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Guiding the Coach through the nutritional maze

Ruth Wood-Martin

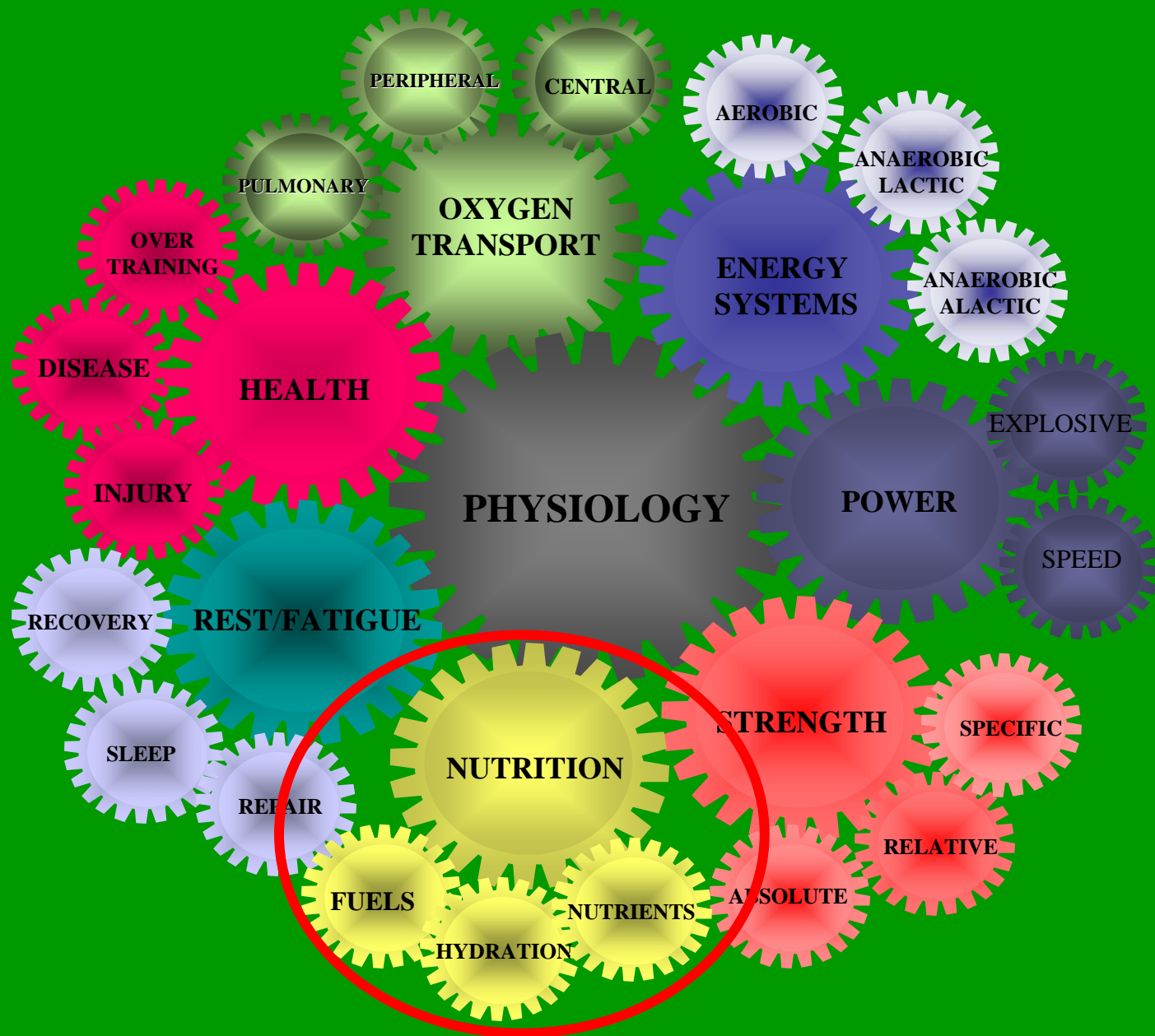
IRFU Performance Nutritionist

Developing Decision Makers in Sport



