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## **RELATIONSHIP BETWEEN SOCIAL PHYSIQUE ANXIETY, WALKING ACTIVITY AND BODY COMPOSITION IN UNIVERSITY STUDENTS**

### **ABSTRACT**

The aim of this study was to examine the relationship between social physique anxiety, walking activity and BMI in university students (male, n=58; female, n=101). Study female-vs-male group design and correlations among social physique anxiety, daily steps and BMI design. The 12-item SPAS was used to determine social physique anxiety. Walking activity was measured by pedometer. The SPA scores of female (M=30±5.27) students were significantly higher than those of male students (M=27.3±4.14). However, mean daily steps of male students (M=9396±3470.5) were significantly higher than those of female students (M=7849±2799.1). There was negative correlation between daily steps and BMI (female, p>0.05; male, p<0.05) and between SPA and daily steps (female and male, p<0.05). There was positive correlation between SPA and BMI (male, p>0.05; female, p<0.05). In conclusion; walking activity and BMI are variables that influence social physique anxiety in both female and male university students.

**Keywords:** Physique Anxiety, Walking, Body Mass Index

## **ÜNİVERSİTE ÖĞRENCİLERİNİN SOSYAL FİZİK KAYGILARI, YÜRÜME AKTİVİTELERİ VE VÜCUT KOMPOZİSYONU ARASINDAKİ İLİŞKİ**

### **ÖZET**

Bu araştırmanın amacı üniversite öğrencilerinin sosyal fizik kaygıları, yürüme aktiviteleri ve vücut kompozisyonu arasındaki ilişkisini incelemektir. Araştırma, kız ve erkek gruplarının karşılaştırılması ile sosyal fizik kaygı, günlük adım sayısı ve VKİ arasındaki korelasyonu şeklinde tasarlandı. Sosyal fizik kaygısını belirlemek için 12 maddelik Sosyal Fizik Kaygı Envanteri uygulandı. Yürüme aktivitesini pedometre ile ölçüldü. Kız öğrencilerinin sosyal fizik kaygı puanları (M=30±5.27) erkek öğrencilere (M=27.3±4.14) göre daha yüksek olarak belirlendi. Fakat erkeklerin ortalama günlük adım sayısı (M=9396±3470.5) bayanlara (M=7849±2799.1) göre daha yüksek olduğu tespit edildi. Günlük adım sayısı ile VKİ arasında (kız, p>0.05; erkek, p<0.05) ve SFK ile VKİ arasında (kız ve erkek, p<0.05) negatif ilişki belirlendi. SFK ve VKİ arasında pozitif ilişki (erkekler, p>0.05; kızlar, p<0.05) belirlendi. Sonuç olarak, yürüme aktivitesi ve VKİ hem kız hem de erkek üniversite öğrencilerinin sosyal fizik kaygılarını etkileyen değişkenlerdir.

**Anahtar Kelimeler:** Fiziksel Kaygı, Yürüme, Vücut Kütle İndeksi



## 1. INTRODUCTION (GİRİŞ)

Preliminary research indicates that self-presentation may be an important determinant of physical activity, in which self-presentation may affect people's exercise cognitions, attitudes, and behaviors. Self-presentation is the process by which people attempt to control and monitor how they are perceived and evaluated by others. That is, people generally want others to view them in desirable ways. Thus, they attempt to control the inferences made by others by only presenting information about them that will bring about the desired impression, while hiding things that would be inconsistent with this desired image [1]. The impressions that we make on other individuals affects how they treat us; therefore, self-presentation underlies most of our social interactions. Some people, however, are more apprehensive about incurring negative evaluation, and thus, they are more prone to self-presentational concerns than their less apprehensive counterparts [2]. Self-presentation theory has been advanced significantly by the study of SPA in exercise settings.

