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MACRONUTRIENTS

What are Macronutrients?
Since 'macro' means large, these nutrients are needed in large amounts and they are essential for our bodies to function. They include **protein, carbohydrate and fat** which are the main components of our diet and essential for optimal health and wellbeing.

Protein

Why do we need to eat protein?

After we have digested protein our bodies break it down into amino acids which are the form that our bodies can use. There are twenty different amino acids, nine of which are essential as they cannot be made in the body so we need to get them from food.

Protein has many important functions in our bodies:

*it is important for growth, and building and repairing tissue. It is also needed for healthy nails, hair and skin.

*it makes essential hormones and enzymes that our bodies need to work.

*it helps make neurotransmitters which are needed for our brains to function properly. They play a role in our mood and sleep.

*it plays a vital role in our immune system as white blood cell (made of amino acids) produce antibodies and protect us.

*amino acids can be used as a form of energy.

*proteins are transporters - they carry things around our bodies, in and out of cells.

*important minerals like iron, copper and zinc are bound to proteins which store them in the body.

Protein sources	Protein content (g)
chicken breast (100g)	42
lean beef (100g)	32
pork loin (10g)	20.5
salmon (100g)	20
cod (100g)	18
mackerel (100g)	19
prawns (100g)	20
eggs (2)	14
cottage cheese (100g)	14
red lentils (100g cooked)	8
red kidney beans (100g cooked)	5
chickpeas (100g cooked)	6
tofu (100g)	8
Greek yoghurt (100g)	9
whole milk (100ml)	3
almonds (25g)	5.3
peanut butter (1 tbsp)	4.5
pumpkin seeds (1 tbsp)	2.7
ground fax seeds (1 tbsp)	1.25
quinoa (100g cooked)	5
brown rice (100g cooked)	3
0ats (50g)	8

A **complete protein** contains all essential amino acids - they are mainly found in animal products but can also be found in soy, quinoa ad chia seeds. Incomplete proteins are mainly found in plant-based sources but by combining certain ones together you can obtain all essential amino acids.

Recommended intake

The British Nutrition Foundation recommend the RNI (reference nutrient intake) for protein is 0.75g per kg of body weight in adults. Requirements will increase for example if pregnant (an additional 6g per day), breastfeeding (an additional 8-11g per day) and also if strength training where protein guidelines range from 1- 2g per kg of body weight depending on the intensity of training).

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Carbohydrates

This macronutrient provides our bodies with **energy** which is needed by all our tissues and cells.

The foods we eat which contain carbohydrates are broken down into glucose which is the body's source of fuel and essential for life. Carbohydrates or 'carbs' can also be turned into fat and stored.

Carbs can be divided into 3 types:

Simple carbohydrates (sugars)

They can be naturally occurring in fruit and vegetables.

They can also be refined sugars in cakes, biscuits, chocolate, white sugar, fizzy drinks.

Complex carbohydrates (starches)

They can be naturally occurring in bananas, beans, lentils, oats, potatoes, nuts, chick peas, root vegetables, brown rice.

Starches can also be refined and occur in white flour, white rice, breakfast cereals, pizza.

Fibre

This is a type of carbohydrate which is found in vegetables, fruits, legumes, nuts and whole grains. The body cannot digest it so it helps move waste out of the body, however, beneficial bacteria in our digestive stem can use it.

The benefits of whole grains and fibre

Refined carbohydrates are processed which means they have had the natural fibre (and the benefits) removed so aren't as nutritionally dense. 'Whole' carbohydrates are unprocessed and still contain fibre giving them a higher nutritional value. Fibre brings many benefits: it can improve gut health, increase satiety (fullness) and can help lower cholesterol. Wholegrains are complex carbohydrates which are digested slowly and therefore release glucose at a slower rate. This is beneficial as it keeps blood sugar stable resulting in improved energy and less cravings.

Recommended Carbohydrate Intake

The DRV (Dietary Reference Value) for carbohydrate intake has been set at 50% of daily energy intake. However, the amount of carbohydrate a person eats should also take into consideration other factors.

Firstly, how much energy they expend or the amount of exercise they do. Highly active people, for example endurance runners may need a higher amount of daily carbohydrates compared to more sedentary individuals.

There is also evidence which supports a lower carbohydrate diet for weight loss and improving health markers like blood sugar and blood pressure.

So, to sum it up, carbohydrate intake will depend upon the individual, some people will do better on a lower carbohydrate diet consuming mainly protein and healthy fats while others do well to include a higher amount of carbs daily.

The recommended intake of fibre for adults is 30g per day.

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Fats

Fat is a vital macronutrient for our health. However, there are often misconceptions about it: that it's not good for you, causes weight gain and can lead to health problems… but not all fats are the same. We need to understand that there is the type we need for good health and other type of fat that we need to avoid.

Fats are important for growth and development, a source of energy and maintaining cell membranes which help absorb nutrients. Fat forms our brain and nervous system and also help us absorb many vitamins.

Our body breaks down dietary fats into fatty acids which is fat in its simplest form. Our foods are often a combination of fatty acids in different amounts.

Some foods are mainly high in **saturated fats** – animal fats (eggs, dairy, meats, butter, cheese etc), coconut oil.

Others are high in **polyunsaturated fats** – omega 3 (flax and chia seeds, walnuts, hemp, fish oil) and omega 6 (peanuts, walnuts, sesame oil, pecans).

Fats high in **monounsaturated fats** include - olive oil, avocado, peanuts, almonds, pumpkin and sesame seeds.

Fats to Avoid

Hydrogenated trans fats are the 'baddies' of the fat world - these have no nutritional value in the diet. They have shown to play a role in inflammation, obesity, heart disease and blood pressure. Also raising our LDL cholesterol (bad) and lower the HDL cholesterol (good). They are mostly found in processed foods like biscuits, cakes, ready meals, margarine, fried foods and crisps. If you see the term partially hydrogenated, it is a sign they contain trans fats.

Essential Fats

Omega 3 and 6 are two essential fats that need to be consumed in our diets as they cannot be synthesised in the body.

They have many important roles: the normal functioning of all tissues of the body, making hormones, cardiovascular health, regulating the immune system, improved brain health, the digestion of vitamins (A, D, E & K), skin health, and providing a source of energy as well as protecting organs.

Both omega 3 and 6 are important for our overall health but it is important that we consume them in the correct ratio – a higher ratio of omega 6 is pro inflammatory. The ideal ratio is between 1:1 and 4:1 (omega 6: omega 3). Omega-6 fats are abundant in our diets: leafy vegetables, seeds, nuts, grains, and vegetable oils, processed meats, carbohydrates and hydrogenated oils. However, there are fewer sources of omega 3s (EPA and DHA) therefore people can be deficient. The best way to ensure you are getting enough is to eat oily fish at least twice a week or take a supplement (be aware of interactions with other medications) which will help create an optimal ratio. There are also plant sources like walnuts and flax seeds but the conversion rate in the body into DHA and EPA isn't as efficient as other sources.

Recommended intake for fat

DRV for total fat is 35% and 11% for saturated fat (of daily energy requirement).