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OPEN PEER REVIEW

The Effects of Transcranial Direct Current Stimulation (tDCS) and Biofeedback on Proprioception and Functional Balance in Athletes with ACL-deficiency

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About this report

This open peer review (OPR) report shows the public comments made on this article during peer review, by the reviewers, the associate editor and the editor-in-chief, for every revision round, together with the authors' replies. Comments appear only with the consent of the people who wrote them. Reviewers who chose to sign their report are named; the others are shown as "Referee". Comments are edited for language only, and confidential remarks to the editors are not included.

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1 Original submission

3 comments · 2 Sep 2022 – 20 Sep 2022

Mehrnaz Kajbafvala Reviewer

MAJOR REVISION 2 Sep 2022

General Comments:

Thank you for the opportunity to review this manuscript. The manuscript reports findings from a comparison of the effects of transcranial direct current stimulation (tDCS) and biofeedback on proprioception and balance in subjects with ACL-deficient knees. Nowadays, proper rehabilitation of individuals with ACL deficiency is important for a better prognosis. Impaired proprioception following ACL rupture leads to impaired balance and functional joint stability. Therefore, using different therapeutic strategies helps clinicians develop good protocols. The authors describe a well-designed study and have reported some reasonable results. The manuscript in its present form has several general issues, and many places in the manuscript require clarification, as I have outlined below. I have also provided some specific comments for consideration.
The presentation of the manuscript is not reasonable from an English-language perspective. The authors are advised to have someone with English as their first language edit the manuscript before resubmission.

Abstract:
Please use effect instead of efficacy. (Background line 3)
Introduction:
1- The introduction needs to provide a better justification for the study.
2- The introduction lacks a logical flow and argument for the importance of using biofeedback and tDCS. Additionally, you could add a paragraph about the clinical use of biofeedback and tDCS in patient assessment and care and why they are preferred over other treatments.
3- The research gap is not explained very well. The last paragraph of the introduction could be stronger. Please edit it.
4- Most of the citations in the introduction are old. Most of them are from before 2010. Please use newer references.

Outcome measures:
Please define primary and secondary outcomes.

Methods:
1- Are the study participants athletes? This is not specified.
2- How did you calculate the sample size? Please add this information.
3- The methods section is too long. Please edit it.
4- Why did you use repeated measures for the pre-post intra-group comparison?

Results:
The results nicely explain the findings; however, the results could be expanded in several areas:
1- Table 2 should be designed better.
Discussion:
The discussion could be expanded in several areas:
1- The importance of the findings is not clearly articulated.
2- You should explain why the findings are in line with or contradict other studies. Please explain more about the basic concept.

3- Please clarify the limitation of the study.
4- Please add suggestions for future and further research in this line.

Specific Comments:

Add figures for biofeedback and tDCS and the proprioception measurement.

Referee 1 Reviewer

MINOR REVISION 12 Sep 2022

Greetings and respectful service to the corresponding author
Thank you for your valuable and up-to-date work. The text was well written, but there are some points that need more attention:

Editor-in-Chief

20 Sep 2022

No public comment.

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Revision 1

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

The authors did not provide a point-by-point response to the reviewers' comments in this round.

2 Revision 1

2 comments · 26 Oct 2022 – 5 Nov 2022

Mehrnaz Kajbafvala Reviewer

MINOR REVISION 26 Oct 2022

Thank you for the opportunity to review this manuscript again. Thanks to the authors for their responses and corrections. All of them are acceptable. But the manuscript has some grammatical errors. Please address all of them. I have 3 suggestions as follows.
1- Title
Please replace this title:
The effects of transcranial direct current stimulation (tDCS) and biofeedback on proprioception and functional balance in athletes with ACL-deficiency

2- Please edit this paragraph:

Objective: The current study aimed to show the effect of tDCS or biofeedback modalities while contraction exercises, and to know if there were any differences between two interventions on proprioception and functional balance in athlete with an ACL rupture.

3- Please edit:

There was no significant difference in subjects' demographic characteristics among three groups (P< 0.05, Table 1). The inter-group comparison indicated no significant differences among three groups after the interventions for the functional balance outcome on SEBT in any eight different directions (P< 0.05, Table 2). Regarding the proprioception, no significant difference was also found among three groups in knee absolute error in 30, 45 and 90 degrees (P< 0.05, Table 3) – Regarding the results, P> 0.05 is correct.

with no significant difference at the angle of 45 degrees (Table 3, P< 0.05). P> 0.05 is correct.

Editor-in-Chief

MINOR REVISION 5 Nov 2022

Dear Authors
According to the reviewers' and associate editor's comments, your article needs minor revision. When revising your manuscript, please consider all issues mentioned in the reviewers' comments carefully: please outline every change made in response to their comments and submit the required files.

