Sports Nutrition

Energy

- We use energy all the time, even when we're sleeping
- When we exercise, we need to produce more energy more quickly
- Food we eat is stored in various forms and when energy is needed is broken down to produce Adenosine Triphosphate (ATP)
- When ATP is broken down, it releases energy

How do we produce energy?

- Our bodies have 3 energy systems that are always in use
- Different types of activities use one energy system more than the others
- The energy system used depends on the intensity (how much effort is needed) and duration (how long we produce that effort for) of the activity

Alactic Anaerobic (ATP-Pc) System

- Explosive power activities lasting up to 6 seconds use existing stores of ATP and Phosphocreatine

- When these stores are used up the next energy system takes over…

Lactic Anaerobic System

- The Lactic Anaerobic System uses glucose to quickly produce more ATP without needing oxygen

- However, this process also produces lactic acid and a subsequent build up of hydrogen ions, so can only last for about 30 seconds...

Aerobic Energy System

- During activities of lower intensity & longer duration the Aerobic Energy System takes over, relying upon oxygen that we breathe in to convert either carbohydrate, fat or ‘recycled’ lactic acid into ATP
- This energy system is also important for replenishing ATP and keeping us going between rounds and events

Where do we get energy from?

- From food!

- There are 3 main food sources that can be converted to ATP after we eat them
  - Carbohydrates
  - Fats
  - Proteins

Carbohydrate

- Most important fuel for an active person
- Carbohydrates are classified according to the speed at which they are converted to glucose (the simplest carbohydrate) - Glycaemic Index

Simple sugary (high GI) carbohydrates can be broken down to produce energy quickly

Complex starchy (low GI) carbohydrates take longer to break down so will keep us going for longer

Fat

- Fat is also used to produce energy but takes longer than carbohydrate to break down to ATP
- Fats are classified into ‘good fats’ (essential fatty acids)…

…and ‘bad fats’

(saturated and trans-fats)

Protein

- Protein is essential for growth and repair of our body tissues so is important both for training and for recovery from exercise
- Protein is only used for energy in extreme situations when the body's carbohydrate and fat stores have been used up
- Protein is made up of amino acids – there are 20 of these, 12 can be made by our bodies but we must get the other 8 from our food

Water and other fluids

- When we exercise our bodies produce extra heat
- As sweat evaporates from our bodies we lose heat
- How much fluid we lose depends on:
  - How hard we exercise
  - How long we exercise
  - Temperature and humidity
  - Individual body differences
- It's recommended that an 'average' person should drink 1.5-2 litres of water each day – for an active sportsperson this need increases.

What makes a good diet?

Fresh fruit and vegetables

3-5 portions of vegetables per day

2-4 portions of fruit per day

Healthy Carbohydrates

4-6 portions
per day

Milk and dairy products

2-4 portions
per day

Meat, fish and vegetarian alternatives

2-4 portions per day

Foods containing ‘bad’ fats and sugar

1-2 portions per day

When is the best time to eat?

- Always start each day with a breakfast high in carbohydrate, protein and preferably a piece of fruit
- Breakfast ideas:
  - Scrambled eggs on wholemeal toast & a glass of orange juice
  - Porridge with semi-skimmed milk, banana & honey
  - Wholegrain low-sugar cereal with semi-skimmed milk & an apple
  - Homemade fruit, yoghurt, oats & milk smoothie

When is the best time to eat?

- Aim to make mid-morning snacks healthy
- Snack ideas:
  - 1-2 pieces of fruit
  - Handful of dried fruit
  - Handful of nuts/seeds
  - Natural yoghurt with one piece of fruit
  - Wholemeal bagel

When is the best time to eat?

- Whether you're recovering from training in the morning, or need to keep your energy levels up to train in the evening, it's a good idea to have a high carbohydrate and protein lunch
- Lunch ideas:
  - Tuna sandwiches (wholemeal) with plenty of salad
  - Pasta salad (wholemeal pasta with chicken/ tuna/ pulses & veg/ salad)
  - Baked potato (with cheese/tuna/kidney bean chilli)

  Plus carrot/celery/cucumber sticks & a piece of fruit

When is the best time to eat?

- Like your morning snack, try to keep your afternoon one healthy!
- Snack ideas
  - Any of the morning snacks
  - 1-2 pieces of wholemeal toast with olive oil spread & marmite
  - Raw vegetables e.g. carrot sticks & humous
  - Wholemeal pitta bread with cottage cheese

When is the best time to eat?

- If you go training after school/ college don't skip your evening meal – even if you get home late
- Ideas for evening meal:
  - Wholegrain rice with chicken & vegetables
  - Potato wedges with vegetable & bean chilli
  - Wholemeal pasta, tuna & sweetcorn bake
  - Salmon with mashed potato & green veg
  - Pizza (homemade or fresh from supermarket)

Should I eat any differently when I'm competing?

- **Before** a competition you need to make sure you've eaten regular meals in the days beforehand with plenty of low GI carbohydrates and protein
- Ideally, eat breakfast with plenty of complex (low GI) foods 2-4 hours before you compete
- If you're nervous in the morning, still try to eat breakfast
- If you're staying away from home, try to eat something similar to what you would normally have

Should I eat any differently when I'm competing?

- **During** competitions eat foods with a higher GI value for an energy boost but if you're competing over a full day or weekend make sure you also have some longer lasting low-GI foods

- If you find it difficult to eat during a day of competing, try to eat easily digestible foods, a little at a time – bananas, jaffa cakes, even jars of baby food!
- Make use of the slightly longer gap that's often timetabled between events around lunchtime, or try to eat a bit more before throwing events than before jumping events.

Should I eat any differently when I'm competing?

- **After** competing it's important to refuel with carbohydrates and protein preferably within 2 hours of finishing – especially if you're competing again the next day
- You can improve your rate of recovery by eating approx. 1g of carbohydrate per kg of bodyweight e.g. if you weigh 50kg, you should eat approximately 50g of carbohydrate
- At this stage high GI (sugary foods) are good as they are digested more easily and replenish energy stores more quickly

How much carbohydrate is in…?

Once you've worked out how much carbohydrate you should be eating after an event, here's an idea of what is in different foods:

- I banana = 23g carbohydrate (CHO)
- 1 apple = 12g CHO
- 500ml bottle lucozade sport = 30g CHO
- 1 bagel = 46g CHO
- 1 Mars bar = 43g CHO
- ¼ malt loaf = 49g CHO
- Digestive biscuit = 10g CHO
- 150g fruit yoghurt = 27g CHO
- 50g raisins = 31g CHO

Remember…

- Try to eat wholemeal/wholegrain foods as they supply a more even release of energy than white/refined varieties
- Eat lots of fresh fruit and vegetables so you get plenty of vitamins and minerals too
- Eat lean meats, fish and vegetable sources of protein
- Eat ‘good’ fats and oils found in nuts, seeds and oily fish
- And don’t forget there’s nothing wrong with eating sweets and chocolate occasionally especially after training when you need to replace energy stores quickly!

Where can I get more info?

- The Complete Guide to Sports Nutrition by Anita Bean
- The British Nutrition Foundation website www.nutrition.org.uk
- Food Standards Agency website www.eatwell.gov.uk
- Dietitians in Sport & Exercise Nutrition (DISEN) www.disen.org