



Evaluation of Eating Habits and Nutritional Knowledge Levels of Professional Football Players and Amateur Football Players Trained in Health Sciences

Ayşe Humeyra Islamoglu^{1*}, Emre Batuhan Kenger², Betül Ova³, Busra Aslıhan Coskun⁴, Gizem Chavush⁵, Irem Solmaz⁶ and Fatma Esra Gunes¹

¹Department of Nutrition and Dietetics, Faculty of Health Sciences, Marmara University, Turkey

²Department of Nutrition and Dietetics, Faculty of Health Sciences, Bahçeşehir University, Turkey

³Sofra Food Production and Service Inc., Turkey

⁴Okmeydanı Sır Polyclinic, Turkey

⁵Suna Dumankaya Bursa, Turkey

⁶Özel E.L.M. Polyclinic, Turkey

***Corresponding Author:** Ayşe Humeyra Islamoglu, Department of Nutrition and Dietetics, Faculty of Health Sciences, Marmara University, Turkey.

Received: July 23, 2019; **Published:** August 21, 2019

DOI: 10.31080/ASNH.2019.03.0419

Abstract

This study was conducted to evaluate the nutritional habits and knowledge levels of amateur and professional football players. The research was carried out with a total number of 69; the amateur football teams of a state university (n = 48) and a professional U-21 football team (n = 21) between January-June 2017. A scale was used to examine the nutritional habits and nutritional knowledge level developed by the researchers by using similar studies in the literature. SPSS version 22 was used for statistical analysis. Frequency and percentage values of the data were calculated and chi-square test was applied. There was a significant difference between the groups in terms of the days, hours and types of training, cigarette-alcohol usage, consumption of nutritional supplements, vitamins-minerals, protein powder and sports drink, frequency of water and fluid consumption ($p < 0.05$). There was no significant difference between the groups in terms of anthropometric measurements, adequate and balanced nutrition, skipping meals, snacks and their contents, habit of packaged product consumption, night-eating habit, daily fluid consumptions and the fluid consumptions before/after training and competition, the content of nutrients consumed before and after training, the level of nutritional education, the level of knowledge of athletes about nutrition, the content of nutrients, vitamins and minerals, the knowledge of carbohydrate-containing foods, the effect of excessive protein and vitamin consumption on the performance ($p > 0.05$). Amateur and professional football players' eating habits and nutritional knowledge levels were not significantly different. As a result, it should be ensured that both amateur and professional football players are given the necessary training to increase their nutritional knowledge and to train athletes by experts.

Keywords: Athlete; Football Player; Nutrition; Eating Habits; Nutritional Knowledge

Introduction

Sports nutrition is a branch of science and has been studied in many years and keep the attentions of sports scientists, athletes,

coaches, athletes' families. It is an area where all relevant professional groups should have accurate and sufficient information [1]. The aim of sports nutrition is to make adequate and balanced nu-

trition by making arrangements for the training and competition periods according to the age, gender, daily physical activity of the athlete and the type of sports he performs [2]. Optimal nutrition plays an important role in optimizing the physical activity, athletic performance and post-exercise recovery. The macro nutrient composition of meals, the choice of food and beverages, the time of consumption, the use of ergogenic substances and micronutrient supplements all show variable effects for the development of the highest level of physical performance [3].

It is stated that athletes are often undernourished and unbalanced when looking for different methods to maximize their performance and this affects their performance negatively [2]. A well-fed athlete's performance, concentration and attention are high; the rate of disease and injury is low, growth and development are as expected, body weight and body fat are within or near to the recommended limits. There is no miracle diet or nutrient recommendation to quickly influence athletes' performance [4]. The optimal diet of any physically active person and the athlete's diet show similar characteristics [3]. In general, athletes are recommended to follow a carbohydrate-rich diet. Protein, vitamins and minerals should be consumed sufficiently. It is recommended that the energy provided from fat be slightly lower than those who do not exercise. In addition, the amount of fluid consumed by athletes should be high [4]. Endurance sports are long-lasting and low-intensity sports and football is a part of endurance sports. Energy expenditure of endurance athletes may vary depending on the duration of the activity, the severity of the activity, the gender of the athlete and body weight. Not only during the competition period, but also during the training period, it needs more energy consumption [5].

