Reviewer’s report

Title: Effect of oral functional training on immunological abilities of older people: a case control study

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Reviewer: Takahiro Ono

Reviewer's report:

In this paper, the challenging hypothesis that oral exercise improved immunological abilities was tested in 30 elderly participants. Tongue pressing exercise and massage on major salivary glands were conducted. As results, expected increase in salivary immunoglobulin A was not detected, so authors investigated the difference in response pattern of saliva and IgA flow during experimental period by cluster analysis. Authors compared characteristics between two clusters (lower/higher saliva and IgA), and they found only BMI was significantly different.

Overall this paper is weak as a theoretical background. In the section of Background, authors referenced only few articles, which could not explain "Weakened oral cavity function in older people reduces immune system function, and leads to decreased systemic health" (P5L41-44). Authors have to discuss more concretely the mechanism by which oral exercise affect on immune function.

In the section of Discussion, there are some explanation which suggested the limitation of this study, such as "a reduction in acute stress is one possible explanation" (P13L39-42) and "An analysis using wider variety of salivary molecules with..." (P13L56-P14L2). These limitations are rather flaw in experimental protocol in such a case control study.

Also, the conclusion "BMI characterized salivary features more than any other parameters, such as..." should be discussed concretely. I'm not statistician, but I wonder why authors didn't use multi-variable analysis.

Minor

P4: "age 80 and over" is not proper as a key word.

P11 last line: "adjusted P-values" should be explained in detail.

Table 2: There are a lot of parameters which were not explained in the section of Method.
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?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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

Not suitable for publication unless extensively edited

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