



**Coincident threshold for muscle and blood lactate accumulation
during progressive exercise**

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The purpose of this study was to investigate the relationship between muscle and blood lactate (LA) concentration during progressive exercise. Additionally, the pattern of muscle lactate concentration during incremental exercise test was compared with the anaerobic threshold (AT) determined from blood lactate threshold (LT), the individual anaerobic threshold (IAT) and the 4 mmol/l AT (OBLA).

Muscle biopsies and simultaneous blood samples for lactate and pH determinations were taken at rest and immediately after completion of three exercise intensities (50 W below OBLA, at OBLA and 50 W above OBLA).

Muscle lactate concentration increased abruptly at exercise intensities greater than the below - OBLA stage (50,5% of VO_2 Max) and resembled a threshold. Blood LA and hydrogen ion accumulation patterns during incremental exercise paralleled the changes in the muscle LA concentration.

A high correlation was shown between muscle and blood lactate during increasing work loads ($r=0,91$), and the threshold increase in muscle lactate preceded that of the blood. The threshold VO_2 at the LT, IAT, and OBLA was not significantly different and occurred at 54, 55 and 60% VO_2 , respectively. The LT, IAT and OBLA corresponded to the muscle lactate threshold, thus indicating that muscle lactate metabolism does alter at an exercise intensity close to AT.

The postulated mechanism underlying the concept of AT and a practical importance of anaerobic threshold as a specific indicator of endurance capacity in sports and clinical medicine has been discussed.