

Physical Activity of Children and Academic Achievement

Dear Editor-in-Chief

I read with interest the recent article of Syväoja et al. (4) showing that although the self-reported physical activity of 12-yr-old children was directly associated with teacher gradings of academic attainment, uniaxial accelerometer measurements of daily physical activity did not show such an association. One potential issue is the accuracy of self-reports. Many children substantially overestimate their absolute levels of physical activity (2). Nevertheless, most authors would accept that questionnaires are capable of ranking interindividual differences in habitual physical activity and, thus, of demonstrating correlations between habitual activity and other variables such as academic attainment.

A uniaxial accelerometer provides the observer with objective data, but there are several pitfalls to accurate interpretation of activity counts. Syväoja et al. (4) based their analysis upon students who provided at least 500 min of data on each of two weekdays and one weekend day. However, a much larger volume of information is needed to provide an accurate picture of a person's activity over an entire year (5). Furthermore, if the device is worn for only a short period, reactive effects may lead to an upward skewing of readings in a proportion of the students (1). Moreover, the accelerometer underestimates or fails to record many childhood activities. Syväoja et al. (4) note skateboarding, but one may add swimming and cycling, to the list of poorly identified activities. Finally, and perhaps most critically, activity counts are averaged over the entire day, whereas in terms of academic learning, the critical factor may be the intervention of a period of vigorous activity during the time that the child is attending school.

Syväoja et al. (4) suggest that their study is the first to look at relations between objectively measured physical activity and academic performance. In terms of accelerometer measurements, they are correct. However, an alternative approach to this question is to impose a substantial and known fraction

of the child's daily physical activity through an hour of vigorous daily classroom activity, using a quasi-experimental design. The Trois Rivières study carried out such an investigation for a 6-yr period and thus demonstrated that children who received a daily hour of added specialist-taught physical activity had a better level of academic achievement than their peers who received only a nominal weekly amount of physical education from their homeroom teachers, whether their performance was determined by local classroom appraisals or by province-wide examinations (3).

In conclusion, our quasi-experimental study would seem to support the questionnaire rather than the accelerometer data. Moreover, given the known arousing effect of physical activity, one important variable to consider in all future research on this topic would seem to be the time relationships between periods of physical activity and academic instruction.

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