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Effects of 1500m swimming upon cycling performance in triathlon, taken from:

Delextrat et al. (2005) **Does 1500m swimming affect cycling energy expenditure in well trained triathletes.** Journal of Applied Physiology. 30(4) : 392-403.

How do you see olympic distance triathlon ? Do you see an endurance event lasting 2-3 hours in duration, or do you see a 1500m a 40k bike and a 10k run ? Due to the nature of triathlon it's easy to view it as 3 separate disciplines, when in fact, it is one continuous event.

Does it sound feasible that your swim can affect subsequent cycling ? After all, swimming uses your arms, surely it doesn't have any effect upon cycling. Delextrat (2005) set out to determine if and by how much, a 1500m swim affected subsequent cycling performance. Their study involved athletes swimming a 1500m time trial in the pool, before jumping onto cycle ergometers at pool side and riding for 30 minutes at 75% of maximal aerobic power (measured in watts). On a separate occasion, the athletes repeated the cycle ride, without having completed the swim. During the 2 cycle rides, oxygen consumption, heart rate and blood lactate levels were monitored.

The 1500m swim had a dramatic effect upon cycling. When compared against the 'cycle only' trial, the athletes showed a 5% increase in oxygen consumption, 9.3% in heart rate at the 5 minute mark on the bike, but gradually reduced to match those of the cycle only trial. By contrast, lactate levels were a huge 56% higher at the 5 minute mark on the bike and were still 43.9% higher following 30 minutes of cycling. It appeared that lactate rose sharply due to the prior swimming and athletes failed to recover from that rise.

Obviously, this large rise in lactate, which remained throughout the cycle test, would have a dramatic effect upon cycle performance. In addition to slowing the athletes, it would also result in faster glycogen depletion. The high lactate levels suggest a significant contribution from the anaerobic system, which is equivalent to 'driving with the choke out'.

Delextrat's findings matched those of previous studies (Delextrat 2003 & Laursen 2000), which also suggested that swimming has a negative performance upon cycling. The prior studies had involved 750m & 3000m swims respectively, the aim of the 2005 study was to examine the 1500m distance. A pattern appears to emerge from these previous studies, indicating that the shorter and more intense the swim, the greater the effect upon lactate, HR and oxygen consumption during the cycle section.

In practical terms, If you swim too hard, it will affect your cycling. We already accept that biking too hard affects running, so at least that completes the full set !!

Your swimming fitness will influence your running performance, if you are a more efficient swimmer, there will be a 'knock on effect' for your cycle and run performances. Maybe the swimmers in the test were poor swimmers and that's why the results were so significant ? Unfortunately not, they were national standard athletes averaging 30km swimming each week. We can presume that the impact of swim performance would be much greater with non-efficient swimmers. I'll admit that i have never completed a swim/bike brick session in my life, these results suggest that maybe it would be beneficial if you are focusing attention on sprint and olympic distance events.

Pacing will play a critical role, i'm sure everyone is guilty of the mad sprint which regularly occurs at the swim start. Going into oxygen deficit during the swim may be very hard to recover from during the cycle section. There is a possibility that you may not recover.

Finally, if you are still viewing triathlon as 3 disciplines, you need to adjust your eyes. Each of the disciplines are greatly influenced by the others. The olympic distance triathlon is a single endurance race.

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