Reviewer's report

Title: Various Appendicular Skeletal Muscle Cut-Points with Different Research Definitions Associated with Health-Related Quality of Life in Korean Elderly: Data from KNHANES 2008-2011

Version: 2  Date: 9 July 2014

Reviewer: David Scott

Reviewer's report:

Major Compulsory Revisions:

1. The authors refer to "sarcopenia" throughout the manuscript yet have assessed muscle mass only. Current consensus definitions define sarcopenia as age-related declines in both muscle mass and function. For this reason I recommend referring to low muscle mass rather than sarcopenia throughout the manuscript.

2. I cannot see the relevance of reporting prevalence of low muscle mass defined by the SMI 20 definition. This definition uses the lowest 20% as a cut-point, therefore the prevalence of muscle mass is unsurprisingly 20%.

3. Why did the investigators focus only on the SMI definition (muscle mass adjusted for height squared). Recent research suggests that adjustment for body mass is more appropriate [e.g. adjustment for body weight (Janssen et al 2002), body fat and height (Newman et al. 2003) or BMI (Studenski et al 2014)] because low muscle mass is often underestimated in overweight/obese individuals using the SMI definition. It would be interesting to determine whether prevalence of low muscle mass is higher in older women in this study using one or more of these definitions, given that mean SMI was actually lower in younger women compared to older women - perhaps this is related to body size? There is a notable difference in body fat between younger and older women reported in Table 1.

4. You state that ethics approval was not required because the dataset is publicly available. I assume you are referring to ethics approval for this analysis, but I assume ethics approval was obtained for the original study from a Human Research Ethics Committee and informed consent obtained from participants? This should be clarified.

5. Tables 2 and 3 are confusing. They state that results are expressed as means, but I believe they are frequencies?

6. Your primary results regarding HRQoL are poorly described. What is the actual outcome that the odds ratios indicate for each domain of HRQoL. Do the odds express likelihood of some problems, extreme problems or another outcome? In the results section, you duplicate the data presented in Tables 4 and 5; this is not appropriate. However, you also fail to report the significant
association observed in Table 5, demonstrating a decreased likelihood of mobility problems in women in the SMI 20 group. This needs to be reported in the results and considered in the Discussion. The reporting in the Abstract and Results is unclear: "men with low SMI were significantly associated with increased odds ratios for the three domains of mobility...". I think what you are trying to say is that men with low SMI had significantly higher odds of poor mobility etc.

Minor Essential Revisions:

7. The conclusions are difficult to follow and could benefit from re-wording. In the abstract the reader is expected to understand the difference between how SMI 2SD and SMI 20 are obtained, even though this is not explained. Also "Proportions of people with sarcopenia depending on gender have the considerable discrepancy using the SMI 2SD value" - this is confusingly worded and I would also argue that just because a gender proportion is observed in an operational definition for a condition, this does not mean it is inappropriate - it might be that sarcopenia is more prevalent in men than women.

8. Introduction: "cut-off value for SMI in the diagnosis of sarcopenia is unknown". Many cut-points have been proposed and so it would be better to say there are conflicting recommendations.

9. Methods: How many participants did not perform DXA? What were the reasons and do they limit generalisability? Were all DXA scans performed on the same machine?

10. Methods: Please provide details on the Korean version of EQ-5D.

11. Were any physical activity data collected? If so, why was this not included as a potential confounder in associations between sarcopenia and HRQoL? If not, please include as a limitation.

12. Statistical analyses: Educational level and income were adjusted for but these are not described in the Methods.

13. Results: "SMI range" - I think this should be "mean".

Discretionary Revisions

14. From a personal standpoint, I question the benefit of examining prevalence of low muscle mass using different cut-points as it is generally not surprising that these will differ. Nevertheless, the finding that mean SMI is higher for older women in Korea is interesting and well discussed. However, I believe the most interesting component of your study is the associations with HRQoL. Unfortunately at present these findings are given little attention in the Results or Discussion, and I would recommend changing the focus of the paper to HRQoL rather than prevalence.

Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Needs some language corrections before being published

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