In recently years, researchers have studied about psychological characteristics like physique anxiety (SPA) and satisfaction of body image and relationship between these psychological characteristics and physical activity [3 and 8]. Although there is a considerable literature examining the effects of physical activity on various aspects of psychological function, the social physique anxiety construct has largely been employed to understand exercise participation motives and preferences in younger adults [9 and 10]. Anxiety of outside body image is a reason that influences participation to physical activity and selection of the type physical activity [3].

The relationship between physical activity and body image (i.e., social physique anxiety) is equivocal [6]. This may in part be due to the varied methods used by researchers to evaluate physical activity and body image. SPA may reduce physical activity motivation [8 and 9]. SPA has been associated with both low [10] and excessive exercise [11]. Kowalski, Crocker & Kowalski (2001) found that physical activity was negatively related to SPA in female college students [12].

Hart, Leary & Rejeski (1989) stressed that there exist positive relationship between SPA and body composition [4]. In addition, Diehl, Brewer, Cornelius, Wan Raalte & Shaw (2000) indicated that body mass index influences SPA [13]. Hausenblas & Fallon (2002) has found that BMI was the strongest predictor of body satisfaction and social physique anxiety for the female [5]. That is, female with a higher BMI reported greater body dissatisfaction and social physique anxiety.

The purpose of the present study was to examine the relationship between social physique anxiety, physical activity and body mass index of sedentary male and female Turkish university students. Clearly, some individuals could relate to feelings of anxiousness when in social situations where their body was the focus of real or perceived evaluation, such as during an annual physical exam, wearing a bathing suit at a crowded beach, or exercising in a public setting; however, a tool to measure this specific phenomenon was not available.

It was hypothesized that (a) SPA of female would be higher than SPA of male [11]; (b) physical activity would be negative related to social physique anxiety [5 and 10]; (c) for female, but not male, BMI would be positive related to social physique anxiety [5 and 14].

## 2. RESEARCH SIGNIFICATION (ARAŞTIRMANIN ÖNEMİ)

Studies of self - presentation theory are not new in psychology, but the area has taken some new directions recently. Self-presentation theory has been advanced significantly by the study of SPA in exercise



settings. SPA is likely an important form of social anxiety in exercise because the body is so critical and salient to physical activity. Exist little research on SPA has been compared male and female. To date, relationship between BMI and SPA has not been fully explained. Therefore the present study can aid to explain relationship among SPA, walking activity and BMI in female and male Turkish university students.

### **3. METHOD (YÖNTEM)**

#### **3.1. Subjects (Denekler)**

Subject comprised 101 female and 58 male free-living and not physically active students at a large university in Turkey; 63.5% of the subjects were female ( $M_{age}=20.8\pm 1.15$  years) and 36.5% were male students ( $M_{age}=21.5\pm 1.6$  years). All subjects were volunteers.

#### **3.2. Questionnaires and Measures (Anket ve Ölçümler)**

**Social Physique Anxiety Scale (SPAS):** The 12-item SPAS was used to measure social physique anxiety [4 and 15]. The SPAS asks subjects to respond to statements about the amount of discomfort felt when others observe or evaluate their physiques. Items are presented on a 5-point Likert scale with total scores ranging from 12-60 (higher summed scores reflecting more anxiety). SPAS also have two subscales which are "feeling of discomfort about the presentation of one's physique" (5 items) and "expectations of negative evaluation of physique by others" (7 items). The following is sample statement for this scale: "Unattractive features of my physique make me nervous in certain social settings". The reliability and validity of SPAS for the Turkish population were determined by Mulazimoglu, Balli & Aşçı (2004). Reliability for university female and male students was found respectively 0.88 and 0.76[16].

**Walking Activity:** Walking is the most frequently reported type of leisure-time physical activity [17]. Walking is likely the most important activity to assess accurately, especially in the majority of individuals who do not regularly participate in sport or exercise. In field settings with ambulatory activity, pedometers have been found to be a valid and reliable way of measuring total daily activity [18-20]. In the last decade there has increased an interest in using simple and inexpensive pedometers to assess walking behaviors objectively [21 and 22]. Steps per day (steps/day) has been recommended as a standard unit of measurement for collecting, reporting, and interpreting pedometer data collected in free - living individuals [21 and 23].

