189 - THE EFFECTS OF THE COMPETITIVE PERIOD IN THE BODY COMPOSITION OF HIGH-LEVEL FUTSAL ATHLETES

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Introduction

Futsal is today considered one of the three most popular sports in Brazil. In recent years, it has won a prominent place among the court sports, and has been practiced by millions of people in all continents, both as a form of recreation, as in the form of competitive sports. Its popularization is becoming increasingly competitive, so there is a growing interest of the international scientific community in furthering the knowledge of this sport, in an attempt to improve the performance of athletes, (JUNIOR et al. 2008).

Always, at the beginning of training, it is necessary to assess the specific conditions of the athlete to make a prescription based on biological individuality, determining factors that may be crucial to his/her success (BARROS; NETO; WAR, 2004). Thus, the physical evaluation of football players has been important to offer more exact parameters for a training program (CUNHA, 2004).

The morfofunctional variables will have direct effects in the establishment of methodological strategies that allow the limitation of energy requirements, metabolic regulation and rates, involved enzymatic actions and finally, a unified feature for the modality (NETO; BARONI; FREITAS, 2007).

Any professional who works in the area of physical preparation, in more different ways and realities of groups, ranging from sedentary people to high-level athletes, should understand and adopt as a parameter the science of Kinanthropometry for purposes of collecting, evaluating, planning and controlling physical and anthropometric variables of their students or athletes (TENROLLER, 2003).

The characteristics of the body composition of athletes, in high-performance sports, can be important information for trainers, coaches and physiologists when it comes to the athletes' weight quality, as well as the variations of this variable in the course of a proceeding training, both in pre-season and in high-season, pointing out that the evaluation should always be a continuous process (ROCHA, 2004).

For these two periods, it is expected that athletes reach their highest level of physical fitness when they arrive in high-season, pointing out that during the physical preparation within the period of pre-season, most of them present inadequate physical condition for the competitive period (PALOSCHI et al, 2008).

According to Torres (2006), working in an objective way, knowing the profile of each athlete, respecting their limitations and features, are ways to give support to increase their physical fitness, improve their performance and also act in the prevention of injuries during the competitions.

Therefore, the purpose of this study was to compare the body composition in pre-season and high season of high-level futsal athletes.

Methodology

This research was characterized as pre-experimental (THOMAS; NELSON, 2002). The sample consisted of 10 subjects, aged between 19 and 30 years, professional athletes of futsal, male, members of a team of Guarapuava, who preceded championship of Parana.

Each athlete was instructed about the research procedures, authorized by the team manager and technical committee, under a consent form by the Technical Advisor, to develop the study.

For the obtention of body composition information, the reference point for analysis of the quantity and distribution of body fat was used. A balance with mechanical platform, of the Welmy brand, with precision of 100g/kg measured the body weight. The height was measured using a stadiometer in the balance with accuracy of 1mm and measurement of body fat has been verified by a skinfold caliper, Cescorf model, produced in Brazil, which allows reading in tenths of a millimeter, with an open pressure equals 10g/mm2. To assess the percentage of body fat composition (% G.), we used the technique of skinfold thickness.

For this, at every point three measures were taken on rotational sequence on the right side of the body, the median value being registered. The anatomical points were measured: triceps, chest, axilla, subscapular, Suprailiac, Abdominal and Thigh, according to the standards proposed by Queiroga (2005). To calculate the body density, the equation was used for male athletes according to the equation DC: (g/cm3) = 1112 - 0.00043499 (Ó7DOC) + 0.00000055 (Ó7DOC) 2 - 0.00028826 (age), described by Jackson and Pollock (1978). It is noteworthy that an evaluator, with approximately four years of experience in these types of measures, collected all the anthropometric measurements.

The data were expressed and measured by the values of mean and standard deviation (SD), minimum and maximum to characterize the sample.

Then, the data were compared by using the "T" test Student Dependent for paired samples (THOMAS, NELSON; 2002). The significance level was p = 0.05.

Results and Discussion

Table 1 shows the characteristics of the sample in mean (M) and standard deviation (SD), in age (years), height (CM), total body mass (TBM / kg) and body mass index (BMI).

Table 1 Sample Characteristics

	Age (years)	Height (cm)	TBM (Kg)	BMI
Mean	**25**	**177**	**76.82**	**24.5**
Standard Deviation	**3.80**	**0.05**	**11.07**	**2.77**

Table 2 presents individual characteristics of the group, means and standard deviation, body mass (kg), relative fat (%) and lean mass (%).

Table 2 Variables analyzed in pre and high season

	Pre Season	High Season
Body Massl	76,82 ÿ 11,07	76,02 ÿ 11,15
Fat %	14,94 ÿ 5,75	12,98 ÿ 4,77*
Lean mass %	85,14 ÿ 5,78	87,03 ÿ 4,77*

* Significative statistical difference (p=0,05)

The pre-season had an average of 76.82 kg of body weight, 14.94% of fat and 85.14% of fat in lean mass, the total body mass is within the desirable levels according to many studies (JUNIOR et al., 2008).

As noted, the high-season took an average of 76.02 kg of total body mass, with an average of 12.98% of fat and 87.03% and lean mass, according to studies (JUNIOR et al. 2008, TRITSCHLER, 2003, Nogueira et al. 2008). These data coincide with our results, and thus all within the recommended levels, (QUEIROGA, 2005).

When comparing the pre-season and high-season, in the second evaluation, there is a lower percentage of fat, consequently higher percentage of lean body mass. For the total body mass (kg), there was no significant difference.

The average percentage of fat started with 14.94% and ended with average of 12.98%. The average body fat percentage points a 1.96% decrease, however for the total body mass there were no significant increases or decreases. These results corroborate with other studies, which show consistent and scientific results similar to this study (NOGUEIRA et al. 2008; FLECK & KRAEMER, 2006; QUEIROGA; FERREIRA; ROMANZINI 2005; CAMPEIZ & OLIVEIRA 2006).

The lean mass percentage started from 85.14% and ended in f 87.03%, inducing an improvement of 1.89% of lean mass in the subjects.

The percentage of fat is high for athletes of this particular sport, who usually have an average of 8 to 13% fat mass (TRITSCHLER, 2003). Obviously, the percentage of lean mass was lower than the recommended levels, because of the excess of fat (GUEDES; GUEDES, 2006).

One possible explanation for a lower level of fat found in high season, is due to the intense training undertaken during this period, and high metabolic demand during the matches. In the particular case of futsal, efforts from the speed, agility and muscle power increase the basal metabolism, since in the pre-season the athletes are on vacation or in recovery for a certain time. (QUEIROGA et al., 2005).

It is worth emphasizing the importance of the evaluation of body composition, for monitoring of nutritional status and health of athletes. And it is also vital to monitor the results of training, allowing the detection of potentially harmful changes that occur as a consequence of inadequate nutrition practices, excessive training and diseases and for association of body composition to performance, (GOING, 2007).

The assessment of the body composition is also important, not to leave an elite athlete with fat excess, compromising their individual participation in a certain competition, and to his team, compromising its performance in court, where a larger amount of fat carries on loss of physical performance, and goals with respect to the appropriate weight for the competition can not be established simply taking into consideration the total body weight of the current athlete, with an overweight athlete can make the scales of height and weight standards and still have a level of body fat normal or below normal, (WILMORE; COSTILL, 2001).

It is believed that instead of worrying about the total body weight, most athletes should be concerned specifically with the lean mass, as the maximization of lean mass is desirable for the athletes involved in activities that require power, endurance and strength, (POWERS; HOWLEY, 2005).

Conclusion

According to the data presented in the study, we concluded that the process of training and the competition between the period of pre until the high season produced an increase in the percentage of lean body mass and decrease in body fat percentage of athletes of the futsal team.

It is believes that the results of this study may contribute to the characterization of the anthropometric profile of male athletes of high-level competitive futsal, as well as the provision of subsidies to better tailor the physical training of these and other athletes.

However, we emphasize that athletes who participated or passed through different teams of national and international levels, and that in addition to be contributing to this team, there is also a great expectation to be able to add to the science of sports training and anthropometry directly and indirectly for other sciences which have proximity to this study.

It is recommended that the analysis of more variables such as other morpho-functional capabilities, to verify and quantify the influences between the seasons.

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THE EFFECTS OF THE COMPETITIVE PERIOD IN THE BODY COMPOSITION OF HIGH-LEVEL FUTSAL ATHLETES

ABSTRACT

This research aims to assess the body composition of athletes in high-level specifically in the case of professional indoor soccer in Exeter, PR. Delineate a map with the whole process be developed in the initial evaluation (pre-season), prescription and periodization of training is mainly linked to the performance of athletes, is of fundamental importance to assess the work that will be held throughout the race. The purpose of this study is to analyze at the end of the season, if there was an evolution of anthropometric profile of athletes, and if the work done with these athletes during the competition reached the expected results in terms of competition. The stages of evaluation aimed at the period of competition and will correlate the periods of pre-season with a season-high, indicating a possible difference in body composition of these athletes for two periods, so if professional athletes use of indoor soccer training sports periodizado and pre-prepared, then we subjects with different body composition profile throughout the race. The sample will be comprised of 10 individuals, male, aged between 19 and 30 years, all professional athletes to indoor soccer. The data will be collected from skinfolds at the beginning of the pre-season and the season-high in January and June of 2008, using the Protocol & JACKSON POLLOCK (for male athletes), 7 folds.

Key words: Futsal, body composition, evaluation, training.

