C. Andres¹, S. Espinoza¹, C. Garrido¹, G. Pizarro¹, C. Cortes¹, M.J. Galvez¹

¹Hospital Carlos Van Buren, MEDICINA FISICA Y REHABILITACION, Valparaiso, Chile

Introduction/Background

Background information and objectives: The Neuro Rehabilitation program was created by the Health Ministry of Chile and was first implemented in August of 2013. Its objective is to give an early rehabilitation, intensive and interdisciplinary, to the patient hospitalized for severe and highly prevalence neurological pathologies. The main objective of this presentation is to characterize the population (age, sex, diagnosis, functionality level, etc.) and the functioning of this program in the following years to its creation (2014 – 2015).

Material and Methods

Methods: retrospective analysis of the clinical charts and compilation of the clinical data through register instruments created by the work team in charge of the program.

Results

Results: 506 patients were attended in total between the years 2014 and 2015, from which 235 were females, and 271 were males. Their principal diagnosis were: 311 CVA; 26 brain tumors; 9 medullar lesions; 44 cranioencephalic traumas; 18 acute neuro muscular pathologies; 19 chronical neuro muscular diseases. The hospitalization days were, in average, 21,4. The application of the Barthel Index, in the admission and discharge of the patients, showed a migration in the dependency levels. According to this instrument, at the moment of admission, only one patient showed a slight dependency, 7 of them a moderate one, 15 grave, and 483 severe. At the moment of discharge, 21 of them showed a slight dependency, 70 a moderate one, 29 grave, and 349 severe dependency (37 deceased).

Conclusion

Conclusions: The rehabilitation with an interdisciplinary approach diminishes the dependency level of the patient.

No conflict of interest

ISPR7-0634

Rehabilitation Systems and Services Research - Rehabilitation Service organisation

REHABILITATION AT SOCIO-SANITARY SERVICE (SSS) OF THE ABRAHAM GODOY PENA HOSPITAL (AGPH) ARAUCANIA SUR HEALTH CARE SERVICES (ASHCS), CHILE

E.L. Prado Pacheco¹, L.D.C. Castillo Novion², V.P. Bachmann Barron³, C.S. Viviana Isabel⁴, B.C. Alex Ulises⁵, L.F. Blanca Aurora⁶, C.V. Carolina⁷, O.N. Yosseline⁸

¹, Temuco, Chile

²Abraham Godoy Peña Hospital, Occupational therapist, Lautaro, Chile

³Abraham Godoy Peña Hospital, Speech Therapist, Lautaro, Chile

⁴Abraham Godoy Peña Hospital, Physical Therapist, Lautaro, Chile

⁵Abraham Godoy Peña Hospital, Nurse, Lautaro, Chile

⁶Abraham Godoy Peña Hospital, Social worker, Lautaro, Chile

⁷Araucanía Sur Health Care Services, Psychiatrist, Temuco, Chile

⁸Hernán Henríquez Aravena Hospital, Medical doctor, Temuco, Chile

Introduction/Background

Socio-sanitary patient is who is able to leave the hospital, but the social and / or family network is deficient, presenting rehabilitation and social needs at the same time. The central government allocates resources to enable socio-sanitary services in the country. In line with the central policy and a need manifested by the community, the SSAS implements 20 beds SSS since May 2016; these services add to those available in low-complexity hospitals. The aim is to provide intensive and integral rehabilitation so that patients can be reinserted into the community.

Material and Methods

Descriptive study. Revision of reference/counter-referral protocol with inclusion/exclusion criteria for admission, proceedings of diffusion in establishments of sanitary networks, data base patient follow-up. For statistical analysis we use an Excel spreadsheet, using parametric test, tables and graphs.

Results

Flow of care in Figure 1. Patient follow-up scales (Table 1). During 6 months of operation, 33 applications for admission were registered, 6 (18%) rejected for failing inclusion criteria. Of 23 admissions (Table 2), 9 (38%) left home with family members and 1 (4%) died. Average days stay: 47.6; Barthel gain average: 41.42 points. Of 14 hospitalized patients in the cut, 5 completed rehabilitation process and await social efforts for discharge.

Figure 1: Flow of Attention

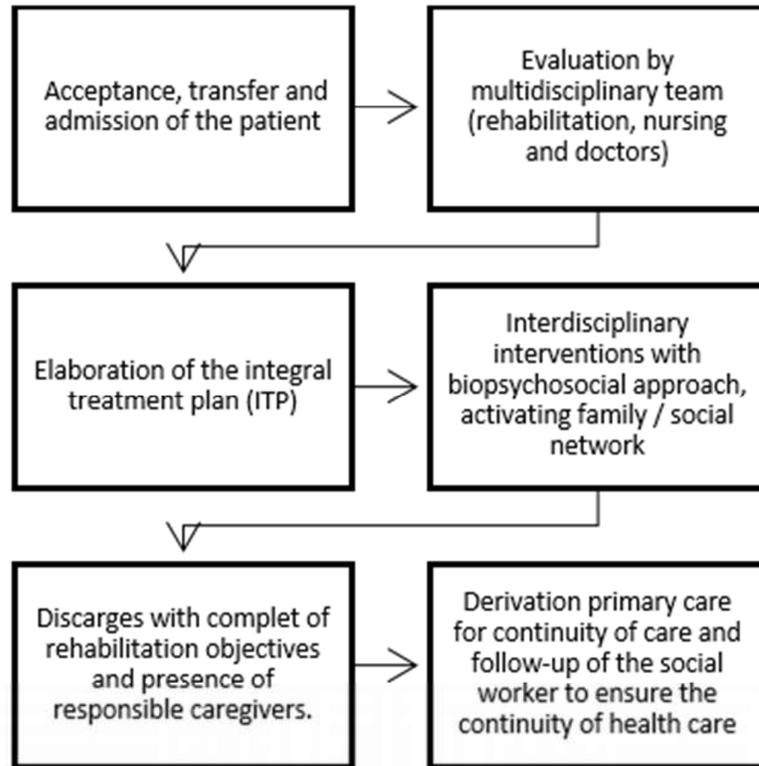


Table 1: Evaluations Scales

Functionality / ADL	Barthel
Balance and Walk	Tinetti
Swallowing	GUSS
Communication and motor speech disorders	Rafael González
Risk of dependency	CUDYR
Biopsychosocial risk	Score biopsychosocial risk To categorize socio-sanitary patient
Risk Assessment Pressure ulcers	Braden
Fall risk assessment	Downton

Table 2: Patient characteristics

Average age	68,4 <u>age</u>
Gender	78 % <u>Men</u> 22 % <u>Women</u>
<u>Main Diagnosis</u>	52.18 % <u>Brain Stroke</u>
	13.04 % <u>Traumatic Brain Injury (TBI)</u>
	8.7% <u>Spinal Tumors</u>
	26.08 % Others
Occupancy rate beds (October month 2016)	68,06%
Biosocial Risk (October month 2016)	7,2% low risk
	57,1% medium risk
	35,7% <u>high risk</u>

Conclusion

The context of integral rehabilitation offered by this unit, allows an interdisciplinary biopsychosocial approach; providing habilitation in physical, cognitive, social and occupational skills; to perform autonomously in daily activities and in community. Educations given to caregivers allow continuity of rehabilitation in their community; favoring the patient's belonging, autonomy and empowerment.

No conflict of interest

ISPR7-0188

Rehabilitation Systems and Services Research - Health Policy and Law (including Medical and Social Model of Disability and Rehabilitation)

FACTORS RELATED TO MOTORCYCLE ACCIDENTS IN THE CITY OF SAO PAULO, BRAZIL

J. Greve¹

¹São Paulo, Brazil

Introduction/Background

The Brazilian public trauma care network was invaded by victims of motorcycle accidents in increased numbers and severities in the last ten years. **Objectives:** to assess the human, road, vehicular factors related to traffic accidents with motorcyclists with victims of the city of São Paulo

Material and Methods

Prospective cross-sectional study that collected data on motorcycle accidents (2/19-05/12/2013) in four emergency rooms of São Paulo City and at local crash at the West zone of the city. The sample consisted of motorcycle accident victims in São Paulo. Data were collected from 24-hour shifts regarding: conditions of the victims, security equipment, road and vehicle conditions

Results

It was include 326 victims and 141 accidents. *Human Factors:* age 29 ± 8 years; 92% male; 73% used the motorcycle as transport and 23% as work). 44% had severe injuries; 2% died. Severe lesions were identified in 67% of unlicensed drivers. Polytrauma occurred in 9% head trauma in 5% of the entire population. Lower limb fractures occurred more frequently than upper limb (17% vs. 12%). 23% didn't have driven license and 67% did not attend any motorcycle driven instruction. 90.2% used : helmet and 21.3% were positive for alcohol/drug dosage).

Local Factors: 40% lateral and 25% rear-end collision, 73% involved another vehicle.

Road Factors: 97% were paved, 18% with bad signalization, 72% straight flat road. 62% elated to high speed. Vehicle factors: good conditions (95%). Tires (11%) and brakes (7%) is the worst items. 77% accidents related to human factors; 10% mixed factors (visibility); 8% road factors and 1%to vehicle.

Conclusion

The main factors were: indiscretion (21%), lack of attention (17%), speeding (13%), inexperience (11%) and vision (10%) and to the second vehicle were: invasion (42%), visibility (24%), lack of attention (8%) and rash (7%).Biker risk behavior and lack of respect and visibility of the second vehicle

No conflict of interest

ISPR7-0722

Rehabilitation Systems and Services Research - Health Policy and Law (including Medical and Social Model of Disability and Rehabilitation)

TOWARDS THE DEVELOPMENT OF A REHABILITATION SERVICE ASSESSMENT TOOL

C. Gutenbrunner¹, B. Nugraha¹

¹Hannover Medical School, Rehabilitation Medicine, Hannover, Germany

Introduction/Background

World Health Organisation (*WHO*) includes health-related rehabilitation as health strategy and part of universal health coverage. WHO Global Disability Action Plan 2014-2021 (GDAP) includes implementation of rehabilitation services into health systems. To develop rehabilitation service implementation plans and for benchmark rehabilitation service provision among countries or provinces, as a first step, a standardized tool to evaluate existing services is importance. Therefore a tool to assess health-related rehabilitation policies and services within health systems of countries (*or provinces*) is needed.

Material and Methods

Based on six Health System Building Blocks, definition of rehabilitation and GDAP, a list of information to describe the scope and capacity of existing rehabilitation services in standardized way was developed. As guidance, International Classification of Rehabilitation Service Organization in Rehabilitation and other documents from WHO were used. The a-version was tested in two WHO missions for the development of National Disability Health and Rehabilitation plans (*Egypt, Ukraine*) and in a joint mission with Handicap International in the Democratic Peoples' Republic of Korea (DPRK).

Results

The list of necessary information includes information about country profile, health system, disability and rehabilitation, national policies, laws and responsibilities and relevant non-governmental stakeholders.

Field testing in Egypt, Ukraine and DPRK showed that this tool was feasible and facilitating to collect information for the development of recommendations to develop rehabilitation service provision at national level.

Conclusion

The systematic development of a Rehabilitation Service Assessment Tool lead to a feasible instrument that needs further testing, in particular, for the benchmark of service provision.

No conflict of interest

ISPR7-0155

Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

APPLICATION OF ICF REHABILITATION CORE SET TO A PEDIATRIC PATIENT

K. Matsuda¹, S. Yamada¹, Y. Okajima¹

¹KYORIN UNIVERSITY, Rehabilitation, Tokyo, Japan

Introduction/Background

ICF is used for recording individual health status, and has great potential for collecting data in uniform and internationally comparable fashion. However, the ICF has not become popular yet in clinical practice. We aimed to apply the ICF to a pediatric patient by using ICF rehabilitation core set (Prodinger, et al. 2016). The core set consists of 30 rehabilitation related categories (9 Body Functions and 21 Activities and Participation), and 12 Environment Factors defined as minimal set were added to the basic set for this report. Each category was rated with the ICF qualifiers, which ranges from **0** (NO problem or barrier/facilitator) to **4** (COMPLETE problem or barrier/facilitator). Codes **8** and **9** were used in cases of “not specified” and “not applicable” respectively.

Material and Methods

2-year-old boy. He had been treated in the Growing Care Unit since he was diagnosed with nonketotic hyperglycinemia after his birth. He presented with muscular hypotonia in his trunk and could not hold his head up. MR imaging of the brain showed agenesis of corpus callosum.

Results

Most of Body Functions were rated as **0** (NO problem). Conversely, almost half of Activities and Participation were rated as **3** (SEVERE problem) or **4** (COMPLETE problem), and the rest **8** (not specified). In Environmental Factors, “Products and technology for personal indoor and outdoor mobility and transportation” was rated as **4+** (COMPLETE facilitator) with a custom-made buggy for him.

Conclusion

As a common language, the core set is a useful tool to assess living environments in the community and share important information among health professionals. On the other hand, definition and scope are still confused in some categories, and not a few categories tend to be rated as **9** (not applicable) especially in children. Finally, we need further consideration for using ICF core sets in clinical settings.

No conflict of interest

ISPR7-0237

Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH (ICF) CORE SET FOR PATIENTS WITH ISCHEMIC HEART DISEASE (IHD)

G. Narmontaitė¹

¹, Vilnius, Lithuania

Introduction/Background

The international classification of functioning, disability and health Core Set for IHD (ICF), that reflects the biopsychosocial model is a wide instrument for evaluating effectiveness of rehabilitation for patients with IHD. It covers all aspects of patient functioning. IHD affects individuals quality of life by disrupting the future of families dependant on them and undermining the development of nations by depriving valuable human resources on their productive years.

Material and Methods

A prospective study including 100 patients with verified IHD who were enrolled during the first two days of rehabilitation after coronary artery bypass surgery (40%) or myocardial infarction (60%) were evaluated of the Brief Core Set for IHD. Patients were interviewed at the end of the rehabilitation treatment — lasting on average three weeks and after three and six months after their discharge.

Statistical analyses of relationships between ICF categories as independent variables and results of the heart ultrasound or veloergometry were carried out by simple and stepwise linear regression models adjusting for age, sex, and occupation.

Results

The stepwise linear regression model with heart ultrasound as dependent variable revealed a significant effect of the variables blood vessel functions and muscle endurance functions. Calculating a stepwise linear regression model with veloergometry as dependent variable, a significant effect of age, emotional functions, energy and drive functions, carrying out daily routine, as well as walking could be observed.

Conclusion

This study identifies that Brief Core Set for IHD shows a significant correlation on heart ultrasound and veloergometry in patients with IHD. ICF application in patients with IHD enables to enlarge perspective on their health status, and provide fundamental information to follow the healthcare process from the in-patient period to the outpatient management.

No conflict of interest

ISPR7-0639

Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

FUNCTIONING OUTCOMES LINKED TO ICF CODES IN HOSPITALIZED ADULTS TREATED FOR CANCER: A SYSTEMATIC REVIEW

C. Sacomori¹, L.A. Lorca P.², C. Garcia-Soto², P. Benavente², M. Mallea², J. Virtuoso³

¹*Universidad Bernardo O'Higgins, School of Kinesiology, Santiago, Chile*

²*Hospital del Salvador, Servicio de Medicina Física y Rehabilitación, Santiago, Chile*

³*Universidade Federal de Santa Catarina, Fisioterapia, Araranguá, Brazil*

Introduction/Background

Cancer is a worldwide health problem that affects health-related quality of life and functioning, comprising difficulties with self-care, pain, mobility, return to work, anxiety, and depression. The aim of this study was to perform a systematic review to identify the outcome measures and concepts about functioning included in studies of hospitalized cancer patients and to link these concepts to the ICF as a reference tool.

Material and Methods

Electronic searches were performed on Ovid MEDLINE and CINAHL for the years 1966 to 2015. All outcome parameters extracted were retrieved from the included studies. These concepts were linked to ICF codes using standardized rules.

Results

A total of 38 studies were included. The 663 concepts extracted were linked to 99 ICF categories. Regarding body functions, 35 codes were identified, and the most cited codes were functions related to exercise tolerance, emotional, energy and drive, temperament and personality, sleep, and pain. For the domain Activities and Participation, 51 codes were identified: Those who were most reported were related to employment, recreation and leisure, carrying out daily routine, and self-care. Thirteen codes for contextual factors were identified, highlighting social support and relationships.