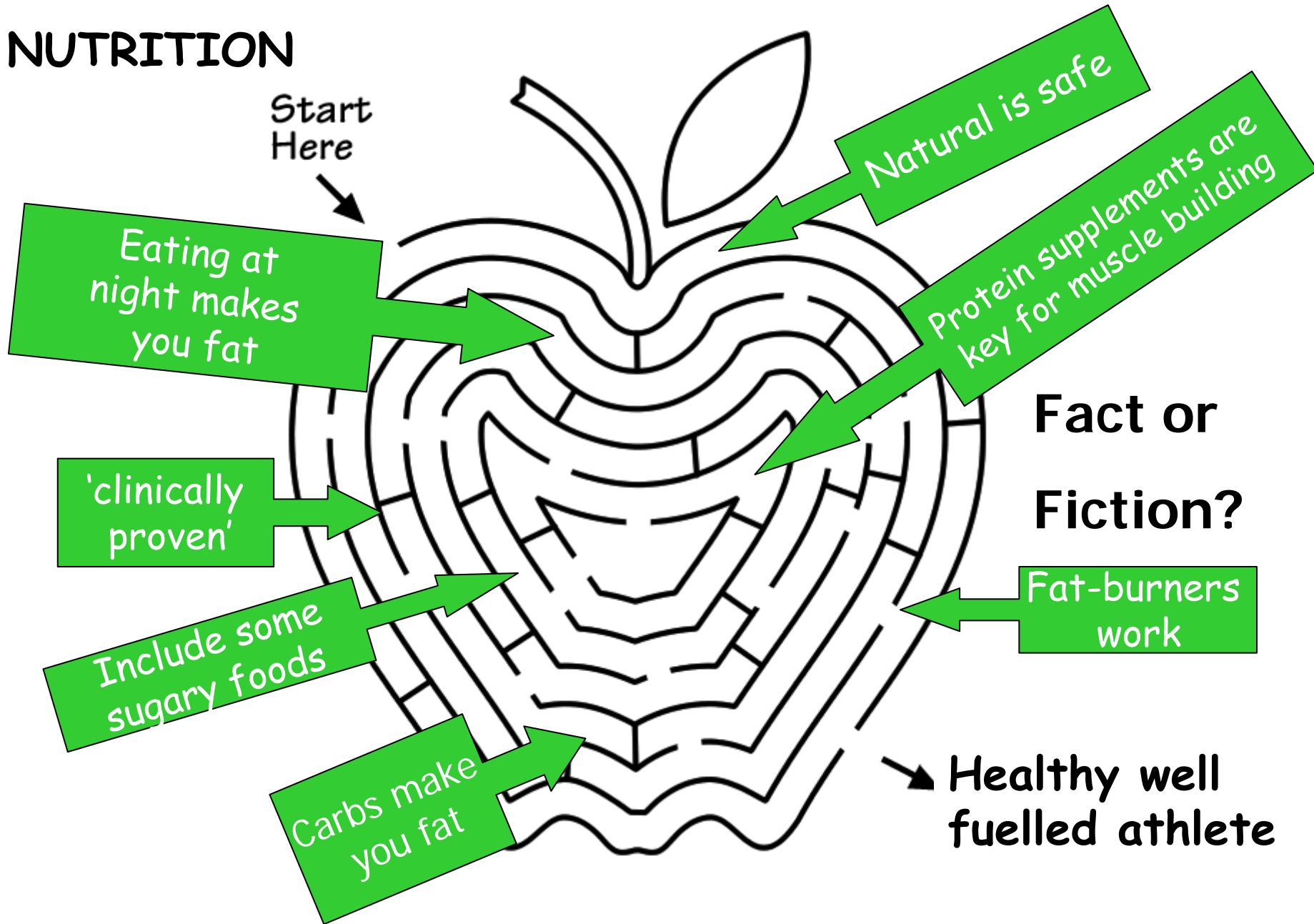
Irish Rugby take it on the full





NUTRITION

Start Here



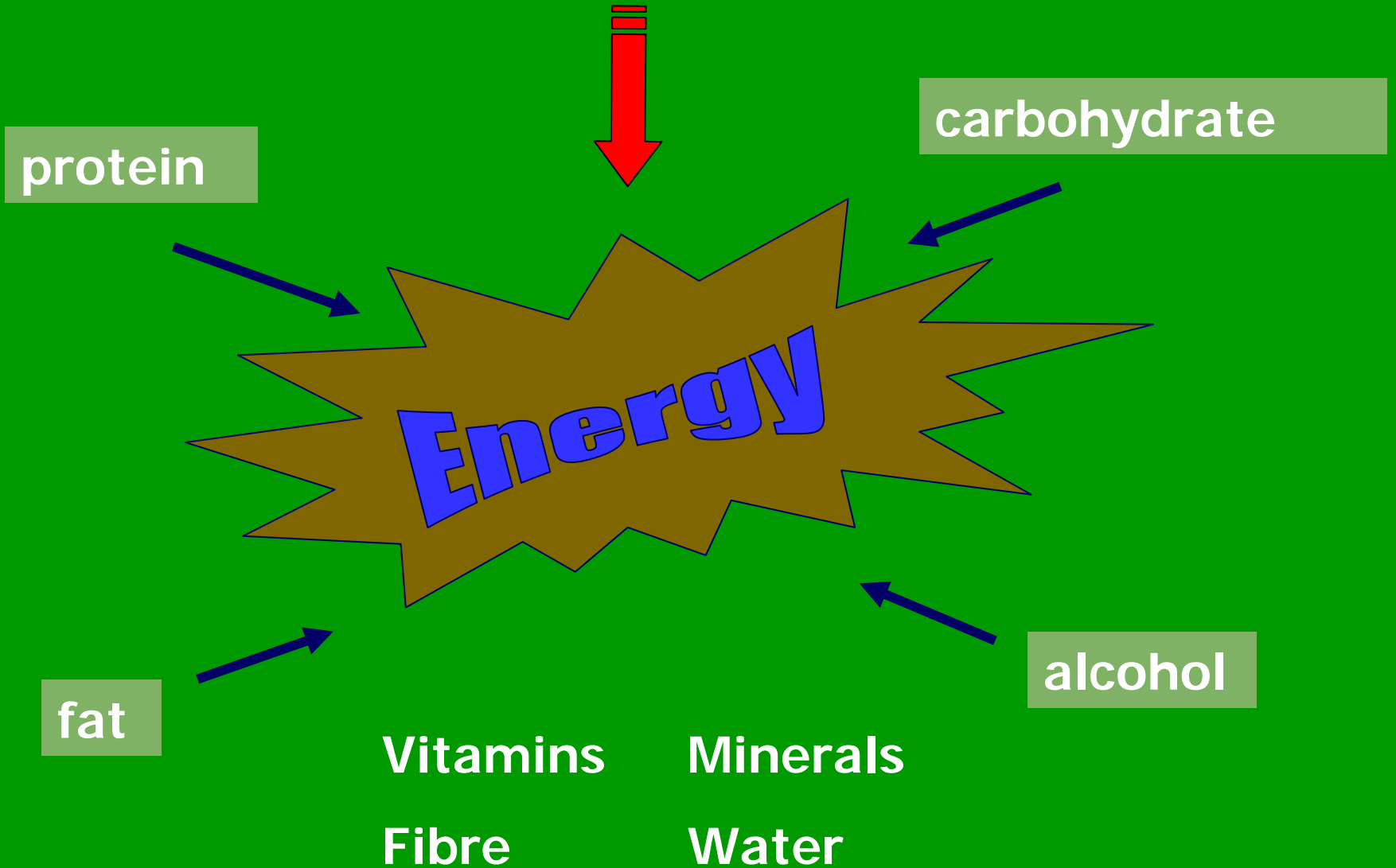
Fact or Fiction?

Healthy well fuelled athlete

From what we eat and drink, where does the energy come from?

