

# #499: THE ROLE OF VAGINAL PALPATION IN MOTOR LEARNING OF THE PELVIC FLOOR MUSCLE FOR WOMEN WITH STRESS URINARY INCONTINENCE RANDOMIZED CONTROLLED CLINICAL TRIAL

Letícia A. Ferreira, MSc; Fátima F. Fitz, PhD; Márcia M. Gimenez, PhD; Mayanni Magda P. Matias, Msc; Maria Augusta T. Bortolini, PhD; Rodrigo A. Castro, PhD.

Universidade Federal do Estado de São Paulo (UNIFESP) in Brazil

## Abstract

**Objective:** To evaluate the effects of a program with verbal instructions, body awareness techniques and vaginal palpation of pelvic floor muscle (PFM) on motor control of women with stress urinary incontinence (SUI). In addition, to evaluate PFM strength and endurance, the use of accessory muscles during PFM contraction, and the self-efficacy and expectations of patients with the results of the PFM awareness program. **Methods:** This is a randomized, controlled, single-center clinical trial with two intervention groups. Patients with predominant SUI symptoms (n=73) were recruited. The Experimental Group received vaginal palpation (manual techniques) for body and perineal awareness; and the Control Group received verbal instructions of PFM anatomy and function. **Results:** No significant differences were identified between the groups in relation to the primary outcome. A significant increase in the number of fast contractions in both groups after 4 weeks of intervention (p<0.000) was observed. **Conclusions:** Vaginal palpation did not significantly increase the number of fast contractions of PFM when compared to verbal instructions; both groups showed improvement in motor control of PFM. **Keywords:** Physical therapy modalities, Pelvic floor muscles, knowledge, Urinary incontinence.

## Introduction

Pelvic floor muscle training (PFMT) is a conservative and first-line treatment for female SUI [1].

In practice, approximately 30 to 50% of women are unable to correctly perform perineal muscle contractions. Some factors may contribute to this finding, such as the location of the pelvic floor muscles (PFM), their small size, and the general lack of knowledge on the pelvic and perineal regions and their functions [2]. In addition, women usually contract their gluteal, hip adductor, or abdominal muscles rather than their levator anus muscle when asked to contract their PFM [2].

For women to benefit from a PFMT programme for the treatment of SUI, the awareness phase of PFMT cannot be omitted [2,3].

This study aimed to evaluate the effects of a program with verbal instructions, body awareness techniques and vaginal palpation of PFM on motor control of women with SUI.

## Methods and Materials

This is a single-centre, double-blind randomized controlled trial with two intervention groups. Women aged between 18 and 75 with predominant SUI symptoms and  $\geq 2$  g of leakage as measured by 1-h pad test; have not previously undergone physiotherapy for pelvic floor dysfunction; and have at least grade 1 muscle strength (flicker) according to the Oxford scale [4]. Did not include patients with chronic degenerative diseases, pelvic organ prolapse stage more than I (by the POP-Q), neurologic or psychiatric disease, history of pelvic floor surgeries, or have any intolerance or discomfort in PFM examination.

Seventy-eight patients were recruited from January 2017 to August 2020 and randomized in experimental and control groups.

The **experimental group** (n=35) received verbal instructions about the anatomy and function of the PFM and vaginal palpation to learn to correctly perform PFM contractions; and the **control group** (n=38) received verbal instructions about PFM anatomy and function. Both groups received a supervised intervention for 4-weeks (1 session per week).

The primary outcome includes the number of fast-twitch muscle fibers [by vaginal palpation and visual observation (PERFECT scheme)].

Secondary outcomes include power (Oxford scale: 0-5) and muscular endurance that were assessed by visual observation and vaginal palpation (PERFECT scheme), use of accessory muscles during the voluntary contraction of PFM, and the self-efficacy and the expectations for the results by the self-efficacy scale of pelvic floor exercises.

To analyze the primary, secondary, and their differences between the moments before and after the intervention we used the ANOVA with 5% cut for significance.

## Results

No significant differences were found between the groups in relation to the primary outcome:  $7.4 \pm 2.3$  in the Experimental Group, and  $7.0 \pm 2.2$  in the Control Group (p=0.556). A significant increase in the number of fast contractions in both groups after 4 weeks of intervention (p<0.000) was observed (table 1). No statistical difference was detected in power (p=0.232) and PFM endurance (p=0,748) between groups (p>0.05).

Regarding the use of gluteal, abdominal and adductor muscles associated to PFM contraction, it was observed a decrease in both groups, with significant results for the adductor in the Experimental Group from 37% to 16% after 4 weeks (p=0.010); and in the Control Group from 81% to 44% after 4 weeks (p=0.010) (Figure 1).

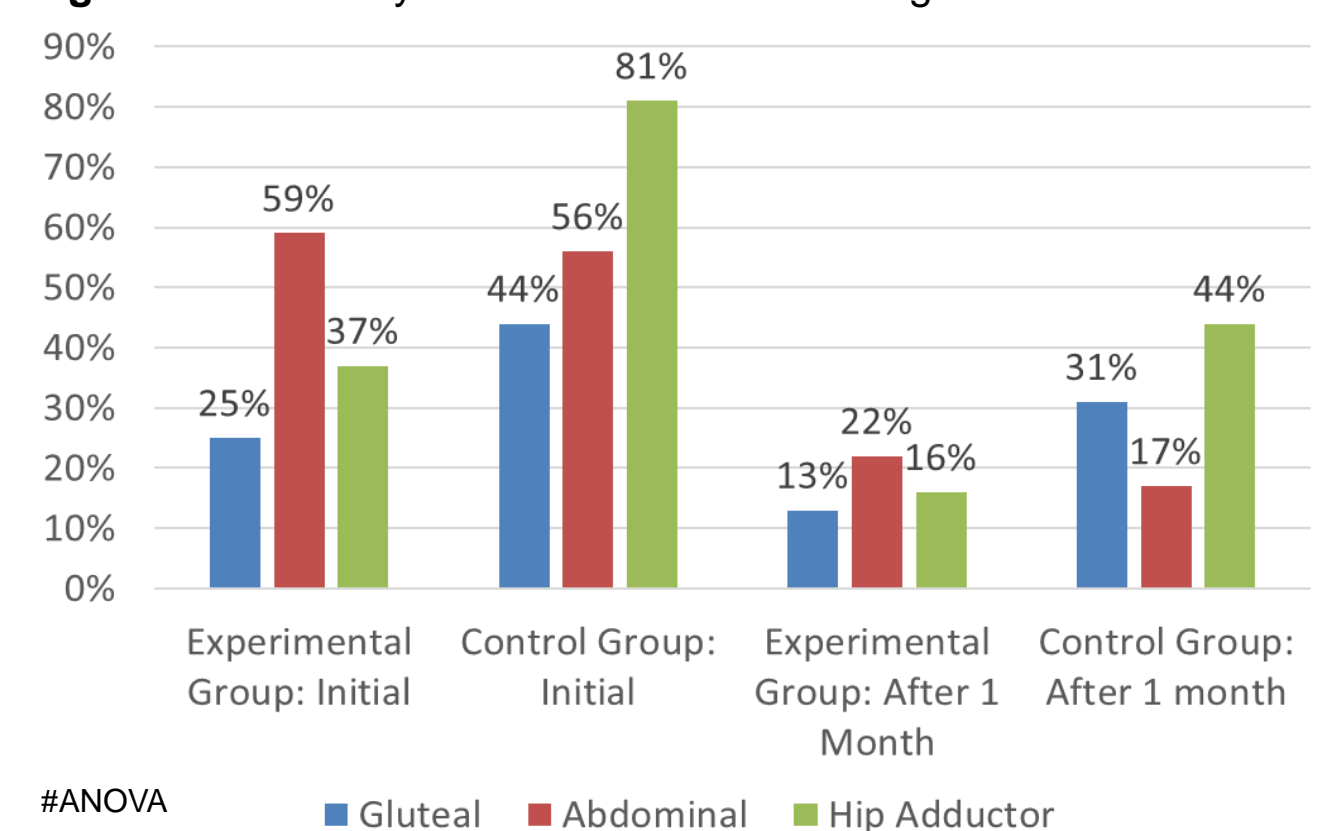
Both groups demonstrated equal self-perception of results and motivation and confidence regarding the benefits of PFM exercises (p=0.283); and in relation to performance expectations that were evaluated only after 4 weeks of intervention, both groups demonstrated ability to perform PFM contraction  $71.2 \pm 18.2$  in the Experimental Group versus  $78.5 \pm 10.7$  in the Control Group, (p=0.196).

**Table 1.** Evaluation of the number of fast contractions.

Fast contractions (number)	Experimental Group (N=32)	Control Group (N=36)	P#
Initial	5.8±2.0	5.4±2.2	0.342
After 1 month	7.4±2.3	7.0±2.2	0.556
p#	0.000	0.000	

#ANOVA

**Figure 1.** Accessory muscles contraction during PFM contraction.



#ANOVA

■ Gluteal ■ Abdominal ■ Hip Adductor

## Discussion

In the present study, vaginal palpation and verbal instructions promoted a significant increase in the number of rapid contractions because of the neuromuscular adaptation promoted by tactile and verbal *feedbacks* and their numerous reflex pathways. Feedback continually regulates motor control, and repetition allows the cerebral cortex to determine the most effective pattern. The simultaneous contraction of accessory muscles can also mask awareness and force of contraction of the PFM, so information regarding size, location and the use of body awareness techniques in different postures, promoted a reduction in the use of accessory muscles and an increased awareness of their own ability to perform PFM contraction more effectively. The performance expectancy was shown to be better in short-term interventions when compared to longer periods of treatment and in unsupervised follow-ups.

## Conclusions

Vaginal palpation did not promote an increase in the number of fast PFM contractions when compared to verbal instruction, both groups showed improvement in motor control. The inclusion of the PFM awareness phase prior to a PFMT program for the treatment of SUI is necessary, however, the methods of learning PFM contraction and function still need to be better investigated.

## References

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