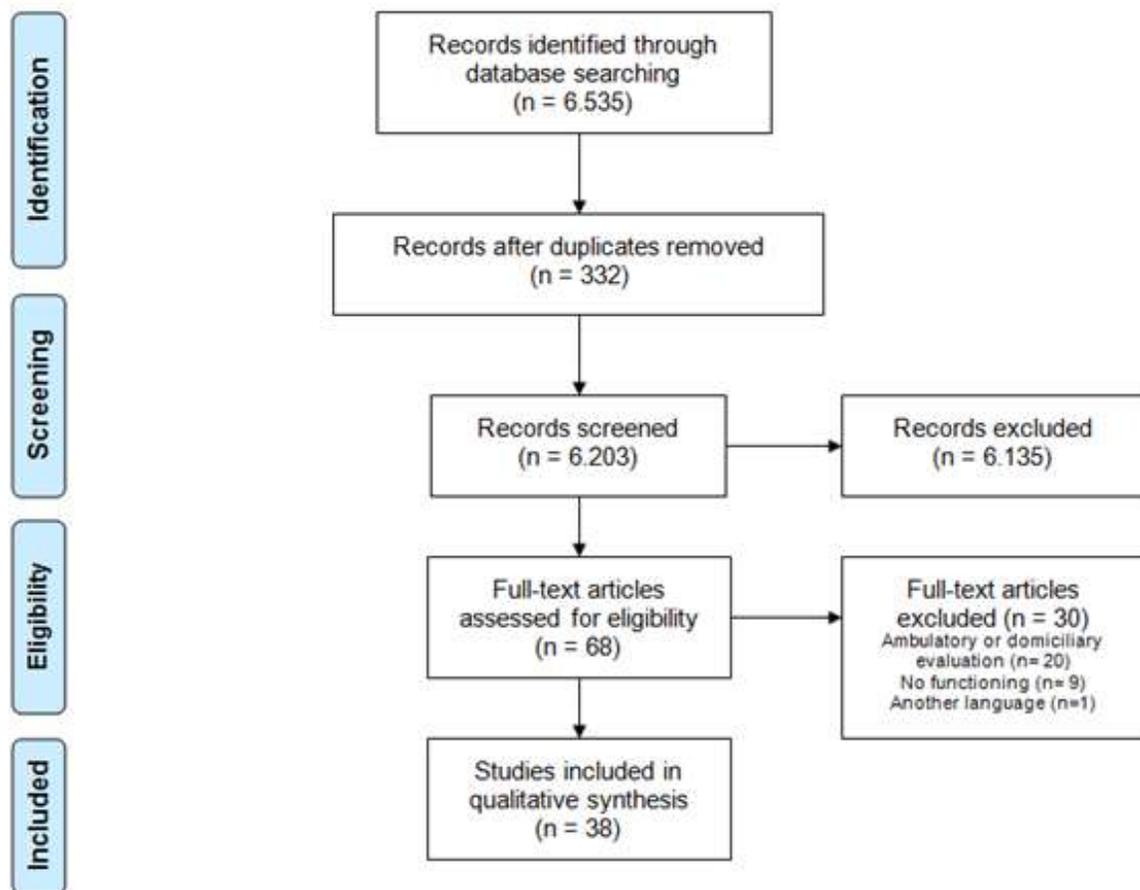


Figure 1. PRISMA flow diagram for selection of studies

Table 1. Characteristics of the included studies (n=38)

	n (%)
Publication year	
1988–2006	10 (26.3)
2007–2014	28 (73.7)
Country*	
USA	15 (39.5)
Asia	11 (28.9)
Europe	10 (26.3)
Australia	1 (2.6)
Type of cancer	
Many	6 (15.9)
Colorectal	4 (10.5)
Rectal	4 (10.5)
Lung	4 (10.5)
Breast	3 (7.9)
Head and neck	3 (7.9)
Hematologic	2 (5.3)
Oral and oropharyngeal	2 (5.3)
Colon	2 (5.3)
Pelvis or femur	2 (5.3)
Gynecological and breast	1 (2.6)
Lymphoma	1 (2.6)
Bowel and urinary system	1 (2.6)
Brain	1 (2.6)
Liver	1 (2.6)
Esophageal	1 (2.6)
Study design	
Prospective	10 (26.3)
Retrospective	7 (18.4)
Cross-sectional	7 (18.4)
Randomized clinical trial	5 (13.3)
Case control study	3 (7.9)
Literature review	3 (7.9)
Systematic review	1 (2.6)
Qualitative	1 (2.6)
Case study	1 (2.6)

* One article did not mention country

Conclusion

The findings of this review describe what areas of functioning researchers consider to be relevant to study in adults treated for cancer in hospitals. These ICF codes could be used to plan discharge and to improve rehabilitation and treatments in hospitals.

No conflict of interest

ISPR7-0769

Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

DESCRIPTION OF FUNCTIONING IN A PEDIATRIC POPULATION RECEIVING OUTPATIENT NEUROREHABILITATION BASED ON THE ICF-CY.

S. Laxe¹, D. Leon¹

¹Guttmann Institut, Pediatric Rehabilitation, Badalona, Spain

Introduction/Background

The paediatric version of the ICF (ICF-CY) is a useful way to describe functioning in children with disabilities. There are limited studies sharing the experience of ICF-CY in the clinical use. This study aims to use of the ICF-CY in a paediatric population in a rehabilitation programme in Spain.

Material and Methods

First step: Clinical records from a paediatric rehabilitation outpatient unit were linked to the ICF and compared to the ICF-CY core sets for Cerebral Palsy(CP) in order to create a working ICF-based list. Second step: prospective avaluation of children was gathered during the clinical sessions. Other data collection included etiological, sociodemographical factors and FIM scale.

Results

A total of 33 ICF-CY items were selected. 106 children, 64.2% with CP, 19.8 with acquired brain injury, 6.6% with SCI, 9.4% with other condition were included. Mean age 10.4 SD 4.18, 46 female. Total FIM 84.05 SD 30.08. Main problems were identified in b140:attention (77.7%), cognitive functions b164 (54.9%), s750: limitation lower limbs (60%), b730:strength (89.2%), d440:fine hand use (85.8%), and b770:gait (91.5%). Linear negative association was found to be statistically significant between the cognitive FIM and the ICF mental functions related categories. A non significant association was found between the motor FIM and the ICF categories related to movement

Conclusion

This study showed that ICF-CY can be used in clinical practice to standize the description of functioning in a paediatric population with neurological disorders and identified the most common problems regarding functioning using a recognized international common framework.

No conflict of interest

ISPR7-0862

Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

FUNCTIONAL PROFILE OF WOMEN WITH BREAST CANCER

C. Costa¹, I.C. Zanlourense¹, D. Markovicz¹, A.C. Binda¹, A.R. Fréz¹, M.B. Ruaro¹, M.P. Baroni¹, C.R. Daniel¹, J.A. Ruaro¹

¹Universidade Estadual do Centro-Oeste, Physical Therapy Department, Guarapuava, Brazil

Introduction/Background

With the approval of the International Classification of Functioning, Disability and Health (ICF) the functionality has a new understanding. Seeking greater scope of ICF use, the project core set started to be developed, and among these there is a core set for breast cancer. The aim of this study was to describe the functional profile of women with breast cancer in the oncology sector of Hospital São Vicente de Paulo, in Guarapuava, Brazil

Material and Methods

The functional profile of women in chemotherapy treatment was classified using the brief ICF core set for breast cancer.

Results

Were evaluated 38 women. Of 29 core set categories, 50.0% or more of the sample showed some impairment in 11 categories; in one category 52.6% of patients did not know how to specify and those who specified showed some impairment.

ICF categories	Some facilitator (%)
e570 Social security services, systems and policies	73.7
e580 Health services, systems and policies	57.9
e590 Labour and employment services, systems and policies	47.4*

*52.6% of patients did not know how to specify

ICF categories	Some impairment (%)
b152 Emotional functions	92.1
b280 Sensation of pain	63.2
b640 Sexual functions	50.0
s630 Structure of reproductive system	57.9
s720 Structure of shoulder region	61.0
d240 Handling stress and other psychological demands	76.3
d430 Lifting and carrying objects	65.8
d640 Doing housework	50.0
d770 Intimate relationships	50.0

Conclusion

A sample of women with functional impairment at various levels was identified. Knowing the function and the impairment of the patients is possible to propose interventions based on the contextual circumstances of each individual.

No conflict of interest

ISPR7-0882

Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

FUNCTIONING IN STUDENTS WITH KNEE PAIN ASSOCIATED WITH SACROILIAC DYSFUNCTION

M.Y. Outi¹, B.G. Muller¹, G. Antonelli¹, M.B. Ruaro¹, J.A. Ruaro¹, C.R. Daniel¹, M.P. Baroni¹, A.C. Binda¹, A.R. Fréz¹

¹Universidade Estadual do Centro-Oeste, Physical Therapy Department, Guarapuava, Brazil

Introduction/Background

The knee is one of the joints most affected by injuries and the unilateral dysfunction of the sacroiliac joint can be a factor to generate overload in the knee joint. The aim of the study was to classify the functionality of university students with non-specific knee pain associated with sacroiliac dysfunction.

Material and Methods

University students were evaluated by a physical evaluation (Gillet and Downing tests) to identify the sacroiliac dysfunction, and to classify the functionality the generic set of the International Classification of Functionality, Disability and Health (ICF) was used.

Results

Thirteen students were evaluated. Only the b280 category was considered by all students. For the other categories (b130, b152, d230, d450, d455 and d850), deficiency was reported in more than 50% of the sample.

ICF categories	ICF qualifiers								
	Some disability					No problem			
	.1	.2	.3	.4	%	.0	.9	%	
b130 Energy and drive functions	6	-	1	-	53,8	6	-	46,25	
b152 Emotional functions	3	4	5	-	92,3	1	-	7,7	
b280 Sensation of pain	2	11	-	-	100,0	-	-	-	
d230 Carrying out daily routine	3	6	1	-	76,9	3	-	23,1	
d450 Walking	2	5	-	1	61,5	4	1	38,5	
d455 Moving around	3	5	4	-	92,3	1	-	7,7	
d850 Remunerative employment	4	2	2	-	61,5	4	1	38,5	

Conclusion

University students presented impairments related to body functions and activities and participation.

No conflict of interest

ISPR7-0904

Classification of Functioning (e.g. ICF Core Sets; ICF Up-Date and Revision)

NARRATIVE MEDICINE METHODOLOGY TO IMPROVE THE QUALITY OF REHABILITATION PROGRAMS IN SEVERE BRAIN INJURIES

M. Zampolini¹, M. Mary¹, L. Nunzi¹, F. Scarponi¹, P. Brustenghi¹

¹USL Umbria 2 - Italian NHS, Rehabilitation, Foligno, Italy

Introduction/Background

Narrative Medicine is an emerging approach starting from the stories of illness of patients and caregivers designed to improve the cure and rehabilitation. We applied this method with family caregivers of patients with severe brain injury. Through a qualitative analysis of the stories the aim of the study is to enhance the rehabilitation program defining better the problem in order to set and share the goals of the rehabilitation projects. We present preliminary data.

Material and Methods

We gathered the stories told by the caregiver of the patients consecutively admitted to the neurorehabilitation department. The patients were randomly allocated to a narrative group or usual care. The primary outcome was: decrease in Length of Stay and more discharge to home instead of institutionalization. The secondary outcome was the perception of better care in the narrative group assessed with CNA Caregiver Needs Assessment, and CBI Caregiver Burden.

Results

Since February 2016 we have contacted 42 caregivers, 12 were excluded. 30 caregivers were randomly assigned, 15 in the control group and 15 in the intervention group. Now only 14 have been discharged. In the narrative group 4 out of 7 were discharged to home while in the control group 2 out of 7. Partial data do not show significant differences in primary and secondary outcome due to the small number of patients. The qualitative observation show a decrease of caregiver stress and an increased number of the rehabilitation goals.

Conclusion

The application of the narrative method facilitates the support of the caregiver, allows a better sharing of goal setting and makes home indwelling easier. The listening of the stories decreases the stress of the caregiver and allow to understand better the needs of the severe injuries patient to define better the rehabilitation goals with a tailored rehabilitation program. The complete study will provide us with further details.

No conflict of interest

ISPR7-0209

Ethical Issues and Human Rights

EVALUATION OF DRIVING RELATED FUNCTIONS IN PERSONS WITH MONOCULAR VISION

J.Y. Kim¹, M.O. Park², B.K. Jung³

¹Soonchunhyang University, Medical Science, Asan, Republic of Korea

²Baekseok University, Occupational Therapy, Cheonan, Republic of Korea

³Soonchunhyang University, Occupational Therapy, Asan, Republic of Korea

Introduction/Background

Requirements for commercial driver's license in Republic of Korea discriminates persons with monocular vision without solid clinical evidence or thoroughly examining vision limitation. The aim of this study was to investigate driving competence in persons with monocular vision.

Material and Methods

7 participants who were medically diagnosed with monocular vision and registered as disabled entered this study. Adelaide Driving Self-Efficacy Scale (ADSES) and Perception on Driving Abilities Scale (PDAS) assessed psychological factors whereas DrivingHealth Inventory (DHI) were administered to evaluate physical and functional factors. It was followed by on-road driving test with a light commercial vehicle. Mann-Whitney test, Spearman correlation coefficient, and Chi-square of independence were completed to statistically analyze the results of the assessments.

Results

4 of 7 total participants (57.1%) passed on-road driving test. There were no statistically significant associations between ADSES and PDAS. However, the latter was highly correlated with on-road test results ($r=0.818$, $p=0.024$). There were no significant differences in ADSES and PDAS scores between pass and fail groups. Chi-square test of independence showed that the relation between low contrast visual acuity (deficit and no deficit) and on-road driving test results were significant ($\chi^2=3.733$, $p<0.47$).

Conclusion

In spite of the relatively small sample size, the similar on-road test pass rate of this study indicates that monocular vision is not a direct factor which precludes driving light commercial vehicles. In addition, relationship between self-confidence in driving and on-road driving results suggests that evaluating psychological factor can be additionally assessed to better examine driving competency in people.

Conflict of interest

Disclosure statement:

This work financially supported by Korean National Police Agency.

ISPR7-0954

Ethical Issues and Human Rights

MALTREATMENT AGAINST CHILDREN AND ADOLESCENT WITH DISABILITY

C. Castineira¹, C. Miziara¹

¹Faculty of Medicine of the University of São Paulo – Brazil

Maltreatment against children and adolescent with disability is a question of public health and a worldwide issue in proportion and seriousness. It is estimated that there are about 5% of children and adolescent with disability in the world, being that a part of the population that is more vulnerable to violation of dignity and abuse of all kinds. The objective of this article is to describe the incidence, prevalence and risk of maltreatment among children and adolescent with disability trough a literature review and to cite which are the Brazilian government's measures to protect children and adolescent with disability. A medical literature review was done in the principal data bases, books and official websites in the last ten years, dealing with violence and maltreatment against children and adolescents with disability. The results confirm that children and adolescent with disability are more likely to be victims of maltreatment, under the influence of a variable of risk and protective factors. There is still a necessity of studies that can evaluate the prevalence of maltreatment in children and adolescent with disability and help to stablish an effective approach of this public health problem.

Document not received

ISPR7-0285

Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

TRENDS IN TREATMENT OUTCOME DISPARITIES IN CARDIOVASCULAR REHABILITATION BETWEEN MIGRANTS AND NON-MIGRANTS IN GERMANY

P. Brzoska¹, N. Koyun²

¹*Chemnitz University of Technology, Behavioral and Social Science- Epidemiology Unit, Chemnitz, Germany*

²*Chemnitz University of Technology, Behavioral and Social Sciences- Epidemiology Unit, Chemnitz, Germany*

Introduction/Background

In many countries, including Germany, migrants encounter barriers in the health care system that may affect the outcomes of the care they receive. Many health care institutions have increased their efforts in recent years to provide services which are more sensitive to the needs of an increasingly diverse population. Little is known about whether these efforts are successful. Using cardiovascular rehabilitation as an example, we examine whether disparities in treatment outcomes between migrants and non-migrants decreased over the period 2006-2013.

