

Cardiorespiratory Fitness and Muscular Strength as Mediators of the Influence of Fatness on Academic Achievement

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Objective To examine the combined association of fatness and physical fitness components (cardiorespiratory fitness [CRF] and muscular strength) with academic achievement, and to determine whether CRF and muscular strength are mediators of the association between fatness and academic achievement in a nationally representative sample of adolescents from Chile. **Study design** Data were obtained for a sample of 36 870 adolescents (mean age, 13.8 years; 55.2% boys) from the Chilean System for the Assessment of Educational Quality test for eighth grade in 2011, 2013, and 2014. Physical fitness tests included CRF (20-m shuttle run) and muscular strength (standing long jump). Weight, height, and waist circumference were assessed, and body mass index and waist circumference-to-height ratio were calculated. Academic achievement in language and mathematics was assessed using standardized tests. The PROCESS script developed by Hayes was used for mediation analysis. **Results** Compared with unfit and high-fatness adolescents, fit and low-fatness adolescents had significantly higher odds for attaining high academic achievement in language and mathematics. However, in language, unfit and low-fatness adolescents did not have significantly higher odds for obtaining high academic achievement. Those with high fatness had higher academic achievement (both language and mathematics) if they were fit. Linear regression models suggest a partial or full mediation of physical fitness in the association of fatness variables with academic achievement. **Conclusions** CRF and muscular strength may attenuate or even counteract the adverse influence of fatness on academic achievement in adolescents. © 2017

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