Effects of walking-induced fatigue on postural balance and risk of falls in young and older people

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1.Introduction

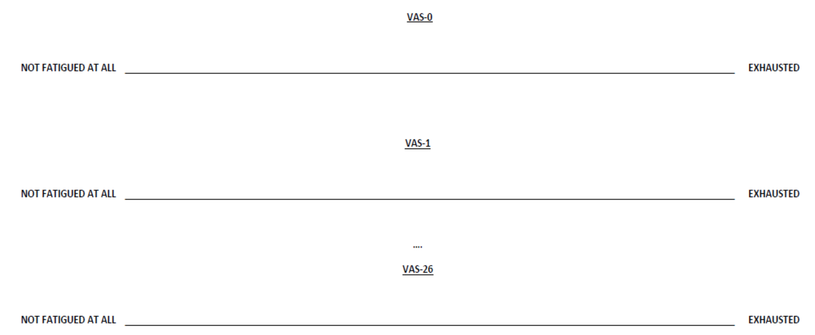
Gait-induced fatigue increases the variability of gait rhythmicity, which increases the risk of falls[1,2]. However, in addition to rhythmic components, gait also has postural components. Therefore, it is relevant to know whether gait-induced fatigue affects postural balance, as poorer balance binds to an increased risk of falls[3]. Importantly, ageing increases the variability of gait rhythmicity and postural instability[1-3]. Understanding the impact of gait-induced fatigue on postural balance in young and older healthy people is of fundamental and clinical/occupational relevance.

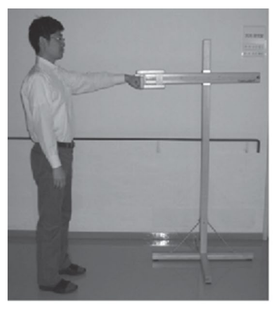
2. Objectives

• To evaluate the effect of gait-induced fatigue on postural balance and the risk of falls in young and older people.

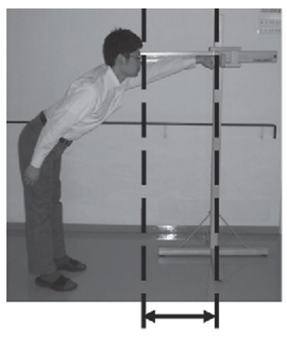
3. Methods

Twelve young (20-28yrs-old) and 6 older participants (60-72 yrs-old) walked over a treadmill-belt at their preferred speed for a maximum of 125 min., or until withdrawal. A visual analogue scale (VAS) monitored fatigue every 5min. The Functional Reach Test evaluated dynamic balance before and after walking. For the older participants only, static balance was also tested on a balance platform with open/closed eyes, before and after walking.

