WOMEN'S SEXUAL HEALTH

Pelvic Floor Muscle Parameters Affect Sexual Function After 8 Weeks of Transcutaneous Electrical Stimulation in Women with Stress Urinary Incontinence

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ABSTRACT

Introduction: Stress urinary incontinence (SUI) is often associated with female sexual dysfunction. We investigated which pelvic floor muscle (PFM) parameters (strength, power, and endurance) are associated with improvement of sexual function after 8 weeks of transcutaneous electrical stimulation (TES) training.

Aim: This study was performed to determine the effects of TES in the seated position on PFM parameters and female sexual function and to identify correlation between improved PFM parameters and sexual function after 8 weeks of TES training in women with SUI.

Methods: The present study was performed between August 2018 and November 2018 in women with SUI who were randomized into a TES group (n = 17) or a control group (n = 17). One subject in each of the TES and control groups ultimately withdrew during the intervention due to a lack of time. Both groups were measured at baseline and after 8 weeks of intervention.

Main Outcome Measure: As outcome measures, PFM parameters (strength, power, and endurance) and female sexual function were assessed using a perineometer and the Female Sexual Function Index (FSFI), respectively.

Results: The final study population consisted of 32 women with SUI. There were significant differences in PFM strength, power, and endurance and FSFI domain scores (desire, arousal, orgasm, satisfaction, and total score) in both between-group analyses (TES vs control group) and within-group analyses (pre-TES vs post-TSE). Change in PFM endurance had the highest association with change in total FSFI total score ($r = 0.437$; $P = .006$), and change in PFM power had the highest association with change in FSFI satisfaction ($r = 0.420$; $P = .008$).

Conclusion: TES in a seated position showed a beneficial effect on sexual function in females with SUI. Consideration of PFM parameters associated with FSFI domain scores may be important when developing intervention guidelines to improve female sexual function. **Hwang UJ, Lee MS, Jung SH, et al. Pelvic Floor Muscle Parameters Affect Sexual Function After 8 Weeks of Transcutaneous Electrical Stimulation in Women with Stress Urinary Incontinence. Sex Med 2019;7:505–513.**

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Key Words: Female Sexual Function; Pelvic Floor Muscle; Stress Urinary Incontinence; Transcutaneous Electrical Stimulation

INTRODUCTION

Urinary incontinence is a common condition, with a prevalence as high as 30% in women 30–60 years of age.[1] Half of these cases are attributable to stress urinary incontinence (SUI).[2] Urinary incontinence has also been reported to have a negative effect on female sexual function.[3–5] Female sexual dysfunction (FSD) is highly prevalent among women with pelvic floor dysfunction, such as urinary incontinence. The etiologies of such sexual dysfunction may include psychological distress, fear of

incontinence during intercourse, and embarrassment due to unpleasant odor.[6,7] A previous study suggested that women with SUI had lower sexual satisfaction than women without urinary disorders.[5]

SUI is usually caused by weakness of or damage to pelvic floor muscles (PFMs) and connective tissue, which provide urethral support, or by weakness of the urethral sphincter itself. PFM parameters are related to the degree of sensation felt by a women during vaginal intercourse and the contraction experienced by her partner.[8] Involuntary rhythmic contractions during orgasm are evoked by the PFMs, in particular the iliococcygeus and pubococcygeus muscles. PFM training (PFMT) was reported to have a positive effect on sexual function in women with weak PFMs.[9,10] PFM performance consists of strength, power, and endurance.[11] Clinically, training specificity is important to specifying objectives of the exercise.[12] Generally, recruiting mainly fast-twitch muscle fibers allows training specifically for speed and strength, whereas recruiting mainly slow-twitch muscle fibers provides endurance training. Thus, PFMT would apply specificity to training programs for women with SUI.[11,12] Although various PFM parameters (strength, power, and endurance) should be considered when evaluating and training the PFMs, previous studies have concentrated only on the relationship between PFM strength and female sexual function.[13,14]

PFMT as a noninvasive treatment for SUI and FSD has been used to enhance PFM function[10,15]; however, selective contraction of the PFMs is difficult to initiate and develop, particularly for women with pelvic floor dysfunction.[16−18] In addition, inappropriate PFM contraction has been reported to exacerbate the symptoms of SUI.[19]

