

ASSESSMENT OF PELVIC FLOOR MUSCLE FUNCTION IN STANDING AND LYING POSITIONS USING TRANSABDOMINAL ULTRASOUND: DIFFERENCE BETWEEN CONTINENT AND STRESS INCONTINENT WOMEN

Hypothesis / aims of study

Pelvic floor muscles (PFM) dysfunction has been commonly associated with stress urinary incontinence (SUI) (1). Assessment of PFM contraction before and after treatment has been commonly accepted as an important parameter in clinical and scientific issues to investigate the efficacy of treatment programs. Transabdominal (TA) ultrasound has been recently used by physical therapists to assess PFM function (2). Traditionally, the PFM function has been commonly assessed in lying position. But, SUI usually occurs in standing position that gravity influences the pelvic floor. Hence, assessment of PFM contraction in standing position seems essential for functional evaluation of these muscles, particularly in women with SUI that symptoms is aggravated in this position. Some studies have investigated the effect of body positions on PFM assessment (3). However, no study has evaluated the PFM contraction in standing and lying positions both in women with and without SUI using TA ultrasound. The purpose of this study was to investigate the difference in PFM function in standing and lying positions and to determine if this difference varies between women with and without SUI.

Study design, materials and methods

A two-way mixed-design was utilized to examine the effect of test position on PFM function in women with and without SUI. A total of 30 non-pregnant female between the ages of 25 and 50 years participated in the study. Subjects were categorized into two groups: continent females and females with SUI. An equal number of women (N=15) were allocated to each group. TA ultrasound measurement of PFM contraction was performed in two positions: crook-lying and standing. The testing position was randomly selected. The amount of bladder base movement on TA ultrasound (mm) was measured in both positions. Subjects performed three maximal contractions with no movement of the pelvis or low back region and the mean value of three contractions was taken for the analysis. A two-way mixed-design ANOVA was used to determine the difference between positions in both groups.

Results

The (Mean \pm SD) scores for TA ultrasound measurement in crook-lying and standing positions for women with and without SUI is presented in Table 1. The test position had significant effect on PFM contraction ($F=7.47$, $P=0.01$). There was no significant interaction between health status of subjects (Having or not having SUI) and test position ($F=1.14$, $P=0.29$). Finally, there was no significant main effect of health status on PFM function ($P=0.30$)

Interpretation of results

In overall, the PFM function was higher in standing position compared to lying position in both females with and without SUI and the difference in positions does not vary between continent and stress incontinent women. There was no significant difference in TA ultrasound measurement of PFM activity between continent women and those with SUI.

Concluding message

In conclusion, the results of this study indicate higher pelvic floor elevation, measured by TA ultrasound, in standing position than lying position. Evaluation in standing position seems essential when the PFM contraction is assessed.

Table1. The (Mean \pm SD) scores of TA ultrasound measurement for each position in women with and without SUI.

Variable	Group	Position	
		Crook-lying	Standing
TA ultrasound measurement (mm)	Continent (N=15)	5.4 \pm 3.7	6.4 \pm 5.4
	Incontinent (N=15)	3.6 \pm 2.5	4.5 \pm 2

References

1. Bø K, Sherburn M (2005) Evaluation of female pelvic-floor muscle function and strength. *Phys Ther* 85:269-82
2. Thompson JA, O'Sullivan PB, Briffa NK, Neumann P, Court S (2005) Assessment of pelvic floor movement using transabdominal and transperineal ultrasound. *Int Urogynecol J Pelvic Floor Dysfunct* 16: 285-92
3. Frawley H, Galea M, Phillips B, Sherburn M, Bø K (2006) Effect of test position on pelvic floor muscle assessment. *Int Urogynecol J Pelvic Floor Dysfunct* 17: 365-371

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<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
<i>Specify Name of Ethics Committee</i>	This research was reviewed and was approved by the Human Subject Committee at University of Social Welfare and Rehabilitation Sciences.
<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes