Amatör ve Profesyonel Takım Futbolcularının Besin Tüketimleri ve Beslenme Destek Ürünlerinin Kullanma Durumları ile Bazı Antropometrik Ölçümlerin Karşılaştırılması*

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Özet
Bu çalışma, amatör ve profesyonel takım futbolcularının besin tüketimleri ve beslenme destek ürünlerini kullanma durumları ile bazı antropometrik ölçümlerinin karşılaştırılması amacıyla yapılmıştır. Yöntem: Araştırma, kesitsel bir araştırma olup tanımlayıcı ve analitik bir çalışmadır. Araştırmada profesyonel lig futbol takımı Alanyaspor ve amatör lig takımlarından Payallar-Konaklı Spor Kulübünün tüm takım oyuncularının besin tüketimleri ve beslenme destek ürünlerinin kullanma durumları ile bazı antropometrik ölçümlerin karşılaştırılması yapılmaktadır. Araştırma, Eylül 2020-Ekim 2020 tarihleri arasında yapılmıştır. Çalışmaya dahil edilen tüm oyuncularla yüz yüze görüşmeler yapılarak sorular sorulmuş ve elde edilen bilgiler kayda geçirilmiştir. Bulgular: Katılımcıların beslenme durumlarının değerlendirilmesi için futbolcuların iki günü hafta içi, bir günü hafta sonu günlere denk gelecek şekilde üç günlük besin tüketim kayıtları alınmıştır. Çalışmaya katılan futbolcuların boy uzunluğu ortalaması 178.76±11.95 cm, vücut ağırlığı ortalaması 69.16±5.71 kg, vücut yağ kütlesi 8.39±1.68 kg, vücut yağ yüzdesi ise %12.06±1.84 olarak belirlenmiştir. Araştırmaya katılan tüm sporcuların diyetle enerji alım ortalaması antrenman öncesi, günü ve sonrası sırasıyla 2307.45±248.19 kkal, 2502.31±211.09 kkal ve 2804.26±139.4 kkal olarak bulunmuştur. Sonuç: Çalışmaya katılan süper lig ve amatör lig oyuncularının büyük çoğunluğunun ergojenik destek ürünü kullandığı; bu ürünlerin diyetisyen ve antrenör tavsiyesi ile alındığı görülmüştür. Bununla birlikte ergojenik destek ürünü alan sporcuların antrenman sıklığı ve süresinde artış gözlenmiştir. Sporcuların en çok dallı zincirli aminoasitler (%44.74) destek ürünü kullandığı saptanmıştır ve büyük çoğunluğunun (%74.5) önerilen diyet uygulamalarına uymadığı belirlenmiştir.

Anahtar Kelimeler: Futbol, Beslenme, Beslenme Destek Ürünü, Besin Tüketimi

A Comparison of Some Anthropometric Measurements with Food Consumption of Amateur and Professional Team Football Players And Usage of Nutritional Supplements

Abstract
Objectives: This study was conducted to compare some anthropometric measurements with the nutritional consumption and nutritional supplements of amateur and professional team players. Method: Research is a cross-

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* This article is produced from the author's master's thesis "Comparison of Some Anthropometric Measurements with Food Consumption and Nutritional Supplements of Amateur and Professional Team Footballers

sectional study and a descriptive and analytical study. In the research, the nutritional consumption of all team players of the professional league football team Alanyaspor and the amateur league team Payallar-Konaklı Sports Club and the use of nutritional supplements and some anthropometric measurements were compared. The research was conducted between September 2020 and October 2020. Face-to-face interviews were conducted with all the players included in the study and questions were asked and the information obtained was recorded. Results: In order to evaluate the nutritional status of the participants, three-day food consumption records were obtained as two days on weekdays and one day on weekends. The average height of the players participating in the study was 178.76±11.95 cm, body weight average was 69.16±5.71 kg, body fat mass was 8.39±1.68 kg and body fat percentage was 12.06±1.84%. The average dietary energy intake of all players in the study was 2307.45±248.19 kcal, 2502.31±211.09 kcal and 2804.26±139.4 kcal respectively before, during and after training. Conclusion: The vast majority of super league and amateur league players who participated in the study used ergogenic supplements; these products have been seen to be purchased with the advice of the dietitian and trainer. However, an increase in the frequency and duration of training of players receiving ergogenic supplements was observed. The most of players were found to use the branched chain amino acids (44.74%) supplements, and the vast majority (74.5%) did not follow recommended dietary practices.

