

# The relationship between eating habits and body mass index of adolescent students doing sports

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**Summary.** *Background:* Evaluation of nutritional and eating habits is important for the development of healthy and quality life and nutrition education in all individuals. *Aim:* In this study, it was aimed to determine the relationship between eating habits and body mass index values of students playing in school teams. *Materials and Methods:* A total of 110 students who are in primary school with participating competitions in 10-14 age group school teams. Age, and BMI (calculated with height and body weight values) of the students, and eating habits test questionnaire was applied. SPSS 20 software was used to analyze the data. Independent t-test was used to determine the difference between eating habits of male and female students, and correlation coefficient analysis was applied to examine the differences between nutritional habits and BMI in order to determine their respective differences. *Results:* Mean height (cm) of the females was  $143.4 \pm 1.70$  and  $145.5 \pm 2.64$  in males, mean body weight (kg) was determined as  $38.11 \pm 1.49$  in females and  $40.81 \pm 1.87$  in males. In this study, mean body mass index values ( $\text{kg}/\text{m}^2$ ) was found as  $19.16 \pm 0.41$  for females and  $18.83 \pm 0.42$  for males. The mean score of eating habits was stated as 101.39 for males and 99.76 for females but there was no statistically significant relationship between eating habits nor gender neither BMI ( $p > 0.05$ ). *Conclusions:* As a result, no statistically significant relation was found between eating habits and body mass index of the students and between eating habits and gender. We think that the majority of students have neutral eating habits, that is, they practice healthy eating habits in the same way as unhealthy eating habits.

**Key words:** Eating habits, body mass index, BMI, sports, adolescence.

## Introduction

Nutrition, eating and health are closely related notions (1). Nutritional and eating habits play an important role in intestinal flora and disease formation from birth to death (2). Achieving healthy eating behaviors during childhood and adolescence increases the probability of maintaining these behaviors later in life (3). Adolescent is an important period that growth and development continues rapidly. Meeting the nutritional elements (nutrients) that increase in this period is an important factor in the prevention of chronic diseases in adulthood. Healthy eating and lifestyle habits are shaped during the adolescent period and become permanent (4). These habits are necessary for

the protection, development and sustaining of health (5). Adolescence is a period characterized by physical and psychological changes, and is the second rapid growth term after infancy. The need for energy and nutrients also increases due to all these changes and rapid growth (6). In adolescents, the need for energy primarily shows itself in the form of increased appetite, and the desire to consume food increases between meals. During this period, the tendency to eat outside home also increases. The habit of skipping main meals and eating fast-food between meals can be seen (7).

There are some daily recommendations specialized for Turkish adolescents between the ages of 11-14 years old: milk group as milk-yoghurt-cheese recommended daily portion size is 3 servings; meat group as

meat-chicken- legumes-nuts recommended daily portion size is  $\frac{3}{4}$ , as fish it is 2 portion, and 2 daily portion size for eggs; vegetables group's daily portion as 2-3<sup>1/2</sup> for males and 2-3 for females; fruit group's portion as 2<sup>1/2</sup> for males and 2-2<sup>1/2</sup> for females and lastly grain group portions as 4<sup>1/2</sup>-5 for males and 4- 4<sup>1/2</sup> for females (8). Sitting in front of TV and computer for a long time and eating snacks during these periods are common behaviors (7). These behaviors can increase the tendency to a sedentary lifestyle in adolescence and consequently obesity can occur. (9).

It is known that "nutritional" status of adolescents can be affected by many factors. Their thoughts and perceptions about their own bodies, genetic factors, changes in lifestyle, and whether having parents that are fat etc. These are some of the factors affecting individual's healthy or unhealthy behavior preferences (10). In order to assess the weight status of individuals, as being underweight, normal or obese, body mass index value should be calculated. Many methods have been developed for these evaluations. Body mass index (BMI) is accepted as one of the most practical methods used to determine obesity level in the population (3). BMI is the most widely used and simplest anthropometric index and can be used to categorize as underweight, normal weight and obese by age and gender (11).

