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BADMİNTON SPORCULARININ SAĞLIKLI BESLENMEYE İLİŞKİN TUTUM DÜZEYİNİN İNCELENMESİ

ANALYSIS OF THE ATTITUDE OF BADMINTON ATHLETES ABOUT HEALTHY NUTRITION

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Badminton Sporcularının Sağlıklı Beslenmeye İlişkin Tutum Düzeyinin İncelenmesi

ÖZ

Bu araştırma, badminton sporcularının Sağlıklı Beslenmeye İlişkin Tutum düzeylerinin çeşitli değişkenlere göre incelenmesi amacıyla yapılmıştır. Sağlıklı beslenme yeterli ve dengeli beslenmedir. Araştırmanın modeli, betimsel yöntem ile yapılmış nicel bir çalışmadır. Araştırmanın evrenini, Türkiye'de badminton oynayan sporcular, örneklemini ise, 2019-2020 sezonunda aktif olan badminton sporcuları oluşturmaktadır. Çalışmaya gönüllü olarak 510 sporcu katılmıştır. Veri toplama araçları, demografik sorular ve Sağlıklı Beslenmeye İlişkin Tutum Ölçeği sorularından oluşmaktadır. Verilerin normal dağılım göstermemesinden dolayı, nonparametrik (Spearman Korelasyon, Mann-Whitney U, Kruskal-Wallis) testler kullanılmıştır. Yapılan analiz sonucunda katılımcıların yaşı ile BHB faktörü arasında pozitif yönde düşük düzeyde, KB faktörü arasında negatif yönde düşük düzeyde anlamlı ilişki tespit edilmiştir. Beden kitle indeksinde zayıf katılımcıların, KB puan ortalamaları, obez, aşırı kilolu ve normal katılımcıların KB puan ortalamalarından anlamlı düzeyde yüksek olduğu tespit edilmiştir. Eğitim durumu lisans olanların BHB puan ortalamaları, lise ve ortaokul mezunu olan bireylerin puan ortalamalarından anlamlı düzeyde yüksek olduğu saptanmıştır. Eğitim durumu lisans olanların BYD puan ortalamaları, ortaokul ve lise mezunu olan bireylerin puan ortalamalarından anlamlı düzeyde yüksek olduğu saptanmıştır. Ayrıca eğitim durumu ortaokul olanların KB puan ortalamaları, lisans ve lise mezunu olan bireylerin puan ortalamalarından anlamlı düzeyde yüksek olduğu saptanmıştır. Katılımcıların cinsiyeti, spor yaşı, eğitim alınan bölüm ve antrenman saati değişkenleri ile SBİTÖ'nün faktörleri arasında anlamlı fark bulunmamıştır. Çalışmanın sonucunda badminton sporcularının yaş, BKİ ve eğitim durumlarına göre tutumlarının farklılık gösterdiği tespit edilmiştir.

Anahtar Kelimeler: Badminton, Beslenme, Sporcu Beslenmesi, Tutum Ölçeği.

Analysis of The Attitude of Badminton Athletes About Healthy Nutrition

ABSTRACT

The aim of this study was to determine the nutritional knowledge levels and attitudes (behaviors) of athletes through different variables. Healthy nutrition is sufficient and balanced nutrition. The model of the research is a quantitative study made with a descriptive method. The population of the research, are the athletes who play badminton in Turkey; The sample is composed of active badminton athletes who played in the 2019-2020 season. 476 athletes participated in the study. Data collection tools consist of demographic questions and Attitude Scale for Healthy Nutrition (ASHN). Due to the fact that the data doesn't have a normal distribution, nonparametric Spearman correlation, Mann Whitney-U test, Kruskal wallis tests were used. As a result of the analysis, a low level of positive correlation was found between the age of the participants and the IN factor. A significant low level of negative correlation was found between the age of the participants and the MP factor. It was determined that the MP score averages of the weak participants in the BMI were significantly higher than the average MP scores of the obese, overweight and normal participants. It was determined that the IN mean scores of the university graduates were significantly higher than the average scores of the high school and middle school graduates. In addition, it was determined that the MP point averages of middle school graduates are significantly higher than the average score of individuals with undergraduate and high school graduates. No significant difference was found between the variables of the participants' gender, sports age, education department and training time and the factors of the ASHN. As a result of the study, it was determined that badminton athletes' attitudes differ according to their age, BMI and educational status.