In this study the pedometer was used measure walking activity. Participant were oriented to the pedometer sampling protocol and provided with a kit containing the pedometer (with lanyard to secure the pedometer), sampling log, and instructions (with photos) in a storage container. Research staff explained the functions of the pedometer, reset it, and taped the pedometer shut, blinding participants to the step count. Staff stressed that participants should maintain their normal daily routine while wearing the pedometer. Staff demonstrated proper pedometer placement, use of the lanyard, and reviewed instructions for completion of the sampling log. All participants were strongly encouraged not to make any changes to their typical daily routine of work and leisure time activity.

**Body Composition:** Body composition was estimated with self-reported height and weight (weight (kg)/height<sup>2</sup> (m<sup>2</sup>), which were used to compute BMI [24]. The advantages of BMI are that is it is cheap, safe, quick and easy. These are traits that make BMI an attractive choice in large scale studies, such as survey [25]. Self-report measured of BMI was use in contemporary studies [5, 26 and 27]. In

addition Kuzmarski et al. (1997) reported that BMI is an adequate estimate of body composition in studies [28].

### 3.3. Procedure and Statistical Analysis (Prosedür ve İstatistik Analiz)

After completion of Social Physique Anxiety Scale, participants were instructed to use of pedometer. For 7 day each participant wore Digi-Walker pedometer model SW-200 (Lifestyles Inc., Lees Summit, MO (Product name: multifunctional Pedometer, Item No.: DT-184X.). Characteristics of pedometer; counts step taken up from 00001 to 99999, counts distance traveled up to 99999 mile or km with individual stride adjustment, counts calorie burnt up to 999.99 kcal, displays time, Large LCD, Alarm clock, Belt-clip type, Low-power consumption) LCD display and count step, distance, calories, Product Size:5.4x3.5x2.2cm (L \* W \* H) throughout the day.

Statistical analysis was performed using the SPSS package for windows, version 15.0. The relationship among variables was evaluated by Pearson correlation coefficient. The statistical significance of differences between the gender groups was analyzed by Independent-Samples T test. A p values <0.05 were considered to indicate statistical significance.

### 4. RESULTS (BULGULAR)

Descriptive statistics for female and male university students that participated in our study was presented in Table 1. Descriptive statistics for female and male respectively was at the mean age 20.8±1.15 years and 21.5±1.60 years, height 166.1±4.66 cm and 173.9±5.26 cm, weight 56.9±7.62 kg and 68.7±7.35 kg, BMI 20.6±2.79 kg/m<sup>2</sup> and 22.7±2.01 kg/m<sup>2</sup>.

Table 1. Descriptive characteristics of subjects  
(Tablo 1. Deneklerin tanımlayıcı özellikleri)

Gender		Age (year)	Height (cm)	Weight (kg)	BMI (kg/m <sup>2</sup> )
Female (n=101)	Mean	20.8	166.1	56.9	20.6
	SD	1.15	4.66	7.62	2.79
	Min.	19	156	44	16
	Max.	23	177	77	27
Male (n=58)	Mean	21.5	173.9	68.7	22.7
	SD	1.60	5.26	7.35	2.01
	Min.	19	166	53	19.2
	Max.	23	182	77	25
Total (n=159)	Mean	21.1	168.9	61.2	21.4
	SD	1.36	6.18	9.43	2.71
	Min.	19	156	44	16
	Max.	23	182	77	27

In order to test differences in daily steps between female and male university students, independent-sample T test was conducted (Table 2). The mean daily steps of male students ( $M=9396\pm3470.5$ ) were significantly higher ( $t=2.90$ ;  $p<0.01$ ) than those of female students ( $M=7849\pm2799.1$ ).

