Author’s response to reviews

Title: Sex differences in circumstances and consequence of outdoor and indoor falls in older adults in MOBILIZE Boston cohort study

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Author’s response to reviews: see over
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Dear Editor,

We appreciate the opportunity to revise and resubmit our manuscript. We have considered all the reviewers comments and revised the manuscript accordingly. The point-by-point responses to the comments are below. All revisions in the text and tables are highlighted in yellow block color.

We thank Drs. Okubo and Nofuji for their expert reviews and constructive comments which have resulted in notable improvements in this manuscript.

Kind Regards

Wenjun Li

Authors Responses (marked in blue color)

Reviewer 1 comments (Dr. Yoshiro Okubo)

Major Compulsory Revisions

1. Page 5, Minimum and maximum length of the follow-up, how the follow-up terminated before the study end should be stated. Were there any participants who dropped out? If so, the follow-up rate should also be mentioned.

   On page 5 we have corrected the follow-up time for participants as median of 2.9 years (range 0.04 to 4.3 years). We have clarified the reason for termination of the follow-up prior to the end of the study in the results section on page 8, paragraph 3.

Minor Essential Revisions

2. Page 8, All rate ratios by negative binomial regression models are unadjusted. Authors could consider adjusting for some variables that may relate to fall incidence, such as racial difference, use of psychotropic medication, or cognitive function (P <0.05).

   We considered covariate adjustments and found the adjustment made little differences in most of the rate ratios: none of the adjustments changed the rate ratios by more than 12% for the outdoor falls or by more than 8% for any of the injurious falls.

   In Table 2, for clarify, we elected to present the unadjusted rate ratios only.
   In Table 3, both crude and adjusted RRs are presented.
3. Table 2: The heading "annual rate\times 100" can be replaced with a more scientific expression. Number of injurious falls should also be included in the table as all falls. Space around "-" should be deleted to match the expressions in the text.

As suggested, in Table 2, we have adjusted the heading of the table as follows “Place and activity-specific number and rates (95% Confidence Intervals) of falls and injurious falls by sex (per 100 person-years)”. We have also added the number of injurious falls, and have deleted the “-” to match the expressions in the text.

4. Discussion: Page 10, Authors stated "This analysis showed that the overall fall rate (combining both indoor and outdoor falls) of women was lower than that of men, in spite of the women’s poorer means scores in several physical characteristics (Table 1).", but no significant difference was found in total falls (0.85, 0.70-1.04), rather women showed higher injurious fall rate than men (1.37, 1.09-1.70). Total outdoor falls are indeed significantly lower in women (0.72, 0.56-0.92). The description should be fixed more accurately. The similar description in the conclusion should also be fixed.

   We have deleted the inaccurate sentence on page 10: “This analysis showed that the overall fall rate (combining both indoor and outdoor falls) of women was lower than that of men, in spite of the women’s poorer means scores in several physical characteristics (Table 1).”

   On page 14, we deleted the statement of “While women seemed to fall less often than men”.

5. Page 11: The references of "a few observations" should be clarified.

   We have clarified this sentence by adding specific references to the differences observed with the PASE questionnaire on page 11.

6. Page 13: Place of “.” and “,” should be checked. (Lines 8 and 11)

   Corrected.

Discretionary Revisions

1. Table 1: Corrections are needed as to “±”, space before and after the ±, SD (S.D.), Examination.

   Corrected.

2. Details of the physical activity (PASE) could be clarified in table 1 or as another table. This information should be used as an interpretation of the sex difference. The authors interpreted the sex difference mostly with exposure time in indoor and outdoor but total PASE score in this sample shows no difference in physical activity, except for household activity.

   In Table 1, we have clarified the Physical Activity Scale for the elderly (PASE) by adding the differences in occupational, leisure and household PA between males and females. In the results section on page 8 we added a sentence to explain the exposure time in physical activity between men and women.

   We have also moved the walking habits into the lifestyle section. We did interpret sex differences mostly due to exposure time in indoor and outdoor activities based on walking habits which in this analysis was significantly different in males and females, with men walking more city blocks compared to women. The walking habits variable has previously been shown to be very predictive of falls and is often consistent with the PASE mets score.
3. Page 10: It is preferred that authors discuss about the sex difference including variables in table 1 which showed significant sex difference.

We have considered the addition of further discussion related to the gender differences and have added a paragraph to the discussion on page 11 to highlight the gender differences identified in table 1 which may have explained the gender differences in fall rates.

Reviewer 2 comments (Dr. Yu Nofuji)

Minor Essential Revision

1. Abstract: Please write RR in full spelling when you use it for the first time.

Corrected.

Discretionary Revisions

1. Discussion First paragraph: The author mentioned that women are believed to experience a great number of falls in the introduction. Moreover, women had poor means scores in several physical characteristics in the present study. However, the overall fall rate of women was lower than that of men. How do you interpret this result?

This is a very interesting question, which warrants a separate more detailed analysis. As shown in our analysis, men and women had approximately equivalent rates of indoor falls while men had higher rates of outdoor falls than women. The higher rates of outdoor falls may explain the higher overall fall rates. Some recent studies suggested that greater gait speed is associated higher risk of falling, in particular, for outdoor falls. The greater gait speed of older may explain their higher rates of outdoor falls.