

MN4

ENERGY REQUIREMENTS: THE FACTS

Energy intake is the amount of energy (calories) consumed as food and drink.

Energy expenditure is the amount of energy that the body uses each day to maintain normal body functions, to undertake physical activity and to digest food.

To sustain physical training and to maintain your body weight your energy expenditure must be **balanced** by your energy intake.

The amount of energy you need depends on: Your age, body size and gender, How active you are in your leisure time, Your physical activity level at work and If you are recovering from illness or injury.

How to lose body weight: The basics

To lose body weight you need to use more energy than you eat and drink.

Physical activity increases energy expenditure, but that does not mean you have to push yourself to exhaustion.

For best results you should combine reducing energy intake from food and drink, with using more energy by being more active. For more information please refer to the 'Weight Management', 'Physical Activity' and 'Get Active' DNAS factsheets (DNAS PH11, PH12 and PH20).

BASAL METABOLIC RATE (BMR)

- > BMR is the amount of energy that your body uses at rest to maintain normal body functions.
- > BMR is influenced by body size and body composition, particularly with respect to the amount of muscle an individual has.
- > The amount of calories you need per day is calculated from your BMR and the energy needs of your daily physical activity (work and exercise).
- > You can calculate your BMR in kilocalories (kcal) per day using the equations below:

Males	18-29 years	$BMR = 15.1 \times W + 692$	(W = body weight in kg)
	30-59 years	$BMR = 11.5 \times W + 873$	
Females	18-29 years	$BMR = 14.8 \times W + 487$	
	30-59 years	$BMR = 8.3 \times W + 846$	

For example, if you are a 20-year-old female weighing 61 kg, your BMR is equal to your body weight multiplied by 14.8 ($14.8 \times 61 = 903$), added to 487 ($903 + 487 = 1390$). Your BMR is 1390 kcal per day.

PHYSICAL ACTIVITY LEVEL (PAL)

- > PAL is a means of estimating your daily energy expenditure (EE) and is expressed as multiples of BMR. Where **EE = BMR x PAL**
- > You can calculate your PAL using the table below by finding that activity level that best describes your job and how active you are during your leisure time. Compare your EE with the examples provided below:

Level of activity at work	Level of activity during leisure time	PAL	Energy Expenditure (kcal)	
			Male 82kg, 18-29y	Female 61kg, 18-29y
Mainly sedentary	Non-active	1.4	2700	1950
Light occupation	Moderately active	1.5	2900	2100
Heavy occupation	Very active	2.0	3900	2800

ENERGY REQUIREMENTS OF MILITARY PERSONNEL

- > Recent studies have examined the energy requirements of military personnel in a variety of roles using: accelerometers to measure movement, task analysis questionnaires to calculate PALs and food diaries to measure dietary intake.
- > The energy requirements of personnel during military training, during Special Forces training/ whilst on arduous exercise, on ships, and on operations (patrolling and non-patrolling) in comparison with personnel in a sedentary office role is presented below.

Role	Energy Expenditure (kcal)	
	Male	Female
Sedentary*	2500	2000
On ship	3000-3500	2300-2800
On operations		
- Patrolling	3500-4000	No data
- Non-patrolling	3000-3500	No data
Military training	3000-4000	2500-3500
SF training/ on exercise	4000-5000	3500-4500

* from general population guidelines

ENERGY REQUIREMENTS: PRACTICAL TIPS

- > **Balance your energy intake** to your energy needs over a week rather than trying to match your energy requirements every day.
- > You may need to eat more on less active days if you have not eaten much on very active days (e.g. patrolling days on Land or during Operational Sea Training on ships).
- > **Shift work** will alter your eating patterns. Try to consume the same amount and types of foods as you would normally; avoid excess energy consumption that would potentially lead to body weight gain over time.
- > Get up from your desk and take a **brisk 10-minute walk** around camp or on deck at least twice a day. Not only will this use a few more calories, it will also improve your mood and concentration.

FOR MORE INFORMATION

- > Defence Nutrition Advisory Service (DNAS): NAVYINM-EMSDNAS@mod.gov.uk