

Managing the care of students with athletic concussions

Research has estimated that 5-10% of high school or college contact sports athletes sustain a concussion each year. These estimates likely understate the true incidence of concussion. In one investigation over 50% of high school football athletes did not report their injury to a parent, coach, or medical professional. A concussion is an alteration of mental status resulting from the brain being jolted inside of the skull due to a blow to the head or body. Among the many symptoms associated with concussion, headache, dizziness, confusion, amnesia, nausea, and disorientation are commonly reported. Loss of consciousness however, only occurs in less than 10% of all injuries and is not an indicator of concussion severity. Also following the injury the athlete may experience other difficulties such as sensitivity to light and sound, forgetfulness, fatigue and emotional changes such as anxiety or depression.

Most athletes who sustain a concussion can fully recover as long as the brain had time to heal before sustaining another hit; but relying only on an athlete's self-report of symptoms to determine injury recovery is inadequate as many high school athletes are not aware of the signs and symptoms of injury, the severity of concussive injuries pose, or they may feel pressure from coaches, parents, and/or teammates to return to play as quickly as possible. One or more of these factors will likely result in under-diagnosing the injury and a premature return to play. Research has shown that young concussed athletes that return to play too soon, before their brain has healed, are highly vulnerable to more prolonged post-concussion syndrome or, in rare cases a catastrophic neurological injury known as Second Impact Syndrome. Therefore, we encourage the following care when an athlete sustains a concussion in a school-sponsored sporting event.

1. When the concussion occurs, the injured athlete should visit the local hospital emergency room or review their condition with their primary care physician to ensure there is not a need for emergency medical care.
2. Then a care team consisting of the student's primary care physician and parents, along with the athletic trainer, head coach and athletic director should monitor the symptoms of the injury.

Concussion is one of the most complex injuries faced by medical professional as the signs and symptoms are not always straightforward and the effects and severity of the injury can be difficult to determine. The injury occurs in absence of structural changes in brain tissue, generally making traditional neuro-diagnostic tests such as CT, MRI and EEG insensitive. Therefore, we encourage a third step in the concussion care process.

3. Engage the injured athlete in battery of tests that include a combination of self-report symptoms, balance, and neurocognitive testing. The combined assessment will provide a more sensitive and objective evaluation of the effects of the concussion that will help better determine when it is safe for the athlete to return to play.