Sports nutrition should be planned appropriately for gender, age and physical activity state of the athlete and as expected according to the sports branch, individualized nutrient needs in a balanced way during the training and competition periods (12). Adequate and balanced nutrition is an important part of sports performance for young athletes, as well as sustaining optimal growth and development. To optimize performance, young athletes should learn what, when and how to eat and drink before, during and after the trainings and matches (13).

The aim of this study is to investigate the relationship between the nutritional habits and body mass index of students playing in school teams.

## Materials and Methods

In this study, 110 students who are in primary school with attending competitions in 10-14 age

group school teams were participated. Age, and BMI (calculated with height and body weight values) of the students, and eating habits test questionnaire was applied. SPSS 20 software was used to analyze the data. Students and parents were given detailed information about the study and their approval was obtained. Research procedures have been carried out in accordance with the human research ethics standards of the 2008 Helsinki Declaration.

The height of the students was measured with bare feet and using a Sega brand measuring instrument with a sensitivity of 0.01cm. Body weight measurement was made with Baster brand scale with a sensitivity of 0.1 kg. BMI was calculated with the formula of body weight (kg) / height (m<sup>2</sup>). After calculating the students' body mass index value, it was determined according to the norm range of the World Health Organization (9).

BMI (kg/m <sup>2</sup> )	Classification
< 18.5	Underweight
18.5-24.9 arası	Normal weight
25-29.9 arası	Overweight
30 veya fazla	Obese

A five likert-like scale was applied for their eating habits, adapted by Mahmoud and Taha (2017). The scores of 'Often', 'Usually', 'Sometimes', 'Rarely' and 'Never' varied between 1 and 5. The scale includes 13 items unhealthy eating habits (scores 13 to 65), 9 items healthy eating habits (scores 9 to 45), 8 items healthy eating habits (scores 8 to 40), 7 items healthy eating planning (scores 7 to 35).

The total scores of the eating habits scale are 37x5=185 points. The points are classified as followed:

- . Scored between 37-86: unhealthy eating habits
- . Scored between 87-135: specified neutral eating habits (meaning that the healthy eating habits and the unhealthy eating habits are equal).
- . Scored between 136 -185: ranges between the specified healthy eating habits.

SPSS 20 software was used to analyze the data. Descriptive statistics and correlation coefficients was used to evaluate questions; descriptive statistics (frequency, percentage, mean, and standard deviation) to define

participants' features, including socio-demographic data and eating habits; independent t-test analysis was performed to examine differences between male and female students' eating habits; and lastly, the relationship between nutritional habits and BMI, correlation

coefficient analysis was conducted to examine the differences.

## Results

**Table 1.** Body mass index distribution by gender

BMI	Male (N-/%)	Female (N-/%)
Underweight	17/32.07	21/36.84
Normal weight	32/60.37	35/61.40
Overweight	4/7.54	1/1.75
Obese	-	-
	Mean $\pm$ SS	Mean $\pm$ SS
Body weight (kg)	40.81 $\pm$ 1.87	38.11 $\pm$ 1.49
Height (kg)	145.5 $\pm$ 2.64	143.4 $\pm$ 1.70
BMI (kg/m <sup>2</sup> )	19.83 $\pm$ 0.42	19.16 $\pm$ 0.41

