Physical activity: rate, related factors, and association between parents and children

Atividade física: prevalência, fatores relacionados e associação entre pais e filhos

Actividad física: prevalencia, factores relacionados y asociación entre padres e hijos

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ABSTRACT

Objective: To analyze the association between sports practice of adolescents and their parents.

Methods: Cross-sectional study enrolling 1,111 adolescents of both genders, with ages ranging from ten to 17 years old and their respective parents. Among parents and adolescents, sportive practice of moderate and/or high intensity was assessed by a questionnaire. Economic condition, gender, and age were used as potential confounders. Binary logistic regression indicated the magnitude of the associations detected by the chi-square test.

Results: For both genders, simultaneous paternal and maternal engagement was associated with higher sports practice (male: OR2.3; 95%CI1.0-5.3; female: OR2.7; 95%CI1.3-5.1). However, maternal engagement was associated with higher sports practice only in the female gender (OR2.4; 95%CI1.4-3.8).

Conclusions: Adolescents' sports practice is associated with parents' engagement and the parental gender affects this event.

Key-words: children; adolescents; physical activity; sport.

RESUMO

Objetivo: Analisar a associação entre a prática esportiva de adolescentes e seus respectivos pais.

Métodos: Estudo transversal envolvendo 1.111 adolescentes de ambos os gêneros, com idade entre dez e 17 anos e seus respectivos responsáveis. Entre pais e filhos, o envolvimento em práticas esportivas de intensidade moderada e/ou vigorosa foi avaliado por meio de questionário. A condição econômica, o gênero e a idade foram considerados variáveis de confusão. A regressão logística binária avaliou a magnitude das associações indicadas pelo teste do qui-quadrado.

Resultados: Em ambos os gêneros, o envolvimento dos pais foi associado com um maior engajamento por parte do adolescente em práticas esportivas (masculino: OR2,3; IC95%1,0-5,3; feminino: OR2,7; IC95%1,3-5,1). Porém, o envolvimento materno foi associado apenas com a atividade física no sexo feminino (OR2,4; IC95%1,4-3,8).

Conclusões: A prática esportiva dos adolescentes está associada com a prática de seus pais e o gênero dos pais exerce efeitos distintos em tal fenômeno.

Palavras-chave: crianças; adolescentes; atividade motora; esporte.

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RESUMEN

Objetivo: Analizar la asociación entre la práctica deportiva de adolescentes y sus respectivos padres.

Métodos: Estudio transversal implicando a 1111 adolescentes de ambos géneros, con edad entre 10 y 17 años y sus respectivos responsables. Entre padres e hijos, la participación en prácticas deportivas de intensidad moderada y/o vigorosa fue evaluada mediante cuestionario. Condición económica, género y edad fueron consideradas variables de confusión. La regresión logística binaria evaluó la magnitud de las asociaciones indicadas por la prueba del chi-cuadrado.

Resultados: En ambos géneros, la participación de ambos padres fue asociada a un mayor compromiso por parte del adolescente en prácticas deportivas (Masculino: OR 2,34, IC95% 1,0-5,3; Femenino: OR 2,67 IC95% 1,3-5,1). Sin embargo, la participación materna fue asociada solamente con la actividad en el sexo femenino (OR 2,37 IC95% 1,4-3,8).

Conclusiones: La práctica deportiva de los adolescentes está asociada con la práctica de sus padres y el género de los padres ofrece efectos distintos en tal fenómeno.

Palabras-clave: niños; adolescentes; actividad motora; deporte.

Introduction

Despite a wealth of scientific evidence indicating the benefits of physical activity on health indicators in pediatric populations[1,2], little information is available on the involvement of Brazilian children and adolescents in physical activities[3]. What few studies are available in the Brazilian literature provide strong evidence of widespread insufficient physical activity (IPA) in this segment of the population[4,5].

Indeed, implementation of measures meant to prevent the future consequences of IPA—such as campaigns seeking to promote increased participation in physical activities by children and adolescents—appears to be of the utmost importance, as the adoption of active behaviors in childhood and adolescence tends to be self-perpetuating over time[6,7]. Due to their ability to reach diverse segments of Brazilian society, sports have often been used by health managers as a tool for promotion of regular physical activity among children and adolescents.

In the Brazilian literature, the only information available from a longitudinal study (prospective design) suggests that adolescents engaged in sports are more likely to engage in sufficient physical activity during adulthood[8]. Furthermore, the health benefits of participation in sports during childhood are experienced during childhood as well[9].

The paucity of scientific investigations on programs seeking to promote involvement in sports, compounded by the nature of physical activity as a behavioral variable, creates gaps in the Brazilian literature that should be bridged in an attempt to improve current action strategies. One such gap concerns parental participation in youths' decisions to be active or sedentary; only one published study has addressed this issue in Brazilian adolescents[10], without, however, focusing on it exclusively

In light of the well-established importance of the family environment to a variety of aspects of child and adolescent health and taking into account the dearth of scholarly investigations on the matter, the present study sought to analyze the association between adolescent sports participation and the involvement of their parents in similar physical activities.

Methods

The present study followed a descriptive, analytical, cross-sectional design and was conducted in the municipality of Presidente Prudente, state of São Paulo, Brazil, during the second semester of 2007. The study protocol was approved by the Universidade Estadual Paulista Research Ethics Committee.

This study was part of a larger survey of approximately 1800 adolescents from Presidente Prudente. The required sample size was calculated as 912 subjects, estimated by means of a population parameter-based equation, with an expected prevalence of IPA of 41.8%[5], a tolerable error rate of 3.2%, 80% statistical power, and a 95% confidence interval, according to recommended standard procedures for epidemiological research[11].

During the first stage of the study (sample selection), relevant data were collected and a list of the 36 educational facilities serving the study's target age range (11–17 years) was compiled. During the second stage of selection, among these 36 facilities, six schools (four public and two private) were randomly selected to take part in the study—taking into account the proportion of children educated in public (~70%) and private (~30%) schools. Of the 2200 students enrolled at these six facilities, 1752 (79.6%) took part in the main survey from which this study is derived. Of these, 1111 were included in the present sample, as they met the required inclusion criteria (informed consent, correctly filled out questionnaires, and information obtained from parents).

Of the 1111 adolescents who returned instruments filled out by their parents or guardians, 948 (85.3%) lived with both parents, 145 (13%) lived with their mothers alone, and 18 (1.7%) with their fathers alone.

Involvement in sports was evaluated by means of the second section of the physical activity questionnaire developed by Baecke *et al*[12], as adapted and validated for Brazilian adolescents by Guedes *et al*[13]. This instrument assesses habitual physical activity across different domains (physical education, leisure, and sports). As the present study focused solely on the sports domain, only two questions (part of the sports activities section of the original document) were adopted: "Do you engage in any type of physical exercise, or are you involved in any exercise program?" and, when replies were positive, perception of the intensity of this physical activity (low, moderate, or vigorous). Only sports practiced outside the school environment were considered (physical education classes or school sports were disregarded). Subjects were thus arbitrarily defined as being "involved in sports" when they were involved in some form of moderate or vigorous sports activity. A yes/no dichotomous variable was constructed to measure involvement in sports.

It should be noted that questionnaires were administered in class, so that any doubts expressed by students could be clarified by evaluators, all of whom were previously trained and familiarized with the instrument. Communication between subjects was not allowed during administration of the questionnaire.

A copy of the instrument was given to all subjects, who were asked to deliver the questionnaire to their parents, instruct them to fill it out at home, and return it the following day. The same criteria used for classification of sports participation in children were adopted for classification of parents and/or legal guardians. Parental involvement in sports was categorized into four possibilities (None; Father Only; Mother Only; Both).

As they are associated with engagement in physical activity during adolescence, age and socioeconomic status were defined as possible confounders and were thus entered into an adjusted binary logistic regression model. Chronological age was calculated in decimal years by subtracting the date of birth from the date of assessment. Chronological age was entered into the adjusted model as a variable categorized into one of four ranges (10–11 years; 12–13 years; 14–15 years; 16–17 years). Economic status was calculated by means of an existing questionnaire widely used in prior studies[14]. This instrument takes into account the educational attainment of the head or heads of household, the presence and quantity of certain durable goods, and the number of rooms in the respondent's household to provide a dimensionless economic status score, with higher scores representing more advantaged living conditions. Economic status was entered into the adjusted regression model as a variable categorized into five groups (quintiles).