Football players' energy, nutrient and fluid requirements vary depending on genetics, desired training adaptations, game position and style of play and training struggles and also, the environmental factors such as temperature, humidity and altitude [6-10]. While the athlete is asked to preserve the body composition during the competition period, the nutrient requirements for the most appropriate preparation, performance and healing process vary for the individual [11]. It is important that football players change the amount and timing of nutrients and fluids they consume according to their body composition, performance and changing daily needs [12].

The aim of this study is to evaluate and compare nutritional habits and nutritional knowledge levels of professional football players and amateur football players trained in health sciences.

Materials and Methods

Research Model and Study Group

This cross-sectional descriptive study was conducted between January-June 2017 between 18-25 years old volunteers who played in a professional sports club U-21 football team (n = 21) and a state university's medicine and dentistry departments' football teams (n = 48). Ethics committee approval was obtained from Marmara University Faculty of Medicine Clinical Research Ethics Committee on 06.01. 2017 with protocol number 09.2017.046.

Data collection

Anthropometric measurements of amateur football players were taken by using "TANITA - BC 418MA" and "Seca - Stadiometer" at the beginning of the research. Anthropometric measurements of professional football players were taken from the records kept by club dietitian/doctor. Body mass indexes (BMI) were divided into groups according to the classification determined by the World Health Organization.

The individuals who participated in the study were asked to fill a questionnaire which is adapted of Saygin and colleagues [13] and Tekin and Arslan [14] studies. The questionnaire is consisted of 11 questions about the demographic characteristics of the football players, 23 questions about the nutritional habits and 14 questions about the nutritional information.

Data analysis

SPSS (Statistical Package for the Social Sciences) version 22 program was used in the data analysis of the study. In the examination of the variables, chi-square test was applied depending on the provision of non-parametric test conditions. The data were calculated at 95% confidence interval and $p < 0.05$ was considered statistically significant.

Results

A total of 69 football players; 48 amateurs and 21 professionals participated in the study.

The anthropometric measurements are shown in Table 1. The mean age of the amateur players was $21,2 \pm 1,5$ years and the mean age of professional players was $18,8 \pm 0,9$ years. Anthropometric measurements of amateur and professional football players are given in Table 1. 77,1% of amateur players and 95,2% of professional players are within the normal BMI range.

There was no significant difference between height, body weight, body mass indexes, body fat masses and fat free masses of professional and amateur players ($p > 0,05$).

	Amateur (n=48)		Professional (n=21)		F	p
	Mean ± SD	Min. - Max.	Mean ± SD	Min. - Max.		
Height (cm)	178,6 ± 5,8	167,0 - 190,0	181,1 ± 8,6	165,0 - 197,0	2,006	0,161
Body weight (kg)	74,2 ± 10,5	55,4 - 103,0	75,3 ± 7,7	64,4 - 86,8	0,184	0,670
BMI (kg/m ²)	23,2 ± 3	18,1 - 35	22,9 ± 1,3	20,3 - 26,2	0,196	0,659
Fat mass (%)	12,7 ± 5,8	2,2 - 28,4	14,4 ± 3,1	7,4 - 22,0	1,600	0,210
Fat free mass (kg)	64,3 ± 6,2	54,2 - 77,7	64,5 ± 7,2	55,2 - 79,2	0,008	0,930

Tablo 1: Antropometric measurements of amateur and professional football players.

Nutritional habits of amateur and professional football players are given in Table 2. Although the ratios of having adequate and balanced nutrition, being careful about fluid intake during training and being careful about nutrition before - after training are higher

in the professional football players, there was no significant difference between the groups. Use of dietary supplements was significantly higher in the professional football players ($p < 0,005$).