**Table 2.** Percent distribution of the students according to unhealthy eating habits

Gender	Unhealthy eating habits	Repeatedly		Often		Occasionally		Rarely		Never	
		n	%	n	%	n	%	n	%	n	%
Male (n-53)	Eat fast food	3	5,66	9	16,98	18	33,96	4	7,54	19	35,84
	Eat fatty food	4	7,54	14	26,41	21	39,62	7	13,2	7	13,2
	Eat frying food	11	20,75	14	26,41	18	33,96	6	11,32	4	7,54
	Eat dessert.	19	35,84	0	0	28	52,83	6	11,32	0	0
	Eat food from restaurants.	1	1,88	5	9,43	18	33,96	16	30,18	13	24,52
	Drink fizzy with meals.	7	13,2	10	18,86	19	35,84	10	18,86	7	13,2
	Drink tea or coffee after meals.	1	1,88	2	3,77	10	18,86	13	24,52	27	50,94
	Eat snakes between meals	4	7,55	6	11,32	17	32,08	14	26,42	12	22,64
	Eat salty food	7	13,21	12	22,64	16	30,19	11	20,75	7	13,21
	Eat canned food	3	5,66	0	0,00	8	15,09	17	32,08	25	47,17
	Eat under cooked food	10	18,87	10	18,87	15	28,30	9	16,98	9	16,98
	Eat spicy food	13	24,53	9	16,98	16	30,19	10	18,87	5	9,43
	Eat fast food	22	38,59	15	26,31	13	22,8	4	7	3	5,26
	Eat fatty food	3	5,26	9	15,78	41	71,9	1	1,75	3	5,26
Eat frying food	4	7	6	10,52	38	66,66	8	14,03	1	1,75	
Female (n-57)	Eat dessert.	10	17,54	14	24,56	26	45,61	7	12,28	0	0
	Eat food from restaurants.	0	0	4	7	7	12,28	21	36,84	25	43,85
	Drink fizzy with meals.	3	5,26	3	5,26	16	28,07	18	31,57	17	29,82
	Drink tea or coffee after meals.	1	1,75	5	8,77	6	10,52	7	12,28	38	66,66
	Eat snakes between meals	3	5,26	5	8,77	11	19,30	22	38,60	16	28,07
	Eat salty food	6	10,53	9	15,79	19	33,33	14	24,56	9	15,79
	Eat canned food	2	3,51	1	1,75	12	21,05	9	15,79	33	57,89
	Eat under cooked food	8	14,04	5	8,77	20	35,09	12	21,05	12	21,05
	Eat spicy food	10	17,54	13	22,81	21	36,84	7	12,28	6	10,53

**Table 3.** Percent distribution of the students according to healthy eating habits

Gender	Eating healthy foods	Never		Rarely		Occasionally		Often		Repeatedly	
		n	%	n	%	n	%	n	%	n	%
	Eat breakfast daily.	0	0	4	7,54	7	13,2	9	16,98	33	62,26
	Eat more vegetables.	23	43,39	12	22,64	9	16,98	7	13,2	2	3,77
	Eat more fruits.	1	1,88	2	3,77	5	9,4	14	26,4	31	58,49
	Eat or drink more dairy foods.	3	5,66	5	9,43	10	18,86	16	30,18	19	35,84
	Eat more whole grain foods.	8	15,09	5	9,43	14	26,4	10	18,86	16	30,18
Male (n-53)	Eat low-fat salad dressing.	8	15,09	12	22,64	17	32,07	8	15,09	8	15,09
	Eat breakfast purposefully .	19	35,84	9	16,98	12	22,64	0	0	13	24,52
	Eat three meals every day.	5	9,43	1	1,88	6	11,32	9	16,98	32	60,37
	Meals contain all food elements	1	1,88	3	5,66	18	33,96	12	22,64	19	35,84
	Eat breakfast daily.	1	1,75	3	2,26	14	24,56	9	15,78	30	52,63
	Eat more vegetables.	0	0	3	5,26	8	14,03	19	33,33	27	47,36
	Eat more fruits.	1	1,75	0	0	4	7,01	16	28,07	36	63,15
	Eat or drink more dairy foods.	0	0	1	1,75	11	19,29	10	17,54	35	61,40
Female (n-57)	Eat more whole grain foods.	3	5,26	9	15,78	19	33,33	14	24,56	12	21,05
	Eat low-fat salad dressing.	4	7,01	11	19,29	24	42,1	9	15,78	9	15,78
	Eat breakfast purposefully .	10	17,54	13	22,8	9	15,78	5	8,77	20	35,08
	Eat three meals every day.	1	1,75	3	5,26	12	21,05	13	22,8	28	49,12
	Meals contain all food elements	0	0	8	14,03	20	35,08	14	24,56	15	26,31