Key Words: Badminton, Nutrition, Sports Nutrition, Attitude Scale.

INTRODUCTION

Genetic structure, appropriate training and nutrition are among the main factors affecting an athlete's performance[1]. Although personal physical and psychological factors, training plans, nutrition, health, environmental factors and sport-related factors contribute to high athletic performance, it is difficult to say which factor has the highest effect in maximum performance. However, it is not possible to claim that an unhealthy athlete with poor nutrition will perform well[2]. Athletes spend most of their time doing practices in order to improve their performances.

Indeed, athletes try hard doing practices and it is important to have a balanced diet so that these attempts will not be wasted and training sessions will be more effective[3]. Success in sports can be achieved with a healthy body and its proper development. Training programs and nutrition are especially important for adolescent athletes in order to ensure healthy growth and body development, maintain health and increase athletic performance[4]. Thus, acquisition of balanced diet knowledge in order to get the maximum efficiency from branch specific training programs will contribute to performance increases and fewer cases of injury. It is acknowledged that providing athletes during times of heavy training with foods necessary for their body development, helping body to store necessary minerals, carbohydrates, proteins etc., and maintaining liquid-vitamin balance are likely to lead an increase in the efficiency of training programs. In other words, the most important support for athletes in reaching their goals is a correct nutrition program and planned training.

The aim of this study is to measure badminton players' attitudes towards healthy nutrition and make valuable contributions to the related literature.

MATERIALS AND METHODS

Study Group

The population of the study is badminton players in Turkish sports clubs, and the sampling is the badminton players who actively played badminton in 2019-2020 season, did practices regularly and were between 12-25 age range. Systematic sampling method was used to determine the sampling. In this method, researchers use non-homogenous population that can be numbered and listed somehow[5]. 510 active badminton players participated in the study. The criteria for this sampling were as follows: regularly attending the activities organized by the federation, doing practices at least 3 days a week and two hours a day, and being older than 12 years old due to the requirement of Attitude Scale for Healthy Nutrition. Wrong and inconsistent replies were excluded from the analyses and the data obtained from 476 participants (287 female athletes and 189 male athletes) were analyzed accordingly.

Data Collection Tools

The data collection tool consists of two sections. The first section involves "Demographic Information Form", which was prepared to obtain demographic information about the participants. Developed by Tekkurşun Demir and Cicioğlu, (2019)[6], "Attitude Scale for Healthy Nutrition (ASHN)" was in the second section of the data collection tool. The demographic questions and Attitude Scale for Healthy Nutrition (ASHN) were prepared on a web page called https://www.onlineanketler.com and sent to the participant badminton players via e-mail. The data collection tool was

sent to all active badminton coaches via a WhatsApp group. These coaches were also informed about the importance of the study and the qualities expected from athletes in this WhatsApp group.

Demographic Information Form

This form focuses on demographic information determined by the researcher, which includes age, height, weight (body mass index was calculated) and others such as duration of weekly regular training, the cities where they do practices, their educational background and graduation information.

Attitude Scale for Healthy Nutrition

Developed by Tekkurşun Demir and Cicioğlu, (2019)[6], "Attitude Scale for Healthy Nutrition" (ASHN) includes 21 items and has four factors: Information on Nutrition (IN), Emotion for Nutrition (EN), Positive Nutrition (PN) and Malnutrition (MP). The scale has 5-point Likert format (I do not agree at all, I do not agree, Undecided, I agree and I totally agree). The positive items were scored as 1,2,3,4,5 and the negative ones as 5,4,3,2,1. The internal consistency coefficients for each factor are as follows: Information on Nutrition (90), Emotion for Nutrition (84), Positive Nutrition (75) and Malnutrition (83).

