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Seeing you through London 2012: eye care at the Paralympics

Clare M Wilson,[1] W David Thomson,[2] Penny J D'Ath[2]

[1]Department of Visual Neuroscience, UCL Institute of Ophthalmology, London, UK
[2]Division of Optometry & Visual Science, City University London, London, UK

Correspondence to
Dr Clare M Wilson, Department of Visual Neuroscience, UCL Institute of Ophthalmology, 11-43 Bath Street, London EC1V 9EL, UK; clarewil25@yahoo.com

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ABSTRACT

Background The provision of eye care services for competitors and support teams is integral to the modern Olympic Games. The eye clinic for the London 2012 Paralympic Games employed a multidisciplinary team of eye care professionals using state-of-the-art instrumentation to provide the highest level of eye care. The detailed organisation of the eye care clinic at London 2012 is described in a companion paper which summarises the eye care clinic during the London 2012 Olympic Games. These two reports will aid in planning eye care clinics at future Games.

Aim This paper summarises the organisation of the eye clinic and provides outline audit data relating to eye conditions encountered during the Paralympic Games.

Results A total of 870 patients representing 102 countries attended the eye clinic. 274 (31.5%) were competitors; the remainder were trainers and support staff. No serious ocular injuries resulted from competitor injury in the field of play during the Paralympic Games, although seven patients were referred urgently to hospital eye services for conditions including orbital cellulitis, retinal detachment, exudative macular degeneration, corneal ulcer, Stevens-Johnson syndrome and macular oedema. A total of 749 spectacles, 14 contact lenses and 7 low-vision aids were dispensed.

Conclusions By combining excellent facilities and equipment with a multidisciplinary team of eye care professionals, we feel we provided the highest level of eye care, providing a legacy for future Games.

INTRODUCTION

Since the first modern Olympic Games held in Athens in 1896, the Olympic Charter has grown to include the provision of many allied services for athletes and their support teams; one of which is the eye clinic. The Paralympic Games benefits from the same healthcare provision for its athletes and entourage.

At the London 2012 Paralympics, 164 countries and over 4000 competitors[1] competed in front of sell-out crowds.

In 2009, one ophthalmologist and two optometrists were appointed (the authors CMW, WDT and PJD) to lead the eye care service. Little information is published regarding eye care services at previous Paralympic Games, although a small but useful amount of information was obtained from personal communication from the Committee of the Paralympic Games.

Many systemic diseases have ocular complications.[2] Paralympians tend to have more complex ocular pathology than Olympians. Indeed, some competitors are eligible to compete as Paralympians due solely to visual impairment. Paralympians not competing in visual impairment categories may also have ocular conditions related to their underlying systemic condition. For example, those with cerebral palsy may have cerebral visual impairment, whereas those with multiple sclerosis may have optic neuropathy and competitors with polio may have ocular motility disturbance. As many people of the support team were former Paralympians, these patients also had more complex ocular needs for the same reasons. An unpublished report from Sydney stated that many patients seen during the Paralympics had a range of eye conditions varying from 'optic neuritis secondary to malaria, sickle-cell retinopathy, and there were a number of patients with corneal conditions caused by birth trauma or infantile infections' (Personal communication from LOCOG. Unpublished report "Eye Service Sydney") resulting in a 'higher level of ophthalmic complexity' than found during the Olympic Games. (Personal communication from LOCOG. Unpublished report "UPDATED—Service Specification—Optometry).

On the basis of figures from the London 2012 Paralympics, around 19% of athletes are competing with visual impairments[3] (Personal communication

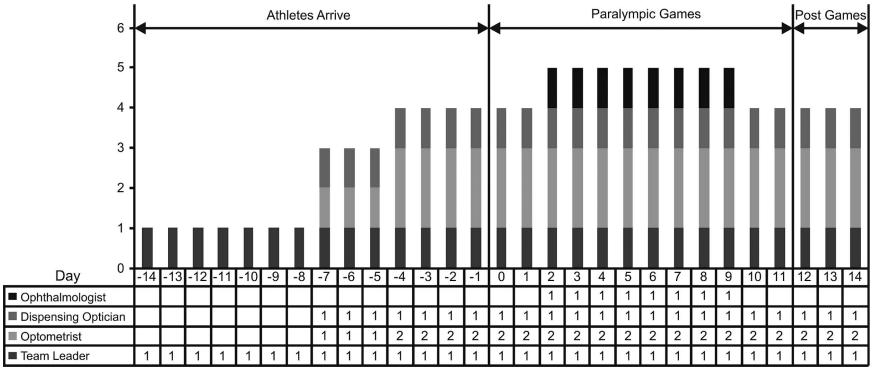

Figure 1 Predicted staff numbers required throughout Games period.

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Table 1 Demographic characteristics Paralympics

Characteristic	Competitors	Non-competitors
Total number seen (%)	274 (31.5)	596 (68.5)
Male (M):female (F)	170:104	445:151
Age (mean: range: n)	M: 33.9: (18–56): n=170; F: 32.7: (17–51): n=104	M: 49.7: (19–75): n=445; F: 45.6: (19–79): n=151

from IPC, 27 May 2013). Visual impairment categories exist for the following sports: athletics, cycling, equestrian, football 5-a-side, goalball, judo, rowing, sailing and swimming.[4]

This is the first paper to analyse eye care data from any Paralympic Games.

AIM

This paper aims to provide outline audit data relating to the patients attending the eye clinic during the 22 days of Paralympic Games.

METHODS

We have assimilated data on the usage of the eye care clinic at London 2012 with reference to demographics, reason for attendance, injuries among competitors and spectacles dispensed.

Layout, equipment and staffing

As described in detail in our companion paper,[5] the eye clinic formed part of a purpose-built polyclinic situated in the Athletes' Village and was designed to accommodate both competitors and their support teams. Details of room sizes, equipment, diagnostic drugs and volunteers are listed in this paper. The main findings from the Olympic Games were that 1406 patients from 154 countries were seen. No serious eye injuries or referrals occurred, but a number of eye diseases including glaucoma, diabetic retinopathy and macular degeneration were detected. Patients predominantly attended the clinic for a full refractive status check and 973 pairs of spectacles and 50 pairs of contact lenses were dispensed.[5]

Of the 309 optometrists and 103 dispensing opticians who applied to become Games Makers, 104 optometrists and 53 dispensing opticians were shortlisted of whom 8 optometrists and 6 dispensing opticians were selected for the Paralympic Games. Six ophthalmologists were appointed as 'Specialists' for 8 days of the Paralympic Games period and were not subject to the normal Games Maker recruitment process.

Table 2 Reason for visit

Characteristic	Competitors n=196	Non-competitors n=419
Reduced vision	75 (38.3%)	167 (39.9%)
Distance vision	31	32
Near vision	30	98
Distance and near vision	13	35
Not specified	1	2
Routine eye examination	27 (13.8%)	43 (10.3%)
Replacement spectacles (lost/broken/left at home)	24 (12.2%)	145 (34.6%)

The eye clinic was open for 22 days from 07:00 to 23:15 throughout the Paralympics Games period. The predicted staff numbers required throughout the Games period are shown in figure 1.

RESULTS

Audit of patients seen

A total of 870 patients representing 102 countries attended the eye clinic over the period of the Paralympic Games. Of these, almost one-third were competitors (n=274; 31.5%), and 596 (68.5%) comprised members of the support team.

Table 1 shows the demographic characteristics of patients who presented to the clinic.

Figure 2 shows the number of patients attending the clinic on each day throughout the period of the Paralympic Games. The maximum number of patients examined in 1 day occurred on day 5 of the competition when 76 patients were seen.

The peak times that competitors attended the clinic were 11:00 and 15:00 and, for non-competitors, were 11:00, 15:00 and 21:00.

