



For discussion:

Agenda Item: 4

I. Energy intake and expenditure data from the NDNS adults 19-64 years

Additional information detailing the relationships between the energy intake and energy expenditure data in the NDNS, following discussions of paper SACN/energy/05/09 at the September 2005 meeting.

II. NDNS and HSE energy expenditure data comparison

Preliminary analysis to be tabled at the meeting.



Scientific Advisory Committee on Nutrition

Energy intake and expenditure data from the NDNS adults 19-64 years

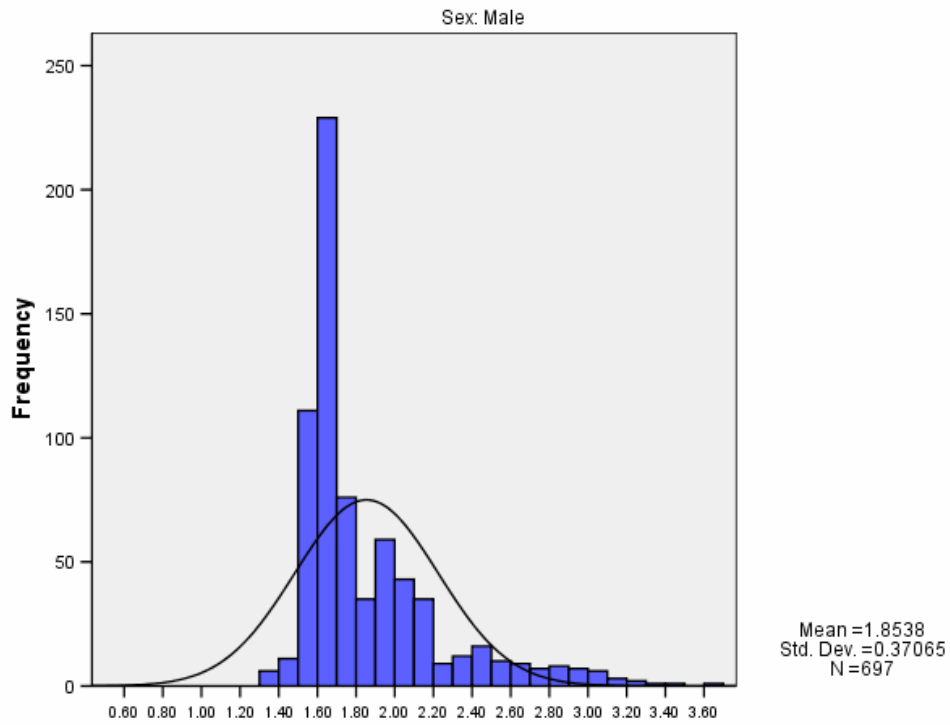
Background

- 1 SACN/energy05/09, discussed at the September meeting of the sub-group, presented data from the NDNS adults 19-64 years (2000/01) comparing reported energy intakes with estimated average requirements (EAR) for individuals using the Schofield equations to estimate BMR and seven-day activity records to derive PAL values. Mean PAL values were 1.8 for men and 1.7 for women. Reported energy intakes were about 70% of the EARs on average.
- 2 SACN/energy05/09 also presented data from the validation study carried out prior to the main adult survey on a small sample of 66 adults. This study included doubly labelled water (DLW) assessment of energy expenditure as well as dietary and activity records. Two methods were used to derive PAL values:
 - i) from seven-day activity records
 - ii) from energy expenditure derived from DLW measurements (PAL = TEE / BMR)Mean PAL values derived by the two methods were similar at 1.8-1.9 for men and 1.7 for women.
- 3 The Committee asked for additional information in order to help understand the relationships between the energy intake and energy expenditure data in the NDNS.
 - the distribution of PAL values both in the main survey and the doubly labelled water study
 - correlation between the PAL values derived from activity records and those derived from DLW measurements of energy expenditure in the same individuals in the validation study
 - Heights and weights of the validation study population compared with the main NDNS
 - Energy intake as a % of EAR for the validation study population
- 4 The Committee also asked for a comparison to be made between physical activity levels assessed in the NDNS 2000/01 with levels assessed in the Health Survey for England. A preliminary analysis will be tabled at the meeting.

