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COMPARISON OF BODY FAT MEASUREMENTS IN PATIENTS WITH PREMATURE EJACULATION AND ERECTILE DYSFUNCTION

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Abstract

Premature ejaculation (PE) and erectile dysfunction (ED) are common male sexual dysfunctions. This study compared anthropometric measurements and skinfold thickness (SFT) between individuals with PE and ED to examine associations with regional fat distribution. A total of 90 men aged 20–50 years participated and were divided into three groups: ED (n = 29), PE (n = 28), and control (n = 33). Ethical approval and informed consent were obtained. SFT was measured at seven anatomical sites: triceps, biceps, subscapular, suprailiac, abdominal, thigh, and chest. SFT values in the triceps, biceps, suprailiac, subscapular, and thigh were significantly higher in both ED and PE groups than in controls ($p < 0.05$). The PE group showed significantly greater abdominal SFT than both the ED and control groups ($p < 0.05$). Although chest measurements did not differ significantly, this region showed the most consistent correlations across groups. Overall, individuals with ED and PE exhibited higher regional fat accumulation than healthy controls, with abdominal fat being particularly elevated in PE. These findings highlight the potential role of regional fat, particularly abdominal fat, in the clinical evaluation of sexual dysfunctions. SFT-based assessments may serve as practical tools for identifying and managing PE and ED.

Keywords: Anthropometry, Erectile dysfunction, Premature ejaculation, Skinfold thickness.

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INTRODUCTION

Premature ejaculation (PE) and erectile dysfunction (ED) are common sexual dysfunctions in men. PE is generally characterized by rapid ejaculation, with ejaculation almost always occurring before or within approximately one minute of vaginal penetration and by an inability to delay ejaculation during penetration (McMahon et al., 2008). Approximately 22.7–39% of men worldwide are affected by PE (Mohamed et al., 2021). The diagnosis of PE is largely based on the patient's sexual and medical history (Shabsigh 2006).

PE is a common and serious male sexual dysfunction with significant psychological and interpersonal consequences. It affects 20%–30% of men (Porst et al.,2007; Althof et al., 2014). The DSM-5 defines PE as ejaculation that occurs within 1 minute of vaginal penetration during partnered sex, occurs before the individual desires it, persists for at least 6 months, and is not attributable to other medical conditions (American Psychiatric Association 2013). There are four subtypes of PE: primary (lifelong), secondary (acquired), variable, and subjective (Gajjala and Khalidi 2014). Primary PE begins with the individual's first sexual experiences, while secondary PE develops later. Variable PE is marked by inconsistent episodes, and subjective PE is diagnosed when an individual reports PE despite a normal intravaginal ejaculatory latency time (IELT) (Parnham & Serefoglu, 2016).

Although the exact cause of PE is unclear, numerous contributing factors have been identified, and the etiology varies across subtypes (Waldinger, 2007). Lifelong PE is linked to central neurobiological mechanisms, including genetic alterations that affect neurotransmitter function. For instance, IELT duration has been associated with a 5-HTTLPR gene polymorphism that impairs serotonin (5-HT) transmission by altering serotonin transporter activity, supporting the idea that reduced serotonergic activity accelerates ejaculation. While no specific cause has been identified for acquired PE, several risk factors are commonly observed, including penile hypersensitivity, prostatitis, erectile dysfunction, hyperthyroidism, anxiety, relationship or marital problems, low sexual desire, and female sexual dysfunction (Janssen et al., 2009).

