Reviewer’s report

Title: The biomechanical demands of standing yoga poses in seniors: The Yoga Empowers Seniors Study (YESS)

Version: 2 Date: 23 September 2012

Reviewer: Jessica Noggle

Reviewer’s report:

Overall, this paper is concise and well-written. It provides important preliminary insight into which standing yoga poses may potentially create risks in older adults with musculoskeletal conditions, and protection in otherwise healthy older adults. Results are generally supportive of conclusions, although there may be over-reliance on the EMG data which cannot be confirmed or refuted. Also, a broader context is needed for the yoga practices studied, noted in several comments below.

Major Compulsory Revisions (which the author must respond to before a decision on publication can be reached)

1. In the last paragraph of the discussion and perhaps the paragraph under methods/yoga program, a strong distinction needs to be made between the static holding of the Iyengar-based standing poses and the dynamic nature of these same poses when executed in a vinyasa-based flowing approach found in several other styles of yoga. Importantly, gentle flowing movements into and out of these standing poses – often without static holding – has been developed in other yoga programs for seniors, and may be safer than static holding for certain conditions or populations. Such movement-based yoga poses may in fact also be more appropriately compared to walking, which is a limitation pointed out by the authors. A comparison between static holding and dynamic movement of poses could be an important follow-up study.

2. In the second paragraph of the background, when making a comparison of yoga to exercise, please clarify that the comparison is to yoga poses not the whole of yoga practices. It is important to context yoga poses as one technique within a pantheon of practices that also include breathing, meditation, chanting, etc.

3. Were the one-legged standing balances measured using the dominant leg as the supporting leg, the non-dominant leg, or not specified? Seems like that could be important, since leg dominance was clarified for the other asymmetrical standing poses.

4. Please provide a table of the EMG data; while not included in statistical analyses, these data are referenced heavily in the discussion.

5. In the second paragraph under discussion/frontal plane JMOFs, considering the Tree data to suggest significantly greater knee abductor JMOF than peak walking JMOF seems like over-interpretation given the limitations of using...
walking JMOF in comparison to static poses. Moreover, the walking data is not used in statistical analysis. This point should be qualified much more. The Warrior II data, in contrast, seems more extreme and thus more clear on this point.

Revisions (which are recommendations for improvement but which the author can choose to ignore)

6. For all graphs, please consider adding minor ticks to the Y-axes to improve visual comparisons.

Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

7. In the second paragraph under methods/kinematics and kinetics (or in the methods/data analysis paragraph), please clarify which of the 2 trials on each subject was used for data analysis.

8. Throughout the text and figures, please be consistent in use of terms to denote placement of dominant leg – either trailing/leading or front/back.

9. In the JMOF figures, please indicate that averages are reported, for example in the title of each figure or on the Y-axis.

10. In the abstract/background, please clarify if this study is ancillary, part of the larger YESS study or the main YESS study.

11. In the methods/subjects paragraph, please provide a bit more detail about the safety exclusion criteria, specifically if subjects lacked OA, etc.

12. In the methods/study design paragraph, last sentence is a fragment.

13. In several of the JMOF sections in the discussion, please replace ‘those’ with ‘average peak JMOF’.

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

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.