Key Words: Football, Nutrition, Nutritional Supplements, Food Consumption.

INTRODUCTION

Today, football, one of the most popular sports in the world, is played by 265 million people. During the training or game carried out during the preparation phase for this sport, some physiological changes occur in the players. These changes can naturally affect their performance, positively or negatively. Therefore, in order for these changes to be overcome without problems, a good nutrition plan must be established and implemented. In this context, a good nutrition plan should be made in parallel with the duration and intensity of the trainings. For example, the higher the intensity of training, the greater the body's energy needs. That's why special dietary recommendations have been developed for footballers, edited by dietitians (Bangsbo, 1994; Bangsbo & Mohr, 2006; Lohman & Condo, 2018).

In order to optimize performance and health through food intake, it is necessary to evaluate the effect of eating habits well for the design and implementation of effective dietary and nutrition training programs. From this point on, improving the nutritional practices of footballers will help them optimize their performance and develop healthy eating habits that will benefit them until the end of their careers (Manore, 2006). With the healthy eating programs to be created for this purpose, it is expected that the nutrients that the players will receive before and after the match will be consumed in a pattern and thus, they will maintain a healthy sports career. The main goal of footballer nutrition is to regulate the physical activities of the player before and after training, as well as the nutritional elements that vary depending on his age, height, body weight and gender (Deakin & Boushey, 2015). In the researches, players need more energy, protein, fat, carbohydrates, vitamins and minerals than normal people in order to live an efficient sports life. For this purpose, it is ensured that their performance is improved by using a number of nutritional supplements, reducing body fat, improving muscles after training and thus having a healthy body image (Kerksick et al., 2018). However, some anthropometric measurements should be made and evaluated correctly and acted accordingly. These measurements include body weight, height length, waist circumference, upper middle arm circumference, triceps skin fold thickness, biceps skin fold thickness, subscapular skin fold thickness, chest skin fold thickness, abdominal skin fold thickness and thigh skin fold thickness measurements. (Santos et al., 2014; Barbieri et al., 2017). In this context, a specific program should be guided by a professional expert in terms of what kind

of diet should be established.

This study was carried out to compare some anthropometric measurements with the nutritional consumption and nutritional supplements of amateur and professional team players. The research was carried out on 94 players who played football at Alanya Sports Club, Payallar-Konaklı Sports Club.

MATERIALS AND METHODS

The Place, Time and Sampling of the Research

In this research, some anthropometric measurements are compared with the nutritional consumption and nutritional supplements of all team players of the professional league football team Alanyaspor and the amateur league team Payallar-Konaklı Sports Club, which are two sports clubs in Antalya. The research was conducted between September 2020 and October 2020.

The research population is made up of players from a professional football team affiliated with the Turkish Football Federation and players from an amateur team affiliated with the same federation. The study sample covers all team players from the super league and amateur league.

Method and Scope of the Research

The research is a cross-sectional study and a descriptive and analytical study. Before the research, the players were informed about the study, and then the players who wanted to participate voluntarily were included in the research. The players in the sample read and signed an 'Informed Voluntary Consent Form' indicating that they had volunteered to work.

Data Collection Tools Used in Research

Face-to-face interviews were conducted with all the players included in the study, questions were asked and the information obtained was recorded. Players who agreed to participate in the study were given a questionnaire with 31 multiple choice and open-ended questions with general characteristics, food consumption and general information about their branches. In this context, in order to compare anthropometric measurements, players' heights, body weights and body composition analyses(waist circumference, upper middle arm circumference, triceps (mm), biceps (mm), suprailiac (mm), subscapular (mm), chest (mm), abdominal (mm), thigh (mm), body fat mass, body fat percentage) were carried out by the researcher and recorded in the relevant place in the survey form.

For the study, the Ethics Committee Approval was obtained by Başkent University Clinical Research Ethics Committee with the decision no. 20/74 dated 01/07/2020 as a research project numbered KA20/265.

Evaluation of Data

In case the data collected at the end of the research are continuous (quantitative) variable obtained by measurement, they are given with average ($\overline{X}$), standard deviation (SD) and min, max values.

