Dietetic profile, nutritional status and prevalence of central obesity in recreative soccer practitioners

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ABSTRACT

The aim of the study was to evaluate the diet profile, nutritional status and centralized obesity (CO) prevalence in recreative soccer practitioners. **Methods:** Sample: 40 male individuals (38.6 ± 7.4 years). To evaluate the habitual consumption (HC) it was used a quantitative of meal frequency. The nutritional status was evaluated by the Body Mass Index (BMI). The CO was defined as waist circumference (WCIRC) above 102 cm. **Results:** There was a predominance of "B" social class individuals (80.0%), white ones (67.5%), married (62.5%) and public workers (52.5%). The average showed: body mass of 77.2 ± 11.8 kg, as high as 1.71 ± 0.1 m, BMI 26.4 ± 3.1 kg/m^2 and WCIRC 92.3 ± 8.8 cm, HC 2623.2 ± 438.5 kcal and the nutrients proportions was 48.2 ± 5.7% carbohydrates, 17.6 ± 2.4% proteins, 34.9 ± 4.2% total fat, 568.2 ± 112.7 mg cholesterol and 20.2 ± 6.1 g diet fibers. In relation to nutritional status, 35.0% are eutrophic, 52.5% present overweight and 12.5% present obesity. In relation to the obesity pattern, 12.5% present centralized fat. Among the correlations it was observed a strong association between WCIRC x IMC (r = 0.91) and WCIRC x body mass (r = 0,88). **Conclusion:** The soccer practitioners must be orientated over the nutritional adequation importance to life quality and sports practice, fact that is related to nutrients proportions that showed carbohydrates uptake reduction and high cholesterol and proteins uptake. The nutritional status showed values prevalence of overweight and obesity. The OC showed evident, that is dangerous because of the association of this obesity pattern with various chronic diseases that aren't transmissible.

INTRODUCTION

Health is understood in the modern world not only as the state of 'lack of diseases', but in a more holistic perspective, it is considered as a human condition with physical, social and psychological dimensions, continuously characterized with positive and negative poles. The behaviors related to health are in the positive pole, and the risk behaviors and death are related to the negative pole[1]. Due to technological advances, people in general have become more sedentary and taken many factors related to a better health conditioning for granted. In Brazil, the demographic, socioeconomic and epidemiologic changes over the time allowed that the called transition in the nutritional patterns, with the progressive decrease of malnutrition and the increase of overweight and obesity, occurred[2].

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This fact has become one of the biggest health problems of the contemporary societies, since the fat excess is related to development of many diseases, especially through their rapid and progressive movement with no distinction of race, sex, age or social status. Considering the OPAS information[3], the obesity has tremendously grown in many industrialized and in development countries, which has made the fat control one of the main concerns of collective health. Therefore, obesity has increasingly called the attention of the scientific community due to its severe, multi-characterized and genetically complex diseased nature[4].

The fat deposition in the abdominal region characterizes the centralized obesity, which has been considered as a severe cardiovascular risk factor. Several studies[5-6] in a series of European countries have pointed that the increase of the abdominal obesity has been higher than the expected secular increases of the body weight indexes[7]. Therefore, this obesity pattern plays an essential role in the development of multiple metabolic disturbs, including dyslipidemias[8], insulin resistance[9], type 2 diabetes[10] and metabolic syndrome[11], all factors leading to the development of cardiovascular diseases. According to data obtained in the National Health Research and Nutrition Examination[12], 86,0% of the individuals with abdominal obesity will probably have at least another cardiovascular risk factor. In this context, recognition of the advantages of good eating habits and regular practice of physical activity, has called huge attention from many specialists. Nowadays, a sports practice with high popular appeal is soccer. Several relevant socio-cultural dimensions constitute its practice, one of the most spreading related to this sport being popular, with principles such as the use of spare time and lucidity, as well as to provide well-being and leisure to its practitioners. The majority of its practitioners do so only for leisure and socializing features. These amateur soccer players present characteristics of sedentarism, especially due to their lack of ambition to become athletes. Considering the globalization of the nutritional disturbs and the increase of the centralized obesity, the aim of this study was to evaluate the diet profile, nutritional status and centralized obesity prevalence in recreational soccer practitioners.

METHODS

The studied population consisted of employees and visitors of the Centro Federal de Educação Tecnológica da Paraíba (CEFET) sports field. The sample involved 40 amateur soccer practitioners, aged between 26 and 57 years. The individuals were selected through the probability method from the registration list in the Institution. The calculations proposed by Richardson *et al.*[13] were applied for the sample size. In order to better characterize the participants, socio-demographic information relative to the social status, ethnicity, marital status and professional profile was collected, using the criteria proposed by the National Association of Research Enterprises[14]. For this reason, a previously tested structured questionnaire with closed questions was used. Diet Profile:

for the evaluation of the routine diet consumption a Quantitative Questionnaire of Eating Frequency (QQEF), following the mentioned structure by Viebig and Valero[15]. This method consists of food (soups and pasta, meats and fish, legumes and eggs, rice and tubers, milk and dairy products, breakfast cereals, vegetables and sauces), where the subject answers considering the number of times he ingests the food, the time unit (per day, week, month and year) and the size portion (small, medium, large and extra large). The estimated analysis of this instrument was processed in the DyetSys software, version 4.01. Anthropometrical indicators: for the body weight measurement (MC) and the height (EST), a digital Camry scale (capacity of 150 kg and division in 100 g) and portable Sanny stadiometers were used (200 cm). For the nutritional state evaluation the Body Mass Index was used (BMI), calculated from the division of the MC by the EST (in meters) to the square. For the BMI classification, the slice points proposed by the World Health Organization were followed[16], where: BMI lower than 18,5 kg/m^2 represents "low weight"; BMI between 18,5 and 24,9 kg/m^2 "eutrophic state; BMI between 24,9 kg/m^2 and 29,9 kg/m^2 "overweight"; and BMI higher than 30,0 kg/m^2 "obesity". For the centralized obesity analysis the abdominal circumference was measured (CIRCAB) in centimeters with a non-elastic measuring tape, Sanny model (resolution of 150 cm), in the average point between the iliac crest and the outer side of the last rib. The abdominal obesity was considered for values higher than 102 cm, according to the International Norms of the WHO[17]. The data collection procedures began with the contact, followed by authorization of the directors of the CEFET for the study conduction in the Institute's installations. Later, the selected individuals for the study were informed about the procedures, possible discomfort, risks and benefits of the study, prior to the free and clarified consent form signature. This form was according to the regulations for Research in Humans and followed criteria of the Research Ethics in Health according to the 196 Resolution of the Health National Committee from 1996[18]. Afterwards, an anthropometrical test was conducted and the socio-demographic and diet evaluation questionnaires were answered. The evaluations were conducted by the same trained researcher and collaborators, through the same validated and calibrated instruments. The data analysis processed percentage, average, minimum, maximum and standard deviation values and pair correlation of variables through the *Pearson* "r" test, being *t*he SPSS software version 13.0 used The $p < 0,05$ value was chosen for the rejection level of the null hypothesis.

RESULTS

Table 1 describes the socio-demographic characteristics of the studied soccer practitioners. Predominance of social class "B", white, married and public servant individuals was observed.

Table 2 presents the distribution of the average, standard deviation (DP), minimum and maximum values of the anthropometrical test and food consumption. The soccer practitioners presented average BMI higher than the classificatory levels of eutrophic case (between 18,5 and 24,9 kg/m^2). Concerning the waist measure, average lower than the risk factors was verified (higher than 102 cm).

Table 3 shows the relative distribution of the nutritional state, there was no low weight among the studied subjects. High prevalence of overweight is observed (52,5%) and obesity (12,5%). Concerning the obesity pattern, 12,5% presented centralized fat (android).

Strong association between CIRCAB and BMI (r = 0,91, p = 0,000) and CIRCAB and body mass (r = 0,88, p = 0,000) was observed between the correlations (table 4). There was evidence of positive relations between CIRCAB and diet indexes of low power, though (r lower than 0,50). Inverse action between CIRCAB and fibers consumption was verified.

TABLE 1
Socio-demographic variables of the recreational soccer practitioners (n = 40)

Socio-demographic aspects	Sample	
	n	%
Social class		
A1	–	–
A2	–	–
B1	10	25,0
B2	22	55,0
C	8	20,0
Ethnicity		
White	27	67,5
African American	1	2,5
Mixed	11	27,5
Asian	1	2,5
Marital status		
Married	25	62,5
Single	10	25,0
Co-habitant	5	12,5
Professional profile		
Self-employed	9	22,5
Seller	8	20,0
Public servant	21	52,5
Enterpreneur	1	2,5
Retired	1	2,5

TABLE 2
Anthropometrical and cholesterol variables
of the recreational soccer practitioners (n = 40)

	Average	DP	Minimum	Maximum
Age	38,6	7,4	26	57
Weight	77,2	11,8	48,8	106,6
Height	1,71	0,1	1,52	1,85
BMI	26,4	3,1	18,8	31,6
CIRCAB	92,3	8,8	66,5	113,5
Usual intake	2.623,2	438,5	1.714,0	3.988,0
Carbohydrates	48,2	5,7	39,3	63,8
Proteins	17,6	2,4	13,3	22,0
Total fat	34,9	4,2	23,7	45,0
Cholesterol	568,2	192,7	201,1	967,0
Diet fibers	20,2	6,1	11,4	37,3

TABLE 3
Nutritional status and obesity pattern
of the recreational soccer practitioners

Classification	Prevalence	
	n	%
Nutritional status		
Low weight	–	–
Eutrophic case	14	35,0
Overweight	21	52,5
Obesity	5	12,5
Total	40	100,0
Obesity pattern		
General	21	87,5
Android (centralized)	5	12,5
Total	26	100,0

DISCUSSION

According to data published in the Sports Atlas of Brazil, during 2003 approximately 30 million Brazilians practiced soccer as leisure[19]. Therefore, confirming the quantitative phenomenon of this sport, countless issues related to its improvement and better quality are raised. Concerning the diet aspects, some research has been