Descriptive statistics were expressed as mean (measure of central tendency) ± standard deviation (measure of dispersion). The chi-square test (χ^2) was used for analysis of associations, and binary logistic regression, represented by odds ratios (OR) with 95% confidence intervals (95%CI), to indicate the magnitude of associations. Confounding variables found to have an association of up to 20% with involvement in sports (univariate model) were entered into the adjusted logistic regression model. All of the aforementioned procedures were performed in the SPSS 10.0 software environment. The significance level was set at 5%.

Table 1 - Demographic profile of study participants, by gender (Presidente Prudente, 2007).

Variable		Male (n= 469)	Female (n= 692)	*p*
Age in years (mean ± SD)		13.5 (1.9)	13.7 (1.9)	0.123
Sports participation (youths)		63.3%	43.6%	0.001
Parental participation	None	64.6%	64.2%	0.842
	Father	13.3%	13.6%	
	Mother	13.4%	15.3%	
	Both	8.7%	7.1%	

SD, standard deviation.

Results

The sample was mostly (p=0.001) composed of female adolescents. Table 1 shows general demographic characteristics of the study population according to gender. A proportionally greater number of male adolescents reported involvement in sports activities. No between-group differences in mean age were found, nor was subject gender associated with parental engagement in sports.

Figure 1 provides an outline of associations between confounding variables and involvement in sports. Sports participation was associated with economic status; adolescents from more privileged backgrounds reported greater involvement in sports activities. From a statistical standpoint, a marginally significant association was found between sports participation and age (p=0.059).

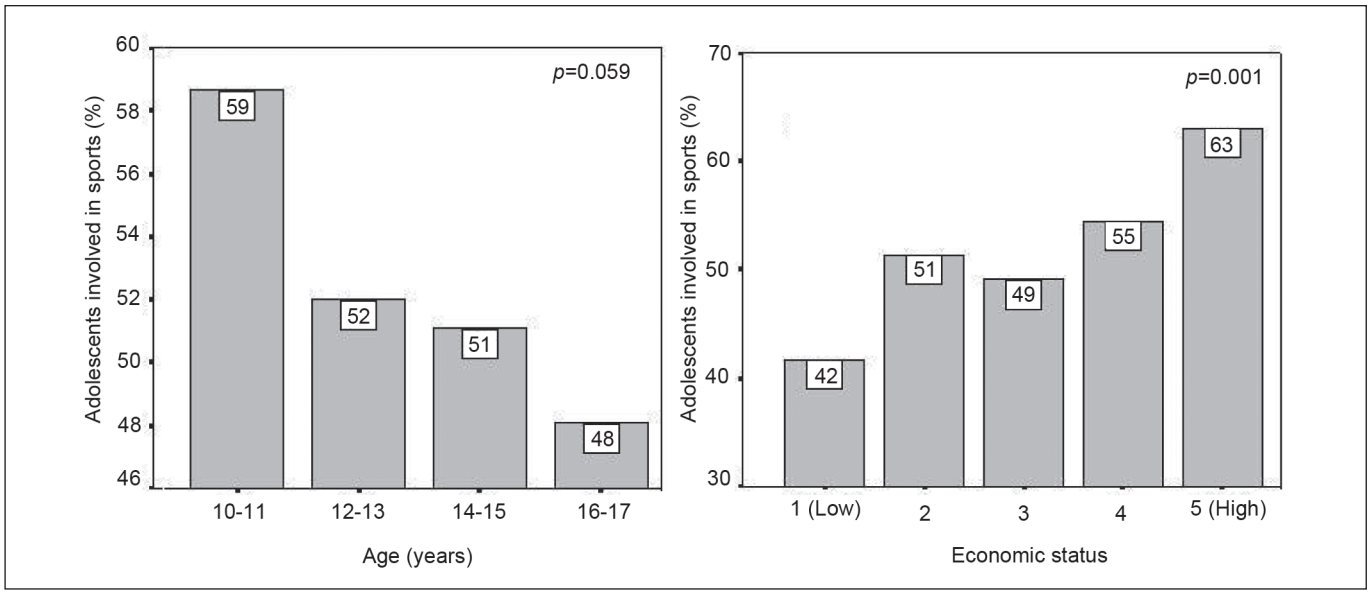

Figure 1 - Association between involvement in sports and possible confounders.

