The cost of concussions

By JOE STEVENSON

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Imagine there is a running back for a high school football team who suffers a concussion.

The player did not think he was injured that badly, and tests by the trainer do not reveal any lasting damage, so he returns the next week.

While carrying the ball, he is struck on the side of his helmet by a defender's helmet. He is stunned, but appears to recover quickly during a timeout and goes back into the game.

On the next play, his helmet takes some light contact from one of the tackler's helmets. The running back gets up from the pile, then collapses, unconscious, in the arms of a teammate in the huddle.

In a hospital 15 hours later, the player is pronounced dead.

Bruce Taira, a registered nurse and certified athletic trainer at Crystal Lake Orthopaedic Surgery and Sports Medicine, uses that story as an illustration of the severity of head injuries. He also uses it because it actually occurred. The 17-year-old player died, and the story was printed in The Journal of the American Medical Association in November 1991.

Although it happened 14 years ago, the story carries a message that can be heeded today, that of the delicate and volatile nature of concussions.

New helmet technology has provided ways to reduce the number of concussions, and most local high school teams have made the switch or are in the process of doing so. However, other items, ranging from relatively inexpensive mouthguards to pricey computer programs that provide better post-concussion analysis, also are available but have gone largely unused by area teams.

"It's a very dangerous situation, mild concussions," Taira said. "You just got your bell rung, get back out there. A lot of coaches take it too mildly. It's a Grade 1 concussion. Those Grade 1 concussions can build up over time and cause a catastrophic injury."

Marian Central coach Ed Brucker remembers the days when he played and someone on the sideline might ask a dazed player how many fingers he was holding up.

"It was before we had trainers," Brucker said. "They'd just throw them back in the game. It's a wonder something [bad] didn't happen."

Join the Revolution

In 2002, Riddell made a significant change in football headgear, one designed specifically to help protect against concussions, when it produced the Revolution model helmet.

The Revolution was produced after a long-term study of NFL players, which revealed that 70 percent of concussions came from blows to the side, face or jaw areas. Thus, the Revolution covers more of the jaw area and the facemask reaches farther down in the front. It is lighter than other model helmets, but also costs about $50 more.

Riddell vice president of research and development Thad Ide said Revolutions cost $150, while the traditional-looking VSR-4 model runs about $100.

"It feels a lot lighter on the head," Ide said. "We took care in the design stages to get the balance just right."

Ide said Riddell works with high schools to replace their older helmets, often with Revolutions, on an annual basis to help with the cost.

"We get them on a schedule to replace a percentage of pads and helmets every year so they do not have any big spikes [in their budgets]," Ide said. "We try to do about 20 percent every five years."

The Revolution has become popular with players for its look, weight and effectiveness. Local teams such as Marian Central and Prairie Ridge have their entire varsity teams wearing Revolutions now. The number of Revolutions on most local teams is growing. The extra cost for each helmet has not deterred schools from following the plan Ide mentioned, replacing the older helmets with Revolutions.

"They're a lot more comfortable, and you definitely can tell a difference when you get hit," Prairie Ridge fullback Bob O'Hagan said. "With the airholes it has, it's not as hot."

McHenry fullback-safety Andy Klink concurs with O'Hagan's assessment.

"I don't get stingers a lot," Klink said. "It seems like when you have a big hit, you don't have that ringing in your head."

Dr. Micky Collins, the assistant director of the University of Pittsburgh Medical Center Concussion Program, was involved with the research that led to the Revolution. He since has studied the Revolution's performance in the field for the past three football seasons.

Collins could not release the study's results because it is under review. Once finished, the group's findings will be published in a medical journal. Collins did say half their sample wore Revolutions, while the other half wore traditional helmets. They looked at how concussions occurred, whether concussions were reduced with Revolutions and the recovery time.

"We were the first to do a field study," Collins said.

Better mouthguards

Taira used to work closely with Marian Central, but now helps coordinate the trainers Crystal Lake Orthopaedics sends to local high schools.

He is a big proponent of the Brain-Pad mouthpiece, which covers the upper and lower teeth and runs $25.

Players might hesitate to wear such mouthguards for fear of gagging or breathing difficulties, but Taira swears by them.

"It's a hard sell, people shy away from it," Taira said. "They think it impairs breathing and it doesn't."

Taira had his son, Logan, a sophomore wrestler at Woodstock, start wearing the Brain-Pad a couple of years ago. Logan suffered a concussion after being slammed to the mat, but since wearing the double mouthpiece he has not experienced problems.

Some players have mouthguards fitted by their dentists. Brucker and Harvard coach Tim Haak said they have local dentists who help the players free of charge.

Taira says the double mouthpiece makes an even more significant difference because the majority of concussions occur after hits to the jaw and face.

"There are custom-made ones that don't protect that much," Taira said. "This is the first thing that has made a dramatic difference. Is it a cure-all? No. It's part of the ammunition to fight against it. We need to use all that we have."

The Brain-Pad is a relatively inexpensive way to protect players from concussions, but one that has not yet caught on.

ImPACT tests

Collins also is the co-developer of ImPACT, a computerized neuropsychological testing system that evaluates the severity of concussion in athletes and provides a more accurate determination of when an athlete can safely return to sports after a concussion.

With ImPACT (Immediate Post-Concussion Assessment and Cognitive Testing), the football player at the beginning of this story might have been saved, because the trainer might not have let him back on the field.

"It's a way to quantify the injury," Collins said. "If you leave it to the athlete, A) they won't be aware of the injury and its subtleties; or B) they may minimize the symptoms. It's a very effective tool for uncovering the severity of injuries."

ImPACT provides a baseline test athletes take ahead of time. If a player suffers a concussion, he then can be tested early in the week, and the trainer can compare the results to the earlier test.

ImPACT was finished in 2003 and has yet to gain in popularity among trainers. The cost – $500 to renew each year – might have deterred some schools from purchasing the program. Also, Taira points out, it takes time to conduct base tests for athletes before the season.

"ImPACT is good, but it's kind of expensive," Crystal Lake South trainer Kevin Gerlach said. "The main drawback is cost. Eventually, down the road, more people will probably start using it."

Prairie Ridge trainer Mary Leafblad worked in northern Wisconsin last year, where ImPACT was popular among high school trainers. While coaches often leave Friday night sideline decisions to the trainers, Leafblad, who does not have ImPACT at Prairie Ridge, says it is valuable in ascertaining an accurate long-term prognosis.

"A big thing is it finally gives us more of something we can see on paper with a person rather than giving them a test," she said. "It's very objective vs. subjective. I know smaller schools [in Wisconsin] without much money that were demanding to get it."

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