Reviewer's report

Title: Longitudinal change in energy expenditure and effects on energy requirements of the elderly

Version: 2 Date: 12 March 2013

Reviewer: Lara Dugas

Reviewer's report:

Overall comments
This manuscript presents longitudinal energy expenditure measurements in adults in their 8th and 9th decades of life and compares these to energy expenditure derived measurements using the DRI equations. Overall, the authors should be commended on their research; however this reviewer has several issues. Firstly the authors should be consistent with their use of “1st & 2nd study” vs. “substudy” 1 & 2. This reviewer found this to be distracting. While the data were collected as sub-analyses of a larger study, the authors should present the two time-points as baseline and follow-up. Since they are not presenting any data from the main study, they don’t have to refer to their study as the substudy. Secondly, the authors have framed their study as important for understanding energy requirements later in life, in order to prevent excess weight gain/obesity. However, they have not framed the scope of this problem adequately. What is the current obesity prevalence amongst this demographic? What is the public implication/impact of this study? Furthermore, they did not address the issue of diet; there is some consensus that as energy requirements decrease with aging, dietary intake decreases concomitantly. The authors should address this. Finally the background is missing many references; this should be addressed prior to publication.

Major Compulsory revisions

Specific comments

Abstract
1) Page 3, Line 3: remove from sentence “or not”

Background
2) Page 4, Line 1-3: References are missing
3) Page 4, Line 7: ref for WHO equations
4) Page 4, Line 8: ref for DLW
5) Page 4, line 11: remove parenthesis around TEE
6) Page 5, Line 1: refs for equations
7) Page 5, Line 8: Refs for Health ABC
8) Page 5, line 14: remove “or not”

Methods
9) Page 6, line 6: define EE
10) Page 6, line 10: change use of sub-study as it indicates that there was a further sub-study within the current study.
11) Page 6, line 13: complete “failure of isotope” to do what?
12) Page 6, line 18 & 19: fix inconsistencies “second” EE study and “substudy”
13) Page 7, line 9: which cohorts?
14) Page 8, line 15: calculated “using” IC
15) Page 9, line 9: Body mass, composition and medical history, socio-demographic?
16) Page 9, line 20: remove “to use”

Data Analysis
17) Page 10, line 7: not clear if this was performed for baseline or follow-up data
18) Page 10, line 8: inconsistent use of sex & gender.
19) Page 10, line 8: not clear if gender were used in the analysis, and if so should be an anova
20) Page 10, line 8: fix substudy
21) Page 10, line 6-12: it’s not clear if the data were evaluated for confounders and then the data adjusted for in the analysis, for e.g. both BMI and health status effects AEE, certain medications change RMR etc
22) Page 10, line 10: This reviewer suggests the authors re-analyse their data using a multiple linear regression analysis.

Results
23) The authors should present the anthropometric/body composition changes in the results section
24) Page 10, lines 14-18: Table 1. It is not clear why the authors chose to only present the DLW measurements from time 2?
25) Page 10, lines 18-22 Table 2. It is not clear why the authors did not include an unbalanced ANOVA to account for drop out and missing time 2 DLW measures, so that all the data could be used in the analysis.
26) Page 11, lines 18-23: What were the limits for the bland altman plots in both the men/women.

Discussion:
27) Page 12, line 5: ref for other study.
28) Page 12, line 8, same
29) Page 12, line 9-11: are these results in line with the other study? What about other studies looking at decreases from 60-70yr?

30) Page 12, line 11-15: The change in FFM was only significant in the men, the women decreased FFM by 0.5 kg, and therefore we would not expect their RMR to change?

31) It seems that if the women weren’t very active to begin with, so then their change would not be very great?

32) The authors make recommendations of improving FFM using strength training; the applicability of this is questionable at best. Using NHANES data it is known a very small % of the US population does any form of PA.

33) Page 13, line 24: would not use the word sarcopenia here. Also are the authors implying that it was only applicable to the men? Is it not a case of the men were more physically active than the women to start with? Please discuss.

34) Page 14, line 5-18: the authors conclude that women behave differently to men, whereas this may just be a reflection of the small sample size and low levels of PA to start with, please discuss.

35) Page 14, line 19-24: was the completed using the ANOVA?

36) Page 15, lines 7-19: what were the limits of agreement for the Bland Altman plot? Discuss the variation in the measurement please.

37) Page 16, lines 1-8: it seems that the cohort that completed the study were very different to those who could not and while is stated, these discrepancies should be further discussed in the results section.

Conclusion

38) Page 16, lines 10-17: this reviewer feels that the authors have over-stated their results, not providing enough evidence that lack of change in the women, was simply not as a result of their AEE levels being low to start with, compared to the men, who had higher levels of AEE at baseline. This should be addressed.

Figures 3: please include the limits of agreement.

**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:**

No competing interests to report.