EFFETS DE LA CONCURRENCE EN PÉRIODE DE COMPOSITION DU CORPS DES ATHLÈTES DE HAUT NIVEAU DANS LE FUTSAL

RESUMÉ

Cette recherche vise à évaluer la composition corporelle des athlètes de haut niveau, en particulier dans le cas de professionnels futsal en Guarapuava, PR. Délimiter une carte avec l'ensemble du processus sera développé lors de l'évaluation initiale (pré-saison), la prescription et la périodisation de la formation est principalement liée à la performance des athlètes, est d'une importance fondamentale pour évaluer le travail qui aura lieu tout au long de la course. Le but de cette étude est d'étudier à la fin de la saison, s'il y avait une évolution du profil anthropométriques des athlètes, et si le travail accompli avec ces athlètes pendant la compétition atteint les résultats escomptés en termes de concurrence. Les étapes de l'évaluation visant à la période de la concurrence et la corrélation des périodes de pré-saison avec une saison haute, indiquant une possible différence de composition corporelle de ces athlètes pour les deux périodes, si les athlètes professionnels utilisent de football en salle de sport de formation periodizado et préparés à l'avance, puis nous avons avec les différents sujets de composition du corps profil tout au long de la course. L'échantillon sera composé de 10 personnes, de sexe masculin, âgés entre 19 et 30 ans, tous les athlètes professionnels de football en salle. Les données seront recueillies pour l'evaluatiós des plis de la peau au début de la pré-saison et la saison haute en Janvier et Juin 2008, le Protocole et Jackson Pollock (pour hommes), 7 plis.

Mots clés: Futsal, la composition corporelle, l'évaluation, trainment.

EFECTOS DE LA COMPETENCIA PERÍODO EN LA COMPOSICIÓN CORPORAL DE DEPORTISTAS DE ALTO NIVEL EN EL TIPO DE FÚTBOL SALA

RESUMEN

Esta investigación tiene por objeto evaluar la composición corporal de los atletas de alto nivel específicamente en el caso del fútbol sala profesional en Guarapuava, PR. Delinear un mapa con todo el proceso se desarrollará en la evaluación inicial (pre-temporada), la prescripción y la periodización de la formación está relacionado principalmente con el rendimiento de los atletas, es de fundamental importancia para evaluar el trabajo que se llevará a cabo en toda la carrera. El objetivo de este estudio es analizar al final de la temporada, si hubo una evolución del perfil antropométrico de los atletas, y si el trabajo realizado con estos atletas durante la competencia alcanzado los resultados esperados en términos de la competencia. Las etapas de evaluación encaminadas a la duración de la competencia y se correlacionan los períodos de pre-temporada con una temporada alta, lo que indica una posible diferencia en la composición corporal de estos atletas durante dos períodos, de modo que si los deportistas profesionales el uso de fútbol sala de formación de deportes periodizado y pre-preparados, entonces los sujetos con diferente composición corporal en todo el perfil de la carrera. La muestra se compone de 10 personas, de sexo masculino, con edades comprendidas entre los 19 y 30 años, todos los atletas profesionales a fútbol sala. Los datos se recogerán a partir de pliegues en el inicio de la pretemporada y la temporada alta en enero y junio de 2008, utilizando el Protocolo y Jackson Pollock (para los atletas de sexo masculino), 7 de pliegues.

Palabras clave: fútbol sala, la composición corporal, evaluación, treinamiento.

EFEITOS DO PERÍODO COMPETITIVO NA COMPOSIÇÃO CORPORAL DE ATLETAS DE ALTO NÍVEL NA MODALIDADE DE FUTSAL

RESUMO

Esta pesquisa visa avaliar a composição corporal em atletas de alto-nível especificamente tratando-se do futsal profissional de Guarapuava, PR. Delimitaremos um mapa com todo processo a ser elaborado na avaliação inicial (pré-temporada), prescrição e periodização de treinamento estando principalmente ligada ao rendimento dos atletas, sendo de fundamental importância para avaliar o trabalho que será realizado ao longo da competição. O objetivo do presente estudo é analisar no final da temporada, se houve uma evolução do perfil antropométrico dos atletas, e se o trabalho que foi realizado com esses atletas ao longo da competição alcançou os resultados esperados em termos de competição. Os estágios de avaliação visam o período de competição e vai correlacionar os períodos da pré-temporada com a alta-temporada, apontando uma possível diferença na composição corporal desses atletas em relação aos dois períodos, portanto se atletas profissionais de futsal utilizam de treinamento desportivo periodizado e pré-elaborado, então teremos sujeitos com perfil de composição corporal diferentes ao longo da competição. A amostra será composta por 10 indivíduos, do sexo masculino, com idade entre 19 e 30 anos, todos atletas profissionais de futsal. Os dados de dobras cutâneas serão coletados no inicio da pré-temporada e na alta-temporada, nos meses de Janeiro e junho de 2008, utilizando o protocolo de JACKSON & POLLOCK (para atletas homens) de 7 dobras.

Palavras Chaves: Futsal, composição corporal, avaliação, treinamento.