

# Ocular hazards of playing badminton

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Although badminton is played in many parts of the world, it is most popular in South-East Asia. It is a racket game with a shuttlecock played as singles between two or as doubles between four players. The racket is similar to a squash racket but much lighter. The shuttlecock is almost cone-shaped,  $3\frac{1}{2}$  in. long with a diameter of  $2\frac{1}{2}$  in. at one end and  $\frac{3}{4}$  in. at the other. Most ocular injuries occur as a result of a "smash" hit.

Among the sports played in Malaysia, badminton presents the greatest ocular hazard, accounting for two-thirds of all ocular injury in sport (Table I). A search of the literature produced only scanty reference to the subject (Chandran and Ooi Eu-sen, 1971). This study was undertaken to determine the nature of the injuries resulting from playing badminton and to suggest possible preventive measures.

**Table I** *Incidence of ocular injuries in sport in a 5-year period*

<i>Sport</i>	<i>No. of injuries</i>
Badminton	63
Hockey	7
Tennis	5
Cricket	4
Soccer	3
Rugby	3
Golf	2
Table tennis	2
Squash	2
Miscellaneous	5
Total	96

## Material

63 cases were seen at the Eye Clinic of the University Hospital, Kuala Lumpur, Malaysia, during a period of 5 years (1968 to 1972). A detailed history of the accident, including whether spectacles were

worn, was obtained. Ocular examination included visual acuity, ocular tension, funduscopy, and gonioscopy where possible.

### Findings

The injuries were all uniocular, some having more than one structure involved. There were no perforations or retinal detachments. Table I shows the incidence of ocular injuries in the various sports. Table II shows that hyphaema was the commonest type of injury, usually associated with traumatic mydriasis. Table III shows that badminton is the main cause of traumatic hyphaema. Table IV shows that macular changes, traumatic cataract, and glaucoma are the main causes of visual impairment. Table V shows that, in half the cases, the visual acuity remained unaffected; but vision of 6/18 or worse was found in 27 per cent. and of 6/60 or less in 11 per cent. of cases.

**Table II** *Nature of injuries received while playing badminton*

<i>Injury</i>	<i>No. of cases</i>
1. Hyphaema	49
2. Traumatic mydriasis	34
3. Commotio retinae	12
4. Haematoma of lid	9
5. Corneal abrasion	8
6. Vitreous haemorrhage	8
7. Subconjunctival haemorrhage	4
8. Laceration of lids	2

**Table III** *All causes of traumatic hyphaema*

<i>Cause of trauma</i>	<i>Cases of hyphaema</i>	
	<i>No.</i>	<i>Per cent.</i>
Badminton	49	53·3
Industrial accident	9	9·8
Stones	8	8·7
Sticks	8	8·7
Other sports	7	7·6
Home accidents	5	5·4
Blows, fist, etc.	4	4·3
Toys	3	3·3
<b>Total</b>	<b>92</b>	<b>100·0</b>

**Table IV** *Complications*

<i>Type</i>	<i>No. of cases</i>
Pupillary abnormality	
(a) Traumatic mydriasis (persisting after 2 mths)	12
(b) Posterior synechiae	5
Macular changes	8
Traumatic cataract	5
Glaucoma (after 2 mths)	4
Blood-staining of cornea	1

**Table V** *Final visual acuity in 63 cases*

<i>Visual acuity</i>	<i>Cases of injury</i>	
	<i>No.</i>	<i>Per cent.</i>
6/6	32	50·8
6/9	8	12·7
6/12	6	9·5
6/18	5	8·0
6/24	3	4·8
6/36	2	3·2
6/60 or worse	7	11·0
<b>Total</b>	<b>63</b>	<b>100·0</b>

## Comments

Of the 63 cases, nine were caused by the racket while the rest were due to a direct hit with a shuttlecock; 44 of the accidents occurred while playing doubles and nineteen during singles. There was a peak of seventeen cases over a 3-month period in 1970 during the Thomas Cup finals held in Kuala Lumpur. There were undoubtedly many other patients who sought no medical care or who were treated by their family physicians.

The shuttlecock may come from either the partner or the opponent, but racket blows came only from the partner. The doubles player is more prone to accident as there is a greater risk of being hit by the shuttlecock from a close range. Turning around to look at the partner increases the risk of "miss-hit" shots or of being struck by the partner's racket (Chandran and Ooi Eu-sen, 1971). In none of the shuttlecock injuries was the patient wearing glasses; twelve were uncorrected myopes or had removed their glasses while playing. Although four pairs of spectacles were either directly broken or knocked down by the racket, there were no such perforating injuries as may occur while playing squash (Ingram and Lewkonja, 1973).

## Discussion

This study describes ocular injuries incurred in badminton which has hitherto been assumed to be a relatively safe sport. The risk of ocular injury has been described in many ball games (Duke-Elder and MacFaul, 1972). Organized sports accounted for six out of 34 cases of traumatic hyphaema (Thygeson and Beard, 1952) and fifteen out of 113 cases (Spaeth and Levy, 1966). In the present series, sports accounted for 57 (badminton 49) out of a total of 92 hyphaemas. The high incidence of hyphaema is due to contusion of the globe by the shuttlecock. For the same reason the incidence of commotio retinae is high, occurring both with and without hyphaema. A pair of well-formed orbital margins which is an asset to a boxer (Doggart, 1955) does not offer much protection in this game because the striking end of the shuttlecock is less than 1 in. in diameter. Unlike squash, the wearing of glasses offers some protection, especially from shuttlecock injury, but ordinary spectacles may increase the risk of a racket injury; however, although four pairs of glasses were broken or knocked down by a racket, there were no perforating injuries. In twelve cases the injuries by the shuttlecock could have been avoided had these myopes worn their correction. In order to play badminton well, competitors must perfect their strokes and develop their reflexes; uncorrected refractive errors have a tendency to slow the reflexes thereby not only impairing the game but also increasing the risk of ocular injury.

Most of the victims were relatively inexperienced. Adequate supervision and proper instruction, especially with the "smash", should lower the incidence of ocular injuries. In the playing of doubles there should be co-ordination with the partner and turning round to look at the partner during the game should be avoided. In doubles, because of the increased hazard of racket injury, it would be advisable to wear safety lenses, as suggested for squash rackets (Ingram and Lewkonja). Spectacles often have a tendency to slip off and it is therefore advisable to tie them on. Although it would be helpful for emmetropic novices to wear protective goggles, this advice would probably go unheeded.

## Summary

Badminton presents the greatest ocular hazard in sport in Malaysia, accounting for more

than half the cases of hyphaema. 27 per cent. of such patients have impaired vision of 6/18 or less, mainly due to macular changes, traumatic cataract, or glaucoma. Myopes and novices are advised to wear safety lenses, especially when playing doubles.

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