

Original Articles

Epidemiology of recreational football in Brazil: prevalence and association with risk factors for chronic diseases and self-rated health in adults

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Abstract: The aim of this study was to describe the social and health characteristics of adults who practice football for recreation in adult living in Brazil. This was a cross-sectional study using data from the VIGITEL Surveillance System. In 2006, 54,369 interviews were carried out with adults. Individuals were classified in three groups: inactive in leisure-time; recreational football participants: one/ two times per week or three or more times per week. We ran descriptive analysis and binary logistic models. Recreation footballers in Brazil are mostly young men of low schooling levels. The southeastern region had the greatest proportion of practitioners in Brazil. Most footballers practiced once or two times per week (75.9%), for 60 minutes or more per day (87.7%), and used public locations (94.2%). Football players had less obesity and poor self-rated health compared with inactive. Football practice seems to provide health and wellbeing benefits, independent of the weekly frequency.

Keywords: Epidemiology. Soccer. Recreation. Motor Activity.

Epidemiologia do futebol recreacional no Brasil: prevalência e associação com fatores de risco para doenças crônicas e relato de saúde em adultos

Resumo: O objetivo deste estudo foi descrever características sociais e de saúde de adultos praticantes de futebol no Brasil. Este foi um estudo transversal que usou dados do Sistema VIGITEL. Em 2006 foram realizadas 54.369 entrevistas. Os indivíduos foram classificados em três grupos: inativos no lazer; praticantes de futebol recreacional: uma/duas vezes por semana ou três ou mais vezes por semana. Foi realizada análise descritiva e modelos de regressão logística. Os praticantes de futebol eram predominantemente jovens e com baixos níveis de escolaridade. A região sudeste teve a maior proporção de praticantes. A maioria praticava uma ou duas vezes por semana (75,9%), por 60 minutos ou mais por dia (87,7%) e usava espaços públicos (94,2%). Os praticantes de futebol tiveram baixa prevalência de obesidade e relato de saúde ruim comparados com os inativos. A prática de futebol contribuiu para a saúde e bem-estar, independente da frequência semanal de prática.

Palavras-chave: Epidemiologia. Futebol. Recreação. Atividade Motora.

Introduction

Football is the most popular sport worldwide (DVORAK et al., 2000). For example, the final match of the 2010 World Cup in South Africa was watched by over 85% of Spain's and 90% of Holland's populations. Brazil is known as the "country of football" because of its millions of fans all over the country and of its positive results in the World Cup. Previous studies have shown that football is part of the culture in Brazil, and

contributes to leisure time entertainment, as well as to the creation of social networks (FRANZINI, 2005; SPAGGIARI, 2008). As a consequence, football is the sport most frequently practiced by children and adolescents (AZEVEDO et al., 2007; HALLAL et al., 2006).

Football is classified as a vigorous-intensity physical activity (AINSWORTH et al., 2000; SHEPHARD, 1999) and its regular practice is associated with a reduction in the risk of chronic diseases, such as hypertension and obesity, along

with improved physical fitness ([KRUSTRUP](#) et al., 2009) and better socialization and wellbeing ([SPAGGIARI](#), 2008). However, epidemiologic data on recreational football players are still limited, particularly in low and middle income countries such as Brazil. This aim of study was described social and health characteristics of practice football for recreation in Brazilian adults.

Methods

This was a cross-sectional study using data from the Surveillance System of Risk and Protective Factors for Chronic Diseases through Telephone Interviews (VIGITEL), implemented in 2006 by the Brazilian Ministry of Health. In 2006, 54,369 interviews were carried out with adults (≥ 18 years) living in households with a telephone line. The sample was randomly selected, using techniques described elsewhere ([MOURA](#) et al., 2008). The response rate of VIGITEL in 2006 was 71.1%. The refusals rate was 9.1%, and in 19.8% of houses it was not possible the phone contact or the person was not found.

