Reviewer's report

Title: Association of total daily physical activity with disability in community-dwelling older persons: a prospective cohort study

Version: 2 Date: 27 July 2012

Reviewer: Jeremy M Jacobs

Reviewer's report:

27th July 2012-07-27
Review: 'Association of total daily physical activity with disability in community-dwelling older persons: a prospective cohort study’
Raj C Shah, Aron S Buchman, Patricia A Boyle, Sue Leurgans and David A Bennett
BMC Geriatrics
Research article

General comments
This is a well written, clearly stated article which stems from a well known ongoing prospective longitudinal study.

The authors investigate the hypothesis that physical activity, as measured by actigraphy among functionally independent subjects, would be associated with preserved functional status over time. Existing evidence exists that increased self reported physical activity among older people is both cross-sectionally and longitudinally associated with improved functional status in comparison to less or non active people. The authors suggest that objective measurement of physical activity and movements throughout the day may provide further insight into understanding the relationship between physical activity and functional status. The rationale for the present study is that self reported activity may be an unreliable measure, susceptible to bias, as opposed to an objective measure of activity.

The authors indeed show that increased measured physical activity consistently was associated with preserved functional status (as measured by ADL), a finding which remained after adjustment for several common comorbidities. Interestingly, the relationship between measured physical activity and function was independent of self reported physical activity, suggesting that the two are not exactly the same.

Overall the study is clearly written, the methodology is sound, statistics are appropriate, findings clearly and logically presented, and the discussion is succinct, balanced and relevant to the findings.

Specific comments
Abstract: accurately presents the hypothesis and findings
Introduction: adequately justifies the rationale. The authors might expand upon the use of actigraphy among older /younger people.

Methods: a well known methodologically sound longitudinal prospective study of memory and aging. Some additional details concerning the actigraphy would be informative. How long? They mention up to 10 days- what determined the duration? Was there a bias in selecting patients who underwent actigraphy, since not all subjects had readings? Please clarify (minor revision).

Statistics: adequate and clear.

Results: clearly presented, logically ordered, data analysis appropriate and efficient. Tables are clear.

Discussion : well structured, fair flow, logical and in keeping with the findings. The authors could expand further on the difference between measured and self reported physical activity, and the implications which their findings have on promoting activity among older people. What, at the end of the day, has been gained by measuring activity? Since the finding seems to be independent of self reported activity, how might the two measures be incorporated together and translated into a more comprehensive measure of activity levels among the elderly?

Conclusion: The bottom line message is clearly stated. Again the differentiation between self reported versus measured physical activity might be stressed(.discretionary revision).

No ethical problems apparent.

The reviewer has no conflict of interest of any nature.

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

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests