Adaptation to acutely intermittent hypoxic exposure appears to produce worthwhile enhancements in endurance performance in normoxic conditions, but the current 5-min duration of alternating hypoxic and recovery intervals may not be optimal. Purpose: To determine the effects of altering the hypoxic and normoxic interval duration on cycle performance and measures of oxygen transport, haematopoiesis and inflammation. Methods: Eighteen male competitive cyclists and triathletes were randomized to one of two intermittent-hypoxia groups, while nine similar athletes represented a control group. Athletes in the hypoxia groups were exposed to 60 min per day of intermittent hypoxia consisting of alternating intervals of hypoxia and normoxia lasting either 3 or 5 min. Exposures were performed at rest for 5 consecutive days per week for 3 wk. Oxygen saturation, monitored with pulse oximetry, was reduced progressively from 90% (Day 1) to 76% (Day 15). All athletes maintained their usual competitive-season training throughout the study. Incremental and repeated-sprint tests were performed pre-, 3 d post-, and 14 d post-intervention in normoxia. Venous blood at rest was sampled pre-, mid- and post-intervention. Results: There were no clear differences between effects of the two hypoxic treatments on performance or various measures of oxygen transport, haematopoiesis and inflammation. Compared with control, the combined hypoxic groups showed clear enhancements in peak power (4.7%; 90% confidence limits, ±3.1%), lactate-profile power (4.4%; ±3.0%) and heart-rate profile power (6.5%; ±5.3%) at 3 d post-intervention. At 14 d the effects on performance were unclear, although the observed effects were about half the 3-d effects. Changes in other measures at 3 and 14 d post-intervention were either unclear or unremarkable. Conclusion: Adaptation to acutely intermittent hypoxia produced substantial enhancement in endurance performance, but the relative benefit of 3- vs 5-min exposure intervals remains unclear.

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