Reviewer’s report

Title: Points-Based Physical Activity: A novel approach to facilitate changes in body composition in inactive women with overweight and obesity. A randomised control trial.

Version: 0 Date: 12 Aug 2017

Reviewer: Tanya Halliday

Reviewer's report:

This manuscript by Holliday et al. presents findings from a 24-week RCT exercise intervention. The main purpose of this trial was to compare how two physical activity interventions, a "points-based program", and a "prescription program" influenced body composition and body mass of previously inactive adult women with overweight/obesity. A control group was also included. Secondary outcomes included self-reported and accelerometer measured physical activity and self-reported dietary intake. The authors report that the points-based physical activity program resulted in decreases in body mass and fat mass while there was no change in these outcomes in the "prescription program" group. Strengths of the current study include the randomised control design, a longer (24-week) intervention period than the typical 12-week exercise interventions normally reported in the literature, and the fact that this study addresses an important topic regarding more effective PA interventions. However, there are also limitations to the current trial beyond what were addressed by the authors. The main flaw is that the largest difference between intervention conditions is the degree of choice individuals were allowed with the types of activity they could do. The prescribed exercise group was given the option of "1 or two modes of exercise" (line 159), while participants assigned to the points-based program were "provided with a table of different activities" that they could use to achieve their weekly points goal. [Note that the Appendix with this table is missing, so it was not possible to determine how many options were provided to participants, and if the assigned point values were accurately applied from MET values.] Therefore, this study is truly evaluating programs which differ in choices participants have, not a novel 'points-based' system that participants can utilize in order to meet PA goals. While exercise guidelines do recommend 30 minutes, 5 days per week, the guidelines from I think every professional, national, and/or international organization also clearly state that a variety of exercises can be used to achieve this goal, and that it can be accumulated in bouts of 10 or more minutes. Therefore, actual exercise guidelines are more flexible than the "prescription program" the authors test in this study. Other limitations include the reliance on self-reported PA and dietary intake and the low number of participants who had objectively measured PA data for analyses. This work has merit and is of importance. However, I recommend substantial revisions prior to publication.
General Comments:

1. The title and manuscript text should be edited to use of "people-first" language rather than "condition-first" language. The participants should be referred to as "women with overweight/obesity", not overweight/obese women. See position stand from TOS, AND, and other organizations here: http://www.obesity.org/obesity/publications/position-and-policies/people-first.

2. Authors should be consistent with use of operational definitions. They currently fluctuate between body weight and body mass. Pick one for use throughout. Same situation for referring to participants as "women" or "female". In general, though not a set rule, "women" preferred term for human subjects, verse "female" for rodent models.

3. Appendix with MET table is missing from document. Not sure if the authors did not include it, or if the journal did not provide it to reviewers.

Specific Comments:

Abstract:

1. Add a sentence on what statistical analyses was utilized. Without this information it is difficult to determine if the results are valid.

2. Adherence to protocols should be presented in the abstract results.

3. Not sure if diet information needs to be included in the abstract since it is not the main objective of the trial.

Background:

1. You mention both exercise and PA, which makes readers think that you want to differentiate between the two constructs. However, later the terms appear to be used interchangeably. It would be helpful for you to describe to readers how you are intending these terms to be used in the manuscript and if you are indeed using them interchangeably.

2. Lines 82-83 - change "dietary restraint" to "caloric reduction" or "dietary modification", etc. The construct of dietary restraint is separate from energy intake. An individual can have a high level of dietary restraint, but not lose weight - for instance, if they also have a high level of dietary disinhibition, and do not actually decrease energy intake.
3. Line 88 - adherence to exercise is also low, not just to PA. Are you using these terms interchangeably? If so, no need for both exercise and PA to be in the first part of the sentence. If not, should also include that adherence to exercise is also low.

4. Lines 88-90: Indicate if this is a global adherence rate, or where specifically this adherence rate is from.

5. Lines 94-96 posits that lack of time is a barrier to PA and therefore interventions should be time-efficient. However it is well-established that it is actually the perception of time, not the actual time available that is problematic. Refer to a behavior theory like the theory of planned behavior and see Heesch and Masse 2004 as an example.

6. Lines 99-101: This sentence is out of place as the conclusion for this paragraph. It is true that few wt loss centered PA interventions have been able to evaluate sustained PA adherence, however this is not a flaw your study can overcome as it is still a short-term intervention in the grand scheme.

Methods:

1. Lines 140-146: Insufficient information for power analysis to be checked. e.g. - were the sample sizes you calculated sufficient to power you at .80 to determine if between group differences existed, etc?

2. Line 163: Appendix is not included.

3. Line 164: Can you provide further explanation for how the points were derived, and what is meant by "adjusted for the MET score of 1 for sitting"? (This may be clear if the Appendix was available for review, but as is, this sentence could be more clear).

4. Line 166: Authors should be clear that the conditions were matched on "assigned" or "prescribed" PA-related energy expenditure, not actual PA-related energy expenditure.

5. Lines 179-181: How did researchers determine if participants adhered to this dietary restriction?

6. Lines 181-183: Can this sentence be reworded to be more clear. Were the food diaries and activity monitors picked up by participants or mailed if they could not come in to pick up? The choice of the word "collected" leads readers to think the researchers collected these from the participants, not vice versa (though this could be my misunderstanding based on conventionally used phrases/words in the US vs UK).

7. Lines 215-218: How to researchers ensure participants used a weighed food record? Were food scales provided? Were food records assessed upon return and the participant queried for
missing/forgotten information and foods consumed? Due to the limitations of self-reported dietary intake, it is crucial that food records be reviewed upon return for accuracy.

Results:

General: I recommend presenting the text results in the same order as the figures/tables. E.g. - Anthropometrics are presented first in the text, but are listed at the bottom of table 1. Also, the figures are mislabeled. Anthropometric changes are actually Figure 3, not 2, and body composition is actually figure 2 and not 1. Since the title is based on body composition, perhaps put that first in results.

1. Lines 281: PA and PA minute-equivalents should be referred to as "self-reported".
2. Lines 289-306: Dietary intake needs to be referred to as "self-reported".

Discussion:

General: Need to add the self-reported nature of PA and diet records as a limitation.

1. Lines: 324-327: This is an inaccurate representation of current PA guidelines. Current recommendations do advocate for flexibility and choice by encouraging people to do PA they enjoy, and by acquiring it over bouts of at least 10 minutes. Therefore, your points based program is actually representative of current recommendations, where the "prescription" program is a more restrictive program that is not in line with current PA guidelines.

2. Lines 368-375: Dietary intake needs to be referred to as "self-reported".

3. Lines 376-388: A recent paper (currently epub ahead of press) by Beer NJ et al in MSSE titled "Providing Choice in Exercise Influences Food Intake at the Subsequent Meal" can be cited to support your view about the points-based system's greater flexibility and change to dietary intake. This was an acute study that compared a bout of exercise with and without choice on directly measured ad libitum EI, and is in line with your longer-term more free-living approach showing change in dietary intake with the exercise program that gave participants more choices.

Tables 2 and 3. Put the n of each group in these tables as well since they are very small.

Figure 1 - Consort. In the bottom 3 boxes, I think you meant to write "objectively measured PA", not "objectively measures PA".

Figures 2 and 3 - Not sure that presenting change from baseline in addition to absolute changes are appropriate.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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Please indicate the quality of language in the manuscript:

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