

Visual status of Nepalese National football and cricket players

Kishor Sapkota,¹ Shashank Koirala,² Suraj Shakya,² Meenu Chaudhary² and Prakash Paudel²

Department of Ophthalmology ¹Nepal Eye Hospital and ²BP Koirala Lions Centre of Ophthalmic Studies, Institute of Medicine, Kathmandu

Corresponding author: Kishor Sapkota, B Optom. Nepal Eye Hospital, Tripureshwor, Kathmandu
e-mail address: sapkotakishor@yahoo.com, kishorsapkota@hotmail.com

ABSTRACT

This study was undertaken to assess the visual acuity, refractive status, stereopsis, colour vision and ocular morbidity of Nepalese national footballers and cricketers. Ninety-five national football and cricket players of different age group, who had at least played one international tournament representing Nepal, were included in the study. A thorough ocular examination of the players was done in the study period of six months, which revealed that higher-level professional players have significant visual problems. Among the players 70.0% had never had complete ocular examination, 8.0% were found with refractive error, 60.0% with stereo acuity equal or less than 40" of arc and 65.0% with ocular complaints.

Keywords: Players, sports vision, refractive error, stereopsis.

INTRODUCTION

Sports vision is the study of visual abilities required on competitive and recreational sports and the development of visual strategies to improve performance, consistency, accuracy and stamina of visual system needed.¹ Basically visual and ocular characteristics of players are examined and any shortcomings seen are treated by means of proper refractive correction, sports vision training or any medical or pharmaceutical means.²⁻⁶ Besides these, protective eye wear are of great help to prevent sports related ocular injuries.

The visual skills that are of utmost importance regarding sports vision are: static visual acuity, dynamic visual acuity, eye movement skills, accommodation and vergence, depth perception/ eye teaming, central and peripheral recognition, peripheral vision, eye hand body co ordination, visual concentration and visualization.¹ The role of these skills has been debated among eye care professionals for years. Review of literature has revealed some contradictory findings regarding these skills. Some studies have indicated that these visual attributes were superior in players as compared to general population where as few other studies demonstrated no difference.⁷⁻²¹

Refractive error of the players does relate directly with their performance. Refractive correction enhances their visual acuity that helps in improving the performance. Contact lenses are the better option for the correction of refractive error in the players.²²

In Nepal football and cricket are the most popular and mostly played sports. These sports need sharp static and dynamic vision to see the ball, target, and team mates etc. All the visual skills are of equal importance including good stereo acuity. Beside the need of visual skills, these sports have high risk of ocular injuries.²³ In this study, we have assessed the visual skills of the players as well as noted the prevalence of ocular injuries in our players.

MATERIALS AND METHODS

This is a community based cross-sectional, descriptive census study. All the national players from the five national teams of football and cricket were included. A thorough ocular examination of 95 players was done in the respective sport center within six months, from March 15th to August 15th 2004. A standard proforma was used to record the data.

A brief ocular history of the participants was taken that include past history of any ocular examination, optical correction and ocular injuries. History of the protective devices used during sports was also recorded.

Static visual acuity for distance and near vision was taken by externally illuminated Snellen charts at a distance of 6 meters and 40 cm respectively. Unaided, aided and pinhole vision, if required, was recorded.

Lid, conjunctiva, cornea, anterior chamber, pupillary function were examined by handheld slit lamp and torchlight. Any abnormality noted was specified. Posterior segment examination was

done by the Heine Ophthalmoscope without pupil dilatation. Any abnormalities noted during examination were confirmed after detail examination by dilating the pupil with 1.0% tropicamide.

Dry retinoscopy was done by Heine CE Streak Retinoscope at working distance of 50 cm and the readings were noted. Cycloplegic refraction was performed under 1.0% cyclopentolate in certain cases. Subjective refraction was performed and the best-corrected vision was obtained. Players who were interested to wear contact lens were referred to eye hospitals.

Near point of convergence and accommodation was measured by means of Clement Clarke RAF near point rule. Stereopsis was measured with the help of Stereo Optical Co., Titmus Stereo. Color vision of all the players was tested by 38-plate edition ISHIIHARA Color Plates.

RESULTS

A total number of 95 players were assessed from five different national teams. Among them four were national football teams of different age group where as one was the national cricket team (Table-1). A player of this study had played at least one single national and international tournament to a maximum of 300 national and 75 international tournaments. The age of the participants ranged from 12 years to 33 years with mean age 19.43 years (Table-2).