**Table 4.** Percent distribution of the students according to following healthy eating habits

Gender	Following healthy eating habits	Never		Rarely		Occasionally		Often		Repeatedly	
		n	%	n	%	n	%	n	%	n	%
	Keep track of how many meal you eat.	7	13,02	9	16,98	19	35,84	9	16,98	11	20,75
	Keep track of food elements in your meals.	5	9,43	10	18,86	22	41,50	9	16,98	9	16,98
	Remind yourself that eating breakfast is healthy.	2	3,77	5	9,43	14	26,4	12	22,64	20	37,73
	Remind yourself to drink fewer sodas or sugared drinks.	16	30,18	8	15,09	12	22,64	4	7,54	15	28,3
	Keep track of servings eaten daily from fruits and vegetables.	3	5,66	3	5,66	10	18,86	14	26,4	23	43,39
Male (n-53)	Keep track of servings you eat daily from dairy foods	6	11,32	8	15,09	17	32,07	11	20,75	11	20,75
	Keep track of servings you eat daily from whole grain foods.	12	22,64	9	16,98	17	32,07	7	13,02	8	15,09
	Keep track of your daily drink from dizzy or sugared drinks.	14	26,4	12	22,64	10	18,86	6	11,32	11	20,75
	Keep track of how many meal you eat.	2	3,5	11	19,29	12	21,05	15	26,31	17	29,82
	Keep track of food elements in your meals.	3	5,26	8	14,03	15	26,31	18	31,57	13	22,8
	Remind yourself that eating breakfast is healthy.	2	3,5	4	7,01	9	15,78	17	29,82	25	43,85
	Remind yourself to drink fewer sodas or sugared drinks.	8	14,03	8	14,03	17	19,82	15	26,31	9	15,78
Female (n57)	Keep track of servings eaten daily from fruits and vegetables.	2	3,5	3	5,26	6	10,52	16	28,07	30	52,63
	Keep track of servings you eat daily from dairy foods	3	5,26	13	22,8	15	26,31	10	17,54	16	28,07
	Keep track of servings you eat daily from whole grain foods.	7	12,28	17	19,82	13	22,8	15	26,31	5	8,77
	Keep track of your daily drink from dizzy or sugared drinks.	13	22,8	10	17,54	14	24,56	12	21,05	8	14,03

**Table 5.** Percent distribution of the students according to planning for eating healthy food

Gender	Planning for eating healthy food	Never		Rarely		Occasionally		Often		Repeatedly	
		n	%	n	%	n	%	n	%	n	%
Male (n-53)	Plan to eat breakfast.	3	5,66	4	7,54	12	22,64	14	26,4	20	37,73
	Plan to eat 5 servings of fruits and vegetables daily.	4	7,54	7	13,02	15	28,3	11	20,75	16	30,18
	Plan to drink or eat 3 servings of dairy foods daily.	6	11,32	13	24,52	13	24,52	10	18,86	11	20,75
	Plan to eat more whole grain foods.	6	11,32	11	20,75	16	30,18	11	20,75	9	16,98
	Plan to drink fewer sodas or sugared drinks	8	15,09	11	20,75	10	18,86	9	16,98	15	28,3
	Plan to eat three meals daily.	4	7,54	5	9,43	8	15,09	14	26,4	22	41,5
	Plan to eat meals with all food elements.	4	7,54	7	13,02	9	16,98	18	33,96	15	28,3
	Plan to eat breakfast.	3	5,26	8	14,03	8	14,03	11	19,29	27	47,36
	Plan to eat 5 servings of fruits and vegetables daily.	1	1,75	7	12,28	18	31,57	13	22,8	18	31,57
	Plan to drink or eat 3 servings of dairy foods daily.	5	8,77	12	21,05	18	31,57	14	24,56	8	14,03
Female (n-57)	Plan to eat more whole grain foods.	11	19,29	12	21,05	15	26,31	11	19,29	8	14,03
	Plan to drink fewer sodas or sugared drinks	11	19,29	11	19,29	14	24,56	10	17,54	11	19,29
	Plan to eat three meals daily.	1	1,75	3	5,26	14	24,56	16	28,07	23	40,35
	Plan to eat meals with all food elements.	1	1,75	8	14,03	15	26,31	18	31,57	15	26,31

