Reviewer's report

Title: Using a single question to assess physical activity in older adults: A reliability and validity study

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Reviewer: Cheryl Addy

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Overall, this manuscript is a well-written analysis of two single self-report questions on physical activity. The two biggest concerns are the lack of generalizability and the response options for the absolute PA question. Other comments are related more to presentation and clarity of information.

Target population: The intended population is older Canadian veterans and their caregivers. This sample is already a blend of two different groups (the veterans are almost exclusively male, while the caregivers are mostly female). As an additional layer, one sample is selected based on having at least one modifiable fall risk factor while a second includes only subjects with no modifiable risk factors. If the data collected were the same this would be less problematic, but one major instrument for convergent validity was not administered to the latter group.

As a person who works more with comprehensive self-report measures of physical activity, I'll confess to a minor bias against single question items, but I do question the responses for the absolute PA measure. Is there a time frame for the question, e.g., typical activity level, activity level in past week or past month? In addition, the three allowed response are very discrete but there are many possible activity levels for which the best response is not clear. In addition, the authors reference responses corresponding to PA recommendations. This is true for vigorous but not moderate activity (recommendation is for most days or at least five days).

There are several details with the overall study design that should be clarified. The authors talk about 159 subjects from a recruitment sample of 3000. With a response rate this low, the authors need to address potential non-response biases. From careful reading, the VCA sample (n=95) seems to a subsample of the larger interRAI sample, but this should be clarified in methods section, not just in table footnotes. Also, the time line of the study is unclear. The authors mention a one-year trial. What is this trial? Later they refer to a follow-up telephone interview completed about five weeks later. If this is five weeks after completion of the trial, what is the impact of the trial on the results of this study. Were post-trial measures used for convergent and discriminant validity? Clarification of the time line for the various components of data collection might also inform the question above about time context of the PA questions (and the corresponding measures of physical function used in the validation analyses).
Results: The authors comment that the two subsets (referring to Table 2) are similar on most variables assessed. If I am correct in interpreting the VCA sample to be a subsample of the interRAI sample, this is to be expected. A more relevant comparison would be the separate VCA versus non-VCA samples since these represent two rather different subgroups of the original sample.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I declare that I have no competing interests.