EFFECTS OF INTERVAL HYPOXIC TRAINING ON SUBSEQUENT RESPONSES TO SUBMAXIMAL EXERCISE AT MODERATE ALTITUDE

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Introduction: Interval hypoxic training (IHT) is a technique developed in the former Soviet Union that consists of repeated short-term exposures to normobaric hypoxia, interrupted by normoxic periods of recovery. IHT has been suggested to improve exercise performance and to pre-acclimatize individuals going to high altitude. However, there are only few studies dealing with that topic. Thus, this study was designed to determine pre-acclimatisation effects of IHT.
Methods: 15 physically active and healthy subjects (sport students) were randomly assigned to the hypoxia (N=8) or the control group (N=7). All subjects performed a submaximal step test under normoxic and hypoxic conditions (16 % oxygen). The hypoxia group was exposed to normobaric hypoxia (16 % oxygen) for 30-35 minutes per day on 5 subsequent days before going to high altitude. The control group had no hypoxic exposure before the altitude sojourn. The step test was repeated at the first and the third day at high altitude (2443 m). Heart rate (HR), arterial oxygen saturation (SaO_2), blood lactate concentration (La_b) and the ratings of perceived exertion (RPE) were determined before and during the step test.
Results: SaO_2 increased during IHT and remained elevated at real high altitude ($p<0.05$) at rest and during submaximal exercise as well. The increases in HR, La_b and RPE during the step tests at real high altitude vs. baseline were lower for the hypoxia group when compared to the control group ($p<0.05$).
Conclusions: We conclude that IHT is sufficient to pre-acclimatize before a subsequent high-altitude sojourn.