ED is generally defined as the inability of the penis to achieve or maintain an erection firm enough for satisfactory performance during sexual intercourse. Numerous studies have reported a close relationship between PE and ED. Some researchers suggest a vicious cycle between PE and ED (McCabe et al., 2016). Men's efforts to control ejaculation can reduce arousal and lead to ED, while their efforts to maintain an erection can increase arousal, leading to PE. These two factors interact, creating a vicious cycle. Although numerous studies have examined the relationship between PE and ED, the cause and mechanism of this relationship remain unknown (Min et al., 2024)

The principle of SFT measurements is to determine the size of the subcutaneous fat depot and to calculate total body fat from that measurement. SFT can be measured in different regions of the body. It is frequently used to measure the triceps and subscapular regions. If body fat amount and lean body mass are to be determined from SFT, the biceps and suprailiac SFT are also measured in addition to the triceps and subscapular SFT (Baysal et al., 2002)

The study aimed to compare skinfold thickness values between PE and ED and to determine the relationship between these diseases and regional fat percentages.

MATERIAL AND METHOD

Purpose and Type of Research

The randomized controlled trial aimed to compare skinfold thickness measurements between individuals with PE and those with ED and to investigate their association with regional fat distribution.

Population and Sample of the Study

The study included patients aged 20–50 years who routinely presented to the Urology Clinic of Malatya Training and Research Hospital and who were diagnosed with ED and PE, as well as control individuals without either condition. Demographic data and informed consent were obtained from patients diagnosed by a urologist. The study was approved by the Malatya Turgut Özal University Clinical Research Ethics Committee (code 2025/231).

Inclusion criteria were: diagnosis of PE or ED, age between 20 and 50 years, and male sex. Exclusion criteria included individuals with serious neurological disorders (e.g., stroke, spinal cord injury), individuals with chronic diseases such

as advanced cancer, those with other medical conditions that could directly affect sexual function, individuals who had undergone major surgery or chemotherapy within the last three months, and individuals whose sexual function was significantly affected by psychiatric disorders (e.g., severe depression or anxiety disorder).

Exclusion criteria included those with serious neurological disorders (e.g., stroke, spinal cord injury), chronic illnesses (e.g., advanced cancer), other medical conditions that could directly affect sexual function, individuals who had undergone major surgery or chemotherapy within the past three months, and individuals whose sexual function was significantly affected by psychiatric disorders (e.g., severe depression or anxiety disorder).

The study consisted of three groups.

Group 1: ED patients (29 people)

Group 2: Patients with Premature Ejaculation (28 people)

Group 3: Control group (32 people)

Data Collection and Analysis

Qualitative data from the study were summarized as numbers (percentages). Quantitative data were tested for normality using the Shapiro–Wilk test and found to be normally distributed. The quantitative data were summarized by reporting the median and the minimum and maximum values. mean ± standard deviation. In statistical analyses, comparisons of categorical variables were made using Pearson's chi-square test. For quantitative variables, the Kruskal–Wallis test was used, where appropriate, to compare more than two independent groups. The Kruskal-Wallis test was used to assess overall differences, and pairwise comparisons were performed using the Mann-Whitney U test with Bonferroni correction. Relationships between variables were assessed using Spearman's rho correlation coefficient. In the applied statistical analyses, a p-value of $p < 0.05$ was considered statistically significant. All analyses were performed using IBM SPSS Statistics 26.0 for Windows (New York, USA).

Power Analysis

This study aimed to determine the relationships among premature ejaculation (PE), erectile dysfunction (ED), and skinfold thickness measurements. In line with this objective, an a priori power analysis was conducted using the GPower 3.1 software. For one key outcome variable, triceps skinfold thickness, a one-way analysis of variance (ANOVA) was planned to compare the erectile dysfunction, premature ejaculation, and control groups. Based on the a Type I error rate (alpha) of 0.05, statistical power (1-beta) of 0.80, an effect size of 0.35, and three groups, the minimum required sample size was calculated as 28 participants per group (totaling 84 participants).

Skinfold Thickness Measurements

To determine body fat percentage, skinfold thickness measurements are taken at the triceps, biceps, chest suprailiac, subscapular, calf, abdomen, and thigh using a standard skinfold caliper. The average of the two measurements taken on the right side of the body is recorded in millimeters.

Triceps SFT was measured on the right arm with the elbow bent to 90°, at a point between the acromion (shoulder) and olecranon (elbow) prominences. The arm was then released, and the fat layer was secured between the index finger and thumb of the left hand. The measurement was taken at the marked location with a caliper held in the right hand. The subject was instructed to stand upright during the measurement.

