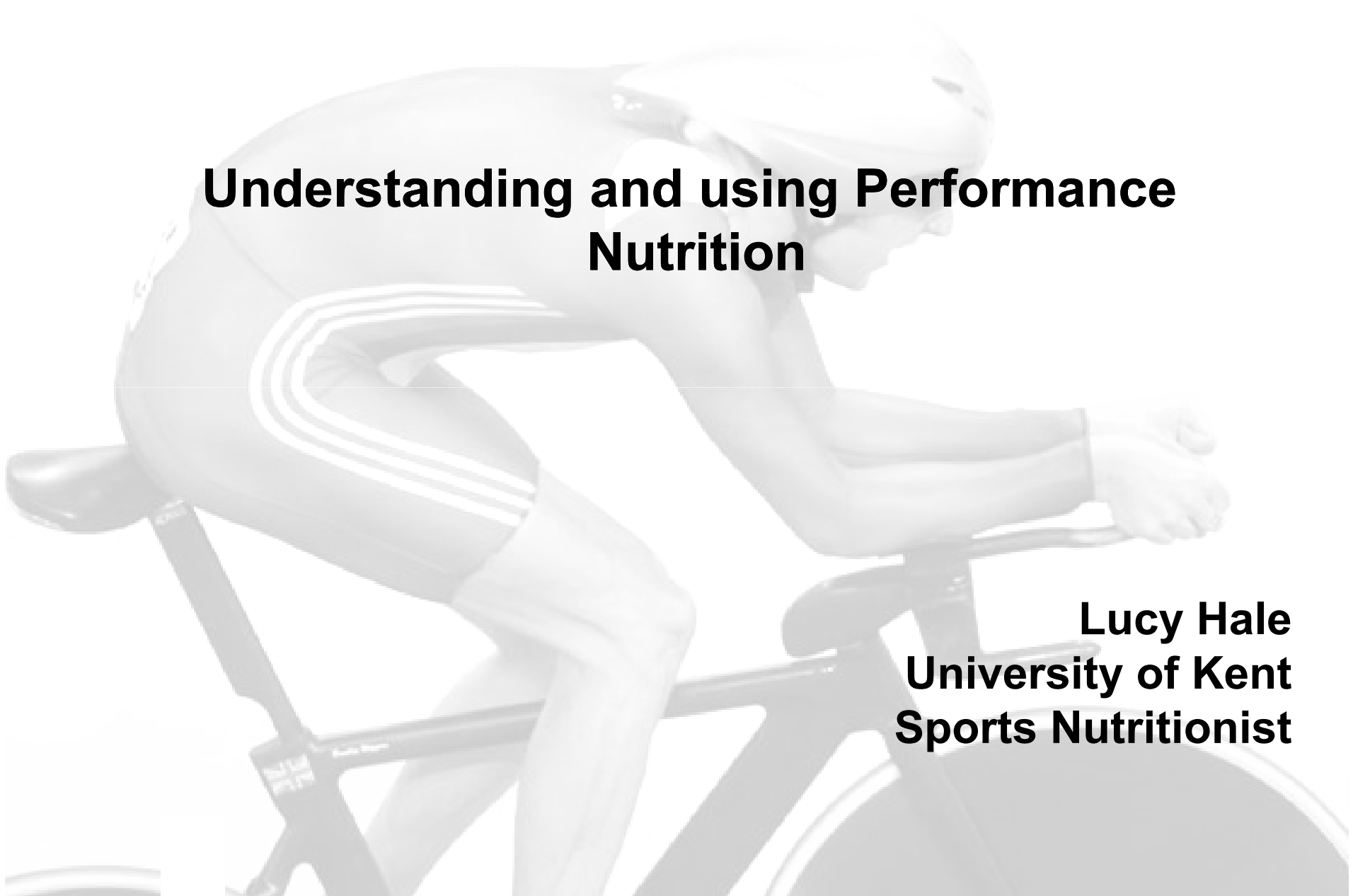


Understanding and using Performance Nutrition

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Diet and Nutrition for the Elite

- Nutrition will not turn the active individual into a champion
- Poor nutrition may prevent a potential champion reaching his or her potential



David Davies Beijing Silver
Medallist

Men's 10-km open swim
marathon

Winning time 51 min 51.6 sec

Davies came in 1.5 seconds
following this.



