

## RISK MANAGEMENT

# Torino 2006. XX Olympic and IX Paralympic Winter Games: the ENT experience

## Torino 2006. XX Giochi Invernali Olimpici e IX Paraolimpici: l'esperienza otorinolaringoiatrica

G. SUCCO, E. CROSETTI, A. MATTIAZZO, E. RIONTINO, G. MASSAZZA<sup>1</sup>  
 ENT Department, "Martini" Hospital; <sup>1</sup> Orthopedic, Traumatology and Work Medicine Clinic, University of Turin, Turin

With the contribution of:

M. Andreis<sup>\*</sup>, D. Di Lisi<sup>\*\*</sup>, G.L. Fadda<sup>\*\*\*</sup>, N. La Fauci<sup>\*\*\*\*</sup>, C. Ondolo<sup>\*\*\*</sup>, P. Marcato<sup>\*\*\*\*</sup>, A. Manarini<sup>\*\*\*\*\*</sup>, S. Rosso<sup>\*\*</sup>  
<sup>\*</sup> ENT Department, "SS. Antonio e Biagio" Hospital, Alessandria; <sup>\*\*</sup> ENT Department, Martini Hospital, Turin; <sup>\*\*\*</sup> ENT Department, University of Turin, "S. Luigi Gonzaga" Hospital, Turin; <sup>\*\*\*\*</sup> ENT Department, Sestri Levante Hospital, La Spezia; <sup>\*\*\*\*\*</sup> ENT Department, "Mauriziano" Hospital, Turin; <sup>\*\*\*\*\*</sup> ASL 8, Turin, Italy

## SUMMARY

A total of 27 competition days, more than 3000 athletes, over 10,000 components of the Olympic family, 3,500 workers, 2,500 volunteers, an overall business of more than 2 billion Euros. These, in a nutshell, are just a few of the data concerning the XX Olympic and the IX Paralympic Winter Games, Torino, Italy, 2006. Such a huge event, obviously required a meticulously organized medical service to cope with the healthcare of the athletes, official workers and the Olympic family, distributed over a geographic area of approximately 80 km in diameter. An ENT service was organized within the medical service, which was divided between 3 Polyclinics, in which 12 ENT Specialists were on duty. The present report gives an account of the final data concerning the service involved, together with a description of the approach used in the actual organization, with a view to providing useful information for colleagues who will be called upon, for a similar service, in future Olympic Winter Games. The ENT healthcare offered was confirmed to be proportional to the requirements, both from a qualitative and quantitative point of view. All the ENT specialists involved, reported having gained an immense store of human experience from having lived the Olympic atmosphere as a volunteer exerting one's own profession. The facilities available in the Polyclinics, which were at a considerable distance from the Hospital, were found to be more than adequate with respect to the pathological conditions and service requested, particularly in 17% of the cases which would otherwise have been sent to a Hospital Outpatient Unit at least 80 km away.

KEY WORDS: ENT Service • Olympic Winter Games • Torino 2006 • Paralympic Winter Games

## RIASSUNTO

Ventisette giorni di competizioni, più di 3.000 atleti, oltre 10.000 membri della famiglia Olimpica, 3.500 lavoratori temporanei, 2.500 volontari, un affare complessivo di oltre 2 bilioni di euro. Questi, in breve, sono alcuni dei dati relativi ai XX Giochi Invernali Olimpici e Paraolimpici, svoltisi a Torino nel 2006. Ovviamente per organizzare un evento così importante è stato necessario pianificare meticolosamente il servizio di assistenza medica rivolto agli atleti e a tutti coloro che hanno prestato servizio nella famiglia olimpica, operanti su un'area geografica di circa 80 km di diametro. Un servizio di Otorinolaringoiatria è stato approntato all'interno del Medical Service Olimpico, organizzato in tre Policlinici, in cui hanno prestato servizio 12 Specialisti ORL. In quest'articolo sono riportati i dati conclusivi inerenti l'esperienza olimpica, descrivendo l'approccio impiegato nell'organizzazione sanitaria, con l'obiettivo di fornire informazioni utili ai Colleghi che potranno essere chiamati, in futuro, a prestare servizio nei Giochi Olimpici Invernali. Le prestazioni otorinolaringoiatriche sono state qualitativamente e quantitativamente proporzionali alle richieste. Tutti gli Specialisti ORL coinvolti sono stati concordi nell'affermare che l'esperienza olimpica li ha umanamente e professionalmente arricchiti. I servizi a disposizione nei Policlinici, allocati a distanze considerevoli dai principali Centri Ospedalieri di riferimento della Regione, si sono dimostrati adeguati alle necessità, specie per il 17% dei casi che altrimenti sarebbero stati inviati presso un Ospedale distante non meno di 80 km dal Centro Olimpico.