In the subscapular SFT measurement, a mark was placed on the inferior angle of the left scapula; the fat layer was held with the left hand at a 45° angle to the spinal cord, and the measurement was taken at that mark.

Biceps SFT measurement was performed as follows: a mark was placed on the cubital fossa of the anterior mid-arm at the same horizontal level as the triceps skinfold site, using the same measurement technique.

For suprailiac SFT, a mark was placed at the midpoint between the iliac bone and the lowest rib, and the measurement was taken using the same technique. For abdominal SFT, the measurement was taken vertically 2–3 cm from the navel.

SFT measurements of the thigh were taken from the anterior surface, midway between the hip and the knee. Chest SFT measurements were taken bet.

Limitations of the Study

The first limitation of the study was that data collection was difficult because patients with sexual dysfunction were reluctant to participate in procedures such as body fat measurement due to privacy concerns. The second limitation was that the data were collected from a single center, which limits the generalizability of the findings. Because all participants came from similar sociocultural backgrounds, the generalizability of the findings is limited.

Ethical Aspects of the Research

The study was approved by the Malatya Turgut Ozal University Clinical Research Ethics Committee (code 2025/231). Informed consent was obtained from all participants diagnosed with ED or PE by a urology specialist.

RESULT

A total of 90 male participants were included in the study. An analysis of group distribution revealed that the control group had the highest rate at 39.0% (n=33), followed by the ED group at 32.4% (n=29) and the PE group at 28.6% (n=28). When lifestyle factors were evaluated, 33.3% of participants were smokers and 66.6% were non-smokers. Most participants (94.4%, n = 84) did not consume alcohol; 6.6% (n = 6) did (Table 1).

Table 1. Distribution of demographic and clinical characteristics of participants

Variables		Numbers	Percentages (%)
Group	ED	29	32.4
	PE	28	28.6
	C	33	39.0
Cigarette	Yes	30	33.3
	No	60	66.6
Alcohol	Yes	6	6.6
	No	84	94.4

ED: Erectile dysfunction, PE: Premature ejaculation

When the descriptive statistics of the participants' SFT measurements were examined, the highest mean value was observed in the abdominal region (35.04 ± 39.52 mm). This was followed by the suprailiac (31.44±17.72 mm) and subscapular (27.50±17.45 mm) regions. Mean thicknesses were 26.84 ± 19.2 mm in the thigh region, 23.01 ± 18 mm in the biceps region, and 22.46 ± 16.75 mm in the triceps region. The lowest mean value , observed in the chest region, was 18.64 ± 28.43 mm.

Analysis of median values showed that the suprailiac region had the highest median (31.8 mm), followed by the abdominal (30 mm), subscapular (26.4 mm), and thigh (25 mm) regions. The lowest median value was observed in the thoracic region at 12.45 mm (Table 2).

Table 2. Descriptive statistics of participants' Skinfold Thickness measurements

Variables	Mean ± SD	Median (Min-Max)
Triceps SFT	22.46±16.75	19.8(2.5-71)
Biceps SFT	23.01±18	20(2.2-54)
Subscapular SFT	27.5±17.45	26.4 (1.65-115)
Suprailiac SFT	31.44±17.72	31.8(6.1-127)
Abdominal	35.04±39.52	30(7.2-404)
Thigh SFT	26.84±19.2	25(3.6-138)
Chest SFT	18.64±28.43	12.45(2.1-261)

SD: Standard Deviation; Min: Minimum; Max: Maximum, SFT: Skinfold thickness

When SFT measurements were compared among the ED, PE, and control groups, statistically significant differences were detected in all regions measured except the chest region.

While both ED and PE groups showed significantly higher values than the control group in the triceps, biceps, subscapular, suprailiac, and thigh regions ($p < 0.001$), no significant difference was found between these two groups.

