Author's response to reviews

Title: Systematic review and meta-analysis comparing land and aquatic exercise for people with hip or knee arthritis on function, mobility and other health outcomes

Authors:

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Author's response to reviews:

Response to reviewers
Reviewer's report
Title: Systematic review and meta-analysis comparing land and aquatic exercise for people with hip or knee arthritis on function, mobility and other health outcomes
Version: 3 Date: 31 December 2010
Reviewer: Steven Kamper
Reviewer's report:
The manuscript reviews RCTs that compare land and water-based exercise programs for people with arthritis. The paper is well-written and provides a high-quality synthesis of the available evidence on the topic. I have no substantial issues with the way the study is conducted or presented and my comments are mostly of a minor nature only and should be easily dealt with.

Major compulsory revisions
Background
1. The authors should state in the Background why pain was omitted as an outcome in this study. Pain is surely a cardinal symptom in this population.

The focus of this review was how two exercise approaches affect function. This focus is clarified in the background.

2. I miss a strong statement of justification for the comparison chosen in this study. Why is it so important that researchers and/or clinicians know whether land based or aquatic exercises are superior?

This has now been addressed in the revised introduction
Minor essential revisions

Background
3. I do not think quoting SMDs from previous studies in the Background section is useful, if the measurement instruments are not reported an SMD is not readily interpretable.

SMDs allow comparison across different methods for measuring related health indices.

Methods
4. Was medication usage part of the exclusion criteria? Was it recorded? Is there some justification for believing that differential usage across the studies could influence the findings?

Medication use was not part of exclusion criteria for the review. It was reported in Table 2 to give readers insight into the variations between trials. The affect of medication on trial outcomes was not assessed; it was reported so infrequently that valid analysis is prohibited. Randomisation is expected to address variation in the large number of factors (known and unknown) that can influence trial outcomes. Given the repeated finding of no difference in outcomes, it is unlikely that medication could have systematically affected one intervention group more than another

5. The authors extracted data regarding home exercise programs, presumably these were on land in most cases? Did they look at whether this factor had an influence on the results? Discussion of home programs seems to be largely absent from the results.

Home programs were poorly reported and not studied in this review

6. See above (Point 3) with regard to adherence/compliance.

We extracted these data (for home exercise and for adherence)
In doing so we extend the typical reporting paradigm
We did not attempt sensitivity analysis for these factors; given the relatively poor quality in reporting exercise design, such analysis would be exploratory at best

7. I assume that post-treatment means were used for calculation of the SMDs rather than change scores because SDs for change scores were rarely reported in the source studies. This could be clarified in the text.

Amended as requested

Results
8. In the ‘Search yield’ paragraph it would make sense to state that 10 studies were finally included in the review.

Amended as requested
9. How were the quality assessment ratings incorporated into the Results/Conclusions from the review? This should also be addressed in the Discussion section.

The discussion section includes reference to trial limitations that should be addressed in future studies (if these are indeed warranted). The influence of trial quality (ranging from 5 – 8 PEDro scale units) is difficult to analyse in sensitivity analysis with the limited data and a range of scores available.

Conclusion
10. The authors state that ‘high quality trial design, with clear allocation...’ etc is necessary immediately after reporting that three high quality studies each found no significant difference. On what basis do you believe that more/better studies would show a different result?

We don’t think that more trials that address this question will show very different results; However, if more trials are conducted there are elements in trial design that might be included.

This now reads
High quality trial design, with intention-to-analysis, adequate follow-up and baseline similarity, would advance the quality of work in this field.

Discretionary revisions
Results
11. Pg. 9, is 50 feet really equivalent to 10 metres?
This has been amended

Clinical Applications
12. ‘Pooled indices’ is not a term that fits well with the concept of clinical applicability, suggest you rephrase.

We agree that pooled indices are difficult to interpret but these were reported.

13. Addition of ‘patient preferences’ to the final sentence before ‘Competing Interests’ would seem appropriate.
Amended as requested

Reviewer’s report
Title: Systematic review and meta-analysis comparing land and aquatic exercise for people with hip or knee arthritis on function, mobility and other health outcomes
Version: 3 Date: 30 December 2010
Reviewer: Luciana Macedo
Reviewer’s report:

I would like to congratulate the authors on the nicely conducted review. I have a few comments and recommendations.

Major compulsory revisions 1: At the end of your background right before objectives it is still not clear why you conducted and what is the need for this review as other reviews in topic are available. Furthermore, you mention in your objectives that no review have compared only these two interventions. I don’t think this is a strong enough argument to support this review as other reviews that compared these two interventions in addition to others may be more comprehensive to readers. I think more information is needed to support the need for this review. Maybe flaws with Bartels review?