The VIGITEL physical activity questionnaire evaluates the four main domains of physical activity (leisure-time, occupational, transportation and household) in all state capitals and the Federal District in Brazil ([FLORINDO](#) et al., 2009a). The questionnaire evaluated the practice of leisure-time physical activity with questions on weekly frequency and daily duration in the previous three months. The questionnaire was validated against 24 hours recall of physical activity, showing acceptable reliability and validity ([MONTEIRO](#) et al., 2008).

All estimates presented in this paper use the official weighting factors attributed to each person interviewed, by using the ratio of the number of adults by telephone lines in each household, the relative proportion of categories of sex, age and schooling, as compared to Census data. Details can be obtained in [Moura](#) et al. (2008).

For data analyses, individuals were divided into three main groups according to their football practice in leisure time and physical activity behavior: those reporting no involvement in leisure-time physical activity in the previous three months; those reporting recreational football

players one or two times per week for at least 30 minutes per day; those reporting recreational football players three or more times per week for at least 20 minutes per day.

Descriptive analyses were undertaken in relation to the participants' social, demographic, lifestyle and disease characteristics, such as sex, age (years), schooling level (years), skin color (white or nonwhite), marital status (with or without partner), region of Brazil where they lived (northern, southern, northeastern, southeastern or central-western region), types of location used for practice (public or private), obesity (body mass index ≥ 30.0 kg/m², based on self-reported weight and height), smoking (yes or no) and self-reported health status (very poor/poor or good/very good). Binary logistic regression models were run. The outcome variables were: 1) obesity; 2) smoking; 3) self-reported health status. The independent variable was practice of football using those inactive as the reference category. The confounding factors included in the model were sex, age, schooling, transportation, work-related and household physical activity and all others variables when were not dependent (obesity, smoking and self-reported health status). Analyses were run using SPSS version 15.0.

The VIGITEL system was approved by the National Ethical Committee for Research with Humans from the Ministry of Health (number 13081/2008).

Results

Most (96.9%) of the football participants were men, aged < 35 years (77.4%), with ≤ 8 years of schooling (54.5%). Most of them said that their skin color was nonwhite (69.3%), and were single (60.1%) (Table 1).

The southeastern region had the greatest proportion of practitioners of recreational football in Brazil (44.0%), followed by the northeastern region (25.2%). On the other hand, the southern region presented the smallest proportion of practitioners of this sport (8.6%). Among the practitioners of recreational football, most said that they practiced once or twice a week (75.9%), for 60 minutes or more per day (87.7%), in public locations (94.2%), among which squares and parks were the places most frequently used (66.1%) (Table 2).

Table 1. Sociodemographic characteristics of the whole sample and of recreational football players. Brazil, 2006.

	Whole sample		Football players	
	n	%	n	%
Sex				
Men	25064	46.1	5272	96.9
Women	29305	53.9	171	3.1
Age (years)				
18 - 24	11575	21.3	2358	43.3
25 - 34	13697	25.2	1854	34.1
35 - 44	11586	21.3	798	14.7
45 - 54	8002	14.7	319	5.9
55 - 64	4760	8.8	112	2.0
65 or +	4749	8.7	2	0
Schooling (years)				
0 - 8	28890	53.2	2963	54.4
9 - 11	16273	29.9	1838	33.8
12 or +	9206	16.9	642	11.8
Skin color*				
White	22069	40.7	1668	30.7
Nonwhite	32262	59.3	3775	69.3
Marital status				
Single	28613	52.6	3272	60.1
Married	25756	47.4	2171	39.9
Total	54.369	100	5.443	100

*38 missing

Table 2. Description of the proportion of the subjects who practiced football (n= 5.443).