Data Analysis

Prior to the analyses, the researcher checked whether the data met prerequisite conditions for parametric tests. Courtois and skewness (normal distribution of the data) values were examined and it was found that the data collected in the study did not have a normal distribution for each variable. Since the data did not display normal distribution (they did not range between ±1), non-parametric tests were used.

The following tests were used in the analyses:

- Spearman Correlation Test (Spearman's rho) to determine the correlation between age and attitude towards healthy nutrition
- Mann-Whitney Test to determine the correlation between gender and attitude towards healthy nutrition
- Kruskal-Wallis Test to determine the difference between attitude towards healthy nutrition and body mass index, educational background, department, sport age, duration of training.

"Z" distribution statistics were used for Mann-Whitney and "Chi-Square" distribution for "Kruskal-Wallis Test". The degree of confidence for the statistical tests was taken as .05. In addition, the frequency and percentage data about the participants' cities, genders, educational background, weekly duration of training and how long they play badminton were also examined.

FINDINGS

Table 1. Spearman Rho Analysis of Age Variable according to Attitude Scale for Healthy Nutrition (ASHN)

Scale (n=476)	Mean	Sd		IN	EN	PN	MP
Age	17,24	4,41	R	,104	-,022	-,063	-,118
			p	,023*	,627	,171	,010*

*p<.05

Table 1 shows the findings related to Spearman Correlation Test (Spearman's rho), which was done to determine the correlation between age variable and the factors of Attitude Scale for Healthy Nutrition. The analysis revealed a low and positive correlation between age and Information on Nutrition (r=,104; p<.05) and a low and negative correlation between age and Malnutrition (r=-,118; p<.05).

Table 2. Mann Whitney U Analyses of Gender Variable according to Attitude Scale for Healthy Nutrition (ASHN)

Variable	Gender	n	Avarage Rank	Rank Sum	Mann Whitney U	z	p
IN	Female	287	228,89	65691,50	24363,500	-1,900	,057
	Male	189	253,09	47834,50			
EN	Female	287	232,41	66701,00	25373,000	-1,193	,233
	Male	189	247,75	46825,00			
PN	Female	287	237,77	68241,00	26913,000	-,143	,887
	Male	189	239,60	45285,00			
MP	Female	287	241,81	69400,00	26171,000	-,652	,515
	Male	189	233,47	44126,00			

*p<.05

Table 2 displays data about the differences between Attitude towards Healthy Nutrition Scale scores of male and female participants according to Mann Whitney Test. The analysis did not reveal a significant difference between age variable and Information on Nutrition, Emotion for Nutrition, Positive Nutrition and Malnutrition (p>.05).

Table 3. Kruskal Wallis Test of Attitude Scale for Healthy Nutrition (ASHN) according to Body Mass Index

	BMI	n	Avarage Rank	x^2	p	Significant Difference
IN	Thin (a)	108	231,37	5,675	,129	-
	NormaL (b)	208	240,07			
	Overweight (c)	61	220,61			
	Obese (d)	99	290,60			
EN	Thin (a)	108	248,58	2,187	,534	-
	NormaL (b)	208	231,41			
	Overweight (c)	61	253,71			
	Obese (d)	99	231,02			
PN	Thin (a)	108	245,75	,859	,835	-
	NormaL (b)	208	236,16			
	Overweight (c)	61	229,53			
	Obese (d)	99	249,53			
MP	Thin (a)	108	279,87	15,873	,001*	a*d-c-b
	NormaL (b)	208	222,08			
	Overweight (c)	61	223,04			
	Obese (d)	99	254,45			

p<.05

The data about the differences between Body Mass Index variable and the factors of Attitude Scale for Healthy Nutrition (ASHN) are presented in Table 3 below. The group with a significant difference was marked with *. The analysis revealed that Malnutrition mean scores of participants with low Body Mass Index (AR=279,87) are significantly higher than Malnutrition mean scores of obese (AR=254,45), overweight (AR=223,04) and normal (AR=222,08) participants (Chi-Square: 15,873; p<.05).