TABLE 4
Association between abdominal circumference and anthropometrical and diet variables of the recreational soccer practitioners

	CIRCAB	
	"r"	p
Weight	0,88	0,000[a]
Height	0,31	0,048[a]
BMI	0,91	0,000[a]
Usual intake	0,39	0,014[a]
Carbohydrates	0,25	0,125
Proteins	0,12	0,940
Total fat	0,33	0,038[a]
Cholesterol	0,26	0,103
Diet fibers	–0,14	0,386

[a] p < 0,05 (significant).

conducted with the aim to investigate possible relations between food and diet nutrients with the nutritional status of the population[15]. Thus, in order to better investigate these associations, it is crucial to study the usual diet which characterizes the food ingestion during a long period of time[20-21]. The Dietary Reference Intakes (DRI's) for adults was chosen to analyze the diet consumption proportions[22]. The usual energetic consumption in this study showed average lower than other publications with soccer players presented by Guerra[23], which varies between 3.341 and 3.969 kcal. The carbohydrates intake was below the recommendations for physical activity practitioners. For sports practitioners, a diet poor in carbohydrates compromises exercise tolerance, as well as the ability to adapt to long term physical training[24]. The protein intake showed values higher than the DRI's. Such intake results in the increase of the amino acids oxidation, decreasing its retention, in the place of the fat oxidation. In the fat consumption of the studied players, ingestion of 34,9% of the usual energetic value was observed. These indexes are within the recommendations for a healthy diet; however, they are higher than the relative values set for physical activities practitioners. Almeida and Soares[25] in a recent publication mention that the fat consumption in the diet should not be higher than 30,0% of the total energetic value, once the fat contribution for the physical activity's performance is only as back up energy. The fat excess in the diet will possibly contribute to the excessive ingestion of energy (calories)[26] and therefore, in the obesity development[27], justifying the general recommendations for the majority of people to reduce the total fat intake. Such situation is an alert, since it exposes the individuals to overweight and obesity. The cholesterol consumption also presented high averages, higher than the diet recommendations, and the fibers consumption was below the recommended minimum, showing a negative correlation with the abdominal obesity. This profile is a concern, once the high cholesterol ingestion and reduced fibers intake are associated with a higher occurrence of non-transmissible chronic diseases, such as intestinal disturbances, cancer, diabetes and hypertension[28]. The nutritional status of the individuals in this study points to a nutritional imbalance condition, which is related to the high prevalence of overweight, (52,5%) and obesity (12,5%) found in the soccer practitioners. The frequency of overweight found in the sample is higher than in other epidemiological studies published in Brazil[29]. Lollio and Latorre[30] found 26,9% of overweight in adult men. Gigante et al.[31] found 21,0% of obesity and approximately 40,0% of overweight. Ell, Camacho and Chor[32] published values of 27,8% of overweight and 6,4% of obesity in male individuals. In the U.S.A. the prevalence of obesity in men is of 27,5%[33], in Brazil, according to the national query data from 1997[29], the prevalence is around 12,4% for women and 7,0% for men. Some authors[2,29] report that the growing increase of overweight and obesity is due to the nutritional transition in which not only the developed countries, but also the in development countries are

involved, and that such nutritional condition is a concern, since it associates with the occurrence of the systemic arterial hypertension, insulin resistance and metabolic syndrome. Concerning the obesity pattern, perimetrical values of the CIRCAB higher than 102 cm were chosen as android or centralized obesity. This anthropometrical indicator has been used for abdominal fat distribution in many nutrition epidemiological clinical essays and research[34-35]. The correlations between abdominal fat showed evidence of positive relations with the anthropometry, presenting stronger associations with the BMI and body mass. Zamboni et al.[36] in a study with adults and elderly individuals found correlation between CIRCAB and BMI similar to the ones found in this study. Sampaio and Figueiredo[37] published correlational values of r = 0,93 between CIRCAB and BMI. Other research involving adult men conducted by Armellini et al.[38] and Richelsen and Pederson[39], found associations between CIRCAB and BMI that varied from r = 0,76 to r = 0,94, showing excellent statistical relation between these variables. The diet indexes, except for fibers, showed positive correlation, low with the abdominal fat, though. Such fact can be possibly attributed to the differences of the evaluation method of the food consumption, which in our sample depended on the individual report, as well as in the small size of the sample which constituted one of the limitations of the present study.

CONCLUSION

Amateur soccer players should be advised on the importance of the nutritional adaptability for the life quality and sports performance concerning the diet profile. Such fact is related to the nutrients proportions found in this study that showed evidence of low ingestion of carbohydrates and high ingestion of proteins and cholesterol. The nutritional status showed prevalence of overweight and obesity values. The centralized obesity was evident in the soccer players investigated, which is a concern due to this obesity pattern association with many non-transmissible chronic diseases. Finally, this study suggests that the participation in games practice should concomitantly associate with nutritional orientation, in order to improve eating habits, following balanced nutrients proportions, adjusted to the nutritional condition of each individual. We strongly believe that this behavior will promote improvement in life quality.

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