Categorical variables are frequency and percentage (%) values. Ki-Square analysis was used in the analysis of the categorical variables in the data set. Fisher's Exact Test analysis was performed for the direction and strength of the relationship between the variables. The assumption of normality in numerical variables was controlled by Shapiro Wilk test. Independent groups t test was used for comparisons with normal dispersion, number of groups two in parallel with the results. For the analysis of repetitive measurements, it was applied with one-way variance analysis (ANOVA) test. In case of differences between the groups as a result of the analysis, Tukey from the post-hoc tests used to determine the source of the difference. Statistical analysis was made with the IBM SPSS Statistics 25.0 (IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.) package program. The level of significance in all analyses is determined as p<0.05.

RESULTS

Evaluation of The Characteristics of Footballers' General Information

47.9% (n=45) of the players who participated in the study are in the Amateur league and 52.1% (n=49) are in the Super league team.

Table 1. Demographics of footballers

Demographics	$\overline{X} \pm SS$	Number(n)	Percentage (%)
Average age			
	23.67±5.06		
Team			
Amateur league		45	47.9
Super league		49	52.1
Accommodation			
At home with my family		2	2.1
At home alone		4	4.3
At facility		58	61.7
Sometimes at home, sometimes at the facility		30	31.9
Licensed football playing time			
5 years or less		6	6.4
6-10 years		42	44.7
11-15 years		19	20.2
16-20 years		21	22.3
21 years or more		6	6.4
Professional football playing time			
5 years or less		58	61.7
6-10 years		21	22.3
11-15 years		14	14.9
16 years or more		1	1.1
Professional football playing time	4.71±4.57		

When the players were evaluated according to the leagues, the average age group was 23.67±5.06. 47.9% of them play amateur football and 52.1% play professional football. 6.4% of footballers play licensed football for 5 years or less, 44.7% for 6-10 years, 20.2% for 11-15 years, 22.3% for 16-20 years, 6.4% for 21 years or more. 61.7% of them play professional football for 5 years or less, 22.3% for 6-10 years, 14.9% for 11-15 years, 1.1% for 16 years or more. The average professional football playing time is 4.71±4.57 years. However, 2.1% (n=2) of players stay at home with family, 4.3% (n=4) stay at home alone, 61.7% (n=58) stay at the facility, 31.9% (n=30) sometimes stay at home and sometimes at the facility.

Table 2. Comparison of footballers' use of ergogenic supplements according to age, team and accommodation information

Distinctive features	User		Nonuser		X^2	p
	Number(n)	%	Number(n)	%		
Age Group						
20 years old or less	23	65.7	12	34.3	9.41	0.018*
21-25 years old	21	87.5	3	12.5		
26-30 years old	21	91.3	2	8.7		
31 years old or more	12	100	-	-		
Team						
Amateur league	38	84.4	7	15.6	0.373	0.60
Super league	39	79.6	10	20.4		
Accommodation						
At home with family	2	100	-	-	0.709	1.00
At home alone	4	100	-	-		
At facility	47	81	6	19		
Sometimes at home sometimes at the facility	24	80	17	20		

*$p < 0.05$ *Ki-square test, if n<5, Fisher's exact test

According to the table, 84.4% (n=38) of amateur league team players use a nutritional supplement or ergogenic supplement and 15.6% (n=7) do not use them. 79.6% (n=39) of super league team players use a nutritional supplement or ergogenic supplement and 20.4% (n=10) do not use them.

65.7% (n=23) of the players 20 years old or younger who participated in the study use a nutritional supplement or ergogenic supplement and 34.3% (n=12) do not use them. 87.5% (n=21) of the players in between 21-25 years old in the group use a nutritional supplement or ergogenic supplement and 12.5% (n=3) do not use them. 91.3% (n=21) of the players in between 26-30 years old in the group use a nutritional supplement or ergogenic supplement and 8.7% (n=2) do not use them. The proportion of footballers 31 years old or more who use ergogenic support has been proven to be 100% (n=12). It was found that there was a statistically

significant relation between the age groups of the players who participated in the study and their use of a nutritional supplement or ergogenic supplement (p<0.05).

