Reviewer’s report

Title: Role of Gait Speed and Grip Strength in Predicting 10-year Cognitive Decline among Community-dwelling Older People

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Reviewer: Takumi Abe

Reviewer's report:

This study entitled "Role of Gait Speed and Grip Strength in Predicting 10-year Cognitive Decline among Community-dwelling Older People" reported the association between physical and cognitive function in community-dwelling older adults. This topic is important in both community and clinical settings. Therefore, there has been an increase in the number of studies that focused on the relationship between physical and cognitive function. I have concerns about the novelty of this study, and the authors should clarify the differences between this study and previous studies.

Major comments

[Background]
1. It is difficult to understand a research question of this study. A number of studies demonstrated the association between physical and cognitive function (e.g. Ref. 10-13 and 15-17). In fact, A meta-analysis showed although gait speed is associated with change in fluid cognition, grip strength is not. Additionally, grip strength is strongly associated with MMSE than gait speed (Clouston et al. The Dynamic Relationship Between Physical Function and Cognition in Longitudinal Aging Cohorts, Epidemiol Rev, 2013). What is the question, significance and novelty of this study?

[Methods]
2. Grouping in gait speed should be conducted by sex. The ratio of participants with slow gait speed was higher in female than in male. Moreover, the percentage of female participants who attend wave 2 only was higher than that of male participants. It is needed to consider the differences.
3. The baseline MMSE score should be included as a covariate when MMSE is a dependent variable. It is more likely that the baseline score is associated with cognitive decline during follow-up period. DSST is also the same.

[Discussion]

4. The authors explain the reason that slow gait speed and low grip strength are associated with DSST and MMSE, respectively, from second to forth paragraphs in the discussion section. I wonder if these explanations could be argued both ways; that is, current discussions fit both MMSE and DSST (e.g. Reduced gray and white matter volumes in multiple brain regions and white matter hyperintensities may also explain the association between physical dysfunction and global cognitive decline [ref. 58]. Does not that fit DSST?).

Minor comments

[Abstract]

5. Please describe the research question of this study in the background section.

[Methods]

6. Are there no exclusion criteria for physical function assessment? Is there no person who is difficult to do physical assessment? (e.g. people cannot walk without a cane).

7. The authors pointed out about physical activity [ref.7-9]. Why did not physical activity include as a covariate?

[Results]

8. How much is the correlation between MMSE and DSST?
9. The last sentence in the results section (After including both…). Please provide estimated β and p-values.

[Discussion]

10. The generalizability of the results of this study should be addressed.

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.

Unable to assess

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

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