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Original article

Investigation of the nutritional attitudes and behaviors of the adolescents of the age group of 16-18 who are engaged in sports and the ones who do not

Mustafa Akil[1], *Elif Top*[1], *Serkan Yildiz*[2]

[1]Faculty of Sport Sciences, University of Usak, Usak, Turkey - E-mail: mustafa.akil@usak.edu.tr, [2]Institute of Social Sciences, University of Usak, Usak, Turkey

Summary. The present study was conducted to determine the nutrition exercise attitudes and nutrition exercise behaviors of adolescents the age group of 16-18 who actively perform sport activities and the ones who do not. The study was conducted on a study group comprised of 174 female (44.2%) and 220 male (55.8%) participants; totaling to 394 subjects. In terms of the gender distribution of the participating adolescents, while there is no significant difference between them based on the nutrition exercise behaviors scale, male adolescents displayed significant difference in the sub-factors of healthy nutrition, unhealthy nutrition and meal order in the nutrition exercise behaviors scale compared to the females ($p<0.05$). Furthermore, it was also determined that nutrition exercise attitudes of adolescents who actively performed sport activities were more positive compared to the ones who do not; and this difference was with the healthy nutrition behaviors and meal order; and that adolescents who succeeded to rank in sport competitions had more positive healthy nutrition behavior and meal order behaviors compared to the one who do not ($p<0.05$). Consequently, it can be said that the factor of gender affects the food and exercise attitudes and behaviors of the adolescents of the 16-18 age group; the food and exercise attitudes of the ones who are engaged in sports is more positive compared to the ones who are not, and the children who rank in sports are more attentive to their healthy feeding and the regularity of their meals.

Key words: sport, nutritional behavior, nutritional attitude.

Introduction

The food choices of individuals are affected by many internal and external factors (1), and these factors also continually force people to make decisions concerning their food choices (2). While the factors affecting the food choices have been stated to comprise the taste, convenience, price, and the cultural or religious beliefs (2, 3), their nutritional knowledge can also affect their food choices (4, 5). Athletes know that nutrition affects the performance in a positive way (6), and they obtain such information from their coaches or their sports-related cultural behaviors (7). The concerns regarding their weight (8), performance and aesthetics (9, 10), as well as the effect created by the media (11), pressure the athletes and may change their food attitudes (12, 13).

Nutritional knowledge provides both awareness on nutrition and the practical skills to be used while choosing the healthy foods (4). Thus, the general and sports-related knowledge of athletes affects their food preferences. Although a lot of information is provided concerning the food intake, athletes still do not have adequate and proper food intake (14, 15). The lack of time, difficulty in access to the food, and the lack of the cooking skills and the cooking equipment have

been suggested to be among the reasons for that (16). Although the food intake of athletes is thought to be affected by their nutritional knowledge, there aren't many studies that have taken into consideration the additional factors that might be important in terms of affecting the food attitudes of athletes (17). The previously conducted studies have usually aimed at explaining the processes behind the food attitudes while they mostly focused on the eating preferences (18-20). However, evaluation of the food behaviors of the people engaged in sports is highly necessary in terms of health and performance, since the development of nutritional programs by taking into consideration the training and competition times ensures that the athlete will have the maximum and contributes directly to the recovery after the exercise (21). The food attitude can change depending on the ideals and lifestyles of people, too (22, 23). While people who act with awareness on health attach importance to exercise, nutrition and weight control (24), athletes may attach importance to their food attitudes due to reasons such as performance, competition and being an individual athlete or a member of the team (6). These differences result in the fact that there are nutritional differences between normal individuals and athletes, and between the athletes themselves depending on their level of success.

There are many studies conducted on the food intake of the elite athletes or adult athletes engaged in sports. However, the subject of nutrition in adolescent athletes has not been addressed much. A previous study suggested that non-elite adolescent athletes increased their food intake at a level higher than the normal (25). In addition, it is well known that adolescents prefer consuming certain foods more than young children and adults, and they have different eating habits (26, 27). The people who are not engaged in sports at an elite level may not display a good performance (28) and may be under risk with regards to their health if they cannot ensure their required energy intake. This, in turn, may mean that their nutrition needs to be regulated. Although extensive research has been conducted on human nutrition, the number of studies investigating this subject comparatively between adolescent athletes and normal individuals is low. The purpose of the present study is to investigate the differences between the healthy and unhealthy feeding and food attitudes of the people of the age group of 16-18, who are not engaged in sports, who are actively engaged in sports and who are engaged in sports at an elite level.