PAROLE CHIAVE: Servizio ORL • Giochi Olimpici Invernali • Torino 2006 • Giochi Paraolimpici Invernali

## Introduction

A total of 27 competition days, more than 3000 athletes, over 10,000 components of the Olympic family, 3,500 workers, 2,500 volunteers, an overall business of more than 2 billion Euros.

These, in a nutshell, are just a few of the data concerning the XX Olympic and the IX Paralympic Winter Games, Torino, Italy, 2006.

Such a huge event, obviously required a meticulously organized medical service to cope with the healthcare of the athletes, official workers and the Olympic family, distributed over a geographic area of approximately 80 Km in diameter. An ENT service was organized within the medical service, which was divided between 3 polyclinics, in which 12 ENT Specialists were on duty.

The present report gives an account of the final data concerning the service involved, together with a description of the approach used in the actual organization, with a view to providing useful information for colleagues who will be called upon, for a similar service, in future Olympic Winter Games.

## Material and methods

Based on the experience of past summer and winter Olympic games, the International Olympic project is supervised by the Medical Commission of the International Olympic Committee (IOC) and the International Paralympic Commission (IPC) which controls and sanctions all organization aspects and levels of healthcare during the games. The aim of all partners is not only to operate high quality services, during the Games, but also to leave a permanent resource unique to Italy in the organization of major sports events.

The primary role of the Torino 2006 Olympic Committee (TOROC) Medical Services was to ensure basic emergency Medical Services to athletes, Olympic Family members, Olympic staff, IOC Members, journalists, spectators and operators during the Games.

The standard of healthcare should not be lower than the quality of services normally delivered to the local population nor should the quality of care provided to local residents be lower because of the Olympic event.

In conformity with the provisions of the Olympic Chart, the medical services operated with due diligence as dictated by common medical ethics and norms regulating patient privacy.

### Medical Services

Basic and emergency Medical Services for all participants in the events are established by the Olympic Medical Plan, which has identified and organized all resources necessary for delivering appropriate Medical Services at in-competition and out-of-competition venues, including permanent facilities (polyclinics, medical stations), mobile units (first aid and emergency teams) and professional resources (physicians and nurses) and first aid volunteers.

Given the considerable size and complexity, the Plan heavily involved various legal bodies, institutions, national and local health authorities, with which agreements have been reached.

The Medical Services Plan was discussed and approved by the TOROC Medical Commission (representatives from the

Region of Piedmont Health Department and the Ministry of Health) and the operation was supervised by the IOC Medical Commission and the IPC Medical Commission, which controlled and sanctioned all organizational aspects and levels of medical care to be provided<sup>1-4</sup>.

### Analysis

Before drawing up the Olympic Medical Services Plan, several important factors were examined.

### The Olympic area

The Medical Services Plan applies to the entire geographic area comprising the Olympic and the Paralympic Systems of the Province of Torino subdivided into two compartments (Fig. 1):

- the Urban compartment: the Torino metropolitan area is characterized by a dense network of roads and numerous public medical facilities with specialized treatment centres of national importance;
- the Alpine compartment: on account of the mountainous terrain in this area, temporary medical service systems were activated and dedicated strategic solutions implemented to manage road conditions and medical transport.

### Health Risks of the Games

Health risk assessment involved various study groups including external consultants from public safety agencies and organizations, persons with specific expertise, and TOROC representatives, whose task was to plan the critical scenarios. In detail, the factors included:

- risks related to sports activities, especially acute trauma and injuries;
- risks related to the onset and/or flare-up of non-traumatic conditions;
- risks related to movement (pedestrian, road and rail-road);
- particularly adverse meteorological conditions;
- hydro-geologic and environmental risks;
- risks related to natural events or unpredictable incidents.

### Service Levels

The aim of the Medical Services was to ensure, within the Olympic area, that the quality of Medical Services should



Fig. 1. The Torino 2006 Olympic System.

not be of a lower level than the standard usually delivered to the local population.

