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## CARING FOR CONCUSSIONS

MANAGEABLE STEPS FOR A  
SERIOUS CONDITION

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2015 TOP DOCTORS IN  
ORTHOPAEDIC SURGERY



# CARING FOR CONCUSSIONS

THESE SPORTS INJURIES ARE MANAGEABLE, BUT THEY MUST BE TAKEN SERIOUSLY. **BY MARNIE HAYUTIN**

**W**hen an athlete is wearing a cast or walking on crutches, there's no question that he or she needs recovery time to heal. With concussions, it's not so simple.

"It's kind of an invisible injury," notes Emily Dixon, D.O., director of the Heads Count Concussion Program at TriHealth and a primary care sports medicine physician. "We would never tell a kid who tore his ACL to 'get back in there and play, it's been a week.' But we do that with concussions."

Years ago, coaches called it "getting your bell rung" on the field, and as long as the athlete could get up and move around, he or she was generally advised to "shake it off."



But times have changed. Thanks in large part to well-publicized efforts by the NFL and other professional sports organizations, laws have recently changed to protect athletes when concussions are suspected, and broad educational programs are teaching communities what to do when they occur. Parents and coaches now understand that concussions must be managed—and they take time to heal.

“I always try to send the message that this doesn’t mean you have to keep your child in a crystal box,” notes Norberto Andaluz, M.D., a Mayfield Clinic neurosurgeon and the medical director of the UC Neurotrauma Center. “But this is serious business. You need to take this seriously.”

### WHAT IS A CONCUSSION?

Doctors define a concussion as a mild traumatic brain injury. It’s a temporary alteration in the way your brain functions as a result of a bump or a shake. Imagine an egg—your brain is the yolk, and your skull is the shell. A concussion is what happens if you shake the egg.

Here’s where it gets complicated: A concussion won’t show up on a CT scan, and the athlete generally looks normal to the untrained eye.

“We say the container looks fine, but the contents are a little bit stirred,” Andaluz says.

If the doctor does order an MRI or a CT scan, he’s generally looking for

something more serious than a concussion—a skull fracture or intracranial bleeding, for example. Instead, diagnosis of a concussion is based on a clinical evaluation of the athlete’s behavior and cognitive function, which can be somewhat subjective.

### MAKING THE DIAGNOSIS

First and foremost, you’re looking for orientation. Does the athlete know where he is and what sport he’s playing?

“In football, I had a kid who would only answer me in Spanish and told me he was the quarterback when really he was a defensive specialist,” Dixon recalls. “Clearly we knew he wasn’t oriented.”

Other symptoms include, but are not limited to, headache, nausea, dizziness, sensitivity to light and sound, and memory loss.

“Visual tracking is very important,” adds Sean Convery, M.D., medical director of Sports Medicine for Premier Health in Dayton. “People with concussions can’t adjust their eyes to track objects because their balance system is off.”

But to show how easy it can be to miss a concussion, Andaluz points to the recent World Cup final between Argentina and Germany. Although many spectators spotted the German player who appeared to be disoriented after hitting his head, it took the coaching team a little while to notice. Eventually he was pulled out, and it was revealed that there’s much of the game that he doesn’t remember.

“We’re talking about a multimillion-dollar level of athletic competition and well-trained German doctors, and they missed it,” Andaluz says.

This may be where student athletes have an advantage. Parents and coaches may have a clearer sense of what normal behavior looks like for each child. Athletic trainer Amber Gerken Yost has baseline cognitive scores for each of her student athletes using the ImPACT computerized assessment tool. The tool measures cognitive ability on tasks such

as matching, memory, and reaction time.

“When I suspect that they may have had a head injury, we redo that ImPACT test so I can compare them to their normal,” says Gerken Yost, MPH, AT, ATC, a TriHealth athletic trainer at The Summit Country Day School.

And again, educational efforts have also grown considerably in recent years. TriHealth and Mayfield Clinic, for example, have joined forces with students from University of Cincinnati and Xavier University to create the Crosstown Concussion Crew. The Crew uses interactive, hands-on teaching methods to educate younger athletes, parents, and coaches on how to recognize a concussion and what to do if you get one.

### THE FIRST FEW DAYS

State laws in Ohio, Kentucky, and Indiana (enacted in the last couple of years) now make step one very easy: If there’s any concern that a head injury has been sustained during a game, coaches and referees are obligated to pull the athlete out—and the athlete can’t return to play until he or she has been cleared by a medical professional.

