

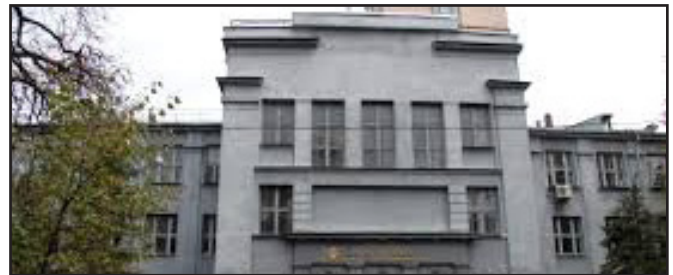
Intermittent hypoxia training as a method of increasing records in sports

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Abstract:

Intermittent hypoxia training/treatment (IHT) is a natural, non-pharmacological method allowing to stimulate internal reserves of an organisms. The mechanisms underlying the effects of hypoxic training at all levels - from systemic physiological reactions to the genome - are widely debated. The lecture is focused upon summarizing the current knowledge of these mechanisms as well as practical problems of the IHT implementation in different sports. The biological responses to intermittent hypoxia may be adaptive or maladaptive, depending on the severity of the hypoxemia, its frequency of occurrence, its duration, and, importantly, the “pattern” and timing of each cycle. Low doses of hypoxia might not be sufficient stimuli to mobilize adaptive mechanisms, while severe or prolonged hypoxia may provoke dangerous pathological processes. Wide implementation of various methodological approaches into fitness and elite sport has raised a lot of questions about the most beneficial regimens of such treatment and their instrumentation. For sports purposes, the reduction of oxygen content to individually tolerable level for some minutes is justified as far as it maximizes benefits. However, such regimen requires preliminary diagnostics of individual hypoxic tolerance as well as rigorous monitoring of vital functions during IHT and good feedback device. Recently, a new mode of



adaptive training was explored, which combines periods of hypoxia (12-10% FiO₂) and hyperoxia (30-35% FiO₂). Studies supports the viewpoint that moderate periodic generation of free radical signal during hypoxic/hyperoxic bouts causes better induction of antioxidant enzyme protein synthesis then hypoxic/normoxic exposures, that may be an important trigger for specific adaptations. Evidences suggest that such regime can reduce the time of recovery periods, that is shorten the duration of sessions. The proper choice of the hypoxic dosage depending on individual's reactivity and a kind of sport promises a bright future for IHT in sport practice.

Biography

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