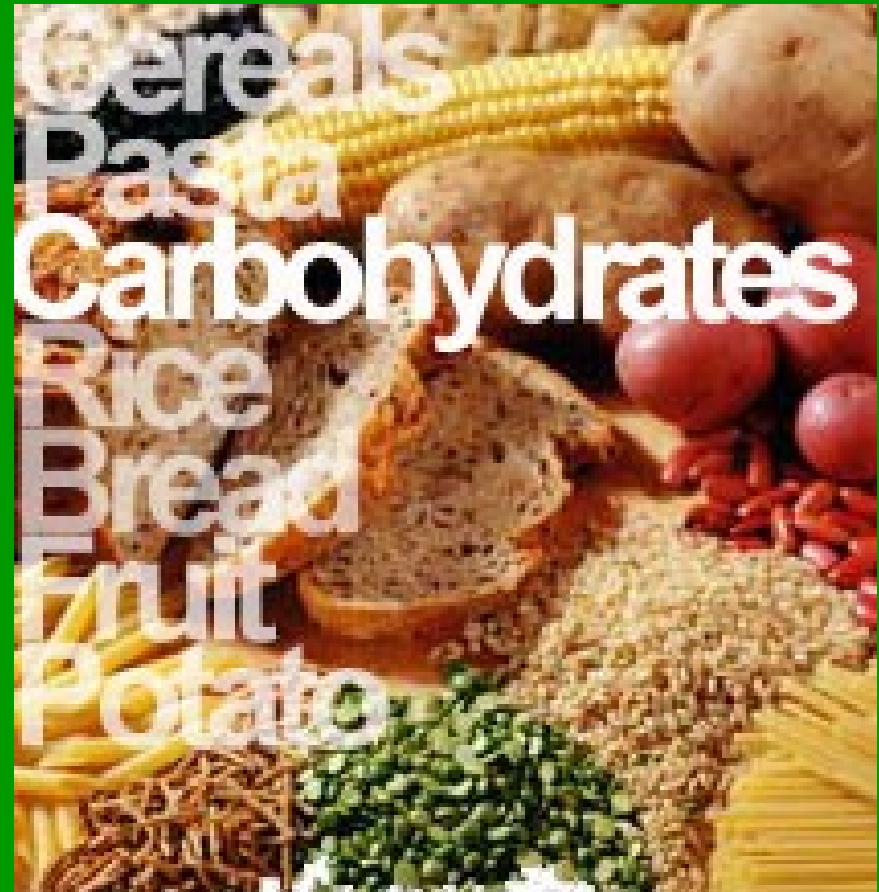
- a. Vitamins, minerals, alcohol and fat
- b. Vitamins, alcohol, carbohydrate and fat
- c. Minerals, fat, carbohydrate and protein
- d. Fat, carbohydrate, protein and alcohol

Food and Drink



Carbohydrate

- major energy provider in everyday diets
- essential to maintain blood sugar levels and fuel brain activity
- Essential fuel for high intensity exercise



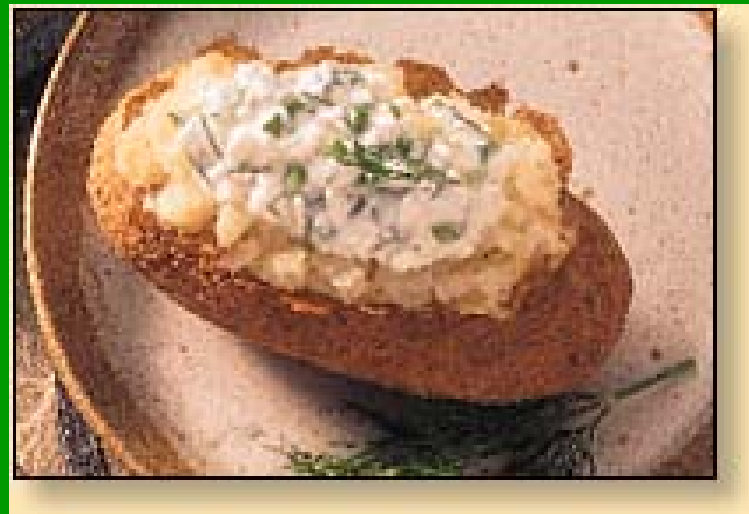
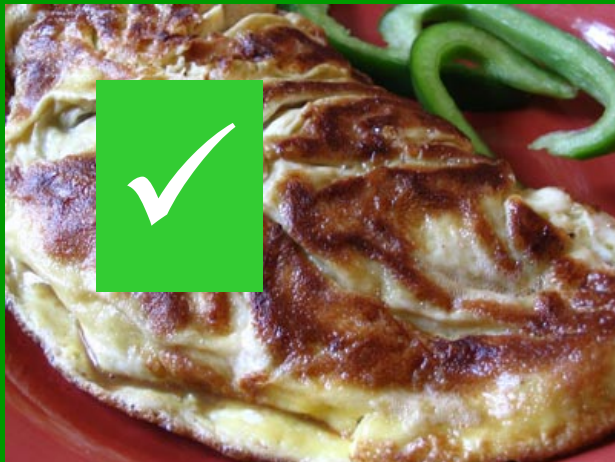
Protein

- 20 amino acids, 8 essential
- Raw material for
 - structure of the body
 - hormones
 - antibodies
 - blood clotting
 - enzymes
- not stored in the same way as fat and carbohydrate
- 1.2 – 1.4g/kg body weight/day

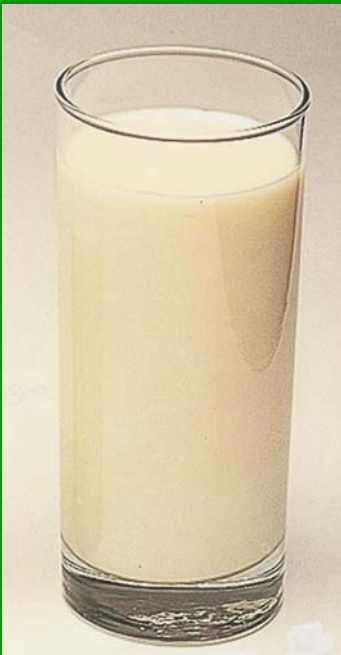


Fat

- essential for insulation, nerves, fat soluble vitamins, essential fatty acids
- a rich source of energy
- main fuel used in aerobic or lower intensity exercise
- good and not-so-good fats



Least carbohydrate?