Given the complexity of the systems and the characteristics of the National healthcare system, the TOROC Medical Services did not act independently but worked in cooperation with external and internal resources.

*Medical Service*

For simplicity of description, this section illustrates the organization model of healthcare employed at the Olympic Villages, while the ENT service is described below (Fig. 1).

*Healthcare – Olympic Villages/Polyclinics for athletes and accredited persons*

Athletes and accompanying persons were housed in the Olympic Villages in Turin, Sestriere and Bardonecchia. Each village had a specialized medical centre, with qualified personnel, on duty and/or on call, and 24-hour ambulance/patient transport service were provided for the management of hospitalisation

Defined as polyclinics, these facilities were designed according to the specifications of the IOC and the IPC Medical Commissions as far as concerns the logistic requirements of the Olympic and Paralympics Systems and represented a reference point for the Organizing Committee of the Olympic Games (OCOG).

Functions:

- patient triage;
- first aid, stabilization and transfer of patients to hospitals;
- on site management of medical and surgical interventions;
- management of specialist interventions: orthopedics, ophthalmology, dentistry, ENT;
- sports medicine management of musculoskeletal interventions and physiokinesitherapy.

Equipment:

- radiology services with diagnostic imaging;
- masso-physiokinesitherapy services;
- drug dispensary;
- laboratory for initial blood screening;
- oculist and optometry services;
- data processing.

Ancillary services:

- anti-doping control station;
- food safety and surveillance;
- IOC Medical Commission office;
- dedicated rescue vehicle station;
- dedicated hospital shuttle service.

Logistics area:

- debriefing rooms for healthcare workers;
- medico-scientific support structures;
- stand-by rooms for healthcare workers.

*Organization of the polyclinics*

The Olympic Winter Games took place in three areas (Turin, Sestriere, Bardonecchia), each with an Olympic Village where a medical services facility (Polyclinic) was organized and equipped according to village size and estimated use. The Polyclinics operated for the duration of the Games.

The Polyclinics were interconnected by internet systems and equipped for patient management using telemedicine (transmission of data and images). Vehicles for surface and air transport (helicopters) were available to ensure transport to the Olympic hospital of patients with major medical problems and for complex diagnostic-therapeutic interventions. An assisted shuttle service operated for patients requiring specialist examinations which could not be performed at the Polyclinic. The medical teams accompanying the national delegations and respective teams were permitted the use of general and specialist medical rooms and dedicated areas. All structures were built and equipped in appropriate spaces for the Paralympic games which were programmed to take place later. Round the clock operation of services was guaranteed for emergency and first aid interventions; other medical services were provided during normal operating hours or longer if required to cover special situations or events, such as the opening and closing ceremonies and night-time events.

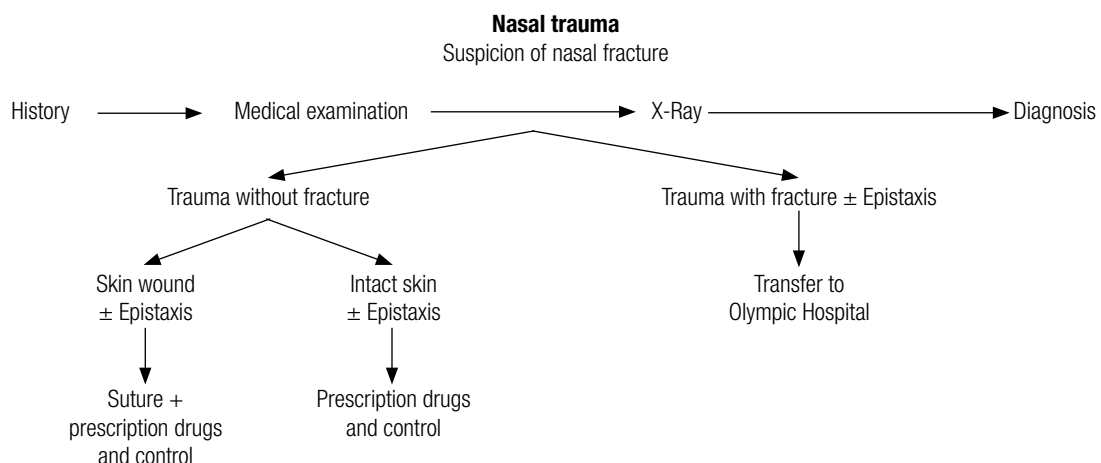
*Organization of the ENT Outpatient Clinic*

A fully equipped Otorhinolaryngology Outpatient Clinic, with the usual equipment for routine diagnostics, has been prepared in each of the 3 Polyclinics.

