Protein

Key points

- Protein is an important nutrient that our bodies use to function properly
- Most Australians get enough protein through their diet
- If you are ill, older and/or at risk of malnutrition you may need to increase your protein intake
- An Accredited Practising Dietitian (APD) can help improve your protein intake

On this page

Details

When to see a dietitian

Top tips

Details

4 minute read

What is protein?

We need protein for all of our cells to grow, repair and function. It's key to building muscles and maintaining a strong immune system. Protein can also be used as a source of energy under specific circumstances.

Proteins are made up of building blocks called amino acids. There are 20 amino acids that join together, in different combinations, to form proteins. There are two types of amino acids, essential and non-essential.

• **Essential**: These are amino acids that cannot be made by the body and are therefore essential to get through our food and drink. There are nine essential amino acids.
• **Non-essential:** These are amino acids that can be made by the body and therefore are not essential to get through our diet. There are 11 non-essential amino acids.

Sources of protein

The nutritional quality of protein is determined by the number of essential amino acids it contains. These can be divided into complete and incomplete sources

• **Complete sources of protein**: these contain all the essential amino acids and are high-quality sources of protein. Complete sources are predominantly animal-based, but there are some plant-based sources.

• **Incomplete sources of protein:** these lack at least one essential amino acid and are a lower-quality source of protein. Incomplete sources are plant-based.

Complete sources	Incomplete sources
Animal-based • Meat, chicken, fish • Eggs • Dairy products (for example milk, yoghurt and cheese) **Plant-based** • Soy products • Quinoa • Amaranth • Buckwheat	**Plant-based** • Nuts, nut pastes and seeds • Legumes, beans and lentils • Wholegrains (for example wheat, rice, oats and buckwheat)

Incomplete sources of protein can be combined to form complete sources of protein. These combinations are called complementary proteins.

It is easy to eat complementary protein by combining the amino acids from nuts, legumes and wholegrains by having:

- Peanut butter or hummus on wholegrain bread, wraps or crackers
- Baked beans or a legume-based soup with wholegrain toast
- Oats sprinkled with pumpkin seeds or chopped nuts

While dairy foods are already a complete protein, they can be combined with grains and seeds to boost the quality of the plant-based protein. For example, simply add adding muesli to your yoghurt or enjoy some cheese with wholegrain crackers.

How much protein do we need?

Most Australians get enough protein by following the Australian Guide to Healthy Eating.

There are some groups of people who may need to monitor the amount of protein they eat. These include:

- children and teenagers
- people who are pregnant or breastfeeding
- people recovering from illness or surgery
- older people
- people with malnutrition
- people following a strict vegetarian or vegan diet
- people with chronic kidney disease

Exact protein requirements depend on age, gender, height and weight.

Approximate protein requirements

- Adult women: 0.75g/kilogram of body weight/day.
- Adult men: 0.84g/kilogram of body weight/day.

- People who are pregnant, breastfeeding or over 70 years old: 1g/kilogram of body weight/day.
- Children: varies depending on age and growth. See these guidelines for more information.

Explore the Australian Dietary Guidelines

Signs of protein deficiency

Signs of protein deficiency include:

- wasting of muscles, and reduced physical function
- oedema (build-up of fluid)
- anaemia
- slow growth (in children).

Protein deficiency is uncommon in most people. People who are ill and/or older people are at an increased risk of protein deficiency and protein-energy malnutrition. For these people dietary intake and risk of malnutrition should be monitored. Encouraging consumption of high protein foods is especially important.

To maintain muscle mass and strength it is also important to complement protein intake with exercise to avoid muscle wasting and maintain strength (for example, walking and resistance/strength exercises). This is particularly important for adults over the age of 50 as muscle mass begins to decrease with age.

Easy ways to eat more protein

- Have a palm-sized piece of lean meat or chicken 2-3 times per week
- Try to eat a range of protein rich foods (see above for ideas on how to combine protein sources to increase quality)
- Incorporate eggs into your diet. Eggs are a versatile ingredient and can be enjoyed at most meals. For example, eggs on toast, omelettes, frittatas
- Snack on Greek yoghurt, nuts or cheese and crackers
- Add nuts or seeds to salads (for example, walnuts, pumpkin seeds)
- Add legumes (for example, cannellini beans) to soups and casseroles
- Add skim milk powder to soups, stews, cereal and drinks
- Add grated cheese to cooked foods

It's a good idea to eat protein across 2-3 meals a day. This improves muscle protein synthesis which is essential to the body's ongoing growth and repair. Aim for high quality sources and follow the serving sizes outlined in the Australian Guide to Healthy Eating.

Protein and exercise

Protein is an important nutrient for exercise. For most people the quality and timing of protein is more important than eating excessive amounts of protein. Elite athletes may have increased protein needs but they should seek advice from healthcare professional or a dietitian.



Exercise uses up energy and the body's muscles. You should eat a meal with a high-quality serve of protein and a carbohydrate soon after exercise to replace energy stores and help repair and maintain muscle mass. This could be something like a bowl of muesli with yoghurt and fruit, small tin of tuna with cheese and crackers, a smoothie made up with milk, yoghurt and fruit.

Protein shakes, powders and supplements

In Australia, most people eat plenty of protein from the foods they eat, even without protein supplements.

Some people use protein supplements in an effort to build muscle. During intense exercise and high training loads, there is a higher protein requirement compared to general guidelines. There may also be specific requirements on the choice of protein rich foods, timing and distribution of protein throughout the day. The best way to build muscle is to do exercise that

uses muscle strength. Although muscle is made of protein, the preferred fuel for working muscles is carbohydrate.
Some people may require protein supplements to help recover after surgery or because of certain medical conditions. In these instances, a protein supplement may be beneficial, but always seek advice from an APD if you're unsure.

High protein diets

High protein diets have been popular in some fad diets. It is important that any diet you follow provides all nutrients and doesn't cut out whole food groups. High protein diets may put added stress on the kidneys so it is important to seek advice from your GP or an APD before commencing a high protein diet.

Having more protein than our body needs doesn't mean we store it for later. In fact, any protein we don't need will be excreted by the body.

When to see a dietitian

We recommend seeing an Accredited Practising Dietitian (APD) if you:

- Would like more advice on protein and how it fits into your overall diet
- Would like a dietary assessment to determine your protein intake and see if its adequate
- Are concerned about protein deficiency or protein-energy malnutrition
- Are adopting or following a strict vegetarian or vegan diet and would like more advice about protein requirements and intake
- Are considering protein supplements or are an athlete wanting more advice on nutrition for performance

APDs are university-trained nutrition experts. They can help you with personalised, easy-to-follow evidence-based advice.

APDs are Australia's most trusted dietetics professionals.

Find a dietitian

Top tips

- Consume a varied and well-balanced diet with a focus on high quality sources of protein
- Combine incomplete sources of protein to enhance quality
- If you are concerned about your protein consumption or think you are at risk of malnutrition see a healthcare professional or dietitian

This health advice page was peer-reviewed by an Accredited Practising Dietitian (APD) in March 2022.