EFFECTS OF BLOOD METABOLISM AND CIRCULATION BY INHALING HYPEROXIA BEFORE, DURING AND AFTER HIGH INTENSITY EXERCISE

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The purposes of this study were to investigate the effects of blood lactate, glucose, heart rate, SpO2, blood pressure, free oxygen radical (FOR) by inhaling hyperoxia (97%) continuously before, during and after high intense exercise. Method: Seven high school level players (age: 16.1±0.48, aerobic threshold: 2.76±0.15mmol/l, anaerobic threshold: 3.34±0.31mmol/l) participated and tested to find out personal maximum persistent intensity previously. And then two randomized high intensity exercises in hyperoxia or normoxia treatment were carried out with 3 days apart. Each treatment consisted 2min 65% personal maximum intensity warm-up follow with 30 sec rest and then into 3x3min personal maximum intense exercises with 40 seconds interval, finally followed with 20 minutes recovery phases. Results showed that lactate accumulation was lower under hyperoxia (p<0.05) when reached near personal maximal intensity, and also had more efficiently lactate reducing rate at recovery phases when compared with normoxia; Glucose and heart rate had the same change patterns with the time course under both treatments; blood pressure under hyperoxia revealed that systolic blood pressure (SBP) was significantly higher at on set of exercise than that under normoxia (p<0.05), and form resting to on set of high intensity exercise also raised significantly when compared with normoxia(p<0.05); SpO2 was significantly higher on both exercise and recovery phases when compared with normoxia (p<0.05); No significantly differences were found on FOR under both treatments. Conclusions: by inhaling hyperoxia (97%) continuously before, during and after high intense exercise has lower lactate concentration at middle and end of exercise, and have higher systolic pressure and SpO2, but there is no significantly changed on FOR.

Keywords: Oxygen Consumption, Blood Pressure, Lactate