Variables	n	%
Frequency of football practice*		
1 to 2 times/week	3763	75.9
3 to 4 times/week	784	15.8
5 or more times/week	413	8.3
Duration (minutes/day)*		
< 30 min/day	59	1.2
30-59 min/day	552	11.1
≥ 60 min/day	4349	87.7
Types of place for physical activity practice**		
Public	4037	90.2
Private	439	9.8
Region of Brazil		
Northern	648	11.9
Northeastern	1377	25.3
Central-western	557	10.2
Southeastern	2395	44.0
Southern	466	8.6
Places for practicing football***		
Clubs	153	3.4
Gyms	265	5.9
Parks/squares	2958	66.1
Schools	102	2.3
Others	999	22.3
Total	5443	100

*483 missing; **967 missing; ***966 missing

The prevalence of obesity was lower in player's football as compared to both inactive individuals. Also, the prevalence of smoking was lower those in the recreational football three or more times per

week as compared to inactive subjects. Finally, the prevalence of poor or very poor report of health was lower likely among those practicing football as compared to inactive individuals (Table 3).

Table 3. Prevalence of risk factors from chronic diseases and self-rated health among subjects with different football levels and inactive in leisure time. Brazil, 2006.

Risk factors for chronic diseases and self-rated health	Inactive in leisure-time	Football 1-2 times per week	Football 3 or + times per week
	% (95%CI)	% (95%CI)	% (95%CI)
Obesity	12.1 (12.7-13.5)	7.4 (6.5-8.2)	6.1 (4.8-7.7)
Smoking	18.4 (15.2-16.1)	20.0 (18.5-21.2)	17.7 (12.8-17.1)
Poor or very poor self-rated health	41.6 (41.3-42.4)	20.8 (18.9-21.6)	22.5 (20.7-25.8)

After adjustment, football players were less likely than inactive individuals to be obese and to report poor or very poor health. Those who reported playing football had a lower risk of obesity, smoking and poor/very poor self-rated health in comparison to inactive individuals (Table 4).

Table 4. Comparison (odds ratios - OR) of risk factors for chronic diseases and self-rated health among subjects with different physical activity levels. Brazil, 2006*.

	Obesity*#	Smoking*#	Poor self-rated health*#
	OR (95%CI)	OR (95%CI)	OR (95%CI)
Inactive in leisure-time	1	1	1
Football 1-2 times per week	0.86 (0.74-0.99)	0.83 (0.76-0.92)	0.59 (0.54-0.65)
Football 3 or + times per week	0.82 (0.63-0.97)	0.67 (0.56-0.80)	0.71 (0.61-0.82)

*Analysis adjusted for sex, age, education, transportation physical activity, occupational physical activity, household physical activity and all others variables when were not dependent (obesity, smoking, self-reported health status); #p-value of model <0.001

Discussion

This study showed that individuals practicing football in Brazil were predominantly young men, with low education; most of them practice the sport in public places. Football players, especially those playing football three or more times per week, were less obese and smokers and to report less poor or very poor health, in comparison with inactive individuals.

Football is the most popular sport in the world (Dvorak et al., 2000; Shephard, 1999) and Brazil is the considered the country of football, because this sport has close relationships with social and cultural aspects of the Brazilian population (Franzini, 2005). This is also true in other countries (Foer, 2004). The high media coverage of football, including national teams, but also clubs, contributes to the increasing number of recreational football players (Damo, 2001).

Our study showed that recreational football was the second most commonly practiced physical activity among Brazilian adults, particularly among younger men (< 35 years of

age) and among those with lower schooling levels (≤ 8 years of schooling). The fact that females were forbidden to practice some sports with physical contact until 60 years ago in Brazil. Perhaps of greater importance, female football practice in Brazil was rare until the 70's, based on the assumption that it could conflicted with ideals of femininity (Franzini, 2005; Goellner, 2005). Although absolute numbers are still much lower among women as compared to men, it is reassuring that female involvement in football has grown systematically over the last years in Brazil (Da Costa, 2005; Goellner, 2005).

