

ORIGINAL SCIENTIFIC PAPER

Evaluation of Ocular Injuries among Athletes in Albania

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Abstract

It is important to evaluate ocular traumas in athletes as they can cause visual loss as blindness. This study aims to evaluate the epidemiology of ocular injuries and their characteristics in students aged from 19 to 23 years old in Albania. This is a 3-month study that started in November 2021 and ended in February 2022. 489 students of the University of Sports participated in the study. They answered a questionnaire about their demographic data and history of ocular injuries during sports activities. Students who reported ocular injuries underwent ocular examinations to evaluate their vision and ocular injuries characteristics. Only 7% of students reported that they had ocular injuries. Ball and teammates were reported with high frequencies as cause of eye injury. Only one student appeared to have reduced vision and damage to the structure of the eye. Sports-related ocular injuries can cause decrease of vision and the use of protective equipment during sports activities would prevent these injuries. Football and boxing were most commonly sports associated with ocular injuries among students in our study. This study points to the importance of preventing eye damage during sports activities by using preventive equipment, and opens the door for taking initiatives regarding the rules of using preventive equipment during sports activities.

Keywords: *ocular injuries, students, sports activities, Albania*

Introduction

Ocular trauma is one of the causes of vision loss and blindness in the world. Ocular traumas in athletes are considered important as they can cause significant visual impairments at a young age. Many studies today determine that the causes of ocular trauma in athletes also include not wearing protective equipment during sports activities (Braham, Finch, McIntosh, & McCrory, 2004). Other studies have shown that athletes are a population group that is especially at risk of ocular trauma (Zhang et al., 2021). Visual loss can change the quality of life (Krasniqi & Trebicka, 2020) and is important to prevent as much as we can eye injury during sports activity. Estimates of the incidence of sports-related concussion in the US vary from 200,000 a year up to 3.8 million a year; the highest numbers include rough estimates of injuries that are not evaluated in a hospital or otherwise reported (Mao,

2021b). According to the studies, the data would be largely underestimated due to the vague symptoms that do not always impose a medical evaluation on the athlete. Nearly 1 in 5 athletes who play contact sports suffer from a concussion during the sporting season, of which 20% of contact sports participants have concussion over the course of a season (Mao, 2021a). Trauma to the head frequently produces ocular signs that are important both as regards diagnosis and treatment. Such signs, which are of equal interest to neurologists and ophthalmologists, cannot be evaluated intelligently unless they are integrated with the other signs of head injury; with this in mind it has seemed worthwhile to present a reasonably detailed account of observations concerning cases of acute trauma to the head (King & Walsh, 1949). Giving a brief overview of the sports most affected by cranial traumas that are also related to eye injuries and their importance of



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preventing eye trauma caused by the practice of these sports activities such as, football, volleyball, basketball and boxing, some of the most practiced sports in the world, all at risk of ocular trauma. Although obviously not all sports have the same risk. In fact, there is a subdivision into some categories with high risk, moderate risk, low risk, eye safe (American Academy of Ophthalmology, 2013). With a high risk sport of ocular trauma in addition to boxing and kick-boxing, karate which in themselves involve intentional trauma, they are all those sports that in their practice involve the use of small and fast objects.

Although some research dealt with this topic, there are no studies in our country. In this regard, in our study, we focused on the epidemiology of ocular injuries and the characteristics of injuries in athletes among students aged from 19 to 23 years old in Albania. The study results will help us to prevent ocular injuries in athletes by planning preventive methods during sports activities in the sports disciplines most susceptible to these injuries.

Methods

Study design

This is a 3-month study that starts in November 2021 and ends in February 2022. The study was conducted in two phases. In the first phase, a cross-sectional study was conducted, in which 489 sports students participated. The first

phase of the study was conducted at the University of Sports in Tirana. 489 students completed a questionnaire, and data were collected and analyzed. There were only 34 students who reported stories of ocular trauma. All 34 students were asked to participate in the second phase of the study by the consent of the students in offering them a free ophthalmologic visit. The second phase of the study, which began in January 2022, was carried out at the “At Luigi Monti” polyclinic in Tirana.

