Reviewer's report

Title: A moderate 500-m treadmill walk for estimating peak oxygen uptake in men with NYHA class I-II heart failure and mid-range ventricular dysfunction

Version: 1 Date: 30 Oct 2017

Reviewer: Quin Denfeld

Reviewer's report:
Summary: The purpose of this study was to examine the validity of a 500m moderate treadmill-walking test for estimating peak oxygen consumption in community-dwelling older men with chronic heart failure and reduced LVEF. The rationale is that based on an easily performed submaximal walking test, this measure could be used to estimate peak VO2. The major finding is that estimated peak VO2 based on the 500m walk test is correlated with measured peak VO2 based on traditional CPEX testing.

Comments and Suggestions for the Author:
Overall, this paper would benefit from a significant re-write to logically present the comparison of these methods to assess peak VO2. While the rationale behind this paper is sound, the paper lacks major details, logical flow, and many undefined terms. There is a strong argument for using the 500m walk test in HF patients in a clinically meaningful way; however, the presentation of the methods and data, as well as the generalizability of the findings, could be significantly improved.

Major recommendations:
* The introduction would benefit from consistency in terms used and definitions for terms, as well as better transitions between key points. Moreover, given the varied measures (6MWT, 1K-TWT, CPEX) already available, it would be helpful to see how the 500m walk test distinctly fits in with these other measures (perhaps in a table).
* There are a number of inconsistencies regarding the subtype of HF, namely in relation to ejection fraction/ventricular dysfunction. The title uses "mid-range ventricular dysfunction"
but the abstract uses "HFrEF." Moreover, there is a note in the discussion regarding the "grey area" of reduced EF (with an EF range of 40-49%). Given the lack of consensus on the gradations of EF, it would be best to stick with one designation throughout the paper.

* Because the purpose of this paper is to address validity, there should be more information regarding the type of validity assessed (criterion, convergent, divergent, etc.).

* The validity of the equation for a 500m walk test using the 1000m walk test should be addressed (i.e. are they considered equivalent?). Moreover, there is likely a major miscalculation of estimated peak VO2 for patients on beta-blockers; if this is not the case, please provide evidence that it doesn't affect the calculation.

* For the sample size, the abstract reports 43 subjects, the table reports 39 subjects, but the text notes that 3 subjects did not satisfy the criteria for adequate effort. Was this adequate effort for the CPEX or the 500m treadmill walking test? Was there anything specific about these patients who didn't achieve adequate effort? Also, what happened to the other subject who wasn't included in the analysis?

* For the analysis, please clarify why a non-parametric regression analysis was used. Particularly coupled with a paired t test and Pearson correlation coefficient (which both have parametric assumptions). Also, please clarify the progression of the statistics from paired t tests to a Passing and Bablock regression analysis to a Pearson correlation coefficient.

* Where is the data on the paired t tests?

* Even though some good points are made, the discussion would benefit from a major re-write as there is redundancy as well as confusing points.

Minor recommendations:

* Revise the last conclusion statement in the abstract, especially since lack of women was a limitation of the study.

* Need more data in Table 1, especially pertaining to their HF medical history: NYHA class, time with HF, serum sodium, etc.

* Would like to see the data from the 500m walk test presented in a table.

* The figure needs work: title, caption (including the type of analysis).
* Review the abbreviations used throughout the paper (i.e. make sure each one is spelled out first), and ideally minimize unnecessary ones.

* References #12 and #17 are the same.

**Are the methods appropriate and well described?**
If not, please specify what is required in your comments to the authors.
No

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

**Are the conclusions drawn adequately supported by the data shown?**
If not, please explain in your comments to the authors.
No

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