Furthermore, each Outpatient Clinic has been provided with:

- light source Xenon 175 Watt;
- diagnostic flexible rhino-pharyngo-laryngoscope;
- diagnostic clinical audiometer;

**Table I.** Guidelines adopted for management of nasal trauma.



- everything necessary to:
  - perform small surgical operations;
  - perform an anterior nasal package;
  - remove foreign bodies from ear and nose.

Every phase of the ENT organization service, which operated in each of the 3 polyclinics, 4 hours per day, during the Olympic and Paralympic winter games, has been discussed, step by step, with the Olympic and Paralympics Commission.

The qualitative and quantitative aspects of the service have been planned, based on the experience matured during the previous Olympic and Paralympic Winter and Summer Games.

Coordination with the Public Health Service, especially with the system of the Olympic hospitals, was made possible by drawing up guide-lines for the following disorders:

- rhinosinusitis;
- laryngitis;
- otitis;
- nasal trauma;
- sudden hearing loss;
- epistaxis.

An example of the guidelines adopted for the management of nasal trauma is given in Table I.

All medical volunteers have been coordinated by a leader, identified in the figure of the ENT coordinator, who acted as an intermediary both with the Coordination Centre and with the Antidoping Control system

Moreover, all medical staff attended a compulsory course of vocational training, credited as recognized by the Ministry of Health.

## Results

Data referring to the XX Olympic and the IX Paralympic Winter Games, are not included in this report.

The characteristics of the population attending the 3 Polyclinics, outlined in Tables II and III, show that the two largest contingents attended the Polyclinics in Turin and Sestriere, with 3,500 and 2,800 patients, respectively, seeking help during the period of the Olympic Games.

Data concerning the atmospheric conditions recorded during that period are summarized in order to better correlate the disorders most frequently diagnosed (Tables IV, V).

In the ENT Outpatient Units, a total of 108 requests for attention were dealt with which included ENT examinations (II level diagnostic or therapeutic work-up).

Data concerning the ENT specialistic examinations performed have been subdivided according to the various polyclinics (Tables VI, VII). As can be seen, the number of specialistic ENT requests made at the 2 Polyclinics, dislocated in the Olympic Villages of Sestriere and Bardonecchia, far outweighed the others (88.9% vs. 11.1% with  $p < 0.005$ ), the ratio being statistically significant.

This finding is in keeping with overall data concerning the health service offered in these two Polyclinics.

As far as concerns the group to which the patients requesting medical attention belonged, as can be seen in Tables VIII and IX, the highest prevalence is related to workers, followed by members of the Olympic family and the athletes. The various pathological conditions diagnosed in the different Hospitals (Tables X, XI) show a clear prevalence of inflammatory/infectious diseases of the upper aerodigestive tract (51%), followed by otitis (24%) and epistaxis (6.5%). Almost all patients were discharged with instruc-

**Table II.** Population attending vs. effective number of medical examinations performed in Polyclinics during XX Olympic Winter Games (February 2006).

Polyclinic (No. residents)	Athletes	Press	No. medical examinations			Total
			Olympic family members	Workforce	Not accredited	
Turin (3500)	140 17%	7 1%	157 19%	519 62%	12 1%	835
Sestriere (2800)	292 25%	22 2%	129 62%	707 60%	26 2%	1176
Bardonecchia (1280)	167 19%	2 0%	59 7%	638 73%	13 1%	879
Total	599 21%	31 1%	345 12%	1864 64%	51 2%	2890

**Table III.** Population attending vs. effective number of medical examinations performed in Polyclinics during IX Paralympic Winter Games (March 2006).

