

Using Pedometry to Measure Physical Activity

What Was the Question?

As a follow-up to similar elementary and middle school studies, Scruggs, Mungen, and Oh (2010) quantified physical activity in high school physical education via pedometry to determine a steps-per-minute cut-point for achievement of the widely accepted guideline of 50% moderate-to-vigorous physical activity (%MVPA; Pate et al., 2006; USDHHS, 2000). The authors also examined the influence of lesson duration on %MVPA as well as minutes engaged in MVPA (MVPAtime) using block (90 minutes) and traditional (43-50 minutes) schedules.

What Was Done?

Data ($N = 218$; 110 female, 108 male) were collected in 27 high school physical education classes (grades 9-12) taught by 10 certified physical educators in six schools. Physical education classes included both traditional ($n = 30$) and block ($n = 10$) lessons. The block schedule lessons included invasion games, dance, and fitness, and traditional lessons included fitness; striking-and-fielding, invasion, and net/wall games; dance and gymnastics; and ropes or team-building activities. Physical activity

data were collected concomitantly via pedometry and systematic observation using the System for Observing Fitness Instruction Time (SOFIT) to categorize and quantify MVPA. Pedometer accuracy was validated before the data collection and pedometer placement was supervised by researchers to ensure accuracy. Inter-rater agreement greater than 90% was achieved before SOFIT data collection. To ensure consistency, 10% of activity-level data were checked for quality.

What Was Found?

Physical activity levels indicated that boys were significantly more active than girls and that 9th and 10th graders were more active than 11th and 12th graders. When steps per minute was used to predict achievement of the 50% MVPA recommendation, consistent cut-point scores were revealed (all data = 81.97 steps/min; traditional schedule = 81.38 steps/min; block schedule = 84.04 steps/min). This consistency was absent when steps per minute was used to predict MVPAtime. This finding is reasonable, given the notable difference in lesson lengths between traditional (43-50 min) and block (90 min) schedule formats.

What Does the Study Mean?

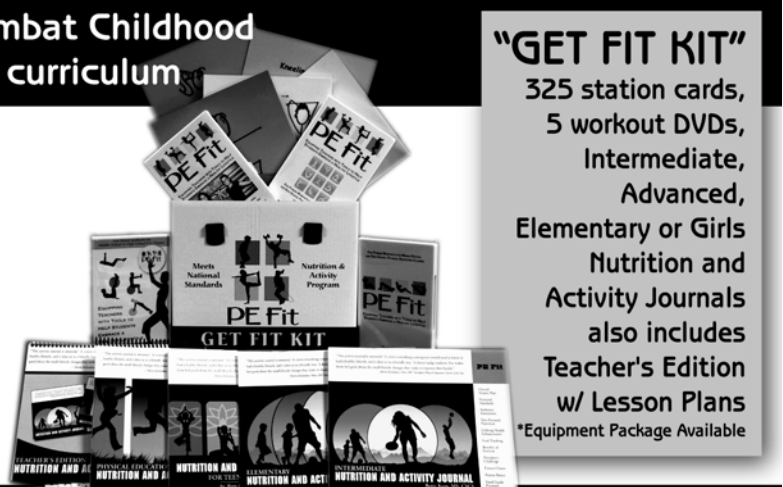
The results showed that (1) using steps per minute is an accurate indicator of the percent of lesson time that the students engage in physical activity, (2) steps per minute accurately quantifies %MVPA during physical education lessons with great confidence, and (3) a step-per-minute criterion of 82 to 83 across schedules and all data is consistent with 7th- and 8th-grade findings (Scruggs, 2007) for predicting achievement of the 50% MVPA guideline. While steps per minute accurately quantifies the 50% MVPA guideline in high school physical education, the authors suggest that the use of steps per minute is less useful and accurate in estimating MVPAtime.

Reference

- Pate, R. R., Davis, M. G., Robinson, T. N., Stone, E. J., McKenzie, T. L., & Young, J. C. (2006). Promoting physical activity in children and youth: A leadership role for schools. *Circulation*, *114*, 1214-1224.
- Scruggs, P. W. (2007). Middle school physical education physical activity quantification: A pedometer step/min guideline.

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