

Examination of the Relationship Between Fitness Center Users' Attitudes to Healthy Nutrition and Muscle Appearance Satisfaction

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Authors' Contribution: A: Study design, B: Data collection, C: Data analysis, D: Manuscript preparation, E: Discussion and conclusion

ABSTRACT

Study aim(s): This research was conducted to determine the use of fitness centers for healthy eating and their satisfaction with muscle appearance.

Methods: The sample of the study consisted of a total of 393 volunteer participants who were members of a fitness center. Data were collected by online survey method. In addition to the Personal Information Form, the "Attitude Scale towards Healthy Eating" developed by Tekkurşun Demir and Ciciođlu (2019) and the "Muscle Appearance Satisfaction Scale" developed by Selvi and Bozo (2020) were used to collect the data. In the analysis of normally distributed data, independent samples t-test was used for pairwise comparisons, and One-way ANOVA was used for the comparison of more than two groups. Pearson correlation analysis was used to determine the relationship between variables.

Results: According to the research findings, while the participants' attitudes toward healthy eating differ significantly according to the number of exercise days per week, they do not differ according to gender, educational status, and occupation. In addition, while muscle appearance satisfaction scores differed significantly according to gender and the number of exercise days per week, there was no significant difference in terms of occupation and education variables. As a result of the correlation analysis, no significant relationship was found between the participants' attitudes toward healthy eating and muscle appearance satisfaction.

Conclusions: It can be thought that fitness center users should be conscious about healthy eating and thus they can have better muscle appearance satisfaction.

Keywords: Healthy Eating, Fitness Level, Body Shape

INTRODUCTION

In recent years, there has been an increase in the number of fitness center users due to the desire for socialization and a healthy lifestyle. The primary purpose of engaging in fitness activities, as stated in the literature, is to create a body image associated with muscles and satisfaction with muscle appearance. The drive to create a body image leads to dependencies such as the use of sports supplements, spending excessive time at fitness centers, muscle dysmorphia (bigorexia), and a desire for a muscular appearance [1].

As the popularity of the fitness industry has grown, dissatisfaction with one's appearance has emerged among both men and women. While men aspire to have a more muscular and larger physique, women have become eager to have a muscular and slim-waisted appearance [2]. The determinant of a muscular appearance is not solely muscularity; body fat percentage is equally important. A lower body fat percentage enhances muscle appearance [3]. This desire to attain such an appearance often leads to the development of eating disorders, as individuals strive to lose fat and gain muscle. This condition is commonly referred to as muscle dysmorphia [4].

Nutrition is defined as the intake and utilization of nutrients by an individual for the growth, development, and maintaining a healthy life [5]. The nutritional status of individuals is influenced by many factors such as genetic characteristics, age, stress, lifestyle, environmental conditions, and working conditions. Habits in nutrition, such as the type of food consumed, skipping meals, short intervals between meals, and food consumption, have a significant impact on human metabolism [6]. Healthy eating, on the other hand, involves preventing the preference for energy-dense foods [7]. However, fitness center users tend to opt for carbohydrate, protein, and fat-rich foods that provide sufficient energy sources for healthy eating [8]. They consider the desire to have a muscular physique and engage in exercise as part of a healthy lifestyle. Individuals who engage in sports not only

value the appearance of their bodies but also have a self-protective instinct against negative comments from their surroundings. It is known that muscle dysmorphia and dissatisfaction with muscle appearance have negative effects on physical and psychological health [9]. Due to concerns about social appearance, individuals may exhibit unhealthy eating behaviors. 1 eating too little or consuming excessive amounts of food is referred to as unhealthy eating [10]. Individuals who exercise regularly but do not have healthy eating habits may have disturbances in body image. These individuals are unable to establish a healthy relationship between body appearance and nutrition [11]. In this context, this study aims to examine the relationship between the healthy eating attitudes of fitness center users and their satisfaction with muscle appearance.