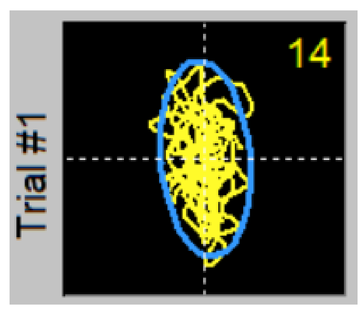




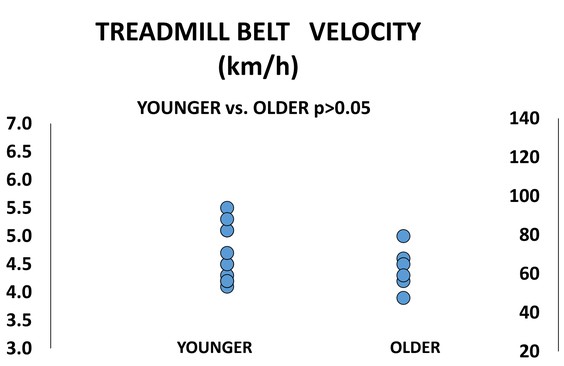
Standing Position

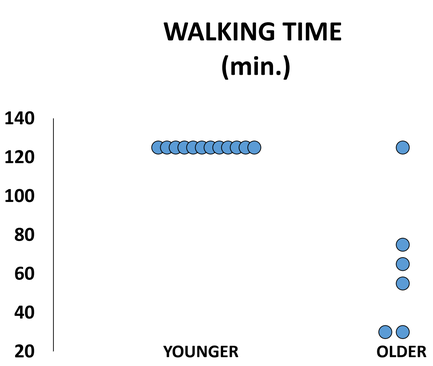


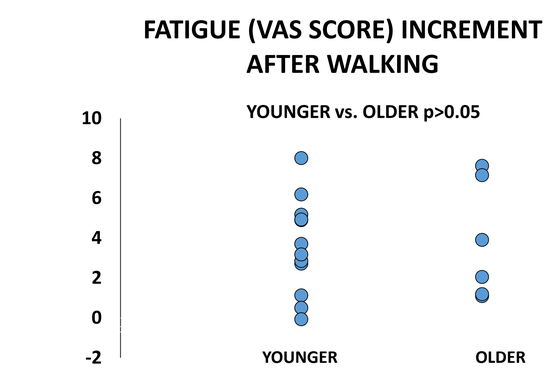
Reach distance

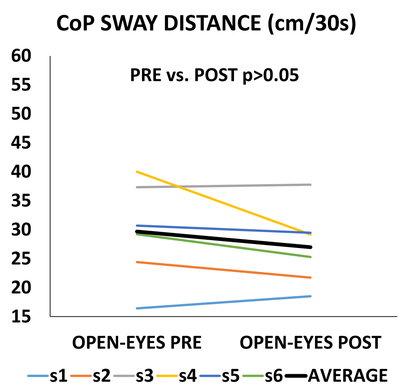


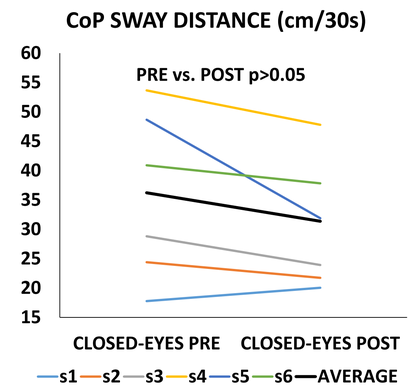
4. Results

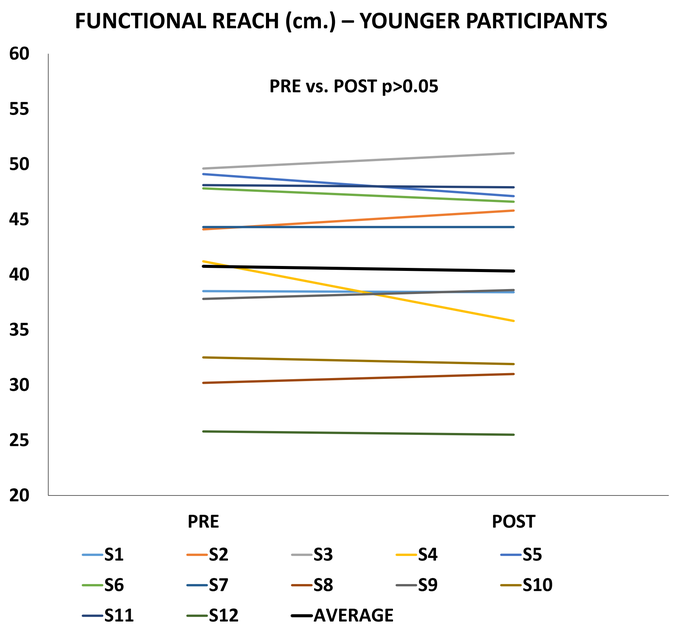


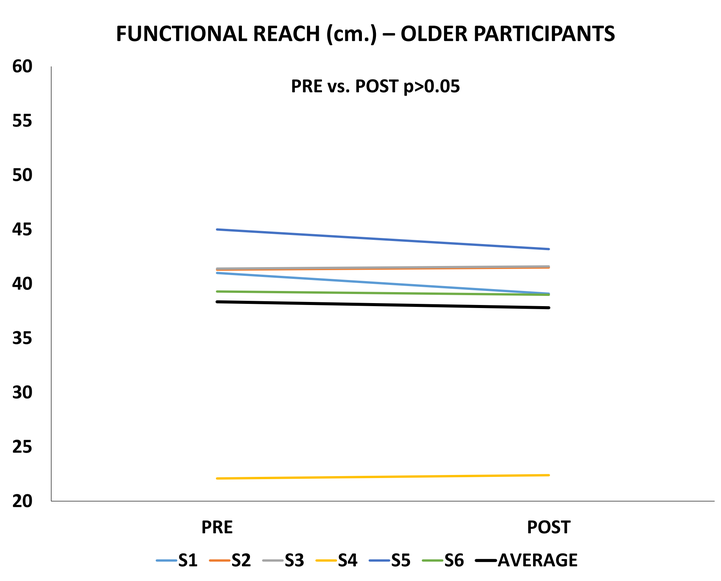


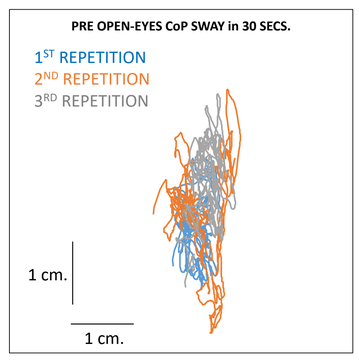


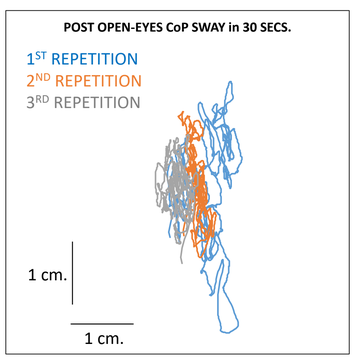


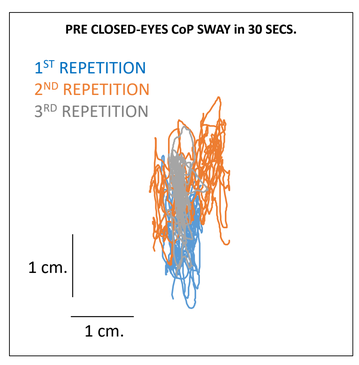


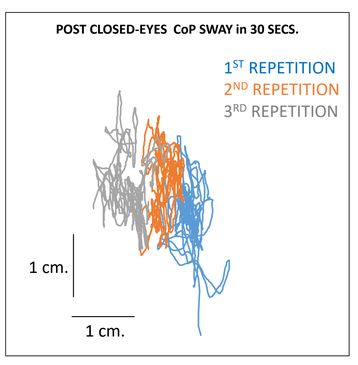












5. Conclusions

Gait-induced fatigue does not affect postural balance in young and older humans.

6. References

1.Renner et al. Innov Aging 2020;5(1):igaa061
2.Hausdorff et al. Arch Phys Med Rehabil 1997;78(3):278-283
3.Fernie GR et al. Age Ageing 1982;11(1):11-16

Funding:
Plan Nacional – DEP2017-86071-R
(PI – Pablo Arias)