Thank you for requesting these important omitted details
The paragraphs referring to previous work and justifying the review have been amended and can be found in the revised in the Background and purpose and objectives.

Major compulsory revisions 2: The method for calculating standard deviation from interquartile range is incorrect. Please refer to the Cochrane Handbook for appropriate method.

Based on Cochrane Handbook (7.7.3.5 Medians and inter-quartile ranges) we have altered this estimate throughout the review using the formula IQR/1.35 as best estimate of the SD.

Minor essential revisions

Recommendation 1 - Abstract; Clinical applications: The first phrase is a little confusing. “… evidence of the benefits on health outcomes of aquatic over land based programs would appear relevant to justify the routine prescription of aquatic exercise therapy for arthritic condition.” From my understanding the authors are saying that if there was evidence of the superiority of aquatic exercises then its use would have been justified. I think it is more important to focus your clinical application on what you found than what would have happened if the results of the review were different.

Recommendation 2 - Abstract; Clinical applications: “On the other hand aquatic exercise provides an alternative that appears to produce results that are comparable to land based exercises programs for patients who FEEL unable to exercise on land.” I think that the word feel may add some uncertainty to the statement. I think it may be better to say patients that ARE unable to exercise on land or what studies have previously used to describe this patient population.

The abstract has been modified as requested and the clinical implication now reads

“Outcomes following aquatic exercise for adults with arthritis appear comparable to land based exercise. When people are unable to exercise on land, or find land
based exercise difficult, aquatic programs provide an enabling alternative strategy”.

Recommendation 3 – Background, 3rd paragraph: “Bartels et al. reviewed the effectiveness of aquatic exercise for the treatment of knee and hip osteoarthritis and concluded that aquatic exercise improves function…” The way that this phrase is written two conclusions could be taken, 1st aquatic exercise improves function and land based do not and 2nd aquatic exercise improves function more than land based. Which one is the correct one?

This has been amended to read

In 2009, Bartels et al. reviewed the effectiveness of aquatic exercise for the treatment of knee and hip osteoarthritis compared to alternative strategies. The review included studies published till 2006 and concluded that aquatic exercise improves function (SMD=0.26, 95% CI 0.11 to 0.42) and quality of life (SMD=0.32, 95% CI 0.03 to 0.61) compared to no exercise control outcomes.

Recommendation 4 – Methods, Types of studies: “To allow statistical comparison between trials and the effect to be independently appraised, papers were only included if they provided data that enabled interventions effects for aquatic compared to land based exercise to be tested for significant differences.”

Do you mean that studies were included when there was enough information to allow pooling? The statement “to be tested for significant differences” is not clear as this is not really what you are trying to do.

The aim of the work was to compare the effects for aquatic exercise to those for land exercise. If data were not reported that enabled this analysis, the paper was not included. This is not related to pooling across studies but to comparing the relative effects within studies of the two approaches.

This has been reworded to clarify

To allow conclusions regarding the relative effects of aquatic and land exercise, papers were only included if they provided data that enabled outcomes following aquatic and land based exercise to be tested for significant differences.

Additionally, based on Figure 1 only one of the pre selected studies did not meet this criteria. Did you try to contact this author and ask for the data? This is common practice and could strengthen your review.

The excluded author was not contacted

Recommendation 5 – Methods, Exclusion criteria: “Participants who exercised as part of rehabilitation immediately following joint replacement surgery were excluded as the review focus was effectiveness for people with joint affected by arthritis.”

I agree with the exclusion of paper dealing with immediately post surgery.
exercise. However, I think that the outcomes of patients with history of surgery with those with no surgery can be quite different. I think that such studies should be carefully evaluated before being pooled together.

Trialists in included papers did not routinely provide information with regards to whether or not participants had a history of joint replacement, limiting the potential for the refinement that you would prefer.

Also it may be important to include this as a limitation in your discussion.

This has been added to the discussion section (now the second paragraph)

“Although the majority of trials excluded participants with a history of surgery within the previous three months, some trials did not report against this characteristic. The results should therefore be considered to reflect outcomes for participants who were, in most cases, participating in treatment for arthritis.”

Additionally the information on table 2 about previous JRS is a little confusing. What does the x mean in front of the time of previous surgery?

The x denotes an exclusion criterion

We have reworked and clarified the tables

Recommendation 6 – Methods, Quality assessment: I think that the authors should clearly state on this section that they have evaluated methodological quality using a modified PEDro scale and explain the differences. My personal opinion is that all further discussions on the differences in your scoring and the scoring found on the PEDro database may distract readers from the main focus of your review.

