Intermittent Hypoxic/ Hyperoxia Therapy - General Information

Recently discovered phenomenon of Intermittent Hypoxic Training (IHT) has been proven by practical experience and numerous scientific trials to be most efficient and practical simulated altitude-training method for human athletes. The method of IHT with Hyperoxic recovery (also known as IHHT) additionally optimizes the training. Short-term bursts of low and high oxygen air breathing doubles training efficiency. The response to mild hypoxia training stimuli is almost instant triggering cascade of effects facilitated by HIF (Hypoxia inducible factor). Simply speaking, repetitive “signals” that are sent to the body multiple times during the sessions are more beneficial than a single long-lasting one hypoxia exposure.

Intermittent Hypoxic Training is scientifically proven and popular amongst athletes looking for a legal and drug-free way to further improve their performance and to get that vital edge over the competition. IHT is delivered in short bursts of reduced oxygen (hypoxic) air breathing via a mask, alternated with hyperoxic recovery. Not only do you have full control over the training session and can easily monitor your response, but also, with the full biofeedback control technology, your training can be completely controlled by the smart algorithms embedded into the system.

An important empirical finding was made in the 1970s as a result of military aviation medicine research. The phenomena of IHT is that short-term repeated hypoxia re-oxygenation intervals provide training challenge, whereas continuous exposure to the same simulated altitude might have a debilitating rather than training effect on the human body.
Another key to success in performance enhancement using IHT is in selecting the correct degree of challenge delivered to your body. Cellgym engineers have pioneered and mastered training protocols that assist with the individualization of your training regime.

The magnitude of the training effect of extreme altitude is so great, that you will feel the challenge of hypoxic air breathing, even within one or two minutes. Although challenging, daily IHHT sessions are pleasant and relaxing generally conducted while sitting in a comfortable chair or a recliner. A full course of training requires only 15 - 20 sessions. The rationale behind the IHHT is that is has a number of physiological effects, each of them contributing to your enhanced performance without overstressing.

Hypoxic test, formats and effects:

The Hypoxic Test involves the short-term breathing of hypoxic air of a known oxygen concentration (conventionally O2 = 9- 13%) followed by a recovery period where the facemask is taken off in order to revert to normal (ambient) air breathing. The purpose of this test is:

a) Establish the individual’s reaction to hypoxic breathing.
b) Help to prescribe the most appropriate training programme for an individual in order to cater for individual variability and to get the most from the IHT course.
c) To determine a baseline for the functional state of the individuals oxygen processing system allowing for a comparison at the end of a training course.

A training course always starts at the EASY “challenge” level. It can be done also at the second stage parallel with physical activity. A main effect besides rising the oxygen transport capacity of the blood seems to be optimizing mitochondrial activity in all the cells of the human body.

Areas of application

One of the main IHHT applications is in Peak performance sports. Almost every Olympic or World Championship athlete is training in high altitude or trains with IHHT formats. Lornah Kiplagat for example and many of her long distance runner colleagues as well as the Mallorca soccer team and many other not wanting to be named are contributing their top condition to IHHT. Moreover, IHHT is used in cardiovascular, high blood pressure and diabetes therapy as well as a measure to help patients to reduce weight.

Intermittent Hypoxia/ Hyperoxia Training and Heart Rate Variability

Heart rate variability analysis can help a practitioner to specify the level of effective hypoxia and monitor the immediate effects of IHHT training on the Autonomic Nervous system of the athlete or client.