Least protein?

Developing Decision Makers in Sport

To meet basic requirements, a 23 year old athlete who weighs 70kg needs to drink everyday

- a. 2½ litres of fluid
- b. 1½ litres of fluid
- c. 3½ litres of fluid
- d. 4 litres of fluid

Fluids

11 – 14 yrs: 55mls/kg

15 – 18 yrs: 50mls/kg

18 yrs + 35mls/kg



The main sources of energy for exercise come from

- a. Carbohydrate and fat
- b. Fat, protein and alcohol
- c. Protein and fat
- d. Carbohydrate and protein

STAGE A Energy sources for muscles

Liver

Adipose tissue

Glycogen

Body fat

Glucose

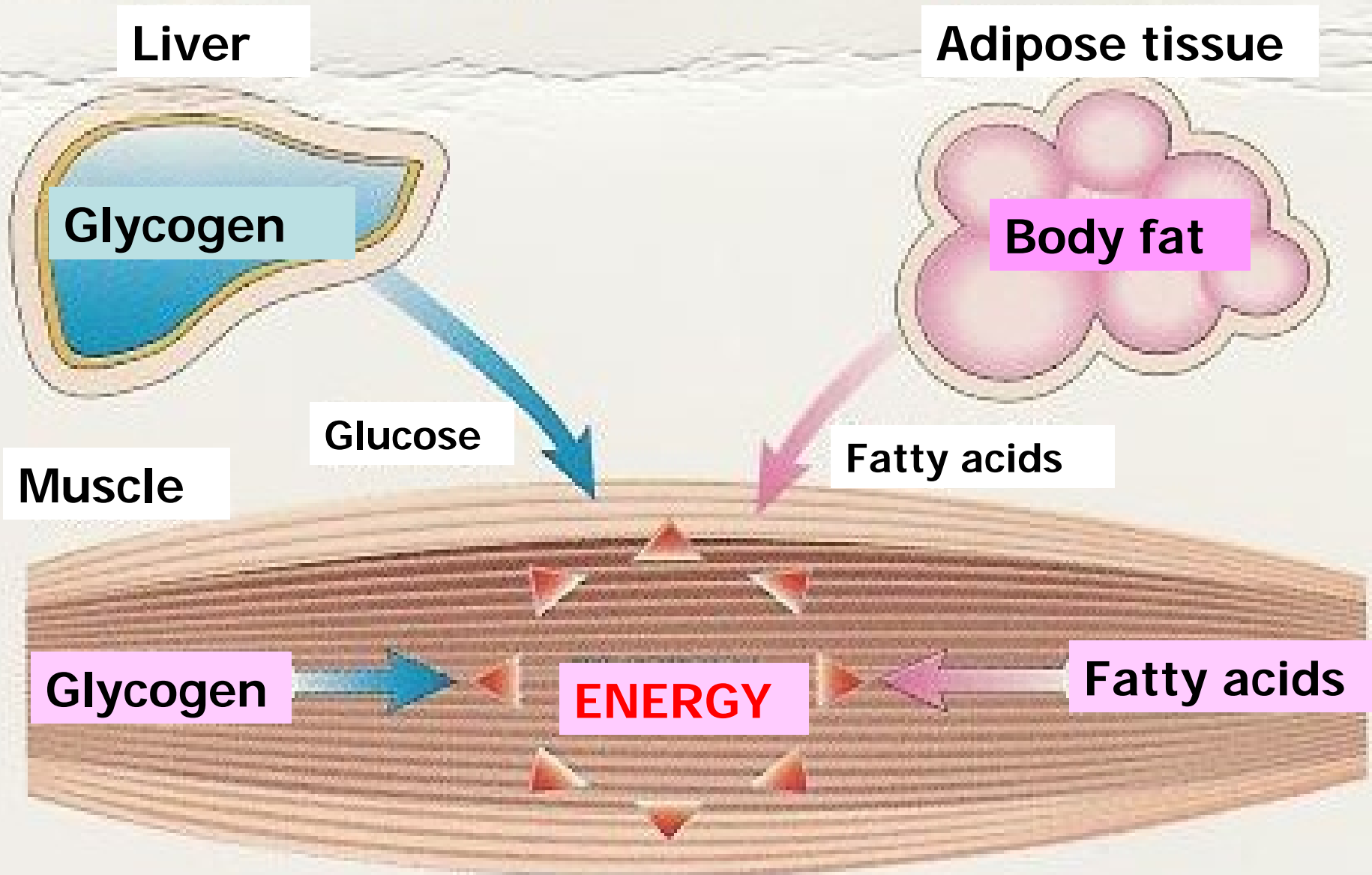
Fatty acids

Muscle

