Nutrition for Success

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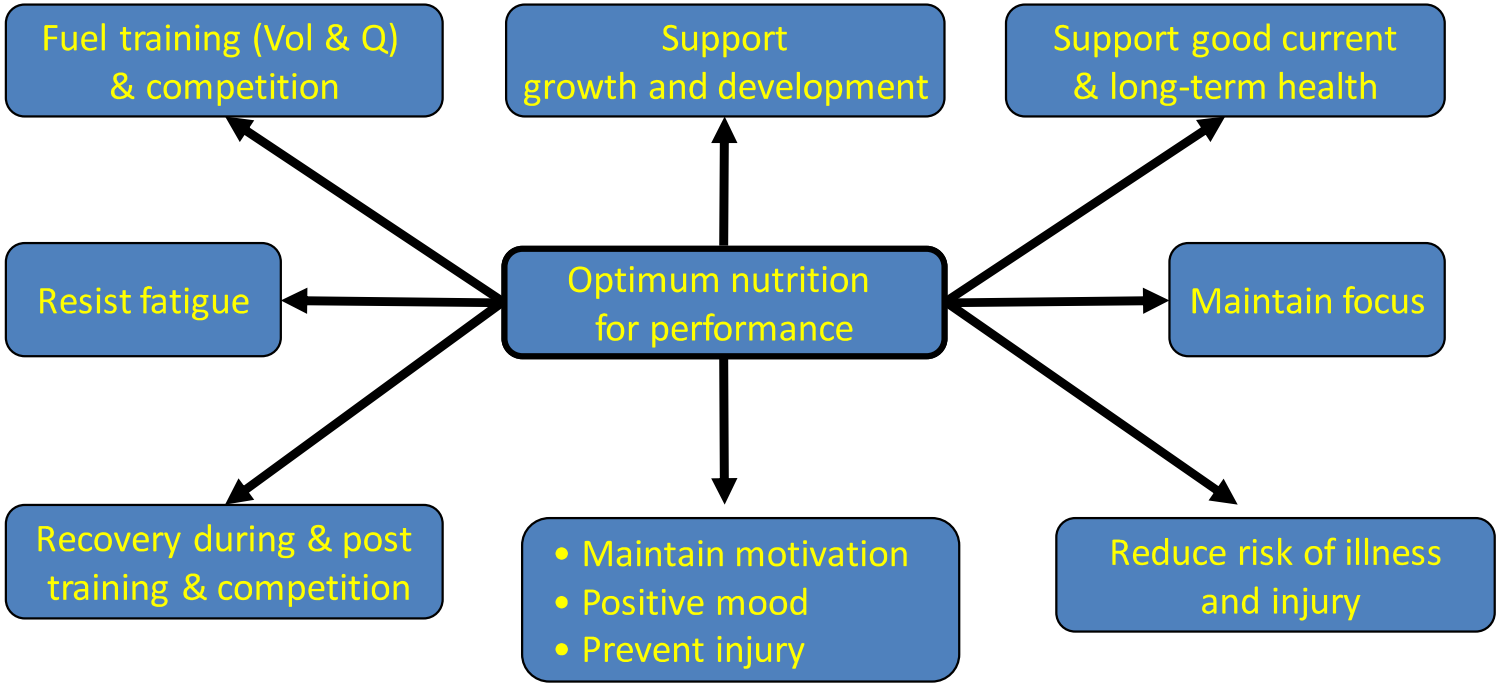
What's coming up?