Material and Methods

We used a random sample of routine data (n=60.093) comprising about 10% of all cases who utilized cardiovascular rehabilitation in Germany during 2006-2013. The outcome of interest was the occupational performance after treatment, with low performance indicating a low treatment effectiveness. We compared cases with a German, Turkish and Former Yugoslavian nationality using logistic regression adjusted for demographic/socioeconomic confounders. Group differences over time were examined by means of interaction terms for the year in which the rehabilitation was provided.

Results

Cases with a Turkish and Former Yugoslavian nationality were at an overall higher chance of a poor treatment effectiveness than Germans (adjusted OR=1.26 [95%-CI=1.07-1.45] and adjusted OR=1.47 [95%-CI=1.18-1.81], respectively). Disparities did not significantly differ between the years in which services were utilized.

Conclusion

Measures implemented by health care institutions seem to have had little impact on reducing existing health care disparities between migrants and non-migrants in Germany. One potential reason is that existing approaches are unsystematic and often not properly evaluated. More targeted approaches and a thorough evaluation is needed in order to improve health care for migrants.

No conflict of interest

ISPR7-0292

Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

DECREASE OF PHYSICAL ACTIVITY HAS CORRELATION WITH LOWER QUALITY OF LIFE AND INCREASE THE RISK OF DIABETES ON MEDICAL SCHOOL STUDENTS

M.R. Rachmawati¹, S. Nuryani¹, P. Tjhin², R. Wratsangka³

¹Faculty of Medicine- Trisakti University, Anatomy/Physical Medicine and Rehabilitation, Jakarta, Indonesia

²Faculty of Medicine- Trisakti University, Anatomy, Jakarta, Indonesia

³Faculty of Medicine- Trisakti University, Research and Development, Jakarta, Indonesia

Introduction/Background

Students of Medical School was expected have low physical activity, which is expected will reduce the quality of life and increased the risk of diabetes melitus. Objective of the study was to analyze the relationship between physical activity level, with the quality of life and the risk of diabetes.

Material and Methods

Design of the study was cross-sectional. Physical activity measured by International Physical Activity Questionnaire (IPAQ) and exercise test (by measured heart beat and lactic acid after the Harvard exercise test). Quality of life (QOL) measured by QOL SF 36. Blood glucose level detected on fasting blood glucose (FBG). Subjects selected by simple random sampling.

Results

Subjects consisted 50 (40%) of Male, and 75 (60%) of Female. Intensity of subject physical activity was $652,67 \pm 554$ METs. There were negative correlation between IPAQ and lactic acid ($r = -0,371, p = 0,000$), positive correlation between heart beat and lactic acid ($r = 0,249, p = 0,002$), as well as positive correlation between body mass index (BMI) and FBG ($r = 0,135, p = 0,043$), by spearman rho test. There were correlation between lactic acid and dimension of role "limitation due to physical health" ($p = 0,002$), and with dimension of "sosial function" of QOL ($p = 0,012$), by ANOVA test.



Conclusion

Subjects has minimally active of physical activity. Lactic acid and heart beat can be used to determine the level of physical activity after exercise test. Increased of lactic acid needed to increased the quality of life on "role limitation due to physical health" and "social function" dimension. Increased of BMI proved has correlation with higher FBG.

No conflict of interest

ISPR7-0508

Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

SURVEY FOR PATIENTS WITH SINGLE DISABILITY CERTIFICATE

I. Aladro¹, M.D.M. Musazzi¹, L. Viale¹

¹Centro Asistencial Universitario. Universidad Nacional de San Martín, San Martín, Buenos Aires, Argentina

Introduction/Background

Approximately 15% of the world population has some kind of disability. In Argentina the 24.901 law establishes the basic benefits system in habilitation and rehabilitation for persons with disabilities. By obtaining the Single Disability Certificate (SDC), holders receive benefits that intended to compensate their situation. Many of these benefits are not reached by patients and in many cases are unknown for them. The aim of this study is to determine the knowledge and use of the benefits provided by the SDC.

Material and Methods

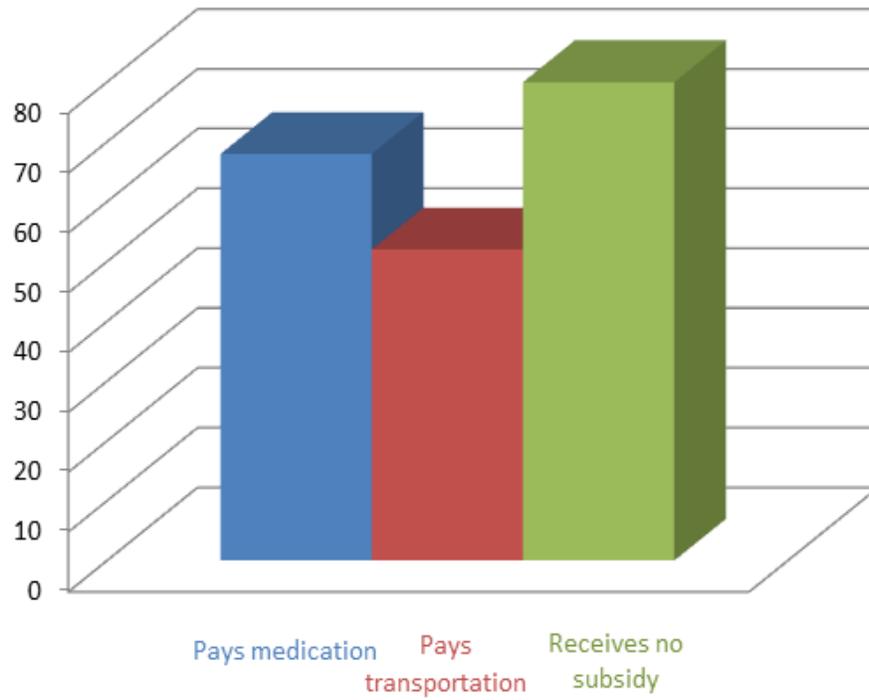
An analytical survey with closed and open questions was made. It included the following items: housing status, activity status, education status, literacy, medical coverage, data associated with obtaining SDC, their known benefits and used.

Results

We evaluated 25 patients with a mean age of 50.6 years (68% men). Almost 80% had motor disabilities, 16% motor disability associated with another category (auditory, visual or mental) and 4% only visual. Most of them (84%) had medical coverage. The average time since they became aware of the possibility of obtaining the SDC until the first state assessment was 203 days.

More than 68% of the patients continued paying medication, 52% paid for public transport, only 20% of the patients worked since the certificate was obtained and 80% did not receive a subsidy.

Only 8% of the patients consulted knew that they had health, transportation, education and employment benefits, and 40% of patients did not refer health as a benefit of SDC.



Conclusion

In this preliminary study, the patients have a prolonged time until obtaining SDC. Many of the benefits set by the laws are unknown. Patients do not receive some of the benefits, despite knowing its existence. It is necessary to make an strategy plan for giving information to the community.

No conflict of interest

ISPR7-0531

Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

HOW ARE YOU? A POPULATION-BASED STUDY OF THE IMPACT OF LOW BACK PAIN (LBP) ON SELF-RATED HEALTH (SRH)

F. Al Zoubi¹, A. Bussi eres¹, N. Mayo¹

¹McGill University, School of Physical & Occupational Therapy, Montr eal, Canada

Introduction/Background

LBP is the most prevalent musculoskeletal disorder in adults, however, its health effects are rarely appreciated. How an individual perceives health (excellent, very good, good, fair, or poor) is a strong predictor of health service utilization and death over and above clinical diagnoses, measures of health status, and known covariates. The purpose of this study was to estimate the extent to which LBP is associated with SRH and to identify modifiable contributors to both.

Material and Methods

Analyses of the 1999 to 2004 National Health and Nutrition Examination Survey (NHANES) were performed. The population was adults 20-60 years of age. LBP was classified as absent, or present with or without sciatica. SRH was a composite measure combining health rating with change from previous year yielding a 7-level ordinal variable. Potential explanatory variables contributing both to LBP and SRH included socio-demographics, life-style factors, comorbidity, and disability. Ordinal regression was used incorporating the sampling weights.

Results

The strongest contributors to both LBP and SRH were age, income, education, comorbidities, and smoking. Variables likely to be in the causal pathway between LBP and SRH were depression, physical activity, disability, and work. The unadjusted odds ratio (OR) for the impact of LBP without sciatica on SRH was 1.64 (95%CI: 1.5-1.79) and with sciatica the OR was 3.73 (95%CI: 3.22-4.31); adjustment for variables associated with both reduced these ORs somewhat, 1.41 (95%CI: 1.29-1.54), and 2.11 (95%CI: 1.82-2.45), respectively. If potential causal pathway variables were included, the ORs for back pain were further reduced supporting their role as mediators of SRH.

Conclusion

The modifiable factors contributing to poor health among people with LBP were smoking, depression, physical activity, and disability. Because physical therapists play an important role modifying disability and physical activity, they can make important contributions to the health of people with LBP patients.

No conflict of interest

ISPR7-0598

Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

GENDER DIFFERENCES OF PHYSICAL PERFORMANCE TESTS IN ADOLESCENTS

F. Gashi¹, B. Haxhiu², E. Gara³, I. Shalaj³

¹QKUK Qendra Klinike Universitare Prishtine, Physiotherapy, Prishtina, Kosovo

²Q.K.U.K, Physiotherapy, Fush Kosovo, Kosovo

³Q.K.U.K, Physiotherapy, Pristina, Kosovo

Introduction/Background

: Non-communicable diseases (NCD) are the leading causes of death worldwide and cardiovascular disease as being part of this group is the leading cause (WHO, 2013). Overweight and obesity play a major negative contribution for clustering and developing cardiovascular diseases from early childhood which most probably is then manifested during adulthood (WHO, 2000).

This study's objective is to look after age and gender differences expressed as strength, explosive power and to make a point whether possible differences are related with body composition.

Material and Methods

191 adolescents 14.8 ± 0.4 years, 1.67 ± 0.08 height, were included in the study, from different schools of Pristina. Anthropometric measurements were taken, BMI was calculated and subjects were classified based on cut-off points presented by Cole TJ (2000), skinfolds were taken at four regions of the upper body. Power of the upper extremities was tested using a 3kg medicine ball, and for lower body was used countermovement jump test as well as standing broad long jump test.

Results

Significant gender differences with respect to all anthropometric parameters (besides BMI) were found ($p < 0.001$). Overweight and obesity prevalence however, was higher among boys (26.3% for boys and 15.7% for girls respectively). Physical performance was higher in boys than in girls. Correlation analyses revealed weak to moderate associations between physical performance and body composition.

Conclusion

Our study clearly confirmed gender differences in both, fitness and anthropometric parameters. However, the association between physical fitness and body composition has to be regarded differentially as they could be point to different direction.

Outcomes of this study shows that physical fitness and body composition has to be regarded deferentially.

No conflict of interest

ISPR7-0849

Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

PARTICIPATION RESTRICTIONS AND VOCATIONAL NEEDS OF UNILATERAL LOWER LIMB AMPUTEES IN A REGION OF SOUTH AFRICA

C. Joseph¹, T. Wing², E. Liezel²

¹, Cape Town, South Africa

²University of the Western Cape, Physiotherapy, Cape Town, South Africa

Introduction/Background

Background: Vocational rehabilitation relates to rehabilitating an amputee back into actively participating in society. Even though lower limb amputation surgery is commonly performed in South Africa, and given the high unemployment rate in the country, a lack of evidence persists on the participation restrictions and vocational needs of amputees in the Western Cape.

Aim: The aim of the study is to determine and explore the participation restrictions and vocational rehabilitation needs amongst persons with a unilateral lower limb amputation (LLA's) in the Western Cape.

Material and Methods

Methods: A cross-sectional, conventional quantitative approach. The study is part of a larger postgraduate study which utilizes a mixed-method approach and an explanatory sequential design. The first phase utilized the WHODAS II and demographic questionnaires to gather information on the predominant limitations and restrictions. Consequently, the second phase made use of telephonic interviews exploring the barriers found in phase one. A total of fifty (50) participants were used in phase one, and seven (7) in phase two.

Results

Results: The study show 44% of the participants struggle to stand for a long period, 70% of the total population faced extreme difficulty with walking long distances. In employment and schooling, an alarming 92% of the participants were neither at work nor at school. Furthermore, 34% of the participants had extreme negative emotional experiences during and after the amputation.

Conclusion

Conclusion(s): Rehabilitation after amputation should include and emphasis on not only the post-operative needs but also address barriers to participation restrictions and vocational needs of the amputee.

No conflict of interest

ISPR7-0878

Functioning Epidemiology (Population-Based Comparative Studies of Functioning Across Conditions, Cultures, and Time, e.g. on Employment of People with Disability)

EPIDEMIOLOGY AND MANAGEMENT OF TRAUMATIC BRAIN INJURY IN THE ELDERLY – A SINGLE CENTER OBSERVATIONAL STUDY

H. Mee¹, F. Anwar², P. Hutchinson³, A. Helmy³, I. Timofeev³, J. Allanson⁴, A. Joannides³

¹, Ely, United Kingdom

²Cambridge Hospitals NHS Trust, Cambridge-, United Kingdom

³, Neurosurgery, Cambridge, United Kingdom

⁴, Rehabilitation Medicine, Cambridge, United Kingdom

Introduction/Background

Traumatic brain injury (TBI) can lead to increased morbidity and mortality at any age. The burden of disease and other co-morbidities commonly seen in the older patient can often lead to difficult treatment decisions and variable outcomes.

On this background, we sought to investigate the epidemiology of TBI in elderly patients referred to a regional neurosurgical unit over a 6-year period. **Material and Methods**

All patients aged 75 or over were analyzed from the neurosurgical referral database over a six-year period from November 2010 to November 2016. Data was correlated to show severity of TBI based on initial GCS score; GCS 13-15 mild TBI, 9-12 moderate TBI and <8 severe TBI. Outcome measures to include transfer to the neurosurgical unit; locally managed and follow up were recorded.

Results

4182 patients were referred; 10% severe TBI (429); 9% moderate TBI (357) and 81% mild TBI (3396). 2 commonest referrals - chronic sub-dural hemorrhage 40% (1661) and acute sub-dural hemorrhage 31% (1295). Total transfer rate to neurosurgery of those referred 17% (721) - 10% severe TBI (43); 14% moderate TBI (51); 18% mild TBI (627). Those transferred 2.5% (18) had emergency theatre; 6.5% (47) were transferred to critical care; 90% (650) were urgently transferred to the neurosurgical ward.

Conclusion

Majority of patients over 75 are not transferred to the neurosurgical unit. Majority of those transferred, 71%, had an acute or chronic sub-dural hemorrhage and have suffered a mild TBI.

No conflict of interest

ISPR7-0346

Functioning Impact Assessment (e.g. Prediction of the Implications of Policy and Legislation on Functioning)

THE OUTCOMES FOR UPPER LIMB MOTOR MOBILITY AND PERSONAL MANAGEMENT DURING THE THREE MONTHS POST STROKE IN PATIENTS ATTENDING OCCUPATIONAL THERAPY

Z. Msengana¹, P. De Witt², A. Owen³

¹, Johannesburg, South Africa

²University of the Witwatersrand, Occupational Therapy, Johannesburg, South Africa

³University of the Witwatersrand, Occupational Therapy, Johannesburg, South Africa

Introduction/Background

This research project aimed to describe the outcomes for upper limb motor mobility(ULMM) and personal management(PM) for patients attending occupational therapy at Chris Hani Baragwanath Academic Hospital in the first three months post-stroke.

Material and Methods

A quantitative, descriptive correlation design was used. A convenient sample, consisting of adult patients who suffered a first onset stroke were selected. Participants who met the inclusion criteria were selected by designated occupational therapists working in medical wards. The researcher did initial assessments of ULMM using the Fugl – Meyer assessment (Fugl – Meyer, 1975) and the South African Data for Functional Medicine to assess independence in personal management (Loubser H, 2002).

Research participants' received rehabilitation as usual. The same measurement tools were administered on discharge and during out-patient follow up appointments at one, two and 3 month intervals.

Results

Data was analysed using descriptive statistics. Results indicated that recovery of ULMM was influenced by the site of lesion. The site of lesion commonly affected by stroke is middle cerebral artery(MCA). Gender and age did not influence recovery of motor function. Severe motor disability involving both poor recovery of upper and lower limb and urinary incontinence yielded poor independence in PM.

Conclusion

The site of lesion appeared to have a direct influence on recovery of ULMM. Stroke in the MCA territory is found to be a predictor of poor recovery of ULMM. Urinary incontinence, poor recovery of ULMM and lower limb are predictors of poor recovery of performance in PM tasks.

No conflict of interest

ISPR7-0412

Functioning Impact Assessment (e.g. Prediction of the Implications of Policy and Legislation on Functioning)

EFFECTIVENESS OF THE RANGE CONSTRAINT THERAPY IN PATIENTS BRAIN STROKE

J. Skibarkiene¹, E. Milinaviciene², O. Gudaitis¹, E. Krisciuniene¹

¹Hospital of Lithuanian University of Health Science,

Kulautuva Rehabilitation Hospital affiliated branch of Hospital of Lithuanian University of Health Sciences Kauno Klinikos, Kaunas, Lithuania

²Hospital of Lithuanian University of Health Science, Rehabilitation, Kaunas, Lithuania

Introduction/Background

To evaluate the efficiency of constraint-induced movement therapy to arm function recovery and to the person's autonomy after stroke.

Material and Methods

Study 65 persons of working age after stroke. There were two groups: research group was applied usual exercises therapy and constraint-induced movement therapy (IMT) and control group (CG) was applied usual exercise therapy. Functional status was evaluated by the Functional Independence Measure, Barthel index, goniometria, dynamometry, Box and Block test, Lovett, Motors assessment scale (MAS) and Ashworth scales and Mini Mental State Examination (MMSE).

Results

The assessment of functional status after rehabilitation in both groups was significant improvement ($p < 0.05$). Patients of IMT group self-service in daily activity increased by 1/3 more vs CG. According by MMSE to the average of cognitive functions disorders in IMT group decreased significantly, than the CG. There was improvement assessing range of motion analysing arm function recovery, arm speed and accuracy, spasticity and muscle strength after rehabilitation: handbreadth muscle strength increased 6.1 kg vs 4.1 kg ($p < 0.05$); damaged hand muscle strength increased isn't significant. Arm range of motion increased from 3.5° up 14° vs 0° up 10°, the difference between the groups wasn't significant ($p > 0.005$). Statistically significant variation between groups observed in the upper arm construction and retraction motions. The rapidity, accuracy of damaged hand increase up 31 % vs 20 % ($p < 0.05$); The assessment by MAS the arm movements increased 3 vs 1.5 point ($p < 0.05$).

Conclusion

The arm function of person's after stroke significant applying constraint-induced movement therapy, more efficient in recovering damaged arm to upper arm and shoulder indentation of the amplitude of the motion, the arc of the hand and arm movements, complex hand muscle strength vs usual occupational therapy sessions ($p < 0.05$). Self-service of daily activities of IMT group in was increased ($p < 0.05$). Increase arm muscle strength with IMT aren't effective.

No conflict of interest

ISPR7-0721

Functioning Impact Assessment (e.g. Prediction of the Implications of Policy and Legislation on Functioning)

CONCEPTUAL DESCRIPTION OF PREVENTION WITHIN THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH (ICF) – A FIRST PROPOSAL

C. Gutenbrunner¹, B. Nugraha¹

¹Hannover Medical School, Rehabilitation Medicine, Hannover, Germany

Introduction/Background

Because of increasing prevalence of disability new concepts and strategies for its prevention is needed. The classical model of prevention with the categories of primary, secondary and tertiary prevention is not compatible with the model of the ICF. They are disease oriented, whereas ICF provides a comprehensive model of functioning and health. Rehabilitation aims at improving functioning, preventive measures, within this context, prevention's concept should be based on the ICF model.

Material and Methods

Conceptual Description of Rehabilitation as a Health Strategy was used to develop, a "Conceptual Description of Prevention in Rehabilitation". Its characteristics are compatible with the ICF and facilitate the design of prevention measures aiming at the reduction of prevalence of disabilities in light of health conditions.

Results

First proposal: "Prevention in rehabilitation is the strategy within rehabilitation (...) applies and integrates approaches to assess risks of the development impairments in light of health conditions; to optimize a person's capacity; build on and strengthen the resources of the person; provide a facilitative environment; develop a person's performance; and stabilize a person's quality of life in light of health conditions (...) with the goal to empower persons with health conditions at risk of developing disability to maintain optimal functioning in interaction with the environment".

Conclusion

The draft of a Conceptual Description of Prevention in Rehabilitation shows that rehabilitation and prevention of disability conceptually are very close. However, prevention in rehabilitation must begin since a risk of disability development is occurring.

No conflict of interest

ISPR7-0089

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

MEDICOLEGAL ASSESSMENTS: THE JUST(US) WAY

M. Tolsma-Piegza¹

¹Tolsma Consult, Medical Advisor- President GAV, Eindhoven, The Netherlands

Introduction/Background

Background:

The impact of medicolegal assessments can be profound, forming the basis for things such as compensation for loss of income. However, despite the high stakes nature of the assessment, there is limited consensus regarding how the medical aspects of this process should be accomplished. In the Netherlands, considerable variation between individual expert reports makes it difficult to compare results and judge the consistency and quality of a report.

This project examined the impact of a standardised procedure to produce a high quality assessment and a thorough and structured report that provides information across different types of injury.

Material and Methods

Method:

A standardised report was developed based on various published guidelines and codes of conduct. Each finished report was reviewed by an experienced Insurance Medicine Physician to ensure questions have been answered specifically, unambiguously, and were understandable to laymen. Once implemented, questionnaires were sent to 159 consecutive clients in March 2014 to ascertain feedback. Respondents rated various features of the process on a 10 point scale (where 0="very poor" and 10="excellent").

Results

Results:

The response rate was 47% (75/159). Overall, the new report was rated an average of 7.3 out of 10. Report timeliness scored lower at 6.6. Clients considered that reports made valid arguments for the conclusions reached and were easy to read and understand. Despite this, inconsistencies in the quality of the reports were noted by the survey team. Communication about the status of the report and the service of the front office clearly showed room for improvement.

Conclusion

Conclusion:

A number of modifications were enacted following the survey. Another survey is planned in the fall of 2016 to assess compliance and see if the improved system is meeting the needs of both the clients and claimants. It is hoped this data will be available in time for the conference.

No conflict of interest

ISPR7-0102

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

INVESTIGATION ON THE MENTAL HEALTH STATUS OF THE PHYSICALLY DISABLED PEOPLE IN ZHEJIANG PROVINCE

J. Qiu¹, Y. Du², H. Gao¹, F. Wang¹, C. Xu¹, S. Xing²

¹Zhejiang Rehabilitation Medical Center, Rehabilitation Medicine, Hangzhou, China

²Zhejiang Dazhong Psychological Aid Center, Education psychology, Hangzhou, China

Introduction/Background

To understand the quality of life (QOL) and mental health status of the physically disabled people in Zhejiang Province.

Material and Methods

Nine-hundred fifty physically disabled people were interviewed by way of making household surveys. Data were collected by using questionnaires and interviews. Physical and mental health status were objectively scored using the questionnaires including the brief quality of life scale (SF-36) and the anxiety and depression scale in the general health questionnaire (GHQ-28). The basic information and other living conditions were collected by interviews.

Results

A total of 907 valid questionnaires were gathered. The effective response rate was 95.47%. The total Score of SF-36 was 60.89(34.16). Both anxiety and depression scores were more than 4 points. There were high scores on anxiety and depression. There were significant differences in all dimensions of SF-36 and anxiety and depression in different levels of physical disability ($P < 0.01$). There was a significant negative correlation between the quality of life and anxiety and depression ($r_s = -0.626$, $P < 0.01$; $r_s = -0.639$, $P < 0.01$). The multiple linear regression analysis showed that physiological function, role physical, body pain and general health were the influencing factors of anxiety. Role physical, body pain and general health were the influencing factors of depression.

Conclusion

The QOL of the physically disabled population were comparably poor. There were a general existence of anxiety, depression and other psychological problems. Physical function status directly affected the quality of life and mental health status in this population.

No conflict of interest

ISPR7-0248

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

THE REACTION TIME DURING SIMULATE DRIVING IS DIFFERENT BETWEEN YOUNG ADULTS AND THE ELDERY AND IT IS PREDICTED BY MOTOR AND COGNITIVE TASKS

A. Castilho¹, D. Tate¹

*¹Laboratório de Estudos do Movimento,
Departamento Ortopedia e Traumatologia Faculdade de Medicina Universidade Sao Paulo,
São Paulo, Brazil*

Introduction/Background

OBJECTIVES: The objectives of this study was to determine the effect of aging on the reaction time, muscle strength, cognition and postural balance; and to identify the predictors of the reaction time in the driving simulator

DESIGN: cross-sectional study.

SETTING: Laboratory for the Study of Movement and Geriatrics Department.

:EN-US;Laboratory for the Study of Movement and Geriatrics Department**Material and Methods**

PARTICIPANTS: 164 volunteers of both sexes, divided into two groups: a) Elderly Group with a mean age of 70.4 (5.8) years and b) Adult Group, with a mean age of 39.8 (7.2) years.

MEASUREMENTS: The motor test including isokinetic assessment plantar flexor muscle strength and handgrip; postural balance test – Time up go test (TUGT); cognition test - Mini Mental State Examination (MMSE) and dual task – TUGT cognitive; associated with the reaction time (braking).

Results

RESULTS: The elderly drove more slowly, took longer to brake the car in the simulator, and had poorer performance in the postural balance test and less muscle strength in the upper and lower limbs, compared with the younger drivers.

Factors associated with longer reaction time were: decrease in muscle strength of the plantar flexors the ankle and hand grip of the dominant limb (only the adults group), poorer performance in the postural balance dynamic, and lower scores in the MMSE.

The predictor of reaction time in elderly were: postural balance with and without cognitive task and cognitive test. In adults were: postural balance associated with muscle strength of the plantar flexors the ankle, cognitive Test, and postural balance with cognitive task.

Conclusion

The age affect performance the driver, the motor parameters of muscle strength and postural balance, as well as cognition, are important predictors of reaction time.

No conflict of interest

ISPR7-0334

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

EVALUATING PARTICIPATION IN PATIENTS FROM A PUBLIC REHABILITATION NETWORK: RASCH ANALYSIS OF THE PARTICIPATION SCALE (P-SCALE)

M. Souza¹, M. Mancini², F. Silva e Dutra³, R. Sampaio⁴

¹Universidade Federal de Minas Gerais, Graduate Program in Rehabilitation Sciences, Belo Horizonte, Brazil

²Universidade Federal de Minas Gerais, Department of Occupational Therapy, Belo Horizonte, Brazil

³Universidade Federal do Triângulo Mineiro, Department of Occupational Therapy, Uberaba, Brazil

⁴Universidade Federal de Minas Gerais, Department of Physical Therapy, Belo Horizonte, Brazil

Introduction/Background

The interest in better understanding and assessing the “participation” construct has been frequent on rehabilitation literature, as the person’s participation is acknowledged as an important outcome of the rehabilitation process. The aim of this study was to use Rasch Analysis to examine whether the P-Scale is suitable to assess the perceived ability to take part in participation situations by patients with diverse levels of function.

Material and Methods

The sample was comprised by 302 patients from a public rehabilitation services network. Participants had orthopedic or neurological health conditions, were at least 18 years old, and answered the P-Scale. Rasch Analysis was conducted using the Winsteps software.

Results

The participants mean age was 45.5 years (SD=14.4), 52% were male, 86% had orthopedic conditions, 52% had chronic symptoms. Rasch analysis was performed using a dichotomous rating scale, and only one item showed misfit. Dimensionality analysis supported the existence of only one Rasch dimension. The person separation index was 1.51 and the item separation index was 6.38. Items N2 and N14 showed DIF between men and women. Items N6 and N12 showed DIF between acute and chronic conditions. The item difficulty range was -1.78 to 2.09 logits, while the sample ability range was -2.41 to 4.61 logits.

Conclusion

The P-Scale was found to be useful as a screening for participation problems reported by patients in rehabilitation context, despite some issues that should be addressed for further improvement of the scale.

No conflict of interest

ISPR7-0357

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

EVALUATION OF THE FUNCTIONAL COMMITMENT OF HAEMOPHILIC CHILDREN

D. Valencia Valencia¹, G.E. Madera Rojas², O. Silva Caycedo¹

¹Universidad Nacional De Colombia, Medicina Fisica y Rehabilitación, Bogotá, Colombia

²Universidad Nacional De Colombia, Medicina Física y Rehabilitación, Bogotá, Colombia

Introduction/Background

Background

Background

The Functional Independence Score in Haemophilia (FISH) is a condition-specific measure of activity limitation. It includes seven activities under three categories self-care, transfers and locomotion.

Aim

To evaluate the functional commitment of a group of children with haemophilia attended in a paediatric hospital of Bogotá.

Materials and Methods

Descriptive study. There was applied in every child the scale of FISH's activities (Functional Independence Score).

Results

31 patients with an age average of 10 years .The most affected joint was the knee with 22,6 % 16,1 % of the cases did not show any damage. The score average of the FISH was of 24,3 with an effect of significant roof since 58,1 % of the patients qualified in the highest score. One did not find association of the FISH with the age ($r = -0,124$ $p = 0,5$). One association close to reaching a significant value in the activity of squatting in relation with the number of affected joints ($p = 0,05$)

Conclusion

Conclusion

The presence of damage to articulate is frequent in the children with haemophilia. FISH's scale to measure activities is easy, rapid of applying and usefully to detect functional serious alterations. Nevertheless, some of his properties clinimetric are weak and limit his use in the paediatric population. It is necessary to investigate more specific functional scales for the children, in which there are included another type of proper activities of the age, as jumping or running, that can fall ill in a significant way for the disease

No conflict of interest

ISPR7-0362

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

COMPARISON OF THE SENSITIVITY TO CHANGE OF THE FUNCTIONAL INDEPENDENCE MEASURE (FIM) WITH THE ASSESSMENT OF MOTOR AND PROCESS SKILLS (AMPS) WITHIN DIFFERENT REHABILITATION POPULATIONS

S.X. Choo^{1,2}, J.E. Harris¹, J. Bosch¹, J. Richardson¹, S.M. Pettit³, B.J. Ansley⁴, P. Stratford¹

¹McMaster University, School of Rehabilitation Science, Hamilton, Canada

²Singapore General Hospital, Department of Occupational Therapy, Singapore, Singapore

³Hamilton Health Sciences, Restorative Care Program- St. Peter's Hospital, Hamilton, Canada

⁴Hamilton Health Sciences, Research and Program Evaluation- Rehabilitation and Seniors, Hamilton, Canada

Introduction/Background

The FIM is widely used to evaluate rehabilitation outcomes; however similar measures exist that may better detect change, particularly given the need to evaluate physical and cognitive aspects of function. This study examined whether the motor and cognitive subscales of the FIM were more sensitive to change than the AMPS.

Material and Methods

We conducted retrospective chart reviews of 322 patients consecutively admitted to inpatient rehabilitation units, with both admission and discharge FIM and AMPS scores. Patients were categorized into diagnostic groups (orthopedic, oncology, and geriatric). For each group, standardized response means (SRM), with 95% confidence intervals (CI), were used to estimate the sensitivity to change of the subscales.

Results

We collected data on a total of 276 patients. The sample size of each group and sensitivity to change of the subscales are summarized in Table 1. Examining SRM values and respective CI, the FIM motor subscale was more sensitive to change than the AMPS motor subscale in the orthopedic and geriatric group. For the cognitive subscales, the AMPS was more sensitive to change than the FIM in the oncology and geriatric group.