	Amateur Football Players (n=48)		Professional Football Players (n=21)		X ²	p
	n	%	n	%		
has adequate and balanced nutrition status	17	35,4	12	57,1	2,830	0,093
skips meal	27	56,2	9	42,9	1,050	0,305
has snacks	30	62,5	11	52,4	0,620	0,431
uses dietary supplements	19	39,6	15	71,4	5,927	0,015
has night-eating habit	38	79,2	18	85,7	5,161	0,076
careful about fluid intake during training	42	87,5	19	90,5	0,126	0,722
careful about fluid intake during football match	42	87,5	18	85,7	0,041	0,839
careful about nutrition before and after training	42	87,5	21	100,0	2,875	0,090
pays attention to the content and nutritional value of nutrients	34	70,8	12	57,1	1,232	0,267

Tablo 2: Nutrition habits of amateur and professional football players.

Furthermore, breakfast was found to be the most frequently skipped meal for both amateur and professional football players. 70,8% of amateur football players prefer carbohydrate-containing snacks while 18,8% prefer protein-containing snacks. 47,6% of professional football players prefer carbohydrate-containing and 33,3% prefer protein-containing snacks. Both amateur football players (56,3%) and professional football players (52,4%) consume 1-2 liters of fluid per day. During the match, 64,6% of amateur football players and 33,3% of professional football players do not consume any other beverages except water. 79,2% of amateur

football players and 66,7% of professional football players pay attention not to consume fatty and excess food before the match (not shown in the table).

Nutritional knowledge levels of football players are shown in Table 3. The number of football players who think that they have enough information about sports nutrition is 35,4% in amateur football players and 47,6% in professional football players. There was no significant difference between the groups ($p > 0,05$). The percentage of amateur football players who answered the ques-

tion “Do you know the vitamin and mineral contents of the foods?” as “yes” was found as 43,8% and the percentage of professional football players was 47,6%. There was no significant difference between the groups ($p > 0,05$). Athletes engaged in endurance and strength may need more protein. “Excess protein intake increases muscle mass” is accepted by 54,2% of amateur football players and 66,7% of professional football players. 31,3% of amateur football

players and 14.3% of professional football players answered correctly by saying “no” ($p < 0,05$). 25% of amateur football players and 28,6% of professional football players think that over-vitamin intake does not improve performance. 8,3% of amateur football players and 38,1% of professional football players do not know what carbohydrate loading is. A significant difference was found between the groups ($p < 0,05$).

Question	Amateur			Professional			P
	Yes n (%)	No n (%)	No idea n (%)	Yes n (%)	No n (%)	No idea n (%)	
Do you have enough knowledge about sports nutrition?	17 (35,4)	31 (64,6)	0 (0,0)	10 (47,6)	11 (52,4)	0 (0,0)	0,424
Do you know the vitamin and mineral contents of foods?	21 (43,8)	27 (56,2)	0 (0,0)	10 (47,6)	11 (52,4)	0 (0,0)	0,798
Do you think excess protein intake increases muscle mass?	26 (54,2)	15 (31,3)	7 (14,6)	14 (66,7)	3 (14,3)	4 (19)	0,307
Do you think over vitamin intake can improve performance?	17 (35,4)	12 (25)	19 (39,6)	11 (52,4)	6 (28,6)	4 (19)	0,211
Do you know what carbohydrate-loading is?	27 (56,3)	4 (8,3)	17 (35,4)	11 (52,4)	8 (38,1)	2 (9,5)	0,004

Table 3: Nutritional knowledge levels of football players.

Table 4 shows the knowledge levels of football players about sports nutrition. It is recommended that athletes consume 3 main meals and 2 snacks per day [15]. 45,8% of amateur football players and 80.9% of professional football players in the group responded correctly saying “4-6 meals should be consumed” ($p < 0,05$). When

“relationship between nutrition and athlete success” was asked; 85.4% of amateur football players and 95.2% of professional football players answered correctly by saying that they are related ($p > 0,05$).

