

Investigation of physical activity levels and eating attitudes of individuals doing sports

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Summary. *Aim:* The aim of this study is to investigate the relationship between physical activity levels and eating attitudes of individuals who do sports in order to improve their life quality according different variables. *Materials and Methods:* A total of 385 athletes, 63 women and 322 men, aged between 18–45 who do sports in various gyms in Adana city center to improve their life quality took part in the survey voluntarily. The athletes completed the International Physical Activity Questionnaire – Short Form (IPAQ-SF) and Eating Attitudes Test (EAT-40). *Results:* According to the results of our research, it is specified that 16.4% of individuals who do sports are females and 83.8% of them are males, 75.3% have a normal eating attitude and 24.7% have a disordered one, 65.7% pay attention to their nutrition whereas 34.3% do not, and 43.1% take supplements. There is no statistically significant difference between physical activity levels and the eating attitudes of the participants according to the gender and education levels ($p>0,5$). On the other hand, it is observed that there is a statistically significant difference between physical activity levels and eating attitude scores according to paying attention to their nutrition, to quantity of having snacks and to taking supplements ($p<0,5$). Moreover, it is discovered that there is no statistically significant relation between physical activity and general eating attitude scores of the participants. *Conclusion:* In this research, it is observed that individuals who pay attention to their nutrition have a higher physical activity level but that individuals who do sports tend more to have a skipping a meal attitude. It can be stated that the benefits of exercise to human health will be more available with correct eating habits.

Keywords: Physical Activity, Nutrition, Eating Attitude

Introduction

Technological and economic developments that started in the 20th century and continuing in the 21st have provided humans with the opportunity to obtain their most basic needs without getting up or struggling at all. With the conveniences that they accompany, these opportunities bring along a number of health problems (1).

Increasing physical activities and having a healthy diet play an important role on aging healthily and minimizing the age-related sickness risks. A regular daily physical activity with a healthy diet is also effective in preventing chronic illnesses (2).

Physical activity is defined to be all body movements that require an energy expenditure above the basal level with the straining of skeletal muscles including all household chore, dancing, jogging, walking, etc.

(3, 4). It is known that regular exercising heals physical, physiological, metabolic and psychological parameters, decreases chronic illness risks and early mortality risks, helps protecting bone muscle and joint health by improving muscle strength, flexibility and endurance, and has a protective effect from cardiac events (infarct, hypertension), type 2 diabetes and some cancer types. Furthermore, regular exercise has an important effect on providing body weight control and preventing from obesity (5-8).

Nutrition, which is the basics of health in every era of life, is obtaining food that provides energy most economically and each nutritional element sufficiently which are required for an individual to grow up, improve and live healthily and productively and using it in the body without losing its nutritive value or rendering it unhealthy (9).

Although people eat adequately, that they do not eat the right food and they consume a similar food group causes the failure of the unconsumed food's duty in the body. This situation which affects health negatively is defined as malnutrition (10).

In addition to its negative effects on individuals' healthy lives, malnutrition affects the physical appearance. It is known that physical appearance has an important role on people's lives. Generally, ideal physical appearance for women is perceived as a fat-free and thin body, and for men it is a muscular and well-built body. Besides, media (journals, newspapers, TV, etc.) have increased public's desire to resemble the ideal figures by publishing items that highlight attractive and skinny women and muscular men. The general instinct that results from this perception causes people to perceive their bodies positively or negatively (11). In addition, changes in the normal eating attitude follows from the changes in the perception of beauty, attraction and aesthetics standards of the public (12).

The changes in the eating attitude have brought along eating disorder. Eating disorder is described as an illness that might include inadequate or redundant food intake, and in other respects, an illness that depends on psychological effects and triggers physical problems (13).

Eating disorder related illnesses are identified as some chronic disorders in the eating habits or as psychiatric illnesses that have significantly harmful results on physical, health-related and psychosocial functions and that are characterized with weight control behaviors (14).

