Reviewer's report

Title: Pilot comparative effectiveness study of surface perturbation treadmill training to prevent falls in older adults

Version: 2 Date: 23 January 2013

Reviewer: Mona Kristin Aaslund

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MCR: Major compulsory revisions. MER: Minor essential revisions. DR: Discretionary revisions

Overall comment: do not place the full stop in front of the references, but it should be placed after the last bracket (MER)

ABSTRACT

1. It is stated that the second purpose is “to compare fall outcomes to determine whether a clinically relevant effect warranting further study might be present”. This purpose is not explicitly stated in the main text, neither is it clear how such a clinical relevance is evaluated (it is only stated that the study was underpowered to find differences). The authors should make sure that the purpose in the abstract and the main text is the same (MCR)

2. “Falls were assessed by telephone interview at 3 months”. Unclear when this was, and when the falls would have happened. Is it better with “Falls during the 3 months intervention period were assessed by telephone interview after the intervention”? This must be described clearer in the text and described similarly here (MCR)

3. “These results were not statistically insignificant but this pilot study was not powered for hypothesis testing”. Typing error? (MER)

INTRODUCTION

4. The introduction is overall easy to read and gives a relevant background. However, there are several important terms that are not defined or explained properly. Examples are tripping and slipping, motor control learning, task-specific adaptive training, dynamic stability training and surface perturbation treadmill training. This makes it difficult to fully understand the Surface Perturbation Treadmill Training (SPTT) device and the theoretical context important to it. The terms must be described better (MCR)

5. What is meant by the statement "dynamic stability has emerged as a biomechanical paradigm....". This statement can be explained better or written differently (MER)
6. Hypothesis 3 is difficult to test in a pilot study? Also it does not reflect the purpose stated above (MCR)

METHOD

7. I miss some information about the therapists doing the intervention. How many, how experienced are they etc. Since the treatment seems heavily dependent on clinical reasoning and judgment, the effectiveness may rely on how good the therapists are. Especially in a larger study this should be explained and accounted for (MCR)

8. After reading about the SPTT in the methods section, I still feel I need to know more to fully understand it. The training needs to be described better and preferably with a picture to give a visual understanding of it as well (MCR)

9. The BBS and the TUG lacks references for the cut-off points used. Include references here (like you have done on the DGI and the ABC) (MER)

10. Is it right that the cut-off for fall risk on the BBS is 50? Is it not 45? Check this and reference the choice (MER)

11. Is the falls registered during the intervention period? In that case does it necessarily reflect the effect of the intervention? The period for the falls must be described more precisely (MCR)

12. What about power analysis? In the abstract and discussion it is stated that this study was "underpowered" to find differences (even though one of the hypothesis was to test this). Describe on what grounds the power was evaluated? (MER)

RESULTS

13. Why was the 64 participants not divided equally in the two groups (50/50). Why was 33 allocated to one group and 31 to the other? (MER)

14. An important (and impressive) finding is that both treatment groups went from being at fall risk to non-fall risk (based on the cut-offs of the measures). This can be highlighted. (MER)

15. Table 1: Ok. Would it be an idea to include the content of the home-exercise here? (DR)

16. Table 2: Ok. Gender should maybe come as the actual number of females with percentage in brackets? (DR)

17. Table 3 lack units. Why is the N in this table different from the other tables? This is also only stated and not explained in the text. What about the home-exercise? Is the time and content of these exercises described somewhere? Was “dosage” of home-exercises equal in both groups? (MCR)

18. Table 4: There seem to be an error in the results from the BBS for the
Standard PT group. The difference should be -0.54 and not 4.46? (MCR)

19. Figure 1: You now use follow-up and analysis. Would it be better with Pre-analyses, intervention, post-analyses? It is for me still unclear in what 3 months period falls were assessed (MCR)

DISCUSSION

20. The groups were quite different in relation to gender (62.8 % in the standard group vs. 37.1% in the SPTT group). Since female gender is a risk factor for falls (especially for injurious falls) this is important to discuss in relation to the finding that there were more falls in the group with the highest number of females. In a future RCT, it is possibly important to have similar groups in terms of gender. Also, if I haven’t misunderstood the falls that happened during the intervention period were registered, and then it should really be discussed whether it is actually an effect of the intervention we are looking at. The use of retrospective fall registration and its limitation should also be described (MCR)

21. The contribution from the therapists in the study should be discussed (see also comment number 7) (MCR)

22. Since this is a pilot study in advance of a larger RCT study, number of participants needed in the RCT should be discussed (preferably based on an power calculation) (MER)

ACKNOWLEDGEMENT AND COMPETING INTEREST

23. What is now written under acknowledgement should possibly be under competing interest instead? (DR)

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests