

TRAINING OF THE PELVIC FLOOR MUSCLES DURING PREGNANCY AND AFTER THE CHILDBIRTH WITH SWISS BALL INCREASES CONTRACTILITY OF THE PELVIC FLOOR MUSCLES ASSESSED BY ELECTROMYOGRAPHIC EVALUATION

Hypothesis / aims of study

The training of the pelvic floor muscles (TMAP) has been indicated for the prevention and treatment of stress or mixed urinary incontinence and must be performed by a trained professional during pregnancy and postpartum.

TMAP protocols aim to help control weight bearing on the pelvic floor during pregnancy, preparation for the second stage of labor, in addition to facilitating the return to pre-pregnancy conditions, during the puerperium. However, little is known about the effects of TMAP on the pelvic floor or pregnancy and postpartum.

Although the Swiss ball is widely used in physical therapy practice, there is, however, scientific evidence to support their use as therapeutics, especially for the treatment of pelvic floor disorders and / or voiding.

Thus, this study aimed to evaluate the effect of TMAP on the contractility of MAP by means of electromyography with endovaginal *probe*, during the stages of pregnancy and puerperal remote, serving from the Swiss Ball as a facilitator in the movement.

Study design, materials and methods

This is a clinical, controlled, prospective, blind, study that consisted of 33 primiparous women (mean age 22.68 years). The patients were divided into three groups: (GG) 13 women with mean gestational age of 28.3 (\pm 2.95) weeks; (GPV) 10 postpartum women with mean of 49.3 (\pm 5.84) days vaginal delivery with mediolateral episiotomy right; (GPC) 10 postpartum women with mean of 46.3 (\pm 3.60) days after delivery cesarean section.

The evaluations were performed by a physiotherapist who was unaware of the treatment protocol and consisted of: (a) functional assessment of the pelvic floor (AFA), by vaginal palpation and grading bidigital muscle contractility, the second standard scale by Contreras Ortiz, and Coya Ibañez (1994) (1) zero to five degrees, and (b) assessment of the pelvic floor electromyography (EMG[®] System, Brazil - Model 400C) by means of endovaginal *probe* Physio-Med Services[®]) to check the floor muscle contractility Pelvic in *microvolts* (*microvolts*).

The PROTOCOL of TMAP was prepared and supervised by the principal investigator and consisted of ten sessions, at home, held three times a week, lasting sixty minutes each.

The exercises began in the supine position, progressing to sitting and standing and were based on TMAP using the Swiss Ball (fast-twitch and slow) associated with breathing exercises and postural care.

For analysis of EMG data were selected three to five seconds of maximal isometric contractions and calculated the mean of three contractions, utilizing the *Root Mean Square (RMS) software* generated by the EMG equipment. These data were then subjected to statistical analysis - Analysis of Variance (ANOVA) with significance level of 5%. For the analysis of correlation between methods, EMG and AFA, we applied the Linear Correlation Coefficient Spearman with significance of 1%.

Results

The 33 women that participates of the study were divided into their respective groups that were homogeneous with respect to sociodemographic data (race, education, family income and marital status). As shown in Table 1, we observed a significant increase in contractility of the pelvic floor muscles after the TMAP in all groups. It was also found that there was a correlation between the assessment methods used to evaluate the contractility of the pelvic floor (AFA and EMG).

Table 1 - Functional Assessment (AFA) and electromyography (EMG) of the pelvic floor muscles in pregnancy and postpartum stage.						
Values expressed as mean \pm standard deviation.						
	Pregnant (N = 13)	Puerperal Vaginal (N = 10)	Puerperal Elective cesarean (N = 10)	P-value		
				Groups *	Time *	Correlation **
AFA Pre treatment	2,62 \pm 0.87	2,30 \pm 1.05	3,0 \pm 0.94	0,2	0,0001	<0.01
AFA Post-treatment	3,46 \pm 0.87	3,30 \pm 1.16	4,0 \pm 0.81			

EMG Pre treatment	40,09 ± 19.49	27,42 ± 8.13	34,03 ± 13.09	0,3	0,0001
EMG Post-treatment	47,49 ± 22.17	38,47 ± 16.94	48,92 ± 18.36		

The table represents the comparison between groups (pregnancy, vaginal delivery and elective cesarean delivery) and comparison between times of assessment and reassessment (pre-treatment and post-treatment). * ANOVA by ranks with transformation, with p-value <0.05. ** Linear correlation coefficient of Spearman, p-value <0.01.

Interpretation of results

Bidigital vaginal palpation is a widely used method in clinical practice because it is simple, reproducible, and inexpensive though considered a subjective method. EMG is a more accurate and reliable, which records the action potentials of muscle fibers, which enables more objective parameters for comparing the pre and post treatment, however, is a method more expensive.

This study found a significant correlation between the two methods for evaluating the contractility of the pelvic floor - AFA and EMG, which agrees with another previous study that also found a positive correlation between the two methods above (2), which confirms that both methods are reliable, since performed by a trained professional.

The TMAP during pregnancy is recommended by the International Incontinence Society (ICS) as a means of preventing pelvic dysfunctions recommendation with level A (3).

The TMAP through the motions provided by the Swiss ball exercise provided deep pelvic muscle structures and surface in different postures in a playful and globalized way. The proposed protocol has helped to increase the contractility of pelvic floor muscles of women as being very vulnerable to pregnancy and postpartum. The TMAP during pregnancy and postpartum can be a means of maintaining the integrity of its functions, besides providing the physical welfare stance, which could also alleviate the complaints of pregnancy and childbirth.

Concluding message

The training of the pelvic floor muscles using the Swiss ball is an effective way to increase the contractility of the pelvic floor muscles during pregnancy and remote puerperium. There is significant correlation between the methods of functional assessment of the pelvic floor (AFA) and endovaginal probe with electromyography evaluation, when performed by a single trained physiotherapist.

References

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<i>Is this a Randomised Controlled Trial (RCT)?</i>	No
<i>What were the subjects in the study?</i>	HUMAN
<i>Was this study approved by an ethics committee?</i>	Yes
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<i>Was the Declaration of Helsinki followed?</i>	Yes
<i>Was informed consent obtained from the patients?</i>	Yes