

## PELVIC FLOOR TRAINING IN WOMEN WITH MULTIPLE SCLEROSIS

### Hypothesis / aims of study

Multiple Sclerosis is characterised by an autoimmune attack to the myelin, this results in decreased conduction through the nerve. Lower urinary tract symptoms occur in up to 90% of the patients with multiple sclerosis at some time in the course of their disease and overactive bladder is one of the most common symptoms. This blind, randomised and prospective trial aimed at investigating the inhibition of the overactive bladder through pelvic floor training (PFT) in women with multiple sclerosis (MS) with relapsing remitting form.

### Study design, materials and methods

Twenty patients were recruited and randomized, by the envelop method, in two groups: Treatment (GT) (N=10) and Placebo (GP) (N=10). Evaluation consisted of ICIQ-SF questionnaire; 24-hour Pad test; 3 day bladder diary; and post void residual volume, maximum cystometric capacity and involuntary detrusor contractions were recorded by urodynamic study and all patients were assessed before and after treatment. The intervention was performed by a physiotherapist and had a period of 12 weeks in both groups with participants attending twice a week. The GT intervention consisted of PFT in lying supine position with assistance of a Perina (Quark, São Paulo, Brazil) perineometer and was instructed to practice the exercises daily in home, without assistance of any device, in other positions like sitting and standing. They were also advised to integrate the exercises into daily life's activity and the regimen was reviewed weekly according to the initial vaginal assessment using the PERFECT system. The GP received a sham treatment which consisted of the introduction of a perineometer inside the vagina with no contraction required.

### Results

Data analysis was by intention to compare the beginning and the end of each intervention and it was used the one-way ANOVA. A P-value of 0.05 was considered significant. Demographic data were calculated by the Mann-Whitney test and there were no statistically significant differences between groups.

In the ICIQ-SF assessment, GT showed a statistically significant improvement ( $p=0.002$ ) and GP group the scores were higher from the beginning of intervention and it was statistically significant ( $p=0.0003$ ) (Figure 1). In 24-hour Pad test results GT showed a statistically significant reduction on the weight of pads ( $p\text{-value} < 0.0001$ ) and no statistically significant differences were observed in the GP group ( $p\text{-value} = 0.42$ ) (Figure 2). In GT was observed an improvement of daytime frequency but there was no statistically significant difference in any group (Figure 3). However, nocturia was reduced in GT ( $p\text{-value} = 0.0006$ ) and remained the same in GP ( $p\text{-value} = 0.5698$ ) (Figure 4). There was no statistically significant difference observed in maximum voided volumes, in involuntary detrusor contractions and maximum cystometric capacity in both groups. A statistically significant decrease was observed in post void residual volume in GT ( $p\text{-value} = 0.01$ ) and no statistically significant difference in GP ( $p\text{-value} = 0.66$ ) (Figure 4).

### Interpretation of results

The PFT has been used as a treatment modality in the inhibition of overactive bladder, alleviating urinary symptoms. In the present study, frequency, incontinence and nocturia decreased in the GT group with consequent lower impact in QoL as can be observed in the ICIQ-SF scores, but no changes were found in maximum voided volume. The results also indicate that PFT is effective in reducing PVR volume. In contrast, GP group had none or lower difference in all aspects. In concordance with previous studies, this improvement of GT is because PFT helps to postpone voiding and manage urinary urgency, and to aid bladder emptying by relaxation of muscles. After inhibition of the urge to void and detrusor contraction, patients may gain enough time to reach the toilet and thereby prevent urge incontinence. Although it was found good results on the signs of the overactive bladder, no changes were found in involuntary detrusor contractions and maximum cystometric capacity in the urodynamic in GT group. According to previous studies, bladder dysfunction does not necessarily correlate with the urodynamic pattern or changes in the disease.

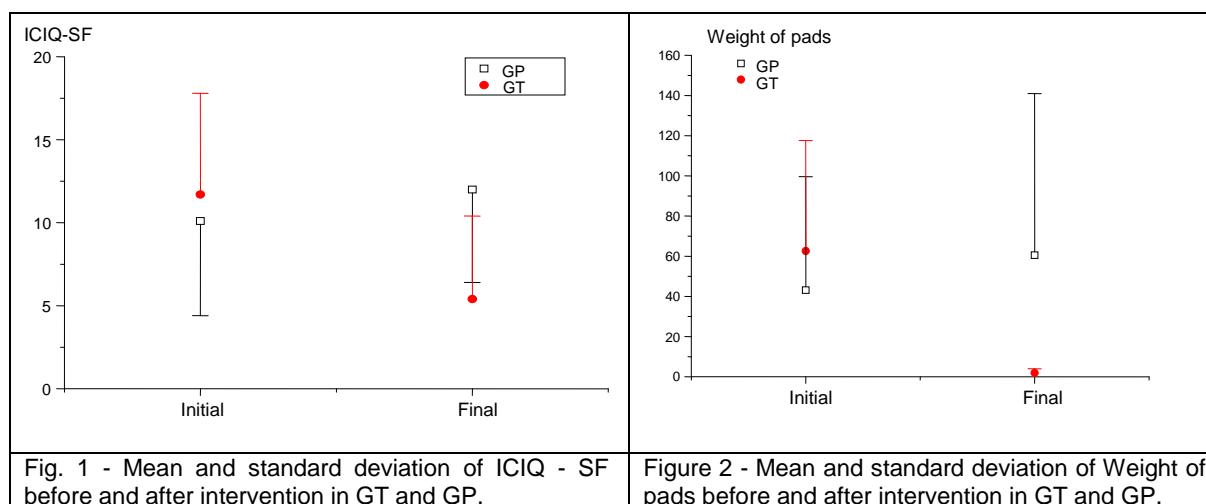


Fig. 1 - Mean and standard deviation of ICIQ - SF before and after intervention in GT and GP.

