

Review of Ph.D. thesis

Title: The effect of different kinds of instant fascial release techniques for improvement of range of motion and muscle stiffness

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In general, the thesis is well written, the topic of the thesis is interesting and the purpose of the study is clearly understandable. In the theoretical part the background of the study is well described. I appreciate that author justify the study purpose and novelty of the research.

Aims and hypotheses

The aims of the study should answer the question what is the the effect of selected techniques (tissue flossing and myofascial release) on jump performance, viscoelastic properties of the muscle, dynamic balance, and range of motion.

Author stated three null hypotheses. Third is a bit misleading. There is mentioned improvement compared to control conditions, but it is not clear what variables could not be improved. Hypotheses are justified.

Methods

Author used cross-over design. Sample of 30 athletes seems to be sufficient, however author do not perform any power analysis.

It is not usual to divide Methods, Data collection and Data Processing to three individual chapters, in my opinion it not essential.

All the devices could be clearly specified by presenting of type of the device and manufacturer (Tanita, force plate).

I miss the information about signal processing. If you work with the accelerometers or force plates there are usually some procedures e.g. filtering, which should be presented to the readers (other researchers).

Similarly I expected description how the variables (e.g. vertical jump height) were calculated. At least author could cite some source with this description.

Results

Author describe the results using charts, tables and comments. Although I probably understand what author want to say there are some issues which can be less understandable for the reader.

Bar charts are redundant. The same values are presented in the tables and line charts.

Stars in line charts shows some significant differences, but it is not clear what differences (within, between).

The values are presented separately for left leg and right leg. Do you expect any difference? Please explain.

Presenting of results of two-way ANOVA is a bit misleading. As example I present several sentences from part focused on range of motion. Author write "Two-way ANOVA indicated that there was statistically significant difference between pre and post measurements for right leg ... ". In my opinion, you should write only that there is significant effect of time of measurement or something similar. Significance of difference you can derive from post hoc comparison. Or you write about significant difference between the time of measurement and intervention ($F(4,174) = 4.8$; $p < 0.002$; $\eta^2 = 0.099$). Probably you mean "time of measurement*intervention interaction.

In the part focused on range of motion you write about "significant difference between pre and max post for tissue flossing and for foam rolling." It is not clear why you mentioned "max post" value. Do you choose value what is higher? In my opinion you should present post1 as immediate effect and post2 as short-term effect or something similar.

Although there is significant increase after both interventions, post values are similar as control conditions. Do you have any explanation? **Do you consider this finding as confirmation of significant effect of intervention or not?**

The line charts for muscle tone and stiffness are relatively similar (especially for VL left). Do you perform some correlation analysis? Maybe the variables are relatively strongly dependent.

Similarly it would be interesting if there are some associations in muscle tone and stiffness in various muscles.

The results of Jump performance showed decrease of values of jump height after FR. Have you any explanation?

It is surprising that values of composite scores of Y balance test significantly increase in each limb for different intervention. Have you any explanation?

Hypothesis evaluation

The statement "Tissue flossing didn't positively affect jump performance however improved brakingRFD when compared pre and post max results." is misleading. Why you report about improvement of braking RFD if alternative hypothesis was not confirmed. Statements related to hypotheses should be quite clear.

It is not clear why you present new results in the evaluation of hypotheses, which did not presented in the results section ($F(1,58) = 0.154$; $p = 0.696$; $\eta^2 = 0.003$).

Discussion and conclusion

Discussion is well written. Author compared the findings of the study with many other studies. Similarly conclusion is well understandable. Author generalize the findings of the study and describe possible using in the practise.

Formal aspects of the thesis

The thesis is well written from both content and formal point of view. The text is understandable. Citing of sources is uniform.

Final evaluation

The thesis brings new knowledge, which has benefits for both development of research in this area and exercise practice. Although I have several comments I consider the thesis be of good quality.

So, I recommend the thesis to be defended.

In Olomouc, 27th November 2023



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