

**Official title:** Dose-response of physical exercise on pelvic floor muscle function in postmenopausal women with urinary incontinence

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## Study protocol

Urinary incontinence (UI) symptoms are highly prevalent among women, and menopause may be a risk of developing urinary incontinence<sup>1</sup>. During the menopausal transition, not only the hormonal secretion is changed but also the physical activity is affected. The time women spend in physical activity is reduced and the time spend in sedentary behavior is increased in postmenopausal women<sup>2</sup>. Studies have shown that physical activity acts in a bidirectional manner, exerting either a preventive or an aggravating effect on urinary incontinence<sup>3</sup>. Individuals with sedentary lifestyle and insufficient physical activity (< 150 min/week) are at risk of developing UI, and regular physical activity exerts a protective effect in preventing UI, but the optimal type, duration, and intensity of exercise for the female older adult population remain unknown. In addition, objective measurements of pelvic floor muscle function was needed as the use of self-reported measures may cause response bias<sup>4</sup>. The aim of the study was to investigate the effect of different intensity of exercise on pelvic floor muscle function and health-related quality of life (HRQoL) in postmenopausal women with UI. We hypothesized that (a) both high- and low-intensity physical activities could improve pelvic floor muscle strength and HRQoL in postmenopausal women with UI, and (b) the improvement in high-intensity group would be higher than that in low-intensity group. A randomized trial was conducted to compare the effect of different exercise intensity on pelvic floor muscle function in postmenopausal women with UI (n=38). The participants were randomly allocated to high-intensity group, low-intensity group or control group. Each group received an 8-week intervention. Both high-intensity group and low-intensity group received a multimodal exercise program including aerobic exercise, resistance exercise, and pelvic floor muscle training. The control group underwent only pelvic floor muscle training. The outcome measures including pelvic floor muscle function, UI symptom severity, HRQoL,

voiding function, and physical activity levels were assessed at baseline and after 8-week intervention.

### **Statistical analysis plan**

Data analysis was performed by Statistical Product and Service Solutions (SPSS) version 22.0 (SPSS, Chicago, IL, USA). The descriptive data were presented as mean, standard deviation (SD), number and percentage. The one-way ANOVA tests were used to compare the continuous data between two groups and chi-square tests were used for categorical data. Shapiro-wilk tests were used to assess the normality of data. Paired-t tests and McNemar's test were used for within-group comparisons. The repeated-measure ANOVA tests and chi-square tests were used to compare changes in outcomes between groups after intervention; ANCOVA tests were used if adjustment for significant differences between groups on outcomes at baseline was needed. A significant level was set at  $p\text{-value} < 0.05$ .

### **Reference**

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