The effect of sedentary work on trunk functions – in context of older employees

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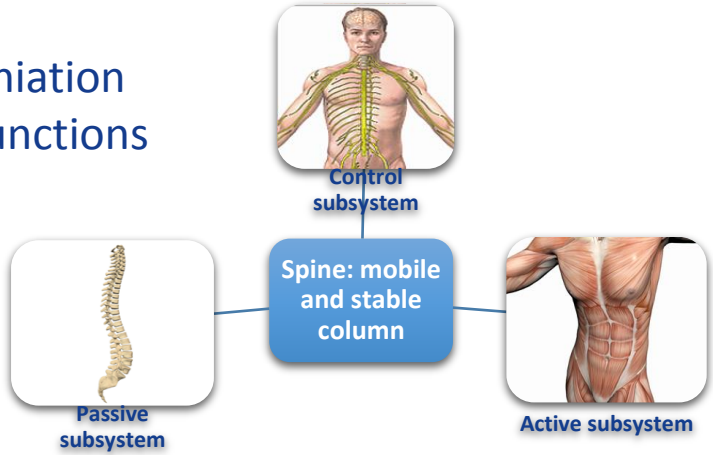
INTRODUCTION

Sitting – a common working position

- Prolonged sitting – risk factor for low back pain
  - No epidemiological support (Kwon et al., 2011; Roffey et al., 2010)
  - Exacerbating factor (Astfalck et al., 2010; O'Keeffe et al., 2013)
  - Proposed harmful mechanisms:
    - direct – e.g. disc degeneration, disc herniation
    - indirect – e.g. weakening of the trunk functions

Deterioration of trunk functions

- Damage, disease
- Non-use
- Age-related



The aim of the study:

- acute effect of sedentary work on trunk functions, which have a vital role in spinal health
- Are there changes between younger and older employees?

METHODS

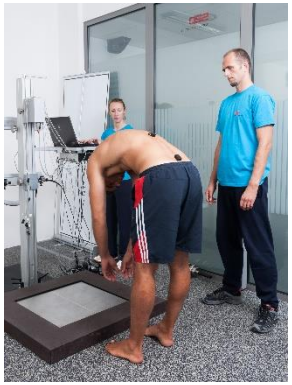
Sedentary workers

- ≤ 35 years old (n = 30)
  - 30.6±3.3 years, 181±5 cm, 87.7±14.8 kg
- ≥ 50 years old (n = 20)
  - 55±3.8 years, 178±7 cm, 87.4±15.6 kg

