Protein needs for training and bulking up

Protein has been considered a key nutrient for sporting success by athletes of all eras and in all sports. Whereas ancient Olympians were reported to eat unusually large amounts of meat, today’s players are provided with a vast array of protein and amino acid supplements to increase their protein intakes.

Protein plays an important role in the response to exercise. Amino acids from proteins form building blocks for the manufacture of new tissue including muscle, and the repair of old tissue. They are also the building blocks for hormones and enzymes that regulate metabolism and other body functions. Protein provides a small source of fuel for the exercising muscle.

Some scientists have suggested that endurance and resistance-training exercise may increase daily protein needs up to a maximum of 1.2-1.6 g per kg body weight (BW), compared to the recommended intake of 0.8 g/kg BW for a sedentary person. However, the evidence for this increase in protein needs is not clear or universal. Part of the confusion is caused by problems involved in scientific techniques used to measure protein requirements.

The debate over the precise protein needs of players is largely unnecessary. Dietary surveys show that most players already consume diets providing protein intakes above 1.2-1.6 g/kg/d, even without the use of protein supplements. Therefore, most players do not need to be encouraged or educated to increase their protein intakes. Rather, anyone who consumes adequate energy intake from a variety of nutrient-rich foods should be confident of meeting his or her protein needs, including any increases that could arise from high-level training.

Players most at risk of failing to meet their protein needs are those who severely restrict their energy intake or dietary variety. An adequate energy intake is also important in promoting protein balance or increasing protein retention.

Although some resistance-trained athletes and body builders consume protein intake in excess of 2.3 g/kg BW, there is no evidence that such dietary patterns enhance the response to training or increase the gains in muscle mass and strength. While such diets are not necessarily harmful, they are expensive and can fail to meet other nutritional goals, such as providing the fuel needed to optimise training and performance.

Recent studies have focussed on the acute response to workouts of both endurance and resistance training. Enhanced protein balance is a desirable goal of the recovery phase – to overturn the increased rates of protein breakdown that occur during exercise, and to promote muscle growth, repair and adaptation following the exercise stimulus. These studies have found that the intake of protein, combined with carbohydrate, enhances protein synthesis during the recovery period. There is some evidence that the response is enhanced when these nutrients are provided soon after exercise, or in the case of a resistance workout, perhaps immediately before training.

Further work is required to fine-tune guidelines for the optimal amount, type and timing of intake of these nutrients, and to confirm that these eating strategies lead to an enhancement of the goals of training.

In the light of this information, it appears sensible to focus on the total balance of the diet and the timing of protein-carbohydrate meals and snacks in relation to training, rather than high protein intakes per se.

Special sports foods such as sports bars and liquid meal supplements can provide a compact and convenient way to consume carbohydrate and protein when everyday foods are unavailable or are too bulky and impractical to consume. However, the additional cost of these products, and the fact that they contain only a limited range of nutrients, must be taken into account. There is little justification for using very expensive protein-only powders or amino acid supplements. Everyday foods are likely to be just as effective.

### Protein rich foods – 10 g protein is provided by any of the following

- 2 small eggs
- 300 ml cow’s milk
- 20 g skim milk powder
- 30 g cheese
- 200 g yoghurt
- 35-50 g meat, fish or chicken
- 4 slices bread
- 90 g breakfast cereal
- 2 cups cooked pasta or 3 cups rice
- 400 ml soy milk
- 60 g nuts or seeds
- 120 g tofu or soy meat
- 150 g legumes or lentils
- 200 g baked beans
- 150 ml fruit smoothie or liquid meal supplement