28 - MORPHOLOGICAL PROFILE CURITIBA SOCCER REFEREES

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INTRODUCTION

Soccer, one of the most popular sports in the world, has as its main competition at the World Cup and the Olympic games. We can not talk about football without talking about the referee, who is a essential person to bring soccer match. For the referee has a good performance is necessary as it is fit to follow the moves of the game and correctly apply the rules of the game.

Physical activities can be characterized in many ways depending on the type, intensity and purpose. Thus, the physical activities are classified as occupational, transportation, home and leisure activities (USDHHS, 1996, Rodriguez-AÑEZ, 2003). In the case of football, the role requires high levels of metabolic demand in order to support the time and intensity of the game, making it necessary to elaborate adequate levels of physical fitness. During a soccer match the referee and assistant referee has a mean energy expenditure of 740.42 and 494.64 kcal(Da Silva and Rodriguez-AÑEZ, 2001), respectively.

The less fitness can cause confusion at the time of decision making while performing strenuous exercise, and therefore, undermine their ability to judge people in this situation (Da Silva, 2005). In addition to metabolic, physical fitness depends on body composition appropriate for overweight or obesity limits the movements also play an overload for the locomotor's system (RODRIGUEZ-AÑEZ; PETROSKI, 2002).

The human body has several types of measures, such as linear measures, which are represented by length, area measures, such as body surface area, and volume measurements, such as lung capacity. There is proportionality among many body measurements that change depending on the state of growth, development and also are influenced by gender. However, a combination of measures such as weight and height, have range to check the state of undernourishment, normal, overweight or obesity of an individual (DE ROSE et al. 1984; RICARDO ARAÚJO, 2002).

Body Mass Index (BMI) is a strategy proposed in nineteenth century by Quetélet, which relates mathematically, weight and height of an individual. Waist Girth Hips (WGH) is strongly associated with visceral fat and seems to be an acceptable index of abdominal fat that has been used to classify individuals into categories of risk to health due to excessive central fat. However, waist girth (WG) alone may be the best predictor of visceral fat, because the waist is sensitive to the accumulation of both superficial fat and the intra-abdominal fat, whereas hip circumference is only sensitive to the accumulation of subcutaneous fat (HEYWARD, STOLARCZYK, 2000). The American College of Sports Medicine (ACSM, 2003) suggests a cut-off point for the WG 102 and 88 cm for males and females, respectively. This point is read in conjunction with BMI to classify individuals into four categories, including: increased risk, high, very high and extremely high.

Many authors and international organizations have attempted to establish normal ranges for BMI in order to establish undernourishment, overweight or obesity (Seidell, 2000; ACSM, 2000, USDHHS, 1996). The ACSM in its latest manual published in 2003 suggested the following values for the classification of BMI (Table 1) and to stratify the risk of disease by waist girth(ACSM, 2003).

Table 1. Disease risk classification based on BMI and waist girth for men.

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	IMC	Waist ≤ 102 cm	Waist > 102
Undernourishment	< 18,5		
Normal	18,5 – 24,9		
Overweight	25,0 – 29,9	Increased	High
Obesity I	30,0 – 34,9	High	Very high
Obesity II	35,0 – 39,9	Very high	Very High
Obesity III	40,0 - >	Extremely High	Extremely High

Source: Adapted from ACSM (2003)

Many few studies involving the football referee present data on BMI and its relationship with waist girth. Research on this group can provide information to better understand the anthropometric profile of this category of professional, serving as reference for future soccer referees wishing to operate within the larger entity of the Brazilian soccer Brazilian Football Confederation (CBF). Thus, it becomes evident the need to invest in studies that address the physical profile of soccer referees. Therefore, the objective of this study was to determine the proportion of soccer referees that meet the patterns for using health as an indicator of BMI and waist girth.

MATERIALS AND METHODS

Procedures adopted, are in according with Resolution No. 196, 10 OCTOBER 1996 of the National Health Council, which deals with procedures for research involving human subjects. The project was approved by the Ethics Committee of the Ponta Grossa State University - UEPG (Opinion 43/2008, Protocol 09322/2008). All subjects had to sign an informed consent form indicating their willingness for the study.

The sample consisted of 88 male referee's by Parana Soccer Federation, assessed in Curitiba, Paraná. The measurement of body mass and height was made following the recommendations of ALVAREZ and PAVAN (2003) and waist girth as Martins and Lopes (2003). Body mass was recorded using a digital scale was utilized with accuracy of 100g and height measured by stadiometer with a measurement scale of 0.1 cm. The body mass index was calculated by dividing weight (kg) by height (m) squared.

Statistical analysis was initially used descriptive statistics to group results in mean and standard deviation. Due to the small number of individuals in the groups studied, we adopted a logarithmic conversion to non-standard variables according to

the Gaussian curve in order to use parametric statistical parameters. By applying the test-t, data were considered to statistically significant when the probability of occurrence of the null hypothesis is less than 0.05.