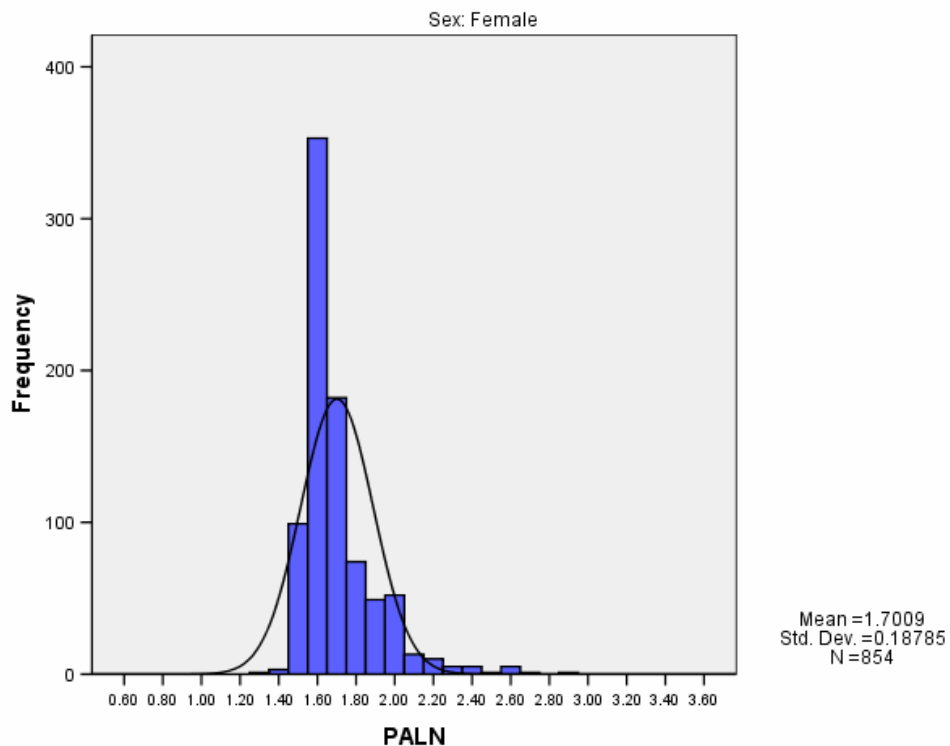
Results

- 5 Results of analyses from the validation study should be interpreted with caution as the sample size is very small (n=66).
- 6 Figures 1a and 1b show the distribution of PAL values for men and women derived from seven day activity records in the NDNS adults 2000/01. The majority of the sample had PAL values between 1.6 and 1.7.

Figure 1a: Distribution of PAL values for men in the NDNS adults 2000/01



Figu



7 Figures 2 and 3 show the distribution of PAL values in the doubly labelled water validation study. Figure 2 shows PAL values derived from doubly labelled water energy expenditure data (PAL = TEE / BMR). Figure 3 shows PAL values derived from the seven-day activity records.

Figures 2 and 3 : Distribution of PAL values from validation study DLW measurements (men and women)

