Reviewer's report

Title: The feasibility and effectiveness of high-intensity boxing training versus moderate-intensity brisk walking in obese adults: A pilot study

Version: 1 Date: 25 October 2014

Reviewer: James Clark

Reviewer's report:

General Comments:
Major Compulsory Revision: There are too many limitations to generate the conclusions regarding effectiveness of new design. Should be used as an observational assessment and relate findings of effectiveness in this case relative to what has been previously reported.

Major Compulsory Revision: Over emphasize importance given the number of limitations and misapplication of covariate used within the ANCOVA. Poor design, a within group cross-over would have been much more appropriate.

Specific Comments:
Abstract:
Major Compulsory Revision: What was equated within the exercise design to allow for equivalent doses of exercise? Exercise dosing is a volume and intensity issue.

Major Compulsory Revision: There is far too much detail given regarding the recruitment, adverse events and association of independent variable in first three sentences of “Results”.

Major Compulsory Revision: When giving results please give as Average ± Standard Deviation (or Error).

Introduction:
Major Compulsory Revision: Please provide background to how boxing or training as boxer relates to the idea of HIIT. While hinted at, what is the rationale for devising intervention? Why not just recommend similar HIIT to what has been previously reported?

Methods: Several issues regarding the reproducibility of the study as detailed.
Study Design: (Minor Essential) This is confusing in its description and a flow chart may be easier to follow.

Major Compulsory Revision: What is the relationship of testing days (both pre- and post-) to the intervention methods? What is the schematic of design? Why perform the randomization as stipulated, when a cross-over design would have been the more appropriate choice given that you are attempting to validate a training method?
Major Compulsory Revision: How did you equate the two training methods? What was the progression method over the 12-weeks of training?

Participants:

Major Compulsory Revision: Why limit your recruitment window given the low rate of enrollment? Given that responses to exercise begin to fluctuate at older ages, was the randomization method able to age balance your groups?

Interventions:

Boxing:

Major Compulsory Revision: Please provide schematics for the intrasession and progression through the 12-weeks of training relative to a) the sequence of exercises; b) training intensities; c) weekly mesocycles. Why were training intensities not governed by heart rate responses given the application of the monitors during each training session? Why was the warm-up and resting periods excluded from total training time in determining the “MET per minute” of the exercise session?

Minor Essential Revision: Please indicate the recovery and training intensities within the HIIT programming of the boxing intervention.

Walking:

Major Compulsory Revision: Please provide actual intensities of training. What is meant by “walk as quickly as possible” for the training session? Why not allow walkers to utilize the heart rate monitors? Without ICC of measures, you are unable to garner any information for reporting here related to heart rate responses or differences in responses between the two groups. As measures and means of measures do not have the same level of reliability and validity between them.

Major Compulsory Revision: Even so, what was method for reading and recording of mid-exercise heart rates? Did exercises have to stop and complete measure? If so, what impact would this have on the concept of “continuous” exercise.

Major Compulsory Revision: Given that you are only analyzing 4 walkers, what was the gender impact?

Adherence and adverse events:

Major Compulsory Revision: What about attrition and compliance with protocol?

Clinical Measures:

Major Compulsory Revision: in Cardiovascular Outcomes, given the availability of the heart rate monitors why obtain heart rate via palpation of radial artery? Did the same tester perform this? What was the ICC between tests?

Major Compulsory Revision: What protocol was used for determining VO2max? Was the test to true max or to volitional peak?

Statistical Analysis:

Major Compulsory Revision: Given the sample size can you perform your
analysis with any certainty of not having type 1 or 2 errors in analysis?

Major Compulsory Revision: Even ignoring the issue of error, why perform a test of average (t-test) when the test for variance (one-way ANOVA within groups) would have been much more appropriate?

Major Compulsory Revision: What was baseline measure used as the covariate in the ANCOVA? Would have been more appropriate to utilize training intensities, gender, or age as the covariate here.

Major Compulsory Revision: In your attempt to perform analysis based on intent to treat, where the walking group has become severely limited in N-size, how does this impact comparability between two small N-size groups?

Results:
Can you state anything for certainty given the limitations to your sample size?

Major Compulsory Revision: in Baseline characteristics, what is meant by stipulations of age, and waist circumference used as covariates? Especially given that at least one of these will be in flux throughout training and that age, gender, and training intensity are each more appropriate than waist circumference in your outcomes of interest.

Major Compulsory Revision: in Training intensities note that this is your independent variable and analysis here should be a reflection of compliance. This compliance would be an appropriate covariance for ANCOVA.

Major Compulsory Revision: in Adherence and adverse events, what is the purpose of inclusion of adverse events? For those that had training modified, are their response similar (e.g., not significantly different) to group response as a whole relative to the compliance to training intensities? If not, can these two be included within your subsequent analysis?

Major Compulsory Revision: Please provide details for your manipulations of the data based on adherence and compliance.

Outcomes:

Major Compulsory Revision: All reports must be stipulated that the N-sizes for the walking group severely impacts your ability to state any difference between groups. Tables 1 and 2 is misleading as you do not have 2 groups of N=6. What about gender of volunteers remaining in “Walking” group?

Minor Essential Revision: When reporting values of effect size, please indicate the measure and then the effect size, not given a list of measures and then a range. As the method you have utilized may be misleading.

Minor Essential Revision: Please provide absolute, or relative, values for the outcome measures, within text not as supplemental materials.

Major Compulsory Revision: Given that the sample size it would be better to provide responses for each volunteer, as this may provide a better image of the actual impact of training on outcome measures.

Discussion:
Major Compulsory Revision: Would have probably been better to discuss this as an observational study, given that the sample size issue, you are providing findings and conclusions very assertively about the actual effectiveness.

Major Compulsory Revision: Biggest question regarding your design and discussion of findings here is “Was there an equated dose of exercise?” Can you state definitively that your boxing group trained significantly higher intensities? If there is a difference in intensities did volume get modified so that training was equated?

Major Compulsory Revision: for the discussion of each of your outcome measures given the huge limitations in comparing between your two groups here. How do your results compare to those seen in other HIIT or MICT studies? While, you did show some comparisons to other populations, the choice was to compare your results to that of dissimilar populations, why not compare to overfat but not diseased? There are several reports in the publication for this group both overfat and chronically diseased as well as overfat but not chronically diseased.

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests