Reviewer's report

Title: Sleep related breathing disorders and gait variability: A cross-sectional preliminary study

Version: 2 Date: 6 May 2014

Reviewer: Wen-Ni Huang

Reviewer's report:

The comments and suggestions made by the reviewer have been well addressed, and the manuscript has improved significantly. There are several minor but essential issues that the authors should address.

Minor Essential Revisions

1. Abstract: The quadratic association between STV and AHI score does not conform to the hypothesis. It seems that the authors believe that the relatively low STV in high AHI score (>40) group is related to the few number of participants in high AHI score (>40) group, is likely an unusual finding. If this is the case, reporting the quadratic association in abstract may mislead the readers to think high AHI score is related to lower STV, especially when significant p-value was reported (p-value = 0.031). It is probably easier for the readers to capture the result if the statement “Ultimately, this association was found to be quadratic (P=0.031)” is removed from the abstract. However, if the authors do not believe that the relatively low STV in high AHI score (>40) group is an unusual finding caused solely by few number of participants, please provide more explanations for the finding.

2. Method (Gait assessment): “A total of 449 steps were respectively recorded and the number of strides ranged from 6 to 12 strides by participants”. This statement is not clear (12-24 steps per participant?). It is not necessary to report the total number of steps collected for all participants, but it is helpful if the author could provide the number of steps used for analysis for each participant in their response to the reviewer. The number of steps required for valid analysis of foot-switch system during over-ground walking has not been well established. However, Hausdorff (1997, 2001) used several hundred strides in his reports. Due to the small sample size in the study, the gait analysis results may not be as valid if the number of steps used for analysis was too low. If this is the case, the authors may consider including this in study limitation.

3. Method (Gait assessment): “Little is known about the test-retest reliability of STV but it has been recently reported that the immediate reliability of the CoV of stride time while single- and dual-tasking is slight to poor but better in cognitively healthy individuals than in those with cognitive decline”. Stance time variability is a common gait variability measure, and the reliability has been established using the computerized walkway, such as GaitMatII system. It is probably more
appropriate to report the reliability for STV measured by foot-switch system than reporting the differences in reliability between cognitively healthy and impaired individuals.

4. Method (clinical assessment): Please state the full name for QD2A questionnaire.

5. Discussion: I do not understand the statement “SRBDs are a cause hypertension mediated in part by chronic-intermittent hypoxia”. Please revise the sentence.

6. Figure 1: Misspelling (quadratic, not quadradic).

7. Professional editing is strongly recommended.

**Level of interest:** An article of importance in its field

**Quality of written English:** Needs some language corrections before being published

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.