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The peculiarities of adaptive responses of cardiorespiratory system in changing gas environment in rowers with different lung ventilation levels

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Abstract

The compensatory mechanisms of moderate forms of hypoxia, hypercapnia or their combinations in a healthy body are of certain adaptive value in formation of adaptive responses, intended to increase body resistance to a whole set of extreme factors, and sports activity is not an exclusion. Any body changes influenced by extreme factors result in gas imbalance - hypoxia and hypercapnia. Thereby, training with breathing gaseous mixtures with different oxygen and carbon dioxide concentration can be used to increase the level of functionalities without increasing training loads. Herewith, the individual features of body's physiological responses influenced by various extreme factors, including hypoxia and hypercapnia, in view of the random level of lung ventilation. Hence, the purpose of the study was to consider adaptive responses of cardiorespiratory system in persons with different lung ventilation levels when breathing under conditions of combined hypoxia and hypercapnia. The individual-typological features of ensured adequate level of metabolism of the gas transport system in the ones with different initial lung ventilation levels included more efficient heart work in those with the initially low breathing index and higher O₂ blood extraction in the persons with a high breathing index.

Keywords

Adaptive responses, Cardiorespiratory system, Combined hypoxia and hypercapnia, Random level of lung ventilation, Rowers