Table 3. Comparison of anthropometric measurements and body measurement values of players according to leagues

Anthropometric Measurements	Amateur league (Number(n)=45)			Super league (Number(n)=49)				
	X̄±SS	Min	Max	X̄±SS	Min	Max	t	p
Height (cm)	179.96±6.05	166.00	198.00	177.65±6.16	165.00	189.00	0.323	0.153
Body weight (kg)	70±5.87	60.00	84.00	68.39±5.51	58.00	80.00	1.373	0.173
Body Mass Index (BMI)	21.84±2.24	19.45	24.38	21.65±0.93	19.37	23.51	0.551	0.583
Waist circumference (cm)	77.07±3.31	70.00	90.00	76.51±2.66	70.00	82.00	0.902	0.369
Upper middle arm circumf (cm)	31.02±3.44	23.80	37.30	30.54±2.88	24.30	37.40	0.74	0.461
Triceps (mm)	6.98±1.69	4.00	10.00	6.83±1.74	4.00	12.00	0.427	0.670
Biceps (mm)	3.4±0.73	2.40	5.00	2.82±0.77	2.00	5.30	3.749	0.001*
Suprailiac (mm)	15.82±1.66	13.00	19.30	17.18±1.49	13.50	19.80	-4.183	0.001*
Supscapular (mm)	16.88±1.54	13.00	20.00	16.88±1.47	13.60	20.00	0.022	0.982
Chest (mm)	8.14±1.54	5.60	12.50	8.04±1.84	5.00	12.50	0.287	0.774
Abdominal (mm)	18.32±1.86	15.00	22.00	17.83±1.56	15.00	22.00	1.393	0.167
Thigh (mm)	14.6±2.37	10.00	18.00	14.58±2.37	10.00	19.00	0.038	0.970
Body fat mass (kg)	8.51±1.74	4.70	12.59	8.27±1.63	5.06	11.93	0.698	0.487
Body fat percentage (%)	12.11±1.98	7.58	14.99	12.02±1.72	8.21	15.30	0.223	0.824

*$p<0.05$

Independent sampling t test

According to the table, while the average body weight of amateur league players was 70±5.87 kg, the super league players were recorded as 68.39±5.51 kg. The body mass index of the players was found to be 21.84±2.24 kg/m² and 21.65±0.93 kg/m² respectively according to amateur league and super league teams. When body weight and body mass index measurements were examined, there was no statistically significant difference between amateur and super league players compared to leagues (p>0.05). The waist circumference of the players in the study was 77.07±3.31 cm and 76.51±2.66 cm respectively according to amateur league and super league teams. When the upper middle arm circumference of the players was examined, while the arm circumference of amateur league players was determined as 31.02±3.44 cm, the upper middle arm circumference of the players was recorded as 30.54±2.88 in super league players. In view of waist circumference and upper middle arm circumference measurements, there was no statistically significant difference between amateur and super league players by league (p>0.05).

When the skin fold thickness measurements of the players were evaluated, the triceps measurements were found to be 6.98±1.69 mm and 6.83±1.74 mm respectively according to amateur league and super league teams. Biceps measurements were 3.4±0.73 mm and 2.82±0.77 mm respectively for amateur and super league players. When the triceps and biceps measurements were examined, a statistically significant difference was found between the players of these two teams only in the biceps measurement (p<0.05). The suprailiac skin fold thickness measurement of the players participating in the study was found to be 15.82±1.66 mm and 17.18±1.49 mm respectively of amateur and super league players. In view of the suprailiac measurement, a significant statistical difference was found (p<0.05). When the supscapular skin fold thickness measurements of the players were evaluated, the skin fold thickness measurements of amateur and super league players were found to be 16.88±1.54 mm and 16.88±1.47 mm respectively. In view of the supscapular skin fold thickness measurements, there was no statistically significant difference between amateur and super league players by league (p>0.05). In view of the chest measurements, it was determined as 8.14±1.54 mm and 8.04±1.84 mm respectively in amateur and super league teams. When chest measurements were examined, there was no statistically significant difference between amateur and super league players by league (p>0.05). In this context, when abdominal measurements of the players participating in the study were evaluated, amateur and super league players were found to be 18.32±1.86 mm and 17.83±1.56 mm respectively. In view of abdominal measurements, there was no statistically significant difference between amateur and super league players by league (p>0.05). When the average thigh measurements of the players were examined, amateur and super league players were recorded as 14.6±2.37 mm and 14.58±2.37 mm respectively. In view of thigh measurements, there was no statistically significant difference between amateur and super league players by league (p>0.05When the body fat mass of the players was examined,

the fat mass of amateur and super league players was found to be 8.51±1.74 kg and 8.27±1.63 kg respectively. In view of the percentage of body fat, 12.11±1.98% and 12.02±1.72% were determined, respectively for amateur and super league players. The averages of biceps (mm), Suprailiac (mm) measurements of the players in the study differ statistically between amateur and super league players ($p < 0.05$) (Table 3). When the averages of other measurements were evaluated, there was no statistically significant difference between amateur and super league players by league ($p > 0.05$) (Table 3).

