

THE EFFECT OF DIFFERENT CONTRACTION METHODS ON PELVIC FLOOR MUSCLE CONTRACTION IN ASYMPTOMATIC WOMEN

Hypothesis / aims of study

The relation between pelvic floor muscles and abdominal muscles allows the protection of urinary continence under increased urethral pressure (1). It was seen that abdominal muscle co-activation contributed to pelvic floor muscle contraction (2, 3). Sapsford et al. reported that pelvic floor muscles became activated during abdominal muscle contraction and the opposite was true, in other words, abdominal muscles became activated during pelvic floor muscle contraction (3). Two contractions have been defined in the literature for abdominal muscle training namely the hollowing and bracing maneuvers. The hollowing maneuver is used for Pilates exercise training and the bracing maneuver is used during stabilization exercises. It was mentioned that pelvic floor muscles contracted in both of these exercise types. Pelvic floor muscle contraction and anal contraction methods are used during pelvic floor muscle training. This study was aimed to determine which of the four different contraction methods enabled pelvic floor muscle function the most and to determine the exercises that should be prioritized while creating an exercise program.

Study design, materials and methods

120 asymptomatic, volunteer women with no pelvic floor dysfunction symptoms participated in the study. The number of the participants was set as to include 30 women in each subgroup and the total number of asymptomatic women was set as 120 to ensure 80% power with an alpha level 0.05. Volunteer women, who had no mental problem to hinder their cooperation and comprehension, were literate and over the age of 18 and got 0 point from the global pelvic floor bother questionnaire, participated in the study. The women, who had urinary incontinence, pelvic organ prolapse and fecal incontinence symptoms, a neurologic illness and musculoskeletal problem and were pregnant or at the postpartum term and used neuromuscular blocking agents for any reason, were excluded. The women's physical features, education duration, menstrual and constipation status, profession, obstetric anamnesis and presence of chronic illness were recorded. Global pelvic floor bother questionnaire was applied for deciding whether the women were asymptomatic or not. Gynecologist and physiotherapist evaluated the pelvic floor muscle contraction of the women by transabdominal ultrasonography. A physiotherapist provided 1 hour training to the women prior to the transabdominal ultrasonography evaluation. During this training, four contraction methods (pelvic floor muscle contraction, hollowing maneuver, bracing maneuver and anal contraction) were taught visually and practically. The measurements were repeated 3 times for each contraction and the average of the 3 measurements was analyzed. The sequence of the contractions was set by using the random method for the assessment of the four contractions. The descriptive statistics of the acquired data were estimated as the mean, standard deviation, numbers and percentile frequencies. The simple repeated measurement analysis of variance and Sidak post-hoc test were used for the comparison of pelvic floor muscle function measured for the four contraction types. The statistical significance level was accepted as $p < 0.05$ and SPSS (ver. 18) program was used for the estimations.

Results

The women's physical and socio-demographic features are shown in Table 1. By comparing the contraction types in terms of pelvic floor muscle function, it was found that the average of pelvic floor muscle function ranked from the highest to the lowest respectively as the bracing maneuver, hollowing maneuver, pelvic floor muscle contraction and anal contraction ($p = 0.0001$).

Interpretation of results

The women's pelvic floor muscle function was at the highest level during the bracing maneuver and it was at the lowest level during the anal contraction.

Concluding message

We think that teaching the women exercises including the bracing maneuver during the pelvic floor muscle training will be more effective for improving pelvic floor muscle function.

Table 1. Women's physical and socio-demographic features

	n	Mean
Age (year)	120	25,73±7,10
Body Height (m)	120	1,63±0,06
Body Weight (kg)	120	60,75±10,64
Body Mass Index (kg/m ²)	120	22,85±4,16
Education duration (year)	120	13,37±2,85
Obstetric anamnesis		
Gravida	23	1,69±0,55
Para	22	1,54±0,50

	n	Mean
Number of live children	22	1,54±0,50
Profession	n	%
Student	59	49,2
Housewife	11	9,2
Working women	50	41,6
Menstrual status		
Normal	93	77,5
Irregular	27	22,5
Presence of chronic illness		
Hypertension	1	0,8
Diabetes	0	0
Asthma	0	0
Presence of Constipation	13	10,8

Table 2. Pelvic floor muscle function according to contraction types

n=120	Mean	SD	p
Pelvic floor muscle contraction	0,45 ^a	0,14	0.0001
Anal contraction	0,32 ^b	0,12	
Hollowing maneuver	0,49 ^c	0,16	
Bracing maneuver	0,57 ^d	0,18	

^{a,b,c,d} The use of superscripts indicates statistical differentiation.

References

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Disclosures

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