

Original

Health-related physical fitness in Brazilian adolescents from a small town of German colonization



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ABSTRACT

Objective: To identify the health-related physical fitness profile of Brazilian adolescents (10–17 years) living in a small town of German colonization and to describe the prevalence of those with low levels of physical fitness according to sex and age.

Method: This is a school-based cross-sectional epidemiological study conducted with all adolescents (10–17 years) enrolled in five public schools of São Bonifácio, Brazil. The study included 277 adolescents (145 boys and 132 girls). The FITNESSGRAM® test battery was applied for the assessment of percent body fat, flexibility, muscle strength/endurance and cardiorespiratory fitness.

Results: Higher mean values of percent body fat and flexibility ($p < 0.01$) were found in girls; boys showed higher means ($p < 0.01$) for pull-up and cardiorespiratory fitness tests. The prevalence of adolescents with low levels of physical fitness was high for percent body fat (boys: 29.3%, girls: 31.8%, $p = 0.75$), flexibility (boys: 26.9%, girls: 54.5%, $p < 0.01$), muscle strength/endurance (curl-up: 37.9% of boys and 45.5% of girls, $p = 0.25$; modified pull-up: 47.6% of boys and 54.5% of girls, $p = 0.30$) and cardiorespiratory fitness (boys: 28.0%, girls: 36.9%, $p = 0.15$). As for the overall physical fitness, 75.7% of boys and 88.9% of girls did not meet the minimum recommended values ($p = 0.01$).

Conclusion: Effective intervention programs are necessary to promote changes in the health-related physical fitness profile of adolescents from São Bonifácio, Brazil.

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Aptitud física relacionada con la salud en adolescentes brasileños de una pequeña ciudad de colonización germánica

RESUMEN

Objetivo: Identificar el perfil de aptitud física y salud de adolescentes brasileños (10 a 17 años) de una pequeña ciudad de colonización germánica, así como describir la prevalencia de aquellos con baja aptitud física de acuerdo al sexo y la edad.

Método: Estudio epidemiológico transversal de base escolar realizado con todos los adolescentes (10 a 17 años) de cinco escuelas públicas de San Bonifacio, SC ($n = 277$; 145 niños), en 2010. Se utilizó la batería de tests FITNESSGRAM® para evaluar la porcentaje de grasa corporal, la flexibilidad, la fuerza/resistencia muscular y la aptitud cardiorrespiratoria.

Resultados: Se encontró un mayor porcentaje medio de grasa corporal y de flexibilidad ($p < 0.01$) en las niñas; en los niños se obtuvieron mayores porcentajes medios en dominadas y en los test de aptitud cardiorrespiratoria ($p < 0.01$). La prevalencia de adolescentes con baja aptitud física fue elevada para la grasa corporal (niños: 29.3%; niñas: 31.8%; $p = 0.75$), para la flexibilidad (niños: 26.9%; niñas: 54.5%; $p < 0.01$), para la fuerza/resistencia muscular (test de abdominales: 37.9% de los niños y 45.5% de las niñas, $p = 0.30$) y para la aptitud física cardiorrespiratoria (niños: 28.0%; niñas: 36.9%; $p = 0.15$). En cuanto a la aptitud física general, 75.7% de los niños y 88.9% de las niñas no alcanzaron los valores mínimos recomendados ($p = 0.01$).

Palabras clave:

Composición corporal

Brasil

Estudio transversal

Flexibilidad

Fuerza muscular

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Conclusión: Son necesarios programas efectivos de intervención para la promoción de cambios en el perfil de aptitud física relacionada con la salud de adolescentes de San Bonifacio, SC.

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Aptidão física relacionada à saúde de adolescentes Brasileiros de uma cidade de pequeno porte e colonização germânica

R E S U M O

Palavras-chave:
Composição corporal
Brasil
Estudos transversais
Flexibilidade
Força muscular

Objetivo: Identificar o perfil da aptidão física relacionada à saúde de adolescentes brasileiros (10-17 anos), de origem étnica germânica e descrever a prevalência daqueles com baixa aptidão física, de acordo com o sexo e idade.

Método: Estudo epidemiológico transversal de base escolar realizado com todos os adolescentes (10-17 anos) de 5 escolas públicas de São Bonifácio (Brasil). O estudo incluiu 277 adolescentes (145 rapazes e 132 moças). Aplicou-se a bateria de testes FITNESSGRAM® para avaliar o percentual de gordura corporal, flexibilidade, força/resistência muscular e aptidão cardiorrespiratória.

Resultados: As moças apresentaram maiores valores médios de percentual de gordura e de flexibilidade ($p < 0.01$). Os rapazes apresentaram melhor desempenho nos testes de flexão de braços e aptidão cardiorrespiratória ($p < 0.01$). A prevalência dos adolescentes que não atingiram a zona saudável de aptidão física foi elevada para a gordura corporal (rapazes: 29.3%; moças: 31.8%; $p = 0.75$) flexibilidade (rapazes: 26.9%; moças: 54.5%; $p < 0.01$), força/resistência muscular (teste abdominais: 37.9% dos rapazes e 45.5% das moças, $p = 0.25$; teste de flexão de braços: 47.6% dos rapazes e 54.5% das moças; $p = 0.30$) e aptidão cardiorrespiratória (rapazes: 28.0%; moças: 36.9%; $p = 0.15$). Na aptidão física geral, 75.7% dos rapazes e 88.5% das moças não atingiram o mínimo proposto para a saúde ($p = 0.01$).

Conclusão: Programas efetivos de intervenção são necessários para a promoção de mudanças no perfil da aptidão física relacionada à saúde dos adolescentes de São Bonifácio (Brasil).

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Introduction

Physical fitness is an important health marker since childhood and adolescence,¹ and the maintenance of satisfactory levels is related to the reduction in the incidence of risk factors for chronic degenerative diseases such as obesity, diabetes mellitus type 2, systemic arterial hypertension, and cardiovascular diseases in adulthood.²

In Europe, low levels of physical fitness are observed in adolescents of both sexes.^{3,4} The prevalence of low cardiorespiratory fitness is 31.6% in teenage boys and 42.4% in teenage girls (12.5–17.5 years).³ As for body composition, body overweight is present in 25.9% and 19.2% of male and female adolescents (13.0–18.5 years), respectively.⁴ In medium and large size cities in Southern Brazil, it has been observed an increase in inadequate levels of adolescents' body composition,⁵ cardiorespiratory fitness,⁶ muscle strength/endurance⁵ and flexibility⁷ for the health.

The components of physical fitness differ between ethnic groups^{8,9} and are influenced by phenotype.¹⁰ Although adolescents from large urban centers are exposed to low physical fitness, the access to the available physical spaces, such as parks, squares and clubs, are considered appropriate for physical activity¹¹ and thus for the maintenance of physical fitness levels in these cities. However, in small town investigated, the access to these spaces is limited, due to lower availability.

Even though the Brazilian literature has reports on health-related physical fitness in adolescents,^{5–8} most studies were conducted in large urban centers.^{5–7} However, it is not totally clear yet whether the physical fitness profile of adolescents from small municipalities colonized by Europeans differs from that observed in studies carried out in large urban centers from Southern Brazil and in municipalities from other Brazilian regions and from Europe, for this reason, this study is justified.

Considering that external influencing factors of physical fitness are similar among adolescents, it will be possible to observe whether body composition and motor performance differ from those observed in studies conducted with heterogeneous populations and whether the proportion of adolescents who does not meet the health criteria for physical fitness is the same as that found in adolescents from larger urban centers. Furthermore, studies using the new cutoff points^{12,13} proposed by FITNESSGRAM® have not been carried out in Brazil yet.

Therefore, the aim of the present study was to identify the health-related physical profile of Brazilian adolescents, from 10 to 17 years of age, living in a small town of German colonization and to describe the prevalence of those who do not meet the criteria for health-related physical fitness according to sex and age.

Method

Study design and participants

The study on health-related physical fitness analysis in adolescents was developed from an epidemiological cross-sectional project called "Physical activity and lifestyle: a three-generation study in São Bonifácio, Santa Catarina" ("Atividade física e estilo de vida: um estudo de três gerações em São Bonifácio, Santa Catarina"), approved by the Human Research Ethics Committee of Universidade Federal de Santa Catarina (UFSC), process no. 973/2010. This study has been conducted so far with all adolescents (10–17 years) from São Bonifácio, Brazil. This town from the state of Santa Catarina was intentionally selected, according to the following criteria: being small and colonized by the Germans.

The southern region of Brazil was predominantly colonized by Europeans. The first European colony settled in Santa Catarina was

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