“The first thing is, don’t get hit in the head again,” Convery says. “Everybody kind of laughs when I say that, but it’s serious.”

There’s a small but very real risk, especially in young athletes, of what’s known as second-impact syndrome. A second brain injury that occurs while the brain is still recovering could result in catastrophic injury or even death. That’s why it’s so important not to miss a concussion.

Once an athlete has been evaluated by a trained medical professional and a diagnosis has been made, the treatment is rest.

“That includes both physical and cognitive rest,” notes Matthew DesJardins, M.D., a sports medicine specialist with Commonwealth Orthopaedic Centers. In addition to keeping physical activity at a minimum, you want to eliminate au-

dio-visual stimuli, he says. Video games, smartphones, TVs, and even bright fluorescent-lit environments like the grocery store or shopping mall can aggravate a head injury and prolong the symptoms.

The rest period continues until the athlete is symptom-free, which in most cases takes a couple of days. Generally, kids recover a bit slower from a concussion than an adult, but DesJardins notes that adults may have a much harder time complying with the directive to rest.

### RETURN TO PLAY

In clearing an athlete to play again, doctors and athletic trainers follow a stepped protocol to determine physical readiness. Beginning when the athlete has been symptom-free for 24 hours, they'll gradually add activity—starting with light aerobic exercise like walking on a treadmill, to a few sport-specific drills like dribbling through cones, to non-contact practice, up to full-contact practice. At each point along the continuum, athletes must remain symptom-free for another 24 hours.

“If at any time during that Return to Play protocol they become symptomatic, you stop, you wait until they're symptom free for 24 hours, and you do that step over,” Dixon says.

Cognitive tests, such as the ImpACT test Gerken Yost uses at The Summit Country Day School, are also helpful to track an athlete's recovery.

This process must be guided by a medical professional, and it must not be rushed. Because championships and scholarships can be riding on an athlete's return to play, doctors say that managing expectations of coaches, parents, and students is among their toughest jobs.

“If you see that one of the Bengals got a concussion, and they're back playing the next weekend, that may not necessarily be the way we would manage an eighth grader,” DesJardins notes.

“I've definitely had huge, 300-pound, defensive-line coaches in my face screaming at me to get an athlete back into the

game, and I just have to say, ‘no, I'm sorry,’” Dixon adds.

Accommodations may need to be made at school too. Smartboards and tablets used routinely now at schools will often aggravate and prolong concussion symptoms. And since cognitive function is impaired, the student may need extra time to take an exam or an extra-credit plan that can mitigate the effects on GPAs of poor grades during the recovery period.

### WHAT TO WATCH FOR

While many athletes will fully recover from a concussion within two weeks, some will be struggling with symptoms for several weeks or even months. It depends not necessarily on how hard they were hit, but on other factors, like how many concussions they've had previously, or whether they have other medical conditions such as ADHD or migraines.

Adults are more likely than kids to have medical conditions that complicate concussion recovery, Convery notes. Although adult brains benefit from having a full layer of myelin to cushion it, the older you get, the more likely you are to have migraines, balance problems, depression, or to be taking medications that can slow recovery.

Under normal circumstances, doctors always don't know exactly why one athlete will take longer to recover than another, but they do know that each successive concussion takes longer to heal, and less force is required to sustain it.

Recovery time is also prolonged when you don't adhere to the required rest period.

“The longer you pretend concussions don't exist, the worse the big picture is,” Gerken Yost notes.

She describes an example of a student who complained to his mother that his head hurt one day after practice, and he was worried that he might have gotten a concussion. Not wanting to overreact, the mom took a wait-and-see approach. After the boy played two games over the

weekend, it became clear that he had in fact suffered a concussion. He was then out for a couple of months.

Depression, anxiety, and personality changes are also common side effects from concussions, especially when they're slower to heal. Experts urge parents to watch children closely during this time; the doctor can help you find specialists in other areas as needed.

With successive concussions you start to run the risk of long-term cognitive impairment. Professional athletes are on the extreme end, with well-publicized cases of Parkinson's disease and chronic traumatic encephalopathy. But you may also know some former high school football players who as adults seem to make a lot of poor financial decisions or struggle with concentration during the workday.

How many concussions are too many concussions?

“There's no magic number,” Dixon says. “The brain is still such a mystery. Your concussion could be totally different from my concussion and totally different compared to Susie's concussion.”

