

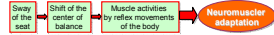
HORSEBACK RIDING FITNESS MACHINE FOR THE TREATMENT OF STRESS URINARY INCONTINENCE - A PILOT STUDY

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Aims of Study



Horseback Riding Fitness Machine spontaneously induces muscle activity in many part of the human body by forcing users to maintain balance against disturbance while in a seated position. This equipment strengthens core (trunk) muscles based on "Counter-Balance Exercise Technology." Core muscles include the pelvic floor muscles. Therefore, exercising with this equipment has possible therapeutic effect on Stress Urinary Incontinence (SUI). Here we present data from our pilot studies to investigate whether ordinary usage of this fitness machine improves SUI symptoms and patients' quality of life.



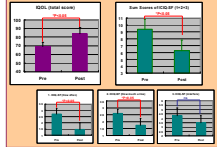
Materials and Methods

10 SUI patients (mean age of 66.2 years, range 38-76) with no history of SUI treatment were recruited via the internet.
 At baseline, following parameters were evaluated:
 [1] Questionnaires: I-QOL and ICIO-SP (22.24 for pad test).
 [2] The volume of levator ani muscle measured by MRI.
 [3] Urodynamic testing (EMG, MUP, UFSMP, PFI).
 [4] EMG of pelvic floor muscles (PFM) (EMG).
 [5] Body weight (Body Mass Index (BMI)).
 Before starting the training, all patients got adequate instructions for proper usage of the equipment. The equipment was set up at the patients' home, and they carried out training for 15 minutes a day, six times a week in a given program for 4 months. Subjects recorded the training conditions in a diary.
 All parameters [1] - [5] were evaluated again 4 months after training started. Statistical analyses were performed using t-test.

Results

All patients were diagnosed as urodynamically proven SUI at base line. No adverse events were observed from the training.

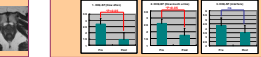
[1] The total score of the I-QOL was improved significantly from 69.8±11.2 to 86.4±11.3 (p<0.05) after 4 months' training. In the ICIO-SP, significant improvement was found in both domains "incidence of urinary frequency" (from 2.7±0.5 to 1.5±0.7) and "quantity of leakage" (from 2.6±0.4 to 1.3±0.5), respectively (p<0.05). There was also a significant difference in sum score of ICIO-SP between pre- and post- training (from 4.1±1.4 to 3.3±1.5, p<0.05).



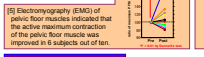
[2] 24 hour pad test was improved significantly from 9.1±3.2 g to 2.9±0.9 g (p<0.05) after 4 mos.



[3] The volume of levator ani muscle measured by MRI increased slightly in 5 of the subjects, but unchanged in another 5 subjects.



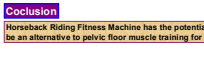
[4] Urodynamic study did not show any significant difference in any parameters.



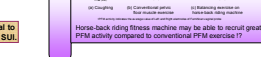
[5] Significant decrease of BMI was found after the 4 months' training from 25.9±4.2 to 21.9±3.8, p<0.05.



[6] Electromyography (EMG) of pelvic floor muscles indicated that the active maximum contraction of the pelvic floor muscle was improved in 6 subjects out of ten.



[7] Although the underlying mechanism is not clear, 4 months training with Horseback Riding Fitness Machine did improve both the I-QOL, scale and pad testing data significantly.
 The decrease of BMI seems to be one of the factors to reduce the symptoms associated with SUI.
 EMG study suggests that this machine may strengthen the PFM contraction in some patients with SUI although the volume of levator ani muscles did not increase.
 It is non-invasive and can be used as a home treatment.



Conclusion

Horseback Riding Fitness Machine has the potential to be an alternative to pelvic floor muscle training for SUI.

Example of PFM activity

(A) Conventional PFM exercise
 (B) Horseback Riding Fitness Machine
 (C) Conventional PFM exercise
 (D) Horseback Riding Fitness Machine

Horse-back riding fitness machine may be able to recruit greater PFM activity compared to conventional PFM exercise !