



Original article

Anthropometric characteristics, somatotype and dietary patterns in youth soccer players

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ABSTRACT

Objective: To determine the morphological characteristics, fat mass, somatotype and dietary patterns of youth soccer players from an amateur Spanish team.

Method: Height, weight, diameters, circumferences and skinfolds from sixteen youth soccer players were measured. Body fat percentage and somatotype were calculated. They completed the Kidmed questionnaire to analyze dietary patterns. Descriptive statistics (mean \pm standard deviation) were used.

Results: The global body fat percentage was 9.16 ± 2.12 and the somatotype (2.56-3.73-2.77). The sum of the six skinfolds was 62.6 ± 2.7 mm. The sum of the eight skinfolds was 80.7 ± 3.1 mm. 75% of athletes consumed a fruit daily, 18.75% took a second fruit each day. 43.75% of players took vegetables once a day, 18.75% ate vegetables more than once a day.

Conclusion: Body fat percentage, the sum of the six skinfolds, the sum of the eight skinfolds and somatotype results are in agreement with previous studies where youth non-professional soccer players were analyzed. Other studies have obtained lower values in body fat percentage or in sum of six skinfolds due to they have evaluated professional soccer players. Anthropometric measures would be important to prescribed personalized diet and training plans.

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Características antropométricas, somatotipo y patrones alimentarios en jugadores jóvenes de fútbol

RESUMEN

Objetivo: Determinar las características morfológicas, la masa grasa, el somatotipo y los patrones alimentarios de jugadores de fútbol jóvenes de un equipo amateur.

Método: Se midieron la altura, el peso, los diámetros corporales, las circunferencias y los pliegues cutáneos de 16 jugadores. Se calcularon el porcentaje de grasa corporal y el somatotipo. Se administró el cuestionario Kidmed con objeto de conocer el patrón alimentario. Se utilizaron métodos estadísticos descriptivos (media \pm desviación estándar).

Resultados: El porcentaje global de grasa corporal fue 9.16 ± 2.12 y el somatotipo (2.56-3.73-2.77). El sumatorio de 6 pliegues fue 62.6 ± 2.7 mm y el sumatorio de 8 fue 80.7 ± 3.1 mm. El 75% de los futbolistas consumía una fruta diaria y el 18.75% tomaba una segunda pieza de fruta. El 43.75% de los jugadores tomaba una ración de vegetales cada día y el 18.75% comía vegetales más de una vez al día.

Conclusiones: Los resultados del porcentaje de grasa, del sumatorio de 6 pliegues, de 8 pliegues cutáneos y del somatotipo son similares a los obtenidos en estudios previos. Otras investigaciones encontraron un porcentaje de grasa inferior y un menor valor para el sumatorio de 6 pliegues debido a que analizaron jugadores profesionales. Las mediciones antropométricas son importantes para prescribir planes de alimentación y entrenamiento personalizados.

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Palabras clave:

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Características antropométricas, somatotipo e padrões alimentares em jovens atletas de futebol

R E S U M O

Palavras-chave:

Futebol
Antropometria
Somatotipo
Padrões alimentares
Gordura corporal
Dobras cutâneas
Esportes de equipe

Objetivo: Determinar as características morfológicas, massa gorda, somatotipo e padrões alimentares de jovens jogadores de futebol de uma equipe amadora espanhola.

Métodos: Foram medidos altura, peso, diâmetros, circunferências e dobras cutâneas de dezesseis jovens jogadores de futebol. A porcentagem de gordura corporal e o somatotipo foram calculados. Eles completaram o questionário Kidmed para analisar padrões alimentares. Foram utilizadas estatísticas descritivas (média \pm desvio padrão).

Resultados: A porcentagem de gordura corporal foi de 9.16 ± 2.12 e o somatotipo ($2.56-3.73-2.77$). A soma das seis dobras cutâneas foi 62.6 ± 2.7 mm. A soma das oito dobras cutâneas foi 80.7 ± 3.1 mm. 75% dos atletas que consumiam diariamente uma fruta, 18.75% ingeriam uma segunda fruta por dia. 43.75% dos jogadores ingeriam legumes uma vez por dia, 18.75% comiam vegetais mais que uma vez por dia.

Conclusão: A porcentagem de gordura corporal, a soma das seis dobras cutâneas, a soma das oito dobras cutâneas e os resultados somatotipos estão de acordo com estudos prévios em que foram analisados jovens jogadores de futebol não profissionais. Outros estudos obtiveram valores mais baixos na porcentagem de gordura corporal ou na soma de seis dobras cutâneas devido a terem avaliado jogadores profissionais de futebol. Medidas antropométricas seriam importantes para prescrever uma dieta personalizada e planos de treinamento.

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Introduction

From long time ago, it is well known that body composition plays an important role in sport performance, specifically in the physical status. Consequently body composition has been studied in different sports such as basketball,¹ rugby² or soccer³ in order to analyze athletes status. Numerous methods to evaluate body composition in athletes have been developed for instance anthropometric analysis,² bioelectrical impedance analyzer³ or dual-energy X-ray absorptiometry.⁴ Anthropometry is the study of the size, the form, the proportionality, the composition, the biological maturation and the body function of humans. This technique allows relating corporal measures in form, proportions and compositions with a specific sport function in athletes.⁵ Anthropometry sizes body weight, height, wingspan, skinfolds, perimeters, diameters and lengths. From these data, it is possible to obtain information about body fat mass, body composition and somatotype.⁶ Somatotype method is used to analyze body composition in humans which is classified in three different component mesomorphy (related to muscle mass), endomorphy (related to fatness) and ectomorphy (related to linearity and slenderness).⁷

Especially in soccer, anthropometry techniques have been widely used in last times. A study⁸ analyzed anthropometric characteristics and somatotype of young players at different ages (14–18 years) from teams of the First Macedonian league ($n = 486$) and compared the results with data from general population. Obtaining players at 14 years showed significant lower values of muscle and fat mass. They also discovered that in all age soccer groups mesomorphy component of the somatotype dominated. Furthermore, athletes presented smaller values of the fat and endomorphic component and greater muscle and mesomorphic component in comparison with general population. Another research⁹ identified anthropometric and somatotype characteristics of Italian young players ($n = 112$). The mean results showed a high muscular and low adipose profile. They found differences in playing position between anthropometric data and somatotype value. Based on these studies, it seems clear that soccer players present different anthropometric and somatotype profiles to the general population and these values could change depending on the playing position.

Casajús¹⁰ evaluated fifteen players from the Spanish First Division to analyze seasonal variations in anthropometric variables from the beginning to the middle of the season. Significant variations (mean \pm standard deviation) were found in fat percent ($8.6 \pm 0.91\%$ versus $8.2 \pm 0.91\%$) and in the sum of six skinfolds (57.0 ± 8.67 mm versus 52.9 ± 8.61 mm). Another paper¹¹ analyze the dietary intakes and anthropometric profiles got the least percentage of body fat ($11.3 \pm 1\%$) where found in players that consumed significantly less fat in their diet, an adequate carbohydrate ingestion for athletes ($52.2 \pm 5\%$ of energy intake), nothing of alcohol and micronutrients intakes above the dietary reference values. So it seems that dietary habits could affect to body composition and consequently influencing to sport performance. Additionally, a previous investigation² found eighteen rugby players with body composition values away from the recommended body composition profile at the preseason. After applied personalized plans of diet and training, changes in body composition were reported at the end of the season. Obtaining data close to reference values of professional players.

Obviously, several methods have been developed to analyze dietary habits in athletes weigh food intakes, food frequency questionnaires, 24 h count questionnaires or specific nutritional questionnaires. One of them is Kidmed questionnaire, this method evaluate the adherence to the Mediterranean diet (MD), a well-known healthy dietary pattern. One study¹² evaluated the relations between Kidmed results and anthropometric characteristics in ninety elite women paddlers. A medium or excellent adherence was observed. However, useful nutritional information was obtaining from this questionnaire, such as the fact that 20% of paddlers ate sweets more than once a day or that 33% didn't eat nuts.

The purposes of this research were to determine the morphological characteristics, fat body mass, somatotype and dietary patterns of youth soccer players from an amateur Spanish team.

Method

Subjects

A total of sixteen players from a U-19 amateur Spanish team voluntary participated at the age of 16–18 years, with an average

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