Author’s response to reviews

Title: The effect of home-based low-volume high-intensity, low-volume interval training on cardiorespiratory fitness, body composition and cardiometabolic health in women of normal body mass and those with overweight or obesity: protocol for a randomized controlled trial.

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Author’s response to reviews:

Evelyn B Parr (Reviewer 2): R2: The authors have done an excellent job of addressing many of the concerns required by both reviewers. The major concern still remaining is the sample size and power calculations. For a small effect size, a group size of 21 per group (with four groups) seems very small and due to the heterogeneity of responses to exercise training I urge the authors to be clear when they are stating how their power calculations are devised. It would make more sense for two groups of 42 each to be assessed with a small effect size, but when this is further devised into two more groups I am not convinced there is enough power. What software was used for these calculations? Is VO2peak change measured in absolute (L/min) or relative (mL/kg/min) units? As this will have an effect and should be clearly stated from the beginning.

Apologies for the continued misunderstanding. We have clarified the sample size calculation in that section. When conducting the repeated measures sample size calculation for 2 groups (HIIT/no HIIT) not 4 (as previously stated), for a small effect size we require a sample size of 30 per group, therefore a total sample size of 60. This calculation is based on relative VO2 peak values measured in ml/kg/min. We agree that dividing the sample further into 2 additional groups will lower the power of the study. Therefore, we will double the target sample size to 120 women (we have institutional ethical approval for this number of participants) so that we have 30 women in each of the four groups for the sub-group analyses. We have revised the sample size calculation paragraph (line 244-247) in the manuscript accordingly. A reference to the G*Power software has also been added in this paragraph.

The comment regarding dietary assessment is not answered by "requesting that participants maintain normal dietary habits", but may not be able to be incorporated since the study has already begun.
We recognise that dietary assessment may not be adequate however the basis of this trial is its pragmatism and we are unable to control for diet more than requesting that participants maintain their habitual diet. However, if participants admit to modifying any aspect of their diet they will be excluded from the study and/or the final data analysis and we will continue to recruit until we reach our target sample of eligible participants.

Several times the authors mention the primary outcome being multiple measures. In fact, the primary outcome is cardiorespiratory fitness and all other outcomes are pre-specified secondary outcomes.

Thank you for suggesting this clarification and we agree. We have modified this in the outcomes section and throughout the manuscript.

Minor:

Line 525: "more time-pressures" than whom?

We have modified this sentence to “HIIT may be especially beneficial for women, a group that experiences inequity in physical activity engagement.” Line 493-494.