Background
➢ Activities of daily living (ADL) accompanied by increasing intra-abdominal pressure can provoke urine loss in women with stress urinary incontinence (SUI)
➢ The affected can therefore complain involuntary loss of urine associated with change of body position [1]
➢ For preventing SUI involuntary pelvic floor muscle (PFM) activity is important

Aim
➢ The study aim was to investigate whether there is involuntary PFM activity during moderate ADL: using stairs, rising from a chair and lifting of loads (Figure 1a-c), and,
➢ whether there is a difference in PFM activity between:
  ➢ three different speeds of stair using (slow, medium, fast)
  ➢ two different speeds of chair rising (slow, fast)
  ➢ the lifting of two different loads (10 kg, 15 kg)

Methods
➢ Exploratory, cross-sectional pilot study
➢ Electromyography (EMG) activity of PFM of 16 healthy nulliparous women using vaginal probes
➢ Root mean square values of the EMG signals were analyzed before and after onset of load
➢ EMG values: Normalization to peak activity during maximum voluntary contractions (%MVC)
➢ PFM activity-onset threshold: mean of rest activity plus two standard deviations (SD)
➢ PFM activities: Analysis by ANOVA for repeated measures between before and after onset of load and the three different speeds followed by adequate post hoc t-test, and,
➢ t-test between the different speeds and different loads for paired samples was calculated. α = 0.05

Results
➢ 16 participants: mean (± SD) age of 26.8 (± 5.2) years; body mass index of 22.3 (± 2.4) kg/m²
➢ Mean threshold of PFM activity onset: 32.4±12.4 %MVC
➢ PFM activity was higher than during rest in all measured ADL
➢ Stair up and down: long lasting PFM activity and activity tended to increase with higher speed
➢ Load lifting and chair rise: higher PFM activity with increasing weight or speed
➢ Mean PFM activity during load lifting and chair rise: Figure 2 & 3

Conclusions
➢ Involuntary PFM activity was shown during stair use, lifting loads and rising from a chair
➢ The increase of involuntary PFM activity with speed and ground reaction force during stair use and chair rise is comparable to findings during other whole-body impact activities i.e. running [2, 3]
➢ ADL can presumably be applied to provoke involuntary PFM activity in healthy nulliparous women
➢ Future research is needed in involuntary PFM activity of women suffering from SUI

Ethics
Study approved by Ethics Committee of the Canton of Bern, Switzerland (2016-00786)

Keywords
Electromyography, muscle contraction, pelvic floor, stress urinary incontinence

References

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