Question	Amateur		Professional		P
	Correct n (%)	Incorrect n (%)	Correct n (%)	Incorrectn (%)	
Average number of meals to consume per day	22 (45,8)	26 (54,2)	17 (80,9)	4 (19,1)	0,035
Relationship between nutrition and athlete success	41 (85,4)	4 (14,6)	20 (95,2)	1 (4,8)	0,271
Time between last meal and competition	27 (56,2)	21 (43,8)	21 (100,0)	0 (0,0)	< 0,001
time between the last liquid intake and the competition	16 (33,3)	32 (66,7)	3 (14,3)	18 (85,7)	0,004
The minerals that athletes need the most	2 (4,2)	46 (95,8)	1 (4,8)	20 (95,2)	0,036

Table 4: Football players’ knowledge levels of sports nutrition.

43,8% of amateur football players gave wrong answer by saying "1-2 hours should be between the last meal and the competition"; all of the professional football players answered correctly by saying "3-4 hours should be between the last meal and the competition". The American Academy of Sports Medicine recommends 200-300 ml fluid intake 10-15 minutes before exercise [16]. 33,3% of amateur football players and 14,3% of professional football players answered correctly the question about fluid intake before exercise by saying "10 minutes ago" ($p < 0,05$).

Phosphorus and magnesium are the most needed minerals for athletes (Ersoy and Hasbay, 2008). In our study, 4,2% of amateur football players and 4,8% of professional football players answered the most needed minerals correctly ($p < 0,05$).

Discussion

There is a direct relationship between athletes' eating habits and performance. It is recommended that athletes consume 3 main meals, 2-3 snacks a day and the timing of meals is as important as the frequency of meals [17]. In our study, 52,1% of amateur players and 81% of professional players consume 4-6 meals a day. In a study conducted to evaluate the nutritional habits and anemia status of active sportsmen, it was determined that athletes mostly consume 3-4 meals [2]. In a study of Yazar and colleagues [18], it was found that 37,4% of athletes skipped snacks, 25,1% skipped breakfast and 24,6% skipped lunch. Furthermore, 47,6% of the athletes cannot have enough time for the meal, 22,8% are skipping meals because of weight control and 18% is lack of appetite. According to Kürklü's [19] study, most of the amateur players skipped one of the daily meals (72,5%), while the majority of professional football players did not skip meals (55,8%); it was found that 57,7% of those who say they skipped meals skipped breakfast meals. In this research, 56,2% of amateur football players skipped meals, while 42,9% of professional football players skipped meals. The most frequently skipped meals were found as breakfast in both amateur and professional football players. Even though skipping lunch rate is low, no amateur and professional football players skip the evening meal. In the literature, breakfast is generally emphasized as the most skipped meal, and our research is parallel to this result. High carbohydrate liquid foods/beverages can be an ideal choice to lower the breakfast skipping rates for athletes who are not hungry and do not want to have breakfast in the morning. A variety of cereals, milk, juice, sports drinks and breakfast liquid foods can be served to encourage athletes to have breakfast. When

such a breakfast is offered, it is observed that 90% of the players are encouraged to have breakfast regularly [17].

Since athletes' nutrient consumption analyzes generally show that they are not getting enough calories and vitamins, many sports dietitians recommend for athletes to take low doses of multivitamin daily and/or consume vitamin-enriched products after exercise [20]. In a study by Kürklü [19], it is shown that there is a general tendency to use multivitamin and multimineral in addition to daily diet in professional athletes. In a study of Burns, *et al.* [21] 88% of athletes; in a study of Kristiansen, *et al.* [22], it was found that 98,6% used one or more supplementary products. In a study, Massad, *et al.* [23] found that 47,1% of athletes use vitamin and mineral supplements. In our study, the use of nutritional supplementation for amateur football players was found to be 39,6% and for professionals 71,4%.