Polyclinic (No. residents)	Athletes	Press	No. medical examinations			Total
			Olympic family members	Workforce	Not accredited	
Turin (1400)	51 21%	0	20 8%	166 68%	8 3%	245
Sestriere (950)	87 15%	11 2%	71 12%	367 63%	42 7%	578
Total	138 17%	11 1%	91 11%	533 65%	50 6%	823

**Table IV.** Atmospheric conditions recorded in Polyclinics during XX Olympic Winter Games (February 2006).

Polyclinic	Mean temperature	Range temperature	Sunny days	Cloudy days	Rainy days	Windy days
Turin	+ 0.6 °C	-6.2/11 °C	13	13	8	6
Sestriere	-2.7 °C	-12.3/6.5 °C	10	14	10	12
Bardonecchia	-1.1 °C	-8.8/6.7 °C	8	14	5	14

**Table V.** Atmospheric conditions recorded in Polyclinics during IX Paralympic Winter Games XX (March 2006).

Polyclinic	Mean temperature	Range of temperature	Sunny days	Cloudy days	Rainy days	Windy days
Turin	+ 4.5 °C	2.3/16.1 °C	9	6	1	4
Sestriere	+ 1.3 °C	-3.2/9.7 °C	7	8	1	9

**Table VI.** Total and ENT medical examinations performed in Polyclinics during XX Olympic Winter Games (February 2006).

Polyclinic	Total attending population	Total number of medical examinations	Ratio medical examinations performed/ attending population	Total ENT medical examinations	Ratio ENT medical examinations/ Total medical examinations
Turin	3500	835	0.24	4	0.4%
Sestriere	2800	1176	0.42	56	4.1%
Bardonecchia	1280	879	0.68	31	3.1%

**Table VII.** Total and ENT medical examinations performed in Polyclinics during IX Paralympic Winter Games (March 2006).

Polyclinic	Total attending population	Total number of medical examinations	Ratio medical examinations/ attending population	Total ENT medical examinations	Ratio ENT medical examinations/ Total medical examinations
Turin	1400	245	0.18	8	3.0%
Sestriere	950	578	0.61	9	1.1%

**Table VIII.** Groups to which patients requesting ENT medical examination belonged during XX Olympic Winter Games (February 2006).

Polyclinic	Athletes	Officials	Olympic family	Workers	Not accredited	Unknown	Total
Turin	0	0	3 (75%)	1 (25%)	0	0	4
Sestriere	2 (3.5%)	10 (17.5%)	11 (21%)	32 (58%)	0	0	56
Bardonecchia	6 (19.5%)	1 (3%)	0	24 (77.5%)	0	0	31
Total	8 (9%)	11 (9%)	14 (12%)	57 (64%)	0	0	91

tions, only in 2 patients was temporary hospitalisation, in the Unit, necessary, in order to carry out treatment requiring intravenous infusion (Tables XII, XIII).

Last, but not least, Tables XIV and XV show the type of ENT medical service requested and the radiological diagnostic procedures carried out.

The Outpatient Units, in these Polyclinics, remained operational throughout the periods listed in Table XVI.

## Discussion

The modern Olympics were proposed by Pierre De Coubertin, upon whose initiative the International Athletics Congress was held in Paris, in June 1894. The International Olympics Committee (IOC) was founded on 23<sup>rd</sup> June 1894. The Olympics represent a philosophy of life that exalts and unites, in a harmonious balance, the talent of the body, the

**Table IX.** Groups to which patients requesting ENT medical examination belonged during IX Paralympic Winter Games (March 2006).

Polyclinic	Athletes	Officials	Olympic family	Workers	Not accredited	Unknown	Total
Turin	2 (25%)	0	1 (12.5%)	5 (62.5%)	0	0	8
Sestriere	0	1 (11.1%)	2 (22.2%)	6 (66.6%)	0	0	9
Total	2 (12%)	1 (6%)	3 (18%)	11 (64%)	0	0	17

**Table X.** ENT pathological conditions diagnosed in Polyclinics during XX Olympic Winter Games (February 2006).

	Turin Polyclinic	Sestriere Polyclinic	Bardonecchia Polyclinic	Total
Rhinosinusitis		1	3	4
Rhinopharyngitis			2	2
Pharyngitis		10	8	18
Tonsillitis		5	4	9
Laryngitis		9	2	11
Otitis	1	15	5	21
Tubotympanitis			1	1
Epistaxis		3	4	7
Rhinitis		8		8
Nasal trauma		2		2
Parotitis			1	1
Wax cap		1	1	2
Sudden hearing loss	2			2
External auditory canal dermatitis		1		1
Pain in temporomandibular joint		1		1
Nasal Herpes	1			1
Total	4	56	31	91

