

ABSTRACT

The purpose of this research was to investigate the influence of relative hyperbaric hyperoxic environment on expiratory ventilation and carbon dioxide elimination during submaximal exercise.

This is a laboratory experimental research and using a randomized pretest posttest controlled group design. Subject of this research were 18 men, age 18-22 years, all in good health, non smokers and non divers. They performed submaximal physical work on a cycle ergometer while breathing air at ambient pressure of 1 ATA (control) and 2 ATA, and a mixture of 90% N₂ 10% O₂ at 2 ATA. They were instructed to pedal at constant 50 rpm speed. Exercise start at 0 watt, increase every 4 minutes to 50 watt, 100 watt, 150 watt, and then back again to 0 watt (recovery). The data were analyzed with descriptive statistics method, variance analysis, distribution and comparisons tests with a significance level $p < 0,05$. Values were expressed as mean \pm standard error.

The average of increasing expiratory ventilation were as follows : normobaric normoxic group 46,93417 L/minute \pm 4,68286; hyperbaric normoxic group 45,69983 L/minute \pm 2,32857; relative hyperbaric hyperoxic group 38,05333 L/minute \pm 11,92556. The average of increasing carbon dioxide elimination were as follows : normobaric normoxic group 1,51400 L/minute \pm 0,26525; hyperbaric normoxic group 1,12167 L/minute \pm 0,24017; relative hyperbaric hyperoxic group 1,03050 L/minute \pm 0,23716.

The decrease in expiratory ventilation and carbon dioxide elimination in relative hyperbaric hyperoxic environment during submaximal exercise were higher than in hyperbaric normoxic environment.

Key words : relative hyperbaric hyperoxic, expiration ventilatory, carbon dioxide elimination, submaximal exercise