Author's response to reviews

Title: How are falls and fear of falling associated with objectively measured physical activity in a cohort of community-dwelling older men?

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Version: 4
Date: 18 September 2014

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Editorial Comments

The authors have answered most of the questions raised by the reviewers. There are some minor points that should be addressed.

We thank the editor for their comment

The work on Fear of falling and falls has shown that there is a relevant gender effect. See for instance the work Kim Delbaere (not cited) on fear of falling and function. In this work replicated by others men often deny fear of falling even if they have high risk of falling (risk taking behaviour). This can be also found across the lifespan (vehicle accidents etc.). There is also literature (e.g. Rapp K) showing that fall recall bias is stronger for men. This gender aspect needs more emphasis. (e.g. in the limitation section)

We investigate a sample of men because unfortunately we do not have equivalent data available for fear of falling in women. The editor requests that we put more emphasis on this in the limitations as requested by the editor. The relevant section of the limitations section now reads:

Our sample is limited to men so our findings cannot be extrapolated to women. We know from previous research that the prevalence of falls is higher among women than men [32], that women are more likely to report fear of falling than men[14] and that women are more likely to inappropriately perceive themselves to be at high risk of falls than men [33] and that women have lower MVPA and higher levels of sedentary behaviour than men[34]. It is therefore important that
future studies explore whether the relationship between PA, FOF and falls varies by gender.

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In the limitation section the authors mention different form of bias. What is not mentioned is the reactivity bias while wearing sensors. It has been shown repeatedly that participants wearing sensors are more active.

In the limitations section we now add the following text.

“It is possible that there is some reactivity to wearing an accelerometer, ie becoming more active, we found that there was a small excess on the first day of accelerometer wear and estimates from subsequent days were very consistent. Indeed, we specifically accounted for this issue in our analyses by controlling for day order in statistical models.”

Final question: you used a triaxial but only used one axis for analysis? Why? Uniaxial analysis of movement is certainly not state of the art.

To our knowledge there are no published studies which examine the associations between triaxial accelerometer data and any health outcomes, uniaxial data are routinely used. This is in part because although the sensor technology permits collection of triaxial data, at present there are not good published cut-points for energy expenditure based on triaxial data for older adults (ie what the triaxial equivalent of <100 cpm for sedentary behaviour below 1.5 METS and > 1040 for moderate to vigorous physical activity above 3 METS). Nevertheless, we have done extensive analyses comparing our uniaxial and triaxial data and find that the uniaxial data correlates very highly with the vector magnitude calculated from the triaxial data (r=0.9). This gives us confidence that a very similar pattern of results are would likely to be seen, if we had reliable cut-points from studies of older adults available for use. Unfortunately cut-point data are not yet available and uniaxial data remain the most advanced and reliable option.