Table 4. Kruskal Wallis test of Educational Background Variable according to Attitude Scale for Healthy Nutrition (ASHN)

	Educational Background	n	Avarage Rank	x^2	p	Significant Difference
IN	Secondary School (a)	94	224,59	7,543	,023*	c*b-a
	High School (b)	129	228,25			
	University (c)	253	264,28			
EN	Secondary School (a)	94	253,06	12,439	,002*	c*a-b
	High School (b)	129	217,00			
	University (c)	253	270,18			
PN	Secondary School (a)	94	261,30	4,342	,114	
	High School (b)	129	227,16			
	University (c)	253	242,26			
MP	Secondary School (a)	94	297,66	32,885	,000*	a*c-b
	High School (b)	129	205,88			
	University (c)	253	253,47			

p<.05

Table 4 displays data about the differences between educational background variable and Attitude Scale for Healthy Nutrition (ASHN) factors according to Kruskal Wallis Test. The group with a significant difference was marked with *. The analysis revealed that Knowledge about Nutrition mean scores of participants with university as their educational background (AR=264,28) are significantly higher than mean scores of high school (AR=228,25) and secondary school (AR=224,59) students (Chi-Square=7,543; p< .05). Similarly, the mean scores of university student participants (AR=270,18) for Emotion for Nutrition are significantly higher than those of secondary school (AR=253,06) and high school students (AR=217,00) (Chi-Square=12,439; p< .05). In addition, the means scores of secondary school students (AR=297,66) for Malnutrition are significantly higher than those of university (AR=253,47) and high school students (AR=205,88) (Chi-Square=32,885; p< .05).

Table 5. Kruskal Wallis Test of The Department variable according to Attitude Scale for Healthy Nutrition (ASHN) factors

	Department	n	Avarage Rank	x^2	p
IN	Physical Education (a)	79	284,26	6,364	,174
	Coach Training (b)	69	265,29		
	Recreation (c)	63	248,88		
	Sports Management (d)	42	254,48		
	Other (e)	223	230,84		
EN	Physical Education (a)	79	259,47	3,012	,556
	Coach Training (b)	69	247,69		
	Recreation (c)	63	227,65		
	Sports Management (d)	42	276,50		
	Other (e)	223	234,05		
PN	Physical Education (a)	79	221,66	2,297	,681
	Coach Training (b)	69	245,59		
	Recreation (c)	63	249,38		
	Sports Management (d)	42	275,34		
	Other (e)	223	236,52		

MP	Physical Education (a)	79	263,93	1,287	,864
	Coach Training (b)	69	241,78		
	Recreation (c)	63	251,27		
	Sports Management (d)	42	234,82		
	Other (e)	223	235,95		

p<.05

Table 5 below presents the differences between the participants' mean scores for Attitude Scale for Healthy Nutrition (ASHN) factors and the departments they attend according to Kruskal Wallis Test. The group with a significant difference was marked with *. The analysis did not show any differences between the departments and Information on Nutrition, Emotion for Nutrition, Positive Nutrition and Malnutrition factors.

Table 6. Kruskal Wallis Test of Sport Age variable according to Attitude Scale for Healthy Nutrition (ASHN) factors

	Sport Age (Year)	**n**	**Avarage Rank**	**x^2**	**p**
IN	3-4 (a)	101	225,21	4,865	,182
	5-6 (b)	120	222,56		
	7-8(c)	124	251,63		
	9 ve > (d)	131	250,92		
EN	3-4 (a)	101	244,62	1,112	,774
	5-6 (b)	120	228,95		
	7-8(c)	124	245,18		
	9 ve > (d)	131	236,21		
PN	3-4 (a)	101	252,75	6,760	,080
	5-6 (b)	120	229,34		
	7-8(c)	124	257,07		
	9 ve > (d)	131	218,32		
MP	3-4 (a)	101	245,83	1,409	,703
	5-6 (b)	120	245,51		
	7-8(c)	124	227,67		
	9 ve > (d)	131	236,68		

p<.05

The differences between the participants' sport age and their mean scores from Attitude Scale for Healthy Nutrition (ASHN) factors are displayed in Table 6. The group with a significant difference was marked with *. The analysis did not show any differences between the sport age of the participants and Information on Nutrition, Emotion for Nutrition, Positive Nutrition and Malnutrition factors.

