Reviewer's report

Title: Combining perceptual regulation and exergaming for exercise prescription in low-active adults with and without cognitive impairment

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Reviewer: Jose Guzman

Reviewer's report:

In my opinion, this is a novel and with a robust methodology study. However, I think some points need to be improved in the manuscript and in the analysis before the publication.

Abstract

In the section purpose it is not mentioned that the sample involves low active adults. In addition, only the first hypothesis is properly explained, whereas the two hypotheses of the second objective about the decrease of the affective response with the RPE and the expected improve with exergaming mode were not indicated, and, in my view, it is a key part of the study. In the "conclusions" section it is not mentioned that there was no relation between exergaming and a better affective response, which was the second hypothesis of the second objective of the study. All the results of the hypotheses, including the negative ones, should be pointed out as they are relevant.

Introduction

In the first objective of the study (lines 109-119) the hypotheses are confusing and difficult to understand. I believe that the writing should be improved and, in addition, numbering the different hypotheses could facilitate their understanding. In addition, there is no distinction between primary and secondary hypotheses, which decreases the power of the study and I think this should be clarified (or at least pointed out in the limitations, i.e., "it is an exploratory study and the results should be interpreted with caution")
Method
The statistical analysis section is confusing because it does not follow the same order as the previous sections. The first part of the statistical analysis (line 216) refers to the first part of the first objective and the second objective. However, the second and third parts of the first objective are referred below. I think consistency should be maintained in the statistical analyses section.
With regard to the methodology, there is one issue that needs to be clarified. The dichotomization of groups based on the Addenbrooke Cognitive Exam (ACE-III) score is not justified and implies the unnecessary loss of information from a variable. From my point of view, there are two options: either to perform an ANCOVA with the two same within subject factors (exergaming and RPE) adding as a covariate the ACE-III score, or to adequately justify, based on the distribution of ACE-III variable (for example, in supplementary material).

Discussion
The limitations section should be improved. It is too speculative and it does not focus on the specific limitations of the study. Especially the last paragraph (lines 329-332) refers to possible future studies or questions that could have been studied but does not constitute a true limitation of the study. In addition, the study has other limitations that have not been pointed out, for example, that it is an exploratory study and with a small sample. Another limitation is that the sample was intentionally collected among people with memory concerns which may affect the generalization of the results to the low active older people population.

I hope these comments are useful and will help the authors to improve the quality of the manuscript. I appreciate the opportunity to review such an interesting study.

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.
Yes
Are the conclusions drawn adequately supported by the data shown?
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No

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