METHODS

Research design

This research, conducted to determine the attitudes towards healthy eating and satisfaction with muscle appearance among users of fitness centers, was carried out according to the cross-sectional survey model, which is a quantitative research method. In survey research, the event or object under study is defined as it is without any attempt to alter or influence it [12].

Study sample

The convenience sampling method was used in the research. Convenience sampling is a non-probability sampling method where the sample segment to be selected from the population is determined by the researcher's judgment. In convenience sampling, data is collected from the population in the easiest, fastest, and most economical way [13]. The selected sampling method aims to prevent time, money, and labor loss. It is assumed that the researcher will try to reach the sample by starting

with the most accessible respondents until reaching a group of the desired size. In this context, a total of 393 participants, who were members of the fitness center, were included in the research. The distribution of the research group is presented in Table 1.

Table 1. Distribution of Personal Information of the Sample Group

Variables	Category	n	%
Gender	Male	239	60.8
	Female	154	39.2
Education Degree	High school and below	137	34.9
	Associate or Bachelor	237	60.3
	Graduate	19	4.8
Occupation	Student	109	27.7
	Self-employed	185	47.1
	Public sector employee	99	25.2
Weekly Exercise Days	1 day	59	15
	2 days	47	12.0
	3 days	83	21.1
	4 days	73	18.6
	5 days	62	15.8
	6 days	63	16.0
	7 days	6	1.5
Total		393	100

Table 1 presents the distribution of participants' personal information. According to the data, it can be concluded that 60.8% (n=239) of the individuals in the sample group are male, 60.3% (n=237) have an associate or bachelor's degree, 47.1% (n=185) are self-employed, 21.1% (n=83) exercise 3 days a week.

Data collections tools

Descriptive Information Form: The personal information form includes questions about individuals' gender, education degree, occupation, and weekly exercise days.

Attitude towards Healthy Eating Scale (AtHES): Developed by Demir and Cicioğlu [14], this scale consists of 21 items and aims to determine individuals' attitudes toward healthy eating. The scale consists of four subscales: Knowledge about Nutrition (KN), Emotions towards Nutrition (ETN), Positive

Eating (PE), and Negative Eating (NE). The scale is in a 5-point Likert format. The negative items of the scale are 6th, 7th, 8th, 9th, 10th, 11th, 17th, 18th, 19th, 20th, and 21st, and reverse scoring is applied during the analysis. The minimum possible score on the scale is 21, and the maximum score is 105. The original form of the scale has a reliability coefficient of 0.87. In our study, Cronbach's Alpha coefficient for the reliability of the scale was calculated as 0.859.

Muscle Appearance Satisfaction Scale (MASS): Developed by Selvi and Bozo [9], this is a 5-point Likert scale consisting of 19 items and five subscales (Addiction to Bodybuilding, Dissatisfaction with the Muscles, Physical Injury, Supplement Use, and Examining Muscles (checking)). Items 1, 4, and 14 are reverse-coded. The Cronbach's Alpha reliability coefficient for the overall scale is 0.94, while in our study, the Cronbach's Alpha coefficient for the reliability of the scale was calculated as 0.812.

Data analysis

The SPSS software package was used for data analysis in the research. Skewness and kurtosis values were checked to determine whether the data followed a normal distribution. These values were evaluated within the range of +2 and -2 [15]. The homogeneity of variances was determined using Levene's test. The analyses showed that the data met the assumptions of parametric tests. In the current study, the data obtained from the participants were analyzed using descriptive statistical methods, independent sample t-test, One-way Analysis of Variance (ANOVA), correlation analysis, and multiple regression. Cronbach's Alpha coefficients were calculated to determine the reliability of the scales.

RESULTS

Table 2. Pearson Correlation Analysis Between Research Variables

Variables	$\bar{X} \pm SD$	MASS	AtHES	p
MASS	2.83±0.59	---	0.02	0.686

AtHES	3.60±0.63	0.02	----	0.686
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**MASS: Muscle Appearance Satisfaction Scale AtHES:
 Attitude towards Healthy Eating Scale**

When Table 2 was examined, the relationship between the participants' total scores on the MASS and their AtHE was examined. At the 0.05 significance

level, the relationship was not found to be statistically significant.