Method

Description of Sample and Study Design

The study was conducted on a total number of 394 people between the ages of 16 and 18 (17.5±1.5) who attended the public schools in the province of Uşak, 174 (44.2 %) of whom were female and 220 (55.8 %) male. While 47 % of the participants of the study were engaged in sports, 53 % weren't engaged in sports, and 22.6 % were determined to have ranked. While 46 % of the female children were engaged in sports, the percentage of the male children engaged in sports was found to be 47.7 %. While 11.2 % of the female children were engaged in individual sports and 88.8 % of them in team sports, 26.7 % of the male children were engaged in individual sports and 73.3 % of them in team sports. While the percentage of the female children who had ranked in the branch of sport they were engaged in was found to be 18.4 %, the percentage of the male children who had ranked in the branch of sport they were engaged in was found to be 25.9 %. The data was collected by the four interviewers taking charge in the study by means of the face-to-face interview technique in a classroom setting. The permissions required for the data to be collected from the mentioned schools were obtained from the Ethics Council of Uşak University and the Provincial Directorate of National Education of the Office of the Provincial Governor of Uşak. The adolescents were informed about the study and their verbal consent was obtained before the study was initiated.

Surveys

In the study, the Participant Information Form, the Food and Exercise Attitude Scale (FEAS) and the Food and Exercise Behavior Scale (FEBS) were employed as the data collection tools. The scales have been developed for adolescents of the age group of 12-14. The usability of the same scale in the adolescents who are in the age group of 16-18 has been evaluated by means of the Cronbach's Alpha. The Cronbach's α internal consistency coefficient of the 13-entry Food and Exercise

Attitudes Scale has been determined to be 0.800. The Cronbach's α internal consistency coefficient has been found to be 0.758 for the 'Psychological/Addictive Eating Behavior' sub-dimension, 0.713 for the 'Healthy Nutrition - Exercise Behavior' sub-dimension, 0.723 for the 'Unhealthy Nutrition - Exercise Behavior' sub-dimension, and 0.671 for the 'Order of the Meals' sub-dimension.

Food and Exercise Attitude Scale (FEAS):

This scale, which was developed by Yurt (2008) in order to determine the attitudes of students concerning nutrition, is a five-point Likert-type scale (1: never, 5: always) composed of 13 entries. All entries in the scale include positive expressions and there is no reversely coded question. The total score of the scale can differ between 12 points and 73 points, and a higher point scored in the scale indicates a positive correlation between the food and exercise behaviors (29).

Food and Exercise Behavior Scale (FEBS):

This scale which was developed by Yurt (2008) in order to determine the behaviors of students concerning nutrition is a five-point Likert-type scale (1: doesn't describe me at all, 5: completely describes me) composed of 45 entries and 4 sub-dimensions. The interpretation of the scale is carried out based on the points scored in the sub-dimensions, and the entries numbered 7, 8, 9, 10, 11, 12, 14, 15, 17, 18, 20, 22, 30, 31, 32, 34, 35, 36, 37, 38, 39, 42 and 43 are reversely coded (29). The sub-dimensions of the scale are as follows:

- *Factor 1 (Psychological / Addictive Eating Behavior):* It is composed of 11 entries (7, 8, 10, 20, 22, 34-39). The point that can be scored in this sub-dimension is between 11 and 55. A higher point scored is an indication of a higher level of psychological eating behavior.
- *Factor 2 (Healthy Nutrition - Exercise Behavior):* It is composed of 14 entries (13, 16, 19, 23-28, 33, 40, 41, 44, 45). The point that can be scored in this sub-dimension is between 14 and 70. A higher point scored is an indication of a higher level of healthy nutrition-exercise behavior.
- *Factor 3 (Healthy Nutrition - Exercise Behavior):* It is composed of 14 entries (9, 11, 12, 14, 15, 17, 18, 21, 29, 30-32, 42, 43). The point that can be scored in this sub-dimension is between 14 and 70. A higher point scored is an indication of a higher level of unhealthy nutrition-exercise behavior.
- *Factor 4 (Order of the Meals):* It is composed of 6 entries (1, 2, 3, 4, 5 and 6). The point that can be scored in this sub-dimension is between 6 and 30. A higher point scored is an indication of a better order of the meals.

The scales have been developed for adolescents of the age group of 12-14. The usability of the same scale in the adolescents who are in the age group of 16-18 has been evaluated by means of the Cronbach's Alpha. The Cronbach's α internal consistency coefficient of the 13-entry Food and Exercise Attitudes Scale has been determined to be 0.800. The Cronbach's α internal consistency coefficient has been found to be 0.758 for the 'Psychological/Addictive Eating Behavior' sub-dimension, 0.713 for the 'Healthy Nutrition - Exercise Behavior' sub-dimension, 0.723 for the 'Unhealthy Nutrition - Exercise Behavior' sub-dimension, and 0.671 for the 'Order of the Meals' sub-dimension.

Statistical Method

In the present study, the SPSS-22.0 statistical software package was used for the analysis of the data. The percentage standard deviation and frequency were used for the description of the data concerning the personal characteristics of the participants of the study. Comparison of the average scores of the scales (FEAS and FEBS) was carried out by using the independent samples t-test. The statistical significance level was taken as $p<0.05$.

Results

The general average of the answers which children participating in the study gave to the 13 questions by which they stated their opinions about the food and exercise attitude scale was found to be x=44.27±8.43. Accordingly, the food and exercise attitude of the adolescents participating in the study is at a medium level. When the food and exercise behavior scale of the adolescents participating in the study was examined, their points at the Psychological/Addictive Eating Behavior sub-dimension (33.94±8.68) and in the Unhealthy Food-Exercise Behavior sub-dimension (40.94±8.25) were found to be at a medium level. On the other

hand, their points at the Unhealthy Food-Exercise Behavior sub-dimension (48.29±9.30) and in the Order of the Meals sub-dimension (22.59±4.49) were found to be at a high level (Table 1).

When the results of the study were examined, it was found out that the male adolescents differed statistically significantly compared to the female adolescents in the factors of 'healthy nutrition', 'unhealthy nutrition' and 'order of the meals' ($p<0.05$). Compared to the female children, the 'healthy nutrition behaviors', the 'unhealthy nutrition behaviors' and the 'behaviors related to the order of the meals' of the male children were found to be at a higher level compared to those of the female children (Table 2).

When the food and exercise attitudes and behaviors of the participants of the study were examined depending on the variable of being / not being engaged in sports, it was determined that the level of the children engaged in sports was statistically significantly higher than that of the children not engaged in sports in the food and exercise attitude scale, the food and exercise behavior scale and the factor of the order of the meals ($p<0.05$; Table 3).

When the food and exercise attitudes and behaviors of the adolescents participating in the study were examined depending on their status in terms of having or not having ranked in sports, statistically significant differences were determined in the factors of food and exercise attitude, the healthy food and exercise behavior and the order of the meals ($p<0.05$; Table 4).

Table 1. Average Points scored in the sub-dimensions of FEAS and FEBS

	Min	Max	Mean ± SD
Food and Exercise Attitude Scale	22	64	44.27±8.43 3.40±1.19
Psychological (addictive) Eating Behavior	13	71	33.94 ± 8.68 3.09±1.42
Healthy Nutrition-Exercise Behavior	21	111	48.29 ± 9.30 3.45±1.38
Unhealthy Nutrition-Exercise Behavior	25	67	40.94 ± 8.25 2.93±1.26
Order of the Meals	8	30	22.59 ± 4.49 3.77±1.21

Table 2. Comparison of the Food and Exercise Attitudes and Behaviors depending on the variable of Gender

	Gender	N	Mean ± SD	p
Food and Exercise Attitude Scale	Girls	173	3.35±0.61	0.127
	Boys	220	3.45±0.68	
Psychological (addictive) Eating Behavior	Girls	173	3.11±0.80	0.582
	Boys	220	3.07±0.78	
Healthy Nutrition-Exercise Behavior	Girls	173	3.34±0.61	0.002*
	Boys	220	**3.54**±0.69	
Unhealthy Nutrition-Exercise Behavior	Girls	172	2.85±0.56	0.023*
	Boys	220	**2.98**±0.61	
Order of the Meals	Girls	174	3.65±0.73	0.007*
	Boys	220	**3.86**±0.76	

* P<0.05

Table 3. Comparison of the Food and Exercise Attitudes and Behaviors depending on the variable of Athletic Activeness

	Sports Status	N	Mean ± SD	p
Food and Exercise Attitude Scale	Yes	185	**3.51**±0.58	0.002*
	No	208	3.31±0.69	
Psychological (addictive) Eating Behavior	Yes	185	3.09±0.87	0.965
	No	208	3.08±0.71	
Healthy Nutrition-Exercise Behavior	Yes	185	**3.65**±0.65	0.000*
	No	208	3.27±0.63	
Unhealthy Nutrition-Exercise Behavior	Yes	185	2.89±0.60	0.215
	No	207	2.96±0.58	
Order of the Meals	Yes	185	**4.00**±0.69	0.000*
	No	209	3.56±0.74	

* P<0.05

Table 4. Comparison of the Food and Exercise Attitudes and Behaviors depending on the variable of Having Ranked in Sports

