



PRESS RELEASE FOR IMMEDIATE RELEASE

CRITICAL SWIM SPEED (CSS)

When purchasing or borrowing a swimming programme or when attending a coached lane at the local pool, have you ever wondered what all the ‘jargon’ means? Ever wondered how the coaches and swimmers alike all know how to pace themselves and at what intensity they ought to train? Apart from endless miles in the pool, and one to three hours per week land training, how do they achieve split times, race pace, swim rest ratios and how do they make it look so easy?

Swimming in this respect is not much different from many sports, whether you are recreational, club, triathlete or an elite swimmer, it all boils down to the same things when you are swimming.

- Stroke technique
- Stroke count
- Aerobic conditioning
- Anaerobic endurance
- Land Training
- Mileage in the pool
- Type of stroke

Many of us have tried and died trying to swim 400m straight away, many of us have wondered what “onset blood lactic tolerance” means, as well as “swim rest” mean. Fear not, in this test, we will look at the critical swim speed test, who can do it, and what you need to do it (apart from big lungs).

The test was devised by E Ginne in 1993¹ and is used by coaches and swimmers alike to test aerobic(s) that can be maintained. From the test results, Ginne concluded that training times could be calculated and set for swimmers using his unique/specific calculations. This means that swimmers can train just below “race pace” or “lactate threshold” to give it its other name.

Who can do it?

- Anyone who wishes to improve their aerobic swimming capacity

What do I need?

- Pool access doesn’t matter on the size although 25m or 50m is best
- Stop watch
- Mate to act as lap counter
- Stopwatch
- Calculator



Test Criteria

- Must be from a “push start”; no diving is permitted
- The swimmer must be allowed to fully recover from each swim
- Record the time for each swim in seconds and again in minutes (in order to compare your calculations)
- Calculate CSS by the approved method

Execution of the test

- Two swims over 400m
- Two swims over 50m.

Best method is to swim 400m then rest, then again swim 50m, after a recovery period swim the test again.

Calculation method for the test

- D1 is 50m
- D2 is 400m
- T1 is time over 50m recorded in seconds
- T2 is time over 400m recorded in seconds

So effectively the calculation is this

$$\text{CSS} = (D2 - D1) \div (T2 - T1)$$

Example of the calculation

Flipper swims 50m in 35 seconds and 400m in 297 seconds

$$\text{CSS} = (400 - 50) / (297 - 31)$$

$$\text{CSS} = 350 / 262$$

$$\text{CSS} = 1.32 \text{ metres/second}$$

What Now?

This is where we think back to lesson 1 regarding analyses and what we require to do

- Test
- Collate
- Analyse
- Discuss
- Disseminate
- Implement (training requirements etc)



Remember the results of the test are required to be analysed but can only be compared to previous CSS tests. With the correct conditioning, training and stroke technique between the tests, an indication will be found allowing an improvement in your aerobic capacity or failings in your training regime.

After collating and analysing the test results, how can we incorporate the results into our training schedule? Well that's the easy part. We can use the results to determine our training times.

Example

Bob is required to swim 6 x 400m, so the time can be calculated as follows

400m training time= Distance/CSS

Bob has a CSS of 1.35 meters per second, the next calculation is as follows

$400/1.35=296.3$ seconds = 4 minutes 56.3 seconds each 400m swimⁱⁱ

So how do we know it works well? The reliability of the test would depend on the test criteria and commitment of the athlete and many other factors as previously discussed in lesson 1. The test itself (CSS) has proven to be a valid and reliable measure of a swimmer's aerobic capacity; it has been rigorously tested by its inventor, who determined that the CSS for a swimmer was about 80 to 85% of maximum 100m swim speed and 90 to 95% of their 400m swim speed.ⁱⁱⁱ

This test will enable you to improve your aerobic fitness and incorporate the results into your training programme. Remember, tests should always be conducted as close as possible to the previous test and over testing can give poor results. Every 6 weeks is enough to test whether your programme and training is progressing or not.

Notes to Editors

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ⁱ Ginne, E. "The application of the critical power test to swimming and swim training programmes" (1993) National Sports Research Centre.

ⁱⁱ Brainmac Internet

ⁱⁱⁱ Ginne, E. "Critical speed and training intensities for swimming" (1993) Australian Sports Commission.