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DETERMINATION OF NUTRITION KNOWLEDGE LEVELS OF THE INDIVIDUAL AND TEAM SPORT ATHLETES

Cuma ECE
Dr., Sakarya University of Applied Sciences, Sakarya, Turkey, cumaece@subu.edu.tr
ORCID:0000-0001-92218194

Ezgi SAMAR
Assoc. Dr., Artvin Coruh University, Artvin,Turkey, ezgi@artvin.edu.tr
ORCID: 0000-0002-9376-9307

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ABSTRACT

This study aimed to determine the nutritional knowledge levels of individual and team sports athletes. The study was quantitative research and 96 athletes of Artvin Provincial Directorate of Youth Sport participated the study voluntarily. In the questionnaire form, there were 39 questions, including 8 demographic characteristics questions and 31 questions on the Nutrition Knowledge Scale (NKS). Since the data showed normal distribution considering the skewness and kurtosis values, independent groups t-test, one-way analysis of variance (ANOVA) and Pearson correlation analyses were used in the statistical analysis. As a result of the analysis, no significant difference was found between the nutritional knowledge scores of the students and the variables of gender, age, amount of daily liquid consumption and sports experience; however, significant differences were found according to BMI, sports branch and daily food consumption ($p<.05$). According to the results of Post-Hoc (SCHEFFE), which was conducted to determine the source of the difference, it was determined that the nutritional knowledge level of individual with normal weight was significantly higher than overweight individuals, and the nutritional knowledge level of those who took 3 meals a day was significantly higher than the nutritional knowledge level of those who took 5 meals a day. Although nutrition is very important in ensuring the growth and development of individuals, it is the use of all nutrients by taking them into the body in a sufficient, balanced and regular way so that individuals can lead a healthy life. This study is of great importance both in this respect and in terms of sports nutrition.

Keywords: Nutritional knowledge level, team sports, individual sports.

INTRODUCTION

Nutrition is essential in providing growth and development in individuals, and it is the use of all nutrients in the body in an adequate, balanced and regular manner for individuals to live healthy (Baysal, 2015). At the same time, it provides very important contributions to the physical and mental development of the individual. While providing physiological contributions physically and mentally, it is a set of behaviours that increase the quality of life socially, facilitate adaptation and harmony to the environment, and improve social communication and interaction (Müftüoğlu, 2003). It is possible to divide nutrition into two as healthy and unhealthy nutrition. The World Health Organisation (WHO) has defined healthy nutrition as a balanced diet containing sufficient amounts of nutrients required by the body with the consumption of appropriate and safe nutrients and has also stated that it is an essential complement to life that contributes to the physiological, mental and social well-being of individuals (WHO, 1998).). In this context, we can say that unhealthy nutrition is an inadequate, unbalanced and irregular diet. The most critical components of a healthy diet are having adequate nutritional knowledge and proper nutrition education. When we look at the content of nutrition education, we can see that it consists of topics such as which nutrients should be consumed and how much, preventing unhealthy eating habits and practices, and teaching how to use food resources more effectively and economically. It is essential to provide this education to individuals and especially to athletes (Yardımcı & Özçelik, 2015).

When we consider nutrition for athletes, we come across the concept of sports nutrition. Sports nutrition is a form of nutrition in which nutritional principles are applied correctly and completely and the main aim is to increase athletic performance (Özdoğan & Özçelik, 2011). The main purpose of sports nutrition is to make nutrition programmes by taking into consideration the gender, age, physical activity, sports branch, exercise and competition times of the athletes. In sports nutrition, which requires expertise, in addition to maintaining health and performance, factors such as endurance and strength continuity, recovery after exercise (regeneration) and body fluid balance should also be given importance (Aka, 2020). Nutrition is one of the important factors that can keep the performance of athletes at a high level. In fact, optimal nutrition facilitates and improves physical activity, athletic performance and recovery process by reducing fatigue. Athletes need to understand the concept of nutrition to maintain both body weight and body health (Andrew et al., 2016).

Unfortunately, sports nutrition is not sufficiently understood by families, coaches and athletes today. Many coaches still direct athletes to nutritional supplements that can be accessed quickly and in a short time to improve athlete performance. However, the relationship between proper nutrition and athlete performance has been known since ancient times (Güneş, 2005). The main factors affecting athlete performance are genetic structure, appropriate training and nutrition (Ersoy, 2004).

Nutrition has become the subject of continuous research and new developments for athletes to compete better in both individual and team games, to increase their performance continuously and to maintain this increase (Yılmaz & Şeker, 2020). The success of professional sports athletes depends on having sufficient knowledge about

nutrition and at the same time transforming them into habits (Pulur & Cicioğlu, 2001). This study aimed to determine the nutritional knowledge levels of individual and team sports athletes.