Pre- and post-work measurements

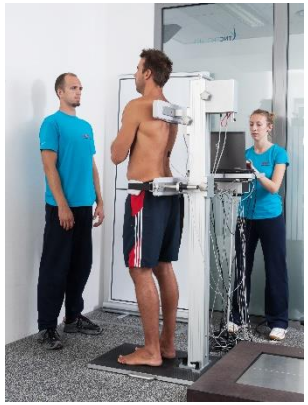
Statistics

- t-test, $p < 0.05$
- 2-way ANOVA (group (2) x time (2)), $p < 0.05$

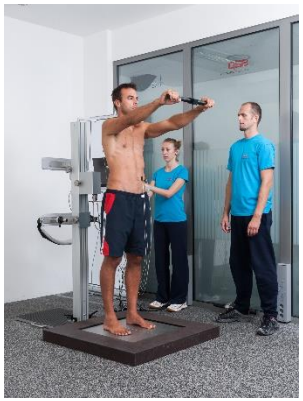


Lumbar RoM

Reposition error



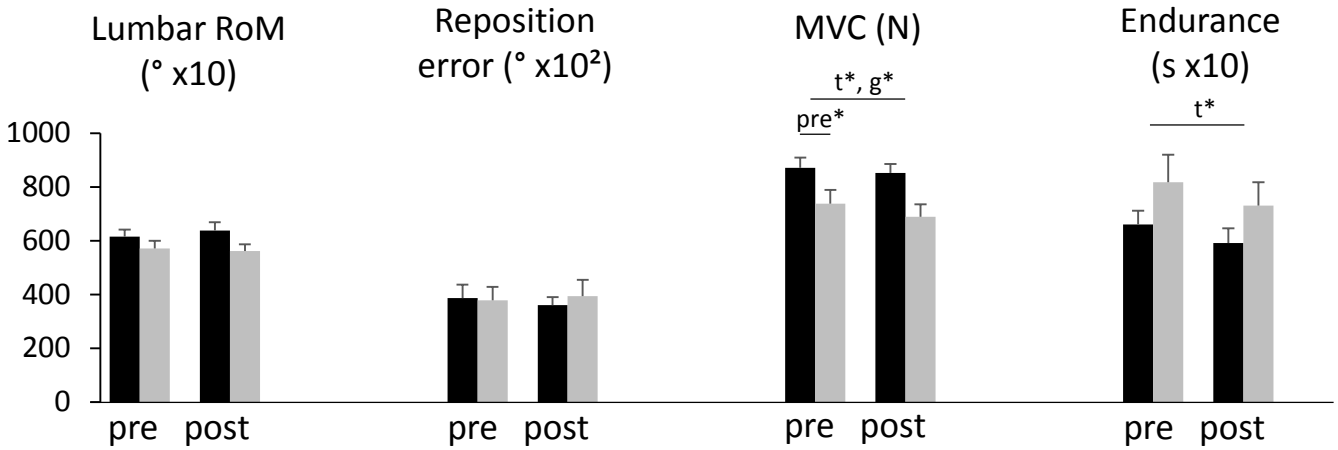
MVC & endurance



Anticipatory postural adaptations

Postural reflexive reactions

RESULTS

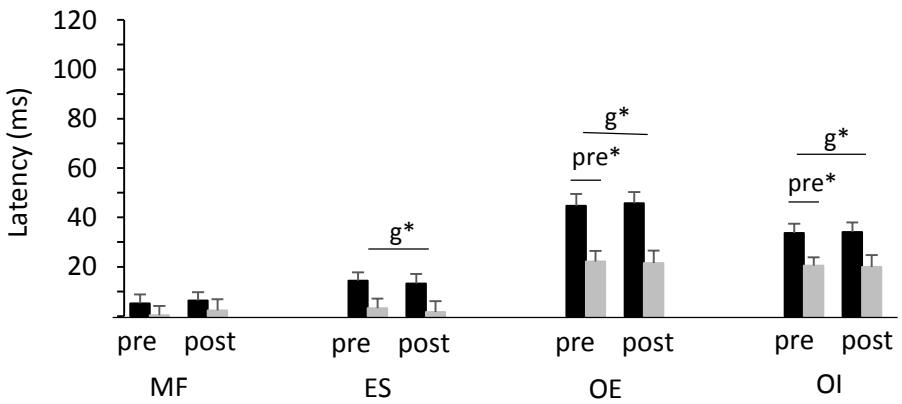


younger
older

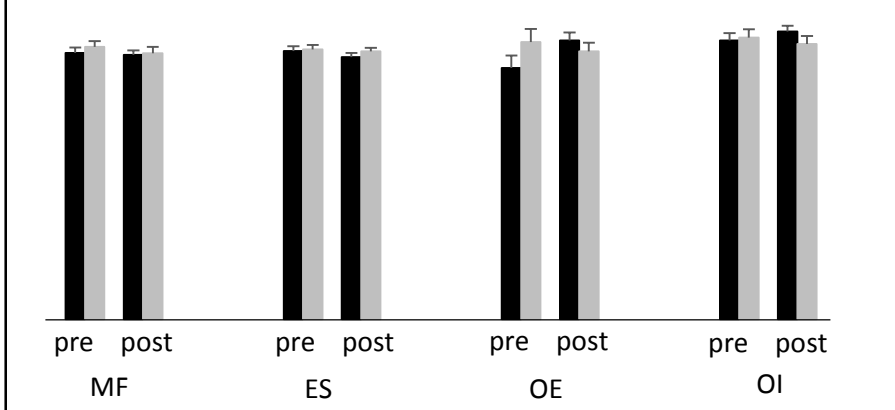
t; time
g; group
t x g; interaction

Ave ± SE
* p < .05

Anticipatory postural adaptations



Postural reflexive reactions



DISCUSSION AND CONCLUSION

Acute effect:

- Lumbar RoM – absence of diurnal variation
  - proposed: rised active trunk stiffness (Kastelic et. al, 2018)
- MVC – lower values in older
- MVC & endurance – lower values after work
  - fatigue or just less motivation after work ?
  - low static contraction – fatigue after 30 min of 2 % MVC (van Dieen et at., 2009)
- APA – shorter latencies in older employees (middle-aged adults)
  - Delayed APA in older adults (Kanekar & Aruin, 2015)
  - Shorter latencies may be a compensation to decreased MVC (Kanekar et. al, 2008, Strang&Berg, 2007)
- PRR – no effect of work
  - Longer latencies after lumbar flex exposure (Sanchez-Zuriaga et. al, 2010), after office work (Kastelic et. al, 2018)
  - Longer latency (MF) in crane operators and shorter in control group after work (Voglar, 2016)

Conclusion:

- Younger vs. Older (middle-aged) → comparable acute effect
  - Some differences in pre-work results

THANK YOU FOR YOUR ATTENTION!

Q & A

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