Body mass index and physical fitness in Brazilian adolescents [Índice de massa corporal e aptidão física em adolescentes brasileiros]

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Objective: Evaluate the relationship between body mass index and physical fitness in a cross-sectional sample of Brazilian youth. Methods: Participants were 3849 adolescents (2027 girls) aged 10?17 years. Weight and height were measured; body mass index was calculated. Physical fitness was evaluated with a multistage 20 m shuttle run (cardiovascular endurance), standing long jump (power), and push-ups (upper body strength). Participants were grouped by sex into four age groups: 10?11, 12?13, 14?15, and 16?17 years. Sex-specific ANOVA was used to evaluate differences in each physical fitness item among weight status categories by age group. Relationships between body mass index and each physical fitness item were evaluated with quadratic regression models by age group within each sex. Results: The physical fitness of thin and normal youth was, with few exceptions, significantly better than the physical fitness of overweight and obese youth in each age group by sex. On the other hand, physical fitness performances did not consistently differ, on average, between thin and normal weight and between overweight and obese youths. Results of the quadratic regressions indicated a curvilinear (parabolic) relationship between body mass index and each physical fitness item in most age groups. Better performances were attained by adolescents in the mid-range of the body mass index distribution, while performances of youth at the low and high ends of the body mass index distribution were lower. Conclusion: Relationships between the body mass index and physical fitness were generally nonlinear (parabolic) in youth 10?17 years. © 2018 Sociedade Brasileira de Pediatria
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