Table 7. Kruskal Wallis Test of Training Duration Variable according to Attitude Scale for Healthy Nutrition (ASHN) factors

	Training	**n**	**Avarage Rank**	**x^2**	**p**
IN	4-8(a)	41	272,54	4,755	,191
	9-10 (b)	44	229,34		
	11-12 (c)	101	220,11		
	13 ve > (d)	290	241,48		
EN	4-8(a)	41	274,46	5,062	,167
	9-10 (b)	44	258,33		
	11-12 (c)	101	241,47		
	13 ve > (d)	290	229,37		

PN	4-8(a)	41	270,55	3,934	,269
	9-10 (b)	44	239,60		
	11-12 (c)	101	220,98		
	13 ve > (d)	290	239,90		
MP	4-8(a)	41	264,11	1,862	,602
	9-10 (b)	44	243,50		
	11-12 (c)	101	239,65		
	13 ve > (d)	290	233,72		

p<.05

Table 7 presents the data about the differences between duration of training variable and the participants' mean scores from Attitude Scale for Healthy Nutrition (ASHN) factors. The group with a significant difference was marked with *. The analysis did not show any differences between the sport age of the participants and Information on Nutrition, Emotion for Nutrition, Positive Nutrition and Malnutrition factors.

DISCUSSION

This study aims to measure badminton players' attitudes towards healthy nutrition and make valuable contributions to the related literature. The study found a significant correlation between age variable for badminton players and Attitude Scale for Healthy Nutrition (ASHN) factors. Specifically, there is a low and positive correlation between age variable and the factor "Information on Nutrition" and a low and negative correlation with "Malnutrition" factor. No significant difference was found for "Emotion for Nutrition" and "Positive Nutrition" factors. The following studies reported findings similar to those found in this study: Üstün et al. (2020)[7] examined sedentary and sportive university students' attitudes towards nutrition and their physical activity levels and found a negative correlation between the factors of the scale and malnutrition and emotion for nutrition factor. In addition, the study conducted by Mor et al. (2018)[8] revealed that nutrition of sport high school students is not affected by anthropometric measurements and demographic characteristics. It was also found that the students do not consume the food needed for their age. Bulduk et al. (2018)[9], in their study on high school students' attitudes towards nutrition, emphasized that they have low satisfaction levels with their bodies because of their irregular diet and it is necessary to support their nutrition attitudes and provide them with nutrition training to improve their body weight and body image. One study that reported a different finding is the study carried out by Çakaroğlu et al. (2020)[10] on university students' nutrition attitude. The study did not find a significant difference in attitude towards nutrition according to age variable. Changes in eating habits according to age might be a predictable situation. Although athletes are expected to be more careful about food consumption, the current study found low levels of Information on Nutrition factor, which implies that some attempts should be made to increase badminton players' knowledge level about nutrition.

The second finding of the study showed that there is not a significant difference among the mean scores of Information on Nutrition, Emotion for Nutrition, Positive Nutrition and Malnutrition factors according to gender variable. The literature review did not reveal any studies with a similar finding. The following studies which found different results are as follows: Akman et al. (2012)[11] found that girls have healthier eating habits, but students in general do not have inadequate knowledge about nutrition pyramid and do not have a healthy diet. Similarly, Yılmaz and Karaca (2019)[12], in their comparative study on mean scores of nutrition knowledge and attitudes towards

nutrition, did not find a significant difference between males and females although females have higher mean scores. Also, Çakaroğlu et al. (2019)[10] reported that female participants have higher nutrition attitudes. Significant differences in female participants' scores in the literature can be explained by visual concerns, characteristic qualities of sports branches, variables based on age, and frequency of training sessions; however, lack of significant difference in badminton branch might be due to the specific characteristics of the participants, who do practices very often and participate in many tournaments / matches in a year.

