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YMCA Awards

Level 3 Nutrition to support physical activity

2018

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Protein

Dietary role of protein

- Building and repair body tissue
- Constituent of cell membrane
- May contribute to the bodies energy needs
- Production of:
  - Enzymes
  - Hormones
  - Antibodies

Protein metabolism

- Protein is digested and broken down (catabolism) to amino acids
- Used to build and repair body tissue (anabolism)
- Excess is transported to liver to produce energy

Amino acids

20 Different amino acids	
8 essential or primary Cannot be made in the body	12 non-essential or secondary Can be made in the body
• Isoleucine • Leucine • Lysine • Methionine • Phenylalanine • Threonine • Tryptophan • Valine	• Alanine • Arginine • Asparagine • Aspartic acid • Cysteine • Glutamic acid • Glutamine • Glycine • Histidine • Proline • Serine • Tyrosine

Sources of protein

Animal Proteins	Non-Animal Proteins
Meat	Tofu
Meat products	Pulses
Fish	Nuts
Poultry	Grains
Dairy products	Soya
Eggs	Cereals
	Textured vegetable protein (TVP)

Primary amino acids

- The human body must get all 8 primary amino acids from food
- Some food sources of protein have a better primary amino acid content than others
- These are mainly animal proteins and soya-based products

Incomplete proteins

- Incomplete protein are proteins that lack some of the essential amino acids
- Examples would be beans, nuts, grains, seeds and corn

Vegetarian protein intake

Protein can easily be obtained from:

- Eggs, milk, cheese, soya products etc

- Plus combinations of incomplete proteins:
  - Cereals
  - Beans
  - Nuts
  - Pulses
  - etc.

Vegan protein intake

- Protein is harder to obtain
- Complete proteins include soya products (tofu, soya milk etc)
- The rest must come from combinations of incomplete vegetable proteins

Energy value of protein

1g of protein provides 4kcal energy

UK dietary guidelines

In the UK, adults are advised to eat 0.75g of protein for each kilogram they weigh, based on the Reference Nutrient Intake (RNI)

e.g. if an individual weighs 70kg (11 stone), they should eat about 52.5g of protein a day

On average, men should eat 55g and women 45g of protein daily. That's about 2 palm-sized portions of meat, fish, tofu, nuts or pulses

Protein requirements

- 0.8g per kg body weight is sufficient for the majority of the UK population
- 1.2 – 1.4g per kg body weight for endurance training
- 1.4 – 1.8g per kg body weight for strength training

Over-consumption of protein

- Nitrogen-containing part is converted to urea and excreted. Potentially harmful for people with established liver and kidney disorders
- Energy-containing part is either used by cells or stored as fat
- High intakes from animal protein may lead to high saturated fat consumption
- May contribute to reduced bone density

Protein supplements

- A personal trainer is not qualified to recommend protein supplementation
- Base any advice just on healthy eating guidelines
- If client suspects a protein deficiency, or feels they need to increase intake, refer them to a dietician for proper evaluation

Under-consumption of protein

- Deficiency in most developed countries is rare
- Reduced growth in children
- Muscle loss in adults
- Susceptible to disease


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