

# Individualized acceleromometer-based physical activity assessment reports from ACTI-study in Portuguese children from a rural area

CATARINA VASQUES 1\*, TATIANA SAMPAIO 2, JOSÉ E. TEIXEIRA 2,3, SAMUEL GINJA 4, PEDRO M. MAGALHÃES 2

1 Research Centre in Basic Education (CIEB), Instituto Politécnico de Bragança, Portugal

2 Department of Sport Sciences, Instituto Politécnico de Bragança, Portugal; Research Centre in Sports Sciences, Health and Human Development, Portugal

3 Department of Sport Sciences, Polytechnic Institute of Guarda, Research Centre in Sports Sciences, Health and Human Development, Portugal

4 Independent researcher

Corresponding Author: catarinav@ipb.pt



## Introduction

Physical inactivity and sedentary lifestyles have become a public health problem in developed countries, by increasing the prevalence of hypokinetic diseases such as cardiovascular disease, type 2 diabetes mellitus, hypertension, and obesity (Magalhães et al., 2023; Teixeira et al., 2022). The Portuguese population, specifically children and young people, are no exception to the trend and have some of the highest values of physical inactivity and sedentary behavior in the European community (Vasques et al., 2014).

## Objective

ACTI-study was to assess the physical activity (PA) and sedentary behaviour (SB) levels in 5th and 9th grade children and young people from Alfândega da Fé (Bragança, Portugal).

In addition, it is intend to understand if Portuguese children from rural areas comply with the minimum recommendations for PA practice, specifically the average of 60 minutes of activity per day.

## Acknowledgements



## Methods

For this, an observational cross-sectional research was conducted between September 2022 and January 2023. The ACTI -study evaluated the moderate to vigorous physical activity (MVPA) levels in students (age 10-16) from a high school in a Portuguese Northeast rural town. The PA assessment were conducted a hip-worn acceleromometer (ActiGraph®, either GT3X or GT1M), on an elastic belt, for seven consecutive days (including weekend) (Vasques et al., 2023). Body mass index (BMI) was computed by dividing weight (kg) by height (m<sup>2</sup>) (Magalhães et al., 2023; Vasques et al., 2014).

## Results

The average daily time spent at each intensity level during the week was 707 minutes (low level), 880 minutes (moderate), 24 minutes (vigorous); 1 minute (very vigorous). Regarding the 60 minutes of MVPA per day, the acceleromometer data show that there were only one day where the values did not met that cut value: (1) Monday (136 minutes), (2) Tuesday (112 minutes), Wednesday (97 minutes), Thursday (58 minutes), Friday (128 minutes), Saturday (102 minutes) and Sunday (95 minutes).

## Conclusion

Thus, it is possible to conclude that in contrast to the trends of previous national and international epidemiological reports, the sampled rural children showed adequate levels of PA practice (Di Cesare et al., 2019). More so, when it refers to the crucial MVPA levels. Future investigations should focus on SB levels and expand the individualized acceleromometer-based physical activity assessment reports for overall population.

## REFERENCES

- DI CESARE, M., SORIĆ, M., BOVET, P., MIRANDA, J. J., BHUTTA, Z., STEVENS, G. A., LAXMAIAH, A., KENGNE, A.-P., & BENTHAM, J. (2019). THE EPIDEMIOLOGICAL BURDEN OF OBESITY IN CHILDHOOD: A WORLDWIDE EPIDEMIC REQUIRING URGENT ACTION. *BMC MEDICINE*, 17(1), 212. [HTTPS://DOI.ORG/10.1186/S12916-019-1449-8](https://doi.org/10.1186/s12916-019-1449-8)
- MAGALHAES, P., TEIXEIRA, J., BRAGADA, J., DUARTE, C., & BRAGADA, J. (2023). PREVALENCE OF TYPE 2 DIABETES, IMPAIRED FASTING GLUCOSE, AND DIABETES RISK IN AN ADULT AND OLDER NORTH-EASTERN PORTUGUESE POPULATION. *HEALTHCARE*, 11, 1712. [HTTPS://DOI.ORG/10.3390/HEALTHCARE11121712](https://doi.org/10.3390/HEALTHCARE11121712)
- TEIXEIRA, J. E., BRAGADA, J. A., BRAGADA, J. P., COELHO, J. P., PINTO, I. G., REIS, L. P., FERNANDES, P. O., MORAIS, J. E., & MAGALHAES, P. M. (2022). STRUCTURAL EQUATION MODELLING FOR PREDICTING THE RELATIVE CONTRIBUTION OF EACH COMPONENT IN THE METABOLIC SYNDROME STATUS CHANGE. *INTERNATIONAL JOURNAL OF ENVIRONMENTAL RESEARCH AND PUBLIC HEALTH*, 19(6), ARTICLE 6. [HTTPS://DOI.ORG/10.3390/IJERPH19063384](https://doi.org/10.3390/IJERPH19063384)
- VASQUES, C., MAGALHÃES, P., CORTINHAS, A., MOTA, P., LEITÃO, J., & LOPES, V. P. (2014). EFFECTS OF INTERVENTION PROGRAMS ON CHILD AND ADOLESCENT BMI: A META-ANALYSIS STUDY. *JOURNAL OF PHYSICAL ACTIVITY AND HEALTH*, 11(2), 426-444. [HTTPS://DOI.ORG/10.1123/JPAH.2012-0035](https://doi.org/10.1123/JPAH.2012-0035)
- VASQUES, C., SAMPAIO, T., TEIXEIRA, J. E., GINJA, S., & MAGALHÃES, P. (2023). ACCELEROMETER-MEASURED PHYSICAL ACTIVITY IN PORTUGUESE CHILDREN FROM A RURAL AREA: A SCHOOL-BASED CROSS-SECTIONAL STUDY. *17TH INTERNATIONAL TECHNOLOGY, EDUCATION AND DEVELOPMENT CONFERENCE*, 1, 7433-7440. [HTTPS://DOI.ORG/10.21125/INTED.2023.2029](https://doi.org/10.21125/INTED.2023.2029)