

Fitness and executive function as mediators between physical activity and academic achievement: Mediators between physical activity and academic achievement

Visier-Alfonso, M.E.

Álvarez-Bueno, C.

Sánchez-López, M.

Cavero-Redondo, I.

Martínez-Hortelano, J.A.

Nieto-López, M.

Martínez-Vizcaíno, V.

Abstract

Physical activity is related with academic achievement in children. This cross-sectional study aimed to assess whether cardiorespiratory fitness (CRF) and executive function act as mediators of the association between moderate to vigorous physical activity (MVPA) and academic achievement. This study included 186 schoolchildren (9-11 years) from Cuenca, Spain. Sociodemographic variables, anthropometric variables, academic achievement, executive function (inhibition, cognitive flexibility and working memory), CRF (20-m shuttle run) and physical activity (by accelerometry) were measured. Serial mediation models were estimated using the Hayes' PROCESS macro. The significant paths in the model mediating this relationship between MVPA and academic achievement were as follows: MVPA → CRF → academic achievement (IE = 0.068, 95% CI: [0.018; 0.127]; IE = 0.079, 95% CI: [0.029; 0.144]; and IE = 0.090, 95% CI: [0.032; 0.165], controlling for inhibition, cognitive flexibility and working memory, respectively), MVPA → CRF → inhibition → academic achievement (0.018, 95% CI: [0.001; 0.047]) and MVPA → cognitive flexibility → academic achievement (0.087, 95% CI: [0.012; 0.169]). The relationship between MVPA and academic achievement may not be direct but mediated by CRF, cognitive flexibility, and inhibition via CRF. Physical activity interventions to improve AA should be focused on improvements in CRF and executive function.

Author keywords

academic achievement

cardiorespiratory fitness

executive function

mediators

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