METHOD

The study was quantitative research. The study was conducted with the voluntary participation of 96 individual and team athletes, 48 females and 48 males, aged 18 and older, affiliated with the Provincial Directorate of Youth Sports in Artvin province. In the study, a questionnaire form was applied to the athletes. After the questionnaire form was organised on google-form, the research was announced through social media and conducted with remote voluntary participation. The survey questions consisted of two parts. Besides, 8 questions were about demographic characteristics, and 31 questions were about Nutrition Knowledge Scale (NKS). The original name of the scale was Nutrition Knowledge Scale (NKS) which was developed by Towler and Shepherd (1990). The Nutrition Knowledge Scale (NKS), whose Turkish validity and reliability study was conducted by Öngün Yılmaz et al. (2021), consisted of 31 questions. Scale items were scored between 0 and 4 (strongly agree 4 points, strongly disagree 0 points). Ten items of the scale (1, 5, 6, 9, 10, 16, 17, 21, 27, 28) were reverse scored because they represent misinformation about nutrition. The highest score that can be obtained from the scale, which evaluation is performed over the total score, was 126. The higher the score obtained from the scale represents the higher the level of nutritional knowledge, and the lower the score represents the lower the level of nutritional knowledge. In the quartiles used for the cut-off points of the scale, the first cut-off point was 79 (<79=low knowledge level), the second cut-off point was 90 (90-100=medium knowledge level) and the third cut-off point was 101 (>101=high knowledge level). The data collected from the participants were transferred to the SPSS programme by statistical coding. A normality test was performed to decide on the statistical analyses to be applied to the data. Here, the skewness and kurtosis values of the data were checked. It was determined that the resulting values were in the range of -2.....+2. These values were accepted as suitable for normal distribution (George & Mallery, 2019, pp. 114-115). Therefore, independent groups t-test, one-way variance (ANOVA) and Pearson correlation analyses were used to analyse the data. The Cronbach Alpa reliability coefficient of the measurement tool was determined as .837.

FINDINGS

Table 1. Descriptive statistics results for the participants

Gender	**n**	**%**
Female	48	50,0
Male	48	50,0
Age	**n**	**%**
12-15	36	37,5
16-19	26	27,1
20 and older	34	35,4
BMI	**n**	**%**
Underweight	5	5,2
Normal	61	63,5
Overweight	30	31,3

Sport Branch	n	%
Team Sport	73	76,0
Individual Sport	23	24,0
Daily Nutrient Consumption	**n**	**%**
2 meals	32	33,3
3 meals	41	42,7
4 meals	17	17,7
5 meals	6	6,3
Daily Liquid Consumption	**n**	**%**
1 lt	17	17,7
2 lt	38	39,6
3 lt	28	29,2
4 lt	6	6,3
5 lt	7	7,3
Sport Experience	$\overline{X}$	sd.
	6,94	5,68
Total	**96**	**100,0**

According to Table 1, 50.0% (n=48) of the participants were female, 50.0% (n=48) were male; 37.5% (n=36) were 12-15 years old, 27.1% (n=26) were 16-19 years old, 35.4% (n=34) were 20 and older; 5,2% (n=5) were underweight, 63,5% (n=61) were normal, 31,3% (n=30) were overweight. Moreover, 76,0% (n=73) played team sports, 24,0% (n=23) played individual sports; 33.3% (n=32) ate daily 2 meals, 42.7% (n=41) ate daily 3 meals, 17.7% (n=17) ate daily 4 meals, 6.3% (n=6) ate 5 meals daily. It was seen that 17,7% (n=17) of the participants consumed 1 lt, 39,6% (n=38) consumed 2 lt, 29,2% (n=28) consumed 3 lt, 6,3% (n=6) consumed 4 lt and 7,3% (n=7) 5 lt of liquid. In addition, it was determined that the mean sports experience of the participants was 6.94±5.68.

Table 2. Comparison results of the participants' nutritional knowledge levels according to gender

	Gender	n	$\overline{X}$	sd	t	p
Nutrition Knowledge Level	Female	48	78,69	13,02	-,634	,528
	Male	48	780,48	16,63		

Table 2 showed the results of the "independent groups t-test" used in the comparison of the participants' nutritional knowledge levels according to gender. As a result of the analysis, no statistically significant difference was found in the nutritional knowledge levels of the participants according to gender (p>.05).

Table 3. Comparison results of the participants' nutritional knowledge levels according to age

	Age	n	$\overline{X}$	sd	F	p
Nutrition Knowledge Level	12-15	36	76,58	12,55	1,478	,233
	16-19	26	77,85	10,15		
	20- 50	34	81,29	11,99		

Table 3 showed the results of the "one-way variance (ANOVA) analysis" used to compare the participants' nutritional knowledge levels according to age. As a result of the analysis, no statistically significant differences were found in the nutritional knowledge levels of the participants according to age (p>.05).

