



10th MEETING

1 December 2008, Conference Room 4, Aviation House

DRAFT MINUTES

Chairman: Professor Alan Jackson
Members: Professor Ian Macdonald
Dr Anthony Williams
Ms Stella Walsh
Professor Joe Millward

Secretariat: Dr Alison Tedstone (FSA)
Dr Peter Sanderson (FSA)
Ms Rachel Elsom (FSA)
Ms Emma Peacock (FSA)
Mr Andrew James (FSA)

Apologies:

Dr Anita Thomas
Professor Marinos Elia
Professor Chris Riddoch
Professor Andrew Prentice
Dr Sheela Reddy (DH)

Chairs' introduction and welcome

1. The Chair welcomed Members to the tenth meeting of the SACN Working Group on Energy Requirements.
2. Apologies were received from Dr Anita Thomas, Professor Marinos Elia, Professor Chris Riddoch, Professor Andrew Prentice and Dr Sheela Reddy.

Minutes from previous meeting (29 September 2008) - SACNenergy/08/min02

3. Members were invited to comment on the minutes of the previous Working Group meeting.

4. Members noted that the Secretariat had received an amendment to the minutes from Professor Millward, which was still to be included.

Action: Secretariat

5. The minutes were agreed as a correct record of the 9th meeting of the SACN Energy Requirements Working Group.

Agenda Item 3

PAL values: general validity, physiological ranges for the healthy adult population, and use in deriving energy requirements for the UK population

6. Following discussions at the 9th SACN Energy Requirements meeting Professor Millward introduced the paper he had prepared on physical activity level values (PAL).
7. Members noted that three large datasets had been investigated, the IOM DRI report, the OPEN cohort (Tooze et al 2007)¹ and the Beltsville cohort (Moshfegh et al 2008)² dataset.
8. Members noted that PAL is an index of TEE adjusted for BMR and should be independent of the factors which influence BMR i.e. weight, age and gender. In the past it has been argued that this is not valid as the regression of TEE on BMR does not go through zero, however it was noted that in the US DRI report dataset, and the OPEN and Beltsville cohorts dataset the intercept of the regression of TEE on BMR is zero or close to zero and it is therefore valid for this purpose.
9. Members noted that gender differences in the assignment of PAL values were not an issue, as there was little evidence for any influence of gender on PAL. In the 1985 WHO energy requirements and COMA 1991 dietary reference values report separate PAL recommendations were set for males and females. However, in the two most recent reports 2004 FAO/WHO/UNU and IOM DRI report gender was not separated, as there was no evidence to support separation.
10. Members were informed that there was little evidence for any difference in the range of PAL values observed within the overweight or obese, relative to normal weight groups. In datasets where BMI was separated (below 25, 25 and above 30), there was little difference in the range of PAL.

¹ Tooze Janet A, Dale A Schoeller, Amy F Subar, Victor Kipnis, Arthur Schatzkin, and Richard P Troiano Total daily energy expenditure among middle-aged men and women: the OPEN Study. *Am J Clin Nutr* 2007;86:382–7.

² Moshfegh Alanna J, Donna G Rhodes, David J Baer, Theophile Murayi, John C Clemens, William V Rumpler, David R Paul, Rhonda S Sebastian, Kevin J Kuczynski, Linda A Ingwersen, Robert C Staples, and Linda E Cleveland The US Department of Agriculture Automated Multiple-Pass Method reduces bias in the collection of energy intakes *Am J Clin Nutr* 2008;88:324–32.

11. Members noted that in the Black 1996³ review the issue of accuracy of individual PAL values when using both measured and predicted BMR had been addressed and this had been further examined. There is an error of 0.3 PAL units when using measured BMR and 0.4 PAL units when using predicted BMR. Therefore only limited attention should be given to individual values.
12. Members noted that there were the following potential sources of error with factorial calculations of PAL made from PAR or MET values:
 - Compensatory reduced activity following periods of high activity, which could decrease the PAL by up to 0.3 units
 - Non exercise activity thermogenesis/spontaneous physical activity (NEAT) which may increase PAL by up to 0.4 units, and this varies between individuals.
 - Dietary thermogenesis could increase PAL by 10% of energy intake
 - Post exercise oxygen consumption (EPOC) could increase PAL by 15%
13. A Member queried whether age was a factor. It was noted that the change with age was significant, however it was small and therefore statements could be made that related to all ages.
14. Members noted that it was difficult to predict/identify appropriate PAL values for an individual or population group. The SACN database of DLW studies and any other published information had been closely scrutinised to identify the overall range likely to be observed within the population. A PAL value of 1.38 appeared to be the lowest value reported in the studies with a survival PAL of 1.27. The upper end of the range of PAL appeared to be 2.5, in populations where high levels of physical activity were maintained (i.e. athletes in training and soldiers).
15. Members questioned the reasons for variability in individual values noting that genetics could be one factor. Members were made aware that genotypic and phenotypic issues were covered in the draft report, noting that it was difficult to predict what contributed to the variability, as there was still considerable discussion in the literature, which had not been resolved.
16. Members noted that there was currently no significant evidence to justify distinguishing between different ethnicities.
17. Members discussed using the DLW database to identify distributions of PAL values and taking the median PAL to calculate the EAR. It was noted that only one PAL value would be recommended, as in practice people/individuals do not work out their daily energy needs. The recommendation would need to capture that the amount of energy an individual requires is hard to define.
18. Members agreed that just the OPEN and Beltsville study datasets should be used as the DRI report included athletes and was not representative of the general UK population.