Table 4. Comparison of average ($\bar{X}$), standard deviation (SD) values of all players' pre-training, training day and post-training nutrient intake

	Pre-training	Training Day	Post-training		
	$\bar{X} \pm SS$	$\bar{X} \pm SS$	$\bar{X} \pm SS$	F	p
Energy (kkal)	2.307.4±248.19[ab]	2.502.3±211.09[b]	2.804.26±139.40[a]	140.705	0.000*
Protein (gr)	92.90±15.72	105.31±16.55[b]	92.19±6.65	27.178	0.000*
Protein (%)	16.43±1.63	17.18 ±1.99	13.38±1.02[a]	149.066	0.000*
Fat (gr)	80.10±14.63[b]	90.64 ±13.25	97.98±14.76[c]	37.474	0.000*
Fat (%)	30.90±3.62	32.29±3.47[c]	30.87±3.82	4.636	0.010*
CHO (gr)	295.55±30.56[ab]	308.03±29.25	381.68±26.09	247.345	0.000*
CHO (%)	52.62±4.10	50.47±3.19[ab]	55.55±4.09	41.959	0.000*
Fibre (gr)	30.79±6.03[b]	28.75±4.05	28.02±2.75	9.651	0.000*
Alcohol (gr)	0.14±0.19[b]	0.05±0.13	0.03±0.11[ab]	15.316	0.000*
Alcohol (%)	-	-	-	-	-
Polyunsaturated fat (gr)	9.58±2.31[ab]	11.76±1.95	16.54±5.27[a]	96.680	0.000*
Cholesterol (mg)	452.38±88.90[b]	449.41±70.17	301.95±105.48[ab]	87.089	0.000*
A vitamin (mg)	1.373.5±957.50	1.129.9±701.17[c]	966.22±711.77[ab]	6.187	0.002*
E vitamin (mg)	11.13±2.36[ab]	10.59±2.86	16.56±8.56[a]	35.268	0.000*
B1 vitamin (mg)	1.19±0.24	1.42±0.18	1.10±0.08[ab]	81.696	0.000*
B2 vitamin (mg)	1.94±0.26[b]	2.10±0.25[c]	1.48±0.21[ab]	162.456	0.000*
B6 vitamin (mg)	1.78±0.38[b]	1.53±0.32[a]	1.51±0.28[ab]	19.534	0.000*
Folic Acid (gr)	415.58±67.24[c]	443.10±108.72[b]	315.20±33.48[ab]	73.193	0.000*
C vitamin (mg)	137.92±32.88	119.70±55.65	92.63±28.47	29.350	0.000*
Potassium (mg)	3.387.4±562.98[a]	3.520.6±650.69[b]	2.904.1±275.73[ab]	36.352	0.000*
Calcium (mg)	1.014.9±182.35	1.222.1±298.47[ab]	942.07±159.86[b]	40.260	0.000*
Magnesium (mg)	354.86±44.60	388.43±62.48[b]	346.59±23.73[ab]	21.455	0.000*
Phosphor (mg)	1.459.49±185.52[a]	2.035.6±690.89[b]	1.417.5±128.06[ab]	63.694	0.000*
Iron (mg)	11.30±2.32[ab]	13.44±1.84	12.16±0.93[a]	34.170	0.000*
Zinc (mg)	11.17±2.55[ab]	13.11±1.45[a]	13.62±0.92[c]	50.090	0.000*

[a] : The difference between a pre-training and a training day.

[b] : The difference between a training day and a post-training.

[ab] : The difference between them before, during and after training.

[c] : The difference between before and after training.