Figure 2 shows the association between sports participation in adolescence and parental involvement in sports activities. Respondents whose mothers or both parents took part in sports activities reported greater involvement in sports.

Figure 3 shows the same associations stratified by gender. The same associations held true for the female subgroup (maternal and parental involvement); however, involvement of male adolescents in sports was only significantly associated with involvement of both parents in such activities.

Discussion

This cross-sectional study analyzed the association between adolescent engagement in physical activities during leisure time and parental involvement in such activities, and found that maternal and parental sports participation were strongly associated with adolescent involvement in similar activities.

In the present sample, just over half of adolescents (51.9%) were engaged in some type of sports activity, a lower rate than that reported in a study of U.S. teenagers (59%)[15]. Furthermore, as reported elsewhere[16], this figure declines considerably (to 14.8%) when more stringent criteria are used to define "involvement" in sports, such as weekly time spent on activities and duration of involvement. These rates, which are indicative of the high prevalence of insufficient physical activity in Brazilian youths, are consistent with the findings of a previous study conducted in the Southern region of the country[5] and highlight the magnitude of this issue among Brazilian adolescents.

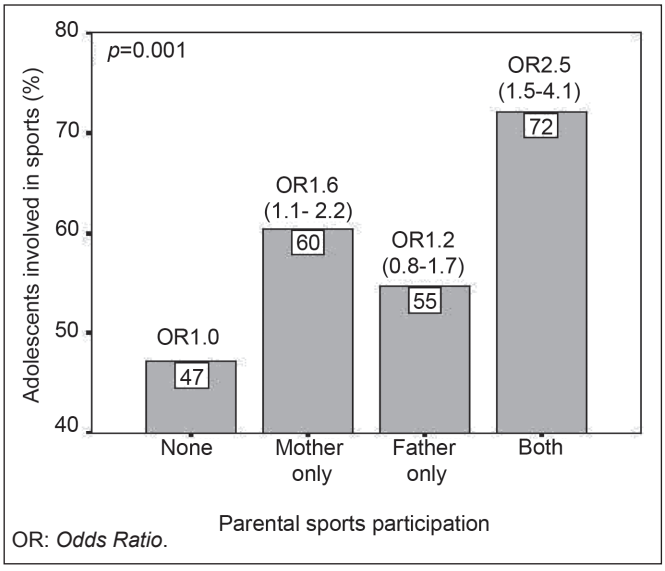

Figure 2 - Association between involvement in sports during adolescence and parental involvement in sports activities.

Male gender was associated with greater sports participation, corroborating the findings of previous studies conducted in Brazil and elsewhere[1,2,5,17]. In the Brazilian context, this higher involvement of male adolescents in sports activities may reflect the fact that males show a greater preference for popular team sports, such as soccer, whereas females tend to prefer physical activities not regarded as sports, such as dancing[8]. Furthermore, it has been shown that Brazilian families are more supportive of the sporting pursuits of male rather than female offspring[18]. These findings suggest that gender is a strong factor in sports participation, and that more

