The role of physical fitness in school readiness and academic achievement

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The transition from kindergarten to school is a big step in a young child’s life, and not all children manage this challenge equally well. Researchers are working to identify the characteristics children exhibit in kindergarten that predict later academic achievement – typically referred to as “school readiness factors.”

In the past, interest has focused primarily on school- or domain-specific factors, such as precursors of mathematics, reading or writing skills. More recently, however, scholars in the field of school readiness have focused increasing attention on more general characteristics of children. Numerous studies have found that self-regulatory abilities, or executive functions, are linked to academic achievement. Another potential factor in school readiness that has received far less attention is physical fitness.

Physical fitness

Physical fitness, a multidimensional construct that encompasses such components as strength, endurance and agility, has recently been identified as a factor in school readiness. The various aspects of physical fitness have been found by numerous studies to be related to academic achievement.

But how is physical fitness linked to academic achievement? One explanation is the cardiovascular fitness hypothesis, which argues that physical activity produces structural and functional changes in the brain that have a positive effect on learning and attention, and subsequently on academic achievement.

Another is the cognitive stimulation hypothesis, which is based on the idea that complex physical activity that requires a high level of coordination has a positive impact not only on physical fitness, but also on cognitive control processes such as executive functions. In other words, engaging in physical activity and learning new motor skills is cognitively demanding and provides an opportunity to improve executive functioning.

Since executive functions have been shown to be associated with academic achievement, it seems plausible that physical fitness, in turn, may have an indirect effect on school success. This is precisely what we set out to test in a recent study conducted by members of the Department of Developmental Psychology at the University of Bern.

Indirect links to academic achievement

Confirming the results of a cross-sectional study in the Netherlands and a short-term longitudinal study in Switzerland, we found that physical fitness does indeed affect academic achievement via executive functions. Our longitudinal study supports the theory that executive functions play a mediational role in the relationship between physical fitness and academic achievement. Well-designed programs of physical activity have a favorable influence not only on health, but also on executive functions. Physical fitness, in turn, appears to promote development in a variety of
domains, including academic achievement.

References


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