Table 2. Mean daily step of subject in one week and comparison by gender  
(Tablo 2. Deneklerin bir haftalık ortalama adım sayıları ve cinsiyete göre karşılaştırma)

Gender		Daily Steps							
		Mon	Tues	Wednes	Thurs	Fri	Satur	Sun	Mean
Female	Mean	7228	7746	9181	7924	6491	8426	7944	7849
(n=101)	SD	3974,3	3849.9	4803.4	4051.6	3418.3	4409.3	4513.4	2799.1
	Min	1737	318	2610.0	2600,0	687.0	2313.0	986.0	4096
	Max	19911	15926	22316	15681	15682	18047	20909	12978
Male	Mean	10728	10805	7997	10648	9273	7316	9003	9396
(n=58)	SD	5131,6	4583.1	3497.2	5848.6	2997.1	4010.3	5375.8	3470.5
	Min.	2381	3500	1900	1600.0	3655,0	2800.0	2550.0	2627
	Max.	16410	17769	13618	19072	13045	13732	17010	12990
Total	Mean	8504	8862	8749	8917	7506	8021	8330	8413
(n=159)	SD	4728.1	4374.9	4397.7	4945.7	3527.8	4288.9	4856.6	3140.4
	Min.	1737	318	1900	1600	687	2313	986	2627
	Max.	19911	17769	22316	19072	15682	18047	20909	12990
t		4.80	4.29	1.79	3.14	5.16	1.58	1.33	2.90
Sig.		p<0.001	p<0.001	p>0.05	P<0.01	p<0.001	p>0.05	p>0.05	p<0.01

In order to test differences in SPA between female and male university students, independent-sample T test was conducted (Table 3). The SPA scores of female students ( $M=30\pm 5.27$ ) were significantly higher ( $t=3.27$ ;  $p<0.001$ ) than those of male students ( $M=27.3\pm 4.14$ ).

Table 3. Mean spa of subjects and comparison according gender  
(Tablo 3. Deneklerin ortalama SFK ve cinsiyete göre karşılaştırma)

Gender	Mean SPA	SD	Minimum	Maximum	T value
Female (N=101)	30	5.27	18	37	3.269***
Male (N=58)	27.3	4.14	23	33	
Total (N=159)	29	5.04	18	27	

SPA: Social Physique Anxiety

\*\*\*:  $p<0.001$

Correlations among SPA, daily steps and BMI were showed in Table 4. The first in both female and male, there was negative correlation between daily step numbers and BMI. Correlation in male was significant ( $p<0.05$ ), whereas in female was not significant ( $p>0.05$ ). The second, in both female and male, there was statistically significant negative correlation between SPA and daily steps ( $p<0.05$ ). Finally, in both female and male, there was positive correlation between SPA and BMI. Correlation, in male was not significantly ( $p>0.05$ ), whereas in female was significant ( $p<0.05$ ).

Table 4. Correlation analysis among daily step, BMI and SPA of subjects  
(Tablo 4. Günlük adım sayısı, VKİ ve SFK arasındaki korelasyon analizi)

Variables	Gender	
	Male (n=258)	Female (n=301)
BMI - Daily Steps	-0.264*	-0.181
SPA - Daily Steps	-0.248*	-0.202*
SPA - BMI	0.146	0.332*

\*: Correlation is significant at the 0.05 level ( $p<0.05$ ).

## 5. DISCUSSION AND CONCLUSION (TARTIŞMA VE SONUÇ)

The purpose of the present study was to examine the relationship between social physique anxiety, walking activity (daily steps) and body mass index of sedentary Turkish male and female university students. It was hypothesized that (a) for female, but not male BMI



would be positive related to SPA; (b) mean daily steps would be negative related to social physique anxiety; (c) SPA of female would be higher than SPA of male. Consistent with the hypothesis, it was found that SPA scores of female university students ( $M=30\pm 5.27$ ) were significantly higher ( $t=3.27$ ;  $p<0.001$ ) than those of male students ( $M=27.3\pm 4.14$ ). This result is similar to that reports of two studies [4 and 29], in which SPA has been noted to be more prevalent among female than male. Isogai (1995) reported that female university students had a higher SPA score ( $p<0.001$ ) than male [30].