Table 4 shows the average ($\overline{X}$), standard deviation (SD) values of all football players to receive energy and macro nutrients before, during and after training. The energy intake of all football players before, during and after training was determined as 2,307.4±248.19 kcal, 2,502.3±211.09 kcal and 2,804.26±139.40 kcal respectively, and the difference between the training day, before and after the training day was significant (p<0.05). The highest protein intake of the players who participated in the study was determined on the day of training, and the highest carbohydrate consumption was found to be after training. Carbohydrate intake after training was 381.68±26.09 g and the ratio of energy from carbohydrates was 55.55±4.09% and it considered statistically important compared to of the training day and pre-training day (p<0.05). The protein intake on the day of training was 105.31±16.55 g and the percentage of energy from the protein was 17.18 ±1.99% and this was found to be statistically different from post-training (p<0.05). The lowest fat in the football players in the study was 80.10±14.63 g before training. The percentage of energy from the fat was determined as 30.90±3.62%. Fat percentage averages before and after training were found to be statistically significant compared to the day of training (p<0.05).

DISCUSSION

Players often use ergogenic supplements. Unnecessarily taken nutritional supplements have many negative health effects on players (Sousa, et al., 2016). Therefore, the characteristics of nutritional information and ergogenic support status of all football players participating in this study were evaluated. While 79.6% of the super league players in the study used a nutritional supplement or ergogenic supplements, this rate increased to 84.4% among amateur league players. Compared to the super league, the use of nutritional supplements in amateur league players was higher. It is thought that the use of nutritional supplements in the amateur league team is high upon the advice of the coach and dietitian. Lacerda and his colleagues found that 64.7% of players use nutritional supplements and it is found that 47.2% of players use nutritional supplements in the research conducted by Argan and Köse. According to Argan and Köse's research, it has been reached the different result that a little more than half of the players do not use these products, however the researches of Lacerda and his colleagues are similar to the results of this study. Wiens' study of players aged 11-25 found that 98% of players use nutritional supplements (Wiens, et al., 2014; Argan & Köse, 2009; Moura, 2015).

According to the distribution of food supplements or ergogenic supplements by age range, the highest rate of use of nutritional supplements or ergogenic supplements was found in footballers 20 or less years old. Statistically significant relations were found between age groups. In a similar study, the highest rate of ergogenic supplement use was between the ages of 24 and 29. In another similar study conducted by Lacerda and his colleagues, supplement use ages ranged from 20 to 39 years of age and statistically there was no difference between age groups (Moura, et al., 2015: 63; Petroczi & Naughton, 2008: 1-8). It was observed that the age range of using

nutritional supplements of the players who participated in this study was lower compared to other studies. While there was a significant relationship between age groups in this study, no significant difference was determined in other studies. In addition, the number of people who used nutritional supplements in the study was higher than those who did not. This rise is thought to have been caused by the advice of the dietitian and the trainer.

The average daily energy consumption of all the players participating in the study before, during and after training was 2307.45±248.19 kcal, 2502.31±211.09 kcal and 2804.26±139.4 kcal respectively. (Table 4). The study in Japan found that the average daily energy intake of footballers on a training day was 3006±1052 kcal (Güvenç, 2011: 79-91). In this study, it is seen that the energy intake of footballers on the day of training is lower than in Japan. It was determined that the energy intake of the players who participated in the study was highest after training. Therefore, it is understood that these players avoid overeating before training and their nutritional knowledge levels are inadequate. A study in Brazil recorded the daily energy consumption of footballers as 3830±1040 kcal (Silva, et al., 2006: 989-95). In the study conducted in Spain, the daily energy consumption of footballers was determined as 3003 kcal. The daily energy consumption of Italian professional football players was determined as 3650 kcal. Daily energy consumption in Swedish footballers is 4929 kcal. Daily energy consumption in Danish footballers is recorded as 3738 kcal (Giada, et al., 1996: 211-6; Rico-Sanz, et al., 1998: 230-40; Noda, et al., 2009: 344-50). It was determined that the daily energy intake of the players participating in this study was very low compared to other countries. The lower daily energy intake of the players who participated in the study was lower than in other countries. In view of the reasons for this situation, it is thought that players may have attitudes regarding avoidance of overeating before training, desire to maintain weight, nutritional knowledge level, training status and use of nutritional supplements.