- Why nutrition matters
- What and when
  Macro and micronutrients
- Challenges

- Hydration
- Race day nutrition principles and plan
- Case studies

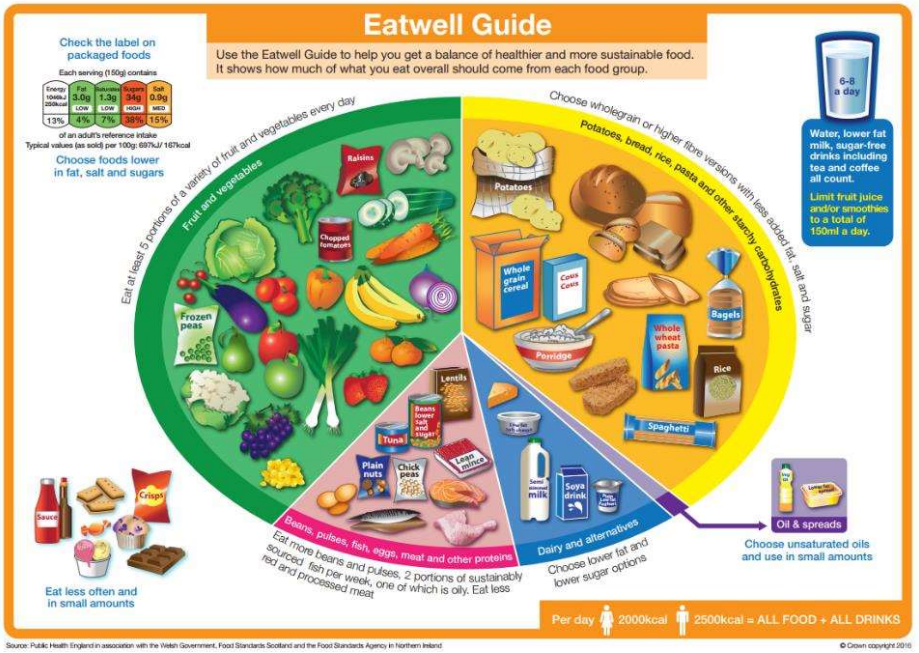
How are nutrition choices important for our swimmers?



Aim of Nutrition

The principal goals of nutrition in young athletes are:

1. **To provide sufficient nutrition for growth and development**
2. **To maintain and promote good short and long term health**



Energy

Assessing if your athlete is having sufficient energy…..

- **Objective** measures such as **height, weight, height velocity** ie growth indicators

- **Subjective** indicators of inadequate energy may include **persistent fatigue, low or variable mood, timing and progression through puberty, menstrual dysfunction**

Energy sources

Carbohydrate

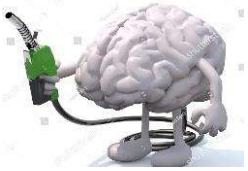
Energy source for muscle and brain

Key points

- Important to have good quality carbohydrates spread throughout the day

1 instant oat pot (55 g)

- There is available carbohydrate for exercise (physical and mental)

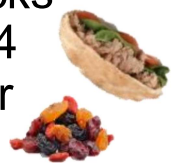


- Younger athletes respond well to 'top ups' of carbohydrate

In practice this means:

✓High fibre carbohydrate at each meal eg porridge, w/m bread, w/m pasta

✓Top up carbohydrate based snacks before exercise, ideally a meal 2-4 hours before or small snack 1 hour before



✓Choice of snack will depend on how long before exercise

✓During exercise snack required in sessions lasting more then 1 hour

Fat for energy

Key points

- Important to ensure an appropriate supply of fat soluble vitamins A,D,E and K and essential fatty acids
- Provide adequate energy to support the growth and maturation of an adolescent athlete (Petrie et al.,2004).
- Body fat, in the form of adipose tissue and triacylglycerol stored within muscle, is the main endogenous energy store for both adults and adolescents

In practice this means

✓ Include good fats in the diet eg peanut butter, avocado, olive oil

✓Fats should be a mixture of mono and polyunsaturated fats

✓Saturated fats and foods containing these eg crisps/biscuits be kept to a minimum

Protein sources

Protein

required for growth and muscle repair

Key points

- Important to have protein spread throughout the day, especially after exercise as part of recovery
- Adolescent athletes do have an increased requirement for protein during times of growth
- Young athletes can meet their protein requirements from food sources

In practice this means

✓Include a source of protein at each meal

✓Make sure post exercise recovery snacks contain protein and carbohydrate

✓A late evening or bedtime milky drink eg Ovaltine or cereal or yoghurt with fruit can be a good way to get additional protein in especially after a hard training session or days play

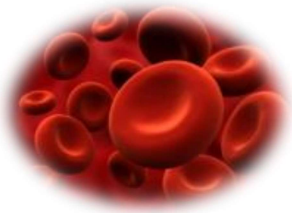
Protein

- Protein requirements can be met from food sources
- Vegetarian and vegan adolescent athletes should ensure they consume adequate amounts of protein from a wide variety of sources
- Protein supplements are not necessary and carry risk of contamination.
- Food first – focusing on whole foods and positive behaviours and environments

https://www.ukad.org.uk/athletes/managing-supplement-risks

http://www.humankinetics.com/bases-webinars-series/bases-webinars-series/moving-beyond-the-athlete-a-call-to-take-action-on-the-dopogenic-environmentnbsp