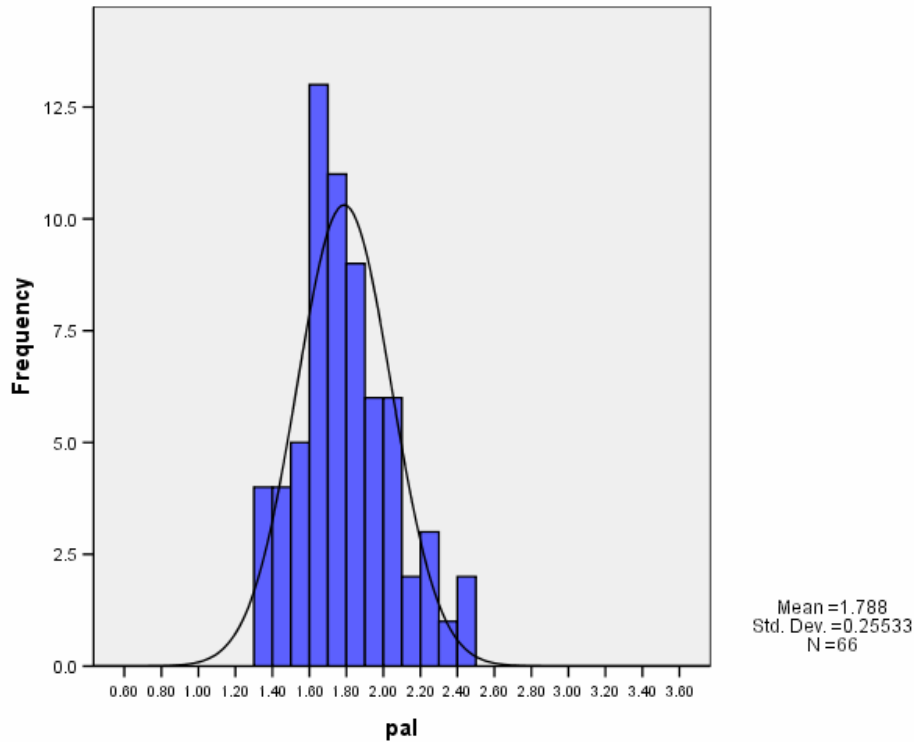
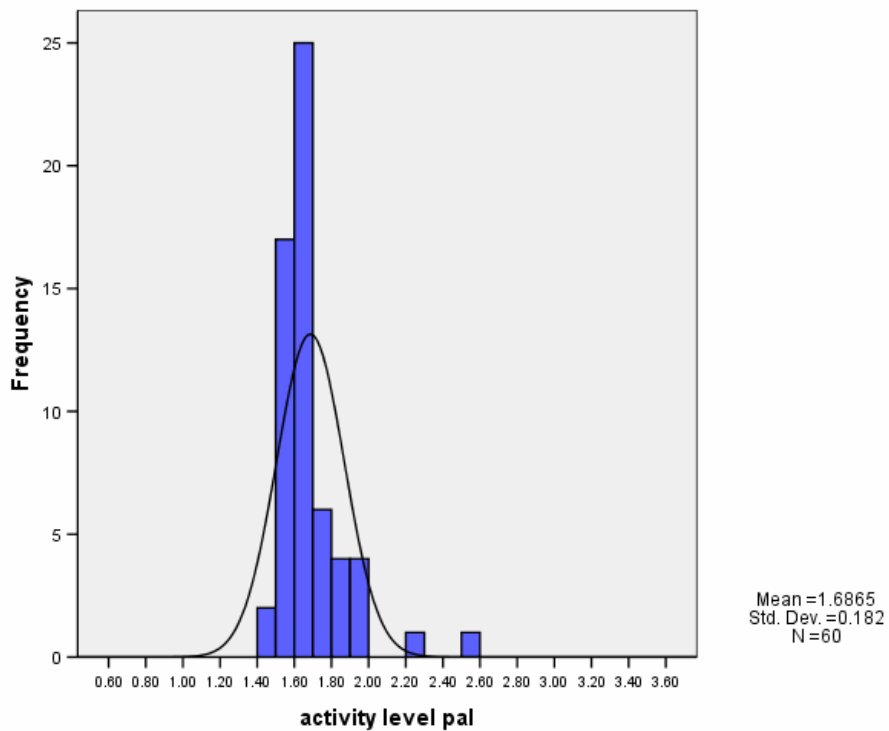


Figure 3: Distribution of PAL values from validation study activity records (men and women)



- 8 Figure 4 plots the PAL values derived from DLW measurements and from activity records for the 60 individuals who took part in all components of the validation study. Table 1 shows the correlation between the PAL values. The correlation is weak and does not reach statistical significance.

Figure 4: Plot of PAL values derived from activity records and energy expenditure for individuals in the doubly labelled water study

