

## **ARIA at the London Olympics**

ARIA (Allergic Rhinitis and its Impact on Asthma) is an international initiative that was launched after a World Health Organization meeting held in 1999. Its aim is to provide and diffuse validated guidelines for the management of allergic rhinitis and the concomitant frequent involvement of the lower airways.

The original document, published in 2001 (1), translated into 42 languages and diffused in 64 countries, was firstly up-dated in 2008 (2) and then in 2010 (3) on the basis of an improved methodology (GRADE) to guarantee evidence-based statements and support the strength of recommendations given (4).

In 2006, an ARIA document was developed to specifically address the needs of elite athletes suffering from allergic rhinitis (5).

The above papers represent internationally recognized guidance for the management of rhinitis in the general population and in athletes, as evidenced by the 1633 citations currently in the scientific literature (6).

This document aims at providing three simple statements and some practical suggestions based on the evidence and recommendations of the ARIA Guidelines, that might be useful for the management of the many athletes with rhinitis participating in the 2012 London Olympics.

### **Statement 1. Rhinitis has a high and increasing prevalence in athletes**

In a review of 16 cross-sectional studies performed in 10328 athletes, rhinitis has been reported to occur with prevalence rates of up to 41%, and with an increasing incidence over the years (7). The prevalence of rhinitis is higher in cold air sport disciplines: 48.6% in skiers (8). However, high prevalence rates are also reported at Summer Olympics: 29.0% in the Australian Delegation at Sydney 2000 (9), 25.3% and 27.0% in the Italian pre-Olympic athletes at Sydney 2000 and Beijing 2008, respectively (10). Furthermore, the transient immunodeficiency associated with intense training has been shown to favor the occurrence of upper respiratory tract infections and infectious rhinitis in close temporal proximity of competitions (11).

Accordingly, it is expected that at least one out of four athletes participating in the London Olympics may suffer from rhinitis.

### **Statement 2. Diagnosing rhinitis in London Olympic athletes is very important**

Rhinitis is often considered a trivial disease and is largely under-diagnosed and self-managed in athletes. However, rhinitis has been shown to significantly affect the Quality-of-Life and performance of athletes, also in relation to the effects of drugs taken to control clinical symptoms (12).

Moreover, rhinitis represents a well-known risk factor for asthma (1-4) and for Exercise-Induced Bronchoconstriction (EIB), a condition often occurring in athletes, even in the absence of clinical underlying asthma (13). Certainly, rhinitis exerts an additive negative effect on the well-being and disease control of athletes with asthma (14).

Therefore, the ARIA recommendation that all subjects with rhinitis should be assessed for co-existent asthma, should also be extended to athletes with rhinitis. Since clinical symptoms are poorly predictive of asthma/EIB (13) and baseline pulmonary function tests are often normal in competitive athletes (15), in London Olympic athletes suffering from rhinitis, an accurate clinical examination by a trained physician should be complemented by a specific allergy questionnaire – such as the Allergy Questionnaire for Athletes, AQUA (16) - and eventually by provocation tests (17).

**Statement 3. Rhinitis should be treated in London Olympic athletes according to evidence-based guidelines with special considerations for modifying factors**

In addition to implementing the general ARIA recommendations for the treatment of allergic rhinitis (1-4), special considerations for factors that modify these recommendations should be taken into account for Olympic athletes. These relate to the potential side effects of some drugs, as well as to the limitations set by the World Anti-Doping Agency (WADA) in the 2012 list of prohibited substances (18).

ARIA guidelines state that subjects with allergic rhinitis and the frequently occurring concomitant involvement of the lower airways should receive a combined treatment for the nose and the lung (1-4) and lay-friendly information on the optimal management of their symptoms (19). This is particularly important for athletes with EIB in whom the by-pass of the nose (which filters, warms and moisturizes air) increases the negative effects of the hyperventilation through the mouth, leading to bronchial epithelial damage and clinical symptoms (13,20).

Inhaled and nasal steroids, permitted by WADA, represent the treatment of choice (1-3), since they are very effective in controlling inflammation and symptoms of both upper and lower airways, while reducing the need of rescue medications (vasoconstrictors and bronchodilators) undergoing clinical and anti-doping limitations for potential side-effects and induction of tolerance.

Ephedrine, methylephedrine and pseudoephedrine are in fact prohibited by WADA when their concentration in urine exceeds the allowed threshold. Although there are no restrictions for the use of anti-histamines, it is well known that - particularly first-generation molecules - may have potential side-effects on the cardiovascular and nervous system and are known to induce sedation and fatigue in many patients. Therefore, the use of second-generation molecules must be preferred, and the potential side-effects should be carefully monitored in athletes, in relation to the relevant cardiovascular loads and the need for unaffected reaction times for optimal performances.

Preventive measures should also be undertaken to limit exposure to environmental factors (air humidity and temperature, content in pollutants and allergens responsible for sensitization in allergic athletes) that may trigger symptoms and affect performances during training and competition.

