Title: Hyperbaric oxygenation treatments and metabolic enzymes in the heart and diaphragm

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Abstract: We previously found that intermittent hyperbaric oxygen exposure increases metabolic enzyme activity in soleus muscle. Since the metabolic enzyme activities of the heart and diaphragm of healthy animals are difficult to alter, we questioned whether intermittent hyperbaric oxygenation would provide a stimulus sufficient to increase metabolic enzyme activity. Therefore, we exposed 36 rabbits (4 groups of 9) twice daily for 90 min 5 days/wk to either 100% O2 at 243 kPa, 8.5% O2, and 91.5% N2 at 243 kPa, 100% O2 at 101 kPa, or 21% O2 at 101 kPa. After 4 wk of treatment, the activities of citrate synthase, succinate dehydrogenase, alpha-glycerophosphate dehydrogenase, phosphofructokinase, and glyceraldehyde-3-phosphate dehydrogenase were measured. In both the heart and the diaphragm, none of the treatments significantly altered the mean enzyme activities for any of the enzymes measured. Therefore, it seems that the hyperbaric oxygenation treatment protocols used do not induce an increase in metabolic enzyme activity in the heart and diaphragm in healthy animals.

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