How might poor diet impact on performance

- Depletion of glycogen stores in the active muscle – fatigue
- Muscular Atrophy (loss of strength and muscle bulk)
- Dehydration
- Hyponatraemia
- Athletic anaemia
- Gastrointestinal discomfort and upset
- Osteoporosis



The risk and severity of an encounter depends on issues including:

- Duration and intensity of the exercise involved
- The environmental conditions
- The training status of the athlete
- The nutritional status of the athlete
- The success of nutritional strategies before and during the event.

What are competition nutrition strategies

- Competition Nutrition includes special eating strategies undertaken before, during and in recovery from an event
- A combination of the right nutrients delivered at the **RIGHT TIME**





Essential nutrients

- Carbohydrates
- Protein
- Fat
- Vitamins
- Minerals
- Water


Water

- Makes up to 60 – 75% of your weight
- Keeps body temperature stable
- Keeps the blood fluid
- RDA approx 2.5 litres+ of water per day

- Body weight lost during activity should be replaced following activity

- 2-3% loss of body mass will decrease exercise performance





Dietary needs of active individuals (dependent on type of activity)

Power/ strength athletes

Carbohydrate

50 – 60% (5 –
6g/kg/bw)

Protein

15% Protein (upper
limit of 2g/kg/bw)

Fat

Less than 25%

Endurance athletes

Carbohydrate

60 – 90% (6-
9g/kg/bw)

Protein

15% protein
1-1.5g/kg

Fat

Less than 25%

Pre event fuelling

- Low carb stores is a major cause of fatigue in exercise duration of 90min+
- We can optimise carb stores in the muscle and liver
- The key to adequate glycogen storage is
 - Adequate carb intake
 - Tapered training or rest





Pre - event fuelling for endurance events

- Important for events lasting more than 60 minutes or if an athlete has successive heats and a final, or in a tournament condition.
- Carbohydrate loading:
 - 36 – 72 hours prior to event
 - Taper training
 - Daily CHO target of 7 – 10g/ kg/ bw



Pre event Fuelling for non endurance events

- CHO loading is NOT required for events less than 60 minutes in duration
- In the absence of muscle damage, stores can be normalised by 24 hours of rest and an adequate moderate carb intake
- For many active individuals this may mean scheduling a day of rest or light training before an event while continuing to follow normal eating patterns

Benefits of CHO loading

- Carb loading may postpone fatigue and extend duration of steady state exercise by 20%. Improve performance over a set work load 2–3%
- Team and racquet sports would also be improved by glycogen loading

