Reviewer's report

Title: Slower walking speed, poor balance and reduced gray matter volume predict falls in older adults with mild cognitive impairment

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Reviewer: Berneet Kaur

Reviewer's report:

The authors describe this as a longitudinal of subjects with MCI who were recruited from a larger RCT study of an exercise program. They had MRI and physical abilities measured at baseline and were followed for 1 year to see if they fell. One fall over the next year was sufficient to refer to the subjects as "fallers". MRI measures (specifically VBM) were used to see if gray matter was different between those who fell and those who did not. Those who fell had smaller frontal cortical volumes and had worse performance on some physical performance measures. The performance measures were adjusted for age and sex but it is not clear to me that the MRI measures were similarly adjusted.

I agree with the limitations that the author discussed in the manuscript, such as the fact that falls were self-reported in only 2 interviews. Subjects or their informants may have forgotten falls in the interim between interviews or may be biased in their reporting. I also agree that the definition of "faller" may not be adequate.

There is no description of how the 50 subjects in the referenced RCT were recruited into this substudy of 42 subjects. The authors assume that all MCI patients are otherwise similar, but cognitive performance and stage of disease can differ within the syndrome group of MCI. There is no accounting for cognitive performance and stage of disease, which is especially important given that some of the subjects may have progressed longitudinally to dementia over the course of one year. It may be that those who fell had also progressed cognitively in their disease process.

Level of interest: An article of limited interest

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