The Basics Protein

Protein is an essential nutrient in the diet, used to manufacture body proteins that have many important roles. Proteins are used to build and repair connective tissues, cells and muscles, and some are also involved in energy production. Proteins are made up of amino acids. Our body can produce some of these (non-essential) but some are essential amino acids and must come from our diet.

Do athletes need more protein?

It is now recognised that protein requirements are increased with exercise. It is therefore easy to assume you need to eat more protein. However, as intense training commands you to consume a high energy diet, it is likely you will meet all your protein requirements without any special focus on protein rich foods or expensive supplements. There are however, some circumstances that demand a greater protein intake. For example, if you are aiming to increase muscle size and function, an increase in protein intake is required in the early stages of intense resistance training. Similarly, if you are a young growing athlete, you will also have increased protein requirements and will need to pay extra attention to your dietary protein intake.

Which foods are good sources of proteins?

Dairy and poultry are high value as they contain all the essential amino acids needed to build muscle tissue and other body proteins. Plant foods such as bread, pasta, rice, legumes, lentils and nuts also contribute significant amounts of protein to the diet but they are incomplete as they don't contain all the essential amino acids. However, if you eat a various foods from plant sources, they can combine with each other to "complement" the amino acid content of the total meal (see table 1). Therefore it is important to include a mixture of protein sources, distributed at each meal or snacks over the day to ensure a balance of proteins are consumed on a regular basis.

Is the timing of protein and combining with other nutrients important?

Recovery after each training session is very important but can be a challenge when training more than once a day on a regular basis. Muscle and protein are broken down during exercise and begin to rebuild during recovery. Muscle building is greatest immediately after exercise. Consuming protein during this time provides amino acids needed to promote training adaptations, stimulate muscle repair and promote muscle building. These effects are enhanced when protein is combined with carbohydrate. Therefore consume a protein-carbohydrate snack within 30 minutes of finishing exercise. [1]

Example post session protein-carbohydrate snacks/light meals:

- Flavoured yoghurt
- Flavoured milk drinks
- Fruit smoothies
- Liquid meal supplements
- Sandwiches with meat, cheese, chicken or peanut butter fillings
- Breakfast cereal and milk
- Sports bars

[1] Information and example snacks from Burke LM & Burke LM & Deakin Clinical Sports Nutrition. Australia, The McGrae-Hill Companies, 2010.

FACT SHEET

Protein containing foods or combinations that will supply all the essential amino acids in adequate amounts[2].

Type	Examples
Dairy products	Milk, yoghurt
Eggs	Boiled, omelette
Meat & meat products	Steak, ham
Poultry	Chicken, turkey
Fish	Tinned salmon, fish fillets
Grains plus legumes	Mexican beans & rice, peanut butter sandwich, cereal with soy milk
Grains plus nuts or seeds	Muesli mix with cashews & oats, almonds in rice salad
Legumes plus nuts or seeds	Trial mix with peanuts
Grains plus dairy products	Cheese sandwich, yoghurt on breakfast cereal
Legumes plus dairy products	Fresh green bean salad with yoghurt dressing

Are protein supplements useful?

Generally, athletes can obtain all the protein they require from a good varied diet. Occasionally, a supplement may be a convenient alternative when appropriate food sources are not available. The most suitable supplements are those that provide both protein and carbohydrate. Many protein supplements contain unnecessarily large amounts of protein and few other nutrients so are not suitable. Supplements are expensive so it is best to only use them when necessary. Good alternatives to protein supplements include homemade fruit smooothies or 20g skimmed milk powder added to regular milk.

Protein rich foods containing at least 10g protein

Animal foods

2 small eggs
30g (1.5 slices) reduced fat cheese
70g cottage cheese
1 cup (250ml) low fat milk
35g lean beef, lamb or pork (cooked weight)
40g lean chicken (cooked weight)
50g grilled fish
50g canned tuna or salmon
200g reduced fat yoghurt
150g light fromage frais

Plant foods

4 slices (120g) wholemeal bread
3 cups (90g) wholegrain cereal
2 cups (300g) cooked pasta
3 cups (440g cooked rice
200g baked beans
120g tofu
60g nuts or seeds
300ml soy milk

[3]

[2] Adapted from Protein and amino acid requirements of athletes. In Maughan RJ and Burke LM, Handbook of Sports Medicine and Science, Sports Nutrition. Oxford, Blackwell Publishing, 2005:26-34.

[3] Examples taken from and available from Australian Institute of Sport Nutrition Factsheets 'Protein', www. www.ausport.gov.au