In this study, the daily carbohydrate consumption of footballers before, during and after training is 295.55±30.56 g, 308.03±29.25 g and 381.68±26.09 g respectively. The ratio of total energy from carbohydrates was 52.62 ± 4.1%, 50.47 ± 3.19% and 55.55 ± 4.09%, respectively. Compared to the nutritional status of this study, a study in Poland found that the average carbohydrate intake of 199 ± 20.6 g/ day was significantly lower. Such low levels of carbohydrate intake have been observed to deteriorate in the re-synthesis of muscle glycogen after training, resulting in a decrease in the physical activity efficiency of players. Moreover, low carbohydrate intake has also been observed to increase the risk of injury (Dobrowolski & Wlodarek, 2019). In one study, the average carbohydrate consumption of Lithuanian endurance sportive was determined as 5.6 g / kg /day. In a study conducted by Martin and his colleagues, dietary fat intake of about 30% and protein intake of 1.2 g / kg / day showed carbohydrate intake well below the recommended intake values. Compliance with the recommended amount of carbohydrate consumption has been found to be among endurance sportive in South Africa, Spain, Australia and Poland (Dobrowolski & Wlodarek, 2019; Baranauskas, et al., 2015). The Spanish study found that footballers' daily carbohydrate intake was 344±16 g and covered 44.6% of energy (Ruiz, et al., 2005: 235-42). In the Swedish study, the average daily carbohydrate intake of players was 596 g and energy were found to be 47.0% (Rico-Sanz, et al., 1998: 230-40). In the study conducted in Spain, the highest carbohydrate intake was found to be 328.6±73.9 g on the day of training (Reinke, et al., 2009: e4910). However, the highest

carbohydrate intake in this study was seen after training with 381.68±26.09 g. The difference here was found to be different from that of Spanish sportive after the sportive who participated in this study had insufficient energy intake before and during training. As a result, when the carbohydrate intake of the sportive participating in the study was evaluated, it was determined that they did not receive enough.

In this study, the daily protein consumption of the players before, during and after training was 92.9±15.72 g, 105.31±16.55 g and 92.19±6.65 g, respectively. The ratio of this intake from the protein was 16.43±1.63%, 17.18±1.99% and 13.38±1.02% respectively. In one study, the daily protein intake rate from energy was recorded as 17.7%. (Ruiz, et al., 2005: 235-42). In other studies, the ratio of protein from energy found as 15.9±2.6%, 11.0±1.3%, 14.4±2.3%, 14.3±2.0% and 14.6±1.9% (Maughan, 1997: 45-7; Noda, et al., 2009: 344-50; Matkovic, et al., 2003: 167-74). It was determined that the players involved in this study had a higher protein intake rate overall. They also believe that they attach importance to protein intake as well as carbohydrate, and that consuming the two together will further improve performance. In the study conducted in Brazil, pre-training protein intake was 1.91±0.75 g/kg and 20.2% of energy (Raizel, et al., 2017). Pre-training protein intake of the players who participated in the study was found low to be 16.43±1.63% of the energy compared to footballers in Brazil. In this study, it was understood that players mainly care about carbohydrate consumption before training, and players in Brazil predominantly prioritize protein intake.

The ratio of the total energy of the players who participated in the study before, during and after training was 30.9±3.62%, 32.29±3.47%, 30.87±3.82%, respectively. Their fat intake was 80.1±14.63 g, 90.64±13.25 g, 97.98±14.76 g respectively. As seen in this study, the ratio of energy from fat on the day of training was higher than other days. These players were found to have more polyunsaturated fatty acids after training than other days.

The average daily potassium intake of all football players participating in this study before, during and after training was 3387.45±562.98 mg, 3520.6±650.69 mg and 2904.11±275.73 mg, respectively. It was found that the percentage of players' post-training potassium coverage was lower than other days. Daily potassium intake was recorded as 2822±1451 mg in the study conducted in Japan (Güvenç, 2011). It was determined that the potassium intake of the players involved in this study was generally higher than that of players in Japan.

In addition to the effect of individual factors such as body size and composition in football matches, there may also be large differences in energy expenditure depending on training time, intensity, gender, age, player's position, environmental conditions and tactics (Oliveira, et al., 2017: 28). In this study, it was observed that the average BMI and body fat % values of all players were within the normal range. In view of the players' waist circumference measurements, it was determined that men were maximum 90 cm below 102 cm and there was no risk of abdominal fat. The average height of the football players participating in this study was recorded as 178.76±6.95 cm. A study in Hong Kong found that the height of footballers was 177.2±6.4 cm, close to the average. Similar results were found in this study conducted in Turkey. In the literature, the heights of footballers in France and Scandinavian countries were recorded as 179.8±1.5 cm and 181.0±2.1 respectively. These footballers were found to be taller than Hong Kong players. It was determined that the height of Turkish footballers in this study

was shorter than that of footballers in France and Scandinavian countries. In another study conducted in Norway, the average height of footballers was 177.3±0.1 cm. At this point, it has been found to contain similar value to footballers in Hong Kong. The height of footballers in Norway was found to be shorter than in this study. In the study conducted in Spain, it was found that the average height of the footballers was between 180 and 185 cm. It was found that the height of the footballers who participated in this study had a shorter average than footballers in Spain (Kwan, et al., 2016; Gil, et al., 2007; Reilly & Franks, 2000; Wisloff, et al., 1998).

