

RACE PACING

Athletes can race at maximum effort for only approximately 45 seconds before severe acidosis (lactic build up) sets in. This does not mean that maximum speed can be maintained for 40 sec as the onset of acidosis is progressive after approximately 10-15 seconds. Therefore the swimmers speed will continue to slow for the remaining 25-30 seconds. Swimmers must delay the onset of acidosis by swimming more comfortably in the early stages of the race. Swimmers can usually compensate for the speed they give up early in the race by increased speed, or maintaining speed at the later stages, thus achieving a faster overall time. On the other hand, swimmers who make the mistake of swimming too fast early in their races usually find that they slow down so much in the latter portions that they lose any advantage gained.

Race Guidelines

50m

The best plan for a 50m race is to sprint from start to finish. However the stroke rate and distance per stroke should be selected to provide maximum velocity (swimming speed) for each individual. Use too high a stroke rate and technique, streamline and consequently velocity can be lost. On the other hand, a stroke rate too slow can also lose swimming speed. Swimmers must aim to have correct technique at their fastest possible rate before their stroke begins to falter and be able to maintain it for the duration of the race.

100m Races

In 100m events, the usual pace is to swim the first 50m approximately 0.50 to 0.80 sec slower than their best 50 best time. The times for backstroke and freestyle are usually over 1.00 second slower because of the additional time taken to turn. The 100m race must begin their races at near maximum velocity although this can vary slightly depending on individuals, strokes and the time taken to complete the race. The target paces for 100m events can vary due to the difference in starts and turns from stroke to stroke but a general guide is below.

100m Race Split Guide

Stroke	50m split (sec's off 50m pb)	Drop off (1 st 50 to 2 nd 50)
Butterfly	0.50-0.80	2.50-3.00
Backstroke	1.10-1.40	0.70-1.50
Breaststroke	0.50-0.80	3.50-4.00
Freestyle	1.10-1.40	1.50-2.00

Summary Maintain a consistent pace and stroke rate for the 1st $\frac{3}{4}$ of the race with an increase for the final $\frac{1}{4}$. Effort should be progressive.

200m Races

The pacing plans for all 200m events seem to be similar for all strokes. Swimmers should start at the fastest pace they can maintain throughout the race without losing speed at the end. Most swimmers start the 1st 50 with a stroke rate too high to be maintained and then decrease towards the end of the 50 or middle of the race to then increase towards the end of the race. Sudden changes in speed and effort generally increase the effort requirement, so swimmers should save the changes in speed and stroke rate for the final 50. Swimmers are probably best to start with a stroke rate and stroke length that they can maintain for $\frac{3}{4}$ of the race and still increase in the final 50m. Breaststrokers may even start slightly slower as they may need to pace more carefully due to the high energy costs of their strokes (i.e. additional drag from kick and body movement). Negative splits in 200m races are rare although an even split can be more beneficial to distance specialist stepping down to the 200m or backstroke swimmers who do not having the same advantage from the dive. Generally a drop off between the 100 splits should be approximately 1.00-2.00 seconds for backstroke/freestyle and 3.00-4.50 seconds on butterfly and breaststroke.

200m Race Split Guide

Stroke	50m split (sec's off 50m pb)	100m split (sec's off 100m pb)	Drop off (1 st 100 too 2 nd 100)	Stroke
Butterfly	2.00-3.00 For all strokes	2.00-3.00 For all strokes	3.00-4.50	Butterfly
Backstroke			1.00-2.00	Backstroke
Breaststroke			3.00-4.50	Breaststroke
Freestyle			1.00-2.00	Freestyle

Summary swimmers must start with a stroke rate which they can maintain throughout or which allows an increase in the final 50m. The effort required to do either will be progressive.

400m Races

Great swimmers in these events have performed with both even-pace and negative split race plans. Some world record and world championship swims have been done by swimmers maintaining a consistent velocity/speed throughout 350m and then turning on a fast sprint for the finish. Swimmers who have held a consistent speed have also had great results.

Ian Thorpe in the 2000 Olympic Games was an even split race with a fast finish. Ian's splits of 1:48.86 and 1:51.73 (200 splits) at first glance look to be an example of fast slow pacing. But by looking at the 100's, an even pace with fast finish becomes evident. Ian swam the 1st 100 in 52.64 with the 2nd and 3rd 100's as mid 56.2 and picked up the pace on the final 100 with a 55.5. His time on the 1st 100 was approximately 3.00 seconds slower than his 100 best. At the 200 he was approximately 3.50 slower than his 200 best. His swimming speed for the 1st 50 was the fastest but the remaining speed was constant with an increase in the final 50 as his stroke rate increased slightly and leg kick increased greatly. Ian Thorpe's pace plan represents an effective way to swim the 400. All the greatest 400 races have been done with an even pace plan or negative split although most have paced the 1st 50 slightly slower than Ian Thorpe.

Distance swimmers can normally swim the 1st ½ of the race close to their best times. Many swim the 1st 100 & 200m within 3.00-4.00 seconds of their best. Middle distance swimmers usually have to hold back a little more to allow a strong finish. Those who like to negative split should increase their speed gradually from 200m for 150m to then sprint for the finish. Negative split swimmers should not try to increase their speed suddenly as the energy cost will be too great. Swimmers have been swimming too slowly if their final 100m is 2.00-3.00 seconds faster than the middle 100's.

Summary select a pace and stroke rate which can be sustained throughout the race or which will allow a gradual build from 200m. Both should allow a sprint finish with additional leg kick and slightly increased stroke rate. Effort must be progressive throughout. Swimmers should aim for the 100 & 200 splits to be approximately 3.00-4.00 seconds slower than their best.

800 & 1500 Races

The key to these races are consistency in velocity (swimming speed), stroke rates and distance per stroke. Swimmers in the 800 should aim to swim the 1st 200 within 3.00-5.00 seconds of their best and within 4.00-6.00 seconds of their 400 best. Both 400m splits should be close together and a sprint finish over the last 50m should be used by gradually increasing speed with 100m to go. In the 1500 a consistent speed should again be sustained until the final 100-200m at which point speed should be increased gradually allowing a sprint finish. Most aim to swim the 1st 400 within 8-10 seconds of their best dropping approximately 4 seconds from the 1st 100 to their pace.

WHATEVER THE RACE
EFFORT MUST BE PROGRESSIVE
TURN SPEED MUST BE MAINTAINED
ALWAYS HAVE A FAST FINISH