Participants

489 sports students participated in the research. Out of 489 students in total that were included in the study, it was observed that 78% were male and 22% female with an average age of 19.2±2.9 years old. 36% of them were footballers and only 18% boxers. 49% of students reported that they performed over 4 hours of sports activities per day. The students participated in the research process with their voluntary consent, and this research was also conducted in accordance with the Declaration of Helsinki.

Measuring instruments

In the first phase of the research, a questionnaire (Figure 1) was conducted with data about the profile of sports studies, gender, age and history of eye trauma during sports activities.

In the second phase, students underwent a detailed ocu-

Questionnaire:
 Name Surname _____
 Age _____
 Nr. Contact _____
 Gender M () F ()
 Sports activities: Football (), Basketball (), Boxing (), Gymnastics (),
 Training time per day <2 hours (), 2-4 hours (), > 4 hours ()
 Do you use protective equipment during sports activity?
 Yes (), No (), Sometimes yes (), Yes, but not always ()
 Eye damage Yes () No ()
 Injured eye Right eye () left eye ()
 At the time of injury, were you wearing eye protection
 Yes (), No (), I do not remember ()
 Cause of injury: Sports ball (), Teammate (), Violent fall (), Other ()

Ophthalmologist examination
 Visual acuity for damaged eye at 6 meters with Snellen chart:
 <1/10 ()
 1/10 - 5/10 ()
 6 / 10- 9/10 (),
 10/10 ()

Ocular motility: Normal (), Abnormal ()
 Eye with normal structure after injury: Yes () No ()
 Damage type: adnexa (), anterior segment (), posterior segment (), orbital fracture ()

FIGURE 1. Example of the questionnaire

lar examination by an ophthalmologist. All the students with stories of ocular trauma (34 students) went to At Luigi Monti polyclinic in Tirana. During the eye visit, the distance visual acuity was evaluated with the Snellen chart table (Currie, Bhan, & Pepper, 2000). Evaluation of the anterior segment was performed using a biomicroscope, and fundus oculi with 90D lens and dilated pupil by cycloplegic drops.

Statistical processing of data

All collected data were analyzed by SPSS 2019 (Statistical Package for Social Sciences, v19.0, SPSS Inc., Chicago, IL,

USA), and the results were compared according to different sports profiles. The risk factors were represented in numerical and percentage values. Also, the obtained results are presented in tabular and graphic form.

Results

With regards to eye protection, most of them (58%) disclosed that they did not use protective equipment during sports activities and only 6% reported using protective equipment during sports activities.

Out of the 489 students who completed the form, only 34

of them (7%) reported that they had been injured in the eye (see Table 1). Injury of the right eye was reported more with

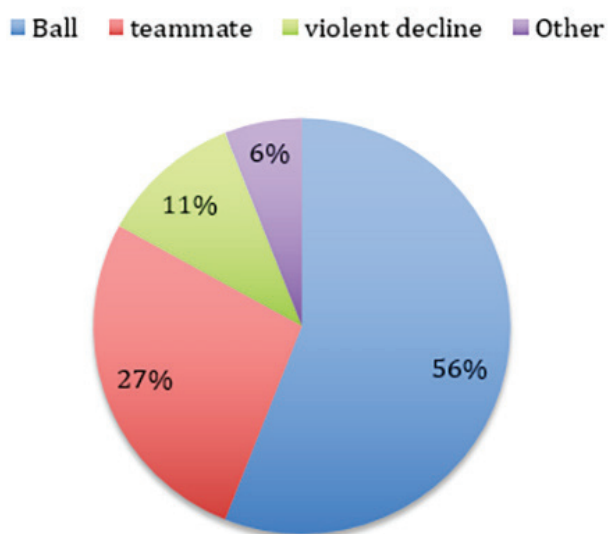
a frequency of 73% (25 students) from 34 students with eye injury in total.