**Table 6.** Correlation coefficient between students eating habits and their BMI

		Eating healthy foods	Unhealthy eating habits	Following healthy eating habits	Planning for eating healthy food
Female	BMI	r	-0,197	0,166	-0,028
		p	0,141	0,217	0,834
Male	BMI	r	0,015	0,163	0,228
		p	0,918	0,245	0,101

**p<0.05**

**Table 7.** Gender differences among students regarding their eating habits

	Max score	Male athletes (n-53)	Female athletes (n57)	t	p
Eating healthy foods	65	40.94 ± 1.260	44.11 ± 1.057	1.932	0,055
Unhealthy eating habits	45	20.49 ± 1.020	17.89 ± 0.629	2.199	<b>0,030*</b>
Following healthy eating habits	40	22.17 ± 0.979	20.39 ± 0.699	1.499	0,136
Planning for eating healthy food	35	17.79 ± 0.860	17.37 ± 0.663	0.393	0,694
Total		101.39	99.76		

## Discussion

Evaluation of nutritional and eating habits is important for the development of healthy and quality life and nutrition education in all individuals. In this study, it was aimed to determine relationships between healthy and unhealthy eating habits of

the students playing in school teams and their body mass indexes bidirectional. In this study, mean height (cm) and body weight (kg) of 110 participants between the ages of 10-14 years old were: 143.4±1.70 for females and 145.5±2.64 for males; mean body weight was determined as 38.11±1.49 for females and 40.81±1.87 for females. Body mass index values (kg/

m<sup>2</sup>) was found for females and males as 19.16±0.41 and 18.83±0.42. According to these results, 61.40% of female students were overweight, 36.84% were underweight and 1.75% were overweight; 60.37% of male students were found to be overweight, 32.07% were underweight, and 7.54% were overweight. In Health Behavior in School-aged Children study (HBSC) Turkey model, that designated in 26 provinces (situated in the NUTS-1 regions), it was found that 13% of females, 17% of males that 11-year-old group, and 11% of females, 17% of males in 13-year-old group, and lastly, in 15-year-old groups 10% of females and 18% of males were reported as overweight or obese (15). Kilinc et al. (2019) found that while 16.3% of adolescents in the 10-14 age group were overweight, 2.3% were obese, 16.1% of adolescents in the age group of 15-18 were overweight and 3.2% were obese and, similar to country based data, obesity was found to be more common in males than females. In a study, students' mean BMI was 21.18 and 60% of them were classified in normal weight group and 4% of them were found to be overweight or obese (17). In their research, Özumut et al. (2004) found that the frequency of obesity (19.4-35.5%) in males is higher than in females (15.7-24.8%). In addition, Tekgül et al. (2012) found that the number of males with normal BMI in both adolescents was higher than that of female adolescents. In the studies conducted, it was observed that athlete's BMI decreased as the KIDMED score increased (20). In another study, a negative correlation was found between the KIDMED index and BMI, body weight, waist circumference, upper middle arm circumference measurements in children and adolescents (21). In this study, no statistically significant difference was stated between eating habits of male and female students, but mean score of eating habits scale was higher in male athletes (101.39) than females (99.76). Cheung et al. (2007) found that students' eating habit scores did not change according to gender, again, Monir et al. (2010) reported that there was no significant statistical relationship between students' gender and their eating habits. In this study, no relation was found between eating habits of female and male students and their BMI values. Al-Muammar et al. (2014) and Nakamura et al. (2007) found that there is no statistically

significant correlation between students' eating habits and body mass index. Lazarou et al. (2009) reported a high KIDMED index and increased dietary quality in children and a useful scale to determine healthy eating habits in children.

