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Factors associated with low levels of aerobic fitness among adolescents



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KEYWORDS

Association;
Oxygen consumption;
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Abstract

Objective: To evaluate the prevalence of low aerobic fitness levels and to analyze the association with sociodemographic factors, lifestyle and excess body fatness among adolescents of southern Brazil.

Methods: The study included 879 adolescents aged 14–19 years the city of São José/SC, Brazil. The aerobic fitness was assessed by Canadian modified test of aerobic fitness. Sociodemographic variables (skin color, age, sex, study turn, economic level), sexual maturation and lifestyle (eating habits, screen time, physical activity, consumption of alcohol and tobacco) were assessed by a self-administered questionnaire. Excess body fatness was evaluated by sum of skinfolds triceps and subscapular. We used logistic regression to estimate odds ratios and 95% confidence intervals.

Results: Prevalence of low aerobic fitness level was 87.5%. The girls who spent two hours or more in front screen, consumed less than one glass of milk by day, did not smoke and had an excess of body fatness had a higher chance of having lower levels of aerobic fitness. White boys with low physical activity had had a higher chance of having lower levels of aerobic fitness.

Conclusions: Eight out of ten adolescents were with low fitness levels aerobic. Modifiable lifestyle factors were associated with low levels of aerobic fitness. Interventions that emphasize behavior change are needed.

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PALAVRAS-CHAVE

Associação;
Consumo de oxigênio;
Estilo de vida;
Exercício;
Saúde do adolescente

Prevalência e fatores associados a baixos níveis de aptidão aeróbia em adolescentes

Resumo

Objetivo: Avaliar a prevalência de baixos níveis de aptidão aeróbia e analisar sua associação com fatores sociodemográficos, estilo de vida e excesso de adiposidade corporal em adolescentes de uma cidade do sul do Brasil.

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Métodos: Estudo com 879 adolescentes de 14 a 19 anos de São José, SC, Brasil. A aptidão aeróbia foi avaliada pelo teste canadense modificado de aptidão aeróbia. Variáveis sociodemográficas (cor da pele, idade, sexo, turno de estudo, nível econômico), maturação sexual e estilo de vida (hábitos alimentares, tempo de tela, nível de atividade física, consumo de álcool e de tabaco) foram avaliados por questionário autoadministrado. O excesso de adiposidade corporal foi avaliado pelo somatório das dobras cutâneas do tríceps e subescapular. Empregou-se a regressão logística para a estimativa de *odds ratio* e intervalos de confiança de 95%.

Resultados: A prevalência de baixo nível de aptidão aeróbia foi de 87,5%. As garotas que gastavam duas horas ou mais em frente à tela, que consumiam menos de um copo de leite ao dia, as não fumantes e com excesso de adiposidade corporal apresentaram mais chances de ter baixos níveis de aptidão aeróbia. Os garotos de cor de pele branca e que eram pouco ativos fisicamente apresentaram mais chances de ter baixo nível de aptidão aeróbia.

Conclusões: Oito em cada dez adolescentes estavam com baixos níveis de aptidão aeróbia. Fatores modificáveis do estilo de vida foram associados com baixos níveis de aptidão aeróbia. Intervenções que enfatizem a mudança de comportamento são necessárias.

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Introduction

Secular trend studies have shown that the aerobic performance of young individuals is decreasing.¹ The decrease has reached 0.36% a year,¹ with a prevalence of low aerobic performance in approximately 80% among Brazilian adolescents.²

The high prevalence of inadequate levels of aerobic fitness in adolescents increases morbidity and mortality in adulthood, due to overweight,³ metabolic risk factors³ and cognitive diseases,⁴ in addition to causing difficulties in performing everyday activities.⁵ Conversely, the maintenance of adequate cardiopulmonary indexes, in itself, is capable of reducing health hazards and helping the recovery after intense physical exertion.³

The decline in aerobic fitness is associated with some individual characteristics, such as sociodemographic and life style factors.⁶ A systematic review identified the following factors associated with low levels of aerobic fitness: female gender, low economic level, lower consumption of dairy products and cereals, higher consumption of sweetened beverages, insufficient physical activity, excessive screen time and excess of body fat.⁶ However, it is controversial the association between low levels of aerobic fitness and other sociodemographic factors, such as skin color and age. Moreover, the association between aerobic fitness levels and excessive alcohol and tobacco consumption is scarcely studied.⁶

To assess the prevalence of low levels of aerobic fitness and possible related factors, such as sociodemographic and lifestyle indicators is justified because: (a) it contributes to the epidemiological knowledge of the subject; (b) it allows identifying whether the proportion of adolescents with insufficient levels of aerobic fitness is the same in different places; (c) it will allow effective interventions to be carried out at community and school level on the outcome. Therefore, the aim of this study was to evaluate the prevalence of low levels of aerobic fitness and to analyze

the association with sociodemographic factors, lifestyle and excess body fat in high school adolescents living in a city in southern Brazil.

Method

This cross-sectional analytical school-based study is part of the "Brazilian Guide of Physical Fitness Evaluation Related to Health and Life Habits – Stage I" macroproject (*Guia Brasileiro de Avaliação da Aptidão Física Relacionada à Saúde e Hábitos de Vida – Etapa I*). It was approved by the Institutional Review Board of Universidade Federal de Santa Catarina under protocol CAAE: 33210414.3.0000.0121, and was carried out between August and November 2014.

The population ($n=5182$) consisted of schoolchildren aged 14–19 years enrolled in public schools of São José, Santa Catarina (SC), Brazil, which has 209,804 inhabitants and a municipal Human Development Index of 0.809.⁷ São José shares borders with the state capital city of Florianópolis, and together they form the most densely populated metropolitan area of the state of SC. In addition to the fact that the school environment is a favorable place to encourage the implementation of a healthy and active lifestyle, as it is the place where young individuals spend much of their time, the choice of students from public institutions is justified because the schools and neighborhoods where they are located show social, cultural and economic discrepancies, which allows identifying adolescents with different cultures, ethnicities and lifestyles.

The sampling process was determined in two stages: 1 – stratified by state public high schools ($n=11$); 2 – class clusters considering the school shift and school year ($n=170$ classes). In Stage 2, all high school students who were present in classroom on the days of data collection were invited to participate in the study.

For sample size calculation, an unknown outcome prevalence rate was considered (50%), with a tolerable error

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