

# AQUA and AQUE: two screening questionnaires for predicting allergy in elite athletes and non professional exercisers. Preliminary testing and validation

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## Background

- Allergic diseases have an even higher prevalence in athletes than in the general population ( up to 54.8% for asthma and up to 42.0% for rhinitis)<sup>1,2</sup>.
- Moreover physical activity may trigger symptoms both in allergic athletes and in non professional exercisers.
- However no specific diagnostic protocol is available for detecting allergy in sports medicine.
- Consequently, the diagnosis of allergy in exercisers is often under-made, this also negatively influencing sports performances.

## Aim of the study

To produce and validate specific screening tools for an easy and reliable prediction of allergy in elite athletes and non professional exercisers.

## Methods

- Two questionnaires (Allergy Questionnaire for Athletes, AQUA and Allergy Questionnaire for Exercisers, AQUE) were produced by adapting the ECRHS questionnaire to the target population and adding specific questions derived by open interviews with team doctors, coaches, athletes and non professional exercisers on:
  - Type, duration and intensity of training;
  - Exercise-induced allergic and infectious symptoms;
  - Social habits (smoking);
  - Drug intake;
  - Aspects related to anti-doping regulation;
- The questionnaires were circulated as a draft to the members of the GA<sup>2</sup>LEN W.P. 2.8.2 for comments and to a sample sport population to test comprehension and consistency.

## Results

- The final version of AQUA (25 questions) and AQUE (20 questions) were translated (from English and back) into several European languages and submitted for copyright registration (Fig. 1)

AQUA  
Allergy Questionnaire for Athletes

Allergic diseases (bronchial asthma, rhinitis, conjunctivitis, eczema, urticaria and dermatitis, allergic and anaphylactic reactions to drugs, foods, and insect venoms, etc.) represent a third millennium epidemic for their increase, particularly in industrialized countries. The high prevalence of these diseases (25-40% of the population) has called for specific actions of the World Allergy Organization aimed at their diagnosis and prevention ([www.gaiasthma.com](http://www.gaiasthma.com), [www.willier.com](http://www.willier.com), [www.gid.org](http://www.gid.org)).

Studies performed in several national Olympic delegations have shown that allergic diseases are very frequent in elite athletes too, with a prevalence of asthma even higher than that recorded in the general population. Moreover, allergic diseases are often associated with infections, particularly in the upper respiratory tract.

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 (without side-effects on the cardiovascular and nervous system, etc.) and which are permitted by the current anti-doping regulations ([www.wada-ama.org](http://www.wada-ama.org)).

This survey is part of an international project involving 24 European Centers of Excellence in allergic diseases (www.galenet.it) which, with the support of the European Community, aims at prevention and treatment of allergy.

Participation in the survey is certainly helpful for the health of athletes, answers to privacy needs and does not influence any decision about the identity to sports activity.

FIRST NAME \_\_\_\_\_ SURNAME \_\_\_\_\_  
PLACE OF BIRTH \_\_\_\_\_ DATE OF BIRTH \_\_\_\_\_  
CITY OF RESIDENCE \_\_\_\_\_ PHONE (optional) \_\_\_\_\_  
WEIGHT \_\_\_\_\_ HEIGHT \_\_\_\_\_  
SPORT \_\_\_\_\_ TEAM \_\_\_\_\_  
CODE \_\_\_\_\_

Fig. 1 AQUA and AQUE. Full texts are available for distribution at the poster site or by e-mailing to: [matteobonini@tiscali.it](mailto:matteobonini@tiscali.it)

- AQUA was validated in 115 professional soccer players who underwent medical examination including accurate history taking, skin prick testing (GA<sup>2</sup>LEN allergen panel and methodology)<sup>3</sup> and/or serum specific IgE assay (Phadiatop, Phadia Uppsala)
- The prevalence of allergy as shown by skin prick tests and/or Phadiatop was 47.8%
- On the basis of the correlation between positive answers and positive skin tests and/or Phadiatop key questions were scored from ... to ... according to their predictive value for allergy
- A total score of ... showed the highest sensitivity (%) and specificity (%) to predict allergy

## Concluding remarks

- The high prevalence of allergy in athletes highlights the relevance of this condition in sports medicine
- AQUA and AQUE represent a contribution in line with the GA<sup>2</sup>LEN Sports Allergy Workpackage goals of making available simple tools for a more accurate detection of allergy in athletes and non professional exercisers
- The questionnaires represent an initial step in the process of developing standardized protocols of diagnostic tools and outcomes for the management of sports allergy

## References

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## Acknowledgement

This study is part of the activities of GA<sup>2</sup>LEN 2.8.2.

We are grateful for collaboration received by the following doctors and soccer teams:

Bonini S. Brusasco V. Canonica G.W. Carlsen K-H Cumminskey J. Delgado L. Drobnic F. Haahtela T. Larsson K. Kovalski M. Kurowski M. Papadopoulos N. Popov T. Rasi G. Donnanno S.



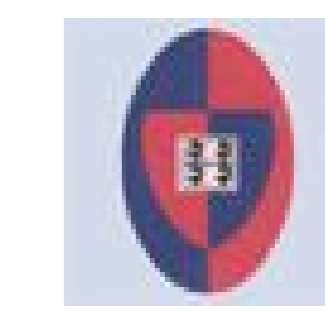
A.S. Roma  
Brozzi M.



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F.C. Parma  
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Cagliari Calcio  
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A.C. Monaco  
Bermon S.

The study has been partially supported by the Italian Ministry of Health, Anti-Doping Commission and by an educational grant of Almirall (Spain)