But doctors agree when it starts taking a couple of months to recover from a concussion, and you start to see personality changes and significant cognitive deficits as symptoms, it may be time to consider a sport where there's lower risk of getting another hit to the head.

“We're trying to prevent kids from having long-term concentration or cognitive deficits for their school life or adult life,” DesJardins says.

Certainly, the decision to sit it out—in the short term and in the long term—is a big deal to an athlete whose whole identity is wrapped up with a particular sport. So physicians remind athletes and parents that they're not alone.

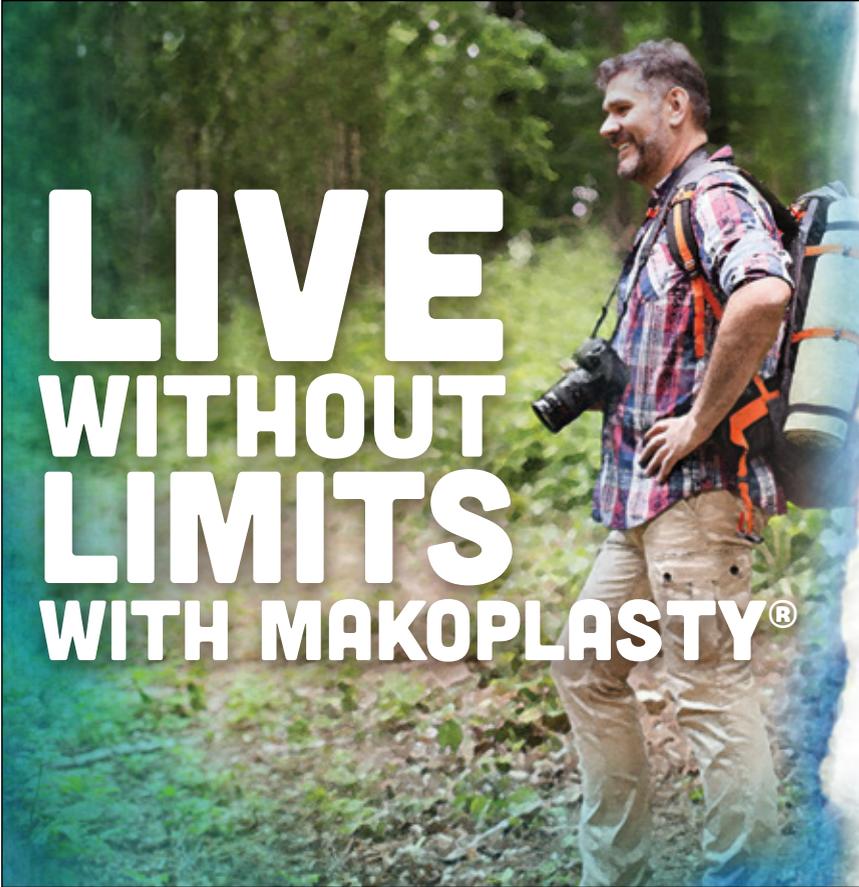
“Seek advice. Talk to a professional,” Andaluz advises. “Don't treat yourself based on information from the Internet. It's good for communication, but it doesn't replace the expertise from a brain rehab specialist.” ■



## TIPS FOR PREVENTION

There are no foolproof ways to prevent concussions, but these strategies can help:

- **Don't over-rely on pads and helmets**—Doctors say football players sometimes play a bit recklessly because they're incorrectly assuming that pads and helmets provide complete protection. Coaches and athletic trainers can help students learn to protect themselves better on the field with good form, proper conditioning, and balance training.
- **Modify style of play**—Individual athletes sometimes develop habits or techniques that put them at greater risk, such as putting their heads down before going in for a tackle. Athletic trainers can work with athletes to modify bad habits. Students may resist, but it's worth the effort to relearn a skill.
- **Wear well-fitting helmets and mouth guards**—These items won't prevent concussions, but they can lessen the severity of them. Get custom-made mouth guards from the dentist to ensure proper fit.
- **Don't fall for gimmicks**—Padded headbands for soccer players and other sports-specific products don't help, doctors say. Helmets and mouth guards are what you need.
- **Know your limits**—This one is for weekend warriors who spend all week at a desk then play hard on Saturday. Remember that balance, strength, coordination, and reaction times may be diminished when you're not playing a sport regularly, and you're more likely to sustain an injury.
- **Get educated**—Learn the signs of a concussion so you can spot a problem as soon as it happens. Coaches, parents, and students can work together to make sure teammates get help for concussions as quickly as possible. —M.H.



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