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Does Physical Fitness Buffer the Relationship between Psychosocial Stress, Retinal Vessel Diameters, and Blood Pressure among Primary Schoolchildren?

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Background. Strong evidence exists showing that psychosocial stress plays an important part in the development of cardiovascular diseases. Because physical inactivity is associated with less favourable retinal vessel diameter and blood pressure profiles, this study explores whether physical fitness is able to buffer the negative effects of psychosocial stress on retinal vessel diameters and blood pressure in young children. Methods. 325 primary schoolchildren (51% girls, Mage = 7.28 years) took part in this cross-sectional research project. Retinal arteriolar diameters, retinal venular diameters, arteriolar to venular ratio, and systolic and diastolic blood pressure were assessed in all children. Interactions terms between physical fitness (performance in the 20shuttle run test) and four indicators of psychosocial stress (parental reports of critical life events, family, peer and school stress) were tested in a series of hierarchical regression analyses. Results. Critical life events and family, peer, and school-related stress were only weakly associated with retinal vessel diameters and blood pressure. No support was found for a stress-buffering effect of physical fitness. Conclusion. More research is needed with different age groups to find out if and from what age physical fitness can protect against arteriolar vessel narrowing and the occurrence of other cardiovascular disease risk factors.

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