



Duke of Edinburgh's Award Romsey Baptist Church Open Award Centre



Expedition Catering - 26/5/08

Expedition catering is about getting the greatest amount of energy into the lowest weight and bulk. Catering for a 2 or 3 day lightweight camping trip is different from cooking at home or camping on holiday when you can get all your supplies from the supermarket by car.

Firstly you will need more calories than you are probably used to. This will not make you fat as you will burn up the energy by walking with a rucksack.

Secondly you should eat less fibre than the recommended daily amounts as fibre is very bulky to carry and is also very filling which means you will not want to eat the calories your body will need to keep the energy levels up for the 2nd and 3rd days.

Thirdly you will not be able to eat the recommended daily amounts of fruit and vegetables as these are also often heavy, bulky and/or easily damaged in a rucksack.

None of this will be bad for you, in fact you will almost certainly finish the trip fitter than you started. It is possible to eat a healthy diet whilst backpacking but the need for a balanced diet becomes more important as the length of the expedition increases.

The Importance of good Nutrition

Good nutritious meals are important to provide you with the energy you need for any physical activity. Award requirements are that you must have a minimum of one cooked meal each day of the expedition.

Most Participants will use considerably more energy during expeditions than they would normally (3-5,000 calories a day). It is important that this is replaced to guard against the onset of exhaustion and/or exposure. The morale boosting properties of a hot, tasty meal after a long day are significant.

This can be achieved by increasing the amount of carbohydrates (sugars and starches) and fats, and by using dehydrated food. This may appear contrary to modern dietary advice but no harm will result over the duration of a venture as all the energy will be burnt up and participants will be healthier at the end of the journey than the beginning.

Expedition Food

Expedition food is a compromise between weight, energy, taste and convenience. Take foods which:

- a. Contain the greatest amount of energy for the lowest weight and volume (usually freeze-dried or dehydrated)
- b. You and your "buddy" will enjoy
- c. Are simple to prepare –one pot if possible.
- d. Have a short cooking time to save fuel.
- e. Will keep in hot weather.

Consider "shelf life". If you are carry food around for two days in a warm rucksack it should be able to survive this without going off or getting crushed beyond recognition.

When carrying food, tins or foods with high water contents should be avoided, they are very heavy. The exceptions to this are Corned beef, luncheon meat or fish (tuna, sardines or pilchards) as the high fat and oil content give them a very high energy content.

Energy Requirements

	Male 15-18	Female 15-18	Male 19-50	Female 19-50
Daily Energy Requirements (DER) in k/cal	2,755	2,110	2,550	1,940
DER DoE Expedition (*) in k/cal	3,030	2,321	2,805	2,134

Plus 10% for each of the following

- Carrying a full rucksack (*)
- Every 500m ascent
- Winter conditions

Note: These energy requirements are only guidelines and some individuals will need more and some will require less energy to perform the same task.

Energy Giving Nutrients

Carbohydrate (3.75 kcal / g)	Fat (9 kcal / g)	Protein (4 kcal / g)
Major source of fuel to skeletal muscle used for walking	Initially carbohydrate used as fuel for walking then a mixture of carbohydrate and fat.	Around 10% of energy used during exercise comes from protein.
60-65% of total energy intake should come from Carbohydrate.	Diet greater than 35% of total energy intake is harmful to health in the long term.	Generally 10-15% of total energy intake should come from protein.
<u>Carbohydrate Stores</u> Glucose within blood 50kcal Liver glycogen store 250-300 kcal Muscle glycogen store 400-500 kcal Total Energy Store = 700-850 kcal	If glycogen stores become depleted, fatty acids alone cannot provide sufficient fuel and fatigue will become apparent. Emphasis in a walkers diet should be on foods containing carbohydrate and only a small amount of fat.	Protein needed for growth and repair, including haemoglobin and immune proteins

Vitamins and Minerals

A deficiency in any vitamin would be a limiting factor during exercise as many of the water soluble vitamins are involved in energy release. In expeditions of less than 2 weeks it is unlikely that a vitamin deficiency would develop.

Fibre

Dietary fibre is important to every day health as it facilitates normal gut function and prevents the bowel becoming sluggish resulting in constipation and diverticular disease.

During an expedition it may be necessary to reduce the amount of fibre eaten as it is bulky and leaves the walker feeling full. Normally 30g of fibre is recommended but it would not be harmful to health if this was reduced for a short period of time during an expedition.

Menu Planning

Balanced Diet = Carbohydrate 60-65%, Fat 25-30%, Protein 10-15%

Energy Intake

In general most walkers prefer a substantial meal in the evening providing up to 50% of their requirements. In general it is not good practice to follow a routine of stuff and bust at the end of each day, the energy intake should as far as possible be spread out during the day. Ideally Breakfast should be eaten at least an hour before setting off. There is a hillwalkers saying that "when breakfast ends lunch begins and there is some truth in this as energy requirements are high and small amounts of food have to be eaten frequently to enable these requirements to be met.

50% of the day's energy should be consumed between breakfast and the evening meal. When planning a menu this should be kept in mind, with this food being high in carbohydrate such as dried fruit mixes, cereal bars or fruit cake. Hot drinks and cooked meals are best kept to breakfast and the evening meal.

Distribution of energy intake = Breakfast 20%, During the Day 50%, Evening Meal 30%

Adapting the Menu

When planning the Expedition Menu it is important to be aware of any special dietary requirements of any group member. Equally likes and dislikes need to be taken into account as some people, particularly youngsters, will prefer to go hungry rather than eat something they don't like.

