

## **Implications of an Ultra-Endurance Swim on Heart Rate and Blood Lactate Response**

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The increased popularity of endurance activities have led to individual's challenging themselves to compete in single-day and multistage ultra-endurance events. Physiological responses to prolonged endurance exercise have mainly focused on activities lasting 1-3 hours. Much less information exists concerning the acute effects of ultra-endurance activities on heart rate and blood lactate concentrations.

**PURPOSE:** To assess the impact of a 24.3 mile open water swim on heart rate and lactate response.

**METHODS:** Thirty year old male weighing 177 pounds swam 24.3 miles from Long Point, Ontario, Canada to Northeast Township, PA on July 22, 2014. During the swim, the subject's heart rate was recorded using a Polar heart rate monitor model RCX5. Lactate levels were recorded before subject entered the water at the start of the swim and immediately following the swim and at five minute time intervals until levels reached pre-activity measured lactate using a Lactate Plus analyzer. Minute stroke counts were performed each hour of the swim to ensure constant and consistent intensity maintenance.

**RESULTS:** Subject maintained a heart rate range of 133-170 beats per minute for 99% of the swim duration (11 hours, 18 minutes, 29 seconds). Measured lactate was similar at start and upon completion of swim (2.4 vs. 2.5 mM/L). Lactate levels rose during each five minute interval immediately following completion of swim until minute 30 when it peaked (4.4 mM/L). Lactate levels did not return to pre-swim levels until minute 65 following completion of the swim (2.3 mM/L). **CONCLUSION:** Subject was able to maintain a fairly consistent heart rate throughout duration of swim. An interesting finding was that upon completion of the swim, subject experienced a rise in blood lactate concentrations.