



# Peak Force in Familial Amiloidotic Polineuropathy

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# FAMILIAL AMILOIDOTIC POLINEUROPATHY (FAP)

A neurodegenerative disease related with systemic deposition of amyloid fibers mainly at the level of the peripheral nervous system. Clinically, the disease is characterized by an autonomous sensitive-motor neuropathy, beginning nearly always in foot, and subsequently involving the hands.

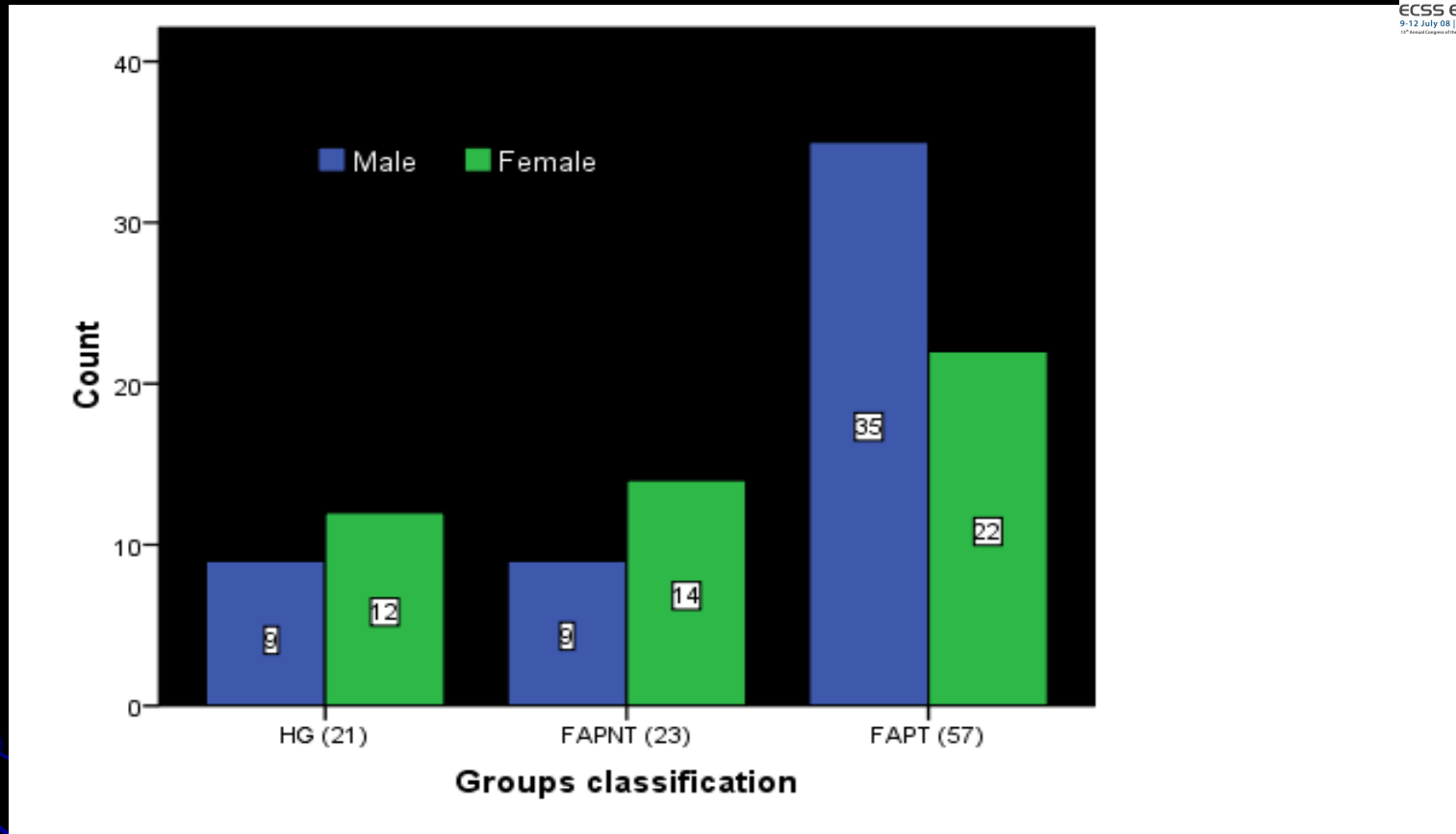
Aggressive medication  
to muscle metabolism  
and force production

**Liver  
transplant**

To our knowledge there are no quantitative characterizations of peak force levels in these patients or comparisons with healthy people.

