Reviewer's report

Title: No effects of a 12-week supervised exercise therapy program on gait in patients with mild to moderate osteoarthritis. A secondary analysis of a randomized trial.

Version: 1 Date: 14 August 2014

Reviewer: Trevor B Birmingham

Reviewer's report:

The paper describes a secondary analysis of an RCT for patients with hip OA and mild-to-moderate symptoms. It shows that the addition of an exercise program targeting muscle strength, physical function, neuromuscular control and flexibility did not affect hip, knee and ankle joint angles and moments during walking. Findings are novel. Limitations are acknowledged. I have the following "Minor Essential Revisions" and suggestions that the authors can be trusted to address.

Abstract:
Please add some sort of brief description of the intervention - “exercise therapy” (i.e. something to show that it focused on strength, neuromuscular control and flexibility rather than being an aerobic exercise program)

Please specifically state “hip, knee and ankle” joint

Conclusions about “any biomechanical changes” and “gait alterations” are likely too strong given what was actually measured. I suggest more precisely stating no changes in hip, knee, ankle joint angles and moments during walking

Main Text:

Background:
Stating the specific measures that were the “distinct gait alterations” and relating them to the present study would be helpful either here or in the Methods or Discussion

Methods:
Regarding the stated power / sample size calculations, please add information about the effect size - i.e. what size of an effect (how much of a difference between groups) did the 21 patients provide the 90% power to detect? Also, I assume alpha was set at 0.05?

Subject characteristics:
Typo: bodyweight

Analysis:
I suggest the sentence about normalizing to percent stance be incorporated into the gait analysis, data processing paragraph where the events are defined.

Please explicitly state, that the mean of the walking trials was calculated for each subject for each dependent variable (if that was the case) and used in the analyses. Please also specifically state that the figures are showing the mean of all subjects (i.e. are ensemble average curves, mean waveforms, etc.).

**Results:**
Understanding the results of the “correlational analysis” for compliance issues suggest no effect, does evaluating the subgroup of patients who were compliant provide more insight (i.e. did the 9 subjects who met the compliance criteria experience changes in the dependent variables)?

**Tables 2 and 3:**
If I understand correctly, these tables show the baseline, follow-up and change scores within the two groups, while the F, p and partial eta squared values are from the ANCOVA that compared the follow-up values between groups while controlling for the baseline values. I think many readers will not pick up on that and I suggest that it should be described more precisely – perhaps as a table footnote?

**Discussion:**
First paragraph, last sentence. Similarly, given the negative findings, further discussion of the effect sizes, and precision around them, is likely warranted. Strictly speaking, I don’t see “precision estimates” for the effect sizes - although the exploratory nature of the study is duly noted.

Second paragraph, last sentence. True. It is also possible that other biomechanical, gait characteristics were affected and not detected with the present methods. Without belittling the present measures, there should be some sort of acknowledgement that these measures may not reflect plausible changes as a result of the exercise program, such as changes in neuromuscular control and muscular contributions to joint loading, that may change without altering joint angles and moments.

Also, perhaps the fact that the “distinct gait patterns” that were previously found to be different in hip OA could be mentioned here or later in the discussion (i.e. were unaffected by the intervention) and help justify the current measures.

**Level of interest:** An article of importance in its field

**Quality of written English:** Acceptable

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