We did not modify the scale; we clarified how we interpreted the decision rule that is applied in grading using the scale. These decision rules can be interpreted in different ways; we wanted the methods that we used to be explicit.

Recommendation 7: Methods, Data extraction: The authors mention that only immediate after treatment outcomes were included in the review. I think it is important to explain why you were not interested in long term follow-ups. If you have the studies why not look at these too? Also, I think it would be important to include in either one of your tables, maybe table 3, the time of follow up included in the review for each one of the included studies.

The review is already large. We made a decision to limit its scope reasoning that if exercise programs had different effects, the point of maximum visibility should be at the first post intervention measurement. Exercise effects typically deteriorate following cessation of exercise. The measurements used in analysis were those recorded on program cessation (program duration presented in Table 3 ). This is now clarified in the section titled data extraction.

Recommendation 8 – Results, Search yield: The total number of papers
according to figure 1 is 191 and not 248. Also I think that the authors did not complete their explanation of figure 1. Eighteen full papers were obtained ... with the inclusion of 10 studies.

Number of papers has been changed from 248 to 191 as this is the total number of papers without duplicates. The search yield now reads

“Of these 8 papers were excluded as they did not meet inclusion criteria and 10 papers were included in the review (figure 1). “

Recommendation 9 – Results, Meta analysis: What are the numbers of patients included in each one of the pooled analysis?

Data on the number of participants in each meta analysis have now been added to the results section

Also, I think that the sensitivity analysis conducted is important but all this information presented here may be a little confusing for readers. In my opinion the results would flow better if the authors create a section called sensitivity analysis and present the results of this analysis on this section.

We considered this but felt that the most accurate presentation of data was when unequal baseline trials were excluded. We have presented these side by side, and only present figures for the data pooled with unequal baseline trials excluded. The wording of this section has been improved. We hope you find it more palatable.

Recommendation 10 – Discussion: The first paragraph of your discussion should include the primary findings of your review. I think that picking randomly specific characteristics of each included study and adding to this paragraph is very confusing and does not add to the discussion of your results. Additionally in my opinion the first phrase of your discussion could be divided in two. First the main results, second the sensitivity analysis. This way you can explain better what baseline differences mean.

The discussion has been amended

Recommendation 11 – Discussion: As mentioned previously in my opinion a discussion of the differences in PEDro scoring between this review and the PEDro database is not in the scope of this review and including 2 paragraphs of your discussion about this topic is irrelevant to your objectives.

This section of the discussion has been deleted

Recommendation 12 – Discussion: I think it is important to include in your review a discussion about the main differences of your review and Bartels review.

These differences are now elaborated in the introduction

As Barthel’s review included only one study that matched the inclusion criteria for this review, detailed comparison of findings would not add improve the discussion.
Recommendation 13 – Conclusion: “High quality trial design, with clear allocation and randomization procedures…” I agree that higher quality trials are needed, however, I am not sure if the solution is in the allocation concealment and randomization as most studies had adequate randomization and allocation concealment according to table 1.

Amended as requested

Recommendation 14 – Clinical application: The authors concluded that the clinical decision making should take in consideration patient’s specific requirement and disabilities. I think that the authors could also include patient preferences as any evidence based approach should consider the best available evidence, patients preferences and therapists expertise.

Amended as requested

Recommendation 15 - Tables: All tables should be at the end of the manuscript. These are included as additional files as they are in landscape layout

Recommendation 16 - Table 5: I think that table 5 is only a summary of tables 4 and 6. In my opinion table 5 can be easily explained on text and excluded from the review.

Recommendation 17 - Tables 8-10: There is a lot of information given on these tables that are not important to readers. Overall the same information has already been presented on the forestplots. In my opinion these tables are not adding to the quality of the review.

All tables have been reviewed and 2 have been removed

Recommendation 18 - Table 1: The symbol (x) on caption is incorrectly represented on the table as (1).

Amended

Recommendation 19 - Figure 1: According to the flowchart one study was excluded from the review as the land based program was supplemented with electrotherapy. I was curious to know if electrotherapies have a significant effect on the outcomes of interest in this patient population. Also how large was the contribution of this treatment to the land based exercise. Depending on your answers it may be arguable that this study could be included in your review.

As the effects cannot be partitioned we retained the position of excluding this report

Recommendation 20 - Figure 1: On figure 1 the authors misspelled the name of one author (Silva and not Silvia). The same mistake was performed on the forestplots.
Thank you. Amended

Recommendation 21 - Figure 1: The authors listed a number of studies that were excluded from full text but do not provide the full reference for these studies. I think this information should be available to readers on your reference list. Consider including the reference numbers from the reference list on figure 1.

Amended as requested