Electrical stimulation (ES) during PFMT could improve female sexual function, urinary leakage, and the strength and pressure of PFM contractions by facilitating or enhancing the ability to perform PFM contractions. Previous studies aimed at improving PFM function indicate that intravaginal ES during a PFM rehabilitation program to treat SUI improved sexual function in women with urinary incontinence.[10,20,21] Correia et al[22] reported that both TES and intravaginal ES improved the quality of life and strength and pressure of PFM contractions; however, Green et al[23] reported that the invasiveness of intravaginal ES reduced patient acceptance of, and adherence to, this treatment. Transcutaneous electrical stimulation (TES) may be more acceptable to, and comfortable for, women with SUI.[24]

The EasyK7 device (Alphamedic Co, Ltd; Daegu, Korea) has recently been developed to enhance PFM contractions via ES using 3 transcutaneous electrodes placed in perivaginal and sacral regions of a woman in the sitting position. ES for PFMT is commonly achieved via transvaginal or transanal electrodes, which are invasive and difficult to manage hygienically, and they frequently cause discomfort, thus leading to low compliance.[25] Previous studies indicated that TES, which can be achieved by placement of transcutaneous electrodes in the perivaginal or sacral region, was effective for treating urinary incontinence.[22,26−28] Few

studies exist regarding the relationship between PFM function and female sexuality or the training effectiveness of this musculature on sexual function.[14] No studies have shown improvements in specific PFM parameters (strength, power, and endurance) after applying TES, nor have any determined the PFM parameters that most influence female sexual function. Therefore, we investigated which PFM parameters most influenced female sexual function after 8 weeks of TES training.

This study was performed to examine the effectiveness of TES during PFMT for improving the PFM parameters of strength, power, and endurance and female sexual function and to determine the degree of association between improved PFM function and sexual function after 8 weeks of TES training.

METHODS

Subjects and Design

The present randomized controlled trial was performed between August 2018 and November 2018 at an obstetrics and gynecology clinic in Seoul, Korea. Investigator-blinded parallel randomization (1:1) of subjects into control and TES groups was performed. The required sample size was calculated a priori using G*Power 3.1.3 (University of Trier; Trier, Germany)[29] with a power of 0.80, α level of 0.05, and effect size of $f = 0.917$, determined by reference to pilot data (3 participants per group). It was suggested that a sample size of more than 6 subjects per group was necessary. Subjects were recruited by advertisements that included our telephone contact details, and interested women with SUI were scheduled for visits to establish their eligibility for study participation according to the inclusion and exclusion criteria. Incontinence and FSD severity were confirmed during interviews.

The inclusion and exclusion criteria are shown in Table 1. A total of 34 subjects who fulfilled the inclusion criteria were allocated to the control or TES groups via random numbers generated online (www.randomization.com; Figure 1). One subject in each of the TES and control groups ultimately withdrew during the intervention due to a lack of time. Before the study, the subjects received an explanation of all study procedures and signed an informed consent form approved by the Institutional Review Board of Yonsei University, Wonju, Korea (1041849-201904-BM-050-01). The study protocol was registered with the Clinical Research Information Service (KCT0003357).

Transcutaneous Electrical Stimulation

EasyK7 is a TES device that stimulates the pelvic floor musculature and surrounding structures via 3 transcutaneous electrodes placed in perivaginal and sacral regions. With the subject in a seated position, the transcutaneous electrodes of the device are attached to the perineum and sacrum to stimulate both perivaginal and sacral regions. The subjects were instructed to sit on the device such that both cutaneous electrodes were in

Table 1. Inclusion and exclusion criteria

Inclusion criteria
Stress urinary incontinence diagnosed by a urogynecologist
More than 1 leakage episode per week
Total Female Sexual Function Index score < 26[30]
Body mass index < 30 kg/m^2
Age between 30 and 60 y
Non-smoker
Not addicted to alcohol or drugs
Successful completion of medical screening questionnaire
Exclusion criteria
Grade III or higher urogenital prolapse
Cardiac pacemaker
Devices implanted in the pelvis or hip joint(s)
Pregnant/planning to become pregnant
Pelvic or abdominal surgery within the last 6 months
Cognitive impairment
Concomitant treatment for stress urinary incontinence during the trial period
Neurological or psychiatric disease
Urinary tract infection

contact with the perivaginal and sacral regions. The stimulation amplitude was set to a comfortable level for each subject. The device delivered asymmetric and biphasic impulses of 25 Hz, with a mean intensity of 19.37 ± 6.29 mA (range 2.5–30 mA) during sessions lasting 15 minutes; pulses were delivered for 11 seconds, with 11-second rest periods in between.

