Impact of 5 Days of Sprint Training in Hypoxia on Performance and Muscle Energy Substances.

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Author information

Abstract

The present study was designed to determine the effect of 5 consecutive days of repeated sprint training under hypoxia on anaerobic performance and energy substances. Nineteen male sprinters performed repeated sprints for 5 consecutive days under a hypoxic (HYPO; fraction of inspired oxygen [F\(_{\text{O}}\)], 14.5%) or normoxic (NOR; F\(_{\text{O}}\), 20.9%) condition. Before and after the training period, 10-s maximal sprint, repeated sprint ability (5×6-s sprints), 30-s maximal sprint, and maximal oxygen uptake (VO\(_{\text{2max}}\)) tests were conducted. Muscle glycogen and PCr contents were evaluated using carbon magnetic resonance spectroscopy (\(^{13}\)C-MRS) and phosphorus magnetic resonance spectroscopy (\(^{31}\)P-MRS), respectively. The HYPO group showed significant increases in power output during the 10-s maximal sprint (P=0.004) and repeated sprint test (P=0.004), whereas the NOR group showed no significant change after the training period. Muscle glycogen and PCr contents increased significantly in both groups (P<0.05, respectively). However, relative increases were not significantly different between groups. These findings indicated that 5 consecutive days of repeated sprint training under hypoxic conditions increased maximal power output in competitive sprinters. Furthermore, short-term sprint training significantly augmented muscle glycogen and PCr contents with little added benefit from training in hypoxia.

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