	Sports Rating	N	Mean ± SD	p
Food and Exercise Attitude Scale	available	89	**3.58**±0.64	0.004*
	unavailable	304	3.35±0.64	
Psychological (addictive) Eating Behavior	available	89	3.04±0.77	0.526
	unavailable	304	3.10±0.79	
Healthy Nutrition-Exercise Behavior	available	89	**3.78**±0.74	0.000*
	unavailable	304	3.35±0.61	
Unhealthy Nutrition-Exercise Behavior	available	89	2.94±0.60	0.768
	unavailable	303	2.92±0.59	
Order of the Meals	available	89	**4.03**±0.68	0.000*
	unavailable	305	3.69±0.75	

* P<0.05

Discussion

The age interval of 16-18 is a process of transition from adolescence to adulthood and a period when independence increases. This period when adolescents increase their independence is also an important developmental phase in terms of the formation of the behavioral patterns concerning health (30). In the present study, the Food and Exercise Attitudes, the Psychological/Addictive Eating Behaviors and the Unhealthy Food and Exercise Behaviors points of adolescents were found to be at a medium level on average, while their average points for the Healthy Food and Exercise Behaviors and the Order of the Meals were found to be at a high level (Table 1). The healthy nutritional behaviors, the unhealthy nutritional behaviors and the order of the meals behaviors of the male participants were found to be better than those of the female participants (Table 2). Although the results suggest a high level of the existence of the ones who feed in a healthy way and are attentive to the order of their meals, the existence of the unhealthy food and exercise behaviors among the general population should never be overlooked. The previous studies suggest that the healthy food attitude has a very little effect on the food preferences. It has been stated that the peer influence is highly effective on the food attitudes of adolescents (31-33). Even if healthy nutritional suggestions are tried to be provided and their attitudes and knowledge on nutrition are improved, the individuals at the adolescence period do not follow those suggestions much. Especially among girls, nutrition mostly means only the weight control, and it does not involve any concern about health (34, 35). It has been indicated that girls do not consume an adequate amount of nutritional elements compared to males although the males and females engaged in sports have an adequate intake of calories and have the habit of eating regular meals (34), which is of importance in terms of supporting the present study.

The Unhealthy Food-Exercise Behaviors and the Order of the Meals of the adolescents engaged in sports have been found to be statistically significantly higher compared to the adolescents not engaged in sports (Table 3). Cavadini *et al*. (2000) stated that adolescent athletes had healthier nutritional habits compared to their peers not engaged in sports, and suggested that the programs including the knowledge of sports and nutrition needed to be implemented (36). As a matter of fact, the food intake depends on the nutritional behaviors (37) and the travel- and health-related nutritional attitudes of the people actively engaged in sports may affect their food intake (38). Previous studies conducted on female athletes indicate their energy intake to be less than the recommended amount (39, 40) and the male athletes engaged in weight-class sports may have to undergo calorie restriction (41). These circumstances can create problems in food behaviors of both the female and male athletes (42). However, in team sports, where calorie restriction is not much required, the energy and nutritional needs can be met to a great extent (43). In the present study, the majority of the participants engaged in sports were engaged in team sports. This means they didn't have to undergo calories restriction, which can explain the fact that their levels of healthy food behaviors and the order of meals were found to be high.

In the present study, the adolescents who had ranked at sports were found to have more positive healthy food behaviors and order of the meals behaviors compared to the ones who hadn't ranked (Table 4). In the selection of foods, the purpose for which individuals engage in sports is of great importance (12, 13). Successful elite athletes have more knowledge on nutrition, which may result from the importance they attach to performance and healthy nutrition (44). The purpose for engaging in sports and the goals constitute the difference between the elite athletes and the amateur athletes, and those factors can change the order of importance in the food consumption (45). An athlete with a goal of success does not have the freedom of eating whatever he/she wishes, which pushes him/her to a different and more controlled type of nutrition (12). And this can be effective in athletes having a healthier and more regular nutrition (17).

Consequently, it can be said that the factor of gender affects the food and exercise attitudes and behaviors of adolescents in the age group of 16-18, the food and exercise attitudes of the ones engaged in sports are more positive compared to the ones who are not engaged in sports, and the children who have ranked in sports are more attentive to their healthy nutrition and to the order of their meals. The attitudes of the ath-

letes towards the preference of foods at various stages of seasons should also be investigated. Considering the highly competitive world of sports and the demands the athletes are faced with, it is highly possible that performance plays an important role in the food preferences.

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Correspondence:
Mustafa AKIL
Usak University, Faculty of Sport Sciences,
Tel: 0 276 2212221
Fax: 0 276 2212222
E-mail: mustafa.akil@usak.edu.tr