Intervention

Subjects in the TES group were provided with an EasyK7 device and trained in its proper use, management, and cleaning. Individuals with an aversion to the sensation of TES were excluded from the study. Subjects were asked to use the device once a day (15-minute session), 5 or 6 days per week for 8 weeks. In addition, subjects performed an EasyK7 session with a possible increase in stimulation amplitude. The control group walked for 10 minutes and underwent restricted PFMT with regard to PFM or abdominal muscle contraction. After 8 weeks, we gave each subject in the control group an EasyK7 unit and trained them in its use as a reward for participating in the experiment. Both groups were assessed at baseline and after 8 weeks according to Female Sexual Function Index (FSFI) scores and PFM parameters obtained using a perineometer.

Outcomes

Female sexual function was measured using the Korean version of the validated FSFI instrument.[31,32] The FSFI is a 19-item, self-administered questionnaire designed to measure female sexual function over 6 domains: desire, arousal, lubrication, orgasm, satisfaction, and pain. Each domain is scored on a 0- to 6-point scale, with higher scores indicating better sexual function. Scores were calculated for each of the 6 domains, and total scores (2–36) were obtained by summing the 6 domain scores.[31]

PFM parameters were assessed in all subjects in the hook-lying position by using a VVP-3000 perineometer vaginal pressure
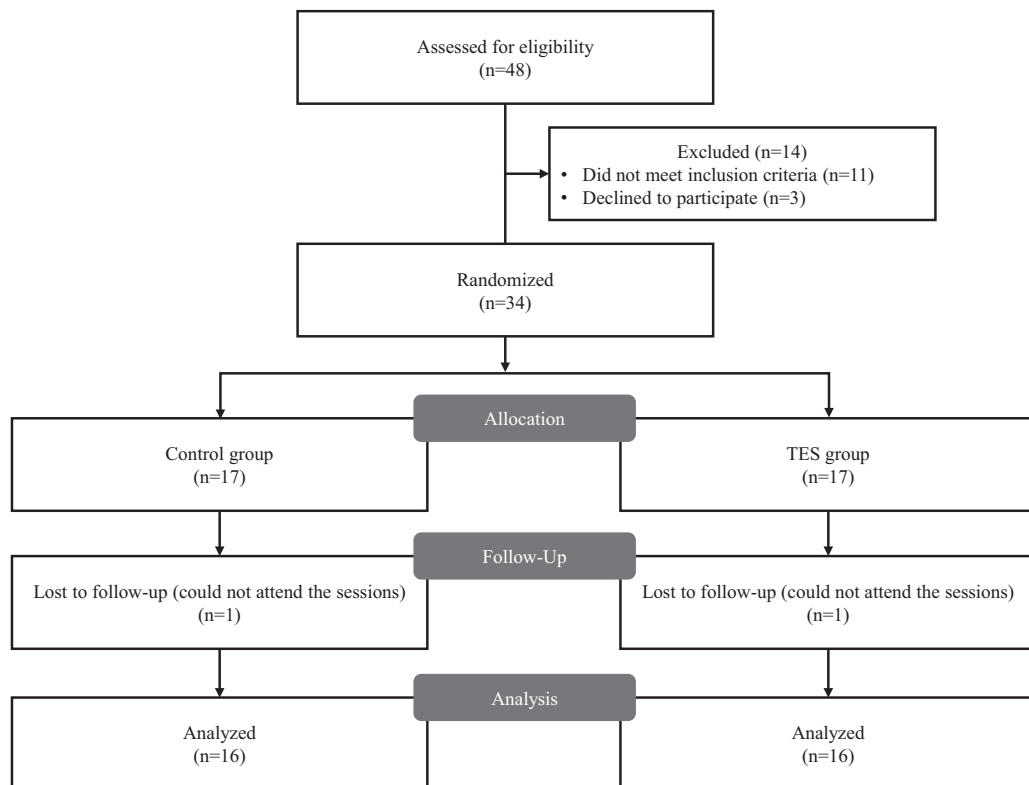
Figure 1. Flow diagram of randomized trial of transcutaneous electrical stimulation (TES) in women with stress urinary incontinence.

probe (QLMED Ltd; Gyeonggi-do, Korea) that was 24 mm in diameter and 115 mm in length, with an active surface measurement length of 66 mm.[33] A microprocessor connected to the vaginal pressure probe with latex tubing allows transmission of pressure readings when the probe is compressed by vaginal contraction. The baseline pressure (without voluntary PFM contraction) was set to 0 mm Hg. Subjects were asked to contract their PFMs, squeezing with maximum effort for 3 seconds. They were instructed to pull their PFMs inward and caudally as much as possible, with no abdominal or gluteal muscle contraction.[34] The measurement was taken before PFM contraction and recorded as a flat curve after the subjects were asked to relax and slowly breathe in and out.[35] PFM strength was measured between the resting and peak pressure (mm Hg), with the resting pressure excluded from the calculation, and was reported as the mean of 2 maximal voluntary contractions (MVCs).[35] The PFM power was defined as the PFM strength per time to reach MVC (mm Hg/s). The time to reach MVC was measured from the starting point of PFM contraction to the point at which the MVC was reached. PFM endurance was recorded as the mean contraction pressure (mm Hg) over a 10-second period during a single contraction attempt.[35]

Statistical Analysis

All statistical analyses were performed using SPSS Statistics 18.0 (IBM; Armonk, NY). In all analyses, $P < .05$ was taken to indicate statistical significance. The Kolmogorov-Smirnov Z-test was used to determine the normality of the data distribution. Analysis of covariance was used to compare the groups, both before and after the intervention; baseline values were used as covariates. Data are presented as means ± standard deviation. The pre- and post-interventions were compared for each group using paired Student's t-tests. The effect sizes (r values) and confidence intervals for the primary outcomes were calculated to determine the clinical significance of the data. The r value was constrained to lie between 0 (no effect) and 1 (maximal effect); an $r \geq 0$ and < 0.1 was classified as no effect, $r \geq 0.1$ and < 0.3 was a small effect, $r \geq 0.3$ and < 0.5 was a moderate effect, and $r \geq 0.5$ was a large effect.[36] Pearson's correlation matrices were constructed to examine the relationships between change in FSFI domain scores ([post-value/pre-value] × 100) and change in PFM parameters ([post-value/pre-value] × 100).

RESULTS

Thirty-four women with SUI were randomly divided into the TES and control groups (both n = 17); however, 1 subject in each of the TES and control groups withdrew during the intervention due to a lack of time. Ultimately, 32 women with SUI completed the intervention and were included in the analysis (Table 2). There were no significant differences between the 2 groups in demographic characteristics or Ingelman-Sundberg scale scores. Also, there were no significant differences between

Table 2. Characteristics of the participants

	Control group (n = 16)	TES group (n = 16)	P value
Age (y), mean ± SD	41.1 ± 7.2	42.3 ± 9.1	.684
BMI (kg/m²), mean ± SD	22.8 ± 3.5	22.6 ± 2.8	.825
Duration of symptoms (y), mean ± SD	7.8 ± 6.0	5.7 ± 3.6	.246
Deliveries (n), mean ± SD	1.5 ± 0.9	1.9 ± 0.7	.201
Menopause (%)	31.3	31.3	—
Vaginal deliveries (n), mean ± SD	1.5 ± 0.9	1.5 ± 1.0	1.000
Ingelman-Sundberg scale score, mean ± SD	1.4 ± 0.6	1.1 ± 0.3	.168

BMI = body mass index; TES = transcutaneous electrical stimulation.

groups in any of the variables examined, with baseline values being used as covariates ($P > .05$).

Table 3 shows the post-intervention improvements in PFM parameters and FSFI domain scores relative to baseline in each group. Regarding the FSFI domains, there were significant differences between groups and within groups in desire (between groups, $P = .007$; within groups, $P = .034$), arousal (between groups, $P < .001$; within groups, $P = .001$), orgasm (between groups, $P < .001$; within groups, $P = .044$), satisfaction (between groups, $P = .002$; within groups, $P = .001$), and total score (between groups, $P < .001$; within groups, $P < .001$). However, there were no significant differences between groups in lubrication (between groups, $P = .530$; within groups, $P = .323$) or pain (between groups, $P = .550$; within groups, $P = .001$). With regard to the PFM parameters, there were significant differences between groups and within groups in strength (between groups, $P = .045$; within groups, $P = .004$), power (between groups, $P = .001$; within groups, $P = .032$), and endurance (between groups, $P = .012$; within groups, $P = .034$).