Out of the total, 65.0% had at least one or multiple ocular complaints but more than two third (69.0%) of the players had never undergone complete ocular examination (Table-3 and Fig. 1). 8.0% players were found to have an ocular injury during play in the last one year.

Available distance vision was 6/6 in 93.0% of the players. However, near vision was normal in 99.0% players. About eight percent players were found to have significant refractive error of which 62.5% were myopic and 37.5% were hyperopic. The amount of refractive error ranged from -3.25D to +5.50D (Table-4).

Twenty three percent players were found to have exophoria, 2.0% were exotropic (intermittent) and 1.0% with vertical phoria. 3.0% were found to have convergence insufficiency and 4.0% with accommodation insufficiency (Table-5).

About sixty percent of the total study population had stereo acuity less than 40" of arc. Binocularity was absent in one case (Fig. 2). More than three percent of the players were found to have abnormal colour vision. Ocular problems were found in 73 (76.8%) players. Exophoria was seen as a common ocular problem in the players followed by pinguecula/ pterygium (21.0%), refractive error (8.5%) and ocular injury (8.5%) (Table-5).

DISCUSSION

Only about one fifth (20.0%) of the population of this study was female. This indicates that boys are much more involved in sports. Similarly, more than four fifth (81.0%) of the participants were footballer. At the time of study there was only one men team of cricket and not even a single team of women. This reflects football as the most popular sports played in the country.

The maximum players (46.3%) were in age group 18 -23 years and minimum (4.2%) were in age group 30 -35 years. This is because late teens and the early twenties is the age in which most of the people participate in sports as their profession.

All the symptoms noted were related to sports and/ or vision. The common complaints were headache after play, difficult to focus at different distance, burning sensation, difficulty to see moving objects. It is noteworthy that most of the symptoms were related to the extensive exposure to sunlight during the tournament rather than the inflammation and infections.

Although more than two third of the players showed ocular symptoms, only about one tenth (11.0%) were found to check their eyes in the last two years. This could be due to the carelessness of the athletes on regular eye check-up. This result does not match with the study done by Beckerman SA et al who has found about 52.0% of the players having their regular eye check-up in last two years.²⁴

Majority of Nepalese players were found to be careless on using eye protecting devices during play in comparison to other highly competitive athletes from other developed countries.^{24,25} None of the players were found using protective devices during sports except batsmen and wicket keepers of cricket. This could be one of the causes of the higher prevalence of the ocular injury (8.0%) during play in the last one year. However, the ocular injuries were minor, like lid edema, lid laceration and sub-conjunctival hemorrhage. Similar results were found by Vinger *et al.*^{26,27}

Available normal distance vision, 6/6, was in 93.0% where as near vision was found in 99.0% of the players. Near vision was good in more number of participants because most of the ametropic players were myopic. In contrary to this finding, only 71.0% were found to have equal or better than 6/6 available vision in a research conducted by Beckerman *et al.*²⁴ This study shows only 8% percent players having significant refractive error without any astigmatism where as Beckerman *et al* found about 35.0% players with significant refractive error in one of the studies.²⁵ The reason he found such high number could be because he used autorefractor as a tool and the study population were general players. Most of the ametropic players in this study had low refractive error and all the refractive error was corrected to 6/6 excluding one, in which vision was not improved due to amblyopia.

Many players were found to have exophoria followed by intermittent exotropia (2.0%) and vertical phoria (1.0%). This may be one of the causes of headache experienced by most of the players (10.0%). A single case of constant strabismus was not found in our study but Becker man SA *et al* found about 2.0% players with strabismus.^{24,25}

Only 60.0% were found with stereoacuity less then 40" of arc. It was interesting to find one player using only monocular clues for the depth perception. Few other studies^{24,25} have found most of the players with stereo acuity better than 25" of arc.

Many players were found to have ocular morbidities of different kinds. About three fourth of the total players were found to have at least one ocular problem. It is interesting to see an amblyopic player and 3.1% color vision defect players involving such competitive tournaments. High prevalence of conjunctival degenerations like Pinguecula, pterygium (23.0%) found could be due to larger duration of exposure to sunlight during sports.

About 8.0% players were found to be ametropic but the available visual acuity of the players was found to be subnormal in 7 percent. Almost half of the players had low stereo acuity (< 40") than that is required for them. Slightly above 3.0% players were color vision defective. Ocular injury during sports was noticed in significant number of players (8.0%). Most of the players (73.0%) had significant ocular problems and 63.0% players had never gone for an eye exam. Early conjunctival degeneration like pterygium, Pinguecula were found in higher number of players.