The public places are very important for practice of leisure physical activities in Brazil (Florindo et al., 2009a) and in region low socioeconomic level (Florindo et al., 2011). The specific places for practice of football are relationship with other types of physical activities as transportation physical activities in men (Salvador et al., 2009), because the men, for example, walk more for this places.

The biological benefits of practicing football have been shown in both experimental and

observational studies ([KRUSTRUP](#) et al., 2009; [TAIOLI](#), 2007).

[Taioli](#) (2007) analyzed the standardized mortality ratio in 5,389 Italian football former-athletes and showed that cancer mortality and cardiovascular disease mortality were lower in athletes in comparison to the general population. The mortality rate for cancer in athletes was 11.59 x 100.000 (compared with mortality rate for cancer of the 35.90 x 100.000 in general population) and the mortality rate for diseases of the circulatory system was 10.80 x 100.000 (compared with mortality rate for cancer of the 27.11 x 100.000 in general population).

An experimental study from [Krustrup](#) et al. (2009) compared recreation football players with runners and a control group. There were significant decreases in blood pressure for both groups, but football participants had the largest decreases in fat mass and low density lipoprotein. This is in accordance with our findings showing that recreational football players had a lower prevalence of obesity than those inactive individuals.

Due to the cross-sectional nature of our survey, it is not possible to rule out the possibility of reverse causality, whereby healthier individuals might be more likely to practice recreational football. In spite of that, the prevalence of obesity in football players was smaller than the inactive independent of weekly frequency. The discussion about weekly frequency is important in the field ([LEE](#) et al., 2004), but we showed benefits of physical activity practice regardless of the weekly frequency. In the US, a study including 8,421 people during 10 years showed that 'weekend warriors' (energy expenditure of at least 1,000 kilocalories a week in activities such as walking, stair climbing and physical exercises and sports only twice a week), had similar benefits in terms of all cause mortality compared to those practicing physical activity on more than two days. This is in accordance with our findings and suggests that the intermittent metabolic energy expenditure related to football practice is beneficial for health ([SHEPHARD](#), 1999).

Smoking was the only risk factor that all groups of physical activity participants demonstrated lower levels of than those inactive. Previous studies have shown that leisure time physical activity is inversely associated with smoking ([DIAS-DA-COSTA](#) et al., 2005; [FLORINDO](#) et al.,

2009b; [ZAITUNE](#) et al., 2007). Our result adds to current knowledge by showing this also extends to football participants.

Football players in our sample also presented better self-rated health in comparison with inactive individuals. A study in Brazil showed that the practice of physical activities in leisure one or two times per week has enjoyment as the main objective ([MONTEIRO](#) et al., 2003). This result is very important for both groups of the football players, because self-rated health is associated with quality of life, well-being ([MALMBERG](#) et al., 2005). This finding is also analogous to the well-known association between physical activity and self-reported health ([BARROS](#) & NAHAS, 2001; [BARROS](#) et al., 2009; [FLORINDO](#) et al., 2009b; [MALMBERG](#) et al., 2005; [MUKAMAL](#), 2006).

Besides, a qualitative study in a small city in the São Paulo State showed that recreational football practice in men contributes to the creation of social networks and increases social support ([SPAGGIARI](#), 2008), and supports the notion that football may contribute to better health through psycho-social as well as physiological pathways. Football may be particularly good in this respect as it involves moderate-sized teams who share the experience of training and matches.

Some limitations of this study should be highlighted. First, the results showed associations between some risk factors for chronic diseases and football practice, but not cause-effect relationships, because of its cross-sectional design. Also, due to the low number of women who reported practicing football, care should be exercised before extrapolating our findings to women.

In summary, recreation football players in Brazil are mostly young men of low schooling levels and practicing football in public places. Football practice was associated with reduced prevalence of obesity, smoking and poor self-rated health in Brazilian adults, independent of the weekly frequency. Therefore, football practice seems to provide health and well-being benefits. Since football is a popular sport all over the world, its promotion may have significant impacts on public health, mainly in countries as Brazil.

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