

## GA²LEN researchers follow European Olympic athletes to Beijing

- GA²LEN Olympic study
- Objectives, participants, expected results
- Background on sport, allergy and asthma
- The AQUA and AQUE questionnaires
- The Olympic study in each centre
- Further reading and more information

GA²LEN centres will be following athletes selected for the Olympic Games 2008 to assess the prevalence and diagnosis rates of asthma and allergies among top athletes in summer sports.

This study is the first pan-European study on allergy and asthma in athletes, designed as part of GA²LEN joint research activities on sports and allergic diseases.

It was initiated in Norway on request of the National Olympic Committee, to follow athletes and provide optimal care if needed. The scientists were also interested in learning more about the effect of air quality and pollution on the athletes.

Nine research centres will participate to the study in agreement with the National Olympic committees of each country.

The protocol of the study was designed by GA²LEN work package on Sport and Asthma (WP 2.8.2) and will be applied in the ten participating centres. This will allow scientists to collect comparable data on the degree of asthma and allergies in European athletes and to validate tools for further studies.

In the long run, the study will contribute to a better understanding of exercise-induced asthma.

### What will be studied, what will be tested?

Athletes will be followed before, during and after the Olympic Games with regular clinical examinations. The following test and measures will be performed:

- Epidemiology: the AQUA® questionnaire will be used with some slight modifications and questions from the ECHRS questionnaire (*see p.2*).
- Pan European Skin Prick Test and blood test of IgE to assess sensitization to common inhalant and food allergens.
- Lung function tests.
- Bronchial responsiveness measured with methacholine challenge and Mannitol provocation test in some centres.
- Exhaled nitric oxide (NOx) to assess airways inflammation.
- Some centres will also study exhaled breath condensate and blood samples for biomarkers.

**A respiratory laboratory** run by GA²LEN scientists will be available in the Olympic Village in Beijing to provide care for athletes in need, in accordance to doping regulations. As a reference, the team present in Beijing will try and assess the daily NO rate in the environment.

Clinical follow-up should also allow assessment of the impact of the local environment on potential symptoms.

### Objectives & expected outcome

- specify the prevalence of asthma, exercise induced asthma and other allergic diseases among European athletes qualified for the Beijing Olympics (summer sports).
- identify the differences in prevalence between a wide range of sports and between the different European regions.
- assess the diagnosis rates of asthma and allergies among top athletes.
- assess the impact of environmental pollution on asthma symptoms and lung function, identify athletes who may develop symptoms
- Confirm the validity of research tools for future studies in sports and allergic diseases.

### The participants

- GA²LEN centres in 9 countries representing the geographical areas of Europe: Denmark, England, Finland, Germany, Greece, Italy, Norway, Poland, Portugal and Spain.
- Qualified athletes to the Olympics: Up to 2,000, depending on the number of athletes qualifying in each country. (*See details per centres p. 2*)

### Next steps

- 8-24 August 2008: Beijing Olympic Games
- Early 2009: Expected results and publication
- 2010: Winter Olympics Vancouver

GA²LEN, the Global Allergy and Asthma European Network, brings together multidisciplinary research teams that address allergic diseases in their globality. Understanding common risk factors and mechanisms will contribute to improve treatment and quality of life for up to 150-200 million Europeans with allergies and asthma.

**GA²LEN Dissemination**  
Tel: +32 2 213 13 60  
noelle.auvergne@ga2len.net



EU Framework programme for research contract n° FOOD-CT-2004-506378

## Sport, asthma and allergic diseases

Exercise is recommended by the WHO as a major component of a healthy lifestyle aimed at preventing overweight and chronic inflammatory diseases, including allergy and asthma. In fact, obesity has been reported to be associated with more asthma and other cardiovascular diseases in both children and adults.

However, physical exercise may trigger symptoms in allergic exercisers in the lack of preventive measures and adequate management. This often occurs in elite athletes, in view of their extreme challenge and limitations in the use of drugs prohibited by the World Anti-Doping regulations without a documented therapeutic exemption prescription.

Allergic diseases have an even higher prevalence in athletes than in the general population. However, allergy in exercisers is often under-diagnosed, partly because no specific diagnostic protocol was available for detecting allergy in sports medicine.

It is suspected that physical activity may trigger symptoms both in allergic athletes and in non professional exercisers. In endurance sports, higher levels of asthma may be due to the prolonged periods with highly increased ventilation and the duration of high level physical activity performed. The highly increased ventilation of endurance top athletes is adequate and in relationship to the demands of their exercising body. This is different to the hyper-ventilation asthma patients can experience: an increased ventilation out of relationship to the demand.



**Prof. Bonini, CNR Italy, with Jackie Joyner-Kersey a US Golden Medallist .**

These factors are combined with some environmental factors such as chlorine in water for swimmers or polluted air for cyclists and runners. In winter sports, cold air is also an important factor.

**Although allergic diseases do not prevent excellence in sports, the lack of diagnosis may influence the quality of competitive performances.**

In addition, treatment of allergic diseases in athletes should be based on safe drugs which do not affect performances. That is to say, medicine without side-effects on the cardiovascular and nervous system, and which are permitted by the current World Anti-Doping regulations. The list of prohibited medicine as well as the list of Therapeutic Use Exemptions are available on the World Anti-Doping Agency (WADA) website: [www.wada-ama.org](http://www.wada-ama.org).

***Athletes are more likely to have one sort of allergic diseases than the general population.***

***Endurance sports seem to be especially concerned, such as runners, swimmers, and cyclists.***

## Different types of sports and prevalence

### Summer sports

According to recent studies, up to 20 percent of summer sports athletes have asthma. This proportion varies between different types of sports. Endurance sports in particular such as runners, swimmers, and cyclists, have been reported to have a higher prevalence.

- A high prevalence of exercise induced asthma and broncho-constriction was also observed in football players.
- Long distance runners are more often diagnosed than speed runners and power athletes.
- Athletes coming for cycling, triathlon and swimming seem to use more medication than in other disciplines.

### Winter sports

Winter sports such as cross-country skiing and biathlon present the higher rate of asthma.

- Cold induced rhinitis was reported in close to 50% of skiers.
- Cross-country skiers also report higher level of exercise-induced asthma.

## Screening tools: the AQUA<sup>®</sup> and AQUE<sup>®</sup> questionnaires

AQUA<sup>®</sup> and AQUE<sup>®</sup> are two questionnaires for the screening of allergy in athletes and non-professional exercisers: AQUA<sup>®</sup> standing for Allergy Questionnaire for Athletes and AQUE<sup>®</sup>, Allergy Questionnaire for Exercisers. Both questionnaires have been developed by CNR Rome within their activities of GA<sup>2</sup>LEN WP 2.8.2 activities and are protected by an International Copyright. Their use therefore needs permission.

The questionnaires are translated in several languages and are available to GA<sup>2</sup>LEN partners and Collaborating Centres on the GA<sup>2</sup>LEN Partners' website.

**Recent publication:** AQUA@2007, an Allergy Questionnaire for Athletes, Bonini et al. Journal of Allergy and Clinical Immunology, Vol 121, Issue 2, Supplement 1, page S225 (February 2008).

[www.ga2len.net](http://www.ga2len.net)

## GA<sup>2</sup>LEN Olympic study - What happens in each county?

### Coordinating Centre: Oslo, Norway

Prof. Kai-Hakon Carlsen, Mobile: +47 90 93 29 93.

**Denmark:** Prof. Vibeke Backer, Copenhagen

**Finland:** Prof Tari Haahtela and Dr. Pekka Malmberg, Helsinki

**Germany:** Prof. Katja Radon, Munich, Tel +49 89 51602485

The German team will focus on the epidemiology questionnaire. The aim is to include 500 athletes from the Olympic and Paralympics teams.