Figure 2 - Mean and standard deviation of Weight of pads before and after intervention in GT and GP.

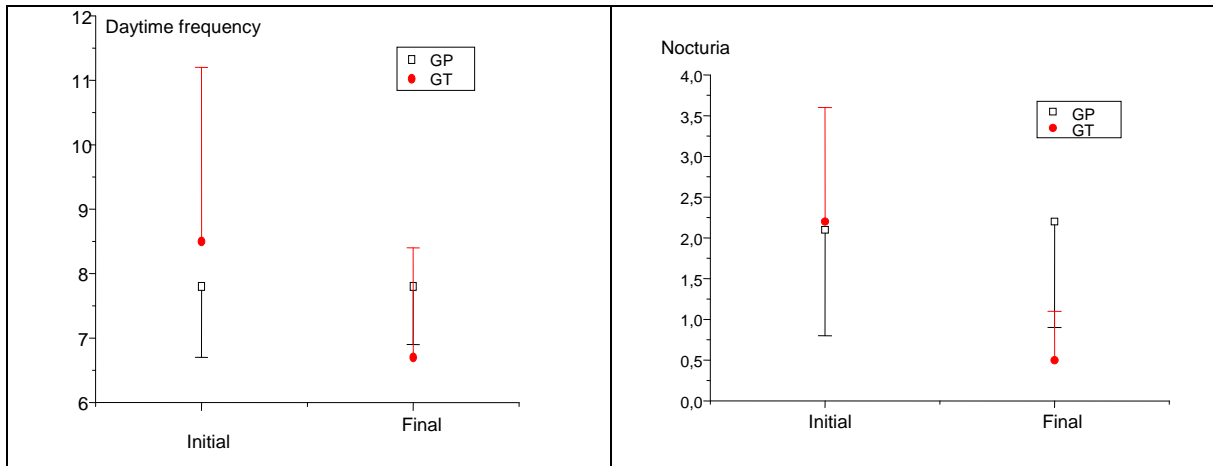


Figure 3 – Mean and standard deviation of daytime frequency before and after intervention in GT and GP.

Figure 4 – Mean and standard deviation of nocturia before and after intervention in GT and GP

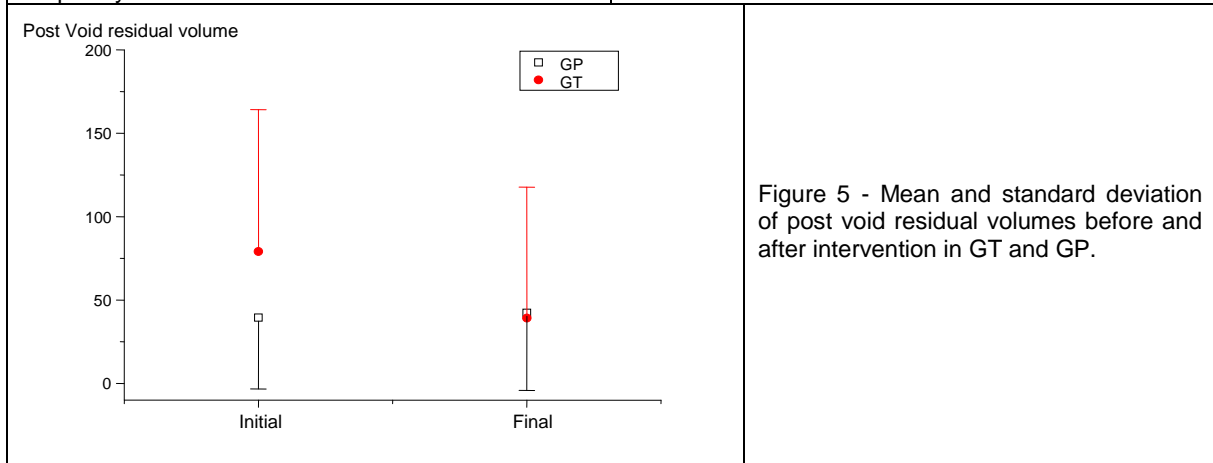


Figure 5 - Mean and standard deviation of post void residual volumes before and after intervention in GT and GP.

Concluding message

Findings from the current study suggest that pelvic floor training is effective in the reduction of signs as urinary urge-incontinence, frequency and nocturia, caused by overactive bladder, also reducing the impact on QoL.

<b>Specify source of funding or grant</b>	<b>FAPESP</b>
<b>Is this a clinical trial?</b>	<b>Yes</b>
<b>Is this study registered in a public clinical trials registry?</b>	<b>No</b>
<b>What were the subjects in the study?</b>	<b>HUMAN</b>
<b>Was this study approved by an ethics committee?</b>	<b>Yes</b>
<b>Specify Name of Ethics Committee</b>	<b>Comitê de Ética em Pesquisa - UNICAMP</b>
<b>Was the Declaration of Helsinki followed?</b>	<b>Yes</b>
<b>Was informed consent obtained from the patients?</b>	<b>Yes</b>