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A QUESTION OF PROTEIN





Protein plays an important role in the response to training and competing in athletics and is needed for building new tissue – including muscle – and repairing the old.

In this chapter you will find out:

- Protein is needed for both repairing and building muscle
- You do not need to eat extra protein or take special supplements if your diet meets your energy requirements and is varied
- Vegetarians and vegans can meet protein needs by selecting an appropriate diet
- The type and the timing of eating protein can be important

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It doesn't necessarily mean that strenuous training, be it power based, sprint or endurance work, merits the need for extra protein. Most athletes will find that their protein intakes are high enough because of the additional food they require for energy in their event.

With athletics consisting of a huge array of differing sports, and the varying body types for different disciplines, it is always difficult to generalise. A good starting point is to look at the recommended levels of protein intake in relation to a person's daily activities.

GENERAL PROTEIN RECOMMENDATIONS

It has been suggested that athletes undertaking an endurance or resistance training phase may need to increase their dietary protein intake above that of a healthy non-athlete.

Table 6 shows daily protein recommendations – expressed in grams per day for every kilogram you weigh: (g/kg/d)

Table 7 demonstrates how these recommendations suggest a wide range of daily protein needs for people of the same body weight, based upon their levels of activity and the athletics event they are training for.

However, it is difficult to divide athletics into strength, power and speed or endurance categories. Longer sprints will require speed-endurance, horizontal jumps will require sprint and power. Throws will require a combination of power and speed. Therefore it is far more advisable to examine your protein requirements taking into account the many other factors, e.g:

- specific event
- ability and level of training
- training goals
- competitive aims
- other nutritional requirements
- body weight and shape considerations

It is important to note that some diets are modelled around a high protein intake. Whilst you can adapt to this, athletes should be aware that it is not necessary for performance and offers no advantage.

Table 6 - Daily protein recommendations

| Activity level | Protein (g/kg/d) | Example |
|---|------------------|--|
| Low levels activity (non sporting) | 0.75 | A 60kg person needs 45g (60 x 0.75) of protein per day |
| Regular activity (more than 1 hour per day) | 1.0-1.2 | 60-72g of protein a day for a person weighing 60kg |
| Middle distance/ endurance athletes | 1.2-1.4 | 72-84g of protein a day for a person weighing 60kg |
| Strength/power/ speed athletes | 1.2-1.7 | 72-102g of protein a day for a person weighing 60kg |

Table 7 - Range of daily protein needs (g/d)

| Athlete's weight in kg | Activity level: endurance | Strength/power/speed |
|------------------------|---------------------------|----------------------|
| 40 | 48-56 | 48-68 |
| 50 | 60-70 | 60-85 |
| 60 | 72-84 | 72-102 |
| 70 | 84-98 | 84-119 |
| 80 | 96-112 | 96-136 |
| 90 | 108-126 | 108-153 |
| 100 | 120-140 | 120-170 |
| 110 | 132-154 | 132-187 |
| 120 | 144-168 | 144-204 |
| 130 | 156-182 | 156-221 |

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DO YOU NEED MORE PROTEIN?

The issue as to whether or not strenuous physical training requires extra protein is more a scientific debate than a practical one. There are pros and cons on both sides of the argument. There is also evidence to suggest that exercise may decrease protein needs as the body becomes more efficient at using the protein it does have.

Points to remember

- If you meet your body's requirement for energy, you can retain a lean body mass within a wide range of protein intakes. (However, different requirements may be needed if trying to build muscle mass)
- Research shows most athletes already eat more than 1.2-1.7g/kg/d (the highest suggested range) even without using supplements
- As energy requirements are increased and met by the diet, if the diet is varied and balanced – protein needs will be met also without having to adjust the foods or composition of the diet

- Inversely if the diet is severely restricted, either in energy intake or dietary variety, then there is a risk that protein needs – and those of other essential nutrients – may not be met
- Regardless of event or muscle size, it is thought there is no advantage in taking more than 2g of protein per kg of body weight per day (providing carbohydrate needs are met)
- Excess protein is metabolized and excreted, rather than converted into muscle
- High protein diets are not necessarily harmful, but can be expensive
- Concentrating on protein can lead to you neglecting other nutritional goals, e.g. low fat and adequate refuelling through carbohydrate

PROTEIN IN FOOD

As previously discussed, if an athlete consumes sufficient food to meet both energy and carbohydrate requirements, then by default it is likely they are consuming an adequate amount of protein, particularly if the diet is varied.

The table below lists some everyday protein-rich foods.

Table 8 - Protein-rich foods

| 10g protein is provided by: |
|----------------------------------|
| 30g lean meat or poultry |
| 40g fish |
| 70g soya beans |
| 125g tofu, lentils, kidney beans |
| Small tin (225g) baked beans |
| 50g nuts or seeds |
| 2 small eggs |
| 330ml cow's milk |
| 400ml soya milk |
| 30g skimmed milk powder |
| 200g yoghurt |
| 40g hard cheese (e.g. cheddar) |
| 110g breakfast cereal |
| 3 slices of bread |

The meat of the matter

Animal sources are richer in protein than vegetable sources and, therefore, a larger quantity of non-animal sources are needed to provide the equivalent amounts of protein. Vegetarian strength and endurance athletes may struggle if they are unable to consume the bulky fibre-rich vegetables and pulses needed to meet daily protein needs. Therefore, it may be necessary to supplement the diet with a rich source of protein such as milk powder.

Factsheet 4 give three examples of athletes with varying protein needs based on their body weights and differing activity levels. Similar foods have been used throughout the three examples to illustrate differences in foods and quantities.

PROTEIN IN MUSCLE RECOVERY

As we have discussed, dietary protein intake is needed for the recovery process following a training session, particularly in relation to the muscles. Research shows that the recovery process for muscle is enhanced when protein is eaten alongside carbohydrate. It is thought however, that the 'window of opportunity' is wider for protein recovery than for restocking glycogen (carbohydrate stores), so protein intake is needed after training but not quite as immediately.

Strength and resistance training

It may be beneficial to consume small amounts of protein – around 6g – prior to training. It is thought to be more beneficial to consume proteins that are richer in essential amino acids than non-essential amino acids, e.g. meat, fish, eggs and dairy products. See chapter one – Down to Basics for a more comprehensive list.

In summary

Despite a lack of extensive research in this area, the important thing to note is: after a heavy training session, consume a little protein (10-20g) in the post-training

snack (see table 8 – most solid foods as well as milk and milkshakes, contain some protein).

In training for your event, your body relies mainly on muscle glycogen, liver glycogen and fat stores for fuel. Protein is used as muscle fuel if glycogen stores are low. Therefore, by keeping glycogen (carbohydrate) stores well topped up, you can stop muscle protein being used as fuel. Do this by making your diet rich in carbohydrate, and where necessary eat additional carbohydrate before, during and after exercise.

One final thought on... Protein and Amino Acid Supplements

As has been discussed in this chapter – an athlete can easily meet their protein needs from everyday foods. This is true even when fat intake needs to be controlled. When a period of strict restriction of dietary fat is required, it is better to select appropriate protein foods – and look at altering cooking methods – before resorting to using any type of protein supplements. If you need advice in this area, we strongly recommended that advice is sought from a sports nutrition professional.

The mistaken belief is that high protein diets will lead to greater muscle mass and strength, because muscle itself is protein has led many sports people to invest in overly expensive supplement products. Nor is there any benefit in taking expensive amino acid supplements.

- Remember: excess protein is metabolized and excreted, rather than converted into muscle, regardless of whether it is obtained from food or a supplement!