Reviewer's report

Title: Effects of 3 months of controlled whole body vibrations with low exposure period on the risk of falls among nursing home residents

Version: 2 Date: 10 February 2013

Reviewer: Michael Schwenk

Reviewer's report:

Major Compulsory Revisions

Abstract

I wonder if the authors can say 30 Hz intensity? Is the frequency related to the intensity of vibration training? Should author’s rater state 30 Hz frequency?

Authors cannot state that the Tinetti test showed an improvement if there was no significance. Better state: Tinetti score increased….

Author should state that gait was assessed under both single and dual task conditions

Authors might use the term ‘fatigue’ instead of ‘tiredness’

Introduction

Author’s state: “Physical activity is not an optimal solution given the time it requires and the physical condition of patients. Indeed, tiredness, lack of motivation, low compliance, and even injuries can be observed in the majority of patients”. I guess this perception of exercise training is a little biased and very much in favor of vibration training. In fact, there are several well designed studies which demonstrate that exercise training can successfully performed in nursing home residents, even in those with dementia, and no adverse effects occurred (e.g. Rolland, Y., F. Pillard, et al. (2007). “Exercise program for nursing home residents with Alzheimer’s disease: a 1-year randomized, controlled trial.” J Am Geriatr Soc 55(2): 158-165). I agree with the authors that lack of motivation etc. can be a barrier for exercise training in selected nursing home patients and body vibration might be an alternative. But I disagree that exercise training (if conducted to guidelines for elderly) causes injuries in the majority of patients as stated by the authors. Also, the risk and benefits of body vibration training are discussed controversially in the elderly (e.g. Risks and benefits of whole body vibration training in older people. Age Ageing. 2009 May;38(3):254-5). Also, there are a lot of exclusion criteria for vibration training (e.g. prosthetic hips) substantially limiting the feasibility of this training in nursing home residents.

Authors state at the end of the introduction that body vibration studies found high drop outs. This might be due to adverse events and thus, is contradictory to their initial statements.

It is not clear which aspects of Vibrosphere are novel. The vibration? The
oscillation? Gallileo oscillates as well. Other plates also involve both muscular and proprioceptive work. This is not a novel part but has been stated as novel by the authors. Authors should be more specific and highlight the innovation of the vibration system used.

Author’s hypothesize a greater reduction of the risk of falls compared to other studies but do not give any references of other studies. Also, they compare their vibration training with a control group. I guess there hypothesis is that the vibration training reduces fall risk compare to control group. Please clarify.

Author’s “… decided to expose our population to a smaller vibration period than usually observed in other studies…” . Please state which other studies and what exposure has been used in this studies.

Methods
Please give more details of the sample size calculation. Which effect size has been assumed? Based on which study?

Author’s state that training period was six month. However, the tile and abstract says 3 month. This is confusing.

Was the knee flexion angle specified?

Authors stated that the plate also oscillates. Was this oscillation standardized?

What does “A low density cushion, 10 cm thick, was placed under the platform to facilitate the training” mean?

How many persons supervised each patient?

Did patient receive support during training, e.g. bar?

Where did patients train? Did patients come to the training by themselves or were picked up from the rooms by the trainers?

Locometrix: In the abstract author’s state that a 10 seconds test was performed. In the methods they say that patients walked 3 times 20 meters. This is confusing.

Parameters of the Locometrix are hard to understand: e.g. what is the symmetry of the left and right half step on the cranio-caudal axis? What is a half step? Is the Locometerix a validated system? Please give a reference.

How was walking speed timed?

What does “this regression was tested with a student’s t-test” mean?

Did patients give written informed consent?

Several medical complications occurred in the intervention group. Where these complications related to the intervention, e.g. hip pain, fracture? It is essential to give reasons for the adverse events.

Table 2: please state abbreviations. Parameters of Locometrix analysis are unclear e.g. what does u.a. mean?

Table 3: Please give values. What does gait increase mean? Velocity? What does “total” mean.
How were falls recorded?

Results
It looks like the randomization was biased since groups significantly differed in several parameters. Are there any explanations for this, e.g. BMI, cognition?
Why did authors only report baseline values of the Locmoetrix but no pre-post outcomes?

Discussion
Improvement in TUG might be related to the increased physical activity (walking to the training sessions) in patients in the intervention group. Control group patients might have had less physical activity.
What does “the Vibrosphere has not been uses efficiently” mean?
Why did authors place the cushion?
The word “indeed” is used frequently, but is not necessary.
If the Tinetti was high (22 points), why did patients than need support during training? Was it intended to training without support?
The discussion can be shortened. E.g. authors repeat that statement of short duration of exposure several times.
Result of adherence should be moved to the results chapter.

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

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
'I declare that I have no competing interests'