Measures	Orthopedic (n = 66) SRM (95% CI)	Oncology (n = 44) SRM (95% CI)	Geriatric (n = 166) SRM (95% CI)
<i>Motor Subscale</i>			
FIM	2.45 (1.98, 3.18)	1.92 (1.55, 2.53)	1.69 (1.42, 2.00)
AMPS	0.92 (0.65, 1.26)	1.50 (1.23, 1.97)	1.04 (0.88, 1.23)
<i>Cognitive Subscale</i>			
FIM	0.22 (0, 0.45)	0.19 (-0.12, 0.41)	0.21 (0.08, 0.35)
AMPS	0.60 (0.38, 0.85)	1.34 (1.09, 1.73)	0.86 (0.71, 1.05)

Conclusion

The FIM is a mandated measure for all rehabilitation units in Canada. As the cognitive subscale of the AMPS is more sensitive to change than the FIM, we recommend also administering the AMPS in order to better detect changes in patients' cognitive aspect of function.

No conflict of interest

ISPR7-0528

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

ICF-BASED OUTCOME MEASUREMENT: OPERATIONALISING ICF CATEGORIES BY LINKING STANDARDIZED OUTCOME MEASURES TO ICF-BASED TREATMENT GOALS IN MUSCULOSKELETAL REHABILITATION

H. Prenner^{1,2}, M. Fischer³, P. Sojer⁴, M. Pirchl⁵, F. Leisch², T. Bochsansky²

¹University of Oslo, Department of Health Management and Health Economics, Oslo, Norway

²VAMED Management & Service GmbH, Hospital Management Austria, Vienna, Austria

³Rehazentrum Kitzbühel, Medical Director, Kitzbühel, Austria

⁴Rehazentrum Kitzbühel, Director of Nursing, Kitzbühel, Austria

⁵Rehazentrum Kitzbühel, Department of Psychology, Kitzbühel, Austria

Introduction/Background

The International Classification of Functioning, Disability and Health (ICF) serves as a framework for setting patient-oriented treatment goals in musculoskeletal rehabilitation. However, no standardized set of outcome measures has been developed to measure the attainment rate of treatment goals. The aim of this study was to link validated and widely used outcome measures with ICF-based treatment goals to determine the change before and after rehabilitation.

Material and Methods

A multi-layer delphi process was adopted to develop a set of ICF-based treatment goals based on the ICF Core Sets and to determine a set of outcome measures. A structured item-analysis was performed on the set of outcome measures. The measures were linked to the ICF Categories by two health professionals according to the ICF linkage rules.

Results

31 ICF treatment goals were identified and assigned to 7 professional groups (physicians, nurses, physiotherapists, occupational therapists, massage therapist, dietician, psychotherapists). 22 validated and frequently used outcome measures were included and clustered in 4 clinical application categories (basic assessments, lower extremities, upper extremities, vertebral column). The quantitative degree of content correspondence between outcome measures and the ICF Categories amounts 70%-75% in all categories. For 11 ICF Categories an extension of outcome measures is recommended.

Conclusion

By linking validated and evidence-based outcome measures with ICF-based treatment goals the ICF Categories can be operationalised in clinical practice. Thus, an ICF-based approach for determining the success of rehabilitative interventions is demonstrated. Further research is recommended to validate the linkage process and to further develop the outcome measurement framework presented.

Conflict of interest

Disclosure statement:

In accordance with our ethical obligation as researchers, we are reporting that we are employed at the company that may be affected by the research reported in the enclosed paper. We have disclosed those interests fully and we have in place an approved plan for managing any potential conflicts arising from that involvement.

ISPR7-0571

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

HEART RATE ASSESSMENT DURING RECOVERY AFTER RESISTIVE EXERCISE AT DIFFERENT LOADS IN ELDERLY AND YOUNG MEN

C. Italiano Monteiro¹, **R. Gonçalves Mendes**², **É. Zavaglia Kabbach**², **F. Cristina Rossi Caruso**², **A. Borghi-Silva**², **R. Cabiddu**²

¹, Sao Carlos, Brazil

²Federal University of Sao Carlos, Physiotherapy Department, Sao Carlos, Brazil

Introduction/Background

Cardiovascular recovery after exercise is driven by cardiac autonomic modulation, which is impaired in the elderly. Resistance exercise (RE) is recommended to contrast the effects of aging. Our objective was to evaluate the heart rate (HR) during recovery after RE at different loads in elderly and young individuals.

Material and Methods

16 elderly male subjects (66.3±4.5 years) and 17 young male subjects (25.7±3.6 years) performed RE until exhaustion on the Leg Press 45° device at an intensity of 70% and 90% of 1 repetition maximum (RM). The HR signal was recorded continuously during 6 minutes of recovery (Polar® S810i, Polar Electro Oy, Kempele, Finland). Two-way ANOVA was performed (SigmaPlot version 11.0, significance level: p<0.05) to assess statistical differences.

Results

Significant differences were found between elderly and young volunteers during recovery after RE at 70% (HR = 71.1± 12.9 bpm vs. 89.3 ± 11.6 bpm, respectively) and after RE at 90% (HR = 70.1± 11.8 bpm vs. 85.9 ± 9.6 bpm, respectively).

Conclusion

During recovery after RE at 70%, higher HR values were observed in both groups, possibly due to prolonged exercise with a higher number of repetitions. Moreover, elderly individuals presented lower HR during RE recovery when compared to young subjects, independently of exercise intensity. We suggest this might be explained by lower HR values reached during RE, possibly due to age-related autonomic control impairment.

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No conflict of interest

ISPR7-0585

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

USE OF THE ICF-CY AS A CLINICAL PROBLEM-SOLVING TOOL IN REHABILITATION OF NEUROMUSCULAR PATIENTS UNDERWENT A NEW ACQUATIC PROTOCOL

L. Labianca^{1,2}, M. Fava³, M. Pane², E. Danis³, V. Pucci³, E. Mazzone²

¹Fondazione Sovena- IRIFOR- La Sapienza University of Rome, Orthopedics and Traumatology, Rome, Italy

²Sacro Cuore di Gesù University- A. Gemelli Hospital Rome, Child Neuropsychiatry, Rome, Italy

³IRIFOR Institut of Rehabilitation- Education and Research, ALLIEN, Rome, Italy

Introduction/Background

Aquatic exercise programs may be a beneficial form of therapy for children and adolescents with neuromuscular diseases, particularly for those with significant movement limitations where land-based physical activity is difficult. Moreover few affordable instruments are able to assess the efficacy of a rehabilitation protocol in these pathologies.

The ICF-CY is a new tool that could be used in finding where could be better focus the rehabilitation program.

This study evaluate how the use of the ICF-CY could be helpful for physicians.

Material and Methods

20 children with neuromuscular diseases (CP, SMA, DMD) have been recruited for a rehabilitation program. All children have been classified by ICF-CY at the beginning and end of treatment. Hammersmith scale, number of pulmonary infection events, Quality of Life scale. Test F for analysis of variance and paired Student T-Test have been applied.

Results

Twenty children have been randomly assigned to the aquatic rehabilitation protocol group (Group AR, 11) or to the standard rehabilitation group (Group SR, 9). Each participant of the AR Group was managed by one therapist and underwent therapy one hour twice a week for 12 months.

Conclusion

The multi-sensorial approach applied in this aquatic therapy not only seems to have a therapeutic effect on children with SMA (increasing muscle efficiency, motor function, functional abilities, respiratory function), but also to have a psycho- social effect (increasing quality of life, life habits, socialization) in patients that most of time have a lack of physical and social experience. Further studies could show if this therapy in long term follow up is able to modify the natural orthopaedic history of these patients (tendon retraction, scoliosis). ICF-CY gave the right indications for effective rehabilitation.

No conflict of interest

ISPR7-0615

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

TOWARDS A COMMON MEASURE OF QUALITY OF LIFE FOR SPINAL CORD INJURY

CLINICAL TRIALS

D. Tate¹, M. Forchheimer¹, M. Post², P. New³, J.M.D. Greve⁴, S. Charlifue⁵

¹University of Michigan, Physical Medicine and Rehabilitation, Ann Arbor, USA

*²University Medical Center Utrecht and De Hoogstraat Rehabilitation,
Department of Physical Medicine and Rehabilitation, Utrecht, The Netherlands*

³Caulfield Hospital Alfred Health, Spinal Rehabilitation Service, Melbourne, Australia

*⁴University of Sao Paulo School of Medicine/Hospital das Clinicas,
Department of Orthopedic Trauma/ Spinal Cord Injury Service, Sao Paulo, Brazil*

⁵Craig Hospital, Spinal Cord Injury Model System, Denver, USA

Introduction/Background

The ultimate goal of rehabilitation is not only to improve function, but to improve quality of life (QOL) after disability. Few measures of QOL have been used during and after rehabilitation to assess patient reported perceptions of their overall physical and psychological function and wellbeing. QOL is often an outcome (albeit secondary) in industry clinical trials. Even if functioning changes occur, if QOL is not improved or even worsen, are we doing the right thing? This presentation discusses the need to have standardized ways to capture QOL that is relevant in any setting, with people with spinal cord injury (SCI) in other countries.

Material and Methods

A consensus group of international leaders in SCI and QOL met and discussed common ways of assessing QOL after SCI. Several of the authors of this presentation were part of this international panel. The group developed a brief measure of QOL to be used in conjunction with the International SCI Datasets, the SCI-QoLBDS. Representatives of four countries tested the measure with clinical populations. For the non-English speaking countries, translations were completed using existing published guidelines. Results were analyzed using appropriate statistics and compared across countries and with legacy measures.

Results

The SCI-QoLBDS offer the potential of good reliability and comparability with legacy measures, the WHOQOL BREF. The Brazilian Portuguese version of the measure showed good intra rater-reliability (.65-.77) and reasonably good inter-rater-reliability (.50- .64) with exception of psychosocial health item. Inter-reliability coefficients improved with time suggesting that with interviewer training these can be even higher. Overall, available data showed satisfactory validity of the SCI-QoLBDS.

Conclusion

The SCI-QoLBDS is a short and easy to use measure of QOL. As a secondary outcome, it offers great potential for cross cultural comparisons of clinical trials results in SCI. However, we need larger samples of prospectively collected data to confirm these results.

No conflict of interest

ISPR7-0669

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

A MULTI-NATIONALLY VALIDATED MOBILITY ASSESSMENT TOOL USING INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH CATEGORIES: THE IBMAT 10

F. Kohler¹, S. Radhakrishnan¹, C. Schiappacasse², C. Gutenbrunner³, J. Li⁴, K. Pieber⁵, J. Arun⁶

¹*Braeside Rehabilitation Research Group, Rehabilitation, Wetherill Park, Australia*

²*British Hospital, Rehabilitation, Buenos Aires, Argentina*

³*Hannover Medical School, Physical Medicine and Rehabilitation, Hannover, Germany*

⁴*Nanjing Medical University, Physical Medicine and Rehabilitation, Nanjing, China*

⁵*Sportordination, Sport, Vienna, Austria*

⁶*Northwestern University, Rehabilitation Institute, Chicago, USA*

Introduction/Background

The International Classification of Functioning, Disability and Health (ICF) provides a universal language for rehabilitation professionals. A multinational collaboration has developed and validated an ICF based mobility assessment tool (IBMAT). Initially a 22 item tool was developed.

Aims: The aim of the study was to establish an ICF based Mobility assessment tool and companion scoring instructions for individuals with a lower extremity amputee. The assessment tool had to be short enough to be used in routine daily clinical practice yet remain sensitive to detect changes in mobility as the individual progresses through rehabilitation.

Material and Methods

191 lower limb amputees were assessed across 6 study centres using the 22 item assessment tool. The individual items were statistically analysed. On average just over 25 minutes were spent completing the 22 item tool so the number of items needed to be reduced to allow routine use in clinical practice. Using concept analysis, general statistical and Rasch analysis to determine discriminative power, item to item correlations and other psychometric properties of the items and the whole assessment tool, items which could be removed were identified.

Results

The IBMAT10 (10 items) includes squatting, standing, bending, lifting and carrying objects, walking short distances, walking long distances, walking on different surfaces, climbing, running and moving around outside the home/other building and has a Cronbach's alpha of 0.92.,

Discussion: Applying common statistical techniques has allowed the development of an IBMAT that can be applied in busy daily clinical practice. The items and the assessment tool has been validated in different cultures and settings. Further field testing is required to validate the instrument and determine the time it takes to complete

Conclusion

Initial statistical analysis of the IBMAT 10 supports its feasibility and validity as an assessment tool. A follow-up research project is planned to validate the IBMAT 10 as a patient self-rated assessment tool.

Conflict of interest

Disclosure statement:

The study was co-funded by Otto Bock and Ossur, but tool development was carried out independently by the researchers.

ISPR7-0691

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

CLINICAL IMPLEMENTATION OF ICF IN CHINA: INTER-RATER RELIABILITY, CONCURRENT AND DISCRIMINATIVE VALIDITY OF A MEASURE BASED ON THE ICF GENERIC SET

S. Liu¹

¹Jiangsu Province Hospital, Rehabilitation department, Nanjing, China

Introduction/Background

Information on functioning and disability needs to be routinely available for operational and strategic decision-making in clinical practice. A generic set for the assessment of functioning has been developed based on WHO's International Classification of Functioning, Disability and Health (ICF). Its clinical implementation is tested in China since 2013. The purpose of the present study was to validate the Generic ICF Set (GIS) in daily routine clinical practice in China. Specific aims were to a) analyse the inter-rater reliability and b) concurrent validity and discriminate validity of the GIS.

Material and Methods

Data from 4,784 patients with various diagnoses from 50 hospitals located in 20 provinces of Mainland China were collected by nurses who applied a 0 (no problem) to 10 (complete problem) numeric rating scale to rate each ICF category at the time of admission, midterm and discharge. Patients at Rehabilitation Departments were rated by two independent investigators at same time point (N=766). Inter-rater reliability was evaluated with intraclass correlation coefficients (ICC). Concurrent validity was evaluated with Spearman correlation coefficients between GIS and SF-12 items. Discriminant validity was examined based on the comparison of patient groups with different severity of injury.

Results

The inter-rater reliability of items and sum score of GIS were good with ICCs ranging from 0.70 to 0.95, with exception of the item d850. Spearman correlation coefficient analysis showed the categories (with exception of d850) of GIS were correlated with the items of SF-12 which indicated acceptable concurrent validity of GIS. Two-sample t test and ANOVA analysis showed GIS could discriminate between patient groups with different severity injury.

Conclusion

The Generic ICF Set in combination with a 0 to 10 numeric rating scale is a reliable and valid tool for the collection of minimal information of functioning across various clinical settings.

No conflict of interest

ISPR7-0709

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

SCIM III (SPINAL CORD INDEPENDENCE MEASURE VERSION III) ASSESSMENT BY INTERVIEW: RELIABILITY AND COMPARISON WITH ASSESSMENT BY OBSERVATION

A. Catz¹, M. Itzkovich², H. Scheffer², -I. Gelernter³, R. Gur-Polack¹, V. Bluvshstein¹

¹*Loewenstein Hospital - Rehabilitation Center, Spinal Rehabilitation, Raanana, Israel*

²*Loewenstein Hospital - Rehabilitation Center, Occupational therapy, Raanana, Israel*

³*Tel-Aviv University-, School of Mathematics- Laboratory of Statistics, Tel-Aviv, Israel*

Introduction/Background

SCIM III, which is in use worldwide, has been validated when used by observation, but not by interview. This study examined the reliability of findings obtained by interview and compared them to those obtained by observation.

Material and Methods

SCIM III assessments were performed in 35 rehabilitation inpatients during the last week before discharge. Patients were assessed by observation by a nurse and by interview by two independent raters, an occupational therapist and a physiotherapist, all three experienced in assessment of SCI patients, and blinded to the scores of the other two.

