

Quantification of Physical Activity in Middle School Physical Education

What Was the Question?

Various policy groups have identified engagement in physical education as an essential way for youths to acquire the recommended levels of physical activity (PA). Despite such an endorsement for physical education, relatively little objective information is available about the amount of PA that children get during classes. As a benchmark, objective 22:10 in *Healthy People 2010* recommends that adolescents be active for at least 50 percent of the lesson time. In an effort to develop an easily deployed and readily available tool to assess activity levels of middle school students in physical education Scruggs (2007) examined the viability of using pedometry. Specifically, the study posed the following questions: (1) is pedometry a valid measure of PA in physical education classes, (2) how many steps should a child take to meet the criterion of being active at least half of the class time, and (3) how much PA did children actually get, relative to stated goals, in physical education classes?

What Was Done?

Data were collected from 180 students in the seventh (56 boys, 45 girls) and eighth grades (42 boys, 37 girls) in the spring and fall of 2004. Overall, this entailed assessing students during 43 physical education lessons at three schools located in the upper Midwestern United States. The following activities were observed: basketball, speedball, archery, interval running, soccer, flag football, volleyball, and Ultimate. In addition to collecting developmental and anthropometric information, students' total steps and steps per minute were recorded from pedometers during physical education lessons. A computerized

video-observational system was also used to classify students as sedentary, moderately active, or vigorously active.

What Was Found?

Scruggs found that pedometry was a reliable and valid tool for assessing physical activity during physical education classes. In addition, he reported that lesson time (distinguished from overall class time, which included time to change to and from PA attire) averaged 33.2 minutes \pm 3.01 minutes (i.e., from when pedometers were started to when they were stopped). During this period, students averaged 2,998 steps or 93 steps per minute. On average, this resulted from 18 minutes of PA (i.e., 54% of actual lesson time). The study also reported that 78 percent of the participants met the 50 percent PA recommendation when measured with pedometry, and 68.9 percent of the students met the criterion when assessed through observation. Of particular interest in this study was the identification of an average steps-per-minute target that was associated with PA for 50 percent of lesson time. The value of 87.27 steps per minute represented this standard. However, to allow for more flexibility in interpreting steps-per-minute compliance, an interval from 82.52 to 87.27 was suggested as a better alternative to one discrete value.

What Does the Study Mean?

This study provides a method for assessing the extent to which physical education contributes to the PA goals established by such policy initiatives as *Healthy People 2010*, which recommends that children in physical education should be active for at least 50 percent of the lesson time and that they should accumulate 210 minutes

of PA weekly. The data collected showed that children, on average, were in fact active at least 50 percent of the time they participated in physical education. However, this study also shows that even if physical education was offered to children five days a week, they would acquire only 88 minutes (range: 80-91 min) or 42 percent of the 210 minutes recommended for such classes. Also, if the President's Council on Physical Fitness guidelines were used (i.e., 11,000 steps/day for girls and 13,000 steps/day for boys), girls would be getting 26 percent and boys 24 percent of their daily steps from physical education. Seemingly, meeting such guidelines would require additional opportunities to engage in PA. Scruggs suggests several ways to do this, including increasing the amount of PA during physical education classes and promoting a physically active lifestyle beyond the physical education setting. He does note limitations to pedometry in that not all physical activities can be assessed by measuring steps (e.g., swimming, weight training, rollerblading). He also acknowledges that physical education entails more than simply engaging students in PA, although it should maximize PA levels in order to better affect the psychomotor, affective, and cognitive domains.

Reference

Scruggs, P. W. (2007). Middle school physical education physical activity quantification: A pedometer steps/min guideline. *Research Quarterly for Exercise and Sport*, 78(4), 284-292.

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