Glycogen

ENERGY

Fatty acids



STAGE B Energy sources for muscles

Liver

Adipose tissue

Glycogen

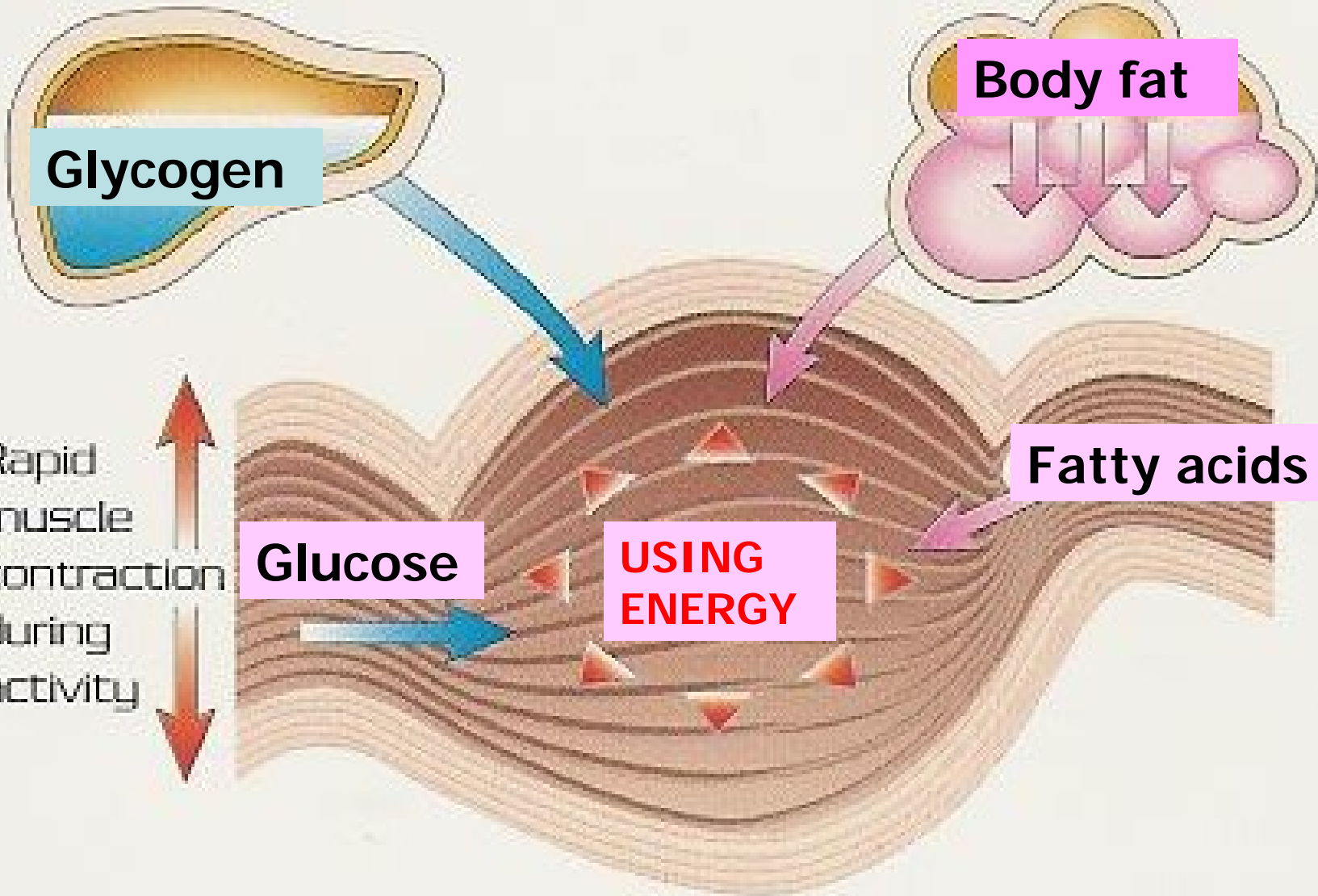
Body fat

Fatty acids

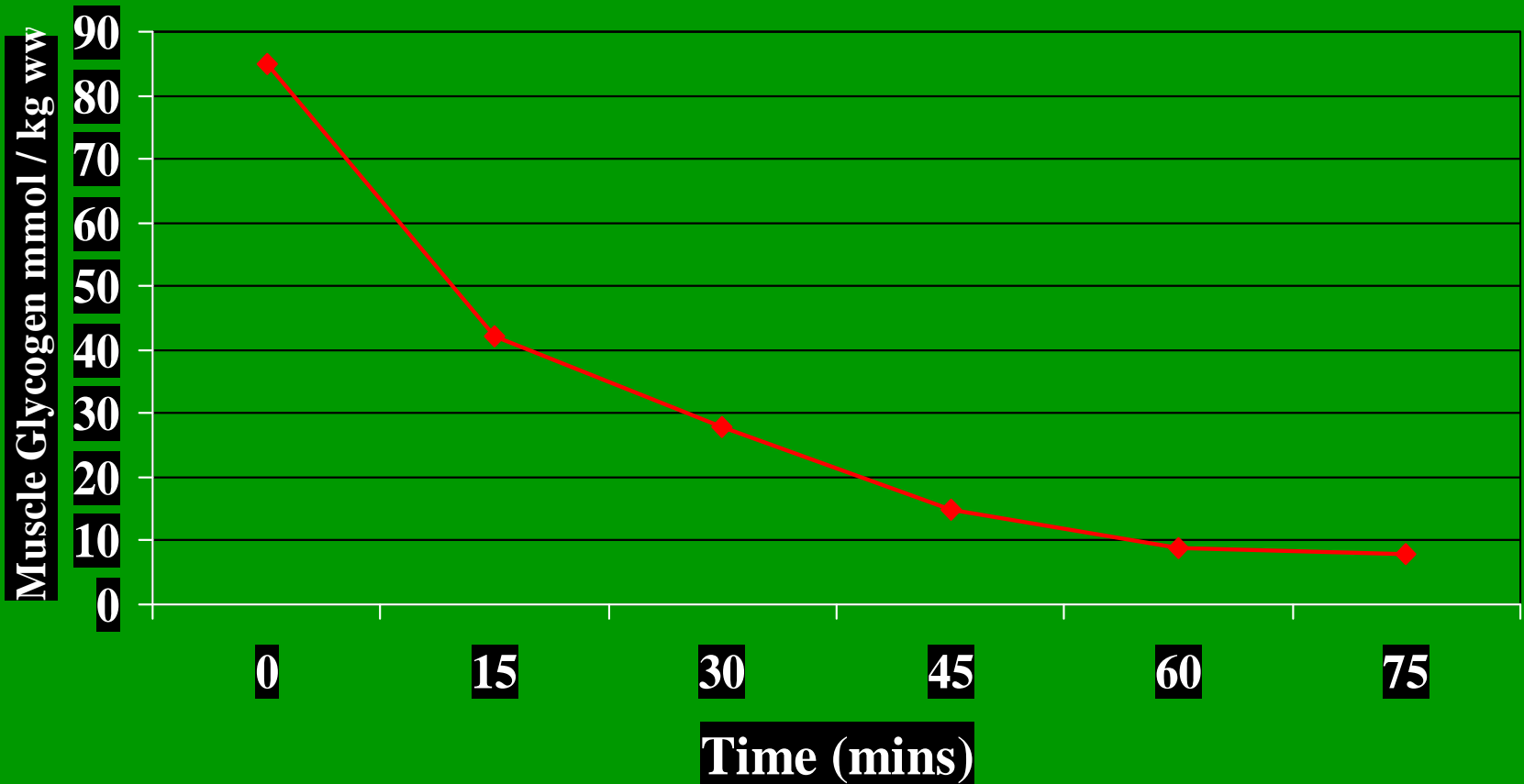
Glucose

USING ENERGY

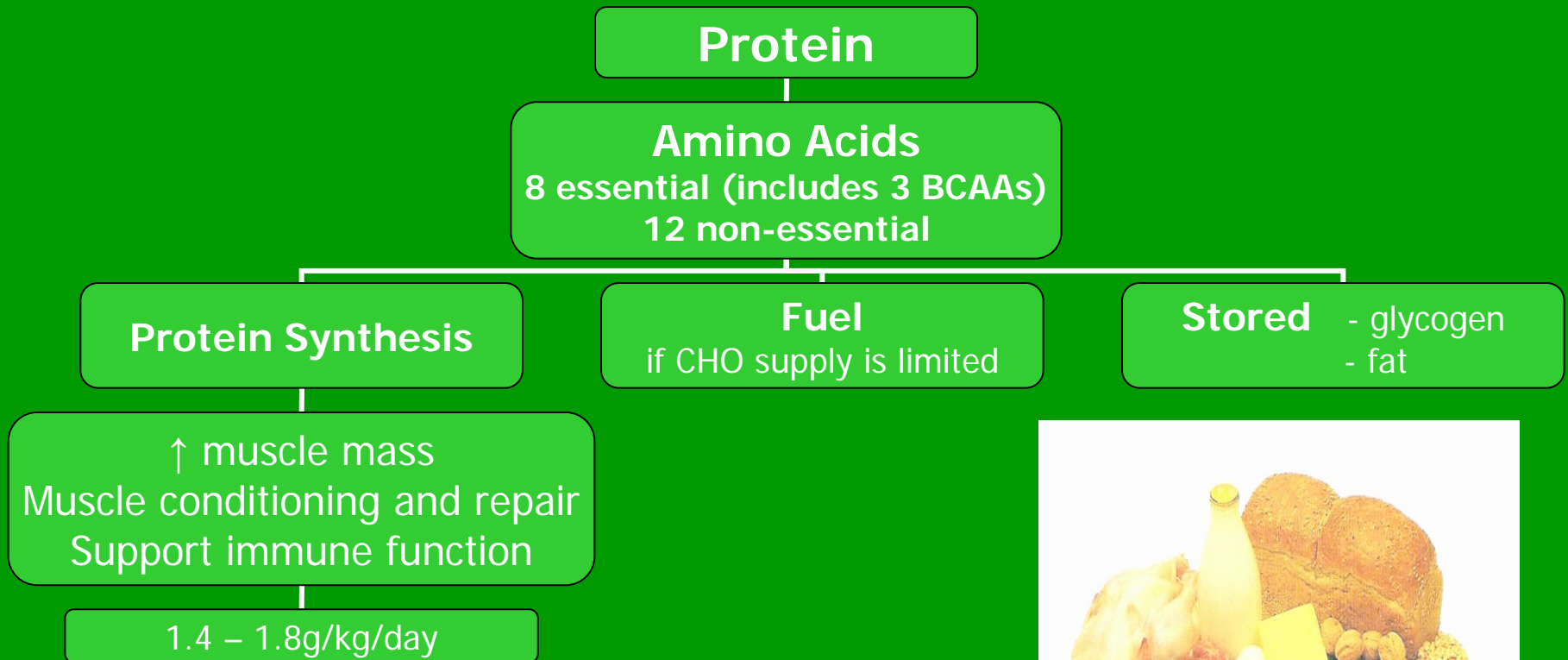
Rapid muscle contraction during activity