Results

Intraclass correlations between the three raters were high on all three SCIM III subscales (0.898-0.958) ($p=0.001$). Pearson correlation coefficients between both interviewers were 0.845 and 0.916 ($p=0.001$) for self-care and mobility, and 0.649 ($p=0.003$) for respiration and sphincter management. The differences between interviewers' mean scores were statistically non-significant in all the subscales. Pearson correlation coefficients between scores obtained by interview and observation ranged between 0.705 and 0.833 ($p=0.001$) for all SCIM III subscales, and the differences between the mean scores of interview and observation were all statistically non-significant. Total agreement between interview and observation scores for most SCIM III items, and the corresponding Kappa coefficient, however, were lower than 78 and 0.7 respectively.

Conclusion

SCIM III assessment by interview is reliable and valid for comparison of patient groups. For assessment of individual patients, however, findings obtained by interview may differ from those obtained by observation, and for certain items may introduce substantial errors.

No conflict of interest

ISPR7-0756

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

SEX AND ANGLE-RELATED FATIGUE ANALYSIS AND SEMG-TORQUE RELATIONSHIP BASE ON TORQUE AND SURFACE ELECTROMYOGRAPHY DURING MAXIMAL VOLUNTARY CONTRACTION OF ELBOW JOINT

R. He¹

¹Nanfeng Hospital- Southern Medical University, Rehabilitation Medicine, Guangzhou, China

Introduction/Background

Isometric contraction use to maintain muscle strength and prevent muscle weakness after fracture fixation. Different fracture require different fixation which resulted in different joint angle during isometric contraction. With continuous isometric contraction, muscle will be at fatigue state which is a bad effect on muscle recovery. However, it is unclear about the difference of sex and joint angle-related fatigue and SEMG-torque relationship. This study aims to explore Sex and angle-related fatigue analysis and SEMG-torque relationship base on torque and surface electromyography during maximal voluntary contraction of elbow joint.

Material and Methods

Thirty healthy subjects with right dominant hand participated in this study and were half male and half female. Right elbow of all subjects was positioned in isometric dynamometer and performed maximal voluntary contraction of elbow flexion at 30°, 60°, 90° and 120°. Flexion torque of elbow were measured continuously during isometric contraction. Simultaneously, surface electromyography were recorded on biceps and triceps brachi. Peak torque (PT), root mean square (RMS) and mean power frequency (MPF) were used to analyze the sex and angle-related fatigue and SEMG-torque relationship.

Results

The highest PT and RMS were at different joint angles, which indicated SEMG-torque relationship is non-linear. The first two higher PT were at joint angles 60° and 90° respectively, which showed that optimal initial length of muscle may be at joint range from 30° to 90°. Different joint angles showed different MPF and fatigue timing and extent. Triceps brachi were higher than biceps brachi at four angle joints. PT, RMS and MPF were significantly different between the male and female.

Conclusion

Duration of isometric contraction should be controlled before fatiguing . Fatiguing time of different joint angles is different, which imply that joint angles should be considered when we decide isometric contraction duration. Sex-related difference show that gender will also affect isometric contraction duration.

No conflict of interest

ISPR7-0802

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

**ASSESSMENT OF FUNCTIONING IN INPATIENTS USING THE GENERIC ICF SET:
PSYCHOMETRIC PROPERTIES**

J. Reinhardt¹, C. Ehrmann², B. Prodinge², G. Stucki³, X. Zhang⁴, J. Li⁴

¹*Institute for Disaster Management and Reconstruction, Disaster Health Sciences, Chengdu, China*

²*Swiss Paraplegic Research, ICF Research Branch, Nottwil, Switzerland*

³*Swiss Paraplegic Research, Director, Nottwil, Switzerland*

⁴*Nanjing Medical University, Rehabilitation Medicine, Nanjing, China*

Introduction/Background

The Generic ICF Set defines a minimum set of information on functioning that should be collected across clinical settings as well as in the community. It comprises the 7 ICF categories b130-energy and drive functions, b152-emotional functions, b280-pain, d230-managing daily routine, d450-walking, d455-moving around, and d850-remunerative employment. For clinical assessment the categories of the Generic ICF Set are combined with a numerical rating scale ranging from 0 (no problem) to 10 (complete problem).

The objective of this study was to determine psychometric properties of the Generic ICF Set.

Material and Methods

In this multi-center prospective cohort study, the functioning of 4510 Chinese adult inpatients from 50 hospitals was assessed at admission and study endpoint using the Generic ICF Set. 710 patients were assessed by two Independent raters. The Rasch-model was used to develop a metric summary score. Sensitivity to Change was examined with a mixed effects model and Cohen's f-squared. MCID was determined with a mixed effects model to find the difference between patients who perceived their functioning as unchanged and those who thought that they improved a little. Inter-rater reliability was examined with Intra Class Correlation coefficients.

Results

The Rasch model fitted the data reasonably well. However, differential item functioning across health condition groups had to be accounted for by creating 3 different summary scores ranging from 0 (no problem) to 100 (complete problem) for 1) musculoskeletal and neurological disorders, 2) cardiovascular and respiratory disorders, and 3) cancer and other disorders. On average patients improved 7.86 points. Cohen's f-squared was large (0.40). Overall MCID was 4.89. Inter-rater reliability was 0.70 at admission and 0.75 at study endpoint for the summary score.

Conclusion

The Generic ICF Set combined with a numerical rating scale showed good psychometric properties and can be used for obtaining minimal information on functioning across clinical settings and diagnostic groups.

No conflict of interest

ISPR7-0890

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

WHODAS-02 INSTRUMENT FOR THE ASSESSEMENT OF SPINAL CORD INJURY PATIENTS

A. Vetra¹, V. Steinerte¹

¹Riga Stradins University, Rehabilitation Department, Riga, Latvia

Introduction/Background

Only a few studies, however, have been conducted about differences between self-rated health and objectively defined parameters. There are many clinical and objectively defined parameters that are used to evaluate a person's disability. Since the World Health Organisation has presented the WHODAS II as a means of objectively measuring subjectively defined functions, greater attention has been focused on self-rated health.

Material and Methods

The survey for this study was conducted on the basis of WHODAS II and the population in Latvia with spinal cord injury.

Results

Respondents were between 18 and 65, and 111 questionnaires were analysed. The results show that people with spinal cord injury on average rate their functioning as limited (33–40 points of 100). Most respondents have been declared to be disabled, which is defined as very serious or severe functional disorders. More than 40% have paid jobs, while one-third do not work for reasons of health.

Conclusion

The research shows that there is a close coherence ($p < 0.05$) between individual, objectively and clinically defined indicators on the one hand and the aspects of the questionnaire in which physical functioning was an important factor on the other hand. For better understanding of the real functional abilities of patients and the individual factors that influence those abilities, it is important in addition to objectively defined indicators to define functional self-rated health.

No conflict of interest

ISPR7-0911

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

A CORRELATIVE STUDY OF THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING (ICF) DOMAINS WITH THE WHOLE PERSON IMPAIRMENT IN INDIVIDUALS WITH CHRONIC PULMONARY DISORDERS

A. Miciano¹, L. Greene¹, C. Cross PhD²

¹*Nevada Rehabilitation Institute, PMR, Las Vegas, USA*

²*Nevada State College, School of Liberal Arts, Las Vegas, USA*

Introduction/Background

The study aims include: 1) to quantify the ICF outcome domains: dyspnea severity (DS), pulmonary-related effect on activity limitation (AL), and participation restriction (PR) of individuals with a pulmonary disorder, using patient-reported outcome (PRO) measures; and, 2) to correlate the ICF outcome domains and the Pulmonary Function Test (PFT) scores with the Rating Permanent Impairment due to Pulmonary Dysfunction (RPIPD), a formal assessment by the AMA Guides to Evaluation of Permanent Impairment, Sixth Edition (AMA Guides).

Material and Methods

In a retrospective cross-sectional study, a total of 26 males (mean age 75.2; range 64 - 87 years old) completed the PROs upon initial evaluation for an impairment rating of the pulmonary disorder. There was only one female subject, who was removed from the study to eliminate any potential gender bias in the results.

The Modified Medical Research Council Dyspnea Scale (mMRC) assessed DS, the COPD assessment test (CAT) measured AL, and the PROMIS-57v1.0 physical function (PF) sub-scale quantified PR. PFT scores were also recorded: forced vital capacity (FVC), forced expiratory volume (FEV1), FEV1/FVC, and diffusing capacity (DLco). The total whole person impairment rating percentage (WPI) was calculated using the criteria from the AMA Guides.

Results

The mean scores (standard deviation <SD>) scores were: mMRC 2.47(1.02), CAT 26.12(5.21), PROMIS-PF 35.88(8.34), FVC 72.917(21.13), FEV1 67.625(29.71), FEV1/FVC 70.34(16.97), DLco 58.35(26.34), and WPI 48.769(24.21).

Spearman's Rank Correlation calculated associations among variables of interest; correlations with $p \leq .10$ indicated potential significant associations. WPI showed high associations with: mMRC ($r = .489, p = .043$); PROMIS-PF ($r = -.613, p = .001$); FVC ($r = -.626, p = .001$); and, FEV1 ($r = -.741, p < .001$).

Conclusion

Individuals with a pulmonary disorder tend to have moderate DS, severe AL, and moderate PR. The study suggests that integrating functional assessment into impairment rating would be accomplished via use of PRO measures within a diagnosis-based impairment class. Future studies should focus on environmental and personal factors as contributors to the impairment rating percentage.

No conflict of interest

ISPR7-0915

Measurement of Functioning (e.g. Psychometrics of Assessment Tools; Operationalisation of ICF Categories)

THE BODY FUNCTION, ACTIVITY LIMITATION, AND PARTICIPATION RESTRICTION OF INDIVIDUALS WITH CHRONIC WHIPLASH

A. Miciano^{1, 2}

¹*Nevada Rehabilitation Institute, PMR, Las Vegas, USA*

²*, Las Vegas, USA*

Introduction/Background

The study objectives include: 1) quantify body function (BF), activity limitation (AL), and participation restriction (PR), as described by the ICF components of disablement, in individuals with chronic whiplash (CW); and, 2) correlate ICF components and scores from performance-based assessments (PBA).

Material and Methods

The Pain Disability Questionnaire stratified 33 individuals (mean age <SD> 46.91 <11.147>) with CW >2 years into mild/moderate (m/m) pain-related impairment (PRI) and severe/extreme (s/e) PRI. The Pain Numerical Rating Scale (NRS) quantified BF, i.e. cervical spine pain severity. The Neck Disability Index (NDI) assessed AL. The PROMIS-57 v1.0 physical function (PF) subscale described PR status. PBA included the: 6-Minute Walk Test (6MWT), Dynamic Gait Index (DGI), Sit-to-Stand (STS), Loaded-Reach (LR), and 50-feet-Walk-Fastest (FWF).

Results

The mean (SD) scores were (m/m, s/e): pain intensity 6.0 (.383), 7.389 (.350); PDQ 64.5 (5.223), 115.556 (4.768); NDI 38 (3.394), 61.556 (3.098); and, PROMIS-PF T-scores 40.98 (1.436), 32.561 (1.311).

Spearman's Rank Correlation calculated associations; correlations with $p \leq .10$ indicated potential significant associations. In subjects with m/m PRI, NRS, NDI, and PROMIS-PF correlated with the PBA scores: NRS correlated with DGI ($r = -.652; p = .001$), 6MWT-distance ($r = -.466; p = .029$), and 6MWT-speed ($r = -.509; p = .016$); NDI scores with DGI ($r = -.528; p = .007$), 6MWT-distance ($r = -.469; p = .018$), 6MWT-METs ($r = -.487; p = .014$), and 6MWT-speed ($r = -.442; p = .027$); and, PROMIS-PF scores with 6MWT-distance ($r = .450; p = .024$) and 6MWT-speed ($r = .462; p = .020$). In subjects with s/e PRI, the NRS, NDI, and PROMIS-PF also correlated with PBA scores: NRS correlated with STS ($r = -.435; p = .030$) and LR ($r = .416; p = .039$); NDI with 6MWT-distance ($r = -.365; p = .048$) and 6MWT-speed ($r = -.400; p = .028$); and, PROMIS-PF with DGI ($r = .387; p = .035$), 6MWT-distance ($r = .611; p < .001$), 6MWT-METs ($r = .615; p < .001$), 6MWT-speed ($r = .630; p < .001$), and STS ($r = -.554; p = .002$).

Conclusion

Most subjects with CW still had moderate pain severity, extensive AL, and high PR. In both PRI sub-categories, the BF, AL, and PR correlated with clinician-derived PBA. The study supports that the ICF components can be assessed via patient-reported outcomes. Future studies should focus on how environmental factors affect the ICF components' multi-dimensionality.

No conflict of interest

ISPR7-0208
Miscellaneous

FACTORS RELATED MUSCULOSKELETAL PAIN IN ADULTS WITH CEREBRAL PALSY

L. Rodríguez Zambrano¹, F. Ortiz Corredor^{1,2}, C.A. Orjuela Rolón¹

¹Universidad Nacional De Colombia, Medicina Fisica Y Rehabilitacion, Bogota, Colombia

²Instituto De Ortopedia Infantil Roosevelt, Bogota D.C, Bogota D.C, Colombia

Introduction/Background

To determine the frequency of musculoskeletal pain in adults with cerebral palsy (CP) seen in a tertiary hospital and its relationship with different variables of gross motor function and gait.

Material and Methods

This is a retrospective study of patients ≥ 18 years with bilateral CP with GMFCS I, II and III (175 patients). Pain, location, classification according to the visual analog scale (VAS), clinical evaluation and video gait analysis were recorded. A subgroup underwent a 6-minute walk test (6MWT) and computerized gait analysis, were calculated the walking speed and the index gait deviation (GDI). Patients with severe pain (score ≥ 7) were compared with patients without pain or pain <7 .

Results

48 patients (27.4%) reported severe pain. Other features are presented in Table 1 - 3. Functional status GMFCS, performance (FMS), history of multilevel surgery, the presence of contractures, walking speed, GDI and index of spasticity were associated with the presence of severe pain. Patients with severe pain showed better results in the 6MWT with near statistical significance ($p = 0.08$). Patients with severe pain were older than others (median = 25 and 22 years, respectively); statistically significant ($p = 0.03$). VAS had a slight but significant correlation with age (Figure 1).