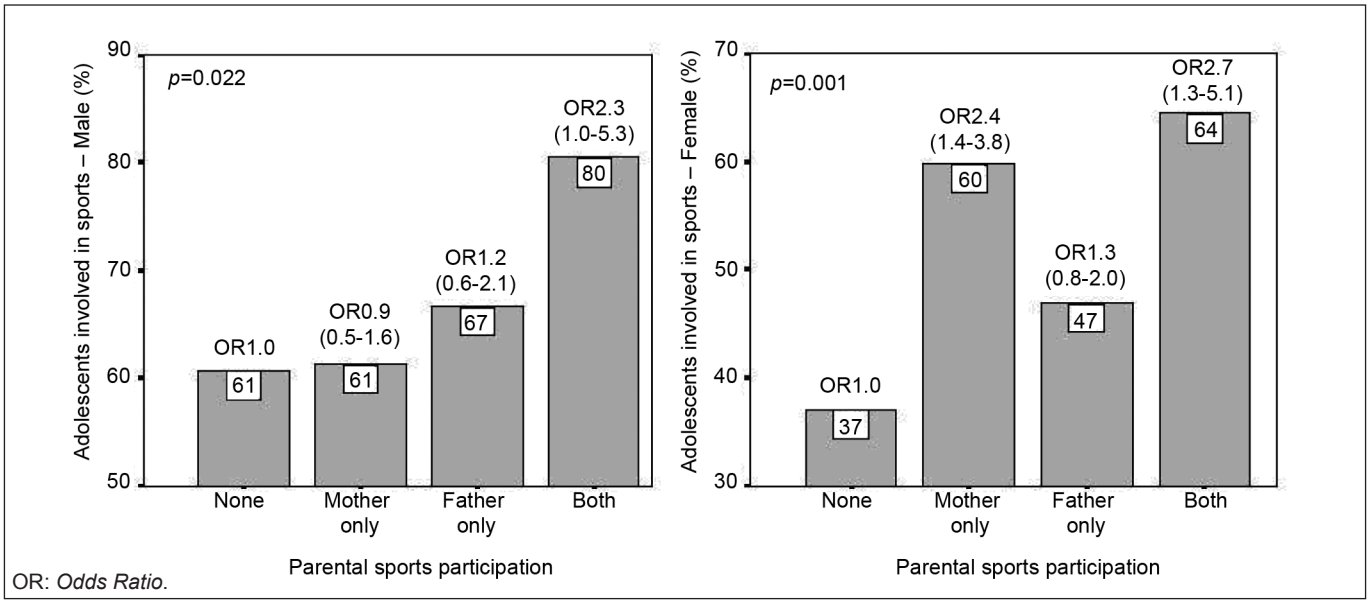

Figure 3 - Association between involvement in sports during adolescence and parental involvement in sports activities, adjusted for gender.

effective campaigns for promotion of such activities should take a gender-sensitive approach.

Involvement in sports was positively associated with better economic status and negatively associated with advancing age. Both findings are consistent with those reported by Bracco *et al*[19] in their study of 2519 children between the ages of 7 and 10. The latter study showed that, even among children, greater age is associated with lower involvement in sports and indicators of poor economic status are associated with higher rates of IPA. The effect of higher economic status on sports participation may be explained by various factors, including easier access to a broader range of activities due to greater access to sport supplies and easier access to sports facilities (such as athletic clubs and gyms) due to transport opportunities and even to more safe environments. These data highlight the fact that public policies seeking to promote sports involvement should take into account important structural issues inherent to Brazilian society, such as income distribution in target populations.

Furthermore, in the present study, involvement of both parents in sports substantially increased the odds of adolescents participating in sports activities. Indeed, the importance of the family environment to various physiological endpoints associated with child and adolescent health has been well documented in the literature[16,20]; however, little data is available for behavior-related endpoints, such as physical activity. Mendes *et al*[21] in a study of youths in Northeast Brazil, reported a significant association between parental and offspring involvement in physical activity, corroborating the results of the present study regarding sports participation.

A more in-depth analysis of the data presented herein suggests that maternal sports participation has a stronger effect than paternal involvement on all associations analyzed. This phenomenon has also been observed by several authors, in Brazil[10,22] and abroad[23], upon analysis of the associations between overweight in adolescents and in their parents; maternal weight issues have a significantly greater influence than paternal overweight. This greater maternal influence may be ascribed to the most common current family unit, in which, throughout most of the development stage, mother are the closest adult figures to their offspring and thus exert a profound influence on the formation and adoption of everyday habits.

Nevertheless, Azevedo *et al*[24] noted that risk factors for physical inactivity vary widely according to gender. This distinction may have a major influence on the process analyzed in the present study; however, further investigation of this effect in future studies is required. Parental influence on sports participation should thus be taken into account by campaigns seeking to promote physical activity.

Due to the cross-sectional design of this study, its main limitation lies in the inability to establish causal relationships among the variables of interest. Furthermore, the absence of quantitative information on sports participation (weekly time

spent on sports activities) should be viewed as a limitation, as there may be discrepancies in the time to which respondents considered "involved" in sports activities actually devoted to these activities.

In the present study, sports participation during adolescence was strongly associated with parental involvement in sports activities, although maternal involvement has a substantially greater influence on this process. Furthermore, gender was found to be a determinant of all associations, which suggests that programs seeking to promote involvement in physical activities among adolescents should take a gender-sensitive approach.

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