This knowledge will be extremely important to check the clinical and functional evolution of this disease.

**PURPOSE:** Compare the levels of hand grip strength (peak force) in FAP patients with (FAPT) or without (FAPNT) liver transplant and in a healthy group (HG).



101 patients were assigned in 3 groups:

- 57 FAPT (4.3±2.9 month after transplantation)
- 23 FAPNT
- 21 HG

## Methods and material

Peak force was assessed by a portable grip dynamometer E-Link (Biometrics Ltd, UK).



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All measurements were taken in standardized positions as described by Mathiowetz et al (1985) and Goodson et al (2007).



Each measurement was assessed with standardized orders.

Peak force was classified according ACSM (2008) norms for grip strength

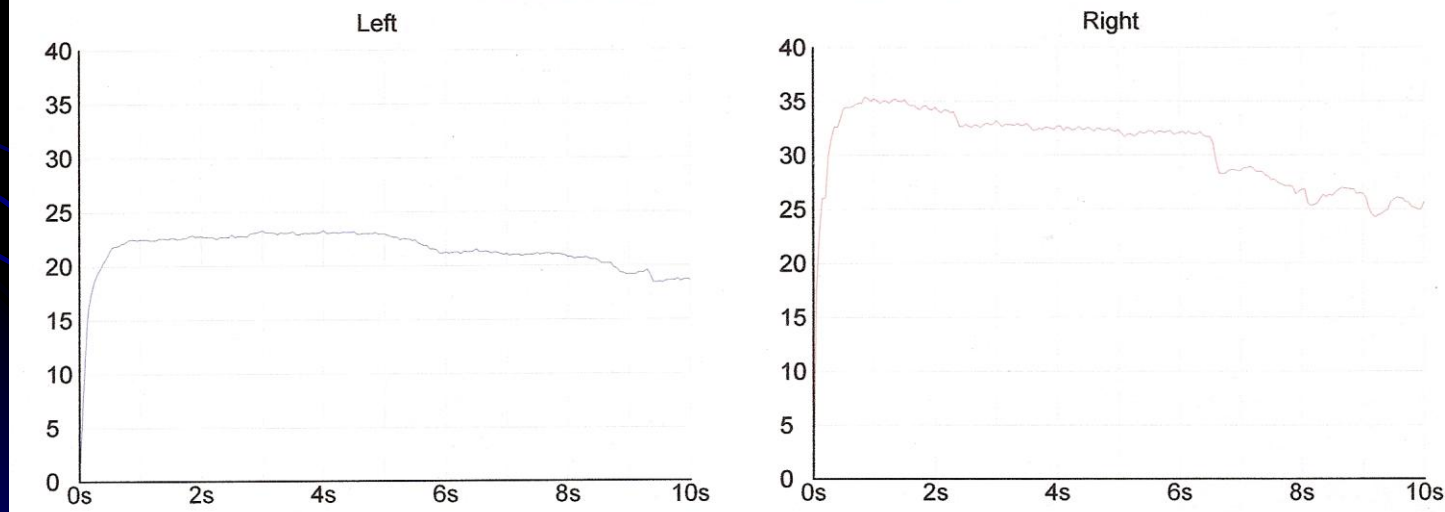


## Dynamometer Sustained Grip Readings

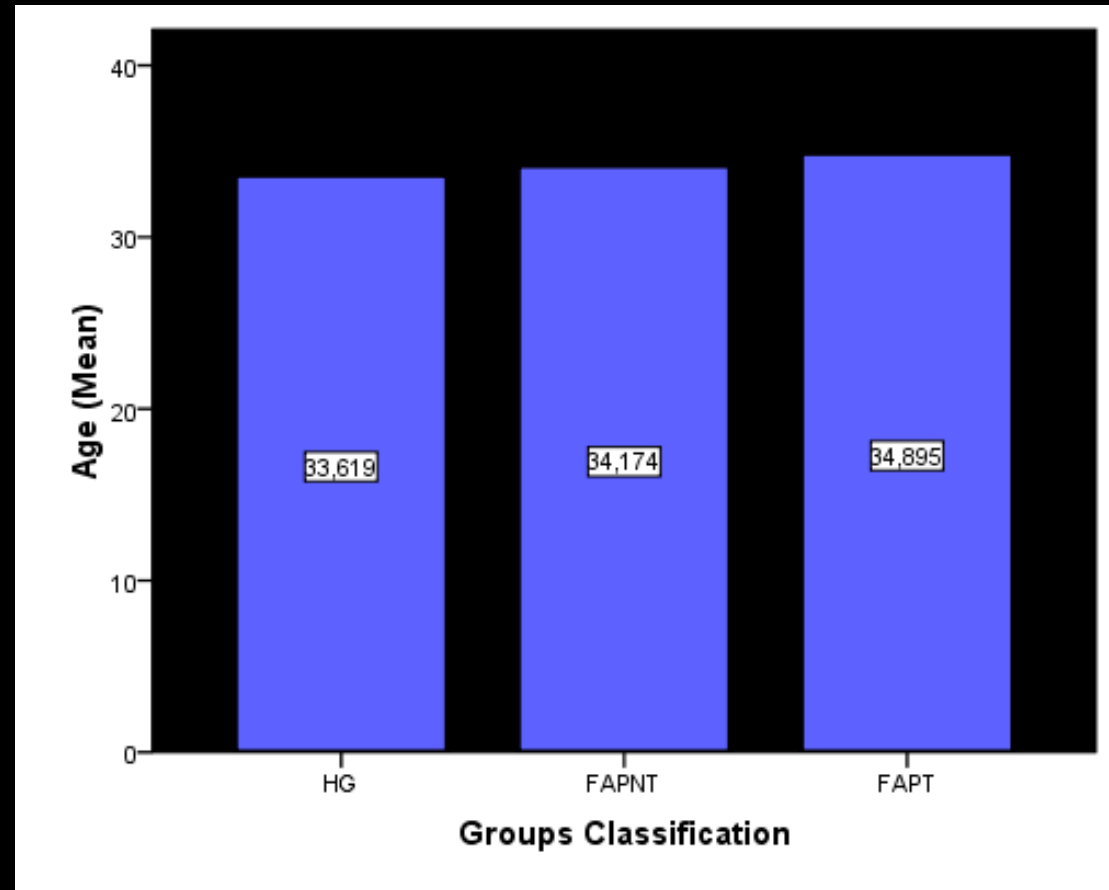
10s interval, position 2	Left	Right		non-dominant / dominant
Peak Force	22.8	35.4	kgs	64.4%
Time to Peak	1.9	0.9	sec	211.1%
Average over last 60%	21.1	29.0	kgs	72.8%
Average to Peak Ratio	92.5	81.9	%	112.9%
Endurance	-0.5	-1.1	kgs/sec	45.5%

Peak force values considered was the best value attained out of 3 measures.