Almost 40% of patients reported 'reduced vision' (competitor, 38%: non-competitor, 40%) (table 2). Among the non-competitors, 59% of cases of reduced vision related to problems with reading/near vision. A total of 14% of the competitors and 10% of the non-competitors were asymptomatic and attended for a routine eye examination. Non-competitors (35%) were three times more likely to present requiring replacement spectacles compared with competitors (12%). There were four minor ocular injuries that required specialist eye care, one of which

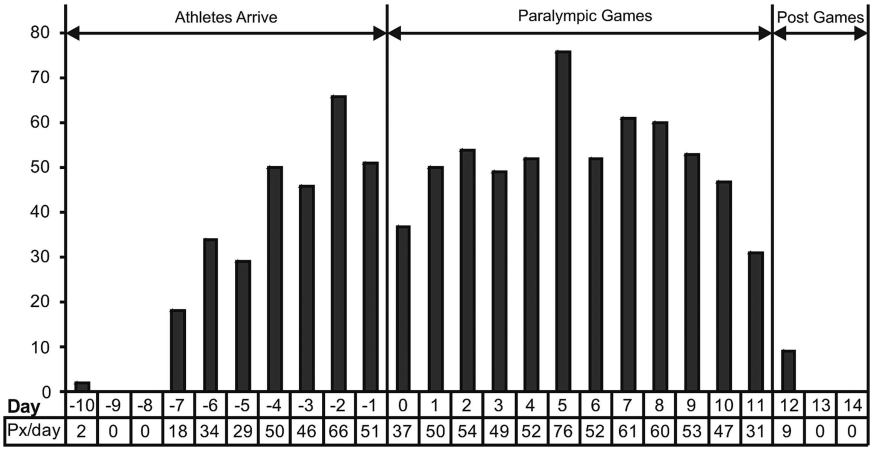

Figure 2 Number of patients attending eye clinic per day.

Table 3 Spectacles and low vision aids prescribed

Type of optical appliance	n=756 (%)
Distance vision	361 (47.8)
Near vision	312 (41.3)
Varifocals	60 (7.9)
Bifocals	16 (2.1)
Low vision aids	7 (0.9)

was a mild corneal thermal injury caused by debris from the fireworks at the opening ceremony.

Of the 870 patients who attended the clinic, 14 (2%) had contact lens related issues or required new lenses (one required a cosmetic glass design) and approximately 72 (8%) were referred for an ophthalmological opinion. Ophthalmologists saw between 6 and12 patients per day over a period of 8 days. Only 8 days had on-site ophthalmic cover as organised by linking to predicted demand. The majority of patients required a single visit to the clinic (excluding the collection of spectacles). Exceptions were patients with contact lens issues or those with conditions requiring ophthalmological management who had up to four follow-up visits.

There were 749 pairs of spectacles and 7 low-vision aids dispensed to seven patients (1%) reporting non-tolerance to their new spectacles. Spectacle type was determined for all 749 pairs (see table 3).

Table 4 shows the number of ocular conditions by visual impairment classifications/ sport. Of the 38 cases of visual impairment, 8 (21%) were caused by high myopia and 5 (13%) were caused by congenital nystagmus.

There were no serious ocular injuries during the Paralympic Games, although there were seven referrals to hospital eye services. Conditions requiring this extralevel of care included orbital cellulitis (patient required admission), retinal detachment, exudative macular degeneration, corneal ulcer, Stevens-Johnson syndrome and macular oedema. There was also one private referral for chronic bilateral epiphora.

Table 4 Ocular condition by visual impairment classifications

Sport	Classification	M	Condition	F	Condition
Goalball (all players blindfolded to ensure fairness)		**n=3**		**n=3**	
				1	Unknown
Blind	**B1**	1	Prosthetic eye		
Visually impaired/partially sighted	**B2**	2	▶ Bilateral optic atrophy ▶ End stage glaucoma and nystagmus	2	▶ Rod cone dystrophy ▶ Bilateral optic atrophy
5-a-side football		**n=1**			
Visual impairment		1	Unknown		
Cycling		**n=1**			
Visual impairment	B	1	Retinitis pigmentosa		
Judo		**n=3**		**n=2**	
Blind	B1	1	Retinitis pigmentosa with macular dystrophy		
Visually impaired/partially sighted	B2	1	Amblyopia (−6D)	1	Unknown
Visually impaired / partially sighted (higher number=better vision)	B3	1	Myopia and astigmatism (−6D)	1	High myopia (>−21D)
Rowing		**n=1**		**n=2**	
	LTA-VIB2	1	High hyperopia (+13D)	1	Congenital nystagmus and myopia (−12D)
	LTA-VIB3			1	Congenital glaucoma
Swimming		**n=1**			
Visual impairment	S12	1	Congenital nystagmus		
Field sports		**n=9**		**n=2**	
Visual impairment	F12	3	▶ Congenital nystagmus ▶ Retinal detachment LE and anisometropic high myopia (RE −16D, LE −9D) ▶ Unknown	2	▶ Congenital cataracts ▶ High myopia (−12D)
Visual impairment	F13	6	▶ RTA, one blind eye ▶ Bad fall as child, high myopia (−21D) ▶ Previous retinoblastoma ▶ Bilateral congenital optic disc atrophy and nystagmus ▶ Congenital blindness		
Track		**n=5**		**N=5**	
Visual impairment	T11	1	AION aged 21	1	Poor vision since measles aged 3
Visual impairment	T11/T12			1	End stage POAG
Visual impairment	T12	1	Unknown	2	▶ Congenital cataracts ▶ Microphthal-mos and nystagmus
Visual impairment	T13	3	3×high myope (RE: −16D, LE −10D; RE −12D, LE −11D, RE −28D, LE −12)	1	? Glaucoma
Total		24		14	

Of the non-competitors, the most common reasons for referral to the ophthalmologist were glaucoma (n=5), ocular complications of diabetes (n=3) and conjunctivitis (viral and bacterial: n=2). We also encountered some more unusual pathologies such as Leber's congenital amaurosis, Stevens-Johnson syndrome, orbital cellulitis, nystagmus, rod cone dystrophies, previous retinoblastoma and congenital cataracts. In cases that required long-term care in the patient's own country, a letter with the findings and appropriate images from the OCT or visual field analyser were given to the patient in CD ROM format.

No adaptations were made to the clinic from the Olympic Games, perhaps as the set-up had been designed with provisions for Paralympic athletes in mind. All wheelchair patients transferred themselves to the main consulting room chair.

We recommend that a full service should be run at future Paralympics with four optometrists, two dispensing opticians and one ophthalmologist available throughout the Games period.

SUMMARY

A total of 870 patients from 102 countries attended the eye clinic over a period of 22 days with a peak of 76 attendees on day 5 of the competition. Of these, 274 attendees were competitors and the remainder were trainers and support staff.

A total of 749 pairs of spectacles were dispensed. Just over 50% were prescribed for near vision/reading. This was significantly more than at Sydney 2000 where 261 pairs of spectacles were dispensed. Fourteen contact/therapeutic lenses were fitted and seven low-vision devices were issued.

No major ocular injuries occurred from sports, although seven patients required referral to the hospital eye service, one requiring hospital admission.

We believe we have provided a legacy of eye care for future Paralympic Games to build on.

What are the new findings

- A total of 870 competitors and support staff from 102 countries attended the Paralympic eye clinic at London 2012 over a period of 22 days.
- There were no serious ocular injuries during the Paralympic Games. Seven patients required urgent referral to the hospital eye service for conditions including orbital cellulitis and retinal detachment.
- The majority of patients attended the clinic to have their refractive status checked, and a total of 749 pairs of spectacles, 14 pairs of contact lenses and 7 low-vision aids were dispensed.

How might it impact on clinical practice in the near future

- Approximately one in five of all Paralympians are classified as having a visual impairment.
- Patients seen at the eye care clinic had more complex optometric and ophthalmological needs (eg, Stevens-Johnson syndrome, orbital cellulitis, nystagmus, rod cone dystrophies, previous retinoblastoma, congenital cataracts, etc) than those found during the Olympic Games.
- For this reason, we suggest that a full service should be run with four optometrists, two dispensing opticians and one ophthalmologist available throughout the Paralympic Games period.
- It would have been beneficial to have had ophthalmologists on-site for longer periods of the day and for the entirety of the Paralympic Games period because of the complexity of ophthalmic problems.

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Competing interests None.

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