Table 1. Characteristics of patients

Age ^a	24.9 (7.9)
Gender (male) ^b	87 (49.7)
Spastic type ^b	132 (88)
History of multilevel surgery ^b	108 (61,7)
Index spasticity ^c	2,2 (1,6-2,7)
Contractures ^b	69 (39,4)
6MWT ^a (n=79)	264,5 (123,4)
Walking speed ^c (n=152)	0,5 (0,4-0,8)
Index gait deviation ^c (n=139)	73,8 (62,2-79,9)

^a Average (standard deviation)

^b Frequency (%)

^c Median (interquartile range)

Table 2. Functional status of patients

GMFCS ^a	
I	29 (16,6)
II	78 (44,6)
III	68 (38,9)
FMS ^b	
5	5 (4-5)
50	4 (2-5)
500	4 (1-5)

^a Frequency (%)

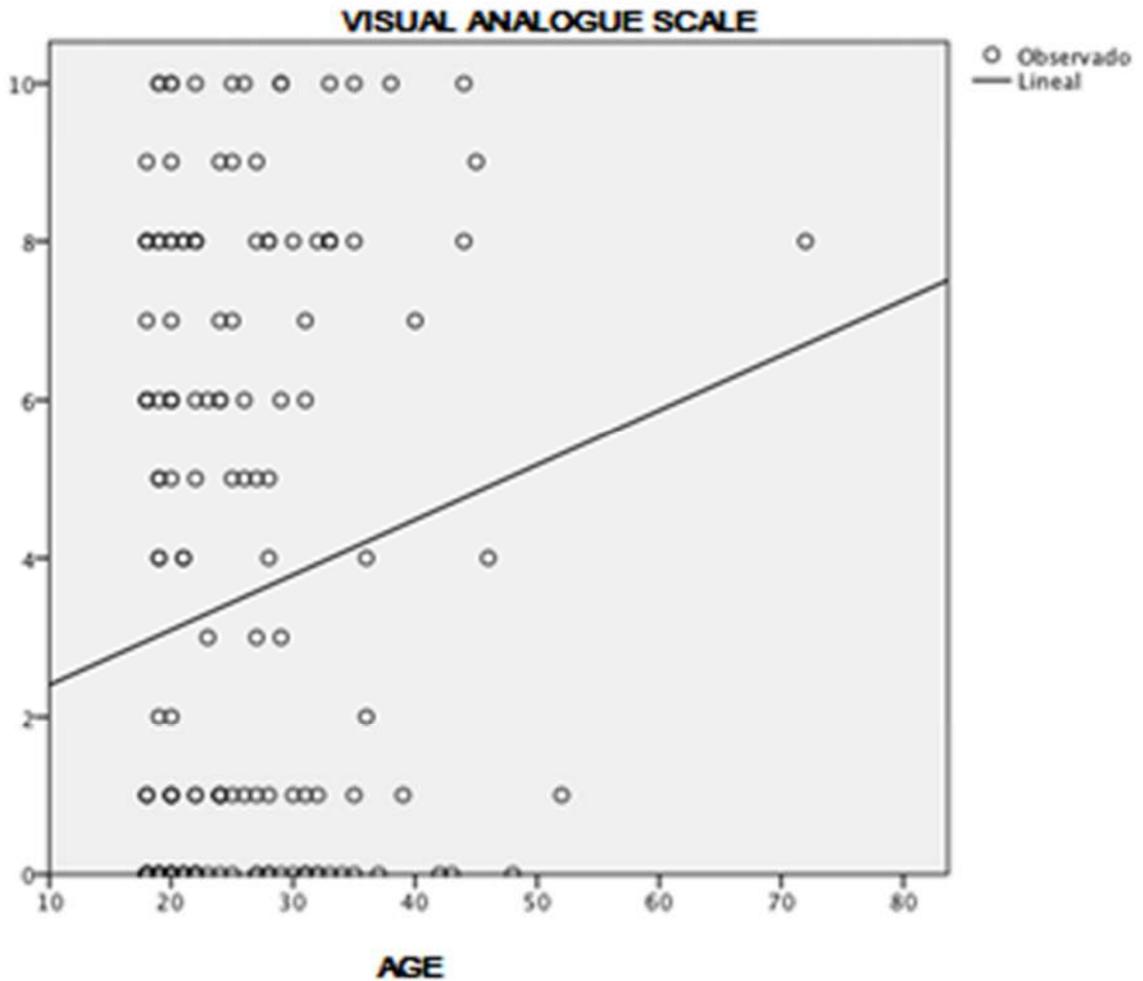
^b Median (interquartile range)

Table 3. Anatomic Regions most affected for contractures

Regions combined (hip and knee or foot and knee) ^a	35.4
foot ^a	31.3
knee ^a	20,8
Hip ^a	8,3
Lumbar spine ^a	4,2

^a Frequency (%)

Figure 1. Relationship of the visual analog scale with age. (R = 0.18; p = 0.01)



Conclusion

Severe musculoskeletal pain of lower limbs occurs in up to one-third of adult patients with PC, it is more common to older and in patients who show better results in the 6MWT. The study findings suggest that possibly, this pain is more common in patients with greater physical activity.

No conflict of interest

ISPR7-0232
Miscellaneous

**PERCEPTIONS, ATTITUDES AND EXPERIENCES OF MANAGERIAL HEALTH PERSONNEL
TOWARDS HIV SCALE UP AND NON-HIV SERVICE DELIVERY IN KENYA**

L. Puckree¹, V. Opollo²

¹Durban University of Technology, Health Sciences, Durban, South Africa

²Kenya Experimental Medicine Research Institute KEMRI, Research unit, Nairobi, Kenya

Introduction/Background

The prevalence of HIV/AIDS in Southern Africa and other parts of Africa has attracted unprecedented donor funding to prevent, and manage the scourge. The focus on this single epidemic has seemingly shifted emphasis away from other aspects of health care and rehabilitation. In Kenya there is no evidence to support this view. The purpose of this study was to determine the experiences, perceptions and change of perceptions to HIV scale up over two different periods in selected counties in one province (Nyanza) in Kenya

Material and Methods

Key informants (6) from government sectors of three counties in one province together with managerial staff from 73 health facilities were invited to participate. Key informants were interviewed while questionnaires were administered to managerial staff. The questions focused on perceptions, attitudes and experiences to HIV/AIDS scale-up over two periods, 2009 and 2013. Thematic analysis compared and contrasted the change that occurred over the study time frame.

Results

The respondents reported that donor money used to improve health care facilities, staffing and services benefitted non HIV care: *"HIV scale-up has resulted in an overall rise in the utilization of non-HIV-related health services, therefore promoting improved health outcomes beyond those specifically addressed by HIV programs"*. Services such as diagnostic, preventative, nutritional and others were enhanced. Some believe that policy should support the integration of services to promote greater benefit to all. Scale-up has also improved health systems and research capacity which is likely to benefit health care in general.

Conclusion

HIV scale up has benefitted non-HIV health services.

No conflict of interest

ISPR7-0304
Miscellaneous

PARTICIPATION RESTRICTIONS AMONG REHABILITATION PATIENTS – THE ROLE OF DIAGNOSES AND SOCIODEMOGRAPHIC AND ENVIRONMENTAL FACTORS

V.P. Moen^{1,2}, J. Drageset², G.E. Eide^{2,3}, S. Gjesdal²

¹Haukeland University Hospital, Centre for habilitation and rehabilitation, Bergen, Norway

²University of Bergen, Department of Global Public Health and Primary Care, Bergen, Norway

³Haukeland University Hospital, Centre for clinical research, Bergen, Norway

Introduction/Background

Disability affects different aspects of an individual's life. Previous studies have investigated the association between disability and sociodemographic and environmental factors. However, participation restrictions are less explored since many instruments assessing disability do not include items concerning participation in society. The aim of this study was to investigate the association between participation restrictions and diagnoses, sociodemographic and environmental factors among rehabilitation patients.

Material and Methods

Patient-reported outcome measures were obtained from a cross-sectional study including patients aged >18 years in western Norway accepted for specialized somatic rehabilitation from January through June 2015. Participation restrictions were assessed with World Health Organization Disability Assessment Schedule version 2.0 on a scale from 0-100. Diagnoses, sociodemographic and environmental variables (age, gender, marital status, education and living area) were obtained from referrals and public registers. Simple and multiple linear regression analyses with participation restrictions (0-100) as response variable were performed and reported by estimated regression coefficients.

Results

A total of 932 patients were included. The mean/median score (standard error) of participation restrictions was 40.9/41.7 (0.67). Lower age and lower educated groups reported significant higher scores. Among diagnoses, patients with disorders in the nervous system reported highest score of participation restrictions differing significantly from patients with cardiovascular disease, [β : 12.61; 95% confidence interval: (7.33, 17.88)].

Conclusion

Age, education and diagnoses are significantly associated with participation restrictions among rehabilitation patients. Considering the importance of being able to participate in society, interventions should take these factors into consideration.

No conflict of interest

ISPR7-0612
Miscellaneous

DIFFERENCES IN HEALTH CARE COSTS, UTILIZATION AND HEALTH OUTCOMES BETWEEN ELDERLY AND NON-ELDERLY OF PEOPLE WITH DISABILITIES IN KOREA

H.J. Kim¹, S.H. Ho¹, S. Lee¹, J.H. Kim¹, S.J. Lee², B.S. Lee³

¹Korea National Rehabilitation Center, Rehabilitation Standard & Policy, SEOUL, Republic of Korea

²Korea National Rehabilitation Center, Korea National Rehabilitation Center, SEOUL, Republic of Korea

³Korea National Rehabilitation Center, National Rehabilitation Hospital, SEOUL, Republic of Korea

Introduction/Background

We attempted to identify the differences of healthcare costs and healthcare use and investigate the relationship between the health outcomes (hospitalization, emergency department visits, death) between elderly (age 65 years or older) and non-elderly (age less than 65 years) of people with disabilities in Korea.

Material and Methods

We merged data from the National Disability Registry of Ministry of Health and Welfare with claims data from Korea National Health Insurance Corporation. Of the people with disabilities (n=2,492,316) in 2012, the number of elderly and non-elderly were 975,019 and 1,517,297, respectively. We estimated health care costs and utilization between elderly and non-elderly, using T test and ANOVA and identified the association between the health outcomes and two groups, using multivariate logistic regression analysis.

Results

The mean health care cost of the elderly group (\$3,247±\$6,681) accounted for approximately 1.3 times the costs of non-elderly group (\$2,530±\$7,835). The average length of hospital stay of the elderly group was 1.5 times longer (67±79) than the non-elderly group (44±74, unit: days). The elderly group was related with high risk of hospitalization (OR 1.64, 95% CI: 1.62-1.67), emergency department visits (OR 1.34, 95% CI: 1.29-1.39) and death (OR 5.88, 95% CI: 5.25-6.57) than the non-elderly group.

Conclusion

Our results showed that the elderly with disabilities pay more money to receive healthcare services and are correlated with the health outcomes than the non-elderly with disabilities. Thus health management according to age group needs to be taken into consideration when dealing with people with disabilities' health.

No conflict of interest

ISPR7-0621
Miscellaneous

PSYCHOLOGICAL RESULTS AFTER A CARDIAC REHABILITATION PROGRAM

*J. Sanchez Gracia¹, M. gimenozgonzalez², M.J. Garcia Rubio¹, M. Supervia Pola³,
A.B. Morata Crespo², S. Laita Monreal⁴, M.J. Perez Echevarria⁵*

¹*Miguel Servet Hospital, Cardiac rehabilitation unit. psychiatry department, zaragoza, Spain*

²*Miguel Servet Hospital, Cardiac rehabilitation Unit. Physical Medicine and Rehabilitation department, zaragoza, Spain*

³*Cardiovascular rehabilitation program. Mayo Clinic, cardiovascular diseases, Rochester . Minnesota., USA*

⁴*Miguel Servet Hospital, Cardiac rehabilitation unit. Cardiology department, zaragoza, Spain*

⁵*Miguel Servet Hospital, psychiatry department, zaragoza, Spain*

Introduction/Background

Background and aims

Psychological factors have long been linked to cardiovascular disease development, as well as its recovery. Results from trials investigating testing in-hospital psychological intervention have been promising. The aim of the present study is to evaluate the effectiveness of a psychological intervention in a phase II cardiac rehabilitation program among the following factors: vulnerability, alexithymia, depression, protection, acceptance, defenselessness, perceived benefits and quality of life.

Material and Methods

Methods: This is a monocentric, controlled clinical trial with 42 patients with CV disease and 42 healthy subjects as a control group. The patients were included in an eight weeks cardiac rehabilitation program. The intervention was based on a weekly group therapy sessions along with a mindfulness weekly session during all the CR program.

(fourteen patients in each group) focusing in several aspects as emotional consciousness, stress, hostility, illness significance.

The intervention was based on a personalized psychological interview and a psychological assessment was conducted before and after the intervention (PHQ9, PVS(psychological vulnerability scale), ICQ (the illness cognition questionnaire for chronic disease), TAS-20 and HeartQoI scores.

Results: Our cohort included 82 patients, 76,2 % males, with mean age 56.99 years. 64.3% of the intervention group were diagnosed with ischemic cardiopathy, 35.7 % had valve surgery. After the psychological intervention, we found a lower prevalence of depression ($p < 0.01$) along with an improvement in quality of life ($p < 0.001$). Quality of life was inversely related to depression ($p < 0.05$); relationship that increased after the psychological intervention in the intervention group.

Conclusion

Conclusions: A comprehensive biopsychosocial approach to management of psychosocial factors should be included in any cardiac rehabilitation program in order to maximize adaptation to illness, reduce depression and alexithymia and increase the quality of life among cardiac patients

No conflict of interest

ISPR7-0783
Miscellaneous

REFLEX EFFECTS OF DRINKING ON CUTANEOUS VASODILATION AND SWEATING RESPONSES IN HYPERTHERMIC AND HYPEROSMOTIC MEN.

Y.I. Kamijo¹

¹Wakayama Medical University, Rehabilitation Medicine, Wakayama, Japan

Introduction/Background

Oropharyngeal stimulation with drinking released suppressed cutaneous vasodilation and sweating in dehydrated and hyperthermic humans. But, the mechanisms remained unknown. Skin sympathetic nerve activity (SSNA) components synchronized and non-synchronized with cardiac cycle were related with cutaneous vasodilation and sweating, respectively. Our hypothesis is that drinking releases the hyperosmotic suppressed both components and cutaneous vasodilation and sweating in hyperthermia.

Material and Methods

Fourteen young males: isosmolality (Iso; N=7) and isovolume and hyperosmolality (Hos; N=7; diuretics and hypertonic infusion), wore water-perfused suit with a semi-recumbent position, while 34-°C water was perfused into the suit. After 10-min thermoneutral condition, 47-°C water was perfused for 45min, then subjects drank a 200-ml water (37°C). Esophageal (T_{es}) and mean skin temperatures (T_{sk}) and cutaneous vascular conductance (=skin blood flow [laser-Doppler velocimetry]/mean arterial pressure) and sweat rate (SR; capacitance hygrometry) on the dorsal foot were monitored until 10min after drinking.

Results

Plasma osmolality were 290mOsm/kgH₂O in Iso during thermoneutral condition, ~8mOsm/kgH₂O higher in Hos. T_{es} increased by ~0.5°C at 45min of passive warming in both groups. CVC and SR increased and the increases suppressed in Hos, with suppressed increases in both SSNA components. After drinking, both components increased in Hos, simultaneously with enhancing CVC and SR in Hos, while T_{sk} and T_{es} remained unchanged.

Conclusion

Both SSNA components associates with enhanced cutaneous vasodilation and sweating by drinking in hyperthermic and hyperosmotic humans.

No conflict of interest

ISPR7-0786
Miscellaneous

DOES THE GAIT IMAGERY ABILITY AFFECT CORTICOSPINAL EXCITABILITY DURING GAIT OBSERVATION?

T. Ito¹, Y. Shiraga², D. Kimura¹, Y. Yoshimura¹, K. Suzuki¹, H. Osaka¹, K. Hanayama³, A. Tsubahara¹

¹Kawasaki University of Medical Welfare, Department of Rehabilitation, Kurashiki, Japan

²Kawasaki Medical School Hospital, Rehabilitation Center, Kurashiki, Japan

³Kawasaki Medical School, Department of Rehabilitation Medicine, Kurashiki, Japan

Introduction/Background

Although motor imagery ability was reported to affect the improvement of observed actions, it was unclear whether the individual imagery ability concerning gait would modulate the motor cortical activity during gait observation. Therefore, this study investigated the effect of the gait imagery ability on corticospinal excitability while observing gait.

Material and Methods

Thirty healthy young volunteers (21.5 ± 0.7 years) participated in this study. To assess the individual gait imagery ability, a mental chronometry test was used. According to its results, the participants were allocated to a good or a bad imagers group. During the transcranial magnetic stimulation (TMS) measurement, participants were seated on a chair, observing a demonstrator walking on a treadmill from the right sagittal plane. Motor evoked potentials (MEPs) in the right tibialis anterior and soleus were measured using TMS while resting and observing gait to subsequently reproduce them. Eight stimuli triggered by signals of a foot switch attached to the demonstrator's right heel were delivered during the stance and swing phases.

Results

MEPs elicited from both muscles were significantly facilitated during gait observation compared to resting, while MEPs did not differ significantly between the good and bad imagers groups. Moreover, no correlations were noted between the gait imagery ability and the alterations of corticospinal excitability in each muscle.

Conclusion

The individual gait imagery ability did not affect the corticospinal excitability, indicating that other factors or neural mechanisms may directly relate to the therapeutic effect of the action observation treatment in a clinical setting.

No conflict of interest

ISPR7-0838
Miscellaneous

REHABILITATION AND ECONOMIC CRISIS

V. Tragoulias¹, K. Tziotzou¹, N. Ananidis¹, K. Gioti¹, P. Tsigkeli¹, N. Groumas¹, I. Kapralos¹
¹National Rehabilitation Centre, Physical Medicine And Rehabilitation, Athens, Greece

Introduction/Background

To show the change that has occurred during the last 3 years in the health benefits as well as the insurance capacity of hospitalized patients.

