ARE CURRENT SPORT REGULATIONS FAIR TO ALLERGIC ATHLETES?

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INTRODUCTION

Have you ever thought when looking at the opening ceremony of the Olympics or at the World Championship of your favorite sport that 1 out of 4/1 out of 3 of those super-men/women are allergic?

In fact, the prevalence of allergic diseases in athletes has been reported to range between 3.7 and 54.0% also depending on criteria used for diagnosis, specific disease considered and features of the athletic population studied¹.

For instance, asthma has been shown to occur in swimmers and in winter sports with prevalence significantly higher than in the general population or in other sports¹. Moreover, even non-asthmatic exercisers may experience bronchial obstruction after physical activity with an incidence dependent on the duration and intensity of the exercise as well as on the environmental conditions in which it is performed².

Figure 1: An imaginary fantastic final among golden Olympic asthmatics

Kurt Grot
Tom Dolan
Amy van Dayken
Nancy Hoghshead
Mark Spitz
Emiliano Brambilla
Diagnosis and treatment of allergic diseases in athletes involves several peculiar issues. In fact, while allergic athletes should be adequately diagnosed and treated in order to compete without any handicap versus other athletes, several drugs used for treating allergic diseases are prohibited by the World Anti-Doping Agency (WADA) \(^3\), or their use is restricted only to athletes who can document their morbid condition.

**ARE THESE REGULATIONS FAIR TO ALLERGIC ATHLETES?**

The question, which has been object of a recent scientific debate\(^4,5\), is of general interest since regulations applied to elite athletes may often reflect on the management of non-professional allergic exercisers, who represent a much more relevant part of the general population.

In answering the question of this article, three different aspects should be considered:

- Is the diagnosis of allergy and asthma in athletes consistent with the diagnostic procedures used in clinical practice and with currently available guidelines?

- Do anti-allergic and anti-asthmatic drugs improve performances, therefore justifying their banning or limited use in athletes?

- Are treatments of allergy and asthma safe in exercisers, independently from whether they are permitted or banned?
DIAGNOSIS OF ALLERGY AND ASTHMA IN ATHLETES

The diagnosis of allergy in both athletes and non-professional exercisers is often undermade in the absence of standard specific protocols to be used in sports medicine screening.

However, the major matter of concern is represented by the diagnosis of asthma, which has to be documented in order to allow the use of drugs (such as beta-2 adrenergic agents and topical steroids) which require a Therapeutic Use Exemption (TUE) form.

The International Olympic Committees (IOC), concerned for the large and increasing use of beta-2 adrenergic agonists, before the Winter Olympics of Salt Lake City established a set of criteria to document asthma and eventually, to allow athletes to use beta-2 adrenergic agents:

a) Fall in FEV₁ > 10% after exercise challenge performed according to ATS guidelines or indirect tests such as eucapnic voluntary hyperventilation or mannitol

b) Increase FEV₁ of > 12% from baseline (or of predicted) after bronchodilators

c) A PC₂₀ ≤ 2mg/mL or a PD₂₀ ≤ 0.2 mg (1 µmol) at nethacholine challenge ( or PC₂₀ ≤ 13.2 mg/mL or a PD₂₀ ≤ 1320 µg – 6.6 µmol – in athletes on topical steroids for 3 months or longer).

These criteria – recently revised – certainly detect moderate and severe asthma but may fail to document mild forms of the disease or subjects without clinical asthma but with occasional bronchial hyperreactivity induced by exercise. According to GINA guidelines, these subjects should be treated with beta-2 adrenergic agents (on demand or to reverse, and possibly prevent, exercise-induced bronchial obstruction). Moreover, according to ARIA guidelines all rhinitic
subjects should be studied for asthma, including athletes. In our experience, rhinitic athletes have normal spirometric values but may show a modest bronchial hyperreactivity not demonstrable whether the thresholds set by the IOC are used.

My opinion is that diagnosis of allergy should be part of routine medical examination of athletes and non-professional exercisers, and that diagnosis and management of asthma in this population should not differ from those applied to the general population according to current guidelines.

**EFFECTS OF ANTI-ALLERGIC AND ANTI-ASTHMATIC DRUGS ON PERFORMANCE**

WADA regulations, on the basis of in vitro studies showing an anabolic effect of clenbuterol, allow the use of some short acting beta-adrenergic agents (SABA) - such as salbutamol and terbutaline - as well as of some long-acting beta-adrenergic agents (LABA) - such as salmeterol and formoterol – only in the presence of a documented diagnosis of asthma.

However, there is no substantial evidence that both SABA and LABA may improve performance which, on the contrary, may be negatively affected by the cardiovascular and muscular effects of these drugs.

On other hand, the limitations in the use of topical steroids may favor, in asthmatic athletes, the unique use of symphomatic treatment (SABA and LABA) while prelegcting the control of inflammation.

Interestingly enough, anti-allergic drugs – such as some anti-histamines – may negatively affect performances because of their potential side-effects at the level of the central nervous and cardiovascular system.

My opinion is that criteria for permitting the use if anti-asthmatic drugs should be carefully reconsidered, and that both athletes and sports doctors should be well aware of potential side-effects of permitted anti-allergic drugs.
SAFETY OF ANTI-ALLERGIC DRUGS

WADA and IOC regulations referring to allergic and asthmatic athletes should have as a primary goal the maintenance of athletes health, which is even more relevant than avoiding doping attitudes. The FDA warning about LABA and their documented potential cardiovascular effects\textsuperscript{7,8} should be carefully considered before permitting drugs in asthmatic athletes without discriminating between controller and symptomatic drugs and between SABA and LABA.

\textit{In my opinion, results of clinical trials of anti-allergic and anti-asthmatic drugs cannot be extrapolated to the athletic population. It would be preferable, in the future, to have specific clinical trials for athletes, with ad hoc protocols and adequate outcome measures.}

\textbf{Figure 2:} The Author with the gold medallist Jackie Joyner-Kersee at the 2000 ACAAI Annual Meeting in Seattle

\textbf{Figure 3:} … and her greetings to EAACI
References


(3) www.wada-ama.org

(4) Weiler JM. Why must Olympic athletes prove that they have asthma to be permitted to take inhaled β2-agonists. J Allergy Clin Immunol 2003; 111: 36-37.


(6) www.olympic.org
