

RESPONSE LETTER

Reviewer's code: 03067293

COMMENTS TO AUTHORS – Reviewer 1

Manuscript review of ESPS Manuscript NO: 25120 First of all, I'd like to congratulate you for the effort to carry out this work. It is a well-written manuscript and well-designed trial. You have follow a great part of the CONSORT checklist. In addition, you have some publications related with the current work, so this is a proof of your research line.

Our answer: Thank you for this evaluation.

Well, after reading your manuscript, these are my comments (please, take them as some suggestions to improve the readability of your experimental work): - From my point of view, I think you should reflect on title that the muscle relaxation...is “perceived”, as a subjective assessment (self-reported)... Something like...self-reported muscle relaxation. Otherwise, it can be misleading (EMG registration, ...) -

Our answer: Thank you for this point. We agree and changed the title into: Stochastic Resonance Whole Body Vibration Increases Perceived Muscle Relaxation but not Cardiovascular Activation: A Randomized Controlled Trial

If I have not misunderstood, between-groups differences post intervention there is not even one unit of difference on a 10-point Likert scale. Do you think that this difference can be considered as “significant” in practice? (although there may be statistical difference). Does it imply really more relaxation? Which are the implications in clinical practice? It would be interesting to explore the MDC or MCID threshold of the employed measurement instrument.

Our answer: The partial eta square effect size for the difference in change between the experimental group and the control group is .073 (see Table 3). The effect size is more close to a “moderate” effect size which is defined by .10 than to a small effect (.01). So, beside statistical significance, the difference is relevant. However, as the participants were healthy young individuals the difference can not be interpreted in clinical terms. We would estimate the effect size to be larger in a clinical sample but this should be proven in a further study. We added this point to the limitations of the study.

- Following CONSORT guidelines authors should provide a statistic justification for the selected sample size? Which is the rationale for the number of participants per group?

Our answer: We did an a-priori power calculation. Expecting a moderate effect size for the repeated measures, within-between interaction and a requirement of a 90% power to detect an existing difference the required sample size was 64 participants. We added this information to the methods section.

- And additionally a flow-chart diagram of the recruitment process.

Our answer: We agree that a flow-chart would be good. However, the recruitment process and study protocol was so clear that a flow-chart seems not necessary. Sixty-four undergraduate and graduate students were asked for participation and all agreed to participate (34 female and 30 male psychology majors, mean age = 27.6 years, SD = 5.0 years). All participants finished the study protocol. We added this information to the methods section.

- Asking participants to rate muscle relaxation on a 10-point Likert scale, from my point of view, is not to measure muscle relaxation. I think this construct is controversial, so it is more subject-dependent. - Is there any way to know the pain intensity of the participants? You wrote about painful symptoms duration, but nothing about intensity. Do you think it could be important to consider in the discussion? Because I think it could be a potential variable to modify the results...

Our answer: This is an interesting point. However, our subjects were healthy students and they did not report to have acute musculoskeletal pain before the training started (and they did not report to experience musculoskeletal pain after training). Therefore, we cannot test the acute effect of the training on acute musculoskeletal pain. In addition, in the current study, we did not expect that a single training could reduce musculoskeletal pain but we did expect a single training trial to increase muscle relaxation. We will address the research question whether a single training trial decreases musculoskeletal pain in a clinical study.

- In relation to this point, you wrote: "SR-WBV may specifically address the neuro-musculoskeletal regulatory system and also generally increase physical strength and fitness like most other trainings". If it is related with physical strength, how can act as a muscular relaxation intervention also? Could you explain more deeply this relation in your discussion?

Our answer: Thank you for this point. In the current study we only did a single training trial. We do not expect a single training trial to increase physical strength and fitness. However after repeated training trials across some weeks effects of the training on physical strength and fitness were shown. In order to avoid misunderstanding we deleted this sentence.

- You stated on the manuscript that "WSR-WBV is effective for worksite prevention of

musculoskeletal disorders". Could you explain how it works on injury prevention?? Why should be considered as a preventive measure? Which kind of injuries can prevent??? Why you stated in the manuscript that "SR-WBV is effective for worksite prevention of musculoskeletal disorders". I think this is not a direct effect obtained from the trial.

Our answer: Yes, you are correct. In the current randomized controlled trial we tested the acute musculoskeletal and cardiovascular changes due to SR-WBV in healthy individuals. In previous works including a regular repeated training across 4 or even 8 weeks at work we found SR-WBV to improve body balance, measured as self-report and as recorded body sway on a balance platform. Improved body balance is connected to a lower risk of slips and falls. We added this information to the discussion. We also made clear that only repeated SR-WBV across 4 or even 8 weeks at work is effective for worksite prevention of musculoskeletal disorders.

When the subjects are on platform...is there any posture change permitted? Is a static posture along time? Is permitted some changes during vibration period?

Our answer: Both legs should have contact to the plates. It was permitted to change the knee angle but participants were instructed not to stand up straight because in that position vibration is conducted to the head. We added this information to the method section.

Did you used a any reference point for the look?

Our answer: Thank you for this point. Yes, we used the figure 1 to demonstrate the look to participants and compared their initial posture to the figure. If necessary we told them to change their posture according to figure 1. We added this information to the method section.

- I think authors should discuss more deeply some results.

Our answer: We added in response to your points and points from reviewer 2 that...

- MSD abbreviation should be defined the first time that is used.

Our answer: we corrected.

Thank you very much for your effort!

Our answer: Thank you for your review. We feel the ms has improved by following your advices.

Reviewer's code: 02444722

COMMENTS TO AUTHORS

The aim of the present investigation was to study the acute effects of stochastic resonance whole body vibration on muscle relaxation and cardiovascular activation. The authors found that a single session of stochastic resonance whole body vibration increased muscle relaxation back, neck or shoulder in young healthy individuals, while cardiovascular load was found to be low. This is an interesting investigation and authors are experts in stochastic resonance whole body vibration.

Our answer: Thank you for this evaluation.

However, the aim of the study is not clear since a number of the parameters (especial muscle relaxation) seem to be already investigated in a previous published investigation (PubMed ID: 24147265). Authors should clearly highlight the novelty of the present investigation.

Our answer: You are right, there was a preceding study on a similar topic (PubMed ID: 24147265). However, PubMed ID: 24147265 was our first and more explorative study on acute effects of stochastic resonance whole body vibration. It was based on a comparably small sample (one third of the sample size of the current study) and was based solely on a repeated measurements design. Consequently, the next step was to replicate acute effects of stochastic resonance whole body vibration in a randomized controlled trial with a larger sample. Expecting a moderate effect size for the repeated measures, within-between interaction and a requirement of a 90% power to detect an existing difference, the required sample size was 64 participants.

Moreover, the paper is written in a way that a naïve reader finds rather difficult to follow authors' rational. For instance, the introduction section is written in one paragraph, and details about stochastic resonance whole body vibration and the novelty of this kind of whole body vibration are given in the middle of this large paragraph. Authors should arrange their introduction in paragraphs that will lead to the aim of the present investigation.

Our answer: Thank you for this point. We rewrote the introduction according to your advice.

Figure 3 is very confusing, the presented results are not clear for the reader.

Our answer: We improved the readability of figure 3 by adding clearer labels and annotations.

In figures 2 and 3 please reduce the size of the axis labels.

Our answer: thank you. We corrected.