

## **SWIMMING NUTRITION FOR SWIMMERS**

### **Nutrition and Hydration for Swimmers**

Swimming is a sport that presents some unique challenges in nutrition and hydration. Swimmers train every day and sometimes twice a day with additional after school clubs and sports teams, during competition you may race four or five times a day. How you prepare your body between practices and competition is crucial for optimal performance. Nutrition is something you can control and it will directly affect your performance both in training and competition.

### **Essential Nutrients for Swimmers**

Think of your body as a highly tuned race car. If you have ever watch motorsport or formula 1 you will notice the importance of pit stops to refuel the cars or change tyres. Waiting too long to refuel the car or placing the wrong tyres on can have disastrous consequences in the race. Just as with a car, how your body performs depends largely on the fuel you put in. If you give your body the right types of fuel and fill up at the right times you will put yourself in a position to perform at your best. There are six basic nutrients the body needs to fuel itself, repair and facilitate recovery.

### **Carbohydrate**

Carbohydrate is broken down by the body into sugar (such as glucose) and contrary to what you may hear about low carb diets is critical to swimming performance. The sugar that enters the blood stream is stored in the muscles and liver as glycogen. This stored glycogen is in turn used as the primary energy source for providing energy to the brain, nervous system and working muscles. Carbohydrate should make up 55-60% of your consumed calories. Think of a dinner plate roughly two thirds of your plate should have foods rich in carbohydrate.

Good sources of carbohydrate are; fruits, vegetables, cereals, grains, beans, nuts and dairy products.

Top 10 foods highest in carbohydrate;

1. Sugars, sweeteners and syrups
2. Jelly sweets and hard candie sweets
3. Dried fruit
4. Cereals
5. Snacks – rice cakes, crisp bread, peanuts, multigrain bars
6. Cakes and Cookies
7. Flour and rice flour
8. Jam's and Preserves
9. Bread, Toast, Pizza, Bagels
10. Potato's – hash browns, chips, baked, roasted

### **Protein**

Protein provides little energy to the body but is essential for building muscle and repairing damage that can occur during training. As a general rule protein should represent 20-30% of your consumed daily intake when moderate to intense training takes place. This is 0.5-0.7 grams of protein per pound of body weight. This can easily increase during periods of weight training or resistance training up to 1 gram per pound of body weight. If you eat meat on a daily basis you are likely to be getting enough protein.

Most athletes regularly exceed the recommended amount of protein in their diets so protein shakes and other forms of supplements are often unnecessary.

Good sources of protein are; lean red meat, chicken, fish, low fat dairy products and soy products such as tofu.

### **Fat**

Contrary to popular belief dietary fat is essential to athletes it provides a dense source of energy and supports many physiological functions. Its recommended swimmers should consume 0.35-0.7 grams of fat per pound of body weight during the swimming season. Avoid saturated fats found in foods like red meat, full fat dairy products and fried foods. Focus on consuming mono-saturated and polyunsaturated fat which can be found in oils, nuts and fatty fish such as salmon.

### **Vitamins**

Vitamins are organic compounds that allow the body to produce energy during exercise while also supporting a variety of other physiological functions. Vitamins cannot be produced by the body and therefore must come from the foods we eat. If possible it's best to get your vitamins from the food you eat but during the swimming season multi-vitamin tables suitable for children and adolescence can be beneficial.

**Vitamin A** – Promotes growth and repair of body tissues, bone and healthy skin and hair. Essential for night vision. Foods such as cheese, egg yolk, milk and butter contain vitamin A.

**B Vitamins** - There are 8 B vitamins and they play a vital role in cell metabolism. Foods such as peppers, carrots, spinach, peaches, peas, orange juice, cheese, eggs peanut butter contain B vitamins.

**Vitamin C** – Promotes healthy cell development, wound healing and resistance to infections and serves as an antioxidant. Foods such as broccoli, cauliflower, strawberries, oranges, tomatoes, onions and potato are high in vitamin C.

**Vitamin D** – Aids in absorption of calcium and helps build bone mass and prevent bone loss. Foods such as fish, milk, margarine, eggs and butter are high in vitamin D.

**Vitamin E** – Serves as antioxidant and is needed for normal growth and development. Foods such as peanut butter, nuts mayonnaise and eggs are high in vitamin E.

