Author's response to reviews

Title: The reliability of postural balance measures in single and dual tasking in elderly fallers and non-fallers.

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Author's response to reviews: see over
The Reliability of Postural Balance Measures in single and dual tasking in Elderly Fallers and Non-Fallers.

Statements and answers relate to the reviewers comments on our article. In black we have the reviewer comments. Our response to a comment is in blue.

Referee 1

The authors adequately addressed almost all of my previous concerns.
The manuscript largely improved and is now very exhaustive and well written. I still have few minor comments that you can find listed in the following.

Minor Essential Revisions

Background

Still remain some flaws in the description of the state of the art about previous reliability studies. In particular the third paragraph that describes the state of the art need some improvement. The cited studies: Benvenuti et al., 1999, Corriveau et al., 2000 and 2001, and Lafond 2004, need to be better described and authors have to underline what you can find in these works and what is still to be done and why.

I would suggest authors to further stress and deepen the points of novelty of their study and to better explain

We better described the studies and stressed the novelty of our research by adding the following parts in the introduction:

“Benvenuti and colleagues (1999) assessed patients with a variety of chronic pathologic conditions resulting in balance problems, however, they did not specifically focus on fallers or non-fallers [16]. Stroke survivors and patients suffering from diabetic neuropathy were assessed by Corriveau and colleagues (2001) but these authors excluded subjects if they reported visual or
somatosensory impairments or reported at least 1 fall in the past year [17]. The same exclusion was performed by Lafond et al. (2004) [15].”

“There seems to be a need to perform reliability assessments of postural control in groups with identified fallers and non-fallers.”

“Therefore, because of inconsistencies in the design and analysis of method evaluation studies, a high proportion of prognostic studies were presented with poor methodology which resulted in the presentation of conflicting interpretation of variability of the measures. This led the Work Package 3 of the Prevention of Falls Network Europe to formulate criteria for evaluation of measurement properties of clinical balance measures for fall prevention studies [28]. The purpose of the present study was, therefore, to determine the interrater and test-retest reliability of quantitative postural control measures in elderly fallers and non-fallers, tested under single and dual-task conditions, with and without vision, and considering both relative and absolute reliability.”

**Methods**

Clarity is largely improved now.

Page 4: why do you mention a 30-s duration? Aren't your trials all 20-s long?

In their article Le Clair and Riach (1996) suggested to use trial durations of 20s or 30s. We used 20s only. We acknowledge that mentioning the 30s is confusing considering that we only used 20s trials in our study. Therefore we deleted the 30s information from the text.

At the end of page 4, there is a: "3)": I think it’s a mistake since I don’t see items 1) and 2).

This 3) was a slip of the pen. We corrected this in the manuscript.

**Discussion**

Page 9. ‘Several investigators have demonstrated that deterioration of balance control…’ : after this sentence a single reference follows...maybe you could add a work by Nardone A et al., 1994. Thank you for this suggestion. We clarified this sentence by adding “Day and colleagues (1993)”. 
Page 10 line 1-9. First you mention that your subjects took a comfortable stance position, and at the end of this paragraph you say that you standardized foot positions. From Methods, I understood that you ask subjects to take a comfortable stance and you marked foot outlines for different repetitions of the same subjects. So, foot position is standardized for each subject, but not across subjects. Please make this point clearer.

We made this paragraph clearer: “Our participants were expected to take a comfortable stance position and were expected to repeatedly use this individualised position. This meant that foot position was standardized for each subject, but not across subjects. This was in contrast to Corriveau and colleagues who asked their participants to take a pre-determined stance position of pelvis width.”
Referee 2

The authors have made a good attempt to consider and review the comments made in the previous review. This manuscript investigates the reliability of a specific protocol used in balance measurement using a force. While the paper has benefited from this revision, there are places where further revision (in terms of presentation) is warranted.

*The reviewer is correct; we rephrased this sentence for more clarity.*

Page 1. Line 1: Rephrase “Many different balance..” to “Various”

*We rephrased this in the manuscript.*

Page 1.Line 2-3: Rephrase..“Although functional balance scales are easy to perform”. It doesn’t read as if it is a test. Can you please rephrase to indicate that it is a “test”.

*We rephrased this in the manuscript.*

Page 3: Line 22: Rephrase “......the duration of a trial in quiet standing is limited because of fatigue particularly for pathologic elderly” to “............fatigue, particularly in pathologic elderly”

*Thank you for this comment. We rephrased this sentence*

Page 3: Line 24: “and 3) we wanted a test that is feasible” Please delete “3)” and rephrase. As its stands it doesn’t read well.

*This “3)” was a slip of the pen. We deleted this in the manuscript and rephrased this sentence.*

Page 5: Line 12: “ for the evaluation”. Rephrase this to “ To evaluate the performance of the cognitive task”.

*We corrected this in the text.*

Page 9: Line 8-9: “ From a clinical perspective our procedure makes sense as well”. Try to rephrase this as to “ makes sense for what ?”

*We rephrased this in the manuscript as “From a clinical perspective our procedure makes sense because we included symptomatic individuals in our sample. This indicates that the results can be generalised to similar populations in clinical settings”.*
Page 9: Line 12: “variables varied”. Again make it clear as to “varied from what?”. We rephrased this in the manuscript as “The ICC values were different for each balance variable that was assessed. Between the test conditions, vision or no-vision and single or dual task, there were differences in ICC values as well (tables 4 & 5)”.