**Table XI.** ENT pathological conditions diagnosed in Polyclinics during IX Paralympic Winter Games (March 2006).

	Turin Polyclinic	Sestriere Polyclinic	Total
Tonsillitis		2	2
Laryngitis		1	1
Otitis	4	1	5
Rhinitis	1	2	3
Wax cap	2	1	3
Benign parossistic positional vertigo		1	1
Costen Syndrome		1	1
Foreign body in external auditory canal	1		1
Total	8	9	17

spirit and the mind. Combining sport with culture and education, the Olympics strive to disseminate a way of life that takes satisfaction from effort, educational value of fair play and universal ethical principles.

The Olympic movement, symbolized by the linked rings, is universal and permanent. It extends to all five continents and culminates on the occasion of the Olympic Games, a solemn meeting of athletes from around the world.

The Medical Services of the Organising Committee for the XX Winter Games, Torino 2006 and the Paralympics, have applied these principles, translating them into a networked project. The network comprises organizations, bodies and single professions to form a single organizational model with the same objectives based on the principles that underlie the Olympic Movement.

Throughout the years of preparation, the Medical Services have

**Table XII.** Patient discharge during XX Olympic Winter Games (February 2006).

	Turin Polyclinic	Sestriere Polyclinic	Bardonecchia Polyclinic	Total
Discharge with instructions	4	55	31	90
Follow-up at TOROC facility	0	0	0	0
Discharge F/up own physician	0	0	0	0
Refer to Hospital	0	0	0	0
Refer to Polyclinic	0	0	0	0
Refer to physiotherapy	0	0	0	0
Refer to TEAM physician	0	0	0	0
Left against medical advice	0	0	0	0
Refused treatment	0	0	0	0
Other	0	1	0	1
Total	4	56	31	91

F/up = follow-up

**Table XIII.** Patient discharge during IX Paralympic Winter Games (March 2006).

	Turin Polyclinic	Sestriere Polyclinic	Total
Discharge with instructions	8	9	17
Follow-up at TOROC facility	0	0	0
Discharge F/up own physician	0	0	0
Refer to Hospital	0	0	0
Refer to Polyclinic	0	0	0
Refer to physiotherapy	0	0	0
Refer to TEAM physician	0	0	0
Left against medical advice	0	0	0
Refused treatment	0	0	0
Other	0	0	0
Total	8	9	17

**Table XIV.** ENT medical examinations performed during XX Olympic Winter Games (February 2006).

	Turin Polyclinic	Sestriere Polyclinic	Bardonecchia Polyclinic	Total
ENT medical examination	4	56	31	91
Fibroscope	0	8	2	10
Tonal audiometric exam	2	0	1	3
Semont manoeuvre	0	0	0	0
Remove wax cap	0	1	1	2
Foreign body extraction	0	0	0	0
Nasal dressing	0	3	4	7
Cranial X-ray	0	1	1	2
Maxillofacial CT-scan	0	2	0	2
Brain MRI	2	0	0	2
Total	8	71	40	119

followed a double mission: to ensure medical care during the Games and to leave a lasting mark. Delivery of Medical Services was ensured as described above. The heritage representing the greatest challenge was both material and cultural. Benefits to the public comprised: modern medical care fa-

cilities (spinal injury treatment centre and anti-doping laboratory), helicopter landing pads and new Polyclinic outpatient services for tourists. From a cultural point of view, we wish to be remembered for our earnest commitment, professionalism and concreteness.

**Table XV.** ENT medical examinations performed during IX Paralympic Winter Games (March 2006).

	Turin Polyclinic	Sestriere Polyclinic	Total
ENT medical examination	8	9	17
Fibroscope	1	1	2
Tonal audiometric exam	1	0	1
Semont manoeuvre	0	1	1
Remove wax cap	2	1	3
Foreign body extraction	1	0	1
Nasal dressing	0	0	0
Cranial X-ray	0	0	0
Maxillofacial CT-scan	0	0	0
Brain MRI	0	0	0
Total	13	12	25