Frequent consumption of foods with high carbohydrate content such as hamburgers and hot dogs poses a risk especially in terms of obesity and pulmonary, metabolic, gastroenterological, psychosocial and cardiovascular problems. Therefore, it is very important to balance the consumption of such foods, which are consumed more frequently between meals. In their study, Aksoydan and Çakır (2011) stated the frequency of student's consumption of "fast food" regularly every day as 15.4%, the most frequently taken foods from canteen are chocolate and candy (23.4%), carbonated beverages (13.3%), biscuits (12%), pastry and toast (12%), hamburger (10%), chips (9%), juice (8%) stated that the fast food consumption and the frequency of skipping main meals were higher in females. Aslan et al. (2003) reported that 43.5% of the female students had toast 1-2 times a week, 43.4% of the hamburger group; hot dog sandwiches, which 71.7% of the students never consume; chips and chips are consumed 3-4 times a week, 1-2 times a week and never consumed in this food group as 20.7%, 22.6%, 29.0% and 27.6%, respectively. In the study conducted by Önder et al. (2000), 48.2% of students consume hamburgers / hotdogs, 40.3% wrap, 48.4% chips and 54.7% of students consume food between meals and food consumption between meals was found to be 80.9%. In this study, fatty food consumption of athletes was 26.41%; occasionally 39.62% in males, while 71.9% were in females, while fried food consumption was 33.96%; occasionally and 26.41% in males and 66.66% in females. It is thought that the frequency of preference of fried foods is high because it appeals to adolescents as well as adults (14). In this study, sweet food consumption of athletes was 52.83% occasionally and 35.84% frequently in males; while in females 45.61% occasionally and 24.56%. While the habit of drinking acidic beverages with meals were found as 18.86% frequently and 35.84% occasionally in males, and 36.84% rarely and 43.85% never in females. The habit of drinking tea and coffee after meals was 50.94% for males and 66.66% for females.

Many of the children and adolescent athletes have high energy, carbohydrate and fat containing confectionery and refined foods in their daily food consumption. At the same time, these foods are poor in vitamins, minerals and protein. Eating in this way, it can cause most of the daily energy to be supplied from simple sugars. Health and as a result performance of athletes can be adversely affected (28). In this study, athletes' eating habits for males and females; between meals were 30.08% occasionally, 26.42% rarely, 22.64% never, and 38.60% rarely, 28.07% never; salty food eating frequencies were 30.19% occasionally, 22.64% frequently, and 33.33% occasionally, 24.56% rarely; canned food consumption was 47.17% never, 32.08% frequently, and 57.89% occasionally, 24.56% rarely; overcooked eating habits were 28.30% occasionally, 16.98% rarely, and 35.09% occasionally, 21.05% rarely and never; spicy eating habits 30.19% occasionally, 22.64% frequently, and 36.84% occasionally, 22.81% frequently, respectively. Mahfouz et al. (2014) stated that most of the students ate sweet and sugary foods in their study, similarly, El Sayed et al. (2015), Platania et al. (2016), and Mahmoud and Taha (2017) found that the majority of the students have daily dessert consumption habits. Aksoydan and Çakır (2011) reported that the most frequently purchased products from the canteen were chocolate and candy (23.4%), carbonated drinks (13.3%), and biscuits (12%). Platania et al. (2016) almost all students consume carbonated drinks; El Sayed et al. (2015) stated that carbonated drinks are favorite drinks among Egyptian students. In addition, they implied that most preferred drink was tea in Egypt and Turkey, while in Saudi Arabia found as coffee. Reif-Lehrer (1976) determined that 22.9% of athletes consumed carbonated drinks 2-3 days a week and 10.4% consumed 5 or more carbonated drinks a week. Limiting the consumption of packaged fruit juice, sugar added beverages-foods is the basis of nutritional intervention when children have total cholesterol and LDL (bad cholesterol, low-density lipoprotein) cholesterol or other cardiovascular disease risk factors. Skemiene et al. (2007) and Al-Muammar et al. (2014) stated that the majority of adolescent students consume snacks between breakfast and lunch as well as between lunch and dinner. Alizadeh et al. (2008) and Szajewska, and Ruszczyński (2010) reported that

snack eating habits regularly are common among young and university students.