Table 4. Comparison results of the participants' nutritional knowledge levels according to their BMI status

	BMI	n	$\overline{X}$	sd	F	p	Difference
Nutrition Knowledge Level	Underweight[a]	5	72,80	5,93	4,953	,009	b-c
	Normal[b]	61	82,80	15,09			
	Overweight[c]	30	74,17	9,40			

Table 4 showed the results of the "one-way variance (ANOVA) analysis" used to compare the participants' nutritional knowledge levels according to their BMI. As a result of the analysis, statistically significant differences were found in the nutritional knowledge levels of the participants according to their BMI (p<.05). According to the Post Hoc (Scheffe) results to determine the source of the difference, it was determined that the nutritional knowledge levels of normal weight participants were significantly higher than overweight participants.

Table 5. Comparison results of participants' nutritional knowledge levels according to sport branch

	Sport Branch	n	$\overline{X}$	sd	t	p
Nutrition Knowledge Level	Team Sport	73	76,77	11,65	-3,193	,000
	Individual Sport	23	88,52	16,40		

Table 5 showed the results of the "independent groups t-test" used in the comparison of the participants' nutritional knowledge levels according to the sports branch. As a result of the analysis, a statistically significant difference was found in the nutritional knowledge levels of the participants according to the sports branch (p<.05).

Table 6. Comparison results of the participants' nutritional knowledge levels according to their daily food consumption

	Daily food consumption	n	$\overline{X}$	sd	F	p	Difference
Nutrition Knowledge Level	2 meal[a]	32	78,63	13,02	2,993	,035	b-d
	3 meal[b]	41	83,22	14,68			
	4 meal[c]	17	77,00	12,23			
	5 meal[d]	6	67,17	6,74			

Table 6 showed the results of the "one-way variance (ANOVA) analysis" used to compare the participants' nutritional knowledge levels according to their daily food consumption. As a result of the analysis, statistically significant differences were found in the nutritional knowledge levels of the participants according to their daily food consumption (p<.05). According to the Post Hoc (Scheffe) results to determine the source of the difference, it was determined that the nutritional knowledge level of those who took 3 meals a day was significantly higher than the nutritional knowledge level of those who took 5 meals a day.

Table 7. Comparison results of the participants' nutritional knowledge levels according to the amount of daily liquid consumption

	Daily Liquid Consumption	n	$\overline{X}$	sd	F	p
Nutrition Knowledge Level	1 lt	17	81,00	12,29	1,729	,150
	2 lt	38	79,24	12,60		
	3 lt	28	82,89	15,88		
	4 lt	6	68,50	10,69		
	5 lt	7	74,29	13,89		

Table 7 showed the results of the "one-way variance (ANOVA) analysis" used to compare the participants' nutritional knowledge levels according to the amount of daily liquid consumption. As a result of the analysis, no statistically significant differences were found in the nutritional knowledge levels of the participants according to the amount of daily liquid consumption (p>.05).

Table 8. Results of the relationship between the participants' sport experience and nutritional knowledge levels

		Nutrition Knowledge Level
Sport Experience	r	,051
	p	,625

In Table 8, the results of "Pearson correlation analysis" showing the relationship between the participants' nutritional knowledge levels and their sport experience were presented. As a result of the analysis, no statistically significant relationship was found between the participants' sport experience and their nutritional knowledge levels (p>.05).

CONCLUSION and DISCUSSION

In this study, the nutritional knowledge levels of individual and team sport athletes were determined. As a result of the study, no significant difference was found between the nutritional knowledge scores of the students and the variables of gender, age, amount of daily liquid consumption and sports experience, while significant differences were found according to body mass index, sports branch, daily food consumption (p<.05). It was determined that the nutritional knowledge levels of normal weight athletes were significantly higher than overweight athletes, the nutritional knowledge level in individual sports was higher than team sports, and the nutritional knowledge level of those who took 3 meals a day was significantly higher than the nutritional knowledge level of those who took 5 meals a day. The main purpose of sports nutrition is to create adequate and balanced nutrition programmes that will provide the energy and nutrients needed by the athlete according to his/her age, gender, sport type, exercise programme and nutritional habits. In this context, healthy nutrition is very important to increase performance regardless of individual or team sports. Therefore, it is essential to establish basic nutrition knowledge in athletes and to organise educational seminars in this field. Moreover, it is recommended to create awareness among athletes in this field by organising training for families and coaches.

