

COMMENTARY

Commentary: Age-related decline in physical activity during adolescence - an opportunity to reflect on intervention design and key research gaps

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The paper by Dumith *et al.*¹ provides a unique synthesis of the current information about the age-related decline in youth physical activity. This is an important contribution to the field at a time when many national governments are encouraging children and adolescents to engage in greater amounts of physical activity.^{2,3} As such, there are a number of studies that have attempted to increase physical activity both within and outside of school.⁴ The synthesis by Dumith *et al.* provides the context for current efforts by showing that, on average, youth physical activity levels decline by ~7% per year, which would equate to an overall decline of ~60–70% during adolescence. Due to a historical absence of data, it is impossible to determine whether this age-related change in physical activity patterns is a function of normal maturation, or a change that has only occurred with the modernization of work patterns and lifestyles.

The clear presentation of the age-related decline in physical activity provides an opportunity for researchers to reflect on how best to promote youth physical activity. The marked year-on-year decline suggests that rather than focussing on strategies to increase youth physical activity, our limited resources may be better utilized by helping individuals to maintain their current level of physical activity. While this difference in approach may at first appear to be very subtle and perhaps contradictory, it could have important implications for intervention design. Many current interventions focus on implementing new programmes into schools to bolster extra-curricular provision.^{4,5} While a new programme may provide exciting new opportunities, it also may have the unintended consequence of forcing participants to alter their current physical activity routine and so result in lower activity levels. For example, it could be the case that an

adolescent usually plays an informal game of football (soccer) on a Wednesday afternoon, but stops doing so to attend a martial arts class that is the focus of a new health promotion campaign. When the martial arts programme stops due to the end of the funding, the adolescent may not feel able to rejoin his or her former friends in the informal football games. In this scenario, an existing physical activity opportunity is lost by encouraging the youth to focus on attending a new, but unsustainable, activity. Interestingly, the Dumith review finds that the number of activities in which a youth engages was the physical activity measure that showed the greatest age-related decline. It may, therefore, be the case that helping youth to continue to engage in a range of activities will be of greater long-term benefit than focussing exclusively on providing new activities. Research that assesses the relative long-term success of strategies that promote new activities versus strategies that focus on maintaining existing activity patterns is therefore needed.

The review also highlights that current longitudinal physical activity data are largely limited to North-American and Western European samples. We therefore know very little about how physical activity patterns may change with maturation in Asian, South-American or African populations. Furthermore, we know even less about the determinants of physical activity in non-Western nations. Examining both of these issues as countries modernize would provide insights into how physical activity may change with maturation and modernization and therefore studies in these countries are needed now!

Dumith *et al.* highlight that current studies are overly reliant on self-reported data. While this finding may reflect the historical nature of some of the

studies and the high cost of objective measures in cohort studies, self-report measures tend to over-estimate physical activity and are less reliable among younger children.^{6,7} However, while accelerometers can provide second by second data on the intensity of most physical activities in which an adolescent engages, they cannot provide any descriptive information on where the activity took place or what the person was doing while they were active. Although research teams are starting to use global positioning system (GPS)^{8,9} monitors to quantitatively identify where activity takes place and these devices may soon be able to provide information on the general mode of activity, there is a lack of refinement in the contextual information that GPS monitors can provide. Thus, there is a critical need for studies that combine qualitative and quantitative assessments of youth physical activity to provide a more complete understanding of how activity changes with maturation. Without an understanding of age-related changes in activity in young people and the key determinants of those changes, the effectiveness of any intervention is likely to be severely limited.

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