Psychopathological characteristics of eating disorder has had to undergo some changes regarding diagnosis and categorizing in the course of time (15). Eating disorder events are categorized in three diagnostic groups that are Anorexia Nervosa (AN), Bulimia Nervosa (BN) and other non-categorized eating disorders (the not otherwise specified eating disorders-EDNOS) in the DSM-IV-TR according to Diagnostic and Quantitative Handbook of Mental Disorders.

Although eating disorders are considered to be a western illness which results from individuals' feelings of reaching an ideal body type and being accepted visually by their social environment (16), its frequency in non-western societies is not insignificant (17). Furthermore, there is an important rate of incidence of eating disorder in the population who do sports, as well (18). Disorders are observed commonly especially in sports where weight has an important effect on performance. There are three basic reasons for this: First, in sports such as long-distance run which require endurance, thinness is directly related with performance because of physiological reasons. Runners who are a few kilograms above the weight that they show optimum performance will display a less good performance. Second, athletes who compete in weight categories such as Judo, Boxing and Wrestling are not allowed to race if they have the weight of a higher category than their own. Athletes are turned down from Olympic Games for this reason without competing. This situation can generally put a pressure on athletes significantly in order to reach a weight-loss goal in a very short time. Lastly, aesthetic evaluation of gymnasts and diving board jumpers is related to certain body compositions (19, 20). Among individuals who are interested in sports, there are a lot of people who are anorectic and who can disguise their illness (21).

The decrease of physical activity causes to adopt a more sedentary lifestyle, besides, that fast-food habit becomes widespread constitutes the most important factors of obesity frequency (22). It is quite important that individuals exercise by performing physical activities regularly and care for their eating attitudes in order to prevent from health problems and to live a more quality life.

The aim of this research is to investigate the relationship between physical activity levels and eating attitudes of individuals who regularly do sports at private gyms voluntarily.

Materials and Methods

Research Methods

This research is a quantitative research in the correlational survey model. Survey models are research approaches that aim to describe a situation in the past or present (23). Correlational researches are studies which are done with the aim of specifying the relations between two or more variables and obtaining clues regarding their cause and effect results, and in which relations are deeply analyzed (24).

Participants of the Research

63 women and 322 men, with a total of 385 athletes aged between 18-45 who do not practice performance sports but exercise at private gyms in order to increase their life quality participated in our research voluntarily.

Scaling Instruments

In the research, International Physical Activity Questionnaire – Short Form whose international validity and reliability studies are done by Craig, et al., and whose validity and reliability studies in Turkey are done by Öztürk in order to specify athletes' physical activity levels (25). The questionnaire provides

information on the time spent on sitting, jogging, activities with medium intensity and with intensity (25).

Eating Attitudes Test (EAT-40) is a 6-point Likert-type scale (Always, Very Frequently, Frequently, Occasionally, Rarely, Never) that consists of 40 items and depends on self-report. The scale which can be applied on people who are older than eleven was developed by Garner and Garfinkel (1979) in order to determine teenagers with eating disorder and measure the diagnostics of anorexia nervosa; and in Turkey, the scale was adopted to Turkish by Savaşır and Erol (1989) (26, 27). Savaşır and Erol calculated the reliability factor as 0.65 of the test that they repeated monthly and the internal consistency as 0.70 which was calculated via Cronbach alfa. In this research, the reliability level of EAT40 is determined as 0.810.

Statistical Analysis: The analyses of the research were done in the SPSS 22.0 (Statistical Package for Social Sciences) software program. After descriptive statistics was used in order to specify the demographic and nutritive features of the participants, the convenience of variables to normal distribution was investigated with Kolmogorov-Smirnov and Shapiro-Wilks tests. It was observed that the data set is not normally distributed. Therefore, Mann-Whitney U test was used for comparisons of independent dual groups, Kruskal Wallis H test for independent multiple groups and Mann-Whitney U test as dual groups in order to determine among which groups the differences are in the groups with significant differences. Spearman correlation test was used to explore the relations between physical activity levels and eating attitudes.

