Author’s response to reviews

Title: Efficacy of Treadmill Exercises on Arterial Blood Oxygenation, Oxygen Consumption and Walking Distance in Healthy Elderly People: A Controlled Trial

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Author’s response to reviews:
Reviewer: Fernando Gomez

Reviewer's report:
This is a prospective controlled intervention trial study that shows the efficacy of treadmill exercises on physiological and functional parameters in an Egyptian elderly group with follow up until 48 weeks. The topic of the manuscript is appropriate for the Journal. It could be of interest to investigators and clinicians. However, a major revision is necessary.

Major compulsory revisions:

* The authors should highlight their most important results "that treadmill exercise produces a beneficial effect on these parameters in healthy elderly people; and b) that supervised exercises has better results that unsupervised exercise".

R: Thank you for your suggestion, we have highlighted the most important results as your proposal.

* Discussion section should be re-organized for clarifying the importance of results of this study.

R: Thank you for your comment, we have re-organized it.
Information about statistical analysis is too excessively in order to provide the right process in their analysis.

R: Thank you for the revision, we have suppressed explanations about the nature and procedure of statistics tests.

Minor essential revisions

Tittle:

The title is accurate and sufficiently descriptive of the content.

Abstract:

* Abstract: Concise and specific.
* The main objective of the study is presented.
* The statistical methods used to prove the hypothesis is mentioned.
* The conclusion highlights the contribution of this work.

Introduction:

* The introduction is clear defining the role of exercise on physiology and functional parameters in older age.
* The mention about the targeted heart rate for exercise should be included in methods section.

R: Thank you, already included.

* The literature used is pertinent to the study and the purpose of the study was clearly stated.

Material and methods:

* Sufficient details about the process are provided.
* Statistical analyses used are appropriate.

Results:

* Three tables and four figures well presented.
* Why the authors include statistical analysis description in the first part of this section?. Recommendation to revise this section and include all paragraph in methods section.
No mean differences pre and post are referred here, only in the tables are shown. Mean important data differences between 12-30-48 week evaluations should be included for easy reading.

R: We are very sorry to disagree at this issue, since results in tables or in text we think shouldn’t be replicated in both places.

* Please, many information of this section is more appropriated in methods section.
* Always the text in this section should show the main results that the reader corroborates in the tables. In this manuscript we need to read first tables and then the text to corroborate the information provided.

R: We think that results could be showed in text or in tables, but never be duplicated at both places.

Discussion

This section should be re-made with emphasis in the findings.

R: Thank you, we have re-organized it.

Why the authors repeat information of the introduction section in the first paragraph? I recommended begin this section with the second phrase on second paragraph "The results of this study show: a) that…"

R: Thank you for your comment, we have erased this paragraph.

Why the authors conclude that their findings clearly show that participation of older adults in aerobic exercise programs significantly improves health, physical capacity, quality of life and natural independence" These objectives are no commented in the introduction section.

R: Thank you for your comment. Pulmonary capacity, as walking distance, can be understood as a construct indicating health, physical capacity, quality of life and independence in daily life activities.

The authors should contrast their results with literature findings and no mention results of other authors without commented (v. g. ref 33 and 34).

R: Thank you, we have commented these citations.

Strengths paragraph should be included. Following for 48 weeks with minimum attrition is an important strength.

R: Thank you, we have added some lines in order to comment this issue.
What activities were used to maintain the adherence?

R: Participants in the control group were encouraged to walk twice a week during 45 minutes, and received standard recommendations for proper health. Weekly, a telephone follow-up of the adherence to recommended exercise guidelines was conducted (see lines 214-216).

Limitations paragraph is no clear and vague. Please provide more precise information with references if necessary.

R: Thank you, we have added some references to light this issue.

References: There were 36 and all are appropriate.

Reviewer #2: The paper under review examined the effect of a treadmill exercise program on indicators of long capacity in healthy older adults. This is important since long capacity decreases with age. The results show that arterial blood oxygenation, maximum oxygen consumption and maximal walking distance improved significantly more in the treadmill exercise group than in the control group. The results further indicate that supervised exercises are preferred over unsupervised exercises.

Major comments

- The authors should better emphasize the need for the current study. What would it add to the existing literature? Why is it important to improve lung capacity in older adults? What benefits are associated with improved lung capacity? Rather than only describing the effects of ageing in the Introduction, also describe the consequences of decreased lung capacity.

