

The Boston Globe

Student athletes return too soon after concussions

By Lisa Kocian | GLOBE STAFF

Some student athletes who suffered a head injury are at risk of returning to the field or rink before their brain is fully healed, according to a new study on a concussion test used by more than 300 schools in Massachusetts.

The study, slated for publication in January's issue of the journal *Brain Injury*, found that 28 percent of the athletes who initially seemed to have regained their cognitive abilities, particularly memory, saw a dip after moderate exertion.

The sample of athletes studied was small: just 54 athletes, primarily high school football, soccer, and hockey players in the Boston area. But it adds to the body of research on concussions in sports, as coaches and parents wade through the confusion to figure out how best to protect children from injuries that could have lifelong consequences. Specialists say the public and even physicians have a long way to go in understanding how to balance their love of competing with real risk.

21 percent of Mass. students reported concussion symptoms after a head injury in sports in the previous 12 months. SOURCE: 2011 Youth Healthy Survey

Young people usually want to get back on the field. The study, though, suggests much tighter rules might be

needed on when athletes can return to play after a head injury.

"The spirit here is we're trying to learn more about when an athlete is fully recovered and when they're not," said Neal McGrath, a Brookline neuropsychologist and lead author on the study whose company offers cognitive testing to schools across the state. "There appear to be very serious implications for athletes, especially young athletes, returning to play and sustaining further trauma before they're fully recovered."

Nearly 3,000 students across 164 Massachusetts schools suffered a concussion or other head injury while playing sports during the 2011-2012 school year, according to data

submitted to the state under a new law and reported by the Globe in October. Separate surveys of local high school sports teams by the Globe found the highest numbers of head injuries in football and girls' soccer, a trend that meshed with national statistics.

The means of measuring cognitive performance in the study is the commercially successful Immediate Post-Concussion Assessment and Cognitive Testing, known as ImPACT[®], which is used by about 350 public and private high schools in Massachusetts.

ImPACT[®] is a computerized test of memory, reaction time, visual motor speed, and other cognitive tasks. A baseline test is performed pre-season, so that it can be used for comparison after a student is injured.

Costs to schools or parents vary. A popular package costs around \$500 per school annually to test up to 300 athletes per year, according to the company. But that does not include the cost or salary of someone such as McGrath or an athletic trainer to help interpret results.

While the study results suggest more ImPACT[®] testing, there is a persistent controversy among some specialists about the overall usefulness of the test for concussion diagnosis and management.

Further muddying the debate: ImPACT's[®] co-owners coauthored several of the published studies, including the latest one in *Brain Injury*.

The study's authors, whose affiliations are disclosed in the study, defend their research. The study is peer-reviewed.

"People just need to understand that potential conflict exists when they look at the study," said McGrath. "... We're not at all putting this forward to say you need ImPACT[®] to do this."

McGrath's study, published online this month, started with a review of past ImPACT[®] tests administered to young men and women, mostly in their freshman or sophomore year of high school, who received a concussion while playing a sport.

