Halotherapy for Sports Performance Enhancement
Addressing pulmonary limitations to performance in sports

**Problem:** finding natural, safe and effective approaches to improvement of lung function in athletes

When you're an athlete, as you know every advantage counts. Halotherapy for Sports Performance Enhancement can help you get that edge over the competition. The primary goal of every athlete is to achieve their absolute maximum potential. One of the most important determinants of whether this is possible to improve their breathing pattern.

Poor breathing patterns will:
- Limit oxygen exchange
- Reduce stamina and performance
- Increase the production of lactic acid and subsequently leave the athlete with residual muscle soreness
- Increase dehydration
- Increase the occurrence of cramps
- Greatly lengthen recovery time
- Elevate the heart rate
- Increase anxiety
- Decrease concentration
- Increase the likelihood of injury in training and competition
- Decrease energy levels
- Contribute to poor sleep patterns

The aim of Halotherapy in Sports Program is to normalize the breathing pattern. When the body is working within its physiologically normal parameters it can work at an increased level of performance. Stamina and endurance are maximized and all of the above are reversed. Athletes find that once they have corrected their breathing pattern, they can achieve better performance with less breath. This means athletes would have more air in reserve and hence have increased as well as have optimal performance. When you want to win, you have to get that edge.

There are known respiratory conditions and pulmonary limitations among athletes:
- Air flow obstruction leading to performance reduction (1)
- Increased bronchial responsiveness (2)
- Exposure to airborne allergens and other unwanted inhaled particles (2)
- Respiratory illnesses and conditions such as asthma, allergy, airway inflammation (1,2)

**Solution:** Pharmacologic and Nonpharmacologic Therapy

Pharmacologic therapy: ask your doctor

Nonpharmacologic therapy:
One of the treatments which appear to successfully address the needs of athletes is dry saline aerosol inhalation, or known as Halotherapy.

Hypertonic saline aerosol inhalation treatment is clinically proven:
- To clear mucus from the airways thus removing airflow obstruction (3)
- To enhance mucociliary clearance mechanism in both asthmatic and healthy subjects (4)
- To balance airway-surface liquid (5)
- To provide anti-inflammatory and bactericidal effects (3)
• To reduce bronchial hyperresponsiveness (6)
• To improve lung function (3)
• To help clear unwanted inhaled particles from lungs (4)
• As a drug-free treatment for asthma, bronchitis, CF and sinusitis (3)

Thus, integrating Halotherapy with other nonpharmacologic therapies can lead to better lung function and improved performance as well as both prevention and treatment of respiratory conditions among athletes.

**Sports Performance Enhancement program**

The program involves:

- Naturopathic doctor assessment and supervision
- Preprogram lung function testing (Spirometry)
- Halotherapy
- Nasal/sinus hydro pulse saline irrigation
- Respiratory muscle training (Breathing Resistance Exercise)
- Post program lung function testing
- Diet and nutrition recommendations

**Our Program Produces Results**

Sports Performance Enhancement program can help:

- To treat existing respiratory problems naturally (3)
- To clear mucus from the airways thus removing airflow obstruction (3)
- To provide anti-inflammatory and bactericidal effects for respiratory system (3)
- To reduce bronchial hyperresponsiveness (6)
- To improve lung function (3)
- To help clear unwanted inhaled particles from lungs (4)
- To enhance mucociliary clearance mechanism (4) (Prevention treatments)

Respiratory muscle training can help:

- To increase lung capacity and endurance
- Strength of respiratory muscles
- To increase the volume of lung ventilation

Thus Sports Performance Enhancement program can improve pulmonary function, which in turn leads to a better performance in sports.

**Why us:**

- Our clinic is specialized to treat respiratory conditions naturally
- Our technology is the only one in Canada that affects purification of the entire breathing system
- We use unique, hospital grade medical equipment
- Our method is clinically proven, safe and effective

**General Information**

Typically, our program is based on 15 sessions, either 5 days per week for 3 weeks or 3 days per week for 5 weeks. If needed, we can modify this format to meet the needs of the athlete. Our hours of operation fluctuate throughout the year based on sport seasons and academic schedules, but are generally noon-8pm Monday through Friday.
We welcome questions and are happy to give tours of the facility and provide complimentary treatment for educational purposes. For more information, please call the Speleotherapy Clinic at (416)-739-7777.

References:
1 Mark Harries, ABC of Sport Medicine: Pulmonary limitation to performance in sport. BMJ 1994; 309:113-115(9 July)
2 Helenius, I, Haahatel, T Allergy and asthma in elite summer sport athletes. J Allergy Clin Immunol 2000; 106,444-452

Why athletes have a need for lung function improvement?