Glycogen utilisation during exercise at 75% $\dot{V}O_2$ max



Protein ... how it supports muscle growth

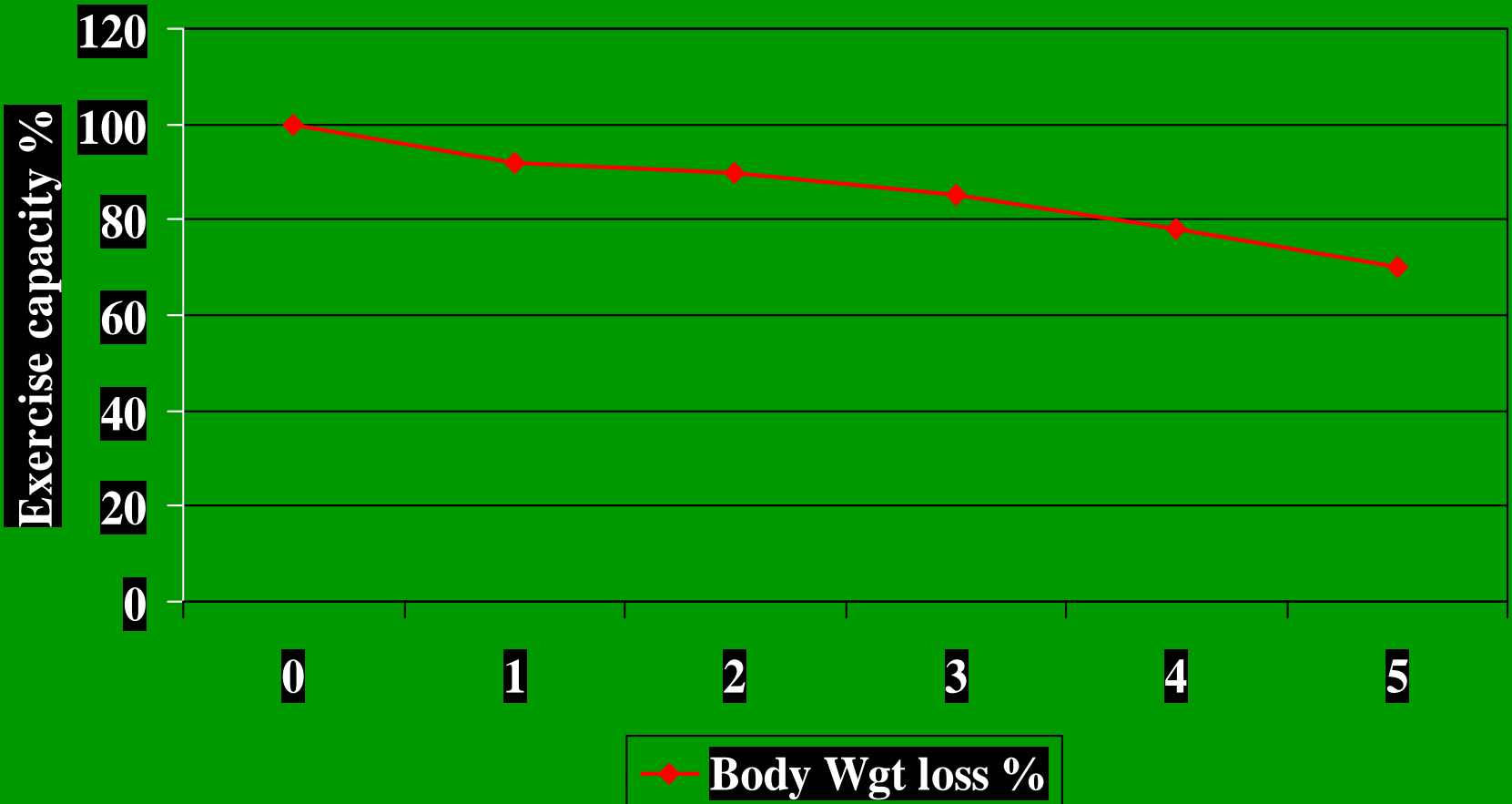


Sweat losses



- Your body sweats to keep you cool
- The amount you sweat depends on
 - Temperature
 - Humidity
 - Work rate
 - Length of session
 - Clothing

Effect of dehydration on exercise capacity

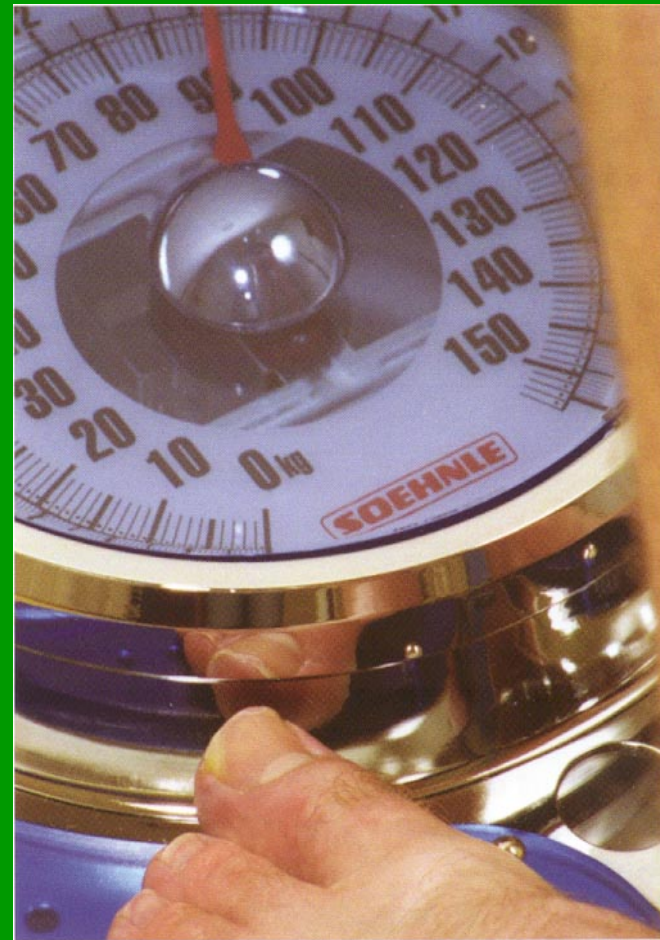


Warning signs of dehydration

- Thirst
- Headaches
- Dark coloured urine
- Irritability
- Fatigue
- Loss of performance
- Flushed skin
- Muscle cramps
- Dizziness
- Nausea
- Heat sensations on head or neck
- Chills
- Rapid pulse
- Clammy skin
- High body temperature *
- Drowsiness *
- Confusion *
- Collapse *

