**Reviewer's report**

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

**Version:** 2  
**Date:** 4 July 2014

**Reviewer:** Ane Johannessen

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Review of the manuscript «SLEEP-RELATED BREATHING DISORDERS AND GAIT VARIABILITY: A CROSS-SECTIONAL PRELIMINARY STUDY» by Celle S et al.

**Major comments:**

The study population is French healthy older community-dwellers free of clinically diagnosed sleep-related breathing disorders (SRBDs). At the same time, the aim of the study is to examine the association between SRBDs and stride-to-stride variability of stride time (STV). It is not clear to me why the study population should be free of SRBDs, does this not make the aim of the study almost impossible to address? The authors should thoroughly provide the rationale for excluding clinical diagnosis of SRBD in the study population in the introduction section and also discuss the implications of this exclusion in the discussion section.

Results from power calculations, if any, should be presented. I am concerned that the groups are too small for the statistical estimates to be reliable. In the adjusted model in Table 2, the only significant estimate (apnea-hypopnea index >30) has an extreme confidence interval (2.03, 337.13). Since this is in fact the result the whole paper revolves around, the reader can only conclude that the study is indeed very preliminary, and that more participants must be included in order to increase the power of the study. Anyway, a clear "dose-response" association between AHI and STV is apparent, which supports the existence of a relation between the two variables.

The results section is extremely short: one paragraph compared with the methods section of 4 pages! The authors should more than double their results section, and shorten the methods section accordingly.

**Minor comments:**

Page 4, background line 6: «adult aged 65 years and over» should be «adults aged 65 years and over».

Page 4, background line 15: «brain damage» should be replaced with a more clinically correct term.
Page 5, methods, participants paragraph line 9: «depressive symptoms» should be «depression symptoms». This is also the case on page 7 line 11.

Page 8, methods, statistics paragraph line 4: «Comparisons among groups» should be «Comparisons between groups».

Page 9, discussion, lines 5-6: «To the best of our knowledge this study is the first to identify a significant direct association between CoV of stride time and SRBD severity in healthy French older community-dwellers.» Is this the first study to identify this association in general, or only among this particular group of healthy French older community-dwellers?

Page 10, discussion, line 2: «animal and humans» should be «animals and humans». Line 4: «a decreased in STV» should be «a decrease in STV».

Page 11, conclusions, line 5: «treatments options» should be «treatment options».

Level of interest: An article of limited interest

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

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:

I declare that I have no competing interests