## Dynamometer Sustained Grip Graph (kgs)

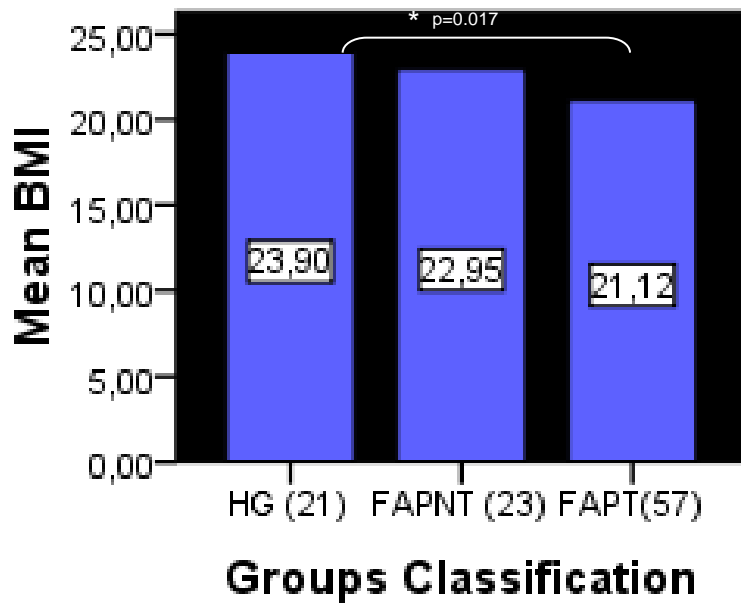


## Results

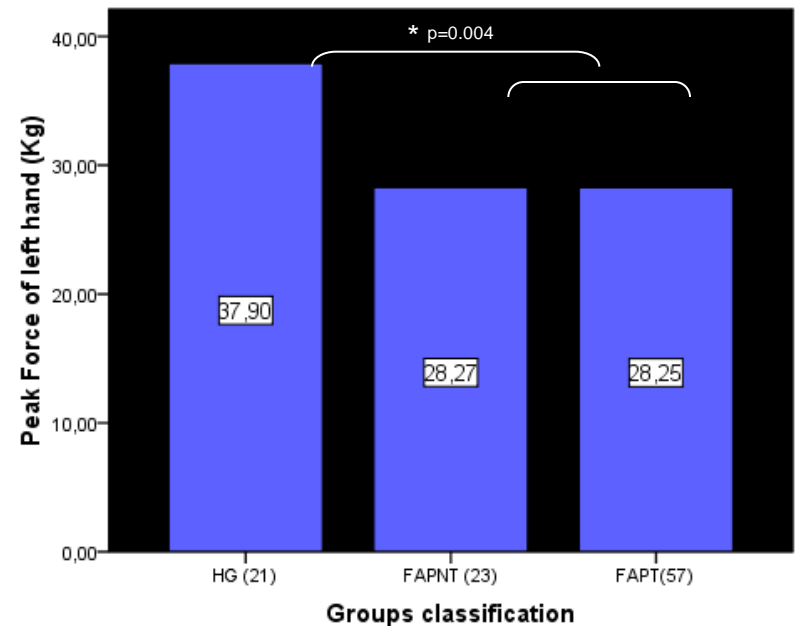
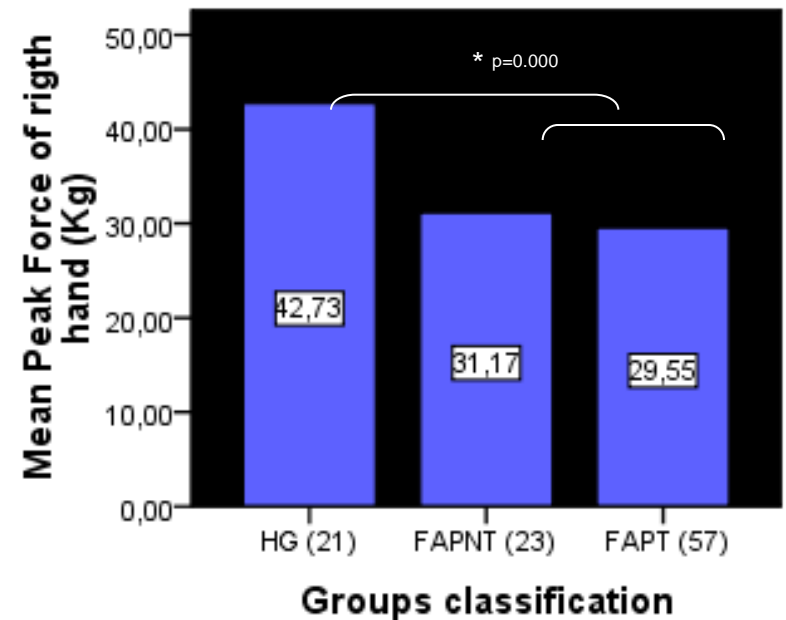


When comparing the 3 groups **no differences in AGE** were found ( $p=0,873$ ) (Anova)

