



The Times

Concussion: The invisible danger

Sunday, January 10, 2010

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STAFF WRITER

Defender Catherine Read charged out of her team's end of the hockey rink, pushing the puck forward at full speed. As she looked for a teammate to take a pass, a girl from the opposing team came at her. Hard.

"I wasn't really prepared, I guess," said Read, a sophomore at the Lawrenceville School. "I didn't think she was going to hit me."

Read didn't quite black out, but by the time an athletic trainer arrived courtside, she was feeling dizzy when she stood up. She couldn't remember the score or what day of the week it was. She felt "just really mentally foggy."

She went home, and the next day she went to a neurologist and had her cognitive abilities tested by a computer, which compared her responses to a baseline test she'd taken previously.

"I failed that pretty miserably," Read said last week. "They basically said, 'You're extremely symptomatic, and you won't be cleared to play until you're headache-free for a week.' It's been almost a month now, and I had a headache last night."

Read remains sensitive to light and noise, but she's been fortunate. She got speedy medical attention from doctors who ordered her off the ice until her brain heals, reducing the possibility she could suffer a dangerous second concussion.

The school's medical director, Dr. Robin Karpf, said Lawrenceville works carefully to prevent head injuries from causing permanent problems for students.

"They're going to need their brains for all their lives and their careers," Karpf said. "Although sports are very important in their lives, to their social and physical well-being, and potentially for college and beyond, it's important they understand these injuries and society understands the impact of these injuries on developing young people."

High school coaches, trainers and medical professionals say awareness of the dangers of concussions has improved tremendously in the last 10 years. Recent media attention to the long-term effects of concussions on retired NFL players has further heightened public interest in the condition, they say.

Parents are now less likely to argue that their child should head back onto the football field after suffering a "dinger," and the increasing use of computerized ImPACT testing of brain function has revolutionized the evaluation of healing.

Yet many schools still do not use ImPACT. Often parents who coach youth sports teams are not trained to recognize and respond to the symptoms of concussion. Monitoring and treatment of cheerleaders remains spotty despite the potentially devastating impact of repeated injuries.

In high school sports alone, about 400,000 concussions occurred nationwide last school year, more in

football than in any other sport, according to researchers at Nationwide Children's Hospital in Columbus, Ohio, and Ohio State University.

The effects -- memory loss, throbbing headaches, depression -- are only part of more serious medical problems that could threaten every aspect of a young person's future.

"The morbidity of this injury is far greater than anyone ever realized," said Micky Collins, one of the nation's leading concussion doctors and a developer of ImPACT. "I never appreciated how many kids have problems with this until I started seeing 15 to 20 patients a day."

readING the brain

Concussions occur when the body suddenly stops moving and the brain continues forward, slamming against the bony skull. The main cure is rest, which typically means no contact sports and sometimes a break from studies and other stimuli. If a young athlete suffers one or more additional shocks before having time to heal, the injury can become permanent.

After sustaining two concussions in a month's time four years ago, former La Salle University football player Preston Plevretes, a Marlboro native, needs 24-hour nursing care and can barely speak. Last year, Montclair High football player Ryne Dougherty died after sustaining his second brain injury in a month.

Yet athletes often try to shake off their fogginess and re-enter the field after a hit, or end a break from sports prematurely. Karpf recalled arguing with parents of a visiting hockey player several years ago who pressed to have their injured son allowed back on the ice. Such disputes were once more common, she said.

"Basically, they would say, 'He's fine, he's fine. We think he can play. I'll sign a paper saying he can play. This is really an important tournament for my kid. They're not going to get in college if they don't play in this tournament,'" she said.

"I was sort of blown away at that level of disconnect between the safety of their child and the desire to have them back out there playing at that moment," she said.

Neuropsychologist Rosemarie Moser of RSM Psychology Center in Lawrence said she became alarmed in the 1990s, when she saw that her son and his fellow recreation league hockey players weren't getting the same kind of medical attention as professional athletes.

"They would get hit, and then feel dazed. If they said they were feeling OK, and if they could see whether there were two or three fingers being held up in their sight, they would go back on the ice," said Moser, an early innovator in post-concussion testing in youth. "These kids would be knocked down and go right out again."

Until recently, even neurologists did not have good information about when a child was ready to return to play. The dizziness and headaches of a brain injury would fade, but an athlete might still be dangerously vulnerable and unfit to return to play.

Unlike a sprained ankle or a swollen wrist, an injured brain often gives little outward sign of its condition, said Elsie Moore, who teaches sports medicine to students at Notre Dame High School.

"The problem with concussion is that you can't see it," she said. "How do you determine if someone is over a concussion? The symptoms may be gone, but your brain may not be healed."

To help athletic trainers and medical personnel better gauge brain condition, ImPACT was created in the early 1990s. The 25-minute computer test measures memory, reaction time and other brain functions.

The key to effective concussion management is having a baseline score for an athlete prior to an injury, doctors say. With the help of a baseline score, a medical professional can determine when a player has returned to the baseline cognitive levels.

ImPACT testing can be purchased by a high school for \$500 for one year or \$1,300 for three years. Ewing

High School is one of a number of local campuses that received a grant to pay for the system for three years, school athletic trainer David Csillan said. He's now looking for additional funding to keep ImPACT available to his students.

"We get baselines on all of our athletes, even those in the most sedentary sports," he said.

U.S. Rep. Bill Pascrell Jr., D-Paterson, and U.S. Sen. Robert Menendez, D-N.J., are co-sponsoring a bill that would provide federal grants for ImPACT testing nationwide. If enacted, the measure would establish a five-year federal grant program that would assist the nearly 300 schools in New Jersey that do not use ImPACT testing.

Without financial assistance, Ewing "didn't have the money to do it," Csillan said. "That's the situation schools have been running into."

DIFFICULT choices

Csillan and others said education is their most important tool in preventing concussions from leading to serious injury. Thanks to instruction by coaches, careful medical supervision and increased media attention, students in many schools are learning not to urge an injured teammate to play through discomfort.

"Many children didn't know they were having concussions. They weren't saying, "Hey, Mom I feel dazed,"" said Moser, who has run training sessions on concussions for schools, teams and medical groups.

"Now we're educating athletes so they can help their peers and let an adult know if someone's skating slowly or seems off during a play. Unfortunately, often kids just keep skating, especially if they're in the middle of the play," she said.

Students who have suffered repeated concussions may have limitations placed on their activities. For example, Karpf said she sometimes will ask a coach to dress a recovering athlete in a brightly colored jersey to indicate they should not be touched or jounced by other students.

Longtime Notre Dame football coach Chappy Moore said he advises parents to upgrade their son's helmet if concussions are a concern. Read said one of her classmates who has had multiple concussions wears head padding when playing field hockey, unlike the other players.

In more serious cases, students may be forced to change which sports they play to minimize the chance of a new concussion. Some have to give up sports entirely.

"We'll sit down in a meeting with the athlete, the parent and the physician, and even the coach," Csillan said. "We'll ask, how many concussions have you had? Is this your main sport? If it isn't, maybe let's not play that one."

Even with today's heightened awareness of the terrible impacts of brain injury, such decisions can still be painful, Moser said.

"It's very difficult emotionally when you have been a star athlete and this is so much a part of who you are," she said. "It's a big emotional and social adjustment. You can transition to track or golf or tennis or something else, but still, it's not the sport you really defined yourself by. It's really tough."

The Star-Ledger and The New York Times contributed to this report.

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