



INTERNATIONAL
OLYMPIC
COMMITTEE

IOC Consensus Statement on Asthma in Elite Athletes January 2008

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1. Diagnosis of asthma in elite athletes

Respiratory symptoms such as recurrent breathlessness, cough, wheezing, chest tightness and excessive mucous production are common in athletes and may be suggestive of asthma. As these symptoms alone cannot be relied upon to make a diagnosis of asthma in an athlete and clinical examination may be normal, objective tests are required to confirm the diagnosis. These tests would include spirometry (Forced Expiratory Volume in one second FEV₁). Because athletes may have an FEV₁ above the normal range, normal spirometry does not exclude variable airway obstruction. If airway obstruction is present, spirometry should be repeated after inhalation of a bronchodilator to test for reversibility. In the absence of airflow limitation, a bronchial provocation test, to establish the presence of airway hyperresponsiveness, is required. If the results of these tests are negative other disorders should be considered.

2. Treatment of asthma in elite athletes

The management of the athlete with asthma should follow current national or international guidelines (e.g. Global Initiative for Asthma-GINA). Currently, there is no evidence that management of asthma in athletes should differ from non athletes. However, some specific issues need to be considered for the high-level athlete.

The prevention and management of exercise induced bronchoconstriction (EIB) is a key issue in athletes. They may also be exposed to high levels of allergens and environmental irritants during training and competition. Dry/cold air may be a particular problem for some athletes.

The non-pharmacological management of asthma in athletes is important. This includes identifying and reducing exposure to asthma triggers whenever possible and especially during training. Warm-up may help to reduce EIB.

Drug treatment of asthma in elite athletes should follow standard guidelines with treatment individualised to achieve asthma control and the effects of treatment monitored. Any medications prescribed must comply with World Anti-Doping Agency (WADA) regulations. All beta₂ adrenoceptor agonists (β₂ agonists) and in particular oral preparations are prohibited. Inhaled corticosteroids and some inhaled β₂ agonists can be used in accordance with the relevant section of the Therapeutic Use Exemption (TUE) Standard. Systemic corticosteroids are prohibited and also require a TUE.

Inhaled corticosteroids are the most effective drugs for long term control of asthma and prevention of EIB. Inhaled β₂ agonists are the most effective drugs for immediate inhibition of EIB and for relieving intermittent symptoms of asthma. However, when used frequently, tolerance (or tachyphylaxis) to these effects develops rapidly. Athletes who use either short- or long-acting β₂-agonists on a daily basis should be advised that their effectiveness to prevent EIB will partially diminish. Frequent use of β₂ agonists may also increase the bronchoconstrictor response to exercise and allergens. Strategies to avoid these problems could include restricting β₂ agonists to infrequent use, use of alternative treatments for preventing EIB and ensuring adequate treatment of underlying asthma with inhaled corticosteroids. Long acting β₂ agonists should not be used as monotherapy.

Athletes should be offered asthma education in order to develop self management skills and ensure appropriate use of medication, including inhaler technique. Individualised action plans for the management of exacerbations, asthma monitoring and follow-up are important.

3. Environmental aspects of asthma in elite athletes

The major environmental factors which could influence airway function in elite athletes are allergens and ambient conditions such as temperature, humidity and air quality. Exposures of importance to the athlete include seasonal and perennial allergens, dry/cold air, chlorine derivatives in swimming pools, ozone and combustion derived pollutants, such as oxides of nitrogen and particulate matter. Because of the high minute ventilation during exercise, the effects of these exposures may be more marked in athletes than in non-athletes.

4. Training as a cause of asthma in elite athletes

Long-term intense endurance training may be associated with an increased risk of development of airway hyperresponsiveness and asthma in the elite athlete. Environmental factors, such as allergens, chlorine derivatives, pollutants or cold air exposure may contribute to the development of airway inflammation and functional changes. Their penetration into the airways will be enhanced by the high ventilation required during intense exercise. The changes in lung function and airway responsiveness may be at least partly reversible after cessation of long-term endurance training.

More research is necessary on how to prevent or minimise the adverse effects of long-term training on the airways, particularly the effects of environmental exposure on airway structure and function.

5. Past experience of β_2 agonists use in elite athletes

Data are now available on athletes who seek approval to use inhaled β_2 agonists. These data arise from the recent Winter and Summer Olympic Games and from the International Association of Athletic Federations (IAAF) world championships in athletics. While most applications for the Games came from those competing in endurance sports this was not a universal finding in athletics. The geographical distribution of the applications closely relates to the reported prevalence of asthma in those countries. Over the last 5 years, there has been a significant increase in the proportion of athletes using inhaled corticosteroids in conjunction with a β_2 agonist. A minority of athletes are now relying on a β_2 agonist alone to manage their condition.

6. Future of β_2 agonists in elite athletes

β_2 agonists are likely to remain the most effective bronchodilators available in the foreseeable future. However, they may have a less important role in the management of asthma in athletes because EIB should be better controlled by use of other therapies. Such therapies are likely to target the production, release and effects of the mediators of bronchoconstriction. Ideally, β_2 agonists should be reserved for occasional use and breakthrough symptoms.

Because of the widespread use and potential for misuse of inhaled β_2 agonists by athletes, there was consensus to continue the strict control of the use of this class of drugs in sport.

Better strategies need to be developed to avoid the development of tolerance to β_2 agonists.