Reviewer's report

Title: Characterization of exercise limitations by evaluating individual cardiac output patterns: a prospective cohort study in patients with chronic heart failure

Version: 1
Date: 20 March 2015

Reviewer: Corey Tomczak

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Line 71: briefly elaborate on statement regarding “physiological heterogeneity” sourcing references 6-8. This is important here for the reader to understand the authors’ intent.

Lines 109-122: I appreciate the author’s inclusion of their methods here. Unless there is a word count restriction, please elaborate slightly more the calibration procedure. Is the measured arm stabilized or is that associated hand gripping the handlebar of the ergometer? A diagram of the testing protocol may help as its difficult to visualize such testing procedures on an upright ergometer. As well, this group has published exercise findings to validate the current cardiac output method with Fick (J Appl Physiol 2008). As the authors know from their work, cardiac output was likely overestimated in their 2008 paper in HF patients above 10 l/min. In the current manuscript, it appears cardiac output is above 10 l/min in approximately 1/3 or so of patients. This observation needs to be balanced with their prior 2008 work published in J Appl Physiol so as to be sure overstating the current findings does not occur.

More information about patient recruitment is needed. For example, were patients consecutively screened? EF value: how recently determined – on testing day or via patient files?

Why was non-parametric testing used? Please indicate assumption violations associated with parametric testing that let to using Mann Whitney. Subsequently, I suggest reporting chi-squared (or other) value and the associated degrees of freedom for each test.

How was LBBB block presence tested statistically? In the same procedure as above?

Not all Figure data is referenced in the manuscript at all - there are 4 Figures. Please incorporate the Figure data into the results and discussion sections, or eliminate the Figures as they have no context without reference.

Figure legends do not appear to correspond to actual figures. There are 4 figures labeled 1-4. Legends are labeled 1 and 2 with subfigure labels of ‘a’ and ‘b’. Please correct and clarify.

Level of interest: An article of importance in its field
Quality of written English: Acceptable

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

Declaration of competing interests:
I have no competing interests.