

Female athletes suffer more head injuries than males

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By Jordana Bieze Foster, Globe Correspondent | July 14, 2008

Collisions happen in soccer. It's part of the game. But when it happened to Meghan Gould, the result was devastating.

The sophomore midfielder for the University of Massachusetts went up for a header in an October game against Rhode Island, only to be knocked off balance by the impact of another player's head hitting hers. The Danvers native and former Bishop Fenwick all-star got up, walked it off, and kept playing until halftime, when team trainers determined she had suffered a concussion.

She hasn't played or practiced in eight months.

Although the public tends to think of concussion as occurring most often in male athletes, who are thought to be more aggressive than their female counterparts, a flurry of recent studies indicate that the opposite is true. Not only do female high school and college athletes in soccer and other sports suffer concussions at a higher rate than male athletes who play the same sports, but the female players also tend to have more severe symptoms and take longer to recover.

"There's no question that it's a hot issue, and something we've only become aware of in the last few years," said Dr. Robert Cantu, chief of neurosurgery and director of sports medicine at Emerson Hospital in Concord and one of the nation's leading experts on concussion.

A National Collegiate Athletic Association study, presented in late May at the annual meeting of the American College of Sports Medicine, reported that concussion rates were higher in women than in men in soccer (27 percent higher), basketball (66 percent higher), and ice hockey (80 percent higher). Roughly 1.4 women soccer players out of 1,000 get a concussion, compared to 1.1 college men out of 1,000. Female ice hockey players get injured more than male football players, according to the research with 2.7 injuries out of 1,000 athletes compared to 2.3.

"Female collegiate athletes may be at greater risk for concussion than their male counterparts," said Randy Dick, former associate director of research for the NCAA and lead author of the study. "This was true not only in sports like soccer and basketball, where rules and equipment are similar for both genders, but also in ice hockey, where one might hypothesize that women would have lower concussion rates because the rules in women's hockey do not allow body checking."

And at the annual meeting of the American Orthopaedic Society for Sports Medicine, held this past week in Orlando, researchers from the University of Pittsburgh reported that female soccer players, mostly high school athletes, were more impaired following a concussion than male players.

When the athletes' post-concussion neuropsychological scores were compared with preseason scores, the change was significantly more dramatic in female players with regard to reaction time and number of symptoms. Female players also had greater deficits in verbal memory and processing speeds.

Concussion specialists for years have emphasized that return to play following a head injury, which requires complete resolution of all symptoms both at rest and during exercise, will require more time in some players than others. The gender disparity means an individual approach to concussion management is even more critical, said Dr. Alexis Chiang Colvin, an orthopedic surgeon and sports medicine fellow at the University of Pittsburgh, who presented the findings in Orlando.

"It's important for trainers and coaches to be aware that the repercussions of concussion will be different in males versus females. Girls will be more symptomatic and could take longer to recover," Chiang said.

The two recent studies support earlier research revealing concussion's gender gap, most notably a Journal of Athletic

Training study of high school concussion rates that made headlines last fall with its finding of a 68 percent higher rate in girls' soccer and a rate almost three times higher in girls' basketball.=

None of this surprises Gould, who is taking summer school classes to make up the work she missed in the weeks following the concussion, when the headaches, nausea, and sensitivity to light and noise made it impossible for her to focus. Those symptoms resolved after a few weeks, but she still suffers from headaches and dizziness any time her heart rate is elevated. "It takes a very long time to get better. It's all trial and error. You have to see what you can and can't do," Gould said. "But ultimately your brain is very important, and you need to have it heal."

Experts remain unsure of just why the gender gap exists. One theory is that male athletes' neck muscles are better equipped to withstand the types of forces that can cause concussion.

"Although concussions can occur from indirect blows, most occur with direct contact that rapidly rotates the neck," Cantu said. "Women athletes in the past have not understood the importance of neck development."

Cantu encourages female athletes to perform exercises to strengthen their neck muscles, particularly those muscles involved in rotating the head. Some gyms may have machines for this purpose, but the exercises can also be done with resistance provided by a buddy or the athlete's own hand. He noted, however, that the value of this type of exercise to reduce concussion rates has yet to be demonstrated in a scientific study, although such efforts are under way.

Helmets offer great protection against skull fracture, but essentially do nothing to protect against concussion, he said. ■

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