Eye injury has become increasingly common as the popularity of sports activities among the general populace has burgeoned. It is important to note that certain sports, such as racquet sports, baseball, water sports, and basketball present risk for eye injury. Radiation may cause eye injury, as well as the more common instances of blunt force and penetration. The severity and frequency of eye injury can be greatly reduced by use of proper protective eye wear. Eyewear that has been approved by the American Society for Testing and Materials is best suited for sports use. An athlete who has only one functional eye (the “monocular athlete”) should be advised to exercise caution during participation in sports, particularly those that present high risk for an eye injury. The risk for eye injury should always be considered during preparticipation physical exams. On-site treatment is only appropriate for a minor eye injury. Return to play and ophthalmology referral are issues that are best managed by team physicians, in collaboration with athletic trainers and therapists.

**Key Points**

- The severity and frequency of sports eye injuries can be decreased by use of eye protection.
- Athletes who have only one functional eye must be protected.
- Immediate on-site treatment is appropriate only for minor sport-related eye injuries.

**Determination of Eye Injury Risk**

Eye injury is most common in collision sports, such as lacrosse, hockey, rugby, and football. Eye injuries also occur during participation in noncontact sports, such as swimming, crew rowing, tennis, track, and cross-country running, however. For an athlete with one functional eye (the “monocular athlete”), the risk of eye injury from noncontact racquet sports and golf may be substantial. In any sport, the use of protective eye wear appears to significantly decrease the risk of eye injury.1

Sports may be categorized as “low risk,” “high risk,” and “very high risk” for eye injury.2 Noncontact sports that do not involve a racquet, stick, bat, puck, or ball are considered low-risk. Cycling, gymnastics, swimming, and track and field are considered “low-risk” for eye injury. Contact sports, and sports that involve implements and objects that are thrown or hit, are considered “high-risk” for eye injury. Water polo, golf, fencing, tennis, racquet sports, lacrosse, basketball, football, hockey, and baseball are examples of high-risk sports. The leading cause of sport-related eye injury in children who are 5 to 14 years of age is baseball.3 Full-contact martial arts, wrestling, and boxing are considered “very high risk” sports because they involve contact and are conducted without eye protection.2,4,5 A study on sports that have become increasingly popular in recent years, such as war games, radical and adventure sports, fantasy military maneuvers, capoeira, yoseikan budo, and motocross documented that ocular injuries in these sports can be severe, often involving retinal breaks.6

A recent study reported that the rate of ocular injury is very low among college athletes who participate in volleyball, softball, water polo, track and field, swimming, diving, soccer, golf, football, cross-country, basketball, and baseball.7 The report’s
authors suggested that an athlete’s past ocular history is a more important factor to consider than the sport the athlete plays for assessment of injury risk.

**Specific Aspects of History Acquisition**

Preparticipation physical examinations should always include an eye examination. Specific information that should be obtained during history taking includes past eye infections, injuries, surgeries, retinal detachment, surgical aphakia (i.e., absence of the lens of an eye), or a high degree of myopia. Serious eye injuries have been known to occur in individuals with such conditions.4,8,9 A strong family history of diabetic retinopathy, retinal tears, and retinal detachment should initiate a focused assessment of the athlete’s eyes.9 Participation in “high-risk” or “very high-risk” sports should be only allowed with an ophthalmologist’s approval.10

**Mechanisms of Sport-Related Eye Injury**

Most eye injuries among the general population include superficial injuries, foreign bodies, contusions, and open wounds.11-12 Among athletes, eye radiation injuries, penetrating injuries, and blunt force injuries are most common. Most sport-related eye injuries result from blunt force.13-14 The magnitude of the object impact force (which is proportional to the velocity and mass of the object) and the object’s hardness and size determine the extent of eye damage.2 A large amount of force may be transmitted to inner eye structures by any blunt object that is smaller than the orbital opening, thereby contacting the globe, which produces antero-posterior compression and middle globe dilatation. For example, paintball impact can produce significant retinal trauma and may lead to severe long-term visual morbidity.15-16

Fracture of the orbital walls may result from the impact of a blunt object that is larger than the orbital opening. In such cases, the globe may not be ruptured, but occult inner eye injury may be present.17-18 For example, a soccer player at any skill level can develop a severe ocular lesion without any obvious symptoms.19 Although rare, pediatric golf injuries can be devastating to the eye, visual system, and periocular adnexa (i.e., eyelids, muscles, conjunctiva, lacrimal apparatus).20 Blunt force can cause such injuries as retinal tear and detachment, choroidal rupture, vitreous hemorrhage, commotio retinae, retinal hemorrhage, hyphema (Figure 1), subconjunctival hemorrhage (Figure 2), traumatic iritis, ruptured globe (Figure 3), iris injury, lid and orbital contusion (Figure 4), and orbital blowout fracture (Figure 5).21-28 Large projectiles are unlikely to...