Is early life motor performance related to physical activity in adulthood?

Kelly R. Evenson Anna K. Porter

Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

Correspondence

Kelly R. Evenson, Department of Epidemiology, Gillings School of Global Public Health, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA.
Email: kelly_evenson@unc.edu

Lack of physical activity is a major risk factor for non-communicable diseases worldwide, estimated to have contributed to 5.3 million or 9% of all deaths in 2008.¹ The World Health Organization recommends for youth 5 to 17 years at least one hour daily of moderate-to-vigorous physical activity and for adults at least 150 minutes per week of moderate, or 75 minutes per week of vigorous-intensity aerobic activity, or an equivalent combination of the two.² Identifying modifiable risk factors associated with lack of physical activity, including those factors occurring early in life, can contribute to our understanding of how to enhance population-level physical activity and reduce morbidity and mortality burden from lack of physical activity worldwide.

In this issue of *Paediatric and Perinatal Epidemiology*, Elhakeem et al³ describe a longitudinal cohort study of 2526 British participants born during the same week in 1946 and followed across their lifetime. In this cohort, teacher-assessed better ability at games and measured faster finger- and foot-tapping speed during adolescence were associated with higher participation in leisure-time physical activity from age 36 to 68 years. Age at first standing and walking were not associated with participation in leisure-time physical activity in later life. Interestingly, findings did not differ between boys and girls. The authors concluded that motor skill interventions may promote lifelong leisure-time physical activity. The lack of an association between infant motor milestones and adult leisure-time physical activity may indicate that innate skill is less important than learned behaviours for impacting choice to be active in adulthood.

The strengths of the study include the representative sample across an entire country, the measured assessment of ability at games at age 13 years, finger- and foot-tapping speed at age 15 years, and the high response rate over time. The investigators included an exposure assessment of mother's report of standing and walking by 2 years of age, something presumably most mothers would accurately recall. This study demonstrates the strength

of the prospective cohort study design, sometimes questioned for its usefulness.⁴

Another strength of the study were the five assessments of leisure-time physical activity during adulthood, although the questionnaire changed over time precluding exploration into finer outcome categorisations. Similarly, the exposure categorisation was limited, such that the exploration of ability in school games at age 13 years compared two levels: "above average" vs "average or below average" abilities. Only 18.8% of girls and 19.5% of boys fell into the "above average" category, bringing to question whether the favourable findings only apply to adolescents in the top quintile for ability in school games.

While the strength of the study also included the long follow-up, the lengthy lag period between assessment of motor skills at adolescence and leisure-time physical activity starting at age 36 years raises the potential for residual confounding. However, the researchers note that confounding of considerable strength would be needed to account for their findings. The long lag period found in the study challenges readers to consider the contemporaneous meaning of the findings. Children's social and school environment in the 1950s differs from the environment that children grow up in today, and it is possible that the skills taught to these participants as children would differ substantially from what is being taught in schools today.

Few intervention studies have examined the longer-term effects among children to enhance motor skills, with follow-up generally not more than a few years.⁵⁻⁷ These studies corroborate that interventions in childhood can have longer-term impacts on physical activity behaviour. To further strengthen the evidence, randomised controlled trials to improve motor skill development during youth, with more detailed follow-up into adulthood on intensity, frequency, duration, and type of physical activity is needed.

Developing a variety of motor skills and movement patterns are essential components of quality physical education.⁸ Physical

education teachers can positively influence physical activity of adolescents through their encouragement, support, and teaching to improve their skills, as well as helping them find activities they enjoy.⁹ Discovering enjoyable physical activities is important, as it is hypothesised that activities engaged in during youth may “carry over” into activities engaged in as adults.¹⁰ Furthermore, inactive children are more likely to be inactive adults, so it is essential to teach them how to enjoyably engage in physical activity at an early age.¹⁰ This study supports the role of high quality age-specific physical education in school as a means to reach youth with motor skills training. The support for physical education should remain a public health priority, given its contribution to motor skills development and its impact on physical activity in later life.

ABOUT THE AUTHORS

Kelly Evenson is a Research Professor at the University of North Carolina at Chapel Hill, Gillings School of Global Public Health in the Department of Epidemiology. Her research focuses on physical activity and sedentary behaviour in a variety of populations.

Anna Porter is a post-doctoral trainee in cardiovascular epidemiology at the University of North Carolina at Chapel Hill, Gillings School of Global Public Health. Her research focuses on physical activity, particularly different types of activity such as bicycling, their ecological correlates, and outcomes.

ACKNOWLEDGMENTS

Anna Porter was supported by a National Research Service Award T32 post-doctoral research fellowship, funded by the National Institutes of Health; National Heart, Lung, and Blood Institute (T32-HL007055).

ORCID

Kelly R. Evenson <http://orcid.org/0000-0002-3720-5830>

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