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Table-1: Participants of the study.

Team	No of players	Percent
National football team (men)	18	18.9
National football team (female)	19	20.0
National cricket team	18	18.9
National football team (under 20)	21	22.1
National football team (under 14)	19	20.0
Total	95	100

Table-2: Age distributions of the participants

Age in years	Footballers		Cricketers	Total	Percent
	Male	Female			
12-17	21	10	1	32	33.7
18-23	24	9	11	44	46.3
24-29	9	0	6	15	15.8
30-35	4	0	0	4	4.2

Total	58	19	18	95	100.0
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Table-3: Ocular symptoms of the participants.

Symptoms	No of players	Percent
Headache after play	23	11.0%
Difficulty to focus at different distance	22	10.5%
Poor distance perception	20	9.6%
Difficulty to visualize moving object	20	9.6%
Burning sensation	20	9.6%
Decreased performance with stress	19	9.0%
Watering	18	8.6%
Poor speed perception	16	7.6%
Light sensitivity	16	7.6%
Foreign body sensation	16	7.6%
Difficulty in seeing / catching ball	10	4.8%
Red eye	9	4.3%
Total		100.0%

Table-4: Pattern of refractive error

Refractive error	Amount	No of players	Percent
Myopia	-0.50D	3	37.5
	-1.25D	1	12.5
	-3.25D	1	12.5
Hypermetropia	+0.50D	2	25.0
	+5.50D	1	12.5
Total		8	100

Table-5: Common ocular problems of participants.

Problems	No of players	Percent
Exophoria	22	23.1
Pinguecula/ Pterygium	20	21.0
Refractive error	8	8.5
Ocular injury	8	8.5
Accommodation abnormal	4	4.2

Convergence abnormal	3	3.1
Abnormal colour vision	3	3.1
Tropia	2	2.1
Glaucoma suspect	2	2.1
Amblyopia	1	1.0
Blepharitis	2	2.1
Vertical phoria	1	1.0
Conjunctivitis	1	1.0
MGD	1	1.0

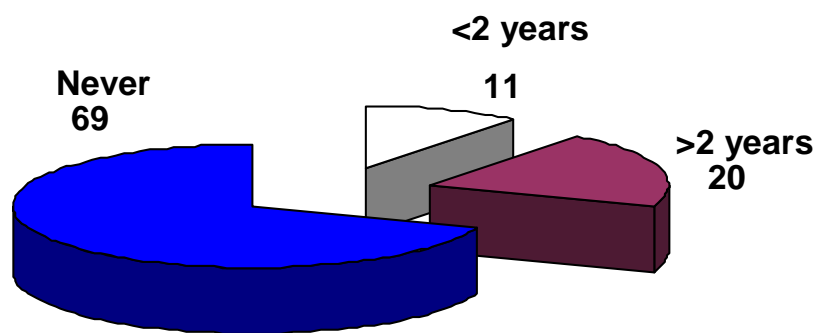


Fig.1. Past history of eye examination done by players.

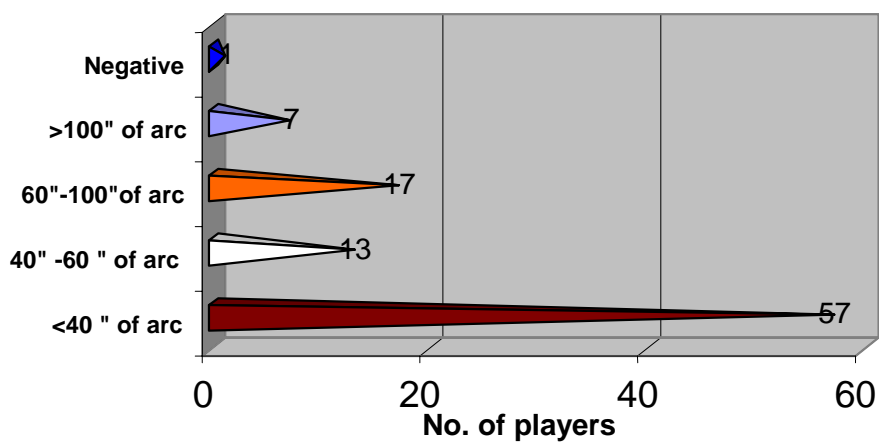


Fig. 2. Stereo acuity of participants.