

# The Boston Globe

September 1, 2011

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## Globe West

### A head's up

**New focus on limiting concussions, brain injuries prompts tighter rules for**



Hopkinton High football player J.R. Barnes, 16, takes a computer test to be used as a baseline in case he gets a concussion. The testing is part of an effort to prevent long-term brain injuries stemming from high-impact collisions in football and other sports. (Essdras M Suarez/Globe Staff)

The new rules, developed by the state Department of Public Health under a law passed last year, require public middle and high schools and other members of the Massachusetts Interscholastic Athletic Association to train student athletes, their parents, coaches, and other school officials in how to recognize and treat concussions. Officials must document concussions that occur each season, and students who have been removed from play because of a head injury must receive medical clearance before they can return.

But an increasing number of area school districts are taking another step, investing in software that measures a student's memory, reaction time, and attention span.

In Hopkinton, athletes are required to take the ImPACT computer test at the beginning of their season, so that the results can be compared with a test taken after a potential concussion. The findings will allow school officials and parents, with the help of an expert, make decisions about when the athlete can return to their game, and to school.

"We figured it was one more step, one more tool to be able to measure where the kids were coming from," said Eric Karjel, Hopkinton's athletic director.

Hopkinton had already started the training mandated in the new state guidelines. But school officials decided they could better manage students with concussions using the software program, and consultations from Brookline neuropsychologist Neal McGrath, founder of Sports Concussion New England.

McGrath estimates that at least 10 percent of high school football players get a concussion each year - and that's a conservative estimate, he says. For sports like soccer, hockey, and basketball, the concussion rate is about 5 percent, he says. As a result, the average

As football players returned to Hopkinton High School last month, practice included a new drill: taking a computer test to measure their brain function.

The test, which will provide a baseline measurement in case the athletes get concussions during the year, is becoming more popular in school sports as new state guidelines draw attention to possible complications from concussions. Their aim is to both prevent and manage concussions suffered by student athletes.

public high school, he says, probably has a few dozen students who get concussions each year.

But not all of those students will necessarily report - or even recognize - their symptoms, according to McGrath.

"We know, too, it's been documented for a long time at all levels, athletes either don't understand concussion symptoms and risk, or even if they understand them, they may not want to report them," he said. "They may not want to let their team down, they may not want to miss playing time."

McGrath works with about 30 schools, mostly in Eastern Massachusetts, and he served on the clinical advisory committee that reviewed the state Department of Public Health's concussion guidelines. The group decided that it would be asking too much to require all schools to use the computerized concussion testing, which can cost several thousand dollars for the initial testing and analysis, and requires a fair amount of time and paperwork.

Last month, Dick's Sporting Goods launched a program to raise awareness about concussions, and provide the ImPACT software to up to 3,335 middle and high schools nationwide for free for one year, according to Joe Flores, a spokesman for the chain of retail stores.

The testing software would serve up to 300 athletes per school, he said, and any parent, student, or staff member can apply, as long as the school isn't already an ImPACT client. More details and the application are available online at [www.dicksportinggoods.com/pace](http://www.dicksportinggoods.com/pace).

The new state regulations came about as researchers have learned more about the impact of concussions. Recent research on professional athletes has shown the long-term impact of repeated head injuries can eventually lead to dementia.

"For a long time, people have thought about concussions as injuries you don't have to worry too much about, that if you get one, you shake it off," McGrath said. "We've been learning over time that this is not necessarily true."

Still, most concussions heal in days or weeks, he said. Danger arises when someone still healing from a concussion gets another head injury. "Once the effects of those injuries begin to accumulate, they don't recover so quickly," McGrath said.

The new state regulations require student athletes or their parents to tell school officials about previous head injuries. This is especially helpful when students suffer concussions outside of school programs, said Michael Lahiff, Watertown's athletic director.

"I read one the other day of a girl that fell off her bike and had a concussion," he said.

Although Watertown doesn't require students to get computer testing, Lahiff said, he may recommend that the school buy the software program. "I think it's worth the money," he said.

In Natick, athletic officials started giving student athletes the ImPACT test last fall. Now all athletes must take the test before they begin playing a sport, said athletic director Tim Collins. "It does try to limit the ability of a student athlete or a parent or coach to try to rush a kid back in the field or to the classroom," he said. "I think this just gives us added ways to try to measure how healthy the student is."

Wellesley is starting the fourth year of using the computer tests to help with students who get concussions. The annual fee for the software for testing students and consulting with McGrath is \$4,200, said athletic director John Brown. "It was something that we thought was important," he said. "You're talking about the young student-athlete, and you certainly don't want something like that to affect them long-term."

Brown had a discomfiting personal experience when his 12-year-old son was playing baseball and a ball struck him in the face. When Brown took his son to Children's Hospital Boston, clinicians immediately asked whether his son had a baseline concussion test. He did not.

Recent research on concussions had made Brown more aware of the risks, and he delayed his son's return to baseball.

"He was out more than five weeks," he said. "If this was five years ago, he would have played a week later, I'm sure. He might have played two days later."

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