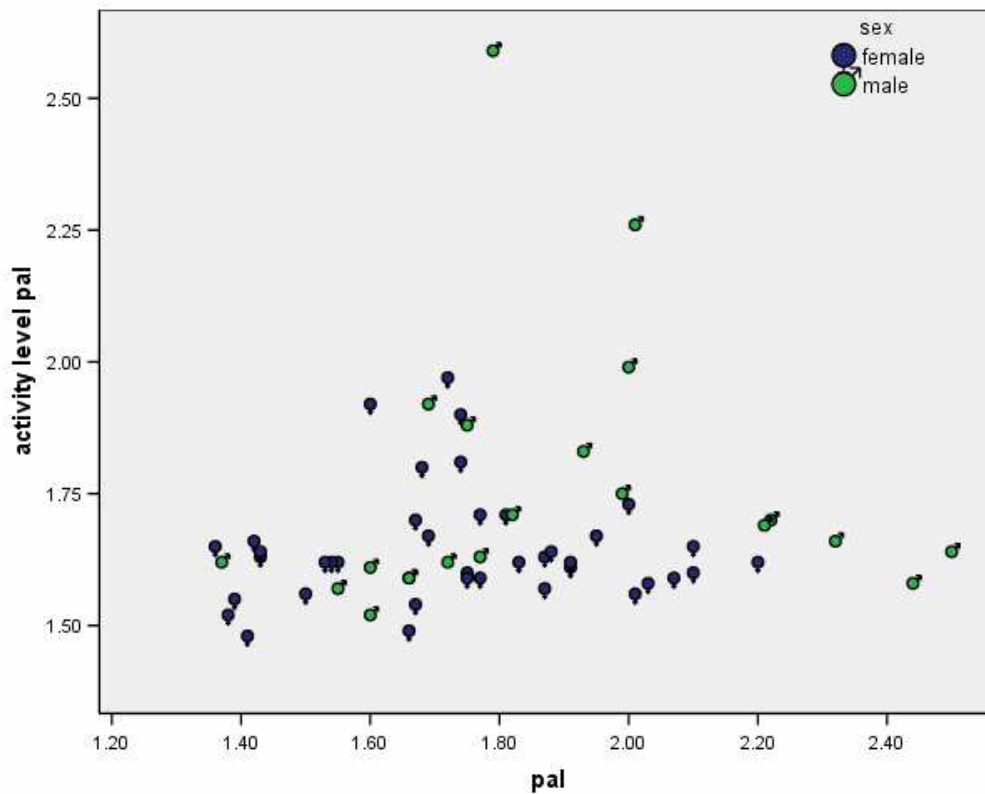


Table 1: Correlation between activity PAL and DLW PAL

Correlations			
		activity level pal	pal
activity level pal	Pearson Correlation	1	.122
	Sig. (2-tailed)		.354
	N	60	60
pal	Pearson Correlation	.122	1
	Sig. (2-tailed)	.354	
	N	60	66

9. Tables 2 and 3 show reported energy intakes in the validation study as a percentage of EAR where EAR is calculated using activity record PAL (Table 2) and DLW PAL (Table 3). Energy intake as a % of EAR is slightly higher when EAR is based on activity record PAL.

Table 2: Average daily reported energy intake as a percentage of EAR in the doubly labelled water validation study using EAR values based on individual BMR and PAL values derived from activity records

	Mean energy intake (MJ)	Intake as % EAR	Number of subjects
Aged 19-64 years			
Men	11.16	84.2%	23
Women	7.80	78.3%	43
All	8.97	80.4%	66

Table 3: Average daily reported energy intake as a percentage of EAR in the doubly labelled water validation study using EAR values based on individual BMR and PAL values derived from energy expenditure data

	Mean energy intake (MJ)	Intake as % EAR	Number of subjects
Aged 19-64 years			
Men	11.16	78.3%	23
Women	7.80	75.6%	43
All	8.97	76.5%	66

10 Tables 4 and 5 shows the heights and weights of subjects in the doubly labelled water study compared with the NDNS adults 2000/01

Table 4: Height of participants in the doubly labelled water study and main NDNS adults

	Study	No of subjects	Mean	Min	Max	Std Dev
Men 19-64	DLW	23	179	171	188	4.05
	NDNS	697	176	152	195	6.7
Women 19-64	DLW	42	163	149	178	7.53
	NDNS	854	162	136	182	6.2
All 19-64	DLW	65	169	149	188	10.1
	NDNS	1551	168	136	195	9.5

Table 5: Weight of participants in the doubly labelled water study and main NDNS adults

	Study	<i>No of subjects</i>	Mean	Min	Max	Std Dev
Men 19-64	DLW	23	84	66	101	11.12
	NDNS	697	84	50	146	14.0
Women 19-64	DLW	43	70	53	113	12.44
	NDNS	854	69	40	200	15.1
All 19-64	DLW	66	75	53	113	13.8
	NDNS	1551	76	40	200	16.4