R: Thank you for your comment. We have added some paragraph that highlight that aging is a sufficient topic to explain physiological decline.

- The methods used are unclear:

  o Participants were not randomly allocated to groups, but please describe how they were allocated (could participants for example choose one of the groups)? Also report that the trial was not-random at lines 150-151.

R: Thank you, we have followed your suggestion.

  o it is unclear whether the outcome measures (SaO2, VO2max and MWD) were recorded during an exercise test or during a training session of treadmill walking. Also more information regarding this exercise test is needed.

R: Thank you, we have added some information to clear this issue.
Is the 'exercise tolerance test' mentioned on line 176 similar to the 'pulmonary exercise test' mentioned on line 121 and 'exercise protocol' on line 177?

R: It’s not a right translation from Spanish. Exercise tolerance test here refers to exercise protocol or intervention. Pulmonary exercise test is a method to evaluate pulmonary capacity. We have changed these lines.

- Line 195: also include the duration of training sessions in this sentence.

R: We have followed your suggestion.

- Specify 'good clinical health' on line 169.

R: We have done it.

- Line 214: how were participants in the control group encouraged?

R: enlightening the benefits of moderate physical activity on health.

- Line 219: Was SaO2 assessed 2 months prior to training? Line 154 states that SaO2 at baseline was measured one week before the start of the intervention. Please explain and clarify. And was this prior to the training or prior to some test? Unclear

R: It’s an erratum. The right data is one week prior to training. It’s the data reporting the baseline, only prior to the training sessions.

- The Participants section contains a lot of information regarding the experimental protocol. 'Protocol' on line 193 is a confusing term in relation to the exercise test described earlier and should be replaced with a term that better covers the content of the paragraph ('Intervention' for example').

R: We have replaced protocol for intervention.

- The Methods section should be better structured to improve readability and clarity. For example use the following sub-headings: Participants, Experimental protocol and outcome measures, Intervention.

R: We have followed your suggestion.

- The Results section contains a lot of repetition. Statistical procedures should not be explicitly repeated here and a lot of results described in this section are already reported in the tables and figures. Please shorten this section in order to create focus.

R: We have shortened it as your suggestion.
- Please report on the compliance in both the exercise group (supervised and unsupervised sessions) and the control group in the Results and discuss this in the Discussion. Lines 348 and 349 state that supervised exercises has better results than unsupervised exercise, but the compliance to supervised and unsupervised exercise sessions is not reported and plays an important role in this.

R: We have added an additional comment in this topic.

- The fact that both exercise programs were not dose-matched should be addressed in the Discussion.

R: We have followed your suggestion.

- Further, the manuscript will largely benefit from a language and style check. See for example the sentences on lines 101-103, 107-109 and 110-112.

R: We have checked these sentences.

Minor comments

- Specify the control intervention (control group) in the Methods of the Abstract.

R: We have specify it.

- Specify the results in the Abstract. Were these main effect of time? SaO2 improved more in the intervention group compared to the control group? MWD improved in the intervention group relative to the control group or relative to baseline?

R: We have followed your suggestion.

- Line 244. Specify. Was data presented as median (SD) for normally distributed data only? Table 1 shows not.

R: Table 1 shows mean (Sd) in all cases.

- Line 245. Add 'statistical' before 'tests'.

R: Thank you.

- Line 248. 'Previously' is confusing in this sentence; rephrase or remove.

R: Thank you.

- Line 359. Remove 'auto'
R: Thank you.

- Line 360-362. Unclear sentence. Did the control group did not perform their recommended walking exercises?

R: We have added some comments to this topic.

- Line 427-428. Were adherence and compliance reported in the manuscript?

R: Adherence is understood as the fit of the participants to the program, as expected in the supervised period in contrast to the unsupervised one.

- Table 3. Change scores were calculated as baseline minus 12W, which causes that improvements have negative signs. This is counterintuitive and unusual. It is recommended to calculate the change scores by subtracting the baseline score from the 12W scores and the 12W scores from the 30W scores etc. This will result in positive signs when there was an improvement.

R: Thank you.

- Table 1. N=20 instead of N=2 for female controls.

R: Thank you.

- All figures. 30W instead of 36W

R: Thank you.