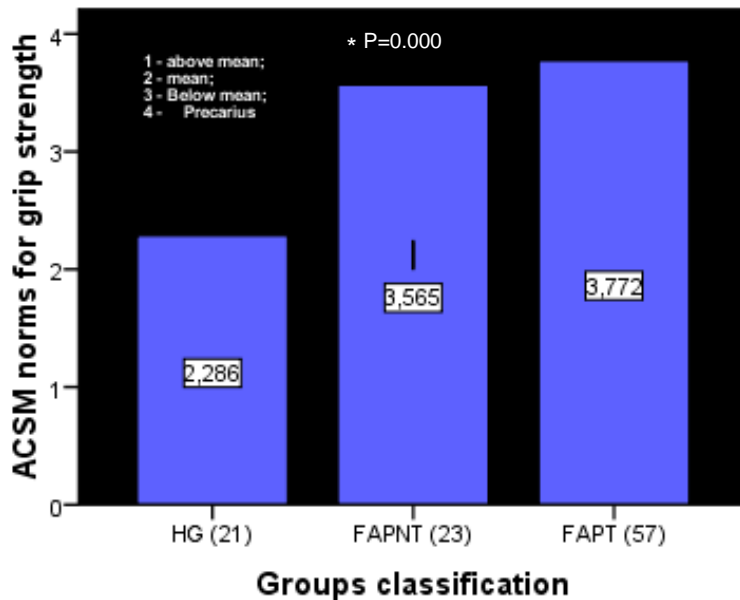
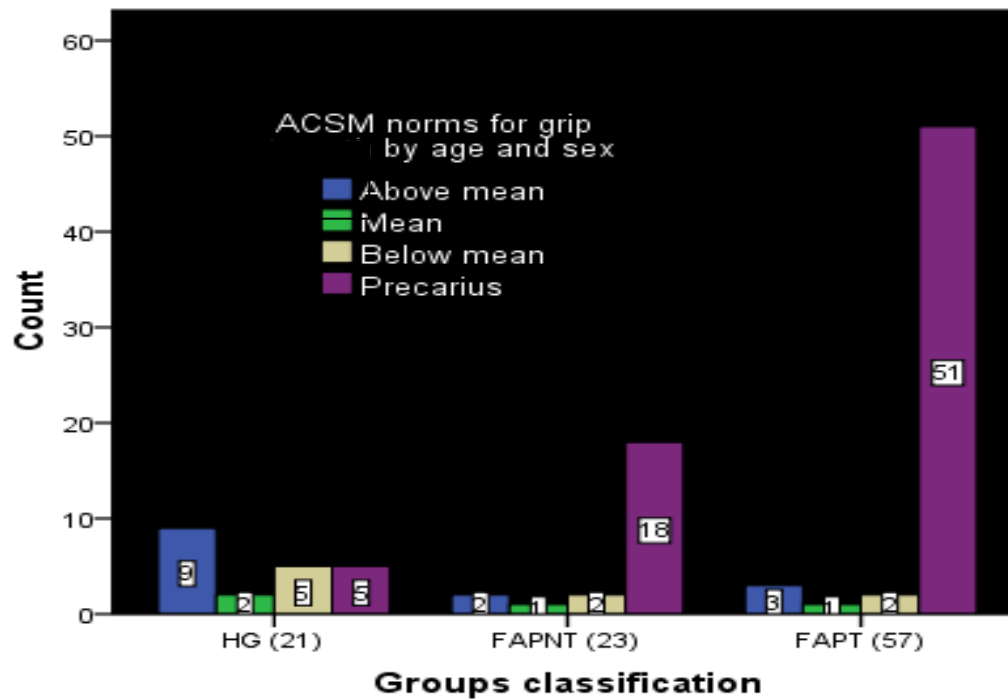
## Results



Significant differences were found between groups FAPT, FAPNT and HG for **BMI** (HG and FAPT but not HG and FAPNT), **peak force on right hand and left hand** (HG, FAPT and FAPNT but not FAPNT and FAPT) (Anova, post-hoc)

