

Hyperbaric oxygen breathing improved exercise performance and oxygen consumption in normobaric conditions for 3 hours following exposure.

Clinical Bottom Line:

1. Hyperbaric oxygen exposure improved performance capacity and oxygen consumption for at least 3 hours post-exposure.

Appraised by: Mike Bennett, Dept of Diving and Hyperbaric Medicine, Prince of Wales Hospital

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Clinical Scenario: An athlete presents suggesting that aerobic performance will be enhanced by exposure to hyperbaric oxygen.

Three-part Question: In athletes, does exposure to hyperbaric oxygen compared to normal air breathing, result in enhanced aerobic performance and for how long?

Search Terms: Hyperbaric oxygenation, exercise.

The Study:

Non-blinded randomised controlled trial with intention-to-treat.

Fit female physical education students with no specific contra-indications to hyperbaric oxygen.

Control group (N = 18 ;18 analysed): All participants had a standard treadmill test with increasing exertion required in a discontinuous manner, three days before hyperbaric exposure.

Experimental group (N = 18 ;18 analysed): All participants were randomised into three arms and then had hyperbaric oxygen at 2.8 ATA for 60 minutes. Each group was tested at a different time post-HBO: 30 mins, 3 hours and 6 hours after completion of HBO protocol.

The Evidence:

| Non-Event Outcomes | Before |
|--------------------|---------|
| After | P-value |

Maximum performance
10.1 11.4 <0.05

(30 minute group)

Maximum performance
10.5 12.4 <0.05

(3 hour group)

Maximum performance
11.6 12.7 >0.05

(6 hour group)

Comments:

1. Placebo effect of hyperbaric oxygen not tested - no blinding of subjects.
2. The ventilation dependent oxygen uptake ratio, respiratory exchange ratio and lactate concentrations before and after HBO exposure did not change significantly in any group.
3. No a priori justification is made for the choice of times to test performance.

Expiry date: February 2005

References:

1. Cabric M, Medved R, Denoble P, Zivkovic M, Kovacevic H. Effect of hyperbaric oxygenation on maximal aerobic performance in a normobaric environment. Journal of Sports Medicine and Physical Fitness 1991; 31:362-366.