Reviewer's report

Title: Change in the P300 Index - A Pilot Randomized Controlled Trial of Low-frequency Electrical Stimulation of Acupuncture Points in Middle-aged Men and Women.

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Reviewer: In-Seon Lee

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English correction by native speakers is strongly recommended to improve the manuscript.

Introduction

1. Relevant reference is needed to the sentences, e.g. 'Alternative medicine is easily accessed and inexpensive and is therefore a good method to solve the problem of senile brain disorders in an aging society.'

I'm not sure whether the alternative medicine is indeed inexpensive than others or not. If yes, isn't it a special case in Asian countries? Furthermore, is there any evidence supporting the treatment effect of the alternative medicine, at least EA in this case, for brain disorders?

2. In Introduction part, I'd like to suggest to provide the concrete rationale for this study. It is hard to get why the researchers performed the study.

Methods

1. Considering the readers, it would be interesting point to prescribe the theoretical grounds for the selection of acupoints, duration, and frequency of EA.

2. Who performed the EA stimuli? A well-experienced and licensed Korean medicine doctor?

3. Which side of acupoints were chosen? Left, right, or bilateral?

Results

1. Is there any reason for subgroup analysis based on gender? Any hypothesis before conducting the study? Any notable results between male and female groups from previous studies (references)?

2. P300 latency and amplitude : Although p value is over 0.05 (0.057) when comparing the Pz channel signal between groups, it is still a marginally significant result which should be noted and also discussed.
Discussion

1. The following sentence is meaningless or less of reference. If it is not closely related to the results of the study, it could be omitted.

'Modern people have more complicated daily lives than people in the past…'

2. Based on the survey results, the men had more frequent smoking and drinking experiences than the women, and this may have acted as a negative factor for the improvement of P300 amplitude. Is this hypothesis confirmed by the data? For example, did you measure the participants' smoking and drinking behavior? If not, it is hardly supporting the results.

Conclusion

1. This study confirmed that the amplitude of the P300, an index used to assess the cognitive function memory, increases in middle-aged women by observing the correlation between changes in the P300 and low-frequency electrical stimulation. This sentence sounds too conclusive and does not provide a precise summary of the results.

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?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
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I am able to assess the statistics

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