

DOES HORSEBACK RIDING FITNESS MACHINE IMPROVE PELVIC FLOOR MUSCLE CONTRACTION?

Hypothesis / aims of study

It has been reported that 4 months training with a horseback riding fitness machine (which spontaneously induces muscle activity in many part of the human body by forcing users to maintain balance against titubation while in a seated position) improved stress urinary incontinence (SUI) symptoms and QOL in SUI patients [1]. In this previous study, however, it was not determined whether the improvement in symptoms was associated with a decrease in body weight or with an improvement of PFM contraction. The objective of this study was to verify whether a new horseback riding fitness machine (EU-JC70; Panasonic Corporation) [2] is effective for an improvement of PFM contraction in women with mild SUI.

Study design, materials and methods

Regional women aged 40-60 with standard proportions (BMI 18.5 or higher and less than 23.0) were recruited. Out of 39 women, 24 possible SUI women were screened for entry of the study by using the statement: "Leaks when you cough or sneeze" in ICIQ-SF (International Consultation on Incontinence Questionnaire-Short Form). After obtaining informed consent, following parameters were evaluated as Pre-interventional (Pre) measurement: (1) Vaginal squeeze pressure assessed by perineometry (*Peritron*TM), (2) Vaginal palpation: the Oxford grading system, duration of contraction, (3) Questionnaires: ICIQ-SF, I-QOL (Urinary Incontinence Quality of Life Scale, PFDI-20 (pelvic floor distress inventory-short form 20), (4) Isometric maximum voluntary contraction (MVC): Hip adduction, Hip abduction, Trunk flexion, Trunk extension, (5) Body weight, Body Mass Index (BMI), (6) Waist Circumference.

All these 24 women were randomized as follows. According to the results of vaginal squeeze pressure, they were listed in descending order and each top two subjects were randomly assigned to either the intervention group or the control group with a probability of one half. Women in the intervention group were required to carry out exercise using the fitness machine for 15 minutes twice or three times a day, 3 days a week for 13 weeks. Women in the control group were required not to perform any other new regular exercises for 13 weeks. Women in both groups were instructed not to increase or decrease their meal size and not to learn about or perform any PFM exercises during the study period. Women also recorded the size of each meal and the details of each exercise session in a diary to prevent variation in meal size and exercise habits.

At 13 weeks (Post) after the start of training, the same parameters were evaluated. Data was anonymized and the staff who performed the measurement and the checking of the diaries were blinded to the study groups.

Results

One woman in the intervention group dropped out of the study because of personal reasons. In 11 women (intervention group) and 12 women (control group) who completed the study period, the "Pre" and "Post" measurement values were compared and the following results were obtained:

- (1) The maximum vaginal squeeze pressure (maximum value of 3 times measurements) was significantly improved in the intervention group ($p < 0.05$, t-test).
- (2) Oxford grading scale improved in 4 women and decreased in 1 woman in the intervention group. In the control group, it improved in 1 woman and decreased in 1 woman. The duration of contraction significantly increased in the intervention group and there was a significant difference from the control group.
- (3) The intervention group showed significant improvement in the ICIQ-SF scores of "Q1: frequency of urine leakage", "Q2: amount of urine leakage" and "Q3: interference with daily life." Significant improvement in I-QOL total score was shown in the intervention group. The PFDIs were preferable from the initial value in both groups and no significant difference was shown between the groups before and after intervention.
- (4) The isometric maximum voluntary contraction in hip adduction was significantly improved in the intervention group.
- (5) There were no significant changes in body weight and BMI in both groups.
- (6) The waist circumference at the umbilicus level significantly decreased in the intervention group.

Concluding message

Horseback riding fitness machine (EU-JC70) does improve PFM contraction. This machine can be a feasible and safe device and may provide a new approach for PFM training.

References

1. Yoshimura Y, et al.; Horseback riding fitness machine for the treatment of stress urinary incontinence – a pilot study. 41th Annual Meeting of the International Continence Society, Glasgow, United Kingdom
2. <http://panasonic.jp/fitness/coretra/products/eu-jc70/>

Disclosures

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