

The making of an IRONMAN

by Brian Walpole

Since its inception in 1978, the Ironman Triathlon has become one of the world's foremost endurance events. We look at the physical and training requirements and the potentially fatal risks of completing the world's hardest one-day event.

It all started with a debate amongst a group of recreational athletes about which sport produced the fittest athletes – running, swimming or cycling. They decided to combine three existing races taking place on their native island of Hawaii into one ultra-endurance event. So the Waikiki Rough Water Swim, the Around Oahu Bike Race and the Honolulu Marathon were united into a daunting 3.8km swim, 180km cycle and 42km run. Legend has it that, just before the first-ever race, one of the organisers muttered the words that led to the event's trademark name, 'Whoever wins today shall be called the Ironman'. Gordon Haller was the world's first Ironman in 1978, completing the course in 11 hours, 46 minutes and 58 seconds. The finishing times over the last two decades have decreased dramatically, with current times generally below 8 hours 30 minutes for males and 9 hours 30 minutes for females.

Fuel for the race

Research analysing 10 male and 8 female competitors in an Ironman race found total energy expenditure to be approximately 10,036 kcals for men and 8570 kcals for females. This equates to nearly four times the recommended daily sedentary calorie intake needed for each gender group. Due to the enormous amount of energy consumed by the body during the race, it is imperative that competitors ingest an adequate amount of food during the race (carbohydrates being the most readily available energy source) as well as sufficiently hydrating and replacing electrolytes lost through sweating. The same research study monitored the amount of food taken in during the race and found the average total calorie consumption to be approximately 3940 kcal for men and 3115 kcal for females. The amount of carbohydrate consumed during the race was inversely related to finishing time, suggesting that the more you eat during the race, the quicker you will finish [1]. During the race, organisers supply athletes with a wide variety of nutrient-dense foods and drinks to replenish energy stores.

Effects on the body

Post-race weight loss is a common side effect, with an average deficit of 2.5kg found between pre and post measurements after completion of the event [2]. This weight reduction includes loss of fat and glycogen, as well as the metabolic water stored with glycogen (around 2.7 grams of water per gram of glycogen). Subjects lost further weight (1kg) in the 11–14 hours after they finished the race, despite ingesting food and fluids. The authors speculated that the cause may be persistently increased metabolic rate after the race, leading to increased fat and glycogen oxidation. Essentially, the body has to work hard over an extended period to just recover – these guys burn more calories during this rest period than most do during a hard gym session!

Hydrating properly during the race is essential, as drinking too little may induce the performance-slowng effects of dehydration; and drinking too much can lead to the development of exercise-induced hyponatraemia (Table 1). Often seen during Ironman races, hyponatraemia can cause a plethora of problems including vomiting, dizziness, decreased consciousness and possible coma ... something that needs to be avoided when trying to complete a 224km race! The research on typical fluid intakes during an Ironman varies from study to study but sits in the range of 400–1000 ml/hour [2], with others reporting amounts as high as 1.5 litres/hour [3]. Other reported complications include gastrointestinal

Table 1: Potential physiological hazards

Hyponatraemia	An abnormally low concentration of sodium in the blood. Too little sodium can cause cells to malfunction and extremely low sodium can be fatal.
Hyperthermia	Overheating of the body which may be due to extreme weather conditions. Unrelieved hyperthermia can lead to collapse and death.
CHO depletion	The depletion of carbohydrate (glycogen) stores within the muscle and liver tissue which can lead to low blood glucose levels affecting brain and bodily function.
Central fatigue	The failure to initiate and/or sustain attentional tasks and physical activity or the inability to maintain 'focused attention'.
Hypoglycaemia	Caused by low blood sugar. Symptoms include palpitations, trembling, intense hunger and fatigue.

distress, hyperthermia, CHO depletion, central fatigue, and hypoglycaemia [4, 5] (Table 1).

Training requirements

It is generally accepted that athletic ability is determined by both environmental and genetic factors. Paramount to success in an Ironman triathlon are running economy, VO_2 max and lactate threshold, the key components that determine endurance performance [6] and which can all be improved through sufficient training. So how do Ironman athletes train? A 6-month analysis of 10 Ironman athletes preceding a race event found that they spent 69% of their total training time below their lactate threshold (the point at which lactate production increases above normal), 25% of their time above the lactate threshold but below the lactate turnpoint (a distinct and sudden increase in blood lactate) and 6% of their time training above the lactate turnpoint, with an average training time of around 10 hours per week spread between time on the bike, in the water and on the road [7].

Although the research gives us an insight into the requirements of running the race, to get the scoop on Ironman training straight from the horse's mouth, I asked Andy Brodziak, two times Ironman World Championship competitor, about the trials and tribulations of preparing for this immense endurance race.

Andy's routine is to train twice a day, seven days a week for 2–3 hours per day, so he is by no means a social runner – this man means business. He told me, 'On a usual training day in a build-up to Kona (World Championships), I might do a 4km open-water swim in the lake, followed by an hour's run with 1km efforts'.

He splits his time between the different disciplines of the race according to where he and his coach think he needs most improvement: 'My coach and I tend to work on different elements through the season but biking naturally takes up the majority of the time. You have to be careful of the running as that's where you can push too much and not arrive at the start line.'

A lifetime dream

Recalling how it feels to compete in the event, Andy explained what can be going through your head: 'The swim is the most intense experience you can get and then, once it's settled after the turnaround, your mind wanders to the bike leg, you pray the winds aren't going to play havoc and you hope you get enough fluids to stay down during the 180km ... but to be honest, the run is the hardest part, especially the last 10km.'

This event becomes more popular each year, with advertising and television coverage increasing daily, and more and more 'everyday' individuals are pushing themselves to the extremes to attain their lifetime dream of becoming an Ironman. This exceptional event requires a dedication that far exceeds normal sporting commitment. It is truly deserving of its name – and is only for those who are driven to physical achievements beyond normal human capability, those who dream of following in the footsteps of its creators.



Above, Andy Brodziak has competed twice: 'only those who finish the race can know what it feels like'. Background image, Andy comments: 'biking takes up the majority of the time'.

Andy left me with a few wise words for anyone who wants to become an Ironman. Although I do not class myself as an endurance enthusiast, I have to admit his love of the sport was an inspiration: '*Nothing comes close to completing an Ironman. Only those who finish the race can know what it feels like, as Hawaii is the hardest one-day event in the world. Keep trying until you get there and it will change your life for ever.*'

References

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