

Suggested settings for accelerometer data reduction in ICAD 2.0

File formats and initial data cleaning

All file formats from any generation of ActiGraphs can be submitted to ICAD 2.0. The submitted files will be transformed into (if not already) files with a .dat extension, containing vertical axis count data in 60-sec epoch periods. The reason for choosing a 60-sec epoch is that most of the data included in ICAD 1.0 only exists in this epoch. Each accelerometer file will be examined for threats to the reliability of the file (typically temporally shifted files, spurious or malfunctioning units, or plateauing levels of activity (e.g. 32767 in the CSA 7164 model)). When deployment strategies differ within studies, start date and start time will be altered where ActiGraphs were initialized prior to deployment using a read-in file. The accelerometer data files will be analyzed using KineSoft (KineSoft, Loughborough, UK, <http://www.kinesoft.org>).

Valid day criteria and identification of non-wear

The valid day criteria will be ≥ 8 hours of data per day. The accelerometer will be considered not worn if a period of 60 minutes or more of consecutive zeros (allowing for 2 minutes of non-zero interruptions).

Physical activity outcome variables

The following variables will be available:

- Wear counts, total valid wear minutes and wear counts/wear minutes (cpm) for the total valid wear period (i.e. summary across all valid days), per weekday/weekend day, per day (Mondays, Tuesdays etc.), and per hour per day (e.g. Monday hour 12:00 – 13:00).
- Accumulated intensity-specific sedentary time and physical activity for total valid wear period, per weekday/weekend day, and per day (Mondays, Tuesdays etc.).
- Minutes in continuous bouts of intensity-specific sedentary time and physical activity for total valid wear period, per weekday/weekend day, and per day (Mondays, Tuesdays etc.).

For the intensity-specific variables we suggest to include the cut-points for preschoolers published by Pate et al (2) and the cut points for children and adolescents published by Evenson et al (1) as well as a block-approach summing time spent in narrow blocks of intensity (e.g. 0-50, 50-100 cpm, 100-150 cpm, etc.). This block-based approach allows matching to other cut-points users would like to apply, without processing the data for each exact cut-point available. The intensity-specific variables will be available as accumulated time (number of minutes) and minutes in bouts (minutes spent in continuous bouts of 0-3, 0-10, 3-5, 5-10, 10-20, 20-30, 10+ and 30+ minutes).

References

1. Evenson KR, Catellier DJ, Gill K, et al. Calibration of two objective measures of physical activity for children. *J Sports Sci* 2008;26:1557-65.
2. Pate RR, Almeida MJ, McIver KL, et al. Validation and calibration of an accelerometer in preschool children. *Obesity (Silver Spring)* 2006;14:2000-6.