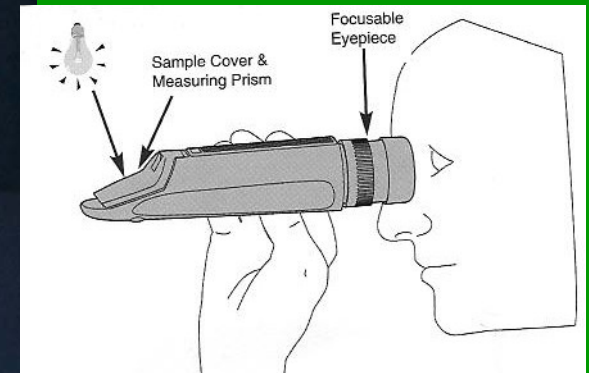
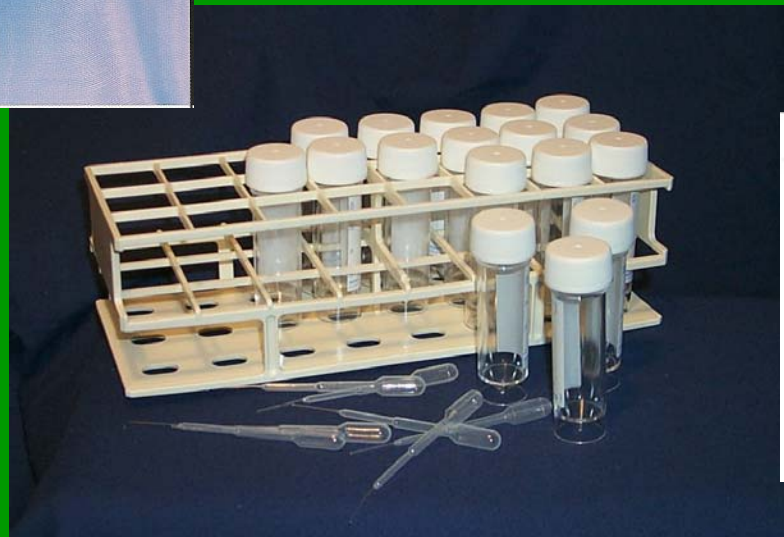
Weight monitoring

- Weigh before and after exercise session to gauge fluid losses
- 1kg weight loss = 1 - 1 ½ litres lost
- Aim to drink 80% of losses in exercise session



Urine Specific Gravity (USG)

USG \leq 1.020 = hydrated



The best time to eat before training or competition is

- a. Immediately before
- b. Within 1 hour before
- c. 2 to 4 hours before
- d. Not within 6 hours before

Nutrient timing

Providing the right nutrients at the right time

- To fuel up and re-fuel
- To maintain steady blood sugar levels
- To hydrate and re-hydrate
- To provide raw materials for growth and repair

Fuel-up before training or competition

- high carbohydrate, low fat, low fibre
- low/moderate protein

Meal with pasta/potato/rice

Sandwich or roll

Yogurt and fresh fruit

Pancakes or scones

Breakfast cereal with milk



After training or competition

- a. You must wait 2 – 3 hours before you eat
- b. You should eat a carbohydrate/protein-rich snack as soon as possible
- c. If you don't eat within 30 minutes, you might as well not bother eating anything
- d. You should try to eat a fat-rich snack to replenish your fat stores

Nutrition Factors in recovery

- Timing of intake
 - Within ½ hour of exercise
- A combination of carbohydrate and protein is the best for:
 - Refuelling
 - Providing raw material for muscle growth/conditioning

Post training or competition snacks and drinks

- ✓ Water, diluted fruit juices, squash or sports drink
- ✓ Sandwiches or filled rolls
- ✓ Bananas, grapes, apples, mandarin oranges
- ✓ Sultanas, raisins, dried apricots
- ✓ Fruit loaf, pancakes, scones
- ✓ Jaffa cakes, fig rolls
- ✓ Cereal and energy bars
- ✓ Yogurts, Yogurt drinks
- ✓ Smoothies/Milkshakes



Practice guidelines for rehydration

- ✓ Adequate supply of cool palatable drinks available
- ✓ Re-hydrate with a fluid that contains some carbohydrate and sodium
- ✓ Fluid continues to be lost during recovery period
- ✓ Alcohol intake can increase urine losses



Which of the following is true?

- a. Sports supplements are essential for improved performance
- b. Dietary supplements are controlled and so are safe to take
- c. Some dietary supplements may be useful to support training
- d. You can believe the manufacturer's claims for improved performance

Sports supplements – what are they?

Sports supplements come in many forms:

- Normal foods
- Sports drinks, bars etc
- Meal replacements
- Herbal products
- Nutraceuticals



Sports supplement classification

- Dietary supplements
- Nutritional ergogenic aids

Nutritional supplements are not licensed

Category 1 Dietary supplements

- provide nutrients found in everyday foods in a form that is convenient or practical
 - or are designed to prevent or treat a nutritional deficiency
 - allow players to meet a specific need in training or competition, if not met through diet
- Sports drinks
 - Sports gels
 - Sports bars
 - Liquid meal replacements
 - Carbohydrate powders
 - Protein powders
 - Multi-vitamins/minerals
 - Iron supplements, Calcium supplements

Category 2 Nutritional Ergogenic Aids

- contain larger amounts of nutrients than would be typically found in everyday foods
- claim to have a direct work enhancing effect on performance
- often rely on theoretical or anecdotal support rather than on scientific evidence

Commonly used ergogenic aids include:

- Creatine
- Caffeine
- Individual amino acids
- Herbal preparations

And lots more

Reasons for supplement use

- To benefit health
- To compensate for an inadequate diet
- To meet demands of hard training
- Because 'team-mates' take them
- Recommended by coach or other influential person
- To improve performance

MUSCLETECH

Research And Development

ONLINE



Adult vs children/adolescents

- Young athletes should not need supplements
- Greatest performance gains result from maturation in age and training
- Long-term safety of some supplements on a growing body is unknown

Sports supplement recommendations

- Good diet is key – supplements don't compensate
- Nutrient deficiency – supplement with medical advice
- Supplements that may have benefit – creatine, caffeine, buffering agents
- Individual assessment for supplement use

Sports supplement recommendations

- Cost/benefit/risk analysis
- Players should seek assurances from companies
- Supplements should not be used where nutritional needs are met by diet
- Supplements should not be used in young athletes, unless medically prescribed

Devising a nutrition programme

Consider

- athletes understanding of sports nutrition principles
- practical nutrition knowledge and skills
- overcommitted lifestyles
- coping with travel

Devising a nutrition programme

Practicalities ...

- food choices
- how to eat enough in the right amounts
- timing of food and fluid intake
- dietary supplements??
- coping with travel



Devising a nutrition programme

- What would your objectives be?
- What components should be included?
- How would they be delivered?
- Who should/could deliver these components?
- How would it be funded?
- How could it link with other sports science providers?