In present study the mean daily steps of male university students ( $M=9396\pm 3470.5$ ) were significantly higher ( $t=2.90$ ;  $p<0.01$ ) than those of female students ( $M=7849\pm 2799.1$ ). According to Hatano (1997), 10000 steps/day are approximately equal to an energy expenditure of 300 kcal/day. This is double the amount (150 kcal / day) that U.S. Surgeon General indicates that it is related to health benefits [31]. Above results shown that male university students were more physically active than female students and physical activity of both female and male students were insufficient. BMI in female and male students was respectively  $20.6\pm 2.79$  kg/m<sup>2</sup> and  $22.7\pm 2.01$  kg/m<sup>2</sup>. BMI mean values for both male and female were in "normal weight" [24].

Correlations among SPA, daily steps and BMI were examined in this study. The first in both female and male, there was negative correlation between daily steps number and BMI. According to Hausenblas & Fallon (2002) male who reported greater exercise behaviors also had higher body satisfaction and low social physique anxiety [5]. These researches determined that exercise and physical activity improved body image in all ages. In addition, exercise had a positive effect on both male and female's body image. Lantz et al. (1997) found that SPA was negatively related to the exercise behavior of university students and community adults ( $M_{age}=25.7$  years), and that the magnitude and form of this relationship were moderated by gender and age [10]. Kowalski, Crocker, and Kowalski (2001) examined whether SPA moderated the positive relationship between physical self-perception and physical activity in female college students [12]. They found that physical activity was negatively related to SPA. Lantz, et al. (1997) explored the relationship between SPA and exercise behaviors among the general population [10]. After having over 300 subjects complete the SPA scale, the Minnesota Heart Health Physical Activity Questionnaire, and the Beck Depression Inventory, the researchers revealed a negative relationship between SPA and exercise behavior. The observation indicated that those higher in SPA were less likely to participate in physical exercise, probably due to the potential exercise brings in negative evaluation. Results in studies above concerning relationship between SPA and physical activity supported results in this study.

SPA has been shown to be correlated with increased body fat percentage [9]. Generally between body fat percentage and BMI exist positive relationship. Diehl, Brewer, Cornelius, Wan Raalte & Shaw (2000) indicated that body mass index influences SPA, which in turn affects protective self presentational motives and ultimately protective self presentational behaviors [13]. According to Hausenblas & Fallon (2002) female with higher BMI reported greater social physique anxiety [5]. Hart et al. (1989) determined positive relationship between SPA and body composition [4]. Isogai (1995) reported that female's SPA was significantly related to their body weight ( $r=.252$ ,  $P<.001$ ) and body mass index ( $r=.325$ ,  $P<.001$ ) while the male's SPA was not [30]. The current study, both female and male, there was positive correlation between SPA and BMI. Correlation, in male was not significant ( $p>0.05$ ), whereas in female was significant



( $p < 0.05$ ). This may be because female experience greater pressures than male do to meet cultural beauty and thinness norms [32 and 33]. Obese female cite apprehension for being evaluated by others as the primary motive for avoiding public exercise settings [34]. Also, adolescent girls have reported that a major demotivator for swimming at public pools was the potential embarrassment or presentation of their bodies [35]. Results of researches mentioned above supported results of this study concerning relation between body composition and SPA.

In conclusion; first, SPA in female students was higher than male students. Second, walking activity and BMI are variables that influence social physique anxiety in both Turkish female and male university students. Finally, relationship a) between SPA and walking activity was negative, b) between SPA and BMI was positive.

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