Reviewer's report

Title: Passive ankle movement increases cerebral blood oxygenation in the elderly: an experimental study

Version: 1 Date: 15 September 2014

Reviewer: Caroline Shuldham

Reviewer's report:

Thank you for asking me to review this paper which outlines a trial to evaluate the effect of active and passive ankle exercises on the heart rate, blood pressure (BP) and cerebral blood oxygenation in elderly people.

Background:
The background provided a clear summary about postural change and the changes to BP on standing and makes a link to the possibility of these causing patients to fall. The discussion section includes the literature about the effect of exercises and I suggest this could have added to the background rationale for the study. 1 The evidence for the use of near infrared spectroscopy as a tool for examining brain oxygenation was not explained and more detail would be useful to the reader. 1

Methods:
The authors are to be commended on carrying out their study in a sample of elderly patients and to have appropriate ethical approval and consent processes, though as it is such an important consideration in this vulnerable group, I think this should be made clear earlier in the methods section. 1

• There are several areas where more information would help the reader. These are

2-How were the patients selected, did any refuse and why?
2-Did any patients not complete the exercises?
2-The sample size is small, how was it determined?
2-Was it adequate to show a difference?
-What is meant by a ‘climactic chamber’? 1

• A trial design was appropriate but you could say how you chose the order in which patients had the exercises, was it randomised and if not how did you decide? What impact might that have had? 2

• You explained the statistics used but I wondered why you chose to use eta squared values and could this have run the risk of overestimating the effect and of bias? 2
Results

You have given a clear explanation of each of the results but I am not clear why Figure 3 has the OxyHb at zero or less at the start when it’s a measure of mmols/l

Discussion

The intervention, both active and passive exercises were done for an extremely short period and the follow-up measurements similarly were done for no more than 2 minutes. You might discuss the implications of this. 2 Also I see where the effect size was large and there was a statistically significant result but you also have at least one (the MAP) where the effect is small but the result significant. The results therefore raise the question about statistical versus clinical significance and whether the effects sizes you showed are enough to influence practice. I am not sure, but it is something you could discuss. 1

In your introduction you rightly postulate that a reduction in postural change in blood pressure might reduce falls. It’s an interesting point but this study does not answer that question. The patients were supine throughout and one would have to have taken measurements with the patients standing, though I can appreciate the reasoning. Therefore I think your hypothesis that ankle exercises may be useful for preventing symptoms associated with postural change and that passive exercises might promote mobilisation are suggestions for further study not conclusions from this. 1

Your study does suggest that active exercise raises HR and BP and passive and active increase cerebral OxyHb so it is worth thinking about the implications of these findings to nursing practice and perhaps well-being of patients and explore them.2

1=minor essential revisions
2=major compulsory

Level of interest: An article whose findings are important to those with closely related research interests

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'