Table 1. Demographic data of the students in the study

Gender	No.	%
Female	108	22
Male	381	78
Type of sports activities		
Basketball	120	25
Football	178	36
Boxing	89	18
Gymnastics	102	21
Total	489	100
Daily training time		
<2 hour / day	132	27
2-4 hour / day	117	24
> 4 hour / day	240	49
Use of protective equipment		
Yes	29	6
Yes, but not always	78	16
No	285	58
Sometimes	97	20
Eye injury		
Yes	34	7
Right eye	25	73
Left eye	9	27
No	455	93

Graph 1 shows the causes of eye injuries during sports activities; in which 56% of them are caused by the ball, 27 % by a teammate, and 11% by violent falls. All the students who re-

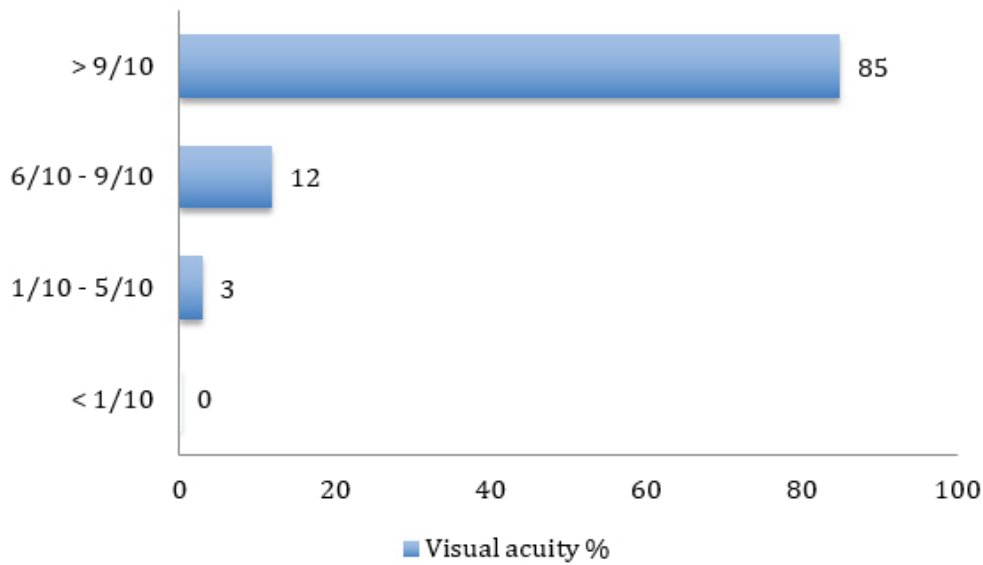
ported eye injuries form the self-completion of questionnaire underwent eye examination. Visual acuity was valuated with Snellen chart table in 6 meters.



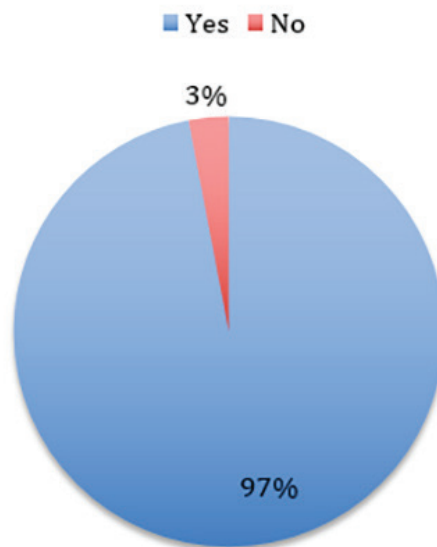
GRAPH 1. Graphic presentation of the causes of ocular injuries

Graph 2 shows the visual prevalence in injured students. As we can see, over 84% of the patients have good vision and

only 3% of them have reduced vision, less than 50%. 12% of students with ocular injuries had a 60-90% vision.