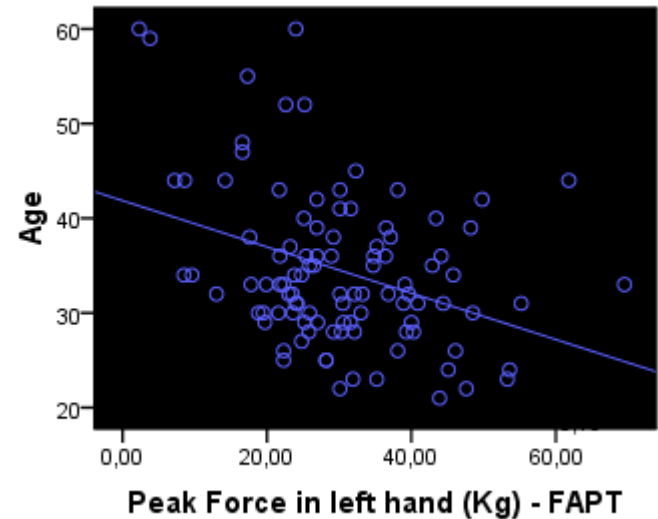
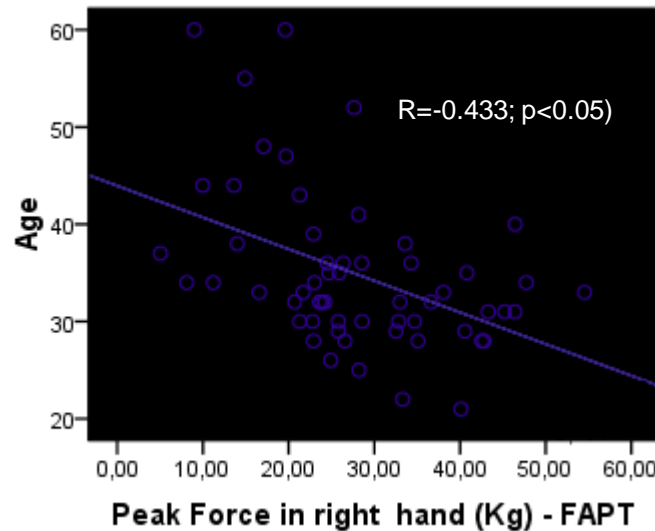
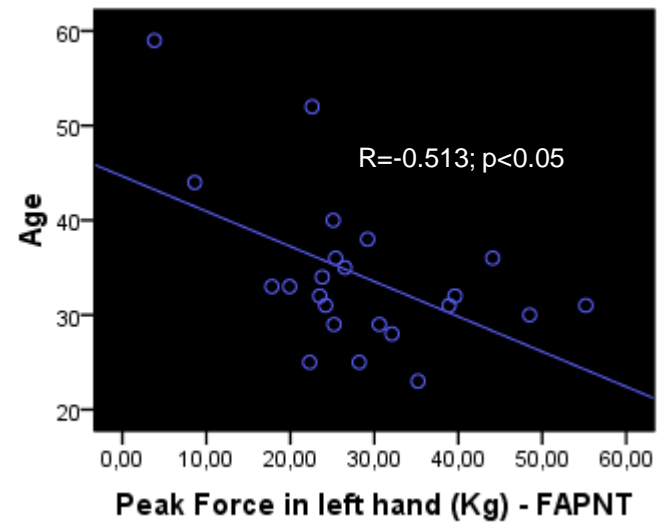
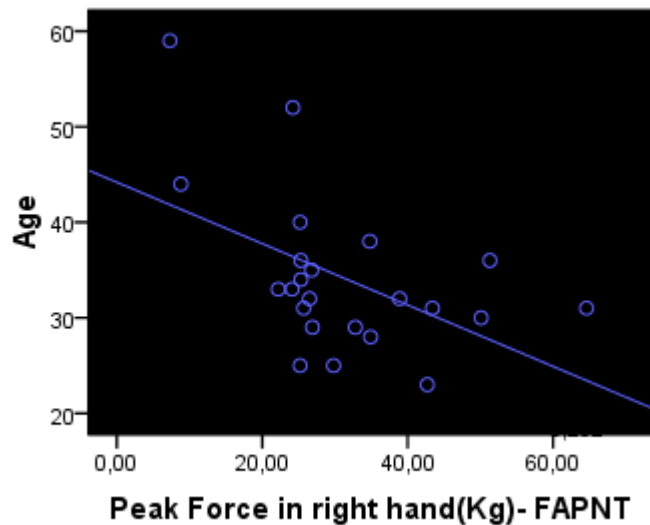


# Results



Significant differences in classification norms according ACSM were found also between groups HG, FAPNT and FAPT (but not FAPNT and FAPT) (Anova and post Hoc)

