

ENERGY EXPENDITURE AND FOOD INTAKE OF MILITARY RECRUITS

B.L.L. MORRISSEY, C.H. FORBES-EWAN, G.C. GREGG and D.R. WATERS

In their continuing efforts to provide adequate nutrition for service personnel, the Australian Defence Force (ADF) needs to know the energy requirements of a broad spectrum of specific, military occupations. Food entitlements for the ADF are based on the NH and MRC's (1984) recommendation of 13,200 kJ (grade 2 level of activity). This follows the identification of infantry work as a grade 2 activity by Thomas and Corden (1970).

Army and Navy recruits have been chosen as groups likely to have a high physical workload. The subjects were Naval recruits midway through training and four platoons (PL) of Army recruits, two in their second week of training, one in week eight and one in week 10 (field training) of a 12 week course.

Energy expenditure (EE) over seven days was determined by two methods (Acheson et al. 1980); (1) the factorial method using trained observers and reference to a data base of published energy values for various activities and (2) for the Navy group and two Army platoons the food intake/energy balance technique using body fatness assessment by skinfold thickness. Food intake (FI) of the Navy group and two Army groups was determined concurrently with the EE study and included all food eaten in dining halls (by direct weighing) and taken outside in canteens (subject diaries). The Table shows body fat (initial and final), FI and EE by intake/balance (Int/Bal) and factorial (Fac) methods, expressed in kJ/person/day.

Group	Body Fat (kg)		FI (kJ)	EE (kJ)	
	Initial	Final		Int/Bal	Fac
Navy	13.91	14.22	15610	13960	14050
Army Week 2, (PL No.4)	12.55	11.69	17030*	21580	16930
Army Week 2, (PL No.14)	10.35	10.33	17030*	17140	16800
Army Week 8, (PL No.16)	-	-	-	-	16410
Army Week 10, (PL No.4)	-	-	CRP**	-	18220

* FI for Nos. 4 and 14 platoons were measured together.

** Recruits in the field ate combat ration packs which yield up to 14000 kJ/day.

These results show that whilst the EE of recruits is far in excess of grade 2 activity, the present system of static mess feeding within the ADF is able to cope with their needs. Further, it can be seen that results gained for EE using the intake/balance technique do not consistently agree with results from the factorial method for a study of such short duration.

ACHESON, K.J., CAMPBELL, O.G., EDHOLM, O.G., MILLER, D.S. and STOCK, M.J. (1980). *Am. J. Clin. Nutr.* 33 : 1155.

NH and MRC (1984). 'Dietary Allowances for use in Australia' (Aust. Govt. Publ. Service: Canberra).

THOMAS, S. and CORDEN, M. (1970). 'Table of Composition of Australian foods' (Aust. Govt. Publ. Service: Canberra).

Materials Research Laboratory - Tasmania, Defence Science and Technology Organisation, Scottsdale, Tasmania, 7260.