

# BRITISH SWIMMING WORLD CLASS PROGRAMME

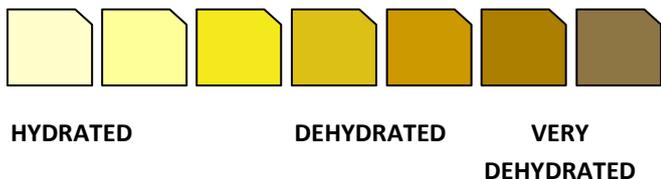
## FACT SHEET

### The Basics Hydration

Good hydration is essential for optimal performance. When we exercise heat is produced and the main mechanism by which the body loses the heat is by sweating. If we do not replace the fluid that is lost as sweat the body will become dehydrated, contributing to impaired performance. By taking a few simple measures you can ensure you begin exercise in a well-hydrated state and consume sufficient amounts of appropriate fluids during exercise to prevent excessive dehydration (2-3% body weight loss) and changes in electrolyte balance.

#### Assessment of pre-exercise hydration

Monitoring your urine colour is a simple indicator of your hydration status; it has been shown that there is a strong relationship between urine colour and other hydration markers. When hydrated your urine will be a pale-yellow colour and there will be lots of it! If your urine is dark in colour and low in volume you need to drink more (see urine chart below).



Some vitamin supplements (B-complexes), the reddish pigment found in beetroot and some other food pigments can cause dark yellow or orange urine but it will be even darker if dehydrated. The important thing is to look for changes from your normal to establish your hydration status. Once you have a hydration plan in place, continue to monitor your urine colour to make sure your plan is covering your hydration requirements.<sup>1</sup>

<sup>1</sup> Maughan RJ & Shirreffs (2008) Development of Individual Hydration Strategies for Athletes. International journal of Sports Nutrition & Exercise Metabolism, 18, 457-472.

#### Hydration status and sweat loss during exercise

The amount and rate of fluid needed depends upon your individual sweat rate, exercise duration and intensity and opportunities to drink. Fluid requirements can be monitored by routine measurements of body weight before and after training to estimate fluid losses. Do this regularly after a variety of sessions to devise an appropriate hydration plan (see *Hydration- Sweat Losses* fact sheet for more information). This is especially important in swimming because there are no visible cues of sweating as you are immersed in water.

In general, sweat losses in swimming are relatively small, even during intensive training, because heat loss by evaporation is of little help as the body is immersed in water. As sweat losses are small and drinking opportunities are frequent, dehydration is not a major issue in swimming, with many swimmers often gaining body mass due to excessive drinking during training<sup>2</sup>. Drinking excessive amounts of water or low-sodium drinks when sweat losses are small can in extreme cases lead to a condition called hyponatremia (low levels of sodium in the blood). Hyponatremia causes symptoms similar to dehydration such as dizziness, headaches and nausea and can be life threatening. Consuming sodium-containing fluids, such as a sports drink, and matching fluid losses with fluid intake lowers the risk of this occurring.

#### What should I drink?

Fluid intake is enhanced when drinks are cool (~15°C), flavoured and contain sodium (salt). This makes sports drinks a good choice during exercise. Sports drinks have been carefully developed and researched to improve fluid intake and maximise performance. Most

<sup>2</sup> Maughan RJ, Dargavel LA, Hares R & Shirreffs (2009) Water and Salt Balance of Well-trained Swimmers in Training, International Journal of Sport Nutrition & Exercise Metabolism, 19, 598-606.

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contain multiple transportable carbohydrates (glucose and fructose) at a concentration (4-8%) that allows refuelling to take place. Fruit cordials, soft drinks and juices generally contain greater than 10% carbohydrate and are low sodium so are a less suitable choice and may increase the risk of stomach discomfort<sup>3</sup>.

Sports and drinks options for before, during and after training:

- **SIS Go Electrolyte**  
Fast hydration and sustained energy
- **Lucozade Body Fuel**  
Provides carbohydrate and maintains hydration
- **CNP Professional Pro Hydrate**  
Carbohydrate drink plus electrolytes to improve hydration

Whilst water is still a suitable option during training, it does not stimulate fluid uptake as much as a sports drink and therefore you need to drink to a plan and be careful not to drink excessive amounts of water alone.

### Competition hydration

Your hydration plan should ensure that you consume adequate fluids in the days leading up to competition. As your event will only last a few minutes, there is no opportunity for fluid intake. Therefore, if you have several races in a day, a plan should be made to ensure fluid losses are recovered after each session. Monitoring early morning urine levels is a good way to know how successful your hydration plan is and should be adapted accordingly.

Before an event you should slowly drink 5ml fluid per kg of your body weight<sup>3</sup>, for example: 350ml for a

70kg athlete. Consuming food and drinks that contain sodium will also stimulate thirst and retain the fluids.

### Post-exercise rehydration

After exercise urine production will still continue to get rid of waste products, even if you are in negative fluid balance. Therefore it is recommended that you drink **1.5L of fluid for each kg of body weight lost**. So if you lose 2 kg of body weight then you should drink 3 litres of fluid to ensure rehydration. This should commence immediately after exercise but should not happen all at once; drinking large volumes of low sodium drinks at once will produce more urine and not aid rehydration. Fluid should be consumed in small amounts over the 2-3 hours after a race or training until the figure is reached.

Sodium containing food and drinks will stimulate thirst and promote fluid retention, allowing a speedier return to fluid balance. Milk has also been shown to be an effective rehydration drink<sup>4</sup>, due to its naturally high electrolyte content and carbohydrate content similar to that of most commercially available sports drinks so could make up part of the fluids in your rehydration plan.



### Key points of hydration:

- Monitor urine colour and sweat losses during exercise to monitor your hydration
- Consume cool (~15°C) drinks that contain sodium and carbohydrates (4-8%), such as sports drinks.
- Drink 1.5L for each kg of body weight lost

<sup>3</sup> In Burke LM & Deakin V, Clinical Sports Nutrition. Australia, The McGrae-Hill Companies, 2010:330-357.

<sup>4</sup> Roy BD (2008) Milk: the new sports drink? A review. Journal of the International Society of Sports Nutrition, 5,15