Another finding of the study is about mean scores of the participants for healthy nutrition according to mass body index and shows a significant difference in Malnutrition factor. No significant difference was found for other factors: Information on Nutrition, Emotion for Nutrition, Positive Nutrition. Accordingly, the mean score of the participants for Malnutrition factor are significantly higher than those of obese, overweight and normal participants. The literature review did not reveal any studies reporting similar findings. The studies that suggest findings which are inconsistent with those of the current study are as follows: Kaya et al. (2016)[13] studied nutrition attitudes of athlete students who took part in sports activities at school and did not find a significant difference in body mass index mean scores. Body Mass Index means of the participants who took part in school activities showed that they are in "normal" category. Another study, which was conducted by Çağıran, (2018)[14] with the athletes playing in school teams, did not show a significant difference between healthy nutrition behaviors of the participants and their Mass Body Index factors. Male and female athletes were mostly in normal category. Similarly, Gökensel, (2018)[15], in his study on Turkish Republic of Northern Cyprus volleyball players' nutrition behaviors, reported that Mass Body Index means showed normal category for males and females and there is not a significant difference among nutrition behaviors in terms of gender. Since badminton is a sport branch that requires continuity in performance, energy obtained from food is quickly consumed during practices / matches. Thus, it is necessary to prepare personal nutrition table and implement them for badminton players. Also, the participants in "thin" category displayed behaviors related to Malnutrition factor. This finding might be explained by the fact that the participants have low levels of information on nutrition, they do not have inadequate food as well as poor eating habits and a family/environment with insufficient opportunities.

The current study examined also the participants' scores for healthy nutrition according to their educational background and found significant differences for Information on Nutrition, Emotion for Nutrition and Malnutrition factors. No significant difference was found for "Positive Nutrition" factor. Accordingly, "Information on Nutrition" mean scores of university student participants are significantly higher than those of high school and secondary school student participants. In addition, "Emotion for Nutrition" mean scores of university student participants are significantly higher than those of high school and secondary school student participants. In the literature, there are some studies reporting parallel findings. For instance, the study conducted by Yılmaz et al. (2019)[12] with sedentary and sportive university students found a significant difference between students who take Nutrition Course and those who do not take such a course; the former group having higher scores. There was a significant difference between students who take Nutrition Course and those who do not take such a course in terms of nutrition attitudes; the former group having higher scores. Similarly, Kabakçı et al. (2012)[16] concluded that nutrition knowledge scores of the athletes playing in Turkish

1st and 2nd Bocce league significantly differ according to educational background and "taking Nutrition Course" variables. The researchers also found that the participants who attended nutrition symposium beforehand had higher levels of nutrition knowledge than those who did not attend this symposium. The current study found that Information on Nutrition level of university student participants is higher than those of secondary school and high school students. The reason lying behind this situation might be that university student participants have high levels of education and they are older than other participants. In addition, all 253 university student participants attend sports sciences faculties and take Nutrition Course. Moreover, Emotion for Nutrition scores of university students are higher than those of secondary school and high school students.

The category related to feelings about nutrition in the scale includes the following questions reflecting eating habits that are not acceptable in athletes' nutrition procedures: "I like consuming fast food products", "I like consuming delicatessen products", I like eating fried foods", "I do not like eating fruits" and "I like consuming sherbet desserts". The current study found that the scores of university student participants in this category are significantly different from those of secondary school and high school students. Since the questions in this category are related to processed foods that are easy to access and prepare, such foods might be attractive for them. On the other, secondary and high school students often eat homemade food since they live with their families. Finally, the mean scores of secondary school participants for Malnutrition factor are significantly different from those of high school and university students. This is a quite negative result because the children at that age group must acquire healthy eating habits since they are in a growth and development stage. When we consider that the study was conducted with active and elite athletes, it is crucial that these athletes should be prevented from displaying malnutrition factor behaviors. Also, it might be necessary for coaches and families to observe and monitor the athletes at this age group.

