

Only Light Physical Activity is Associated With Good Perceived Health and Fitness in Terms of Both Absolute and Relative Intensity

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Purpose: Physical activity (PA) is associated with perceived health and fitness, but associations of broader concept of physical behaviour and relative intensities of PA have been studied less. This study analysed how daily physical behaviour – in terms of lying, reclining, sitting, and standing, both absolute and relative individual intensities of PA, number of steps, and peak 1-min metabolic equivalents (MET) – is associated with perceived health and fitness.

Methods: The study is based on combined data from two cross-sectional population-based FINFIT studies that measured physical behaviour by a triaxial hip-worn accelerometer (UKK RM42) among 20–69-year-old adults. Lying, reclining, sitting, and standing during waking hours were analysed by the APE-algorithm and PA by the MAD-algorithm. The range for absolute light PA (LPA) was 1.5–2.9 METs. The cut point for absolute moderate PA (MPA) was ≥ 3 METs and for vigorous PA (VPA) ≥ 6 METs. The cut point for relative LPA was $<40\%$ of oxygen consumption reserve ($\dot{V}O_{2R}$), for relative MPA $\geq 40\%$ and $<60\%$ of $\dot{V}O_{2R}$, and for relative VPA $\geq 60\%$ of $\dot{V}O_{2R}$. Multivariate multiple regression and receiver operator characteristics (ROC) analysis were used as statistical methods.

Results: Participants ($n = 3,915$, mean age 50.5, standard deviation 13.1 years, 62% women) used the accelerometer for at least four days, 24 h/day. Most participants perceived their health (87%) and fitness (92%) as at least good. Less lying and reclining were associated with better health while less standing, absolute and relative LPA and VPA, absolute MPA, and fewer steps and lower peak 1-min MET were related to poorer health. The highest area under the ROC curve (AUC) values for good perceived health were found to peak 1-min MET (AUC = 0.676) and absolute VPA (AUC = 0.650). The associations with perceived fitness were similar, but stronger. The AUC values for good fitness were highest for steps (AUC = 0.716) and peak 1-min MET (AUC = 0.715). Relative MPA and VPA indicated low AUC values for both health and fitness.

Conclusion: Higher volume of daily PA, regardless of absolute intensity and higher relative LPA, was associated with good perceived health and fitness. Lying and reclining had the opposite association compared to those of PA.

