

# Nutrition: Guidelines

give yourself the best chance.....

enhance performance and produce results

# Introduction



- ❑ One of the most important aspects of sporting performance often overlooked by paddlers are their nutritional requirements
- ❑ Paddlers competing at a elite level have a heavy training schedule and need to ensure they adequately refuel and recover for each session and during competition
- ❑ It is important to consider the energy systems you are using for paddling.

# Energy systems



- **ATP-PC**
  - Explosive energy 10 secs
- **Glycolytic – anaerobic energy system**
  - Capacity 2-3 mins
  - Produces lactic acid
  - Oxygen not required
- **Aerobic Energy system**
  - Oxygen required – longer lasting
  - Uses glycogen stored in muscle and present in blood

**Note:** three systems work simultaneously. By increasing your aerobic capacity/fitness you will be able to use anaerobic system with greater efficiency.

# What are nutrients?

- **Macronutrients** – nutrients needed in relatively large quantities

Examples:

- Protein
- Carbohydrates (CHO)
- Fats & Oils

- **Micronutrients** – nutrients needed in lower quantities

Examples:

- Vitamins
- Minerals

# Importance of Protein



**Protein** – promotes growth and development

(Muscle, soft tissues and organs consist largely of protein and for tissue growth and repair protein is required. It is also a source of energy).

**Sources** – in Western diet are eggs, meat, milk products, fish & poultry

**Other sources** – seafood, cereals (wheat, rice, corn), nuts and seeds

**1 gram = 16.7 kJ or 4 cal**

# Protein recommendations for athletes



<b>Population</b>	<b>Protein requirement g/kg/day</b>
General population/ Recreational athletes	0.80 – 1.0
Strength & power athletes	1.4 – 1.75
Competitive endurance athletes	1.2 – 1.6
Adolescent athletes	2.0

# Protein sources

<b>Food</b>	<b>g Protein/Serve</b>
Beef steak	44g 1 steak (160g)
Tuna in water	49g 1 can (185g)
Chicken	23g 2 drums
Cottage cheese	21g (1/2 cup)
Cashew nuts (raw)	13g (1/2 cup)
Poached egg	6g 1 egg
Multigrain bread	2g 1 slice
Kidney beans	5g (1/2 cup)
Calci-trim Milk	21g (1 cup)
Green peas	4g (1/2 cup)
Trim milk	11g (1 cup)

# Protein requirements



- Include protein in as many meals as possible, because.....
- Protein is metabolically expensive to process, helps to increase metabolism
- Protein fills up quicker and for longer
- Protein + carbs helps to moderate blood sugar levels and can help reduce cravings

# Protein shakes/meal replacement?



- The proteins found in commercial supplements are derived from natural protein – milk, egg or soy so offer no advantage over protein in other food sources
- Many are expensive
- Can be useful (especially for busy athletes) in addition to a balanced diet – not in place of
- Good when touring overseas or long trips where food sources may be unreliable

# Carbohydrates (CHO)

**1 gram = 16.7kj or 4 cal**

- provide energy for contracting muscle and brain function
- Glycogen is the storage form of CHO and is stored in muscle and liver
- main function of glycogen in the liver is to maintain constant blood glucose level

## **Recommended requirements for athletes**

- 45 – 65% of diet
- Up to 60 minutes moderate to high intensity 5-6g/kg/bwt
- 60-120 minutes moderate to high intensity 7-8g/kg/bwt
- 2-5 hours or intense daily training 9-10g/kg/bwt

# Carbohydrate sources



## **Carbohydrates per 100g/100ml**

White rice	25g
Potatoes (raw)	25g
Pasta	30g
Choc chip cookies	65g
Energy drinks (avg)	12g
White bread	55g

# Carbohydrates before exercise



- first meal on day of competition will usually be breakfast
- after rest overnight will allow muscle and liver glycogen stores to be replenished
- CHO in the hour before exercise will have more effect on liver glycogen stores

## **Recommendation:**

Low GI foods be consumed during breakfast prior to competition.

Planning and organisation is the key.

# Glycaemic Index



A ranking system that compares individual Carbohydrate foods according to their effect on blood glucose responses

## **Why is this important?**

A good way to monitor energy levels for pre-competition, during competition and post-competition preparation and recovery and ensure you eat right foods at right time

**High GI** – produce fast high response in blood glucose

**Low GI** – produce a slow response in blood glucose

# GI Ranking (examples of foods)

## High GI >70

cornflakes

Coco pops

white rice

sports drink

jelly beans

white bread

weetbix

mashed potato

popcorn

## Mod GI 55-69

honey

boiled potato

basmati rice

bananas

sultanas

ice cream

nutrigrain

coca-cola

porridge

## Low GI <55

all bran

pasta

baked beans

oranges

apples

yoghurt

milk chocolate

corn

orange juice

# Carbohydrates during exercise



CHO recommended for exercise 30 mins or more in duration.  
Believed to improve endurance capacity and performance.

**Purpose:** Maintain blood glucose levels

Can be achieved through sports drinks, eg, powerade, replace

**Recommendation:**

Any drinks or foods you consume during exercise be tested during training sessions to ensure you can tolerate them.

# Carbohydrates after exercise



- Main purpose to replenish depleted stores of liver and muscle glycogen  
(1 – 1.5 g/kg/body weight)
- Consume protein along with carbs to aid muscle recovery and repair within 30 mins of completion of exercise
- Smart training = recovery between training sessions and competition
- The sooner you recover the sooner you can try again

# Fats & Oils



- Secondary energy source
- Requires CHO to be burned efficiently
- Stored as adipose tissue around organs
- Fat carries fat soluble vitamins (micronutrients)  
A, D, E and K

**1 gram = 37kj or 9 cal**

# Good Fats v's Bad Fats



- Minimise intake of saturated fat, animal fats, margarines, processed foods
- Focus on unsaturated fat sources – these contain the essential fatty acids called Omega 3 and Omega 6

## **Omega 3 – sources:**

- Seeds, nuts, avacado, tuna, salmon

## **Omega 6 sources:**

- Seeds, olive oil, nuts, vegetable oil

# Hydration

- Increased muscular activity results in an increase in heat production and fluid loss through sweat.
- For every litre of fluid lost paddlers should replace it with 1.5 litres of fluid
- a 2% drop in body weight can significantly impair performance.
- Besides containing water sweat also contains electrolytes like sodium and potassium, important for cellular activity.
- Levels of hydration can be monitored very easily by recording weight, before and after sessions (gym, paddling) or observing the colour of urine, light straw coloured (well hydrated), yellow or dark (not sufficiently hydrated).



# Fluid replacement

- For many paddlers undertaking sprints water will be sufficient to keep levels of hydration at maximum
- For endurance events 30 mins + paddlers should look at keeping blood glucose levels constant – carbohydrate required for endurance events. By consuming sports drinks during race ie, powerade, gatorade, replace are some suggestions as they contain electrolytes that are lost in the sweating process
- Try different drinks out during training to measure suitability and effect
- Energy drinks like V, Red Bull are not recommended. While they give rapid sugar rush the effects do not last and can leave you feeling less energetic.

## Alcohol

**Note:** one standard drink (300ml glass of beer, a shot of spirits or glass of wine) contains 10 grams of Alcohol

**1 gram of Alcohol = 29kj or 7 cal**

**One drink = 70 cal, 12 pack = 840 cal**

# Food = Fuel



Your body is the machine.....

Right fuel      **→**      increased performance

.....important for high intensity training

# References



Jeukendrup, A., & Gleeson, M. (2004). *Sport Nutrition: an introduction to energy production and performance*. Champaign, Ill: Human Kinetics.

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