



# Effect of a pelvic floor muscles training protocol associated with abdominopelvic exercises on pelvic floor muscles strength in continent women: preliminary results



Piccini Adriana<sup>2</sup>, Andrade Marília<sup>2</sup>, Peres Isabela<sup>2</sup>, Silva Valéria<sup>2</sup>, Martinho Natalia<sup>1</sup>, Marques Joseane<sup>1</sup>, Carvalho Leonardo<sup>2</sup>, Iunes Denise<sup>2</sup>, Riccetto Cássio<sup>1</sup>, Palma Paulo<sup>1</sup>, Botelho Simone<sup>1,2</sup>

<sup>1</sup>State University of Campinas (UNICAMP) - SP / Brazil.

<sup>2</sup>Federal University of Alfenas (UNIFAL) - MG / Brazil

## INTRODUCTION

Pelvic posture is maintained by a balanced action between abdominal muscles, spinal extensors and hip. Pelvic changes, in turn, can impact pelvic muscle structure and thus predispose occurrence of pelvic floor muscles (PFM) disorders. Thus, we hypothesized that pelvic rehabilitation exercise protocol promotes an increase of PMF strength. The aim of this study is to investigate the effect of a pelvic rehabilitation exercise protocol on PFM strength in continents women.

## PATIENTS AND METHODS

**Study design:** A prospective clinical study was approved by the regional Ethics Review Board (CAEE:44675415.1.0000.5142).

**Participants:** Fifteen women participated of the study. Exclusion criteria: women who had urogynecological symptoms, prior abdominal or pelvic surgery, any pelvic organ prolapse, diabetes, hypertension, neurological abnormalities, myopathy, chronic lung diseases and/or urinary tract infection.

**PFM Assessment:** Was performed through digital palpation (*Oxford Modified Grading Scale*) and all of them were able to contract their PFM.

**Pelvic tilt angle Assessment:** Was performed an analysis of pelvic tilt angle by photogrammetry in which were taken participant photos using swimsuits and marquees on anterior superior iliac spines and on posterior inferior iliac spines. To analyse pelvic tilt angle, an evaluator demarcated the angle between the line of intersection that joins the anterior superior iliac spine to the posterior inferior iliac spine using Corporis Pro<sup>®</sup> 3.1.3 software. After this, participants was characterized as with anterior pelvic tilt (positive value) or posterior pelvic tilt (negative value).

**Randomization and intervention protocols:** Participants were evaluated before and after perform 10 supervised individual sessions of proposed protocol (Figure 1), twice a week and for 50 minutes each.

**Statistics Analysis:** Statistical analysis was performed using McNemar-Bowker test with a significance level of 5%.

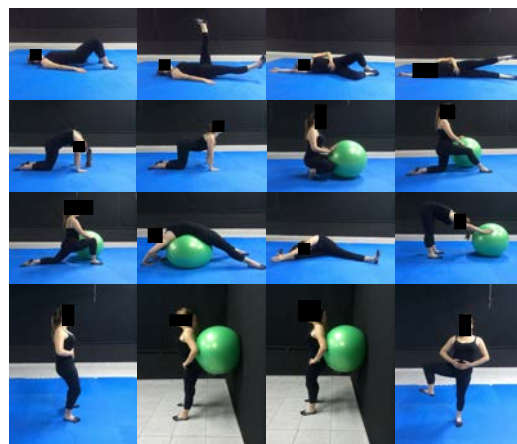


Figure1. Proposed Protocol

## RESULTS

**Demographic and clinical characteristics:** Most participants were single (86,66%), have white skin color (80%) and have higher educational level (86,66%). Participants had a mean age of 25,33 ( $\pm$  4,6) years old and body mass index average of 22,16 ( $\pm$  2,95) kg/cm<sup>2</sup>.

**Main outcome:** In pelvic posture photogrammetry analysis, it was found that most of the participants had posterior pelvic tilt (46.66%), while others had anterior pelvic tilt (53.33%). After training, the number of participants with anterior pelvic tilt increased to 60%, despite not having been observed statistically significant differences in pelvic positioning pre and post training. Table 1 shows evaluation of PFM strength before and after PFM training protocol with abdominopelvic exercises, assessed by digital palpation.

Table 1 – PFM Strength analysis by digital palpation, pre and post training.			
DIGITAL PALPATION (Oxford Modified Scale)	Pre-training (f/%)	Post-training (f/%)	p-value
2 and 3	7/ 46,7	2/ 13,3	0.029
4	6/ 40	6 / 40	
5	2/ 13.3	7/ 46.7	

Data presented in absolute frequency (fi) and relative frequency (%). \* P <0.05

## CONCLUSION

In conclusion, preliminary results suggest that pelvic floor muscles training protocol associated with abdominopelvic exercises promotes an increased pelvic floor muscles strength in continent women, evaluated by digital palpation.

### Acknowledgements

### Reference:

Martins MC et al. Impacto da reeducação postural global no tratamento da incontinência urinária de esforço feminina. Rev Assoc Med Bras 2008; 54(1): 17-22.