In the abdominal region, the PE group (38 mm) showed significantly higher values than both the ED group (30.15 mm) and the control group (24.8 mm) ($p = 0.005$), while no significant difference was found between the ED group and the control group.

There were no statistically significant differences between the groups in any area; in the chest area, $p = 0.268$ (Table 3).

Table 3. Comparison of skinfold thickness measurements between groups

Variables *	Group **			p ***
	ED	PE	K	
Triceps SFT	36.6 [b] (4.7-49)	34 [b] (5-71)	5.9(2.5-45.5)	<0.001
Biceps SFT	37 [b] (3.2-54)	39.1 [b] (4.2-49.3)	5.4(2.2-48.7)	<0.001
Subscapular SFT	34.4 [b] (3-115)	36 [b] (1.65-74)	14.7(3.1-39)	<0.001
Suprailiac SFT	35.2 [b] (10-127)	42 [b] (15.2-94)	18.5(6.1-53.4)	<0.001
Abdominal	30.15 [a] (10.7-404)	38 [b] (13.3-95)	24.8(7.2-65.6)	0.005
Thigh SFT	29.35 [b] (9-138)	31.9 [b] (12-56.2)	13.8(3.6-37.4)	<0.001
Chest SFT	15(6-261)	15(6-32.7)	11(2.1-50.3)	0.26842
Body Mass Index	25.4 ±2.1	25.1±2.0	25.3±2.2	0.84

*: Variables are summarized as 'median, (minimum-maximum)'; **: a: Different according to PE group, b: Different according to C group. ***: Kruskal-Wallis Test, SFT: Skinfold thickness, ED: Erectile dysfunction, PE: Premature ejeculation, SFT: Skinfold thickness

Intergroup correlation analyses

Only one region showed a statistically significant correlation between the ED and PE groups. A moderate, statistically significant positive correlation was found between the thigh ED group and the subscapular ED group ($r = 0.372$, $p = 0.043$). No statistically significant relationships were found among the other SFT regions in the correlation analyses ($p > 0.05$; Table 4).

Table 4. Correlation analysis of Skinfold Thickness measurements between ED and PE groups

			PE						
			Triceps SFT	**Biceps SFT**	**Subscapular SFT**	**Suprailiac SFT**	**Abdomin al SFT**	**Thigh SFT**	**Chest SFT**
ED	**Triceps SFT**	r	0.287	0.294	0.220	0.204	0.104	0.276	-0.052
		p	0.124	0.115	0.243	0.280	0.584	0.147	0.790
	Biceps SFT	r	0.215	0.098	0.113	-0.078	-0.055	0.127	0.038
		p	0.254	0.605	0.552	0.683	0.774	0.512	0.845
	Subscapul ar SFT	r	0.204	0.105	0.187	0.045	0.040	0.051	0.184
		p	0.281	0.582	0.322	0.812	0.832	0.793	0.338
	Suprailiac SFT	r	0.218	0.081	0.166	-0.092	-0.050	0.093	0.166
		p	0.246	0.671	0.379	0.630	0.791	0.632	0.390
	Abdominal	r	0.084	0.051	0.116	0.023	-0.039	-0.039	-0.014
		p	0.658	0.789	0.542	0.903	0.838	0.843	0.942
	Thigh SFT	r	0.350	0.257	0.372 *	0.293	0.273	0.297	0.093
		p	0.058	0.170	0.043	0.116	0.145	0.118	0.631
	Chest SFT	r	0.120	0.145	0.361	0.057	0.038	-0.145	0.006
		p	0.527	0.445	0.050	0.763	0.842	0.453	0.977

* p<0.05, r: Spearman RHO correlation coefficient, ED: Erectile dysfunction, PE: Premature ejeculation, SFT: Skinfold thickness

When correlations between skinfold thickness measurements in the PE and control groups were examined, significant correlations were found only for measurements in the chest region. A positive correlation was found between

chest skinfold thickness in the PE group and triceps skinfold thickness in the control group (r=0.536, p=0.003). Similarly, a significant positive correlation was found between chest skinfold thickness in the PE and control groups (r = 0.424, p = 0.022). Correlation analyses among the other skinfold regions revealed no statistically significant correlations (p > 0.05; Table 5).

Table 5. Correlation analysis of skinfold thickness measurements between PE and control groups

			K Triceps SFT	Biceps SFT	Subscapular SFT	Suprailiac SFT	Abdominal	Thigh SFT	Chest SFT
	Triceps SFT	r	-0.253	0.118	-0.077	-0.132	0.043	-0.064	-0.025
		p	0.178	0.536	0.684	0.485	0.822	0.737	0.896
	Biceps SFT	r	-0.207	-0.001	-0.263	-0.164	-0.020	-0.186	-0.226
		p	0.273	0.994	0.161	0.386	0.916	0.325	0.230
	Subscapular Nerve	r	-0.070	-0.005	0.012	-0.085	-0.059	-0.120	-0.131
		p	0.714	0.978	0.949	0.657	0.756	0.527	0.491
PE	**Suprailiac SFT**	r	-0.092	-0.062	-0.041	-0.004	-0.150	-0.060	-0.042
		p	0.630	0.743	0.830	0.982	0.430	0.752	0.826
	Abdominal	r	0.063	0.100	-0.090	-0.087	-0.082	0.047	-0.044
		p	0.739	0.600	0.638	0.646	0.667	0.807	0.817
	Thigh SFT	r	-0.168	-0.131	-0.294	-0.299	-0.075	-0.170	-0.326
		p	0.383	0.500	0.122	0.115	0.698	0.377	0.085
	Chest SFT	r	0.536 *	0.144	0.257	0.242	0.351	0.202	0.424 *
		p	0.003	0.455	0.178	0.207	0.062	0.294	0.022

* p<0.05, r: Spearman RHO correlation coefficient, ED: Erectile dysfunction, PE: Premature ejeculation, SFT: Skinfold thickness

Comparing the ED and control groups, correlations between CCT measurements were statistically significant in four regions. Significant positive correlations were also found between the chest CCT region in the ED group and the subscapular, suprailiac, and thigh CCT regions in the control group. A significant positive correlation was detected between suprailiac SFT in the ED group and abdominal SFT in the control group (r = 0.348, p = 0.044). No statistically significant correlations were found among other SFT regions (p > 0.05; Table 6).

Table 6. Correlation analysis of Skinfold Thickness measurements between the ED and control groups

			Control						
			Triceps SFT	**Biceps SFT**	**Subscapular SFT**	**Suprailiac SFT**	**Abdominal**	**Thigh SFT**	**Chest SFT**
	Triceps SFT	r	-0.063	-0.118	-0.021	-0.231	-0.051	-0.042	-0.005
		p	0.721	0.508	0.905	0.189	0.776	0.812	0.977
	Biceps SFT	r	0.024	-0.187	0.166	-0.153	0.179	-0.018	0.060
		p	0.892	0.290	0.349	0.387	0.310	0.920	0.738
	Subscapular SFT	r	0.140	0.006	0.248	-0.034	0.213	0.088	0.288
		p	0.431	0.973	0.157	0.847	0.227	0.622	0.098
ED	**Suprailiac SFT**	r	0.256	0.092	0.260	-0.079	0.348 *	0.076	0.148
		p	0.144	0.604	0.137	0.655	0.044	0.669	0.404
	Abdominal	r	0.251	0.255	0.320	0.187	0.235	0.223	0.215
		p	0.152	0.146	0.065	0.289	0.180	0.205	0.221
	Thigh SFT	r	0.172	0.219	0.133	-0.100	0.135	0.192	0.101
		p	0.332	0.212	0.453	0.575	0.447	0.278	0.570
	Chest SFT	r	0.213	0.206	0.484 *	0.354 *	0.323	0.426 *	0.286
		p	0.227	0.243	0.004	0.040	0.062	0.012	0.101

