Reviewer’s report

Title: Preventive effects of intermittent whole-body vibration and weight bearing on capillary number reduction and muscle atrophy in unloaded rat skeletal muscle

Version: 2 Date: 21 July 2014

Reviewer: Naoto Fujita

Reviewer’s report:

Comments to the Author

In this manuscript, the authors examined whether body vibration can prevent skeletal muscle atrophy and capillary regression by unloading. The findings suggest that vibration could inhibit the expression of CD36 mRNA and reduce capillary regression. This results is interesting and suitable BMC Musculoskeletal Disorders. However, the authors need to add some of refinements and explanation for issue with this paper.

Minor essential revisions:

#1 The authors state “Importantly, VIB concomitantly prevented a reduction in the number of capillaries and muscle atrophy during unloading. Our results suggest that VIB exercise is effective for disuse-derived disturbance by preventing muscle atrophy and maintaining microcirculation of skeletal muscle” as conclusions in abstract section. However, there were no significant differences in muscle weight and muscle fiber area between the HS + WB and HS + VIB groups. The statement implying vibration is effective on muscle atrophy should be deleted to avoid misunderstanding.

#2 The introduction does not clearly state the hypothesis and objective in this study. The readers want to know “what is this study interesting?” Please emphasize your research question in introduction section.

#3 The authors should mention the reason why vibration performed 20 min in a day. Additionally, what is the reason for vibration frequency of 55Hz? If the reason is shown in the manuscript, the statement gives readers possible application.

#4 In Table 1, although there is no significant different in body weight between the CONT and HS groups, the values are significantly lower in the HS + WB and HS + VIB groups than the CONT group. Were weight bearing and vibration high intensity exercise? Please provide details regarding how the exercise intensity was determined.

#5 Generally, the number of capillary depends on muscle fiber size and the type distribution. Therefore, if the treatment could prevent capillary regression by unloading, the muscle atrophy must be also attenuated by the treatment.
However, the vibration treatment in this study was effective only in capillary. Please provide the reason the effect was just in capillary. It is readily understood that reduction of unloading time in a day can prevent disturbance with disuse. The authors should mention what property of vibration is effective on prevention of capillary regression.

#6 In Fig. 4, some of symbols are not centering.

Discretionary revisions:
#1 The authors focus on preventive effect of vibration in this study. However, other control group is essential to strictly proving preventive effect. If possible, I suggest you add two experimental groups that received vibration treatment without unloading and received the treatment during unloading without weight bearing.

#2 There are some abbreviations in this manuscript. For example, I could not judge immediately whether HS means the HS group or just suspension procedure in some parts. The VIB and WB were also the same. Unfamiliar abbreviations should be used only as experimental group name.

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

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

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