**Table XVI.** Polyclinic opening/closing days during Torino Olympic and Paralympic Winter Games 2006.

	Polyclinic	Opening day	Closing day	Length (days)
XX Olympic Winter Games	Turin	27/01/2006	01/03/2006	34
	Sestriere	27/01/2006	01/03/2006	34
	Bardonecchia	03/02/2006	01/03/2006	27
IX Paralympic Winter Games	Turin	05/03/2006	21/03/2006	16
	Sestriere	05/03/2006	21/03/2006	16

From a purely ENT point of view, there were, fortunately, no particularly serious clinical conditions during the period of service provided. Thus, it is safe to say that the work carried out in the polyclinics was comparable to a normal outpatient routine in any well-equipped Outpatient Unit. The data obtained are, nonetheless, quite interesting inasmuch as they refer to a homogeneous population attending, for the first time, 3 different Polyclinics, dislocated in 3 Olympic villages located at different altitudes (Turin: 239 mt above sea level, Sestriere: 2035 mt above sea level, Bardonecchia: 1312 mt above sea level, respectively). It thus follows that the different atmospheric phenomena, in terms of temperature, wind, humid atmospheric conditions, reflect, in particular, on the most frequent inflammatory disorders encountered in the ENT setting.

The first observation of interest concerns the very few requests for ENT medical services made by the athletes, overall a total of 10 examinations for the ~ 3000 athletes, accounting for 1.3% of all healthcare interventions performed for athletes. Regardless of considerations concerning the excellent overall physical conditions usually of athletes taking part in Olympic games, it is also obvious that eventual ENT disorders are usually taken care of by the medical staff of the National Teams.

These two factors probably offer an explanation for this finding:

- most of the pathological conditions encountered are of a simple type and of an acute inflammatory nature involving the upper aerodigestive tract, thus not requiring Level II diagnosis;
- the treatment required for these disorders must be well balanced in order not to interfere with the athlete's performance and also not to risk positive findings when passing anti-doping controls;

- furthermore, from the data obtained, a statistically significant difference emerges regarding the number of subjects attending the ENT outpatient Units in the Polyclinics located in the Mountainous areas (Sestriere, Bardonecchia) compared to the Polyclinic in Turin.

This finding is not in keeping with the relationship between the population frequenting the Olympic villages and the total number of medical services performed (Tables VI, VII). The interpretation given for these findings is that the very poor weather conditions, particularly during the period of the Olympic Games, played a fundamental role in determining the acute inflammatory disorders of the upper airways, resulting in more people seeking healthcare in the Polyclinics in the mountain areas.

Taking a closer look at the specific evaluation of the ENT disorders diagnosed, it can be seen that, during the Olympic Games, 63% of the examinations performed were for acute inflammation/infection of the upper airways and 23% for acute otitis.

Of these disorders, 98% were diagnosed in the Polyclinics located in the mountain areas.

In the period of the Paralympic Winter Games, inflammation/infection of the upper airways accounted for 35% of the diagnoses made, while acute otitis accounted for 29%.

In this case, a very slight prevalence was observed in diagnoses performed in the Polyclinics in the mountain areas (54%) due to the weather conditions which were clearly much better during the month of March.

As far as concerns the remaining disorders diagnosed, no particular prevalence was observed, with the exception of 2 cases of sudden hypoacusia triggered by neuronitis of the VIII cranial nerve of viral origin (influenza).

In both cases, a MRI brain scan was performed; corticosteroid treatment was started immediately, together with os-



motric diuretics, antiviral drugs (acyclovir) and high doses of Vitamin B12.

A return to normal hearing was observed within 10 days, in ~ 50% of the frequencies evaluated.

With regard to the geographic area in which the Polyclinic was located, it is worthwhile pointing out that the services offered were more than adequate with respect to the type of requests made and to the fact that for 2 of the Polyclinics in the mountains, the closest Olympic Hospital was approximately 80 km away.

In this case, the availability, in these Polyclinics, of facilities, such as the rhino-pharyngo-laryngoscope, the clinical audiometer and radiological equipment for I and II level diagnosis (CT Scan, MRI), enabled a more detailed diagnosis to be made without having to send the patient to the main hospital, in 20 out of the 108 (17%) cases examined.

As far as concerns the period and the hours of activity of the Outpatient Unit, 4 hours per day on duty and availability by telephone, for the ENT Coordinator of the Outpatient Unit, from 10 days prior to commencement of the Games and until 7 days after the Closing Ceremony of the event, were found to be both suitable and sufficient for good functioning of the service.

