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# Exploring the Influence of Physical Activity on Lymphedema Development in Female Breast Cancer Survivors

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## Introduction

- In recent years, there has been a notable rise in the number of breast cancer survivors, highlighting the advancements in treatment and care. However, the presence of cancer treatment side effects, such as lymphedema (LE), significantly affects the function, active participation, and overall quality of life for these individuals (Sung et al., 2021).
- Preventing LE involves promoting active and healthy lifestyles by instilling behavioral changes and addressing modifiable risk factors (Paxton et al., 2016).
- It is imperative, to gain a deeper understanding of the most effective strategies for preventing and treating LE (Naghibi & Varshoie Tabrizi, 2018).

## Objective

Characterize the physical activity (PA) levels of Portuguese breast cancer survivors.

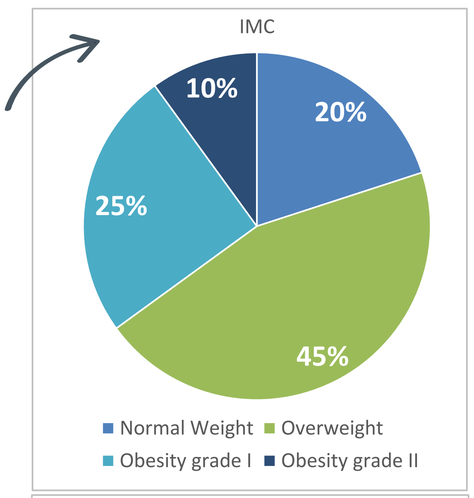
## Materials and methods

- A cross-sectional analytical study was conducted.
- Women who survived breast cancer between 1 and 5 years after surgery were selected. Women with bilateral surgery and who had not completed the active phase of treatment were excluded.
- A characterization questionnaire was performed, upper limb lymphedema volume was measured with tape measures and PA levels were assessed with International Physical Activity questionnaire (IPAQ-SF).

## Results

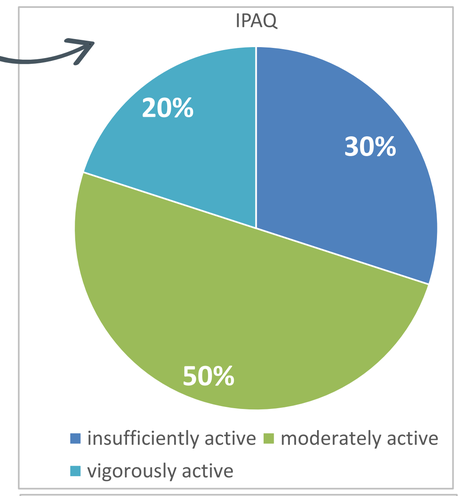
- A group of 20 women with a mean age 61±8 years and an average of 39 months after breast surgery participated in the study. Six underwent mastectomy and 14 underwent axillary surgery. Most participants underwent sentinel node biopsy (16) and only 4 underwent axillary lymph node dissection.
- **80% were overweight**, of which **35% were obese**.
- There was an average volume of 2100 $cm^3$ in the affected upper limb and an average of 2013 $cm^3$ in the unaffected side. **The difference between the two limbs presented an average of 87.3 $cm^3$.**

  → So far, **none of the participants showed a significant difference between limbs (greater than 10% difference). Despite this, 45% of participants have subclinical LE (difference between both upper limbs of 5 to 10%).**



Graph 1: Characterization of the sample according to the body mass index

- In the present study, 30% of the sample were insufficiently active, 50% moderately active, and 20% vigorously active, with a weighted **average of 5 +/-0.6 hours of sitting per day.**
- **No significant associations were found between the LE and PA** (rs=0.231; p=0.3) nor between **LE and the number of hours sitting** (rs=0.291, p=0.213). *
- A **strong positive correlation was found between Body Mass Index (BMI) and limb volume difference** (rs=0.583; p=0.007). *



Graph 2: Characterization of the sample according to the physical activity levels

* Statistically significant p<0,05.

## Conclusions

- This exploratory study does not provide evidence of a direct association between physical activity (PA) and lymphedema (LE). However, it indicates a **correlation between body mass index (BMI) and lymphedema**, and **higher BMI** is identified as a **risk factor for the development of lymphedema.**
- Moreover, engaging in **physical activity** can contribute to the control and management of BMI, revealing the influence of PA in BMI. Consequently, PA indirectly serves as a preventive strategy against lymphedema by helping to control BMI.
- By incorporating PA as part of a comprehensive approach to managing BMI, the **risk of developing lymphedema may be reduced.** In summary, the observations suggest that while PA may not directly prevent lymphedema, it can play an important role in indirectly preventing its development by helping to control BMI.

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