Reviewer’s report

Title: Limb symmetry during double-leg squats and single-leg squats on land and in water in adults with long-standing unilateral anterior knee pain; a cross sectional study

Version: 0 Date: 19 Oct 2017

Reviewer: Gerwyn Hughes

Reviewer’s report:

Generally the manuscript reports an interesting study which contributes to knowledge. The introduction develops a clear rationale which I feel the method addresses but there are some details lacking in the method, in particular around the data analysis and statistical analysis sections. This leads on to some confusion in the results section which I feel requires more considerable improvement. At present the descriptions of the results are vague and some of the variables mentioned in other sections of the manuscript (e.g. the control subjects and the symmetry index) do not appear to be presented or described. These things in particular need to be addressed in any resubmission.

Introduction

The introduction is well written and provides a rationale for the subsequent research study.

Method

Line 110: I suggest it might be beneficial to include a figure which illustrates the placement of the inertial sensors.

Line 114-115: I note that all subjects performed the land test first followed by the water test. Why not perform these in a random order to minimize order effects? This should be considered in the discussion. Also, what steps were carried out in order to ensure consistent inertial sensor placement? Was it the same person attaching the sensors on all occasions and did you perform any reliability testing around this issue?

Line 119: were all 10 squats used during analysis or were any discarded? If so, what criteria were used to determine whether a squat was used in subsequent analysis and if any were discarded how many?

Line 128 and 137; change 'data was' to 'data were'.

Line 142; Clearly define each measurement/variable analysed and state which direction of rotation corresponds to a positive and a negative. I believe some variables reported are segment absolute angles and others are joint relative angles but it is not clear from the descriptions provided. Consider including a figure to illustrate these angle definitions.
Line 143-145; i find the wording a little confusing here, consider revising. I think what you are saying is that kinematic differences between land and water were examined in the AKP group. What I feel is confusing is the use of 'bilateral kinematic differences' in the first sentence and then 'bilateral asymmetries' which sound a bit like the same thing but having read through a few times i realize they are different things.

Line 149; I feel the description of the stats tests used need to be clearer since I am not sure what stats tests were used to examine each independent variable. For example, if you were comparing between water and land it is likely a different stats test would have been used to when comparing between injured and control groups. Please revise this section to ensure clarity.

Line 147; define how the SI score was calculated.

Line 154; state what your alpha level was set at for the statistical tests.

Results

I feel the results section needs considerable improvement. At the moment this section is very short and quite vague in terms of where differences were observed. I feel you need more clear description of the results for all the variables examined. In addition, please state whether results were significantly different or not. There also appears to be no presentation of the asymmetry scores in the tables and no presentation of the data from the control subjects.

Line 163; again you use the term 'bilateral differences' here and then later use the term 'asymmetry'. I'm not sure what the difference between these terms are or whether they are the same but I suggest using terms that are clear and consistent throughout.

Discussion

Generally I found it difficult to evaluate the discussion since I feel the comments that relate to the results and statistical analysis need to be addressed first. Therefore I will review the discussion in more detail in any resubmission.

Line 176; I feeling the following statement cannot be concluded based on the data presented: "individuals with AKP employ different movement strategies in both environments compared to healthy controls". Either present the data which clearly shows this including results of appropriate stats tests or remove this statement.

Line 193; could the increased asymmetry in water compared to on land be the result of familiarization of performing squats on land versus in water?

Tables

There appears to be data that is mentioned in the text that is not included here (control group, SI scores). You can remove the word 'squat' from table 1 and 'SLS' from table 2 since it is already stated in the captions.
General

I suggest rather than saying 'squats and single-leg squats (SLS)' it might be better to say 'double-leg squats (DLS) and single-leg squats (SLS)', since both are different types of squat exercises.

Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

No

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Unable to assess

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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Please indicate the quality of language in the manuscript:

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