Findings

In Table 1, it is demonstrated that participants are 16.4% women and 83.6% men according to their gender; 3.4% of them have a primary school degree, 23.1% a secondary school, 66% bachelor's and 7.5% master's degree according to their education levels; 37.4% have

an income of 1400 TL or less, 26% of 1401 – 2100 TL, 9.4% of 2101 – 2800 TL, 9.9% of 2801 – 3500 TL and 17.4% of 3501 and above according to their income levels; 45.5% are athletes for one year, 8.8% for 2 years, 6.8% for 3 years and 38.9% for 4 years and above according to their sport age.

In Table 2, it is observed that, according to the eating attitude of the participants, 75.3% of them have a normal eating attitude and 24.7% a disordered eating attitude, 65.7% pay attention to their nutrition whereas 34.3% do not; according to the quantity of meals a day, 28.3% eat 1 or 2 meals, 56.4% 3 meals, 9.4% 4 meals and 6% 5 meals; according to times of snacks a day, 14.3% do not have snacks while 29.6% have snacks once, 44.9% twice and 11.2% three times or above; according to skipping a meal situations, 27.5% skip at least 1 meal, 72.5 two or more meals, 43.1% take supplements, 50.6% consume packaged food and 48.6% consume packaged beverages.

When Table 3 is analyzed, it is observed that there are no statistically significant differences when physical activity levels and eating attitudes of the participants according to gender are compared.

When Table 4 is analyzed, it is observed that there are no statistically significant differences when physical activity levels and eating attitudes of the participants according to education levels are compared.

When Table 5 is analyzed, it is observed that when physical activity levels of the participants according to sport age are compared, individuals who do sports less than 1 year have a statistically significantly lower physical activity level than others and that there are no statistically significant differences between groups when their eating attitudes are compared.

When Table 6 is analyzed, it is observed that the participants who pay attention to their nutrition have statistically significantly higher scores in physical activity levels and eating attitudes than others when

Table 1. Demographic Characteristics of Participant

Variable	Group	f	%
Gender	Female	63	16.4
	Male	322	83.6
Education Level	Primary Education	13	3.4
	Middle School	89	23.1
	University	254	66
	Graduate	29	7.5
Income Rate	Very Low	144	37.4
	Low	100	26
	Average	36	9.4
	High	38	9.9
	Too High	67	17.4
Sports Age	1 year	175	45.5
	2 year	34	8.8
	3 year	26	6.8
	4 year and over	150	38.9
Total		385	100

Table 2. Nutritional Status of Participants

Variable	Group	f	%
Eating Attitude Status	Normal Eating Attitude	290	75.3
	Impaired Eating Attitude	95	24.7
Attention of Nutrition	Yes	253	65.7
	No	132	34.3
Main Meal Quantity	1 or 2 meal	109	28.3
	3 meal	217	56.4
	4 meal	36	9.4
	5 meal	23	6
Snacks Quantity	No Snacks	55	14.3
	1 Snack eating	114	29.6
	2 Snack eating	173	44.9
	3 and over Snack eating	43	11.2
Skipped Meal	At least 1 skipped meal	106	27.5
	2 or 3 skipped meal	279	72.5
Supplement	Yes	166	43.1
	No	219	56.9
Consumption of Fast Food	Yes	195	50.6
	No	190	49.4
Consumption of Fast Drink	Yes	187	48.6
	No	198	51.4
Total		385	100

Table 3. The Comparison of Physical Activity Levels and Eating Attitudes Behavior According to Gender of Participants

Variable	Gender	N	Min	Max	Med	Average of Ranks	Sum of Ranks	Z	P
Physical Activity Level	Female	63	240	39465	3636	204.73	12898.00	-.915	.360
	Male	322	180	63075	3193	190.70	61407.00		
Eating Attitude	Female	63	5	48	22	196.91	12405.50	-.305	.760
	Male	322	1	59	20	192.23	61899.50		

physical activity levels of the participants according to nutrition care are compared.