# Results

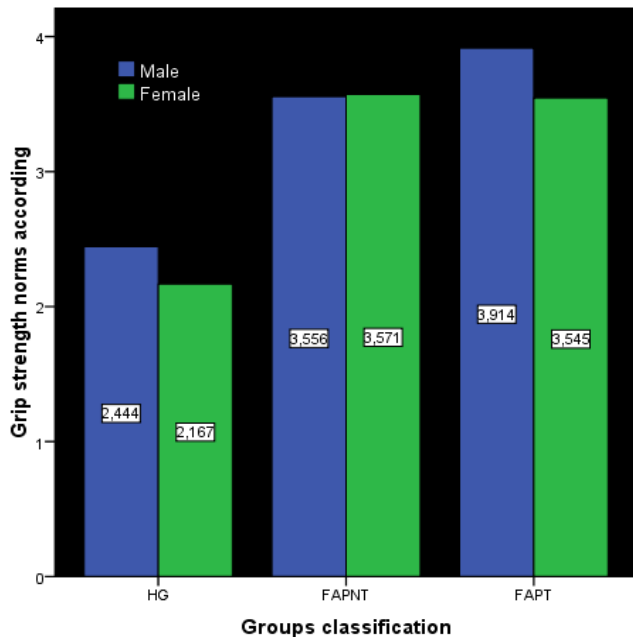
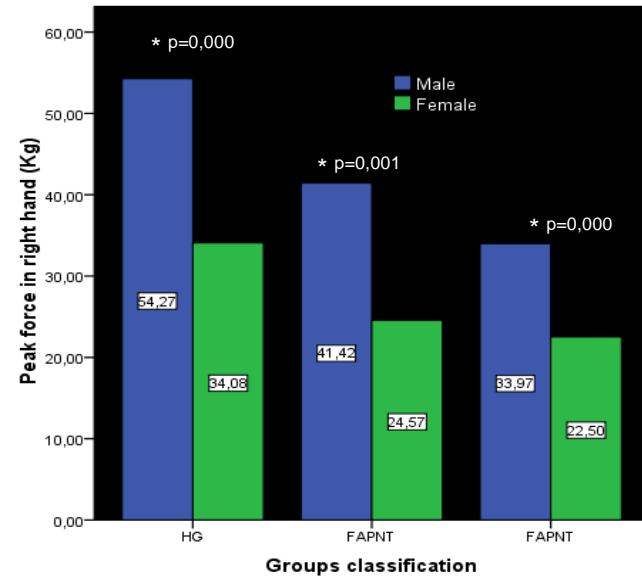
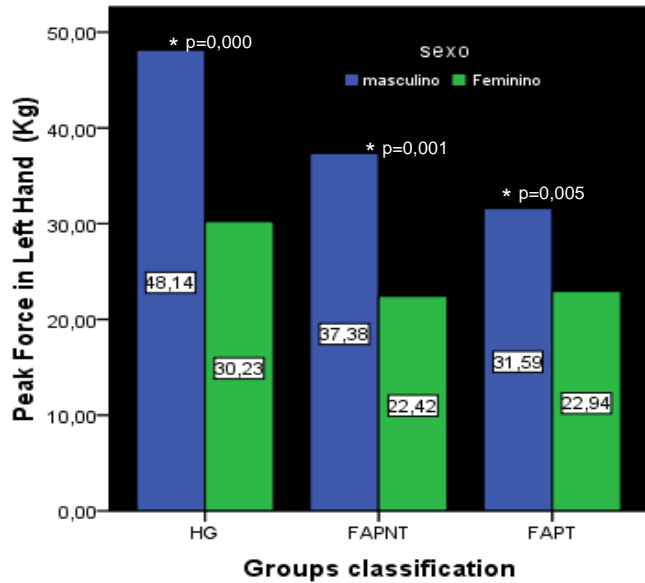


Negative correlations between **age** and **peak force** were found in both hands for FAPNT ( $r=-0,513$   $p<0.05$ ) and FAPT ( $r=-0.433$   $p<0.05$ ), but not for the HG

A positive correlation between **BMI and peak force in both hands** for group FAPNT ( $r=0.643$   $p<0.05$ ) was observed but not in FAPT and HG

A positive correlation between **age and BMI** for FAPT group ( $r=0.270$   $p<0.05$ ) but not FAPNT or HG

# Results



When comparing peak forces between males and females in each group, significant higher values were observed ( $p < 0.05$ ) in males, but these differences seem to disappear in the grip strength norms according ACSM (t-test)

## Conclusions

**According our results and as expected, the FAP patients had lower values for peak force than healthy subjects, and consequently a worse classification in ACSM norms**

**For FAP patients it seems also that grip strength is more affected by age and BMI than for the HG.**

# Thank you

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