Table 4 shows the correlation coefficients between changes in PFM parameters and changes in FSFI domain scores. There were significant correlations between change in PFM power and change in arousal ($r = 0.321$; $P = .036$), change in satisfaction ($r = 0.420$; $P = .008$) (Figure 2), and change in total score ($r = 0.313$; $P = .040$) in FSFI domains. Also, there were significant correlations between change in PFM endurance and change in desire ($r = 0.318$; $P = .038$), change in pain ($r = 0.318$; $P = .038$), and change in total score ($r = 0.437$; $P = .006$) (Figure 2) in FSFI domains. However, there were no significant correlations between change in PFM strength and change in FSFI domains.

DISCUSSION

Previous studies have indicated the utility of the PFMT for assessing PFM and female sexual functions.[13,37] The results of the present study indicated improvements in PFM parameters (strength, power, and endurance) and female sexual function after 8 weeks of PFMT involving TES, indicating that it is a

Table 3. Primary outcome measures in both groups before and after the intervention

Primary outcome measures	Pre-intervention	Post-intervention	Mean change (95% CI)	P value	Effect size
PFM					
Power (mm Hg/s)					
Control group	16.411 ± 13.202	15.156 ± 10.065	−1.255 (1.956 to −4.466)	.418	0.224
TES group*	16.272 ± 9.203	30.500 ± 17.564	14.228 (22.682 to 5.775)	.003	
Strength (mm Hg)					
Control group	18.699 ± 10.071	19.019 ± 9.403	0.321 (1.460 to −0.818)	.557	0.129
TES group*	20.212 ± 9.089	25.725 ± 11.933	5.513 (10.969 to 0.057)	.048	
Endurance (mm Hg)					
Control group	13.716 ± 7.963	13.268 ± 7.347	−0.449 (2.017 to −2.915)	.704	0.157
TES group*	14.486 ± 7.493	20.456 ± 10.336	5.970 (10.748 to 1.192)	.018	
FSFI					
Desire					
Control group	2.406 ± 0.821	2.219 ± 0.657	−0.188 (0.133 to −0.508)	.232	0.292
TES group*	2.000 ± 0.837	2.750 ± 0.983	0.750 (1.256 to 0.244)	.006	
Arousal					
Control group	2.047 ± 1.305	1.922 ± 1.290	−0.125 (0.423 to −0.673)	.634	0.396
TES group**	1.844 ± 1.278	3.156 ± 1.140	1.313 (1.844 to 0.781)	.000	
Orgasm					
Control group	1.469 ± 0.155	1.391 ± 0.182	−0.078 (0.038 to −0.194)	.173	0.195
TES group*	1.531 ± 0.272	1.781 ± 0.315	0.250 (0.396 to 0.104)	.002	
Lubrication					
Control group	2.750 ± 0.463	2.687 ± 0.537	−0.063 (0.263 to −0.388)	.688	0.034
TES group	2.979 ± 0.494	2.875 ± 0.437	−0.104 (0.161 to −0.369)	.416	
Satisfaction					
Control group	2.396 ± 0.990	2.438 ± 0.941	0.042 (0.408 to −0.325)	.812	0.275
TES group*	2.529 ± 1.313	3.471 ± 1.291	1.000 (1.490 to 0.510)	.001	
Pain					
Control group	3.563 ± 1.087	3.542 ± 0.877	−0.021 (0.603 to −0.645)	.944	0.767
TES group*	2.627 ± 1.567	3.725 ± 0.709	1.104 (2.110 to 0.098)	.034	
Total score					
Control group	14.630 ± 2.176	14.198 ± 2.146	−0.432 (0.598 to −1.463)	.385	0.322
TES group**	13.789 ± 3.821	17.951 ± 3.474	4.312 (5.906 to 2.719)	.000	

FSFI = Female Sexual Function Index; PFM = pelvic floor muscle; TES = transcutaneous electrical stimulation.
*P < .05.
**P < .001.

good option for treatment of FSD in cases with SUI. We also showed positive correlations in women with SUI between change in PFM endurance and change in total FSFI score, as well as between change in PFM power and change in FSFI satisfaction. These results could inform interventions or exercises to improve sexual function in women with SUI.