**Greece:** Prof. Nikos Papadopoulos and Prof. Christina Gratziau, Athens, Tel: +30 6977 007393

Having previous experience with the 2004 Olympics games in Athens (JACI 2006;117:767) the Asthma Centre headed by Prof. Gratziau performs an extensive battery of tests including exercise testing, mannitol and eucapnic voluntary hyperventilation. The athletes will be followed-up after the Olympics to evaluate the effects of diagnosis and treatment on their achievements.

**Italy:** Prof. Sergio Bonini, CNR Roma, Tel. +39 06 35346840, se.bonini@gmail.com

About 500 athletes who participated in the selections for the Olympic and Paralympics teams will be involved. The study will allow comparison of data with a similar study performed by the same team for the Sydney Olympics (2000).

The study is performed in collaboration with INMM-CNR, the Italian Sports Medicine Federation, the Institute of Medicina and Sciences of Sports, and the Italian National Olympic Committee; and funded by the Italian Ministry of Health, Commission of Control and Vigilance on Doping.

**Poland:** A<sup>2</sup>POLO study, Allergy and Asthma in Polish Olympics

Prof. Marek Kowalski, Lodz, (Tel: + 4842 6757309)

The Polish team will conduct the full study on more than 150 athletes.

**Portugal:** Prof. Luis Delgado, Mobile: +351 937464791 and Dr. André Moreira, Porto

In collaboration with the Portuguese National Olympic Committee, the team will assess 50 athletes competing in eight different modalities, including speed and power, long distance running and water sports.

**Spain:** Prof. Kogevinas and Dr. Francek Drobnic (Tel: +34 935891810- 225; Mobile: +34 606150154), Barcelona

The Spanish team will conduct the full study and tests on involved athletes.



### GA<sup>2</sup>LEN researchers in Beijing:

Kai-Hakon Carlsen, Norway - authorized to practice western medicine in China.

Dr Hubert Krysztofiak and Dr. Andrzej Jurczyk from Poland

*Respiratory laboratory in the Olympic Village*

## Further reading and scientific publications

The GA<sup>2</sup>LEN work package on sports, asthma and allergic diseases notably contributed to the Joint Task Force on 'Exercise-induced Asthma, Respiratory and Allergic disorders in sports and the relationship to doping', set up by the European Respiratory Society (ERS) and the European Academy of Allergy and Clinical Immunology (EAACI). The Task Force led to two scientific publications in April and May 2008.

- Exercise-induced asthma, respiratory and allergic disorders in elite athletes: epidemiology, mechanisms and diagnosis: Part I of the report from the Joint Task Force of ERS and EAACI in cooperation with GA<sup>2</sup>LEN. Carlsen KH et al. Allergy. 2008. 63(4):387-403. Review. April 2008.
- Treatment of exercise-induced asthma, respiratory and allergic disorders in sports and the relationship to doping: Part II of the report from the Joint Task Force of ERS and EAACI in cooperation with GA<sup>2</sup>LEN. Carlsen KH et al. Allergy. 2008. 63(5):492-505. Review. May 2008.
- Rhinitis and asthma in athletes: an ARIA document in collaboration with GA<sup>2</sup>LEN. S. Bonini, et al. Allergy 2006, Vol 61 N°6, pp. 681-692. June 2006.
- Diagnosis, prevention and treatment of exercise-related asthma, respiratory and allergic disorders in sports. Carlsen KH, Delgado L, Del Giacco S, eds. Europ Respir Monographs no. 33, vol 10: November 2005. ISSN 1025-448x. ISBN 1-904097-54-5

### Training for scientists and clinicians

An Allergy School on Allergy, Asthma and Sport was organised in collaboration with GA<sup>2</sup>LEN and EAACI in Porto Heli, Greece, from 27 to 30 June 2008 on the theme '3-2-1-go! : Towards free sports for allergic people'.

More information: [http://www.allergy.gr/summer\\_school-2008/general\\_info.html](http://www.allergy.gr/summer_school-2008/general_info.html)