## **Minerals**

Minerals are inorganic substances such as iron, calcium and sodium which assist in the breakdown of food and support many bodily functions. Minerals are not produced by the body they are consumed in the foods you eat. The body needs over 20 minerals to function properly and these mineral must be available in sufficient amounts to ensure healthy and athletic performance. Swimmers typically consume adequate amounts of minerals, but deficiencies can occur when general food intake is too low. It's usually iron or calcium which is too low and can have a negative effect on health and performance.

Iron rich foods are; dark green leafy vegetables, brown rice, pulses and beans, fish and tofu.

Calcium rich foods are; milk, yogurt, cheese, dairy and some seafood's.

## **Water**

Many people do not think of water as a nutrient, however water makes up as much as 60% of your total body weight and inadequate intake can lead to dehydration and a loss of body water can quickly impair performance. Water is critical for the function of many bodily systems and functions.

Swimmers should drink a minimum of 500ml of water for every hour of training.

## **Top Tips for Hydration**

Hydrate properly before training

Drink small amounts but often during training

Aggressively drink fluids immediately after training

## **Nutrition For Young Swimmers**

A Healthy diet will help you train harder, perform better, recover faster, reduce your chances of illness and help gain a competitive edge.

### **Before Training**

Fuel Up: Eat a meal 2-3 hours (where possible) before training (carb + protein + **fat low GI**).

Hydrate properly: drink 200-300ml 2 hours before swimming.

### **Suggested pre-training meals:**

- Jacket potato with cheese, tuna or baked beans plus veg.
- Pasta with tomato-based sauce or pesto, cheese, tuna or chicken plus veg.
- Rice with Chicken, fish or beans plus veg.
- Sandwich / toast with tuna, cheese, chicken or peanut butter.
- One pot dish with pulses, veg, lean meat or fish plus potatoes.

If you don't have enough time for a meal before training (i.e. morning training) have a snack 20-30 mins before training with 200-300ml water. You should never train on empty.

### **Suggested pre-training snacks:**

- Toast (wholegrain) with honey or jam.
- Banana (or other fresh fruit).
- Handful of dried fruit (i.e. raisins).
- Porridge or wholegrain breakfast cereal with milk.

### **During Training**

Prevent dehydration, drink plenty.

- Drink around 500ml per hour.
- Drink little and often.

For training sessions lasting longer than 1 hour, swimmers may find that consuming additional fuel (drink or food) helps maintain performance and delays fatigue.

Suitable drinks include:

- Isotonic sports drinks.
- Squash regular or high juice diluted 1 to 6.
- Water plus snack

Mid training snacks:

- Half a banana
- A cereal bar
- Handful of raisins

These foods should be accompanied by a drink of water.

Avoid the following during training as they are too concentrated in sugars and lack nutrition.

- Sweets
- Jelly Cubes
- Energy tablets
- High Energy Drinks ( i.e. Red Bull)

The above should only be consumed with in 20 minutes prior to racing.

### **After Training**

After training a swimmers priority should be to refuel and rehydrate replenishing depleted muscle glycogen and restoring normal electrolyte levels. The faster you can get food and water the quicker the recovery process will start enabling you to train or compete sooner.

Working Muscles are sponges after a training session muscles are like a damp sponge that has had all the glycogen squeezed out of it. If you quickly place a sponge in water it will soak up the water until full, in the same way your muscles soak up glycogen to rebuild energy stores. If you leave a sponge to dry out it becomes less efficient at soaking up water. When water is available the sponge will eventually soak up the water it will just take longer. The same is true of your muscles the quicker you get carbohydrate into your body the quicker you will recover.

Re-hydrate: drink straight away (water or juice not energy or fizzy drinks)

Milk shakes or milk is proven to aid recovery time if consumed with in 20 minutes of training.

Refuel: Carb and Protein within 30 minutes.

Examples:

- Whole banana.
- 500ml milk, milk shake or flavoured milk.
- 2 X 150g pots of fruit yoghurt.
- One cereal bar + one pot of yoghurt.
- Wholemeal sandwich or toast with peanut butter or cheese.