The study also examined the scores of the participants for healthy nutrition according to their departments. No significant differences were found in Information on Nutrition, Emotion for Nutrition, Positive Nutrition and Malnutrition factors. There are some studies which found consistent findings. For instance, the study conducted by Çakaroğlu et al. (2020)[10] with university students found similar findings.

The analysis of university students' scores from Eating Awareness Scale did not show a significant difference between disinhibition and Eating control; however, there were significant differences between departments and Emotional Eating, Awareness, Eating Discipline and Conscious Nutrition. There are also studies reporting different findings. For instance, Arslan and Menteş (2004)[17], in their study conducted with physical education and sports students in five universities found a significant difference between the departments attended and nutrition attitudes only in one university. Although the students attending physical education and sports department consume 2114±184 ml water in average per day, the students attending other departments drink 1848±144 ml in average a day. There is a significant difference between students attending physical education and sports departments and those attending other departments in terms of water consumption on weekdays, at the weekends and in general; physical education and sports department students consuming more water. When the data were analyzed according to department variable, it was seen that all

university students who participated in the study attend sports science faculties. The reason why there was not a significant difference between the participants in Information on Nutrition, Emotion for Nutrition, Positive Nutrition and Malnutrition factors although not all four departments in sports science faculties (physical education and sports teaching, coach training, recreation and sports management) offer Nutrition Course might be explained by the fact that the participants have regular sports lives at least 3-4 years and 9 and more years at maximum. This long and disciplined regular sports life and ages of the participants might have affected their knowledge level and attitudes.

Another finding of the study, which is about the participants' healthy nutrition scores according to sport age (how many years they have been playing badminton), showed no significant differences for Information on Nutrition, Emotion for Nutrition, Positive Nutrition and Malnutrition factors. The literature review revealed some studies reporting parallel findings: Mor et al. (2018)[8], Sarıbaş, (2016)[18] and Turgut et al. (2014)[19], which did not find a significant difference sport age and nutrition knowledge and attitudes. Although a significant difference might be expected in the scores of the participants with relatively shorter sports age in Attitude Scale for Healthy Nutrition factors, such a difference was not reported in the studies. The reason lying behind this finding might be that the athletes playing in the cities where badminton is actively played might have attended similar training programs because badminton is a sport where all age groups do practices in the same sports hall, at the same time and in different courts. In other words, older athletes in addition to coaches might be teaching younger ones due to the presence of a hierarchical order. There might be a system in which many behavioral attitudes (team harmony, team discipline, interaction in the team and team teaching etc.) are learned from senior athletes. The lack of a significant difference in Information on Nutrition, Emotion for Nutrition, Positive Nutrition and Malnutrition factors according to sport age variable might be due to knowledge and attitude shares within teams.

The final finding of the study deals with the scores about healthy nutrition according to training duration. According to the results, no significant differences were found for Information on Nutrition, Emotion for Nutrition, Positive Nutrition and Malnutrition factors. Similarly, Turgut et al. (2014)[19], in their study on eating habits of swimmers, did not find a difference between their knowledge and attitudes and weekly training duration. The literature review did not show another study focusing on weekly training duration. The current study revealed results similar to this finding. According to the data, 290 badminton players who participated in the study do practices 13 hours and above. This long training duration and the matches they take part in imply that the athletes spend a lot of time with their team mates almost as long as the time they spend with their families, which makes us consider "interaction with the team" variable as well. In addition, although the number of badminton players who do practices 4-8 hours a week in badminton branch, no significant difference was found between this group and other groups in terms of knowledge about and attitudes towards nutrition, which might be due to elite badminton players.

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