³ Black AE, Coward WA, Cole TJ, Prentice AM. Human energy expenditure in affluent societies: an analysis of 574 doubly labelled water measurements. *Eur J Clin Nutr*, 1996; 50: 72-92.

19. The Chair thanked Professor Millward for preparing the paper investigating PAL values and bringing clarity to the issue.
20. At the 9th Working Group meeting, the approach used to calculate mean PAL values from the DLW dataset was questioned and it was agreed that this would be investigated further by the Secretariat.
21. Members discussed the tabled paper that had been prepared by Andrew James FSA Statistics branch, which discussed the difference in taking the mean PAL and the mean of the ratio.
22. Members noted that the most appropriate way to calculate a value to represent average PAL was to calculate the average of the individual PAL values, as each data point had the same influence on the overall value.
23. Members agreed that this had been considered and agreed as an appropriate approach for the purpose it was engaged in.

Agenda Item 4

SACN Energy Requirements Working Group Draft Report

24. The Secretariat introduced the draft report, explaining that Members comments from the last meeting had been incorporated into the draft, however information on adults had been removed and would be redrafted in light of Members comments and discussion during agenda item 3.

Chapter 2 - Introduction

25. Members noted that the introduction should contain information from previous expert reports before describing how SACN had looked at the issue.
26. Members agreed that the earlier discussion on NEAT should be included in the introduction.

Action: Secretariat

27. Members discussed the use of the term energy balance/imbalance. Positive energy balance is required for growth and pregnancy, therefore the use of energy imbalance is not appropriate. It was agreed that three states have to be recognised, for example when energy is balanced, when energy is in positive balance i.e. during growth and pregnancy and when energy is in positive balance, but is not wanted. A brief statement capturing the different types of energy balance should be included in the draft report to ensure clarity.

Action: Secretariat

28. A number of small changes to the report were agreed.

Action: Secretariat

Chapter 3 – Approach used to derive energy dietary reference values

29. It was agreed that it would be useful to discuss the inaccuracies in the DLW method and its validity in this chapter in addition to the annex.

30. Members noted that this chapter would be redrafted to include information and discussions from the earlier agenda item 3. The chapter will also include information on the steps taken to reach this point, for example the previous work carried out on producing regression equations for adults. It was agreed that the regression equation approach was practical, however revealed wide variation, which did not properly capture age, weight and gender. It would also require explanation as to why the DLW dataset PAL of 1.72 was not representative of the UK population.

31. Members noted that the regression equations approach would be adopted for children as there were a larger number of studies. This would be explained in the draft report.

Action: Secretariat

Chapter 4 – Energy Requirements

32. The following specific points were raised:

- The term formula fed should be replaced with breast milk substitutes.
- Page 35, table 18, some of the columns had moved.
- Paragraph 119 needs to be repeated at the end of the chapter.
- Paragraph 124, penultimate sentence requires rewording.

Action: Secretariat

33. It was agreed that Dr Anthony Williams would read through the sections on infancy, children and pregnancy and lactation and provide comments to the Secretariat.

Action: Dr Anthony Williams

34. Members discussed the use of the terms ‘reference’ and ‘recommendation’ and the importance of referring to the correct term in the draft report.

35. Members noted that the adults section would be rewritten in light of the earlier discussions.

Action: Secretariat

Chapter 5 - Summary and Conclusions

36. Members noted that the summary and conclusions would be amended to reflect the meeting's discussions.
37. Members were asked to leave their hard copies of the draft report with any comments they had made in the chapter with the Secretariat.
38. Members noted that a glossary of terms will be included in the final draft of the report.

Next Steps

39. The Working Group noted that the report will go to the main SACN committee at their meeting in February 2009. The Secretariat will trawl for a Working Group meeting date following the meeting in February to discuss any comments raised by SACN before the draft report goes out for consultation.

Action: Secretariat

40. The outcome of the discussion of the meeting would be sent to the Working Group members that were unable to attend the meeting.

Action: Secretariat

41. Members noted that the next Working Group meeting was due to take place on 30th January 2009.
42. The Chair closed the meeting and thanked the Secretariat and Members for the work on the report.