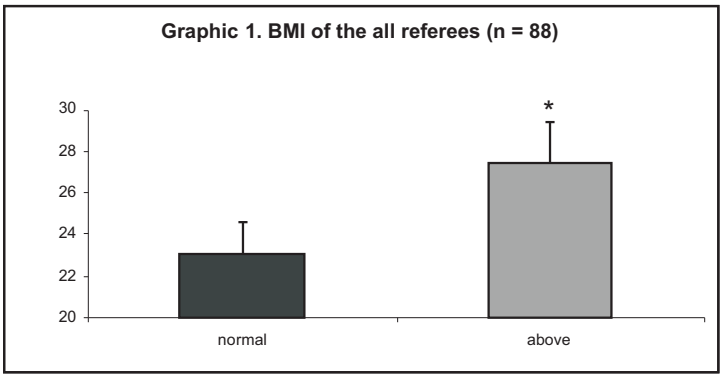
RESULTS AND DISCUSSION

The average BMI of the referees assessed (Table 2), this normal, however, only 55% of the referees are with BMI values considered normal (mean 23,0 1,6 kg/m2), in other words, 49 referees, while 45% have values equal or above than 25 kg/m2 (mean 23.0 1.9 kg/m2), its means 39 referees. Statistical analysis in the referees with a BMI above normal showed no significant difference between these groups p = 0.0001 (Figure 1). The waist girth average was 87,0 8,0 cm. referees had values above 102 cm, ie, they presented a high risk for developing degenerative disease, the association of BMI and the accumulation of fat in the central region of the body (waist), according to the procedure proposed by ACSM (2003), because their BMI was also greater than 25 kg/m2 (Table 2). Although, two referees showed values over 102 cm, in other words, consider with high risk by development of degenerative diseases, obtained by association between BMI and of central body fat (waist girth), according to the procedure proposed by the ACSM (2003), because their BMI was also greater than 25 kg/m2 (Table 2).

Table 2. Descriptive characteristics of the FPF soccer referees

	Peso	Altura	IMC kg/m^2	Cintura
Minor	52,2	163,0	16,8	66,0
Large	118,3	198,0	33,8	109,0
Average	79,9	178,7	24,9	87,0
Standard Error	11,0	6,4	2,8	8,0

The waist and height values showed in cm.



The crossing of the mean value of 27.4 kg/m2 made by the referees who have BMI above normal, with the average waist girth (Table 2), indicates increased risk to health, since all had values of waist girth below 102 cm. Thus, it is characterized only as excess weight without an increased risk to health (Table 2).

In a study conducted Parana, in 2004, involving 220 officials (Da Silva, 2006) describe a mean BMI 24,87 2,86 kg/m2 (n=220), noting also that only 54 % of referees are with BMI values considered normal (average 22,80 1,59 kg/m2), while 46% have values equal to or greater than 25 kg/m2 (mean 27,29 1,87 kg/m2). In the same study, it was found that body fat to corroborate with the referees were on average 18,56 4,29% the body mass index close to or above the normal range (25 kg/m2) found in that study. The body fat percentage of the referees was above the average for men in the South of Brazil (16.14%), this region where it was developed this work (and PETROSKI PIRES-NETO, 1996).

In the case of soccer referees, the role requires high levels of metabolic demand in order to support the time and intensity of the game, making it necessary to elaborate adequate levels of physical fitness. According to Da Silva et al. (2008) caloric expenditure of the referees in the course of the game is similar to a football player, reaching motor perform actions that correspond to an intensity equivalent to 18.4 METs. According to reports in the scientific literature soccer referee cover distances between 9 and 12 km in the course of the game (Da Silva and Rodriguez-AÑEZ, 1999; KRUSTRUP and Bangsbo, 2001; CASTAGNA et. Al., 2004) and that the covered of soccer players during the game, particularly the midfielder, is also from 9 to 12 km during a match (Bangsbo et. al. 1991; RIENZI et. al. 1998; MOHR et. al. 2003). This similarity between the total covered of the referees and players reinforces the idea that soccer referees should realizing more professionally and specific physical trainings (WESTON et. Al., 2004, Da Silva, 2005).

Federations and Mainly the Brazilian Football Confederation should take responsibility for the constant improvement of soccer this is mainly because of its fitness. The soccer referee is only called a professional referee, but in reality has characteristics that fall below an amateur category, if we take as a reference many athletes of amateur soccer. The Referees Committee, to escape the responsibility of a professional referees are now demanding from their referees, they have a steady job, or that do not require refereeing of football. Therefore, the referee is a person with refereeing as a second job, who as diagnosed by several studies does not prepare adequately for driving a sport with so much physical strength, and when a referee evil acts, they committees often without patterns, depart or to leave them because they do not lose anything with this suspension, because they are suspending a "professional" who never invested anything.

The present data support the assertion that not only provides just over a physical training program for soccer referees at the moment they are also in need of nutritional guidelines, because a large number of these workers are overweight.

CONCLUSION

Data analysis support the conclusion that in general the referees by Paranaense Soccer Federation have a body composition above what is expected of a person who is involved in a sport of such a high level of fitness, and referee the one subject that can interfere directly in the outcome of the match. The scientific study involving soccer referees are very recent as shown by the citations of this literary work. However, all are aimed at improving the physical capabilities of the referee during the game, to provide information, discuss training proposals or diagnose your level of fitness and body composition.

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ABSTRACT

The aim of this study was to analyze the BMI and the waist girth as overweight indicators of risk for the development of diseases related to the excess of central body fat in soccer referees from the Paraná Soccer Federation (FPF). Sample was composed by 88 male referees. Weight, Height and waist girth were measured. BMI mean was 24,92,8 kg/m2, considered normal by health standards. However, just 55% of the referees showed values inside in health standards. There is a statistical significance between groups normal and over BMI standards (p<0,0001). Waist girth mean was 87,0 8,0 cm. Although, two referees showed values over 102 cm, in other words, consider with high risk by development of degenerative diseases, obtained by association between BMI and of central body fat (waist girth).

KEY WORDS: referee, soccer, anthropometry

PROFIL D'ÉTUDE MORPHOLOGIQUE DES ARBITRES DE FOOTBALL À CURITIBA

RÉSUMÉ

Cette étude visait à examiner l'indice de masse corporelle (IMC), le tour de taille comme indicateurs de la surcharge pondérale et le risque de maladie associée à l'excès de graisse abdominale, parmi les arbitres de football de la Fédération Paranaense de football (FPF). L'échantillon se composait de 88 arbitres, tous du sexe masculin. On a mesuré le poids corporel, la taille et le tour de taille. L'IMC moyen des arbitres évalués était de 24,9 ± 2,8 kg/m2, une valeur considérée comme normale. Toutefois, une analyse plus détaillée des données a demontré que seulement 55% des arbitres ont à l'IMC des valeurs considérées comme normales. En revanche, l'analyse statistique des arbitres ayant un IMC normal et supérieur à la normale a montré une différence significative entre ces groupes (p <0,0001). Le tour de taille moyenne était de 87,0 ± 8,0 cm. Toutefois,

deux arbitres ont présenté des valeurs supérieures à 102 cm, c'est à dire, ils ont un risque élevé de développer une maladie dégénérative, avec l'association de l'IMC et l'accumulation de graisse abdominale (taille).

MOTS CLÉS: Arbitre, football, l'anthropométrie.

PERFIL MORFOLOGICO DEL ÁRBITRO DE FÚTBOL DE CURITIBA

RESUMEN

Este estudio tuvo como objetivo examinar el índice de masa corporal (IMC) y circunferencia de la cintura como indicadores de sobrepeso y el riesgo de enfermedades asociadas con el exceso de grasa central, en árbitros de fútbol de la Federación Paranaense de Fútbol (FPF). La muestra consistió de 88 profesionales, todos hombres. Se midió peso, talla y circunferencia de la cintura. El valor promedio del IMC fue de 24,92,8 kg/m2, un valor considerado dentro de la normalidad. Sin embargo, un análisis más detallado de los datos reveló que sólo el 55% de los árbitros con valores de IMC se considera normal, y el análisis estadístico de los árbitros con un IMC superior a lo normal mostraron haber una diferencia significativa entre estos grupos (p<0,0001). La circunferencia promedia de la cintura fue de 87,0 8,0 cm. Sin embargo, dos árbitros tuvieron el valores de la cintura por encima de 102 cm, es decir, que presentan un alto riesgo de desarrollar enfermedades degenerativas, con la asociación del IMC y la acumulaciónde grasa en la región central del cuerpo (cintura).

PALABRAS CLAVE: árbitro, fútbol, antropometría.

PERFIL MORFOLOGICO DE ÁRBITRO DE FUTEBOL DE CURITIBA

RESUMO

Objetivo deste estudo foi analisar o índice de massa corporal (IMC) e o perímetro da cintura, como indicadores de sobrepeso e de risco para doença associada ao excesso de gordura central, dos árbitros de futebol da Federação Paranaense de Futebol (FPF). A amostra foi constituída por 88 árbitros, todos do sexo masculino. Foram mensurados, o peso corporal, a estatura e o perímetro da cintura. O valor médio do IMC dos árbitros avaliados foi de 24,92,8 kg/m2, valor este considerado dentro da normalidade. Contudo, uma análise mais detalhada dos dados comprovou que apenas 55% dos árbitros se encontram com valores de IMC considerados dentro da normalidade, sendo que, a análise estatística entre os árbitros com IMC normal e acima mostrou haver uma diferença significativa entre estes dos grupos (p<0,0001). O valor médio do perímetro da cintura foi de 87,0 8,0 cm. Contudo dois árbitros apresentaram valores acima de 102 cm, ou seja, apresentaram risco alto para o desenvolvimento de alguma doença degenerativa, pela associação do IMC e pelo acúmulo de gordura na região central do corpo (perímetro da cintura).

PALAVRAS-CHAVE: árbitro, futebol, antropometria.

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