When Table 7 is analyzed, it is observed that the participants who have 1 snack have statistically significantly lower physical activity levels than the ones who have 2 snacks when physical activity levels of the

participants according to their quantity of snacks are compared; and that the ones who have 3 snacks or more have statistically significantly higher eating attitude levels than others, and the ones who have 1 snack have statistically significantly lower eating attitude levels when their eating attitude behaviors are compared.

Table 4. The Comparison of Physical Activity Levels and Eating Attitude Behaviors According to Education Level of the Participants

Variable	Group	N	Min	Max	Med	Mean Rank	X ²	p
Physical Activity Level	Primary Education	13	600	18855	2614	157.69	5.565	.135
	Middle School	89	240	59425	2782	173.98		
	University	254	180	63075	3360	199.31		
	Graduate	29	690	61695	3543	211.93		
Eating Attitude	Primary Education	13	5	41	18	182.46	4.814	.186
	Middle School	89	1	54	17	178.83		
	University	254	4	59	20	194.28		
	Graduate	29	9	48	24	230.05		

Table 5. The Comparison of Physical Activity Levels and Eating Attitudes Behaviors According to Sport Age of the Participants

Variable	Sports Age	N	Min	Max	Med	Mean Rank	X ²	p	Different Groups
Physical Activity Level	1 year (a)	175	180	63075	2346	148.05	54.669	.000*	a<b* a<c* a<d*
	2 year (b)	34	570	60495	3322	199.60			
	3 year (c)	26	486	18855	4633	242.25			
	4+ year (d)	150	240	61695	5285	234.41			
Eating Attitude	1 year (a)	175	1	56	19	188.57	3.412	.332	-
	2 year (b)	34	5	53	17	165.63			
	3 year (c)	26	6	45	22	199.85			
	4+ year (d)	150	5	59	20	201.96			

Table 6. The Comparison of Physical Activity Levels and Eating Attitudes Behaviors According to Attention of the Participants

Variable	Attention of Nutrition	N	Min	Max	Med	Average of Ranks	Sum of Ranks	Z	P
Physical Activity Level	Yes	253	180	61695	3472	201.23	50911.50	-2.009	.045*
	No	132	195	63075	2856	177.22	23393.50		
Eating Attitude	Yes	253	1	59	21	205.55	52004.00	-3.065	.002*
	No	132	5	48	18	168.95	22301.00		

* $p < .05$

Table 7. The Comparison of Physical Activity Levels and Eating Attitude Behaviors According to Quantity of Snack of the Participants

Variable	Quantity of Snacks	N	Min	Max	Med	Mean Rank	X ²	P	Different Groups
Physical Activity Level	No Snacks (a)	55	255	36195	3045	180.45	8.899	.031*	b<c*
	1 Snacks eating (b)	114	180	45495	2959	173.59			
	2 Snacks eating (c)	173	297	61695	3618	211.19			
	3 +Snacks eating (d)	43	198	63075	3210	187.33			
Eating Attitude	No Snacks (a)	55	5	55	19	200.99	17.117	.001*	a,b,c<d* b<a* b<c*
	1 Snacks eating (b)	114	5	56	18	164.33			
	2 Snacks eating (c)	173	1	59	21	196.66			
	3 +Snacks eating (d)	43	8	53	26	244.08			

p*<.05Table 8.** The Comparison of Physical Activity Levels and Eating Attitude Behaviors According to Use of Supplement of the Participants

Variable	Use of Supplement	N	Min	Max	Med	Average of Ranks	Sum of Ranks	Z	P
Physical Activity Level	Yes	166	180	63075	3667	207.22	34398.50	-2.183	.029*
	No	219	198	60495	3033	182.22	39906.50		
Eating Attitude	Yes	166	1	59	26	228.65	37956.50	-5.476	.000*
	No	219	4	51	17	165.97	36348.50		

When Table 8 is analyzed, it is observed that the participants who use supplements have statistically significantly higher physical activity levels and eating attitude scores than others when the participants' physical activity levels according to use of supplements are compared.