GRAPH 2. Visual prevalence of students with ocular impairment



GRAPH 3. The appearance of the eye structure after injury

In graph 2 we have represent the prevalence of visual acuity in students who reported eye injuries. As we can see, 85% of them have good visual acuity (students read 9-line form 10 in Snellen chart table). Only 3% of students with eye injury had reduced visual acuity and they read from 1 to 5 lines in Snellen chart table. 12% of students with ocular injuries had a visual acuity that was from 6 lines to 9 lines in Snellen chart table. From the detailed ophthalmological visit, it was evidenced that 97% of students with ocular injuries showed regular ocular structure and only 3% (1 student) had damage to the structure (graph 3). The student who had structural damage had suffered an orbital fracture during the boxing match and had limited ocular motility and retinal damage.

Discussions

Ocular injuries can cause visual loss and blindness which will influence in life quality and work activity. Sports activities increase the risk of ocular injuries (Moon et al., 2016), as the factors that favor these injuries are present. In our study, factors of eye damage during sports activities were the sports

ball and teammates, with a lower prevalence of violent falls. In other studies ball and teammates have shown a risk factor for eye injury (Cassell, Kerr, & Clapperton, 2012; Lee et al., 2021). The use of protective equipment during sports activities reduces the risk of ocular injuries. Stealing Haring in his study in 2016 reported that the use of protective equipment during sport prevents ocular damage (Haring, Sheffield, Canner, & Schneider, 2016). In our study, only 22% of students claimed through the questionnaire that they used protective equipment during sports activities. The latest studies suggests that the right protective eyewear is available, but not mandatory, by high-performance athletes often choose to use them to be safe during the development of certain sports disciplines (Micieli, Zurakowski, Ahmed, 2014). While the conventional use of the helmet is protective for the head, for some sports disciplines such as boxing and kickboxing, its protective capacity for the face is reduced at the zygomatic and maxillary level of the face and for eye injury. Particularly on the face, these blows manifest as soft tissue injuries, including lacerations, abrasions, and contusions, and skeletal injuries, such as fractures. This shows

the effect they have only on the head part and they do not provide comparable protection to the exposed face. It should be taken the fact that during various sports incidents, protective helmets serve to reduce the risk of injury, although not in the entire cranial and facial area. It is worth noting that, in most cases, the greatest care for the use of these protective equipment during various sports competitions is shown by athletes competing for medals, who require a high performance even in important national and international competitions in which they also participate. However, facial injuries occur at a similar rate to head injuries and the protective ability of the helmet is reduced specifically for the areas mentioned above. Studies have reported that their use prevents ocular damage (Haring et al., 2016). In our study, only 22% of students claimed through the questionnaire that they used protective equipment during sports activities.

The ophthalmological examination showed a decrease in vision in students who had ocular injuries during sports activities (15%). Parmar in her study in 2020 have shown a decrease in the vision of students who have suffered injuries during sports activities (Parmar, Martin, Davies, & Daniel, 2020).

Out of 489 students, only 7% of them responded that they had a history of ocular injuries during sports activities. Different studies have reported the same percentage for eye

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Conflict of Interest

The authors declare that there is no conflict of interest.

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injury during sport activity (Motlagh et al., 2021), and other studies have reported a lower prevalence of eye injury (Zhang et al., 2021). This difference is because of strict rules of using preventive equipment during sport activity.

The strength of this study consists in preventing eye damage during sport activities by using preventive equipment. After data collected in our study, another study will open the door to undertake initiatives regarding the rules of using preventive equipment during sports activities.

Limitation of this study is the sample size, in which this study was limited only in University of Sport.

Conclusions

In conclusion, we can say that sports activities can lead to ocular injuries with reduced vision up to its total loss. In our study, it was observed that the use of protective equipment during sports activities was low, although wearing the protective equipment would prevent these injuries. Only 7% of students reported that they had ocular injuries. Ball and teammates were reported with high frequencies as cause of eye injury. Boxers and football players have the highest prevalence of ocular injuries in our study, albeit this is an isolated study limited to the University of Sports in Tirana.

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