Hopefully, these simple concepts will help the London Olympic athletes suffering from rhinitis in sharing the motto *“Yes, (with allergy) we can”* (21). Thus, the Olympic athletes will become ambassadors to broadcast this positive message to the hundreds of millions of other allergy sufferers around the globe.

## References

1. Bousquet J, van Cauwenberge PB, Khaltaev N, et al. ARIA Workshop Group. World Health Organization. Allergic Rhinitis and its Impact on Asthma (ARIA). *J Allergy Clin Immunol* 2001;108 Suppl (5):S147-334.
2. Bousquet J, Khaltaev N, Cruz AA, et al. Allergic Rhinitis and its Impact on Asthma (ARIA) 2008 update (in collaboration with the World Health Organization, GA(2)LEN and AllerGen). *Allergy*. 2008;63 Suppl 86:8-160.
3. Brozek JL, Bousquet J, Baena-Cagnani CE, et al. Global Allergy and Asthma European Network; Grading of Recommendations Assessment, Development and Evaluation Working Group. Allergic Rhinitis and its Impact on Asthma (ARIA) guidelines: 2010 revision. *J Allergy Clin Immunol*. 2010;126:466-76.
4. Brozek JL, Baena-Cagnani CE, Bonini S, et al. Methodology for development of the Allergic Rhinitis and its Impact on Asthma guideline 2008 update. *Allergy*. 2008;63:38-46.
5. Bonini S, Bonini M, Bousquet J, et al. Rhinitis and asthma in athletes: an ARIA document in collaboration with GA2LEN. *Allergy*. 2006;61:681-92.
6. ISI Web of Science (accessed June 24, 2012).
7. Schwartz, LB, Delgado L, Craig T, et al. Exercise-induced hypersensitivity syndromes in recreational and competitive athletes: a PRACTALL consensus report (what the general practitioner should know about sports and allergy). *Allergy* 2008;63:953-61.
8. Bonadonna P, Senna G, Zanon P, et al. Cold-induced rhinitis in skiers--clinical aspects and treatment with ipratropium bromide nasal spray: a randomized controlled trial. *Am J Rhinol* 2001;15:297-301.
9. Katelaris CH, Carozzi FM, Burke TV, et al. A springtime Olympics demands special consideration for allergic athlete. *J Allergy Clin Immunol*. 2000;106:260-6.
10. Bonini M, Gramiccioni C, Fioretti D, et al. Asthma, allergy and the Olympics. *Lancet* 2012 (submitted).
11. Moreira A, Delgado L, Moreira P, Haahtela T. Does exercise increase the risk of upper respiratory tract infections? *Br med Bull* 2009;90:111-31.
12. Katelaris CH, Carozzi FM, Burke TV, et al. Effects of intranasal budesonide on symptoms, quality of life, and performance in elite athlete with allergic rhinoconjunctivitis. *Clinical Journal of Sport Medicine*. 2002;12:296-300.
13. Weiler J M, Anderson SD, Bonini S, et al. Pathogenesis, prevalence, diagnosis, and management of exercise-induced bronchoconstriction : a practice parameter. *Ann Asthma Allergy Immunol* 2010;105:S1-S47.
14. Cruz AA, Popov T, Pawankar R, et al. ARIA Initiative Scientific Committee. Common characteristics of upper and lower airways in rhinitis and asthma: ARIA update, in collaboration with GA(2)LEN. *Allergy*. 2007;62 Suppl 84:1-41.
15. Bonini M, Lapucci G, Petrelli G, et al. Predictive value of allergy and pulmonary function tests for the diagnosis of asthma in elite athletes. *Allergy* 2007;62:1166-70.
16. Bonini M, Braido F, Baiardini I, et al. AQUA: Allergy Questionnaire for Athletes. Development and Validation. *Med Sci Sports Exerc*. 2009;41:1034-41.
17. Fitch K D. An overview of asthma and airway hyper-responsiveness in Olympic athletes. *Br J Sports Med* 2012 January 8 (Epub ahead of print).
18. World Anti-Doping Agency. List of prohibited substances. [www.wada-ama.org](http://www.wada-ama.org) (accessed June 24, 2012)
19. S. Bonini, Carlsen KH, Del Giacco S and Storms W. Sports and Allergies. In WAO White Book on Allergy. Eds: Pawankar R, Canonica GW, Holgate S, Lockey RF. World Allergy Organization 2011, pg 70-74 ([www.wao.org](http://www.wao.org)).
20. Anderson SD, Kippelen P. Airway injury as a mechanism for exercise-induced bronchoconstriction in elite athletes. *J Allergy Clin Immunol* 2008;122:223-35.
21. Bonini S, Craig T. The elite athlete: Yes, with allergy we can. *J Allergy Clin Immunol* 2008;122:249-50.