Intermittent Hypoxia

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Chapter 30

EQUIPMENT AND REGIMES FOR INTERMITTENT HYPOXIA THERAPY

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ABSTRACT

The rapid advance of intermittent hypoxia therapy (IHT) has led to the development of medical protocols that use mild, non-damaging hypoxia training to deliver measurable benefits and the drug-free treatment of a number of chronic degenerative conditions. A variety of technical implementations for this treatment has been tested and used in recent decades, including hypobaric chambers, normobaric reduced oxygen rooms, and mask-system hypoxicators, which produce hypoxic air in various ways. There are advantages and disadvantages of the different methods and equipment, so caution needs to be exercised when selecting an appropriate model for medical use. Individual variability of physiological reactions to breathing the same hypoxic air is substantial, hence it is important to conduct a hypoxic test that establishes a hypoxia reaction type and to individualize the treatment regime in order to achieve greater efficacy. The three main reaction types are defined and described in this chapter. A novel approach is suggested in order to objectively quantify the dosage of the delivered treatment in the form so-called hypoxia training index (HTi). Knowledge of HTi can be used to alter the training regime for different individuals, compensating for individual variability, and can also be used in scientific studies to ensure that the hypoxic exposure was correctly controlled for each subject. The latest advance in IHT is the biofeedback-controlled hypoxicator that is capable of automatically adjusting oxygen concentration in the inhaled hypoxic air. This automatic biofeedback control provides the desired SpO₂ in each individual training session, which fully compensates for individual variability. Further research must be conducted in order to discover the optimal regimes and treatment protocols that can be used to cater for individual variability.