

The nutritional demands of triathlon

Carin Hume MSc, Registered Dietitian

Characteristics of the sport and training

Triathlon consists of three disciplines – swimming, cycling and running - in that order. Triathlon events are completed over various distances and times for the different events range from approximately 1 hour for a sprint triathlon to up to 17 hours for an ironman distance triathlon. The table below shows the distances for the various triathlon events and carbohydrate recommendations (this is explained in greater depth further in factsheet).

Event	Distance	Carbohydrate required	Recommended intake
Sprint	0.75 km swim, 20 km cycle, 5 km run	Very small amount	0-30g per hour
Olympic or standard distance	1.5 km swim, 40 km cycle, 10 km run	Small amount	+/- 30g per hour
Double Olympic distance	3.0 km swim, 80 km cycle, 20 km run	Moderate amount	+/- 60g per hour
Long distance	4 km swim, 120 km cycle, 30 km run	Moderate amount	+/- 60g per hour
Half ironman	1.9 km swim, 90 km cycle, 21.1 km run	Moderate amount	+/- 60g per hour
Ironman	3.8 km swim, 180 km cycle, 42.2 km run	Large amount	60-90g per hour

Many triathletes train twice a day and over a week usually aim to do at least 3 sessions of each of the 3 disciplines. The time spent training varies enormously and some professional triathletes can train up to 40 hours per week.

Similar to other endurance athletes, triathletes like to achieve a low body fat level and therefore some may be weight conscious. This is in order to improve the power-to-weight ratio.

Nutrition and Performance

Daily recovery and training

As triathletes typically train 2-3 times per day, refuelling during and after sessions is important. Eating and drinking during long training rides and runs is essential for maximizing training adaptations; it also provides an opportunity to practice race day nutrition strategies. Daily carbohydrate recommendations are in the range of 7-10g per kg body weight depending on the training phase.

Nutrition for racing

There are not many sports where nutrition plays a more crucial role than in the Ironman. Nutrition can not only be the difference between finishing first or second, it can be the difference between finishing and not finishing. Nutrition during shorter events (i.e. sprint

and Olympic distance) is of far lesser importance than in longer distance events. The above table illustrates carbohydrate recommendations for the different triathlon events.

Carbohydrate loading

To restore muscle glycogen stores prior to competition athletes need to consume 7-12g carbohydrate per kilogram body weight for 24-48 hours prior to competition. This is more applicable to athletes competing in longer distance events such as half Ironman and Ironman distance events.

For athletes competing in shorter distance events the taper in training leading into the race, along with a moderately high carbohydrate diet (i.e. 7-8g/kg body weight) is sufficient for maximising glycogen stores. However, for longer distance events the athlete should aim to have at least 10g of carbohydrate per kilogram body weight for 48-72 hours prior to the event. Athletes need to realise that the taper phase reduces energy expenditure and is therefore not an opportunity to consume excessive amounts of foods in the week leading up to the event.

Pre-race nutrition

Since most triathlon races start early in the morning it is important to eat a pre-race meal to top up glycogen stores. Ideally this meal should be eaten 1-4 hours before racing and contain 1-4g carbohydrate per kilogram body weight. For the Ironman this typically means having breakfast at 4am. It is a good idea to include foods and drinks which contain sodium in the breakfast for longer distance events.

Nutrition for long-course triathlon racing

There are 3 nutrition goals for long-course triathlon racing i.e. to meet hourly carbohydrate requirements; to stay adequately hydrated during the race; and to replace electrolytes, with the most important one being sodium.

Athletes competing in the Ironman or similar events should consume 1g of carbohydrate per kg body weight for each hour of the race. Some athletes may consume up to 1.5g of carbohydrate per kg body weight on the bike and consume slightly less carbohydrate on the run. There is evidence to show that multiple transportable carbohydrates result in increased exogenous carbohydrate oxidation compared with glucose alone – this is of importance for athletes consuming more than 60g of carbohydrate per hour. Secondly, fluid requirements have to be met. Ideally the athlete should have an idea of their individual fluid balance during training sessions and competition to serve as a guide for determining hourly fluid needs. Ideally fluid balance should be determined in conditions similar to those in which the athlete will be racing. In practice most athletes should aim to consume 600 -1000ml of fluid per hour, with the lower amount being consumed on the run and higher amount on the bike. Slower athletes may be tempted to over consume fluids, especially on the run. This may result in hyponatremia and is therefore not recommended. This leads onto the third goal of replacing electrolytes i.e. sodium. Similar to fluid requirements, sodium requirements are individual and are related to the individual's sweat rate and composition. The average concentration of sodium in sweat is 1g per litre sweat. The American College of Sports Medicine (1996) suggests consuming 0.5-0.7g sodium per hour during prolonged exercise. Some athletes may require far more than this.

Use of caffeine before and during the event can be considered to enhance race performance.

Practical tips:

- The cycle leg of the race presents the best opportunity to consume food and fluid, where as the run is far more challenging. It can be a long day for some; therefore it is often good to eat some solid food on the bike. To ensure fluid requirements are met it is advisable to drink to the higher side of the suggested hourly fluid guidelines while on the bike, as it is very unlikely that fluid requirements will be met on the run.
- It may be advisable to walk through aid stations in Ironman events to ensure that sufficient fluid is consumed.
- Minimize “flavour fatigue” by having a variety of tastes and textures available.
- The athlete should be familiar with products that will be offered on the course and ideally have used these products in training if they will be having them on race day.
- Keep it simple. It can pose a challenge to keep track with nutrition consumed during the race; therefore the athlete should have a clear race plan where they have an hourly goal.

This fact sheet is the view of the author and is for information only