* p<0.05, r: Spearman RHO correlation coefficient, ED: Erectile dysfunction, PE: Premature ejeculation, SFT: Skinfold thickness

DISCUSSION

SFT measurements in the triceps, biceps, suprailiac, subscapular, and thigh regions were significantly higher in both ED and PE patients than in the healthy control group ($p < 0.05$). SFT measurements in the abdominal region were significantly higher in the PE group than in the ED and control groups ($p < 0.05$). Although no significant difference was observed between the groups in chest-region SFT measurements, correlation analyses showed that SFT was the variable most frequently correlated between the groups, although these correlations were not statistically significant ($p > 0.05$). The present study is the first to examine regional fat mass in addition to reporting overall fat values and demonstrates that fat percentages in many body regions are higher in patient groups than in healthy individuals.

In the literature, a strong association is reported between obesity, particularly visceral adiposity, and ED. Corona et al., reported a relationship between central adiposity and arteriogenic ED and decreased testosterone levels (Corona et al., 2014). Similarly, Fillo et al. reported a high risk of ED among men over 40 years of age with abdominal obesity (Fillo et al., 2017). Zhang et al. reported an increased incidence of ED among Chinese individuals with a BMI ≥ 30 kg/m² (Zhang et al., 2017). Bacon et al. reported a correlation between ED and adiposity in a 14-year longitudinal study (Bacon et al., 2006). Riedner et al. evaluated central obesity in men over 60 years of age using various anthropometric measurements and reported a relationship between central obesity and the development of ED (Riedner et al., 2006). No studies in the literature have investigated regional skinfold thickness in patients with PE and ED. In our study, SFT measurements in the triceps, biceps, suprailiac, subscapular, and thigh regions were significantly higher in ED patients than in the healthy control group ($p < 0.05$). While no significant difference was observed between the groups in SFT measurements of the chest region ($p > 0.05$), correlation analyses revealed that SFT was the variable most frequently correlated between the groups. This suggests that the percentage of fat in many areas of the body is higher in ED patients than in healthy individuals.

Many studies report strong evidence linking PE to body fat. Bolat et al. reported a significantly higher prevalence of metabolic syndrome in PE patients (51%) compared to controls. Furthermore, Bolat et al. (2017) reported that PE patients had a waist circumference greater than 102 cm. Gao et al. reported that PE patients had a higher body mass index than healthy individuals (Gao et al., 2013). Lu et al. (2020) demonstrated significantly increased visceral fat, waist circumference, and total body fat mass in individuals diagnosed with PE. These findings suggest that increased body fat, particularly central adiposity, may play a direct or indirect role in the pathogenesis of PE. In the present study, SFT measurements at the triceps, biceps, suprailiac, subscapular, and thigh sites were significantly higher in PE patients than in healthy controls ($p < 0.05$). Regarding abdominal fat measurements, the PE group had significantly higher values than both the ED and control groups ($p < 0.05$). In particular, the finding of greater abdominal fat in the PE group, compared with both the ED and control groups, suggests that abdominal fat accumulation may play a unique role in the pathophysiology of premature ejaculation. These results suggest that abdominal fat should be specifically considered in the evaluation of PE patients and that regional fat measurements may be valuable screening tools in clinical practice.

CONCLUSION

The present study showed that fat accumulation, assessed by SFT measurements, was significantly greater in individuals with ED and PE than in healthy individuals. The finding that abdominal fat accumulation was significantly greater in individuals with both ED and PE than in the PE, ED, and control groups suggests that abdominal fat accumulation may play a unique role in the development of premature ejaculation. The present study demonstrates that abdominal fat accumulation should be specifically considered when evaluating patients with PE and that regional fat measurements can serve as a valuable screening tool in clinical practice.

Ethics Committee Approval: The study was approved by the Malatya Turgut Ozal University Clinical Research Ethics Committee (code 2025/231).

Informed Consent: Demographic data and informed consent were obtained from the participants.

Peer-review: Externally peer-reviewed.

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