

Reviewer's report

Title: Water aerobics versus no exercise in pregnancy: cardiovascular response, labor and neonatal outcomes from a randomized controlled trial

Version: 1 **Date:** 15 September 2008

Reviewer: Minna Aittasalo

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REFEREE COMMENTS

The study examined the association between water aerobics, maternal cardiovascular capacity during pregnancy, labor and neonatal outcomes. It was resulted that water aerobics had no detrimental effects to the health of the mother or the child and there were fewer requests for analgesia during the labor in the water aerobics group.

The topic is of importance and the study seems carefully implemented. However, there are several issues that, in my opinion, need revision:

Major Compulsory Revisions

Abstract

- Statistical methods need to be mentioned.
- Remove all p-values and replace them with between-group differences with confidence intervals. P-values convey nothing about the sizes of the between-group differences (Gardner and Altman: *Statistics with Confidence* 1989). In regard to some selected outcomes you may want to present both confidence intervals and p-values.
- Indicate clearly what \pm sign means. Presumably it means SD but it can also mean SE. Therefore, the sign is not generally recommended (Altman and Bland: *Standard deviations and standard errors*. *BMJ* 2005;903. bmj.com).
- Replace X with vs.
- Specific values are needed only on variables which show between-group differences. Those with no differences need only to be mentioned.

Background

- This part of the manuscript is too general; it should review physiological changes due to pregnancy alone in regard to outcome variables, studies on water exercise and the specific features and effects of water aerobics (e.g. Katz: *Exercise in water during pregnancy*. *Clin Obstet Gynecol* 2003;46:432-41).
- Paragraph 3: The need for supervised physical activity in sedentary or gestational diabetes is not mentioned by ACOG. The key issue is that the intensity of PA should be moderate.

- Paragraph 4: The use of RPE (Ratings of Perceived Exertion) is recommended in both the American (Artal & Toole 2003) and Canadian (Davies et al. 2003) guidelines for the intensity evaluation during pregnancy. In fact, Artal & Toole states that target heart rates cannot be used to monitor exercise intensity in pregnancy due to variability in maternal heart rate responses to exercise. Davies et al. suggests the use of a modified version of the conventional age-corrected heart rate target zone but also the use of Borg's scale is suggested. This should be added to the text.

Methods

- Too many subtitles; combine issues under fewer subtitles such as "Participants", "Design", "Evaluation" and "Statistics".

- Paragraph 2: The assessments methods for "regular physical activity" and "any disorders" should be explained.

- I am not sure how ethical it was not to give the control group even some information on physical activity. The benefits of physical activity during pregnancy are, after all, scientifically recognized. Was this acknowledged by the research staff?

- Practice of water aerobics: When was the first physical evaluation done, 18-20 weeks' gestation? It is stated in the results that the first evaluation took place at 19 weeks' gestation but what was the range? How was the intensity of the exercise determined for each participant? These facts should be added to the text.

- Control variables: What are these? Are these confounders in the statistical analysis? If so, they should be mentioned in the statistics section. How was pre-gestational BMI measured – this should be indicated at least in Table 1.

- Statistical analysis: Were any adjustment made for any of the baseline characteristics? It seems to me that there were differences between the groups at baseline that may have explained the findings in regard to analgesia use. For instance, in the control group there were much more nulliparous women, who may need more analgesia than women with previous deliveries. The educational level may also have been associated with analgesia use as well as previous C sections. This has to be clarified in the statistical part. If not taken into account in statistics, the issue should be thoroughly discussed in Discussion.

Results

- Too many subtitles. Confusing to read. Structure the contents according to the main outcomes. For example: "Participants" (includes information about participation and evaluation points), "Maternal cardiovascular outcomes", "Fetal outcomes" (includes fetal heart rate and information on newborns) and "Labor outcomes".

- Remove the p-values throughout the text and replace them with between-group differences and their confidence intervals. The same thing has to be done with percentages, for example in paragraph 9, "Characteristics of labor". P-values do not tell anything about the relevance of the findings to the reader. This is a very

important change. After making the corrections you may want to reconsider the number of figures needed in the manuscript.

- Paragraph 1: What was the participation in water aerobics? What about the drop-out rate? This is essential information for the interpretation of the results and should be added.
- Table 1: The significance testing of baseline differences is not recommended by The Consort Statement for Randomized Trials (Moher et al. 2001). Thus, remove the p-values from Table 1. Instead, use variables with notable between-group differences and variables which may have effects on outcomes as confounders in the statistical analysis.
- Paragraph 2: Use similar terms as in figure 1 – “Physical fitness” in the text should be “Physical Capacity” as it is in the figure.
- In all the figures, you should write out “GA”

Discussion

- Compress your most important findings in the first paragraph. Then structure the contents as in results. Now it is too fractured. First, briefly mention what was found out, then compare the findings with earlier studies and finally explain the reasons for your findings. For instance, paragraph 4 lacks discussion about whether the increase in VO₂max was comparable to the studies referred. Moreover, in paragraph 12 it is difficult for the reader to compare the findings of the current study with the studies referred because no values of the current study are presented. They can only be found from the figure.

Conclusion

- If no baseline adjustments have been performed in statistics, I seriously doubt the conclusion on analgesia use.

Minor essential Revisions

Background

- For readability, the objective of the study should be formulated in two sentences.

Methods

- Paragraph 1: The name of the institute should be mentioned in paragraph 1.

Results

- Indicate what the sign \pm means.
- Table 2: use more familiar signs, such as a, b, c etc. to indicate the various samples and statistical methods.
- Figures: ... evaluation “points”, not “moments”.

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

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests.