



Position Statement on Asthma in Sport

The diagnosis of asthma in sport is clinical with the addition of Pulmonary Function Tests (to ERS and ATS standards). The percentage changes in PFT are as follows:

1. resting pulmonary function tests, (12% bronchodilation above the athletes resting force expiratory volume in one second (FEV-1) after a bronchodilator and/or
2. non-pharmacological challenge tests
 - a. exercise challenge (10% bronchoconstriction in FEV-1) or
 - b. eucapnic voluntary hyperventilation (EVH) challenge (10% bronchoconstriction in FEV-1) or
3. pharmacological stimulation tests
 - 20% bronchoconstriction in FEV-1 at a Methacholine dose of 4-16 mg/ml or less. The higher dose is accepted for athletes using inhaled corticosteroids in the last 6 weeks before the test,
 - 15% bronchoconstriction in FEV-1 to Mannitol by inhalation challenge or
 - 15% bronchoconstriction in FEV-1 to 4.5% Saline challenge

The balanced view:

There is no disconnect between clinical asthma, sport asthma and research asthma definitions for the purpose of diagnosis. There may be a difference in degree of severity and extra findings to better prescribe in the various types of asthma.

In sport, the diagnosis of asthma is made with the following three premises:

- Protect the health of the athlete
- Ensure a fair playing field for all competitors in an event
- Protect the ethics of medicine and sport.

Controversy:

Exercise alone may be a cause of one form of asthma (EIB). Some would argue that exercise induced asthma, without symptoms at any other time, is an exaggerated physiological effect not requiring treatment. The failure to be consistent in our diagnostic criteria over the years may be responsible for a false epidemic of asthma in sport.

The sport medicine community now accepts that a second form of bronchoconstriction is seen in athletes. This is manifested by neutrophil infiltration of the airways. This is not accompanied by the clinical symptoms of atopic asthma (with an eosinophilic infiltrate). It behaves in a different manner to atopic asthma in that it has a poor response to inhaled corticosteroids (ICS) and may give a negative test to Methacholine challenge. This form of exercise induced bronchoconstriction is positive on exercise and EVH provocation tests. In sport, examples of potential provocation include variations in ambient temperature, endurance training and exposure to swimming pool or ice rink chemicals.

A negative provocation test does not exclude asthma as the asthma might be under control. The effect of various drugs, like ICS causing apoptosis, should be considered a variation of drug effect in asthma and not part of the diagnosis of asthma.

The varying effects of airways to Methacholine, EVH, exercise, Mannitol, cold air, hyperosmolar aerosols and other agents may be a function of receptors. They may also be due to the downstream molecules which transduce the signal generated by the activated beta-2 receptor, corticosteroid receptor or leukotriene receptor. An example of this are the several forms of adenylyl cyclase in the case of the beta-2 receptor.

Methacholine bromide and chloride are not shown to be different as the methacholine is the active substance. Dose versus concentration should be kept simple. The ever increasing concentration is the more commonly used method and can be easily translated into total dose administered.

Expanding of the number of tests for asthma is correct but should not form the basis for the majority of athletes. This should be confined to the difficult to diagnose cases.

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