When healthy nutrition is considered in terms of athletes, it is very important in terms of protecting health, protecting from injuries and most importantly increasing performance. The contribution of adequate and balanced nutrition to performance is undeniably great. At the same time, an appropriate training programme and genetic identity are other factors that play a role in performance (Ersoy, 2004). For healthy nutrition to turn into a lifestyle in athletes, it is necessary to have a correct nutritional knowledge level. In the study, no significant difference was found between the Nutrition Knowledge Scale (NKS) scores of the athletes and the gender variable (p>.05). In their study, Yılmaz and Karaca (2019) found that the mean nutritional knowledge of females was higher and no significant difference was found between the groups. In another study in the literature, no significant difference was found between the nutritional knowledge levels of male and female athletes (Rosenbloom et al. 2002). Similarly, in a study examining the nutritional knowledge levels of athlete students studying at the Faculty of Sports Sciences, it was reported that gender did not affect the level of nutritional knowledge (Yılmaz & Şeker, 2020). In the study conducted by Acar (2008) with boxers, the nutritional knowledge levels of males and females were compared and it was determined that both genders had the same level of knowledge (Acar, 2008). Uzlu et al. (2021) conducted a study with 117 male and 23 female students and found that students of both genders had poor knowledge levels. In the study, no significant difference was found between the Nutrition Knowledge Scale (NKS) scores of the athletes and the variables of age and sports experience (p>.05). In the study conducted by Acar (2008) with boxers, when the nutritional knowledge levels and habits of the athletes were evaluated according to their ages, it was determined that there was no statistically significant difference between both groups. In the study, no significant difference was found between the Nutrition Knowledge Scale (NKS) scores of the athletes and the amount of daily liquid consumption (p>.05). Inadequate fluid consumption in athletes negatively affects strength, resistance and aerobic capacity. When the literature was examined, in a study conducted with football players, it was found that the majority of athletes (44.9%) consumed between 1-2 litres of liquid daily (Yarar, 2011). In another study conducted by Saygın (2009) and colleagues, it was determined that although the majority of athletes (83.1%) stated that they paid attention to liquid intake, their liquid consumption was insufficient (87).

In the study, a significant difference was found between the Nutrition Knowledge Scale (NKS) scores of the athletes and the body mass index variable (p<.05). It was determined that the nutritional knowledge level of normal-weight athletes was significantly higher than overweight athletes. Similar to our study, Ülker (2021) determined that there were significant differences between the nutritional knowledge levels of the groups in a study conducted with 25513 university students, and it was found that the basic nutritional knowledge levels of the students in the overweight and obese group were poor. In Gündoğdu's (2009) study, a statistically significant relationship was found between nutritional knowledge level and BMI (p<0.05). In some studies, it was reported that BMI did not affect nutritional knowledge scores (Labban, 2015; Alması, 2015).

In the study, a significant difference was found between the Nutrition Knowledge Scale (NKS) scores of the athletes and the sports branch variable (p<.05). It was found that the nutritional knowledge level of individual athletes was significantly higher than that of team athletes. Healthy nutrition is very important for all sports,

regardless of individual or team sports (Elias, 2018). Uzlu et al (2020) similarly found that the level of sports nutrition knowledge of individual sports students was higher than that of team sports students ($p<0.05$). Besides, similar results were obtained in some studies in the literature (Jessri, 2010; Saygın, 2009). In another study in which a total of 309 students studying in Physical Education and Sports Colleges and doing active sports in different branches participated, the nutritional knowledge levels of the students were compared. As a result of the study, the mean knowledge level score of the individual athletes was found to be significantly higher than that of the team athletes, and this difference was attributed to the fact that there were dietitians within the teams who mostly made arrangements related to the nutrition of the athletes and therefore the athletes who were engaged in team sports needed less information about nutrition (Bozkurt, 2005). Unlike the above results, in a study investigating the general nutritional knowledge level of elite Australian athletes, no significant differences were found between the team and individual athletes in terms of nutritional knowledge (Spendlove, 2012).

In the study, a significant difference was found between the Nutrition Knowledge Scale (NKS) scores of the athletes and the daily food intake ($p<.05$). It was determined that the nutritional knowledge level of those who took 3 meals a day was significantly higher than the nutritional knowledge level of those who took 5 meals a day. In the study conducted by Alması (2015), 57.2% of males consumed daily three meals and 38.4% consumed 2 meals, while the meal consumption of females was 57.4% daily three meals and 35.2% consumed 2 meals. Vassigh (2012) found that 65.7% of the students consumed three main meals and 26.7% did not consume any snacks. In the study of Özdoğan et al. (2012), it was determined that 52.6% of the students consumed three meals a day, 41.2% consumed two meals a day, 84.8% of female students and 68.3% of male students consumed snacks.

SUGGESTIONS

- Attention should be paid to healthy nutrition in order to be more successful in individual and team sports.
- A healthy diet should be paid attention to in order to be healthy in the future.
- Support should be obtained from the relevant people regarding regular nutrition.

ETHICAL TEXT

The study was approved by Artvin Çoruh University Scientific Research and Publication Ethics Committee, which was unanimously decided by the members of the ethics committee that there were no ethical and scientific drawbacks in the study (Document Date and Number: 05.12.2022-72789).

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