centraljersey.com local voices local choices
THE PRINCETON PACKET

Bench time

The use of 'baseline screening' is on the rise in dealing with sports concussion

Thursday, September 20, 2007

By: Hilary Parker

A bell ringer.

It sounds harmless enough, but the cavalier phrase — slang for a mild concussion — makes light of a serious medical condition that could have devastating health effects.

Experts warn that if athletes don't give their brains enough time to recover from a concussion before getting back into the action, they're running a risk. The headache may subside — but the brain may still be recovering.

Everyone has different reflexes and attention spans. Even physicians can be hard-pressed to confirm that a concussed patient is indeed back up to par. If only there were a way to test whether the patient's brain is functioning as it had in the past, before the concussion ...

There is a way, it turns out — and with people like Dr. Rosemarie Scolaro Moser on the case, many more people are going to know about it.

"I am a neuropsychologist, so I evaluate, study and treat individuals with brain injury," says Dr. Moser. "I'm also a mom."

Both of these identities led Dr. Moser — a neuropsychologist on staff with the University Medical Center at Princeton who also has a private practice in Lawrence — to delve deep into the study of the treatment of concussions.

When Dr. Moser's son became involved in recreation league ice hockey, she noticed that the coaches were often parents who lacked much knowledge about concussions. She also became aware that before they even got into the game, professional and college athletes were being given baseline screening tests — neuropsychological tests that provide a background reading on normal brain function, including memory, reflexes and attention span. When an athlete suffers a concussion, he can be re-tested after the injury to determine whether he has fully recovered.

In the late 1990s, Dr. Moser researched the National Hockey League baseline screening program and created a similar battery of paper-and-pencil tests that she uses for research purposes in her private practice and at The Lawrenceville School.

Since that time, computer programs have been developed that assess brain functioning quickly and effectively, including the Immediate Post-Concussion Assessment and Cognitive Test (ImPACT). These programs make it much easier to attain baseline readings on hundreds of athletes. The number of schools administering these tests is growing.

"You can't rely just on symptoms," says Dr. Margot Putukian, director of athletic medicine at Princeton University, in support of baseline screening as a way to make return-to-play decisions. Dr. Putukian manages the program at Princeton University that provides baseline readings, using ImPACT, on the neuropsychological functioning of all university athletes who participate in contact sports.

Princeton University's concussion protocol is to repeat the ImPACT test within 24 to 48 hours post-injury and then compare it to the baseline screening results. In addition, injured athletes do more extensive paper-and-pencil neuropsychological tests as well as fill out a complete physical checkup and symptom checklist. After the students' symptoms have subsided, the ImPACT test is repeated. The results from all of their tests are then compared.

"It makes it a lot easier for kids to know they're not 100 percent," Dr. Putukian says, adding that even if students are asymptomatic, they won't be allowed back into the game if their neuropsychological tests aren't up to par. She thinks this is useful for athletes who might otherwise push themselves to return to normal activity before they are entirely ready to do so.

Due to the nature of the baseline testing, Dr. Putukian and her staff actually look for a "learning or practice" effect in the ImPACT tests following an injury. Because the students are taking similar tests in close succession, if their brains are functioning normally, they should perform better over time. When this does not happen, it's an indication that the brain has not fully recovered from the concussion.

Dr. Putukian feels that one of the strengths of baseline screening in college athletes is that their brains are, by and large, fully developed. She cautions that because younger children's brains are still developing, their baseline readings will change as they grow cognitively. This means that baseline screening needs to be done more often on younger children to maintain an accurate point-of-comparison.

Dr. Moser agrees with this assessment, saying, "My advice is you don't know what happens with kids from year to year. Their brains do grow and develop, so the more frequent the baseline, the more able you are to make decisions about brain changes."

Many area school districts are aware of the research. Either they already have programs in place or they are looking to offer baseline screening in the near future.

"We are looking into several programs," says Tony Maselli, the athletic director of the Montgomery Township School District. "We want to find the right program that works best for us. There are some flaws to current programs, but we definitely want to have one in place by next fall, if not sooner."

According to Mr. Maselli, one of the problems with ImPACT testing is that it needs to be done immediately after an injury, and the computer program might not be available at "away" games. In addition, colleges typically have far more extensive athletic training staffs.

Since Dr. Moser's research program began at The Lawrenceville School, the school has expanded its baseline screening.
"First it was football, soccer, field hockey," says Michael Goldenberg, the school's athletic director. "But, being a boarding school, kids could fall down the stairs."With this in mind, the school now obtains a baseline screening on every student, athlete or not.

The Lawrenceville School has two computer labs set up to do baseline tests. They obtain a baseline screening on every student as part of orientation.

Mr. Goldenberg says not a single parent has complained, although phone inquiries have been received from parents who want to know when their child will have the testing done.

The program at Lawrenceville highlights the fact that baseline screening is useful for more than making return-to-play decisions. Given that a concussion is an injury to the brain, there are often repercussions that affect students in the classroom.

"The doctor can say, 'They're only working on X percent of their memory capacity'," says Mr. Goldenberg. Teachers and the student can take that into account as the student recovers.

Dr. Moser has seen similar situations clarified by neuropsychological testing. "It's clearly more difficult when you don't have a baseline" to compare with, she says. When she is treating an individual who did not have a baseline screening prior to the injury, she performs repeated tests over time to follow the recovery of the brain.

Dr. Moser treated one field hockey athlete who had suffered a concussion the previous year. Without proper testing by her school, she was allowed to return to school, and to sports, too soon. As a result, her grades suffered,

and she started having behavioral problems. The situation was such that her mother knew that something was wrong, and so she brought her daughter to Dr. Moser.

Dr. Moser's complete neuropsychological evaluation showed that the girl had not yet fully recovered from the injury. Dr. Moser was able to explain to the family and the school the causes of the girl's behavior problems.

Dr. Moser cites this as a cautionary tale about the importance of giving the brain time to recover completely. "If you go back to physical and mental exertion too soon, you actually prolong the recovery period," she says.

Dr. Moser is pleased that the media is paying more and more attention to the seriousness of concussions. It is common now for the media to point out which professional athletes have had concussions and to state when they will be able to return to play.

Dr. Moser thinks that this is one of the reasons why there has not been as much resistance from benched athletes as she expected, especially considering the athlete's mindset to "fight the pain and keep going." Of course, the test results don't always say what the athletes want to hear, she says. No high school athlete wants to be benched when the scouts are out looking for scholarship beneficiaries.

The benefits of baseline testing far outweigh the drawbacks, though. Dr. Moser is passionate about its importance. She believes that parents are the greatest advocates for the programs. More and more parents are wondering why baseline testing was not performed on their children prior to an injury, she says. She thinks that the next step is to enact legislation that will ensure all athletes have baseline screening.

"I think most people don't know what concussions are," says Dr. Moser. "Probably many kids go undiagnosed. I hope that, within the state of New Jersey, preseason baseline testing is mandated for all students in sports, especially contact sports."