Most of the students eat something between meals. Some of them also prefer foods such as hamburgers with high fat content, hot dogs, french fries. This poses a risk for future endocrine, pulmonary, metabolic, gastroenterological, psycho-social and cardiovascular problems. Breakfast, which is one of the main meals, is of great importance in the nutrition of individuals. When skipping meal is turned into a habit, it prevents adequate nutrition and problems related to malnutrition can occur (36). A sufficient breakfast speeds up the metabolism by providing enough energy for a whole morning (37). In this study, the breakfast habits of the athletes were found to be 62.26% frequently in males, 52.63% in females, and three times a day, 60.37% in males and 61.40% in females. It is stated that the most frequently skipped meal in adolescents is breakfast (38,39). However, in this study we have a high breakfast habit. In order to concentrate on the lessons well, to keep the performance at the highest level and to increase the success in school and sports, breakfast has a great importance (40). Yücecan et al. (1993) conducted a study in students and found as not having breakfast was 30.6%; Koçoğlu (1982) found 94.4%. Altıncı (2017) stated that most of the athletes (85.4%) had breakfast and 14.6% did not.

Child athletes need additional energy and nutrients because they still have a physical growth process with an engagement in sports. The number of meals is as important as the consumption of food. As the number of meals decreases, glucose absorption and glycogen synthesis increases. There is an increase in fat stores and fat synthesis, the availability of nitrogen decreases, leading to disruption of metabolism. Therefore, foods should be consumed at least 3 meals a day (43). It is known that athletes have breakfast more frequently than non-sports ones (37). Kabaran et al. (2003) found that 81.4% of males, 79.3% of females have regularly 3 main meals a day and 41.4% of males and 44.0% of female skip meals and it was stated that the most frequent skipped meal in both gender was breakfast. In the study conducted by Türkçapar et al. (2014), it was observed that 77.2% of the wrestlers did not skip meals, 22.8% skipped meals, and 46.3% of the athletes who skip meals skipped breakfast and 41.5% skipped

lunch. In the study carried out by Göktaş (2010) with active national athletes, 88.9% of the athletes did not skip meals and 11.1% skipped meals, and the skipped meal was 72.3% breakfast. Turan et al. (2009) found that 30.7% of students skipped meals and 23.3% of students did not eat breakfast every day. In the study of Tezcan et al. (2007), 18% of the students found as not having breakfast in the morning. In another study, it was found that male students did not have breakfast at the rate of 23.4% (Önder et al., 2000). In this study, consumption of male and female athletes sorted respectively; vegetable 43.39% never and 47.36% frequently; fruit 58.49% and 63.15% both frequently; milk and products 35.84% and 22.64% frequently; lastly whole-grain foods 30.18% and 24.56% frequently. Onyiriuka et al. (2013) that few students had fruit and vegetable consumption habit, as opposed to Turan et al. (2009) determined that 36.5% of students always consume fruit and vegetable. Willett (2002) found that the consumption of essential nutrients (milk, yogurt, cheese, fresh fruit and vegetables), which are important in the development of the adolescent age group, was low. According to the new food pyramid, low consumption of fresh vegetables and fruits, which are recommended to be consumed every day, may cause young malnutrition. Aslan et al. (2003) determined that 47.0% of female students consume milk and yogurt every day, and milk is never consumed at a frequency of 46.7%. They reported frequencies about consumptions as, buttermilk were 10.9% and 38.9% of those who never consume; 61.4% consume cheese and 40.0% eggs every day; 47.9% of them consume legumes 1-2 times a week, grain group was 1-2 times a week with a frequency of 43.8%; fresh fruits and vegetables are consumed every day as 69.1%; the frequency of consuming sugar every day is 55.8%; 23.7% of those who consumed cola drink every day, 20.9% of those who consumed 3-4 times a week, 26.5% of those who consumed 1-2 times a week, and 28.8% of those who never consumed.

## Conclusions

In the present study, we could not find a relationship between students' eating habits and body mass index or eating habits and gender. This study differs from

the generalized literature. It is thought that this may be due to the increase in scientific activities in the field of sedentary and sports nutrition in our country and around the world, and can be effected by a conscious orientation towards healthy nutrition and quality life in every segment of populations, and an increase in educational activities about nutrition.

The majority of having neutral eating habits were stated, as healthy and unhealthy eating habits moving in a parallel way. It can be said that the students fluctuate between healthy eating and unhealthy eating habits and the level of healthy eating is risky.

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