Athletes who participate in environments in which there may be environmental pollutants are at increased risk for the development of EIB (Exercise-Induced Bronchoconstriction). Chlorine compounds in swimming pools and chemicals related to ice-resurfacing machinery in ice rinks may put certain populations of athletes at additional risk. Particulate matter and gases such as carbon monoxide and nitrogen dioxide, which are abundant in indoor ice arenas, and chlorine from swimming pools may act as allergic "triggers" and may exacerbate bronchospasm in athletes who are predisposed to EIB. Helenius and Haahatel showed a 96-fold greater risk of asthma in atopic swimmers when compared to nonatopic control subjects when atopy and swimming were included in multivariate statistical analysis. Leuppi et al found a 35% incidence of airway hyperresponsiveness in a group of ice-hockey players. In addition, figure skaters have been shown to have a high incidence of EIB.(1)

Although athletes who compete in high-ventilation or endurance sports are more likely to experiences symptoms of EIB than those who participate in low-ventilation sports, EIB can occur in any setting. It is especially prevalent in endurance events such as cross-country skiing, swimming, and long-distance running in which ventilation is increased for long periods of time during training and competition, allowing for relatively more evaporative water loss and subsequent airway narrowing. There is also increased prevalence of EIB in winter sports athletes, which is thought to be due in part to the increased cooling of airways and the relative increase in reactive hyperemia in the pulmonary vasculature. It is important for athletes, coaches, and trainers supervising athletes in these "higher risk" sports to be aware of the increased incidence of EIB in these populations of athletes.(1)

The prevalence rates of bronchospasm related to exercise in athletes range from 11 to 50%, and up to 90% of subjects with asthma will have EIB. Wilber at al found that 18 to 26% of Olympic winter sport athletes and 50% of cross-country skiers were found to have EIB. Of the 50 elite summer athletes studied, with and without asthma, Holzer et al found 50% to have EIB. Mannix et al studied 124 elite figure skaters and tested them on an ice rink during their figure-skating routines. Thirty-five percent had a significant postexercise drop in their FEV1. The US Olympic Committee reported an 11.2% prevalence of EIB in all athletes who competed in the 1984 summer Olympics, according to the article "Exercise-Induced Bronchoconstriction in Athletes"1 Elite male athletes, especially competitive swimmers, have an increased risk of wheezing, coughing, and other
respiratory symptoms as well as increased risk of asthma, according to Danish researchers who studied 62 athletes. Thomas Lund, MD, from Bispebjerg Hospital in Copenhagen, said more than a third of the athletes studied had respiratory symptoms and 21% had asthma. (2)

Pharmacologic Therapy

The most common therapeutic recommendation for minimizing or preventing symptoms in athletes who have EIB is the prophylactic use of short-acting bronchodilators (ie, β2-receptor agonists) such as albuterol shortly before exercise. β2-agonists are considered to be the most effective therapy for the prevention of symptoms of EIB in asthmatic patients. Treatment with two puffs of a short-acting β2-receptor agonists shortly before (15 min) exercise will provide peak bronchodilation in 15 to 60 min and protection from EIB for at least 3 h in most patients. However, the overuse of β2-agonists has been shown to result in tachyphylaxis and to worsen symptoms of EIB and asthma.

Other nonpharmacologic approaches

Many athletes find that a period of precompetition warm-up reduces the symptoms of EIB that occur during their competitive activity. Athletes often draw this conclusion without any guidance from health-care specialists. Symptoms of EIB usually occur after a few minutes of exercise, and some athletes find that warming up before exercise acts as prophylaxis against more significant episodes of EIB during exercise.

There are other nonpharmacologic strategies that athletes can employ to help reduce the frequency and severity of symptoms of EIB. Wearing a facemask during activity warms and humidifies inspired air when outdoor conditions are cold and dry, and is especially valuable to elite and recreational athletes who exercise in the winter. Breathing through the nose rather than the mouth will also help to ameliorate EIB by warming, filtering, and humidifying the air, which subsequently reduces airway cooling and dehydration. In addition, athletes with knowledge of triggers (ie, freshly cut grass) should attempt to avoid them if possible.

References:
1 (Chest. 2005;128:3966-3974.)
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"Exercise-Induced Bronchoconstriction in Athletes"
Jonathan P. Parsons, MD and John G. Mastronarde, MD, FCCP
2 Male Athletes More Likely to Develop Respiratory Symptoms Than Noncompetitors
The study was funded by the Danish Lung Association, Team Denmark, and H:S Copenhagen. ATS 99th International Conference: Abstract P637. Presented May 20, 2003.
Reviewed by Gary D. Vogin, MD