These requirements are confirmed by the services provided during the XIX Winter Games of Salt Lake City, where, nonetheless, the Health service had been concentrated within the one Olympic Village<sup>5-12</sup>.

Finally, following the treatment prescribed and con-

sumed on account of ENT disorders no cases were found to be positive, at the doping control. This finding confirms the usefulness of organizing an update course during which it is possible to face and foresee the majority of the activity scenes, operational guidelines for the principal acute pathological disorders, as well as the principles regarding the battle against doping with reflections upon drugs.

## Conclusions

In conclusion, there can be no doubt that the experience matured in approximately 2 months of activity has been completely positive.

The offer of ENT healthcare was confirmed to be proportional to the requirements, both from a qualitative and quantitative point of view.

All the ENT specialists involved, reported having gained an immense store of human experience from having lived the Olympic atmosphere as a volunteer exerting one's own profession.

The facilities available in the Polyclinics which were at a considerable distance from the Hospital were found to be more than adequate with respect to the pathological conditions and service requested, particularly in 17% of the cases which would otherwise have been sent to a Hospital Outpatient Unit at least 80 km away.

## References

- 1 Franke F, Coulon L, Renaudat C, Euillot B, Kessalis N, Malfait P. *Epidemiologic surveillance system implemented in the Hautes-Alpes District, France, during the Winter Olympic Games, Torino 2006*. Euro Surveill 2006;11:239-42.
- 2 Massazza G, Pigozzi F, Bono D, Torrione P, Redivo L, Gribaud CG, et al. *Olympic Winter Games – Torino 2006. The medical services for the Torino 2006 Olympic and Paralympic Winter Games. Basic medical and emergency services and anti-doping control*. Med Sport 2006;59:113-39.
- 3 Epidemiological Consultation Team, Demicheli V, Raso R, Tiberti D, Barale A, Ferrara L, Lombardi D, et al. *Results from the integrated surveillance system for the 2006 Winter Olympic and Paralympic Games in Italy*. Euro Surveill 2006;16:E060817.5.
- 4 Epidemiological Consultation Team, Demicheli V, Raso R, Tiberti D, Barale A, Ferrara L, Lombardi D, et al. *Surveillance system in place for the 2006 Winter Olympic Games, Torino, Italy, 2006*. Euro Surveill 2006;11:E060209.4.
- 5 Gundlapalli AV, Olson J, Smith SP, Baza M, Hausam RR, Eutropius LJ, et al. *Hospital electronic medical record-based public health surveillance system deployed during the 2002 Winter Olympic Games*. Am J Infect Control 2007;35:163-71.
- 6 Allen TL, Jolley SJ, Cooley VJ, Winn RT, Harrison JD, Price RR, et al. *The epidemiology of illness and injury at the alpine venues during the Salt Lake City 2002 Winter Olympic Games*. J Emerg Med 2006;30:197-202.
- 7 Reeser JC, Berg RL, Rhea D, Willick S. *Motivation and satisfaction among polyclinic volunteers at the 2002 Winter Olympic and Paralympic Games*. Br J Sports Med 2005;39:e20.
- 8 Reeser JC, Willick S, Elstad M. *Medical services provided at the Olympic Village polyclinic during the 2002 Salt Lake City Winter Games*. WMJ 2003;102:20-5.
- 9 Gesteland PH, Gardner RM, Tsui FC, Espino JU, Rolfs RT, James BC, et al. *Automated syndromic surveillance for the 2002 Winter Olympics*. J Am Med Inform Assoc 2003;10:547-54.
- 10 Gesteland PH, Wagner MM, Chapman WW, Espino JU, Tsui FC, Gardner RM, et al. *Rapid deployment of an electronic surveillance system in the State of Utah for the 2002 Olympic Winter Games*. Proc AMIA Symp 2002:285-9.
- 11 Rolstad OJ, Grøgaard H, Brandt E. *Olympic Games 1994 and the Medical Department, Lillehammer County Hospital*. Tidsskr Nor Laegeforen 1996;116:1107-8.
- 12 Cantwell JD. *The Winter Olympics in Lillehammer: the last dress rehearsal for Atlanta '96*. J Med Assoc Ga 1994;83:354-6.

Received: March 2, 2008 - Accepted: April 3, 2008