Reviewer’s report

Title: Metabolic syndrome in mid-life women is associated with low physical activity and low cardiorespiratory fitness

Version: 1  Date: 2 February 2013

Reviewer: Patricia Hageman

Reviewer’s report:

Major Compulsory Revisions (3)

1) The stated purpose is to determine the relative and combined associations of PA and CRF with the prevalence of MS and it is meritorious to have CRF assessments completed using a symptom-limited maximal exercise test. The statistical analysis dichotomized the data for fitness based on tertiles. The values of the tertiles were not published, leaving no reference to the cut-off point to support the group as “unfit”. It would seem that the cut-score from the low tertile for your sample would not be congruent with the ACSM guidelines or the authors own recently published, but not cited, article on normative data for cardiorespiratory fitness which includes information about the 50th percentile for women of similar age as in this manuscript [Yu R et al. 2011, Cardiorespiratory fitness and its association with body composition and physical activity in Hong Kong Chinese women aged from 55 to 94 years, Maturitas, 69:348-353].

2) Please explain your use of the total index (TI) as opposed to the weighted total index (WTI) for the modified Chinese Baecke questionnaire in your analysis. In reviewing the cited reference which appears to be the work of the authors of this manuscript [31-Table 4], the TI was found to have poor correlation with mean energy expenditure from the 3 day diary for women and the WTI index had a significant correlation with mean energy expenditure from the 3 day diary for women. In reference [31-Table 6], the WTI appeared significant for mean energy expenditure per tertile of modified Chinese Baecke scores for women and the TI did not appear significant per tertile of modified Chinese Baecke scores for women. The reference [31] indicates that the WTI takes into account the estimated time spent and energy expenditure for each category of activity and data supported the validity of WTI as a measure of PA in Chinese women whereas the TI score did not.

3) The discussion includes relevant points; yet more information is needed throughout this section about the specific populations to which this study’s results are being compared. For example, you did cite page 14, lines 14-18 and again on page 16, line 7, that your findings are consistent with that of middle aged men (Caucasian?); however, on page 15, paragraph 1, you have not clarified the populations of the studies cited so that the reader can discern how your cohort results are similar to or different from other populations - which is important as related to the stated relevance of this work.
Minor Essential Revisions (3)

1) The authors indicate that the relevance and importance of their work is that the “combined contributions of PA and CRF with MS are unclear” and that “further study is required in Chinese” as the majority of works in this area are related to Caucasians. With that perspective, more information is needed in the introduction for background about whether the problems and prevalence of metabolic syndrome in the Chinese population is similar to that of Caucasian or other populations. Providing more information from your reference [6] and perhaps other references would be appropriate to strengthen your rationale for the importance of this work. [eg. Cai H, Huang J, Xu G, Yang Z, Liu M, et al. (2012) Prevalence and Determinants of Metabolic Syndrome among Women in Chinese Rural Areas. PLoS ONE 7(5): e36936. doi:10.1371/journal.pone.0036936]. This will strengthen their stated relevance of this work.

2) The authors note that age-defined fitness is lower in Chinese men and women compared with Caucasians which supports the importance of this work – however the authors did not reference findings from their recent 2011 work specific to providing normative values of cardiorespiratory fitness for women of similar age published in Maturitas; nor does the reader know how much lower the cardiorespiratory fitness for these women relative to ACSM guidelines or other standards. Addressing this will strengthen the rationale for the importance of this work.

3) The authors need to review their article throughout for minor editorial corrections. Examples include:
- p 5, line 16, “intakes” should read “intake”
- p 10, line 1, need period behind the word “assessment”
- p 15, line 18, insert verb “occur” between the words “may” and “through”

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

Quality of written English: Acceptable

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have research funding from the National Institutes of Health R01 NR 010589.