

Comparison of accelerometer-based measurement with the international physical activity questionnaire (long form) in the assessment of physical activity level

Abstract

Accurate measurement of physical activity depends on the validity and reliability of measurement instruments. The objective of the present study was to compare the assessed moderate-to-vigorous intensity component of physical activity as measured by an accelerometer and by the International Physical Activity Questionnaire. From the target population of Malaysian government employees, 225 participants (mean age = 34.84 ± 8.41 years; 71.1% women) wore an accelerometer on two consecutive weekdays and one weekend day and completed the International Physical Activity Questionnaire (IPAQ). Three assessments were conducted at four- and six-month intervals to compare total time spent in moderate-to-vigorous intensity physical activity (MVPA) as measured by accelerometer and by the IPAQ. The criterion validity of the IPAQ was evaluated by Bland-Altman analysis and Pearson's correlation coefficients, and specificity and sensitivity were calculated. Higher MVPA times were reported on the IPAQ ($p < 0.001$) as compared to the accelerometer, while strong to very strong correlations (ranging from -0.784 to -0.981) were observed between the two instruments. The IPAQ showed good specificity in correctly classifying adequately active individuals, but its sensitivity to identifying inadequately active people was low. The IPAQ overestimated MVPA among Malaysian government employees and demonstrated modest evidence of criterion validity. Further evaluation of self-report physical activity instruments such as the IPAQ in other Malaysian populations could help to ensure more accurate assessment of physical activity data in the country.

Keyword: Accelerometer; IPAQ; Physical activity