Eye injuries sustained in sports and recreational activities are common in the United States. Of the more than 2.4 million ocular injuries that occur each year, approximately 100,000 cases are sports related (Stock & Cornell, 1991). Once an eye injury is sustained, prompt evaluation is essential. Whether on the playing field or in the office, it is important to keep in mind that severe underlying injuries may exist and vision-threatening complications may occur. A systematic approach including a careful history, complete examination of both eyes, and appropriate management is the key to reducing ocular morbidity from sports related injuries (Grewel et al., 1996; Zagelbaum, 1995a, 1995b).

The examiner should also obtain the patient’s ocular history including any past trauma or surgery to the eye concerned. Knowing the patient’s baseline best-corrected vision helps in assessing the severity of the injury. Finally, questions regarding past medical history, medications (including eye drops), and allergies are obtained.

**The Eye Examination**

A complete examination of both eyes enables an examiner to determine the nature and the extent of injury. In most instances, the initial examination of an athlete with an eye injury will take place at the sporting event. For this reason, an emergency first-aid kit for ocular examination should always be available. Examination should always include the following:

**Visual Acuity**

Ideally, visual acuity should be tested with a Snellen eye chart posted at 20 feet away or a pocket vision card held at a comfortable reading position. Each eye should be tested independently (the fellow eye is covered) for the best-corrected vision. Glasses or contact lenses, if worn, should be used. Start with the smallest line on the chart and move up, recording the smallest line where more than half of the letters are read accurately. When patients fail to see the largest line at 20 feet, they should be moved closer to the eye chart until they can see the larger print on the chart. The distance at which patients stand from the chart is noted in feet. The visual acuity will be
recorded by using the distance as the numerator. For instance, a patient seeing a 20/200 line at 5 feet from the chart has 5/200 visual acuity.

If the patient cannot read the Snellen chart, he or she should be asked to count the examiner’s fingers at different distances. If unable to count fingers, perception of hand movements or light should be recorded. A penlight or flashlight can be used as the light source. The results should be documented as finger counting or hand movements, light perception or no light perception.

If a standard vision chart is not available, a newspaper or magazine can be used. In trauma cases, vision should be tested promptly for both medical and legal reasons. Any decrease in visual acuity is a red flag for the examiner to suspect a vision-threatening injury.

Eyelids and Adnexa

The lids and periorbital areas should be thoroughly inspected for abrasions, lacerations, foreign bodies, edema, erythema, and ecchymosis. A lid laceration that involves the margin should be evaluated by an ophthalmologist, as it may involve damage to the nasolacrimal system. Significant periorbital edema and ecchymosis should raise suspicion of an underlying orbital wall fracture. Palpate the area for subcutaneous emphysema, the orbital rim for bony displacement, and the cheek for hypesthesia (numbness).

Pupils

Using a penlight, inspect both pupils for size, shape, and reaction to light. An irregularly peaked pupil warrants a careful examination for possible ruptured globe. Each pupil is tested individually for direct reaction to light and the consensual response is checked as well by swinging a penlight back and forth between the two pupils. Each pupil should normally constrict when the light is directed toward the fellow pupil. Detection of a paradoxical dilation of any pupil (relative afferent pupillary defect) is significant and requires evaluation by an ophthalmologist.

Extraocular Movements

Extraocular muscle function is tested by asking the patient to look up, down, right, and left without moving the head. It is important to look for limitations of movements in any gaze and see if there is any diplopia (double vision) in a particular gaze. The presence of any of the above may indicate an orbital fracture with muscle entrapment or hemorrhage.

Anterior Segment

The conjunctiva should be inspected for injection (redness), swelling, hemorrhage, lacerations, or foreign bodies. Applying fluorescein dye into the area helps visualization of transparent objects, such as glass and contact lens fragments. The cornea should also be checked for abrasions, lacerations, haziness, and foreign bodies. If a corneal laceration is present, this is a medical emergency and should be referred to an emergency room immediately.

The anterior chamber—the space between the cornea and the iris plane—is examined for depth and hyphema (blood in the anterior chamber). One eye should be compared with the other for depth. The iris should be checked for any irregular shape. Although difficult, if the lens is viewed, its clarity should be noted.