Table 3. Comparison of MAS and AtHE According to Participants' Gender

Variables	Gender	N	$\bar{X} \pm SD$	t	p
MAS	Female	154	2.74±0.61	-2.47	0.01
	Male	239	2.89±0.57		
AtHE	Female	154	3.63±0.65	0.77	0.44
	Male	239	3.58±0.61		
Addiction to Bodybuilding	Female	154	2.79±0.89	-2.17	0.03
	Male	239	2.99±0.90		
Dissatisfaction with the Muscles	Female	154	2.96±0.96	1.60	0.11
	Male	239	2.80±0.98		
Physical Injury	Female	154	2.89±0.98	-2.57	0.01
	Male	239	3.14±0.94		
Supplement Use	Female	154	2.47±0.95	-3.01	0.00
	Male	239	2.76±0.90		
Examining Muscles (checking)	Female	154	2.66±0.97	-1.02	0.31
	Male	239	2.76±1.02		
Knowledge about Nutrition	Female	154	4.15±0.85	2.28	0.02
	Male	239	3.93±0.93		
Emotions towards Nutrition	Female	154	3.04±0.95	-0.55	0.58
	Male	239	3.10±0.91		
Positive Eating	Female	154	3.84±0.91	1.91	0.06
	Male	239	3.66±0.89		
Negative Eating	Female	154	3.65±0.99	-0.63	0.53
	Male	239	3.71±1.00		

MASS: Muscle appearance satisfaction scale, AtHES: Attitude towards healthy eating scale

When Table 3 was examined, there was no significant difference in the gender-related attitudes of the participants towards healthy eating, dissatisfaction with the muscles, groaning, feelings about nutrition, and bad eating habits ($p > 0.05$). It was determined that there was a significant difference between the genders in terms of satisfaction with muscle appearance,

addiction to bodybuilding, physical injury, supplement use, and knowledge about nutrition ($p < 0.05$).

When Table 4 was examined, no statistically significant difference was found in the level of satisfaction with muscle appearance and attitudes towards healthy eating according to the educational status of the participants ($p > 0.05$).

Table 4. Comparison of Muscle Appearance Satisfaction and Attitudes Regarding Healthy Eating According to Participants' Educational Status

Variables	Education Status	N	$\bar{X}\pm SD$	F	p
MAS	High school and below	137	2.79±0.58	2.55	0.08
	Associate or Bachelor	237	2.87±0.59		
	Graduate degree	19	2.59±0.66		
AtHE	High school and below	137	3.58±0.63	0.07	0.77
	Associate or bachelor's degree	237	3.60±0.63		
	Graduate degree	19	3.70±0.64		

MAS: Muscle appearance satisfaction scale, AtHES: Attitude towards healthy eating scale

Table 5. Comparison of Muscle Appearance Satisfaction and Attitudes Regarding Healthy Eating According to Participants' Occupational Status

Variables	Occupation	N	$\bar{X}\pm SD$	F	p
MAS	Student	109	2.92±0.61	2.80	0.06
	Self-employed	185	2.84±0.58		
	Public sector employee	99	2.72±0.59		
AtHE	Student	109	3.70±0.63	2.48	0.09
	Self-employed	185	3.58±0.63		
	Public sector employee	99	3.51±0.60		

MAS: Muscle appearance satisfaction scale, AtHES: Attitude towards healthy eating scale

Table 6. Comparison of Muscle Appearance Satisfaction and Attitudes Towards Healthy Eating According to Participants' Weekly Exercise Days

Variables	Weekly Exercise Days	N	$\bar{X}\pm SD$	F	p	Differences
MAS	1 day	59	2.62±0.72	4.00	0.00	6>1 6>2
	2 days	47	2.65±0.65			
	3 days	83	2.79±0.48			
	4 days	73	2.94±0.56			
	5 days	62	2.87±0.52			
	6 days	63	3.03±0.57			
	7 days	6	3.00±0.60			
AtHE	1 day	59	3.15±0.46	11.95	0.00	3>1 4>1 5>1 6>1 3>2 4>2 5>2 6>2
	2 days	47	3.30±0.44			
	3 days	83	3.64±0.60			
	4 days	73	3.86±0.58			
	5 days	62	3.76±0.64			
	6 days	63	3.73±0.66			
	7 days	6	3.35±0.59			

MAS: Muscle appearance satisfaction scale, AtHES: Attitude towards healthy eating scale

When Table 5 was examined, no statistically significant difference was found in the level of satisfaction with muscle appearance and attitudes towards healthy eating according to the occupational status of the participants ($p>0.05$).

