Use Your Head, Save Your Brain
Proper Management of Sport Concussions

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If you have been watching or playing sports over the past couple of years, concussions and brain injuries have received quite a bit of attention. Is all of this attention justified or much ado about nothing? While concussions are an inevitable part of playing sports, I am most concerned about how that athlete is treated and managed after the concussion injury occurs. For those athletes who are properly managed, the overwhelming majority will experience a quick recovery with no long term consequences. If poorly managed, these injuries can cause a host of symptoms that not only can impact on field performance but can also affect long term neurological health. In this article, I will discuss updated management guidelines that will facilitate recovery and actually minimize risk for long term consequences of concussion injuries.

Management of a concussed athlete occurs right at the moment of injury. California Interscholastic Federation Bylaw 313 states that an athlete who is suspected to have a concussion must be removed from play and may not return to competition until cleared by a health professional trained in the proper care of brain injuries. To understand this CIF bylaw, one must understand what happens to an athlete's brain at the moment of impact. You cannot see a concussion, as there is actually no physical change to the structure of the brain. This is why a brain scan (e.g. CT, MRI) provides little to confirm whether or not a concussion has occurred. Rather, the damage occurs on a molecular level and actually affects the way in which the brain's cells function. The brain is placed in a state of metabolic crisis that actually slows down the communication between neurons. It is in this state that an athlete's brain is at an especially high risk toward further injury, an injury that can be worse than the initial blow and significantly delay recovery. In very rare circumstances, a second injury to a concussed brain can cause Second Impact Syndrome, an often fatal condition.

The key to recovery from a concussion can be summed up in three words: *Rest*, *Rest,* and *Rest*. When a brain is injured, it needs time to heal. That process occurs when the brain has as much opportunity to rest as possible. This not only means minimizing physical exertion, but also minimizing cognitive exertion too. What does that entail? In many cases this can include modifying an athlete's school schedule or temporarily withdrawing from school all together. It also means limiting external stimulation such as computers, texting, video games, TV and movies, hanging out with friends, attending sport events, etc.

Your brain does not really know the difference between physical exertion (e.g. running) and mental exertion (e.g. sitting in a class). Both of these activities ask the brain to expend energy during a time when it is injured and trying to use as much energy as possible to recover. By continuing to push the brain both mentally and physically, an athlete can greatly delay recovery and delay the time when they will be ready to return to play.

I tell athletes that if they are bored while they are recovering, then they are doing a good job. For the first few days, you want to expend about the same energy as when you have the flu. Once symptoms start to clear, your doctor will let you know when you can slowly start increasing both physical and mental activity.

After an athlete sustains a concussion, families and their doctors are often left to speculate about when the athlete has recovered from their head injury. Typical concussion management has consisted of providing the athlete with time to recover and allowing them to return to play when they reported that they were symptom free. This type of care placed the athlete at high risk because (a) an athlete may under-report their symptoms, and (b) even if they were symptom free, their brain may still be in a critical part of recovery, making them susceptible to sustaining further injury.

New technology has given us the tools necessary to manage concussions and determine whether or not the brain has recovered from injury. Several professional leagues (NFL, MLS, etc.) have now begun to utilize computer based cognitive testing to monitor and manage an athlete during their recovery from a concussion. This technology is also available to high school athletes. Athletes may undergo a baseline (pre-injury) test which allows for later comparison should an athlete sustain a future concussion. Even if an athlete does not have a baseline test, cognitive testing can still be utilized post-concussion to monitor recovery.

The program is a computer based cognitive test that measures areas of memory, attention, decision making and processing speed. All of these areas can be adversely affected from a concussion. By measuring these areas of functioning, we are able to provide objective data that takes the speculation out of determining whether the brain has recovered. When an athlete is symptom free and their testing scores have returned to normal, then parents and doctors can make confident decisions about when it is safe to return to play. You can visit www.impacttest.com/doctors to locate a provider in your area who administers this type of testing.

Unfortunately, suffering injuries in sports is as much a part of the experience as winning, and losing. While we will never be able to avoid concussions all together, proper care and management can help athletes and their parents feel confident that they are returning to play as safely as possible.

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