

Intermittent Hypoxia Improves Endurance Performance and Submaximal Exercise Efficiency

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ABSTRACT

Intermittent hypoxia improves endurance performance and submaximal exercise efficiency. *High Alt Med Biol* 4:291–304, 2003.—

The purpose of the present study was to elucidate the influence of intermittent hypobaric hypoxia at rest on endurance performance and cardiorespiratory and haematological adaptations in trained endurance athletes. Twelve trained male endurance runners were assigned to either a hypoxic group ($n = 6$) or a control group ($n = 6$).

The subjects in the hypoxic group were exposed to a simulated altitude of 4500 m for 90 min, three times a week for 3 weeks. The measurements of 3000 m running time, running time to exhaustion, and cardiorespiratory parameters during maximal exercise test and resting hematological status were performed before (Pre) and after 3 weeks of intermittent hypoxic exposure (Post). These measurements were repeated after the cessation of intermittent hypoxia for 3 weeks (Re).

DISCUSSION

The major findings of this study are that (1) the 3000 m running time and running time to exhaustion during the maximal exercise test in trained endurance athletes improved significantly in response to 3 weeks of intermittent hypoxia at rest (90 min per day, three times a week, simulating an altitude of 4500 m), and the improved running time declined after the cessation of hypoxic exposure for 3 weeks;