This is the published version of a paper presented at XXVIII CONGRESS OF THE INTERNATIONAL SOCIETY OF BIOMECHANICS (ISB).

Citation for the original published paper:


N.B. When citing this work, cite the original published paper.

Permanent link to this version:
http://urn.kb.se/resolve?urn=urn:nbn:se:gih:diva-6920
Improved accelerometer assessed physical activity patterns after an eight-week exercise intervention.

Godhe M1,2, Ekblom Ö1, Ekblom M1, Pontén M1, Andersson E1,2.
1Laboratory of Biomechanics and Motor Control, Swedish School of Sport and Health Sciences, Stockholm, Sweden
2Department of Molecular Medicine and Surgery, Karolinska Institutet, Stockholm, Sweden
Email: manne.godhe@gih.se

Summary

Older adults participating in an eight-week intervention with guided physical activity two times per week improved physical activity (PA) and reduced sedentary behaviour (SB) measured with accelerometers. The result of this study may contribute valuable knowledge in designing of proper public health strategies targeting healthier physical activity patterns in older adults.

Introduction

Many beneficial health outcomes are associated with SB and PA in older adults.1 However, research is scarce or lacking regarding supervised exercise-interventions with accelerometer measured SB and PA including reliability assessments in older adults. The aim of this study was to determine if eight-weeks of regular supervised exercise would have any effect on physical activity patterns in older adults. For comparison, a control group, not receiving supervised exercise, performed similar pre- and end-tests intervals. Reliability of the accelerometer with two separate pre-tests measures was also investigated.

Methods

Seventy-eight older adults exercised (65-91yrs, 61.5% women) and 43 participated in a control group (65-88yrs, 69.8% women). The exercise group performed combined aerobic and strength-training, twice/w à 1 h. Accelerometer assessments (GT3X+, Actigraph) for the exercise group were performed three times, two times before the intervention (Pre-1 and Pre-2) and one test in the last week of the 8-week-exercise-period (End).2 The control group performed one pre-test and one end-test at corresponding intervals, without receiving any supervised physical activity. Accelerometer data was analyzed using the vector magnitude (VM) of all three-axis in 60s epochs, with previously validated cut-points for physical activity intensities related to METs.3,4

Results

There was a significant difference in the exercise-group from Pre-1 to End-test in both absolute minutes (min/w) and relative to daily wear time (%); in moderate-to-vigorous-PA (MVPA +41 min/w and 8% of-total-daily-wear-time), light-intensity (LPA+228 min/w and 3.9% of-total-daily-wear-time), Sedentary (SED) -time (-254 min/w and -4.7% of-total-daily-wear-time) and SED-bouts-à-10 min (-320 min/w and -5.7% of-total-daily-wear-time), (see Figure 1). The control group showed only significant differences from pre-1-to-End-test in % of-total-daily-wear-time for LPA (+2.3%) and SED-time (-2.7%). Total-daily-counts in the End-test increased for controls (+6.7%) but significantly more for the exercise group (+17.3%). Between the exercise groups’ two pre-tests, no significant difference was observed, except for percent of wear time in total-PA (+4.6%) and SED-total (-2.4%).

Conclusions

Older adults participating in supervised exercise increased light and moderate- to vigorous PA and decreased time in SB, which is of importance because elderly being less sedentary and more physically active reduce risks of disease and morbidity. Furthermore, a good repeatability was shown from the two pre-tests.

References


Figure 1. Physical activity patterns in the exercise group from three measures: Pre-1, Pre-2 and End, illustrated with the average absolute time per day (min); and as percentage of daily wear time (%) in SED, LPA and MVPA.