Players' body fat percentage may vary depending on the player's gender and sports. The estimated minimum level of body fat compatible with health is 5% for men and 12% for women; however, optimal body fat percentages for an individual player can be much higher than these minimum values and should be determined by person (Rodriquez, et al., 2009: 709- 31). When the fat percentages of the players who participated in this study were examined, the study in Nigeria showed lower body fat. Nigeria study found players' average body fat percentage was 15.8±0.02%. In Turkish players who participated in the study, the average body fat percentage was recorded as 12.06±1.84%. In this study, the fact that the training times are higher suggests that players are decreasing their fat rates. Another study found that among 20 Malaysian players who were a physically active group, the average body fat percentage was 16.6 ± 3.4%. In the English league, Sutton and his colleagues found that players' body fat percentage was 10.6±2.1%. In the study conducted in Brazil, the average body fat percentage of footballers was recorded as 17.3±6.0% (Wan Nudri, et al., 2009; Sutton, et al., 2009; Neto, et al., 2014). Based on the study results, it is thought that players who engage in more physical activity have lower percentages of body fat, along with findings in other countries.

In the German study, the average body weight of footballers was 90.1±5.6 kg, and in the Hong Kong study, the body weight of footballers was 70.6±7.6 kg. In the Australian study, the body weight of footballers was recorded as 82.0±9.2 kg. The average body weight was 78.6±8.4 kg in the study conducted in Spain (Kwan, et al., 2016; Reinke, et al., 2009; Devlin, et al., 2017; Renon & Collado, 2013). The average body weight of the football players participating in this study was recorded as 69.16±5.71 kg. It was determined that the body weight of Turkish footballers had a lower average than that of footballers of other countries. In addition, the low body weight of players was lower than in other countries. Looking at the reasons for this situation, it is thought that it may be due to the attitudes of players regarding the avoidance of overeating before training, the desire to maintain their weight, nutritional knowledge level, the state of training and the use of nutritional supplements.

RESULT

This research was carried out on 94 players who played licensed football professionally and amateurly. Of these players, 49 play at super league level and 45 at amateur league level. The average height of the players in this study was 178.76±11.95 cm, body weight average was 69.16±5.71 kg, body fat mass average was 8.39±1.68 kg, and average fat percentage was 12.06±1.84%. It was determined that the players provided 52.62±4.1% of the total energy before training from carbohydrates, 16.43±1.63% from proteins and 30.9±3.62% from fats. On the day of training 50.47±3.19% of the total energy came from carbohydrates, 17.18±1.99% from proteins and 32.29±3.47% from fats; at the end of training, it was determined that

55.55±4.09% of the energy was provided from carbohydrates, 13.38±1.02% from proteins and 30.87±3.82% from fats.

CONCLUSIONS

According to this research, the use of nutritional supplements of super league and amateur league players has increased considerably. The fact that this use is within the knowledge of dietitians and coaches does not pose a health problem in footballers. However, coaches may need to receive good nutrition training at this point because some coaches lack nutritional knowledge and may mislead players in this respect. In addition, according to the study, ergogenic support intake is quite high in all age groups, but this rate was especially high in players 31 years old or more. This situation has been shown to provide a significant increase in the frequency and duration of training for the players of the age group in question by using supplements as well as natural nutrition. Ensuring that the player is adequately nourished and taken fluid before starting physical activity is very important to support continuous muscle function and strength throughout the activity. Players who use practices such as restricting energy intake or losing serious body weight, removing one or more food groups from their diets, or consuming high or low-carb diets with low micronutrient density are at greatest risk for micronutrient deficiency. To avoid these nutritional problems, it is recommended to consult a sports dietitian. Players should consume diets that provide at least the recommended amount of diet (RDA) for all micronutrients. The nutrition of players in general should be given importance. Players should be consulted on the appropriate use of ergogenic aids. Such products should only be used after careful consideration in terms of safety, effectiveness, impact and legality.

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