### **Competition Day**

- Plan and organise your eating around each session and the races you are doing.
- Only eat light meals.
- Re-hydrate immediately after swimming (warm up and racing).
- 2 hours before the start of the first warm up have a carb + protein meal.
- Avoid snacking on sweets and jelly cubes, consume these within 20 minutes of your race.
- After you have swum refuel with light snack.
- Never leave long gaps without re-hydrating or re-fuelling.

### **Snacks can include:**

- Small quantity of pasta with, chicken, tuna, cheese, and any veg.
- Cereals
- Half a sandwich on wholegrain bread with, jam, peanut butter, cheese, tuna, chicken.

### **GI foods for training and competition**

#### **What are GI foods?**

In 1981, professor of nutrition Dr David Jenkins was looking at how different carbohydrate-rich foods affected blood sugar levels in people with diabetes and discovered that, contrary to popular belief, many starchy foods affected blood sugar levels quite dramatically, while some sugary foods had little effect. From his research, he developed a scale called the Glycaemic Index, which quite simply ranked foods based on the effect they had on blood sugar levels.

#### **How it works**

The Glycaemic Index runs from 0 to 100 and usually uses glucose - which has a GI value of 100 - as the reference. The effect other foods have on blood sugar levels are then compared with this. In simple terms, the GI index tells us whether a food raises blood sugar levels dramatically, moderately or a little bit. Foods that have only a slow, small effect on blood sugar have a low GI value, while those causing a rapid and massive rise in blood sugar have a high GI value.

The theory behind training diets based on the Glycaemic Index is that foods with a low GI value slowly release sugar into the blood, providing you with a steady supply of energy, leaving you feeling satisfied longer so that you're less likely to snack and have dips in performance. In contrast, foods with a high GI value cause a rapid - but short-lived - rise in blood sugar (hyperactive children!). During Training this can leave you lacking in energy and feeling hungry within a short time, with the result that you end up needing a snack. Foods with high GI values should only be consumed predominantly prior to racing.

The table below gives you an idea of some foods to look out for and there are a few surprises.

**Table 1 - Low GI Foods**

<b>Food</b>	<b>GI</b>
Roasted and salted peanuts	14
Low-fat yoghurt with sweetener	14
Cherries	22

Grapefruit	25
Pearl barley	25
Red lentils	26
Whole milk	27
Dried apricots	31
Butter beans	31
Fettucine pasta	32
Skimmed milk	32
Low-fat fruit yoghurt	33
Wholemeal spaghetti	37
Apples	38
Pears	38
Tomato soup, canned	38
Apple juice, unsweetened	40
Noodles	40
White spaghetti	41
All Bran	42
Chick peas, canned	42
Peaches	42
Porridge made with water	42
Lentil soup	44
Oranges	44
Macaroni	45
Green grapes	46
Orange juice	46
Peas	48
Baked beans in tomato sauce	48
Carrots, boiled	49
Milk chocolate	49
Kiwi fruit	52
Stoneground wholemeal bread	53
Crisps	54

Special K	54
Banana	55
Raw oatbran	55
Sweetcorn	55

### Medium Glycaemic Index foods (56 to 69)

**Table 2 - Moderate GI Foods**

Muesli, non toasted	56
Boiled potatoes	56
Sultanas	56
Pitta bread	57
Basmati Rice	58
Honey	58
Digestive biscuit	59
Cheese and tomato pizza	60
Ice cream	61
New potatoes	62
Coca cola	63
Apricots, canned in syrup	64
Raisins	64
Shortbread biscuit	64
Couscous	65
Rye bread	65
Pineapple, fresh	66
Cantaloupe melon	67
Croissant	67
Shredded wheat	67
Mars bar	68
Ryvita	69
Crumpet, toasted	69
Weetabix	69
Wholemeal bread	69

### High Glycaemic Index foods (70 or more)

**Table 3 - High GI Foods**

Mashed potato	70
White bread	70
Watermelon	72
Swede	72
Bagel	72
Branflakes	74
Cheerios	74
French fries	75
Coco Pops	77
Jelly beans	80
Rice cakes	82
Rice Krispies	82
Cornflakes	84
Jacket potato	85
Puffed wheat	89
Baguette	95
Parsnips, boiled	97
White rice, steamed	98