

Effect of Hyperbaric Oxygenation on Lactate Concentration after Muscular Fatigue from Exercise in Healthy Male : Study in 60 Naval Cadets

Egtasaeng N.
Faculty of Medicine,
Chulalongkorn University
Sueblinvong T.
Department of Biochemistry,
Faculty of Medicine,
Chulalongkorn University

Objective : To Study the effects of 30 minutes exposure to 2.5 ATA with 100 % O₂ inhalation (hyperbaric oxygenation) on blood lactate concentration after muscular fatigue from incremental exercise on a cycle ergometer.

Methods : Sixty male naval cadets, age 20 - 23 years were randomly assigned into 3 groups of 20 volunteers each. The 3 groups were : Rest recovery group (RR), rest by sitting at ambient ; Oxygen recovery group (OR), sit at ambient with 100 % O₂ inhalation through O₂ mask ; Hyperbaric oxygenation (HBO₂) recovery group (HR), sit in pressurized chamber at 2.5 ATA with 100 % O₂ inhalation through O₂ mask. At experiment, group of volunteers had taken the incremental exercise test (ordinary lamp protocol) on cycle ergometer to exhaustion, then separated into the assigned recovery groups. Blood lactate concentration was analysed at before experiment and 5 minute intervals after exhaustion for total of 30 minutes.

Results : Comparisons of blood lactate concentration showed that there were significant differences ($p < 0.05$) in the decrease of blood lactate concentration at 20 and 25 minute interval after exhaustion between RR(10.3 ± 2.4 ; 9.0 ± 2.0 mmol/L, respectively) and HR(8.3 ± 2.7 ; 7.2 ± 2.4 mmol/L, respectively); at 15 minute interval, between OR group(11.6 ± 2.8 mmol/L) and HR group (9.4 ± 3.0 mmol/L).

Conclusions : It may be initially concluded that HBO₂ enhances the rate of lactate removal from peripheral blood vessel and therefore shortened the recovery time.