Iron



Iron

Supports training efforts and immunity

Key Points

- Young athletes have been found to have suboptimal iron status
- Important to optimise intake of dietary iron and absorption of iron to prevent iron deficiency developing
- Vegetarians - dietary iron availability maybe lower so may need to have higher intake of iron to match requirements
- Females have higher losses then males due to menstruation

In practice this means

✓ Eat lean **red meat** at least twice a week

✓ Add **animal products** with **plant based foods** to increase non-haem iron absorption.

✓ Eat an **iron fortified** breakfast cereal.

✓ Include foods rich in **vitamin C** with meals and snacks

✓ **Avoid** drinking **tea/coffee** with meals and snacks (wait for an hour after eating).

Vitamin D

Important for bone health and immunity

- The body can produce vitamin D from **direct** sun exposure (UVB rays) between April and September in UK
- **15-20 min** in the sun depending on skin tone.
- The sun must be at ~50° above the horizon.
- **Uncovered** with no sunscreen but taking care not to burn.
- Vitamin D supports calcium absorption

Food sources

- Oily fish
- Eggs and cheese
- Fortified foods
  - Margarine
  - Breakfast cereal
  - Milk

+ Vitamin D

Calcium

Calcium

Important for bone health and muscle function

Key Points

- Adolescents calcium requirements are high due to skeletal growth- applies to boys and girls
- Requirements change throughout life
- Important to optimise calcium intake for short and longterm bone health
- Be aware of sources of calcium in addition to dairy
- If using non dairy milk, make sure it is fortified with calcium

In practice this means

- ✓ Meet calcium requirements daily by eating a range of calcium containing foods
- ✓ For more information on calcium go to BDA https://www.bda.uk.com/resource/calcium.html

Examples	Calcium
Glass of milk (250 mL)	300 mg
Matchbox sized piece of cheese (30 g)	222 mg
¼ block of tofu (115 g)	406 mg
3 fillets of sardines (75 g)	509 mg
1 medium pot of yogurt (125 g)	250 mg
1 cup cooked kale (65 g)	100 mg
2 slices wholemeal bread (75 g)	50 mg

Fluid requirements

Fluids

Important for general well being.
Effect of dehydration is cumulative

Key Points

- Fluid requirements vary from day to day and are dependent on level of activity and the ambient temperature
- Children have a greater surface area-to-body mass ratio than adults which causes a greater heat gain from the environment on a hot day and a greater heat loss to the environment on a cold day
- Sweating capacity is considerably lower in children than in adults, which reduces the ability of children to dissipate heat by evaporation

In practice this means

Encourage good hydration habits by:

- ✓ Having drinks available before, after and during exercise
- ✓ Make sure drinks are at the right temperature according to conditions
- ✓ Flavoured drinks are often better tolerated and consumed than plain water
- ✓ Be aware of the effects of poor hydration – headaches, faint, overheating in the young athlete

Before

2-4hours before training have a high carbohydrate, low fat meal or snack and a drink

If it's an early morning session,
Have a carbohydrate based breakfast or smoothie.

Good nutrition is important to help you train consistently, avoid illness and help to reduce tiredness.

During

Keep hydrated –remember **5 gulps every 15 minutes.**
If session is more than 1 hour have a small carbohydrate based snack after 45 minutes

Your body stores carbohydrate for fuel which needs to be replaced and topped up regularly. The amount you need will depend on the duration and intensity of exercise.

After

Within 30minutes of finishing have a drink and eat a meal or snack containing carbohydrate and protein.

You need to eat as soon as possible after a session especially when you have an evening session followed by an early morning session or 2 sessions in one day.

Race day
Example Nutrition plan

Keep fluids topped up throughout the day

3 R's of RECOVERY NUTRITION
Refuel
Rehydrate
Repair

0530-0600 — 2-3 hours before racing

Breakfast
Carbohydrate based
such as porridge but can include protein e.g. high protein yoghurt, scrambled eggs & toast or homemade smoothie if cannot tolerate solid food.

0745-1100 — Warm-Up 0745 & Heats 0900

Snack
Carbohydrate based
snacks such as rice cakes, crackers, granola bars, bananas, dried fruit or bagel thins with filling.

1115-1145 — In between sessions

Light Lunch
Containing carbohydrate and protein
e.g. sandwich/wrap with fruit & yoghurt or pasta with chicken/tuna/veg.
Portion size eaten dependent on time between heats.

1220-1500 — Warm up 1220 Heats 1320

Snack
Carbohydrate based
snacks such as rice cakes, crackers, granola bars, bananas, dried fruit or bagel thins with filling.

1500-1530 — In between sessions

Pre-race snack
Carbohydrate rich, familiar to you and low in fat & fibre.
e.g. pancakes & jam, banana, sandwich thin, soreen bar.

1630-1930 — Finals Warm up 1630 Start 1730

Snack
Carbohydrate based
snacks such as rice cakes, crackers, granola bars, bananas, dried fruit, pancakes or bagel thins with filling.

1930 — Aim for within 30 minutes post race

Post Event Snack
Carbohydrate and protein
e.g. high protein yoghurt and banana, pancake and milk based smoothie or cold meat wrap.

2030-2100

Evening Meal
Balanced meal containing carbohydrate, protein and vegetables/fruit.

Quick meals:
Fajita chicken with wraps & salad
Soup & toasted sandwich
Baked potato with tuna/beans/veg
Chicken stir fry with noodles
Pasta with chicken/tuna and sauce

Race Nutrition plan

2-4 hours before race

Breakfast
Carbohydrate based
Eg porridge or overnight oats
And banana

90 mins pre race

Consider a Small pre-race snack. Only have if you feel you need it

- ✓ Carbohydrate rich
- ✓ Low in fat & fibre
- ✓ Familiar to you

Eg banana or dried fruit or Nak'd bar or pancake & jam

5-10 mins pre race

15 Minutes pre race
Sip on sugary squash or homemade isotonic drink
Maybe try jelly sweets eg jelly babies

RACE

Keep your fluids topped up throughout the whole day

After race

Recovery snack asap– containing carbohydrate

1-2 hour post race

Balanced meal containing carbohydrate, protein and vegetables/fruit

Make sure that any supplements you take are batch tested and keep a record of your searches and batch test certificates

Challenges

Challenge	Possible Impact	Solution
Travel  	*Miss meals – impacts on energy and hydration levels*	**Be prepared take own snacks and drinks – plan ahead**
Availability of food at venue 	*Eating foods you don't like or not eating enough or right thing*	**Take your own lunches for first day**  **Lunch on the go pots ,Sportkitchen Make your own sports drinks, no bake snacks , mini malt loaf bars, bananas, dried fruit**
Nerves 	*Can't eat In sufficient nutrient intake esp hydration and energy*	**Reduce fibre a day or so before; liquid nutrition eg smoothies, homemade isotonic drinks, own snacks/familiar foods**  ***Check our recipes on SS Blog***
Long days 	*Don't eat enough*	**Be prepared – make up a snack bag with various snacks from drinks to rice cakes, bananas, lunch pots**

Basic smoothie

Ingredients:

½ - 1 cup milk or fluid alternative (juice/ water)
½ - 1 cup fruit (best if frozen) eg mixed berries
1 teaspoon vanilla essence (optional)
Sprinkle of cinnamon (optional)

Additions which can boost different nutrients:

Carbohydrates:

½ tablespoon honey
¼ cup oats
1 banana (more than berries)

Protein:

1 tablespoon skimmed milk powder
½ cup 0% fat high protein yoghurt

Healthy fats:

¼ cup nuts or seeds
1 tablespoon peanut butter
¼ - ½ avocado

What is a Sports drinks

Isotonic

Contain **sugars** and **electrolytes** Provide **energy** and will help (re)**hydrate** you.

How to make your own:

- Regular squash (**not** no added sugar) add a pinch of salt (1/2 tsp) and add water (1L).
- Mix fruit juice (250ml) and water (750ml) add a pinch of salt (1/2 tsp) and pop in your bottle

Hypotonic

Contain **electrolytes** and much lower amounts of sugar.

Will help to (re)**hydrate** you, but provide very little energy.

How to make your own:

- Sugar free squash (no added sugar), add pinch (1/2 tsp) of salt and water (1L)

Performance Nutrition
Considering a supplement?

ASSESS THE NEED / RISK / CONSEQUENCE

sportscotland.org.uk

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high performance expertise