The rate of having information about carbohydrate loading is 57,9% for all players. In a study conducted by Saygın [13], this rate is 66,1% of all players. In our study, 66,7% of amateur players and 86,7% of professional players know what carbohydrate loading is. According to Saygın [13], these rates are 41,7% for amateur players and 78,3% for professional players. When football players were asked which of the foods containing high carbohydrates, 100,0% of amateur football players and 95,2% of professional football players chose "bread, rice, banana, potato, legumes". Özdemir and Özdelek [2] in their study with active sports students, most of the students stated that simple sugars (honey-jam-molasses) improve performance more than complex carbohydrates (pasta-rice). Protein supplements provide a convenient way for athletes to consume high quality protein in their diet and meet their protein needs. However, additional protein intake beyond requirements does not provide additional gains in strength and muscle mass [24]. 1,2-1,4 g/kg protein intake is sufficient in endurance sports [17]. Excess amount of protein intake may cause health problems and dehydration in athletes [25,26]. In this study, the rate of amateur football players who think that excessive protein intake will not increase muscle mass was found to be 31,3% and professional football players' rate as 14,3%. In this study, 35,4% of amateur football players and 52,4% of professional football players responded that using more vitamins increased performance. Woolf and Manore [27] stated that exercise can increase the need for riboflavin and vitamin B₆; also reported that more research is needed to see if it increases folic acid and vitamin B₁₂ requirements, and that athletes with low-

quality diets that restrict energy intake should seriously consider taking a multivitamin/mineral supplement. In a study of Özdoğan and Özçelik [28] in which student-athletes nutritional knowledge was measured, it was seen that more than half of the students answered "vitamin supplements recommended for all physically active people" as "wrong". Also according to our study; 33,3% of amateur football players and 14,3% of professional football players answered correctly the question of "How many minutes should be between the last fluid intake and the competition". The American Academy of Sports Medicine recommends 200-300 ml fluid intake 10-15 minutes before exercise [29].

Conclusion

Nutrition knowledge levels of both amateur and professional football players should be increased and necessary trainings should be provided about sports nutrition by experts. Nutrition education should be given and proper diet practices should be applied in order to increase the performance of athletes. Coaches, dietitians and athletes should cooperate for a proper and correct nutrition plan. It should be emphasized that there is no need for additional supplements in terms of performance for athletes with adequate and balanced nutrition, vitamins and minerals; so athletes should be encouraged to eat adequate and balanced. Also, athletes should be informed by the dietitian and physician about the vitamin and mineral contents of the foods and the safe intake levels and safety of ergogenic supplements.

Bibliography

1. Baysal A. Beslenme, Ankara: Hatipoğlu Yayınevi (2011): 531.
2. Özdemir G and Özdelek Ç. "Dumlupınar Üniversitesi Beden Eğitimi Ve Spor Yüksekokulunda Okuyan ve Aktif Spor Yapan Öğrencilerin Beslenme Alışkanlıkları". Dumlupınar Üniversitesi Sosyal Bilimler Dergisi (2010): 26.
3. Katz DL, et al. "Klinik Uygulamalarda Beslenme". Çeviren: Kalkan İ, Akman M. 3. Basım, İstanbul: İstanbul Tıp Kitabevleri s (2018): 428.
4. Ersoy G and ve Hasbay A. Sporcu Beslenmesi, Klasmat Matbaacılık, Ankara (2008).
5. Özdemir G. "Spor Dallarına Göre Beslenme". SPORMETRE Beden Eğitimi ve Spor Bilimleri Dergisi, 8.1 (2010): 1-6.
6. Bangsbo J., et al. "Executive summary: Football for health - prevention and treatment of non-communicable diseases across the lifespan through football". *Scandinavian Journal of Medicine and Science in Sports* 24.1 (2014):147-150.
7. Collins J and Rollo I. "Practical considerations in elite football". *Sports Science Exchange* 27 (2014): 133.
8. Laitano O., et al. "Hydration science and strategies in football". *Sports Science Exchange* 27 (2014): 128.
9. Taylor L and Rollo I. "Impact of altitude and heat on football performance". *Sports Science Exchange* 27 (2014): 131.
10. Holway FE and Spriet LL. "Sports-specific nutrition: Practical strategies for team sports". *Journal of Sports Sciences* 29.1 (2011): S115-S125.
11. Di Salvo V., et al. "Performance characteristics according to playing position in elite soccer". *International Journal of Sports Medicine* 28.3 (2007): 222-227.
12. Michael CA and Catherine I. "Room for improvement in nutrition knowledge and dietary intake of male football (Soccer) players in Australia". *International Journal of Sport Nutrition And Exercise Metabolism* 26 (2016): 55 -64.
13. Saygın O., et al. "Amateur and professional football player to investigate of nutritional habits". *Journal of Human Sciences* 6.2 (2009): 177-196.
14. Tekin M and Arslan F. "GAP Spor Şenliğine katılan yıldız ve genç taekwondo sporcularının beslenme alışkanlıklarının belirlenmesi". *Selçuk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi* 14 (2005): 481-486.
15. Manore MM. "Weight Management for Athletes and Active Individuals: A Brief Review". *Sports Medicine* 45.1 (2015): 83-92.
16. Thomas DT, et al. "Position of the Academy of Nutrition and Dietetics, Dietitians of Canada, and the American College of Sports Medicine: Nutrition and Athletic Performance". *Journal of the Academy of Nutrition and Dietetics* 116.3 (2016): 501-528.
17. Ersoy G. "Fiziksel uygunluk (fitness) spor ve beslenme ile ilgili temel öğretiler". 2. baskı, Ankara: Nobel Kitapevleri. S (2016): 79-179.