In the present study, we measured PFM parameters (strength, power, and endurance) using a perineometer. Sale and Norman[38] defined muscle strength as the peak MVC force, and muscle power has been defined as the peak force divided by the time to reach the peak force.[39] Muscle endurance refers to the ability of a muscle to maintain submaximal or maximal force.[35,40] In the present study, PFM strength, power, and endurance were significantly increased after 8 weeks of TES training compared to baseline. In addition, there were significant post-intervention differences in PFM parameters between the TES and control groups. Regarding PFM strength, as determined by a

perineometer, previous studies have reported increased vaginal pressure after training involving surface ES.[22,41] There are 3 possible reasons for the improvements in PFM parameters observed in our study after 8 weeks of TES training. First, the PFM contractions induced by ES could cause perturbations in myofibers and the extracellular matrix, in the case of stimulus overload.[42] In addition, according to Henneman's size principle, whether motor units are recruited from smallest to largest is controversial with respect to the muscle contractions evoked by ES; a more likely explanation is that type I and II twitch muscle fibers are recruited randomly.[43] The PFM consists of 70% type I slow twitch fibers and 30% type II fast twitch fibers, and ES-evoked contractions could stimulate the PFM by random recruitment of these fibers, thereby enhancing PFM strength and power (by increasing recruitment of type II muscle fibers) and endurance (by increasing recruitment of type I muscle fibers). Second, after ES, collagen levels were reported to be increased

Table 4. Descriptive statistics and results of Pearson's correlation analysis

| | Pearson correlation | | | | | |
| | PFM power | | PFM strength | | PFM endurance | |
FSFI parameters	r	P value	r	P value	r	P value
Desire	0.275	.064	0.070	.351	0.318*	.038
Arousal	0.321*	.036	0.241	.092	0.204	.132
Orgasm	0.231	.101	0.172	.173	0.063	.366
Lubrication	−0.044	.405	−0.152	.204	−0.082	.444
Satisfaction	0.420*	.008	0.072	.348	0.183	.159
Pain	0.099	.295	−0.009	.481	0.318*	.038
Total	0.313*	.040	0.088	.316	0.437*	.006

FSFI = Female Sexual Function Index; PFM = pelvic floor muscle.
*P < .05.

and the transforming growth factor beta 1-Smad2/3 pathway was activated in response to mechanical strain.[44] This pathway is an important regulator of collagen metabolism.[44] The main collagen types in fibrous connective tissue are I and III collagen fibers, which influence the tensile strength of the tissue.[44] Although changes in collagen properties were not measured directly in the present study, alterations in the quantity and organization of these fibers could affect the tensile force of the endopelvic fascia.

Figure 2. Correlation between relative change in PFM power and FSFI satisfaction score, and between relative change in PFM endurance and total FSFI score. FSFI = Female Sexual Function Index; PFM = pelvic floor muscle.

Third, the improvement of PFM parameters may have been due to stimulation of the pudendal nerve by TES.[45] ES is known to promote contraction of the PFM, thus strengthening its muscle fibers and promoting the electric activation, coordination, and proprioception of pelvic floor contractions.[45]

Previous studies have suggested the use of various modes of ES to improve sexual function in female patients with urinary incontinence or pelvic floor disorders.[1,21,46] Rivalta et al[21] reported that functional ES of the PFM was associated with varying degrees of improvement in sexual function in all domains examined. Giuseppe et al[1] reported that FSFI desire, lubrication, sexual satisfaction, and pain domain scores were significantly increased but arousal and orgasm domain scores were not significantly different between pre- and post-ES. Aydın et al[46] confirmed significant improvement of FSFI arousal, desire, orgasm, and satisfaction in their ES group compared to controls. We confirmed significant improvements in FSFI desire, arousal, orgasm, satisfaction, and total scores in both within-group (pre- vs post-TES) and between-group (TES group vs control group) analyses. The increases in FSFI domain scores after 8 weeks of TES training could be explained as the result of stimulation of the PFM to evoke the contractions necessary for vaginal friction and blood flow.[8,13] Graber and Kline-Graber[8] reported a significant decrease in the strength of pubococcygeus muscle contractions in anorgasmic women compared to orgasmic women. The PFMs, in particular the pubococcygeus and iliococcygeus muscles, are responsible for the involuntary, rhythmic contractions that occur during orgasm.[47] After reaching this point, the PFMs are tensed and rise to a new maximum tension level, which is maintained momentarily followed by instantaneous release of all tension.[47] This reflex, also known as orgasm, is followed by 5–15 PFM spasms or convulsions occurring at 0.8-second intervals. In addition, women without fear of dyspareunia and urine leakage during intercourse showed recovery of sexual desire, arousal, and sexual satisfaction after 8 weeks of TES training.[48] Similar to previous reports, the present study showed that female sexual function was improved after 8 weeks of TES training. Thus, improving PFM functions had a positive effect on female sexual function.
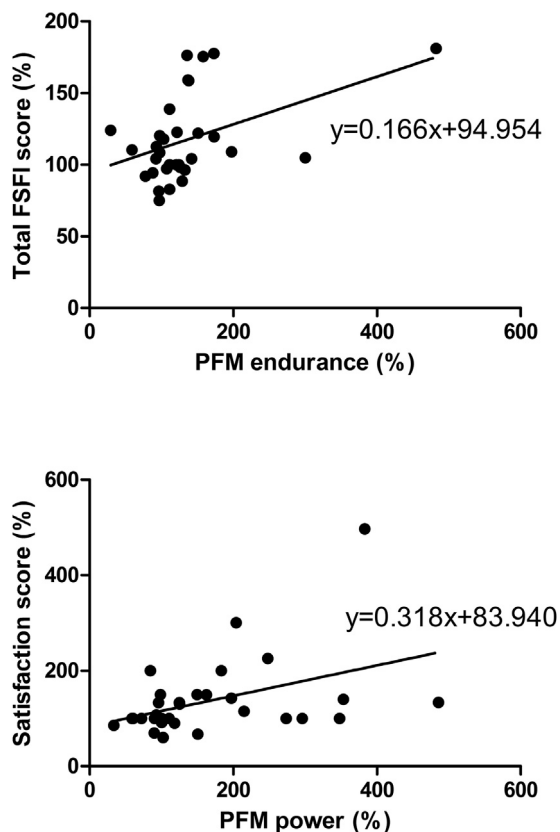
In women with SUI, change in PFM endurance had the highest positive correlation coefficients with change in total FSFI total score ($r = 0.437$; $P = .006$). Salonia et al[49] reported a significant relationship between SUI and loss of libido in women. PFM contraction is believed to influence the degree of sensation felt by a woman during vaginal intercourse and the strength of the contraction as experienced by her partner. In addition, during contraction of the ischiocavernosus and bulbocavernosus muscles the clitoral body descends to within close proximity of the distal portion of the anterior vaginal wall.[50] Increased PFM endurance could result in contraction of the ischiocavernosus and bulbocavernosus muscles and a longer "hold" sensation during intercourse. Huey et al[51] reported that the mean duration of penile-vaginal intercourse was approximately 7 minutes. Schnabl[52] reported a significant association between intercourse duration and female orgasmic consistency, as 25% of women reported experiencing an orgasm "every time or usually" with intercourse of 2 minutes or less, but reports of orgasm increased to 60% of women in the "over 10 minutes" group. PFM contractions must be repeated over a period of time to achieve sexual orgasm.

In women with SUI, PFM power had the highest positive correlation coefficients with satisfaction in FSFI domains ($r = 0.437$; $P = .006$). Psychological disinterest, distress, fear of incontinence during intercourse, and embarrassment due to unpleasant odor have been suggested as likely etiologies of sexual dysfunction in women.[49] Incontinence occurring during penetration is more likely in women with SUI.[1] Thus, because rapid PFM contractions may decrease the likelihood of incontinence, increasing PFM power could in turn increase FSFI satisfaction. In addition, greater PFM power could improve body image in women,[53] as suggested by the positive correlation between PFM power and FSFI satisfaction in the present study.

The main limitation of this study was the lack of electromyography and ultrasonography measurements of changes in PFM activation and hypertrophy of the PFMs; therefore, further studies are needed to determine the influence of these parameters on female sexual function after 8 weeks of TES training. Also, it is not possible to determine whether the improvements in sexual function might be associated with the intervention or are a result of the natural course, or other psychosocial aspects. Additionally, we included women with a wide age range, including both pre- and postmenopausal women. Also, further studies need to be conducted on larger sample size with sexual dysfunction caused by PFM dysfunction.

CONCLUSION

TES can be considered as an option for improving PFM parameters and sexual function in female SUI patients. In addition, this study determined the extent to which the PFM parameters of strength, power, and endurance are associated with sexual function after 8 weeks of TES training in women with SUI. We noted changes in PFM endurance, total FSFI score, PFM power, and FSDI satisfaction after 8 weeks of TES training. The results of this investigation may be useful for developing guidelines for treatments to improve female sexual function.

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