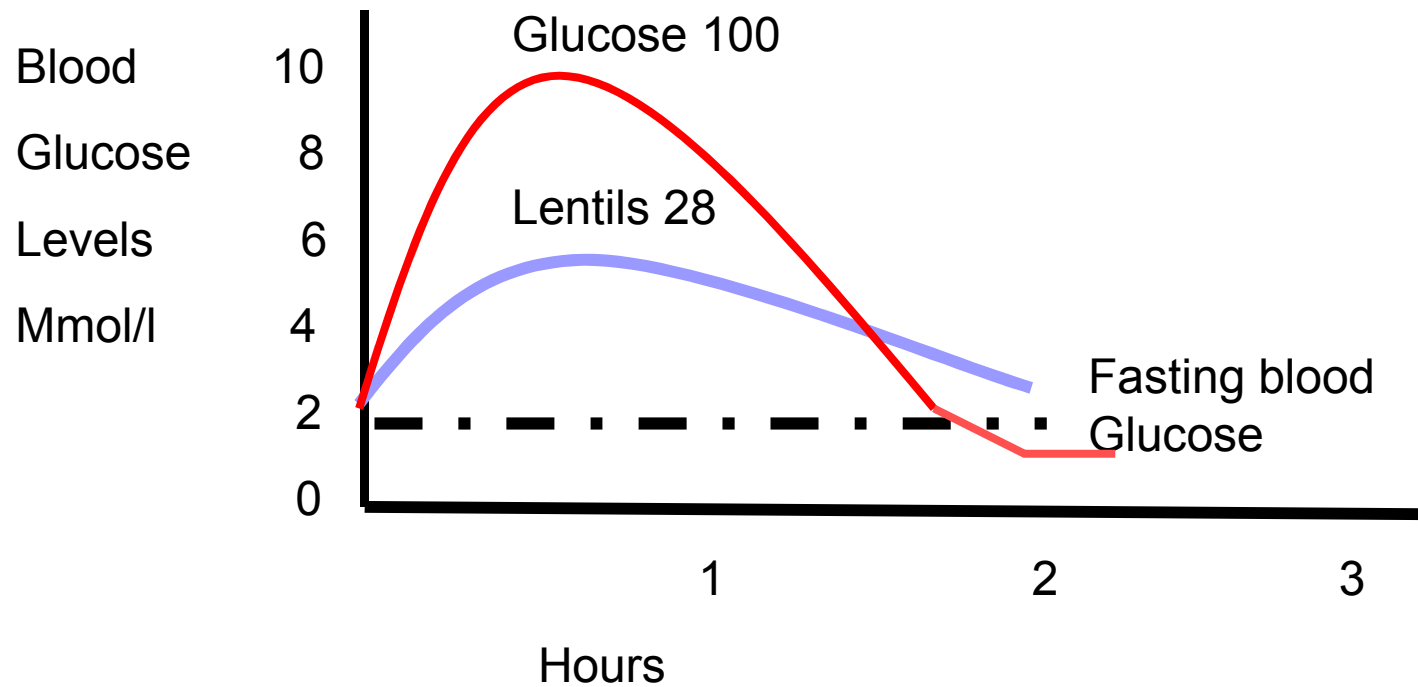




Pre event or training meal

- Eat pre competition meal 1 – 4 hours before the event 150 – 300g Carbs, low fat, low fibre.
- Don't eat too close to the start of competition for risk of rebound hypoglycaemia. Experiment with timings
- Fluid intake 500ml (sodium/ carbs)
- If power training consume a carb/ protein snack or drink prior to the exercise session

Glyceamic index and rebound hypoglycaemia



Modern Starchy foods have a high GI

■ Glucose	100
■ Potatoes	88
■ Cornflakes	84
■ White bread	70
■ Wholemeal bread	70
■ Weetabix	70
■ Rice	72



'Traditional' Starchy foods have a low GI

- Barley 25
- Legumes/beans 30
- Pasta 40
- All bran 51
- Oats 50





Nutrition during competition and training

- For endurance events 90 min or longer
- Carb ingestion should be no more than 30 - 60g/ hour in the form of a CHO/electrolyte drink
- Ingest early and regularly throughout exercise 250 – 300ml every 20 min
- If power training consume some protein at the same time intervals 10 – 15g



Drink selection

Exercise	Drink
Less than 30 min	Nothing/ water
Low moderate intensity exercise lasting 1 hour	Hypotonic 1 – 3% carb solution
High intensity exercise lasting 90min plus	Isotonic 3-7% carb solution
High intensity exercise lasting several hours	Hypertonic 7% plus carb solution

Guidelines after exercise

- IMMEDIATE RECOVERY window of opportunity
- Muscle glycogen replenishment
- During the first hour of recovery 50g of CHO should be ingested with 10 – 15g protein and then every hour until meal patterns are resumed
- Moderate to high GI
- Consume 1.5 x fluid for each kg bodyweight lost over time after exercise

Use lost body weight as a guide

Example after a run you loose 1kg (1kg = 1L)

You will need to replace 1.5 liters of fluid 500ml immediately and then the rest over the recovery period.





Protein

- Muscle protein synthesis increases during the hours following endurance and resistance exercise and this synthesis can remain elevated for up to 48 hours
- In resistance training pre during and recovery snacks or drinks containing Carbs and protein should be consumed to minimise protein break down as a result of training
- Protein consumption should also be spread across a typical day to keep amino acid levels in the blood adequate
- Upper limit of protein intake is 2g per kg bodyweight per day



Vitamins and Minerals

- Allow us to produce energy
- Important for growth maintenance and repair
- A, C, E beta carotene = Antioxidants



Is supplementation needed?

- Athletes who compete in low weight categories and follow weight reducing training programmes
- Athletes who have to maintain low body weight for a prolonged period of time: dancers & gymnasts
- Individuals on meatless diets should consume a small amount of milk product eggs or fortified foods/supplements as B₁₂ exists only in foods of animal origin or fortified foods

Recent developments

- Omega 3
 - Prevention of EIBC
 - Prevention of inflammation
 - Increased oxygen carrying capacity
- Nutrition and perception interaction
 - Increasing motivation
 - Decreasing fatigue
 - Improvement of performance





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