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Revision 2

AUTHORS' RESPONSE TO REVIEWERS

Authors' reply to reviewers

The next pages contain the authors' point-by-point reply to the comments of this revision round, as submitted with the revised manuscript. It is published as the authors wrote it.

Hello, dear editor

I have reviewed the revised version and it is now accepted, It is suggested that at least one graph is needed in the results section to better show the differences.
Dear reviewer, there are 11 variables in the present research including 8 variables for functional balance (using SEBT test) and 3 variables for knee absolute error (at 30, 45, and 90 degrees). If we want to present graphs, we should present the graphs for all variables, nor just for some because no variable is superior to another. Including all 11 variables in one or 2 graphs is not possible. So, we have to make many graphs and that is a lot for the manuscript.

If possible, therefore, please accept the manuscript without graph. If not, please tell us. We will present them in the next revision. We will surly do that.

We are looking forward to hearing your final decision in this question. Thank you.

Reviewer 2:
Thank you for the opportunity to review this manuscript again. Thanks to the authors, for their responses and corrections. All of them are acceptable. But it has some grammatical errors. Please consider all of them. I have 3 suggestions as follows.
1- Title
PLZ replace this title:
The effects of transcranial direct current stimulation (tDCS) and biofeedback on proprioception and functional balance in athletes with ACL-deficiency
Thank you for your comment. We modified the title according to your comment as follows:

“The effects of transcranial direct current stimulation (tDCS) and biofeedback on proprioception and functional balance in athletes with ACL-deficiency”

2- Please edit this paragraph:

Objective: The current study aimed to show the effect of tDCS or biofeedback modalities while contraction exercises, and to know if there were any differences between two interventions on proprioception and functional balance in athlete with an ACL rupture.

We modified that as follows:

“To evaluate the effect of tDCS or biofeedback modalities while contraction exercises in athlete with an ACL rupture”

3- Please edit:

There was no significant difference in subjects’ demographic characteristics among three groups ($P< 0.05$, Table 1). The inter-group comparison indicated no significant differences among three groups after the interventions for the functional balance outcome on SEBT in any eight different directions ($P< 0.05$, Table 2). Regarding the proprioception, no significant difference was also found among three groups in knee absolute error in 30, 45 and 90 degrees ($P< 0.05$, Table 3) – Regarding the results, $P> 0.05$ is correct.

Dear reviewer, many thanks for your attention. It was just a typing error. We made them correct as follows:

There was no significant difference on subjects' demographic characteristics among three groups (P> 0.05, Table 1). The inter-group comparison indicated no significant differences among three groups after the interventions for the functional balance outcome on SEBT in any eight different directions (P> 0.05, Table 2). Regarding the proprioception, no significant difference was also found among three groups in knee absolute error in 30, 45 and 90 degrees (P> 0.05, Table 3).

with no significant difference at the angle of 45 degrees (Table 3, P< 0.05). P> 0.05 is correct

Dear reviewer, many thanks for your attention. It was just a typing error. We made them correct as follows:

"For control group, a significant reduction was observed at knee angles of 30 and 90 degrees (Table 3, P< 0.05), with no significant difference at angle 45 degree (Table 3, P> 0.05)".

> Associate Editor's Comments:

Associate Editor 1:
Dear Chief Editor
The manuscript has been improved much, all comments have been given full consideration. However, it still requires native English edition. In addition, since the Sample size calculation is based on the primary outcome it is necessary to be specified. When there are two primary outcomes, sample size should be calculated for both outcomes and the large one should be chosen. So It seems that functional balance is the main outcome. It's not clear whether the mean and sd used for sample size calculation is related to the same population.

Dear editor, we checked whole manuscript for English edit again. We think there are not any grammatical error in the text now.

Regarding the sample size, the **closest** study to our work was Hamdolah's study[29]. They also worked on male athletes like our study. However, male athletes in the Hamdolah's study were healthy. Male athletes in our study were athletes with ACL injuries. So, that is almost the same population. We modified the sentence related to sample size as follows:

"Regarding the 95% confidence level and 80% power and considering the mean and standard deviation (SD) of Star Excursion Balance Test (SEBT) for the anterior-lateral direction on the male healthy athletes in a previous study[29], the number of subjects was calculated as 11 per group"

For the outcome measure, Hamdolah's study just measured functional balance. So, for calculating the sample size, we used this outcome. We did not measured the sample size for the proprioception because there was not any closed study with the same population in the literature.

3 Revision 2

2 comments · 12 Nov 2022 – 14 Nov 2022

Mehrnaz Kajbafvala Reviewer

ACCEPT 12 Nov 2022

Hi
Thanks a lot for the consideration.

Editor-in-Chief

ACCEPT 14 Nov 2022

Dear Authors
We are pleased to inform you that your article is accepted for publication in the MEJRHS. We hope to receive other suitable articles from your group.