Reviewer’s report

Title: Contemporary Portable Oxygen Concentrators and diverse breathing behaviours – A Bench Comparison

Version: 1 Date: 06 Oct 2019

Reviewer: Jacek Nasiłowski

Reviewer's report:

The study of Dion Martin addresses an important clinical issue about the efficacy of triggering of portable oxygen concentrators (POC).

It is well designed bench study with the aim of assessment of the reliability of triggering of different POCs in three clinical scenarios: exercise with nasal breathing, rest with nasal breathing and sleep with oronasal breathing.

I have found the study well written and appropriate for publication, however some minor drawbacks should be addressed before.

The main points of criticism are:

1. The background section is a little bit too wordy. Some paragraphs refers more to discussion than a background, like detailed analyzing of the study of Leblanc et al. The direct quotation of sentences should be avoided. I recommend to shorten this part and make it more concise.

2. The methods section is concise and informative, however such sentence like: "Yet very few related publications offer information on the shape of the effort, or any associated rationale." fits more to discussion then methods.

3. Titles of paragraphs of the result section are a little bit misleading. E.g., the title "Inspiratory synchronization during shallow nasal breathing" indeed refers to oronasal breathing imitating sleep with open mouth. I would suggest to change titles to make them more informative about the clinical scenario they pretend.

4. In the discussion section the misleading description of oronasal breathing is repeated, and should be corrected. The first, theoretical part of discussion is too wordy. I recommend to make it more concise. The last sentences of the discussion should be rather placed in methods, where they are missing, like method of inserting nasal cannula.

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.

No

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

Yes

**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.

Not relevant to this manuscript

**Quality of written English**
Please indicate the quality of language in the manuscript:

Acceptable

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