Refuelling

Carbohydrate is an important source of fuel for skeletal muscle and the diet should remain high in carbohydrate throughout the expedition. Carbohydrate can be taken on the move to help top up carbohydrate stores and snacks such as dried fruit, cereal bars and chocolate are ideal for this throughout the day. After walking the body refuels glycogen most effectively in the 2 hours after exercise stops. It is important that muscles are refuelled following exercise particularly if the party is to walk on consecutive days.

Fluid Requirements

To remain healthy the average 70kg man requires 30ml/kg per day (i.e. 2.1 litre/day). During exercise and/or hot weather this increases as much as three fold (i.e. 2.1litre/day).

Water absorption in the body is an energy consuming process and the addition of glucose, sodium and chloride will assist this process. Isotonic sports drinks work on this principle.

Never wait until you are thirsty while out walking before you drink. Thirst is a poor indicator of the need to drink and at this point 1-2% of body weight may already have been lost as fluid.

Fluid Requirements = 2 to 6 litres of water a day. At least 1 litre of water should be carried with more on hot days. Alternatively the group should be clear about arrangements for topping up with water during the day.

Packing and Carrying the Food

Just take the amount of each item you need, measure out quantities where necessary, discard unnecessary wrappings (but keep cooking instructions if needed). Use small containers or polythene bags to keep things dry and to prevent spills in the rucksack. Sort and pack food into daily quantities and label accordingly i.e. Mon Breakfast, Mon. lunch etc.

Expedition Menu's

Food is a very individual thing and all of the below are suggestions. Practice cooking dehydrated food in the comfort of your kitchen at home – don't wait until you are on your expedition to experiment

Breakfast

Particularly important – never set out walking without eating a good breakfast – you'll suffer later if you do. As with all of the lists some of these things are much better for the first morning, before you start walking, because they need to be fresh or are heavy.

Porridge is ideal - light & nutritious. Use water, or milk if available. Read the instructions on the packet carefully and measure out right amount before expedition. There are "instant porridge" meals.

Alternatives - tin of sausage & beans (heavy), freeze-dried breakfast meal (expensive), cereals (lack nutrition).

Also consider bread butter and jam, biscuits, juices/squashes, smoked bacon sandwich, sausage sandwich (while Bread available), fruit, soup, hot chocolate, tea, coffee etc.

Bacon & eggs are to be avoided –they are messy, may not keep in hot weather, and are awkward to carry.

Lunch

Do not plan to cook at lunchtime –it is too time consuming, and difficult in poor weather. Lunch should be prepared before setting out and should be easy to eat.

Sandwiches/ rolls/ crisp bread/ pitas, contents of your preference, pasties, pies, fruit, Kendal mint cake, dried fruit, chocolate, biscuits, crisps. Plenty to drink, preferably in a plastic bottle(s).

Consider whole-wheat crackers, pitta bread or similar with various toppings – cheese spread, meat/fish paste, tuna, sardines or pilchards.

Include a packet of nuts/nuts & raisins/dried fruit.

Chocolate bar – Snickers or similar for energy. Have a fruit drink –you could take concentrate and mix with water from water bottle.

You can probably get away with at least one packed lunch, made at home. Remember, don't bring Tupperware boxes to keep your sandwiches nice and unsquashed, because it takes up too much room! Squashed sandwiches taste just the same as unsquashed ones!

For the rest of the days using pitta bread for sandwiches works best because it's squashed already! You can buy tuna in flat packs and cheese slices are ok. Also Primula (squirry cheese, which can come in allsorts of different varieties e.g. ham, fish etc) works well on pitta bread.

Dinner

This must be a hot meal. Freeze-dried main courses are available from most supermarkets (look for ones with short cooking times). Avoid 2-pan meals. Boil-in-the-Bag (e.g. Wayfarer) meals are widely available at Camping shops. They are more expensive and heavier than dehydrated food, but very easy to prepare (and saves on washing up - you just place the packet in boiling water and wait for it to heat) but it is more expensive. Be sure to follow the instructions when cooking.

Pasta and sauce, Spaghetti Bolognese (non-perishable), pasta and meatballs in sauce, tinned sausage and beans with mash, tinned tuna with pasta, special rice with Italian-type smoked sausage meat, cakes, fruit juice, hot chocolate.

Most people go for pasta and sauce or savoury rice on at least one occasion (make sure you buy the packets which don't need milk added!) But there are also loads of other ready foods in packets which you can buy, such as curries, which can go well if you're cooking rice or smash. Army Ration Packs also provide a suitable and balanced menu.

Pot noodles and the like do not constitute a main meal –they provide insufficient nutrition for expedition work.

Puddings

Fruit yoghurts, milk based puddings, dried fruit, cake are all suitable. Custard works really well with bars of chocolate!

Sundries

Cup soups, salt & pepper, tea/coffee, sugar, whitener (the small packets found in cafes are ideal), poly bags.

Snacks

A selection of 'trail foods', healthy snacks to be eaten along the way – cereal bars, flapjacks, fruit cake, peanuts, dried fruit. Go easy on sweets and chocolate – and not to be eaten on an empty stomach as they can lead to a sugar rush followed by fatigue.

Emergency Rations

This is mostly high energy foods such as Chocolate, Glucose Tablets, Kendal Mint Cake. To avoid sugar rush consider eating snacks or a meal as soon as possible. The sugar in the emergency rations will provide your brain with enough "instant" energy to help you deal with the emergency for a short time.

You should NOT eat your emergency rations until you're at home (unless in an emergency of course!) The assessor may want to see them at the end, and it won't look good if you've scoffed them along the way!

Top Tip: Some people take things they're not particularly fond of as Emergency Rations. It avoids the danger of eating them as snacks and a) not having them when needed and b) getting into trouble with the Assessor! (You work out which is worse!!)

Drinks

You should take water with you, and fill it up at every opportunity.