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Intermittent hypoxia in pediatrics: benefits and disadvantages.

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Hypoxia for pediatricians and neonatologists is considered one of the main factors threatening the life or normal development of the child. Indeed, episodes of hypoxia stress may contribute to several chronic diseases associated with obstructive sleep apnea syndrome (OSAS) and course devastating effects on development and behavior in childhood. However, it is well-known for today that brief, episodic hypoxia gives rise to several adaptive responses promoting better tolerance of hypoxic episodes and protection against other types of stress. So, the effects of intermittent hypoxia (IH) depend on the pattern of hypoxia-reoxygenation. There are a number of studies using the sessions of well-controlled and moderate IH training in sick children for treating several diseases, particularly various forms of bronchitis or bronchial asthma (BA). For instance, it was shown that two-week IH course resulted in a significant decline in breath shortness and feelings of chest congestion in BA children; the attacks of asphyxia disappeared or became more occasional; mitochondrial enzymes activity of immune cells increased significantly. The proper choice of the hypoxic dosage must be titrated for each patient to avoid negative effects of hypoxia and to augment the favorable ones. We wish to stimulate a comprehensive understanding of such a complex physiological phenomenon as intermittent hypoxia, in order to prevent or reduce its harmful consequences, while maximize its potential utility as an effective therapeutic tool in pediatric patients.