18. Yarar H., *et al.* "Elit Seviyedeki Sporcuların Beslenme Bilgi ve Alışkanlıklarının Değerlendirilmesi". *Selçuk Üniversitesi Beden Eğitimi ve Spor Bilim Dergisi* 13.3 (2011): 368-371.
19. Kürklü GB. "Sporcularda Vitamin ve Mineral Tüketimi Nasıl Olmalı? How Should be Vitamins and Minerals Consumption in the Athletes? Spor Hekimliği AD, Konya Necmettin Erbakan Üniversitesi Meram Tıp Fakültesi, Konya Türkiye Klinikleri". *Journal of Sports Medicine-Special Topics* 2.3 (2016):16-21.
20. Kersick M. "ISSN exercise and sports nutrition review update: research and recommendations". *Journal of the International Society of Sports Nutrition* 15.1 (2018): 15-38.
21. Burns RD., *et al.* "Intercollegiate Student Athlete use of Nutritional Supplements and the Rol of Athletic Trainers and Dietitians in Nutrition Counseling". *American Dietetic Association* 104.2 (2004): 246-249.
22. Kristiansen M., *et al.* "Dietary Supplement Use by Varsity Athletes at a Canadian University". *International Journal of Sport Nutrition and Exercise Metabolism* 15.2 (2005): 195-210.
23. Massad SJ., *et al.* "High school athletes and nutritional supplements: A study of knowledge and use". *International Journal of Sport Nutrition* 5.3 (1995): 232-245.
24. Negro M., *et al.* "Sports Nutrition Science: an essential overview". *Progres in Nutrition* 15.1 (2013): 3-30.
25. Bilsborough S and Mann N. "A review of issues of dietary protein intake in humans". *International Journal of Sport Nutrition and Exercise Metabolism* 16.2 (2006):129-152.
26. Poortmans JR and O Dellalieux. "Do regular high protein diets have potential health risks on kidney functions in athletes?". *International Journal of Sport Nutrition and Exercise Metabolism* 10.1 (2000): 39-50.
27. Woolf K and Manore MM. "B-Vitamins and Exercise: Does Exercise Alter Requirements?". *International Journal of Sport Nutrition and Exercise Metabolism, Human Kinetics* 16 (2006): 453-484.
28. Özdoğan Y and Özçelik AO. "Evaluation of the nutrition knowledge of sports department students of universities". *Journal of the International Society of Sports Nutrition* 8 (2011): 11.
29. Sawka M., *et al.* "Exercise and Fluid Replacement". *American College of Sport Medicine* (2007): 377-390.

Volume 3 Issue 9 September 2019

© All rights are reserved by Ayse Humeyra Islamoglu, et al.