When Table 6 was examined, statistically significant differences were found in the level of satisfaction with muscle appearance and attitudes towards healthy eating according to participants'

weekly exercise. The results show that the participants who exercise 6 days a week are more satisfied in terms of muscle appearance than the participants who exercise 1 and 2 days a week. Moreover, it was revealed that the participants who exercised 3,4,5, and 6 days a week had higher attitudes towards healthy eating than the participants who exercised 1 and 2 days a week.

DISCUSSION

Based on the conducted analyses, it was determined that there was no relationship between MAS and AtHE. This suggests that participants do not prioritize healthy eating in terms of MAS. In their study with 231 participants from martial arts clubs, swimming teams, basketball teams, and public fitness facilities, Tremblay et al. [16] found a positive relationship between muscle appearance satisfaction and unhealthy eating behaviors. Morry and Staska [17] found in their study with psychology students that dissatisfaction with muscle appearance and body shape leads individuals towards unhealthy eating, with magazines and television programs being identified as major contributing factors.

In our study, a significant difference in muscle appearance satisfaction was found based on gender as a demographic variable. Men had higher MAS scores compared to women. However, no statistically significant difference was found in AtHE based on gender. Heiman and Olenik-Shemesh [18] examined the eating habits, physical appearance, and body image perceptions of 14 male and 16 female participants aged 20-40 who engage in sports. Similar results were obtained regarding the gender variable in their study, suggesting that the difference may be more related to age. Oellingrath et al. [19] found that Norwegian adolescents, consisting of 469 individuals, desired a thinner appearance for girls and a more muscular appearance for boys.

In our study, significant differences were observed in AtHE based on the number of weekly exercise days. Participants who exercised 1 or 2 days a week had lower levels of AtHE compared to those who exercised 3, 4, 5, or 6 days a week. Berk and Bingöl [20] conducted a study with 170 female and 305 male participants interested in fitness and bodybuilding. They found no significant difference in the nutrition subscale of the healthy lifestyle behavior scale based on exercise duration (years). It can be speculated that as individuals' exercise history increases, they become more conscious of their choices, and in the long term, fitness and bodybuilding support a healthy lifestyle.

No statistically significant difference was found in MAS and AtHE based on the occupation variable in our study. In a study conducted in Kuwait, Ebrahim et al. [21] found that 400 male participants employed in public and private universities were generally dissatisfied with their muscle appearance, leading them to engage in continuous irregular and unhealthy eating. However, similar to our study, no significant difference was found in muscle appearance and dietary habits between participants employed in the public and private sectors.

This research was conducted to contribute to the interpretation of the relationship between MAS and AtHE among fitness center members in terms of demographic characteristics. The lack of a relationship between muscle appearance satisfaction and attitudes

towards healthy eating in both male and female participants may lead to unhealthy eating behaviors, eating disorders, and social appearance anxiety in pursuit of desired physical appearance goals [22].

CONCLUSIONS

This study aimed to examine the relationship between MAS and AtHE among fitness center users based on demographic variables. The findings indicate that there is no significant relationship between muscle appearance satisfaction and attitudes toward healthy eating among fitness center users. This may be attributed to a lack of sufficient information provided by trainers and nutrition experts to fitness participants.

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It can be suggested that informing fitness participants coaches and nutrition experts could help reduce the risks associated with dissatisfaction with muscle appearance.

CONFLICT OF INTERESTS

No potential conflict of interest was reported by the authors.

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