

## ENERGY EXPENDITURE OF SPECIAL FORCES SOLDIERS

C.H. FORBES-EWAN, D.R. WATERS, R.A. COAD, M.B. SAWYER\* and  
W.A. COWARD\*

The Australian Army uses a nutritionally-based set of ration scales to determine food entitlements when soldiers are fed freshly-cooked food. The quantity of food made available varies according to activity level but will not normally exceed 17 MJ per soldier per day. These scales have recently undergone a series of revisions based on the results of energy expenditure (EE) studies conducted on soldiers in a wide range of training and operational situations. EE up to 19 MJ per man per day have been reported (Forbes-Ewan 1990).

Anecdotal evidence from the Special Air Service Regiment (SASR), an element of the Army's Special Forces (SF), suggested that some SF training and operations may involve EE levels that far exceed the current maximum food entitlement. For example, soldiers were reported to lose up to 10 kg of body weight during the three-week SASR Selection Course.

To assess the nutritional requirements of SF soldiers, an EE study was conducted on a cohort of 12 volunteers attempting the SASR Selection Course. EE was determined over six days using the multi-point doubly-labelled water technique (EE<sub>DLW</sub>) (Coward and Cole 1992). A factorial estimate of EE based on a record of activities of the cohort for the period day two to day five was also conducted (EE<sub>FAC</sub>). Anthropometric measurements included initial and final weight and body fat from skinfold thicknesses (Durnin and Womersley 1974). Basal metabolic rate (BMR) of each subject was estimated by the method of WHO (1985).

	Wt (kg)		% Fat		Fat mass (kg)		BMR (MJ/day)	EE <sub>DLW</sub> (MJ/day)	EE <sub>FAC</sub> (MJ/day)
	Init.	Final	Init.	Final	Init.	Final			
Mean	77.4	74.3	15.4	12.8	12.1	9.7	7.78	28.0	23.90
SD	6.8	6.0	4.0	3.0	3.8	3.4	0.44	4.9	-

EE by both the DLW and factorial methods was greater than three times BMR. To our knowledge this is the highest expenditure ever reported for servicemen. It was concluded that the EE of SF soldiers far exceeds the Army's current maximum food entitlement, and that supplementary feeding in the form of high carbohydrate rations should be made available to SF soldiers engaged in extremely active operations or training.

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Defence Food Science Centre, Defence Science and Technology Organisation, Scottsdale, Tasmania 7260 \*Dunn Nutritional Laboratory, Downhams Lane, Milton Road, Cambridge CB4 1XJ United Kingdom