



Title	Pedometers and Accelerometers in Assessing Physical Activity Among Children and Adolescents
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Reference	Technology Review Report 018/07, 2007. http://medicaldev.moh.gov.my/uploads

Aim

To determine the safety, effectiveness, and cost effectiveness of pedometers and accelerometers in measuring physical activities in children and adolescents.

Conclusions and results

There is no retrievable evidence on the safety aspect of the devices. In terms of accuracy, the evidence showed that, except for the Caltrac AC accelerometer, all pedometer and accelerometer models – eg, Yamax Digiwalker (model DW-200 and SW701), Walk4Life (model LS250) pedometers, tri-axial Tritrac-R3D, WAM accelerometer (model 7164), CSA Actigraph monitor (model 7164), Actiwatch® activity monitor, and Actical accelerometers – were valid instruments for measuring physical activities. The Mini Mitter MM Actiwatch (model AW16) was valid only when used to assess physical activity in a controlled research setting, but not under free living conditions. Comparison of the tri-axial accelerometer, uni-axial WAM accelerometer (model 7164), and Digiwalker DW-200 in the same study showed the best single device to be the tri-axial Tritrac-R3D accelerometer. Measurement of physical activity was affected by the attachment site of the device and whether the study was carried out in a structured physical activity program or through daily physical activity. Many authors commented that the pedometer, as compared to the accelerometer, is a relatively inexpensive technique to assess physical activity.

Recommendations

Among pedometers and accelerometers, the tri-axial Tritrac-R3D accelerometer can be recommended since the evidence shows it to be the most accurate device for estimating a variety of physical activities in children.

Methods

Databases searched included PubMed, Ovid, ProQuest, Ebscohost, EBM Reviews for Controlled Trials, Cochrane Database of Systematic Review, Cochrane Clinical Trial Registry, Science Direct, and Springer

Link. The study included all primary papers, systematic reviews, or meta-analyses pertaining to safety, effectiveness, and cost effectiveness on the use of pedometers and accelerometers in humans. All relevant literature was critically appraised, and the evidence level was graded according to the Oxford Centre for Evidence-based Medicine Levels of Evidence (May 2001 for diagnosis).