In Table 9, it is observed that there are no statistically significant relationships between general physical activity and general eating attitude scores of the participants.

Discussion and Conclusion

People's efforts and care for a regular and well-balanced diet and for doing physical activities and sports, which are the key features of a healthy living and leading a good-quality life, are gradually increasing. In our research, it is aimed to specify the physical activity levels and eating attitudes and disorders of individuals who do not practice performance sports but exercise at private gyms in order to increase the quality of their health.

Table 9. The Relationships between Physical Activity level and General Eating Attitude Scores of the Participants

	Eating Attitude
Physical Activity	.050 (p=.331)

When physical activity levels according to gender of participants in our research are compared, it is observed that there are no statistically significant differences between groups (Table 3). In his study in 2018 on students who take part in sports teams, Çağiran could not find a statistically significant difference between physical activity levels according to gender of athletes (28). Arslan, et al. could not find a significant difference between physical activity levels according to gender of participants in their study in 2015 on students who study at a university (29). Haase, et al. found in their study in 2004 which was held on university students in 23 different countries that male students have a higher physical activity level than female students (30). In their study in 2013, Nicaise and Kahan found that physical activity scores of males are higher than females (31). When studies on young adults in different countries are considered, it is observed that different results are obtained (32). That women who participated in our research exercise actively at gyms is believed to be the reason that the results of our research do not exhibit the difference in favor of men in the literature.

According to the results of our research, when genders and eating attitude scores of individuals are compared, it can be seen that there is no statistically significant difference between groups (Table 3). In his study in 2015, Vardal did not find a statistically significant difference between eating attitude and behaviors according to gender of individuals (33). Buhsi found that eating attitude does not differ according to gender in the study he did in 2016 (34). In their study in 2017, Yıldırım et al. found that eating attitudes and behaviors differ according to gender and that women's eating attitudes and behaviors are higher than men (35). It is possible to claim that eating attitude scores according to gender in our study show resemblances with some studies in the literature and differences with some others.

When physical activity levels according to education levels of participants in our research are compared, it is observed that as the education level increases, physical activity level increases accordingly; however, this tendency does not constitute a statistically significant difference (Table 4). Yetim could not find a significant difference in the average scores of physical

activity levels according to education levels in his study in 2017 either (36). In their study in 2003, Morrato, et al. found that as the education level of men increases, physical activity level increases, as well (37).

When eating attitudes according to education levels are compared, it is seen that there is no statistically significant difference (Table 4). In his study in 2018, Işık could not find a statistically significant difference between education levels and eating attitudes of the participants (38).

When physical activity levels according to sport age of the participants are compared, it is observed that physical activity levels of the ones who do sports for 1 year are statistically significantly lower than others (Table 5). In the study in 2018, Çağiran found a statistically significant difference between physical activity levels according to active sport age (28). According to Canadian Institute for Health's research, adults reduce their expenses on health by increasing their physical activity levels (39). When we analyze the results of our study depending on this information in the literature, it is observed that, for individuals whose sport age is low, their physical activity levels are low, too. This result, on the other hand, is parallel to the information in the literature and gives us the expected results.

When eating attitude scores according to sport age of individuals who take part in the study are compared, it is noticed that there is no statistically significant difference between groups (Table 5). In their study in 2017, Yıldırım, et al. found that the individuals' eating attitudes and habits according to their sport history do not constitute a difference (35).

When physical activity levels according to paying attention to the nutrition of the participants in our research are compared, it is seen that physical activity levels of the ones who pay attention to their nutrition are statistically significantly higher than others (Table 6). The result that is obtained from the research can be considered to follow from the facts that individuals are gradually obtaining more information on subjects such as doing sports, doing physical activities and having a regular and well-balanced diet, which are believed to be interrelated, and that they have the information that a good diet makes an individual's performance better.

When eating attitude scores according to paying attention to the nutrition of individuals who take part

in our research are compared, it is observed that the eating attitude scores of the ones who pay attention to nutrition are statistically significantly higher than others (Table 6). In eating disorder events, especially anorexia nervosa and body dysmorphic disorder circumstances, a situation constantly observed is that compulsive exercise is done with the purpose of staying thin (40). In studies that report psychopathology in exercise addicts, cases such as anxiety, depression, obsession, perfectionism, body dysmorphic disorder are observed in especially women, still it is stated that they can be observed in men, as well (41). It is also suggested that the psychopathological features seen in exercise addicts could be related to eating disorders (42). According to the results of our study, and depending on this information in the literature, it is regarded that in addition to the possibility of occurring some eating disorders such as AN and body dysmorphic disorders in individuals who do sports, it is also likely for an individual to experience a bad and careless nutrition.

When physical activity levels according to quantity of snacks of the individuals that take part in our survey are compared, it is observed that the physical activity levels of participants who take 1 snack are statistically significantly lower than the ones taking 2 snacks a day (Table 7). One of the most important factors of a healthy and balanced diet is eating little by little and frequently. It is required that we eat with 4-5-hour intervals in a day. This implies a consumption of 4-5 meals a day. Healthy snacks also enable one's metabolic rate to increase with the thermic effects of food besides preventing the feeling of starvation when it is time to eat. In general terms, having snacks enables weight control, reduces the feeling of starvation, renders into a more active and vigorous body (43).

When eating attitude scores according to quantity of snacks of individuals who take part in our research are compared, it is observed that the eating attitude scores of participants who have 3 snacks or more are statistically significantly higher than others, and the scores of the ones who have 1 snack are statistically significantly lower than others (Table 7). In addition to the fact that eating disorders result from social and cultural pressures, these cases are actually very complicated. There can be a lot of underlying reasons for this and such cases can be found in every society

and culture. The frequency of such incidents in non-western societies is not insignificant (44). Furthermore, there is an important rate of occurrence in the population doing sports (45). The reason that we have reached this conclusion in our research is considered to be the probability to find athletes in our research group of a branch such as fitness that both requires competing according to weight and where aesthetic appearance is emphasized. It can also be stated that whether individuals choose the right nutrients for their meals and snacks is a debatable issue.

When physical activity levels according to use of supplements of the individuals that take part in our survey are compared, it is observed that the physical activity levels of participants who use supplements are statistically significantly higher (Table 8). In his study that he held on students of university sport teams in 2018, Çağıran could not find a statistically significant difference between the ergogenic supplement usages according to physical activity levels (28).

When eating attitude scores according to supplement usages of individuals who take part in our research are compared, it is observed that the eating attitude scores of participants who use supplements are statistically significantly higher (Table 8). In 2018, Çağıran investigated whether there is a difference between skipping a meal habit of students of university sport teams and their ergogenic supplement usage and found that the habit of skipping a meal among athletes who use supplements are significantly higher than the ones who do not use (28). The result found in our research is as follows: It is considered that, instead of eating the food in the nutrition methods, the individuals may compensate them with reinforcements that contain supplements.

It is observed that there are no statistically significant relationships between physical activity and general eating attitude scores of the participants (Table 9). In their study in 2012 on 115 athletes, Vardar, et al. found that there is no statistically significant difference between the group which are exercise addicts and the symptomatic non-addict group with the asymptomatic non-addict group according to their eating attitude and habits (46).

As a result of the research, it is observed that physical activity levels of people who pay attention to

their nutrition are statistically significantly higher than others, that physical activity levels and eating attitude scores of individuals who use supplements are statistically significantly higher than the ones who do not, and that there are no significant relationships between physical activity and general eating attitude scores.

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