Author's response to reviews

Title: Physical activity, sedentary behaviors, and estimated insulin sensitivity and secretion in pregnant and non-pregnant women

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Author's response to reviews: see over
To the editor:

Re: Physical activity, sedentary behaviors, and estimated insulin sensitivity and secretion in pregnant and non-pregnant women

Thank you for your positive response to our article submission. We have addressed the reviewer’s concerns and attended to the editorial office requests in the revised version of the manuscript. We also provide a point-by-point rebuttal below.

The lead author of this paper (Ms. Anna Gradmark) is due to defend her PhD thesis on June 6th and this paper is included as one of the chapters in her thesis. Given this, and that the requested amendments to the paper are minor, I hope that you might be willing to make a final decision on the manuscript within the next few days. I would not usually make such a request, as I appreciate how incredibly busy you and your office are likely to be. Nevertheless, I hope you can appreciate how important it is for Ms. Gradmark to know if this paper will be accepted for publication before she defends her thesis; if this turned out to be the case, I know this would be a great lift for her at a time when her nerves are in tatters.

Thank you in advance for your consideration.

Sincerely yours,

Paul W. Franks
We thank the reviewer for her careful evaluation of our manuscript.

**Review comment 1:** The coefficient of determination (r square) should be given for the r values as this is a more robust indication of the association between the variables.

Author response: The r values in the paper are all Spearman partial r values. We have tried to fulfill the reviewers request by including the partial r-squares from multiple linear regressions using log transformation to approximate a normal distribution when necessary. We have retained the r values, as it is important to indicate the direction of the relationship (which the r-square does not), as well as the explained variance.

**Review comment 2:** It would be helpful to include some of the data (i.e. insulin, glucose, PAEE, etc.) which differed significantly between the groups, rather than just p values.

Author response 2: We have added this information to the abstract.

**Review comment 3:** In paragraph 2, the authors state that previous studies on the topic "have relied on subjective self-report measures of physical activity", and in paragraph 3 "there is a requirement for studies that define the appropriate dose, intensity, and mode of physical activity during pregnancy ... to help prevent GDM." However, several intervention studies have been conducted on this topic in which physical activity has been measured and/or supervised and these should be included in this section:

Author response 3: We are familiar with the studies the reviewer cites. However, none of these studies, whether interventional or observational, included objective physical activity assessments, which is the point we were hoping to convey in our paper. The assessment of physical activity through observation is not a valid approach when seeking to quantify physical activity energy expenditure, and existing exercise intervention studies, whilst sometimes adequately assessing the amount of exercise performed during the hours of the intervention, rarely adequately assess physical activity outside the hours of the intervention. Nevertheless, we have added the following section to the paper on page 5 to highlight the studies in women without gestational diabetes the reviewer cites:

“Several intervention studies have been performed in pregnancy [9-12]. Whilst several of these studies sought to quantify the amount and intensity of exercise performed during the hours of the intervention, none to date has adequately assessed overall physical activity energy expenditure or non-exercise activity. This point is important, as people undergoing exercise interventions may compensate by reducing physical activity energy expenditure during other parts of the day [13].”

**Review comment 4:** Specify whether the pain rating was general versus specific (i.e. back pain).

Author response 4: We have specified on page 9 that the pain rating related to general pain.

**Review comment 5:** Table 1: Specify when the body composition measures were made in the pregnant group, 8-16 or 28-32 weeks gestation. Since there were no differences, it must be assumed that these were made at 8-16 weeks. However, this should be specified in the table footnote.

Author response: We have added a footnote to table 1 clarifying that the measurements of body weight were made during weeks 28-32.

**Review comment 6:** Table 3: Include r square (as in Abstract) in the table and/or in the Results section when referring to Table 3.

Author response 6: We have added the r2 value as a new column to Table 3, as requested.
Review comment 7: Table 3: In the footnote, change p to < 0.05 (not less than or equal to).

Author response 7: We have made the requested change.

Review comment 8: Same comments as for the Background section when the authors state "This is the first study" (paragraph 1); "Longitudinal studies.... are needed" (paragraph 4); "This study is the first ..." (paragraph 7); "Appropriately designed intervention studies are required"

Author response: As we explain above, we stand by our statements about the novelty of this study. Given that we cite the papers the reviewer refers to above, we have not reiterated these points in the Discussion section.

Review comment 9: End of first sentence, change "researched" to "collected the" data.

Author response 9: We should prefer to retain the word “researched” as this descriptive includes the analysis of samples and data, whereas the word “collected” does not.

Essential Editorial Requests:

Editorial request: Ethics/consent

Author response: We have added these statements, as requested (page 7).

Editorial request: Competing interests

Author response: We have added a statement indicating that none of the authors has a competing interest, as requested (page 16).