

# BRITISH SWIMMING WORLD CLASS PROGRAMME

## FACT SHEET

### Competition & Training

#### Recovery Nutrition

The nutritional challenge after exercise is to rehydrate, replenish carbohydrate stores and repair muscle with protein. Recovery becomes even more of a challenge when completing training or racing more than once a day.

#### What are the priorities for recovery nutrition?

There are a number of aims of recovery nutrition:

- Top up carbohydrate stores (as glycogen in liver and muscles)
- Replace fluid and electrolytes lost in sweat
- Regenerate new muscle protein, repair existing muscle and begin the adaptation process
- Boost your immune system so it can handle the damage and challenges caused by exercise

How well you recover after a bout of exercise will impact how well you can perform in subsequent training and competition. Your nutritional requirements will depend on your event, intensity and duration of the training and recovery between sessions.

#### Refuelling

The energy you need to train and compete comes from the carbohydrate that you store (as glycogen in the liver and muscles, as well as glucose in your blood). Fatigue during exercise is often associated with depletion of these stores and therefore, you should try and start exercise with high muscle and liver glycogen for optimal performance.

- To maximise recovery consume a carbohydrate rich snack or meal within the first **30 minutes** of completing training, as this is when glycogen synthesis is at its greatest.

- This is especially important when there are only 4-8 hours of recovery available between training sessions. Make sure you are organised and have suitable food and drinks available.
- Consume carbohydrate rich foods and fluids with medium to high Glycaemic Index of about **1g of carbohydrate per kg of body mass** over several hours until normal eating patterns are resumed<sup>1</sup>.

#### *50g carbohydrate rich snacks<sup>3</sup>*

- 800-1000ml of sports drink
- 500ml of fruit juice, soft drink or flavoured mineral water
- 60-70g packet of jelly beans or jelly babies
- 3 medium pieces of fruit or 2 bananas
- 1 round of thick-sliced sandwiches

#### Rehydration

Most athletes will finish training with some level of fluid deficit. If you do not replace the fluid lost in sweat you will become dehydrated, which can negatively affect performance. Mild-severe fluid losses can also cause gastrointestinal discomfort and upset, which may limit what you feel like eating, affecting your recovery.

- Aim to consume **1.5L of fluid for each kg of body weight lost**. So if you lose 2kg, you should drink 3L of fluid to ensure rehydration.

<sup>1</sup> Based on recommendations on Post-Event Recovery in Maughan RJ & Burke LM. Sports Nutrition. Oxford:Blackwell Science, 2002: 93-103.

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- Fluid should be consumed in small amounts for 2-3 hours after exercise until the figure is reached.<sup>2</sup>

Fluid replacement alone will not guarantee rehydration. You also need to replace the electrolytes lost in sweat, especially sodium (salt). Consuming food and drinks containing sodium will stimulate thirst and improve fluid retention allowing a speedier return to fluid balance. Flavoured and cool drinks (~15°) also increase voluntary intake of fluids (refer to *Hydration-Sweat Losses* and *Hydration* fact sheets for more information).

### Muscle repair and rebuilding

During exercise muscle protein is broken down. Immediately after exercise there is a decrease in muscle breakdown and an increase in muscle building. Consuming **10-20g of protein** in recovery snacks and meals immediately after exercise provides the amino acids (building blocks of proteins) needed to promote muscle repair and training adaptations. Adding a source of carbohydrate to this post-exercise snack will further enhance recovery.<sup>2</sup>

### Immunity boosting

Diet and recovery nutrition is essential in maintaining your immune function. Beginning exercise with depleted carbohydrate stores and dehydrated can put greater stress on your immune system, increasing your risk of illness. Consuming carbohydrate and fluids immediately after exercise can help maintain immune function (see *Immune Function* fact sheet).

<sup>2</sup> Burke LM. Nutrition for recovery after training and competition. In Burke LM and Deakin V, *Clinical Sports Nutrition*. Australia, the McGrae-Hill Companies, 2010: 358-392.

### Snacks & meals with 50g carbohydrate and at least 10g protein

- 250-350ml of liquid meal supplement
- 500ml flavoured low-fat milk/fruit or yoghurt smoothie
- 60g breakfast cereal with half cup milk
- Sandwiches with cheese/meat/chicken filling and one large piece of fruit
- 1 cup of fruit with 200g carton fruit flavoured yoghurt
- 200g of baked beans on 2 slices of toast

### Real foods vs. Supplements

Sometimes time and food options are limited so sports foods or supplements may be the best way to meet your recovery needs. Otherwise real food/fluid options are better as they also contribute to other dietary goals.

### Practical tips for recovery eating:

- Consume a protein and carbohydrate snack as soon as possible after exercise (within the first 30 minutes).
- Consume fluids containing electrolytes in 2-3 hours after exercise to replace 150% of the amount lost through sweat during exercise.
- If you do not feel hungry after exercise, focus on compact forms of carbohydrate, such as sports bars, sports drinks, milk shakes and fruit smoothies.
- Take foods and snacks with you to the pool that require minimal preparation and storage.

<sup>3</sup> Adapted from Burke LM. Nutrition for recovery after training and competition. In Burke LM and Deakin V, *Clinical Sports Nutrition*. Australia, the McGrae-Hill Companies, 2010:358-392.