Material and Methods

Regarding to material, a total of 1153 patients was hospitalized during the years 2013-2016 (until 30/10/16), suffering from different types of diseases (Stroke—Traumatic Brain Injury – Multiple Sclerosis - Amputation, etc.). Regarding to methods, a comparison of insurance funds and uninsured patients as well as medically indigent adults was conducted.

Results

In 2014, 402 out of 453 hospitalized patients were insured. In 2015, 315 out of 359 hospitalized patients were insured while from the beginning of 2016 to 30/10/16, 284 out of 341 hospitalized patients were insured. Uninsured patients were contrary increased respectively.

Conclusion

It is easily demonstrated that the increase of uninsured patients during the last three years leads to a reduction of hospital revenue and automatically to the inability of hospitalized patients to obtain the necessary therapeutic items such as orthoses / prostheses / wheelchairs etc. for the completion of their rehabilitation program.

No conflict of interest

ISPR7-0913
Miscellaneous

THE STEADI MEASURE FROM THE CENTER FOR DISEASE CONTROL & PREVENTION (CDC) AND ITS CORRELATION WITH CLINICAL OBSERVATION ASSESSMENTS

A. Miciano¹, B. Bissen¹, C. Cross²

¹*Nevada Rehabilitation Institute, PMR, Las Vegas, USA*

², *Las Vegas, USA*

Introduction/Background

The study aims include: to investigate community dwelling elderly individual's falls risk factors using the CDC's STEADI toolkit: STEADI screening measure and recommended Clinical Observation Assessments (COA); and, to correlate the STEADI measure scores with the COA scores.

Material and Methods

In a retrospective cross-sectional study at a comprehensive outpatient rehabilitation facility, 24 elderly community-dwelling subjects (mean <standard deviation; SD> 71 years old <7.56>) admitted to a geriatric rehabilitation program. The patient-reported STEADI assessed falls risk factors. The COAs consisted of the Timed-Up-and Go (TUG), 30-Second Chair Stand Test (CST), and 4-Stage Balance Test: Feet side-by-side (FSS), Instep-touching-Toe (ITT), Heel-touching-Toe (HTT), and Standing-on-one Foot (SOF).

Results

Significant gender differences were detected; therefore, results for all data were conducted separately. Spearman's correlation coefficients (r) were used to examine associations between STEADI and COA results. An alpha of .10 was used for statistical tests. In female subjects, the mean (SD) scores were: STEADI 6.261 (2.8954); TUG 21.86 (9.6), CST 6.63 (2.96), FSS 25.57 (7.92), ITT 30.0 (17.619), HTT 12.8 (11.81), and SOF 4.28 (4.86). In male subjects, the mean (SD) score were: STEADI 3.35 (4.29), TUG 15.63 (7.67), CST 9.5 (2.94), FSS 25.35 (9.13), ITT 25.14 (11.18), HTT 13.47 (11.04), and SOF 8.53 (10.11). For females, STEADI scores correlated with FSS ($r = .456, p = .057$) and ITT ($r = -.404, p = .096$). For males, STEADI correlated with SOF ($r = -.477, p = .085$).

Conclusion

The STEADI toolkit identified elderly community dwelling females as having a higher fall risk than males. The study showed that the STEADI measure correlated with certain COAs, specifically FSS, ITT, and SOF. These findings suggest that the STEADI could be an integral part of fall prevention and could be a valuable screening tool in a busy clinic practice. Future studies should be adapting the STEADI in specific disease states, such as musculoskeletal or neurologic disorders.

No conflict of interest

ISPR7-0917
Miscellaneous

A CORRELATIVE STUDY OF THE PAIN DISABILITY QUESTIONNAIRE AND THE CLINICIAN-DERIVED PHYSICAL PERFORMANCE TESTS ON ELDERLY INDIVIDUALS WITH CHRONIC PAIN AND CARDIO-PULMONARY DISORDER

A. Miciano¹, B. Bissen^{1, 2}

¹*Nevada Rehabilitation Institute, PMR, Las Vegas, USA*

², *Las Vegas, USA*

Introduction/Background

The study objectives include: 1) to quantify the self-reported pain-related impairment (PRI) and physical function (PF) of elderly individuals with chronic pain and cardio-pulmonary disorder (CP/CPD); and, 2) to investigate the correlation between PRI and PF status and scores from clinician-derived Physical Performance Tests (PPT).

Material and Methods

55 elderly community-dwelling subjects (mean age <SD> 74 <10>) with CP/CPD from an outpatient cardio-pulmonary rehabilitation program participated.

The Pain Disability Questionnaire (PDQ) quantified PRI (scored 0-150): mild (0-70); moderate (71-100); severe (101-130); and extreme (131-150). The PROMIS-57v1.0-Physical Function (PF) subscale assessed the physical function and was scored on a 5-point scale, for a maximum total score of 40 (unable to perform tasks) and a minimum score of 8 (able to perform all tasks without difficulty). The 6-Minute Walk Test (6MWT), Berg Balance Scale (BBS) and Dynamic Gait Index (DGI) were used as PPT.

Results

A general linear model on ranks was used to test for PRI scores and gender; gender was not found to be significant. PRI scores differed significantly among PDQ and PROMIS scores ($p < .05$). Spearman's correlation coefficients (r) were used to examine associations between PDQ, PF, and PPT results. An alpha of .10 was used for statistical tests. PDQ correlated with PROMIS-PF ($r = -0.323, p = .032$), 6MWT-distance ($r = -0.408, p = .028$), and 6MWT-METs ($r = -0.375, p = .049$). PROMIS-PF correlated with 6MWT-distance ($r = 0.422, p = .016$), 6MWT-speed ($r = 0.421, p = .018$), and 6MWT-METs ($r = 0.389, p = .030$).

Conclusion

Individuals with CP/CPD tend to have moderate decrease in physical function and mild PRI, which had a statistically significant negative effect on PF and on PPT scores. These findings suggest that the self-reported PDQ and PROMIS are reliable indicators of physical performance status related to pain, and would be valuable as an alternatives to PPT in a clinic practice. Future studies should be on the application of the PDQ and PROMIS measures on individuals with CP and other concomitant comorbidity.

No conflict of interest

ISPR7-0934
Miscellaneous

REVIEW: AUTISM SPECTRUM DISORDER'S INTEROCEPTION

H. Haoyu¹

¹*Rehabilitation Department, Children's Hospital of Kunming in Yunnan, Province, Kunming 650034. China*

Objective: To research the interoception in autism spectrum disorder, providing basis for clinical interventions, such as sensory integration training, biofeedback, pain management and brain stimulation technology. **Method:** Review original research literature. **Results:** Interoception is atypical in autism spectrum disorder, which occurs due to multisensory connection and integration of internal afferents in cortical and subcortical areas. Due to the heterogeneity of the condition, the degree and directionality of this abnormality is not yet clear. Between-group interoceptive differences in individuals with and without autism spectrum disorder have been demonstrated, with a slight tendency towards hyporeactivity in interoceptive awareness in individuals with autism spectrum disorder.

Conclusions: To understand how interoceptive differences link to the behavioral and cognitive characteristics of autism spectrum disorder, multidimensional research combining neuroimaging with psychophysiological and self-report measures guided by a clear theoretical model is necessary. Sensory processing models and autism theory should also be updated to incorporate these recent findings.

Document not received

ISPR7-0936
Miscellaneous

THE OUTCOME AND QUALITY OF LIFE AFTER URETHRAL BOTULINUM TOXIN A INJECTION FOR PATIENTS WITH SPINAL CORD INJURE AND DETRUSOR SPHINCTER DYSSYNERGIA

Y. Weixin¹, Z. Dawei¹, Z. Hongjun¹, C. Qingmei¹

¹Department of Rehabilitation, The First Affiliated Hospital of Soochow University . Suzhou City, Jiangsu Province, China. 215006

Objective: To evaluate the therapeutic results and quality of life (QOL) for Patients with spinal cord injury and detrusor sphincter dyssynergia (DSD) after urethral sphincter botulinum toxin A (BTX-A) injection. **Methods:** 34 patients with spinal cord injury and DSD were selected. A dose of 100U BTX-A transrectal ultrasound-guided transperineal was injected to the external urethral sphincter for treatment of urinary retention. The urodynamic parameters, QOL scores using UDI-6 and IIIQ-7 and general satisfaction were recorded before treatment and 6 weeks later.

Results: The overall satisfactory result was perceived in 66.2% in patients who received urethral BTX-A injection. The catheter is easier to insert than before. Urodynamic parameters showed significant improvement. The improvement of UDI-6 and IIIQ-7 was significantly. However, Increase in incontinence grade was the major cause of dissatisfaction. **Conclusion:** Patients treated with urethral injection had significantly QOL improvement. Although objective data showed improvement, some patients might not be satisfied with the result of incontinence grade.

Document not received

ISPR7-0938
Miscellaneous

THE RESULTS OF QUALITATIVE GENERAL MOVEMENTS ASSESSMENT: THE BASIS OF MAKING SUPER-EARLY REHABILITATION THERAPY SCHEME FOR TEST-TUBE BABIES

Y. Liu¹

Rehabilitation Department, Children's Hospital of Kunming in Yunnan Province, Kunming 650034. China

Objective: To investigate the scientificity of qualitative general movements (GMs) assessments results as the basis of making super-early rehabilitation therapy scheme for test-tube babies. **Method:** According to the results of qualitative general movements (GMs) assessments, 80 test-tube babies were divided into 3 levels and treated with corresponding rehabilitation therapy. Then we analyzed the feasibility and rationality of those rehabilitation therapy schemes, combining with their neurodevelopment outcomes at the age of 1 and a half year. **Results:** Among the qualitative general movements (GMs) assessments results of 80 test-tube babies, there were 31 cases with abnormal GMs during the writhing period (in which there were 11 cases with cramped-synchronized GMs) and 10 cases with abnormal GMs during the fidgety period (in which there were 6 cases with an absence of fidgety movements). Super-early rehabilitation therapy schemes: Selected cramped-synchronised (CS) GMs cases and/or absence of fidgety movements (AFMs) cases as level A cases (17 cases), which were treated with comprehensive rehabilitation therapy, and then 8 cases' follow-up ending were neurodevelopmental disorders (CP 8 cases, CDD 1 case) by age 1 year and a half; Selected those cases with other abnormalities during writhing period and/or fidgety period as level B cases (19 cases), which were treated with selective rehabilitation therapy and offered family-based rehabilitation guidance, and then no case's follow-up ending was neurodevelopmental disorders by age 1 year and a half; Selected those cases with normal GMs during writhing period and/or fidgety period as level C cases (44 cases), which were offered family-based rehabilitation guidance and regular high-risk infants follow-up. At the follow-up of 1 year (corrected age), all cases with neurodevelopmental disorders were treated with rehabilitation therapy for 4.50-11.77 months, mean (9.81±2.09) months. **Conclusions:** The results of qualitative general movements assessment could be the basis of making super-early rehabilitation therapy scheme for test-tube babies. Classified rehabilitation therapy schemes is practical and instructive, it is worth promoting.

Document not received

ISPR7-0370

Theory and Models of Functioning (e.g. Disability Creation Process)

THE RELATIONSHIP BETWEEN BEHAVIOURAL AND AUTONOMIC REGULATION OF RESPONSE TO SENSORY STIMULI IN CHILDREN

I.N. Gomez¹, C. Lai¹, H. Tsang¹

¹The Hong Kong Polytechnic University, Department of Rehabilitation Science, Kowloon, Hong Kong S.A.R.

Introduction/Background

Children face a gamut of sensory information in the living environment. The ability to regulate response to sensory stimuli is important in the adaptive functioning of children. Previous research suggests inconclusive findings on the association between behaviour and autonomic measures of the parasympathetic (PNS) and sympathetic (SNS) nervous system. Specifically, it seems that the link between behaviour and autonomic regulation might only be seen in clinical childhood population. In this research, it sought to investigate the relationship between sensory behaviours and autonomic activity among typically-developing children.

Material and Methods

Thirty typically-developing (n=30), urban-dwelling male children ages 7-12 years old were recruited to participate in this study. To measure sensory behaviours, parents of the participants completed the Sensory Profile questionnaire. Measures of electrodermal activity (EDA) and heart rate variability (HRV) were indexed to represent autonomic activity. Specifically, the normalized units of the High (HF) and Low (LF) frequency bands of HRV were used to mark PNS and SNS activity, respectively. Additionally, EDA was used as an adjunct index of SNS activity. Participants were subjected to a sensory paradigm that is comprised of a resting, auditory stimulation and recovery conditions.

Results

Findings suggest that children with fewer sensory behaviour issues will most likely have lower sympathetic responses ($r = -.47$; $p = .01$). At rest and recovery conditions, sensory behaviours and univariate or multivariate indices of autonomic activity have weak relationship. However, significant moderate canonical correlation between behavioural and autonomic regulation to sensory stimuli was found for the stimulation condition ($R = .54$; $p = .03$).

Conclusion

This research suggests that the ability to regulate sensory information in everyday life situations adaptively, might be dependent on the regulation of the autonomic activity among typically-developing children. The findings of this research has implications in understanding the underlying autonomic neurophysiological mechanism of sensory processing that can inform both theory and clinical practice.

No conflict of interest

ISPR7-0920

Theory and Models of Functioning (e.g. Disability Creation Process)

THE DOMAINS OF DYSPNEA MEASUREMENT, ACCORDING TO THE AMERICAN THORACIC SOCIETY

A. Miciano¹, L. Greene¹, .²

¹*Nevada Rehabilitation Institute, PMR, Las Vegas, USA*

², *Las Vegas, USA*

Introduction/Background

The study objective include: 1) to quantify the sensory–perceptual experience (SP), affective distress (AD), and symptom impact (SI), as described by the American Thoracic Society (ATS) Statement on the Domains of Dyspnea Measurement, using patient-reported outcome (PRO) measures; and, 2) to correlate the PRO scores with clinician-derived physical performance tests (PPT).

Material and Methods

Total of 26 males (mean age 75.2; range 64 - 87 years old) completed the PRO measures upon initial evaluation for an impairment rating.

The Modified Medical Research Council Dyspnea Scale (MMRC) quantified SP (defined as what breathing feels like to the subject). The PROMIS-57 v1.0 subscales, PROMIS-Anxiety and PROMIS-Depression (PROMIS-A/D), assessed the AD (how distressing breathing feels). The PROMIS-Physical Function (PROMIS-PF) subscale, from the National of Health toolbox, described SI (how breathlessness affects function). PPT included the: 6-Minute Walk Test (6MWT), Dynamic Gait Index (DGI), and Berg Balance Scale (BBS).

Results

The mean <SD> scores were: mMRC 2.47 <1.02>; PROMIS-A/D T-score 50.21/48.06 <12.99/13.45>; PROMIS-PF T-score 35.88 <8.34>; 6MWT-distance 1088 feet <347>; 6MWT-speed 2.08 miles-per-hour <0.64>; 6MWT-METs 2.58 <0.48>; DGI 18.78 <5.26>; and, BBS 45.83 <7.99>. Spearman's Rank Correlation was used to calculate associations among variables; correlations with $p \leq .10$ indicated potential significant associations. MMRC correlated with PROMIS-PF ($r = -.621; p = .006$) and DGI ($r = -.669; p = .005$). PROMIS-PF correlated with BBS ($r = .365; p = .087$), 6MWT-distance ($r = .405; p = .044$), 6MWT-speed ($r = .447; p = .025$), and 6MWT-METs ($r = .475; p = .017$).

Conclusion

Individuals with a history of pulmonary exposure tend to have moderate SP, moderate SI, clinical slowness, and mild gait/balance deficits. The study suggests that individual's SP had a statistically significant effect on SI; SP and SI were not associated with AD. Both SP and SI had a statistically significant effect on the physical performance level, specifically the gait/balance. The study supports the utilization of PRO measures to assess the dyspnea domains. Future studies should focus on the use of the ATS' domains on other chronic pulmonary conditions.

No conflict of interest