

The Effects of Intermittent Hypoxia (Simulated Altitude) on Health

Reference: Angela Navarrete-Opazo and Gordon S. Mitchell, (2014) **Therapeutic potential of intermittent hypoxia: a matter of dose**, *Am J Physiol Regul Integr Comp Physiol*, 307: R1181-R1197, doi:10.1152/ajpregu.00208.2014.

Key Points

- Intermittent hypoxia (IH) has many therapeutic benefits; however, the benefits are dose dependent, and adverse side effects are observed from chronic hypoxia
- The therapeutic range of IH is between 9-16% inspired O₂, which roughly corresponds to blood oxygen saturations of 82-95% (altitudes of ~1500-5000 m)
- 3-15 episodes per day of IH in the above range elicits therapeutic benefits without harmful side effects

Summary

For practical application the key message from this paper is that IH is therapeutic when blood oxygen saturation is between 82-95% (as can be achieved with Oxygen Advantage simulated altitude training techniques) and 3-15 cycles are performed per day. The therapeutic benefits they found were:

- Improved athletic performance
- Increased nitric oxide and reduced sympathetic nervous system activity, both of which lower blood pressure
- Increased innate immune system response
- Increased overall anti-inflammatory response
- Decreased blood sugar and increased insulin sensitivity
- Decreased symptoms of depression
- Increased memory
- Increased bone density

Application

In the absence of any serious health conditions, anyone can learn to achieve IH in the safe therapeutic range with the application of Breathexchange training using Oxygen Advantage simulated altitude training techniques.