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Report Urges ‘Cultural Shift’ as Hockey Coaches Defy Concussion Specialists

By JEFF Z. KLEIN

Despite several years of intensive research, coverage and discussion about the dangers of [concussions](#), the idea of playing through [head injuries](#) is so deeply rooted in hockey culture that two university teams kept concussed players on the ice even though they were taking part in a major concussion study.

The study, which was published Friday in a series of articles in the journal *Neurosurgical Focus*, was conducted during the 2011-12 hockey season by researchers from the University of Western Ontario, the University of Montreal, Harvard and other institutions.

“This culture is entrenched at all levels of hockey, from peewee to university,” said Dr. Paul S. Echlin, a concussion specialist and researcher in Burlington, Ontario, and the lead author of the study. “Concussion is a significant public health issue that requires a generational shift. As with smoking or seat belts, it doesn’t just happen overnight — it takes a massive effort and collective movement.”

The study is believed to be among the most comprehensive analyses of concussions in hockey, which has a rate of [head trauma](#) approaching that of football. Researchers followed two Canadian university teams — a men’s team and a women’s team — and scanned every player’s brain before and after the season. Players who sustained head injuries also received scans at three intervals after the injuries, with researchers using advanced [magnetic resonance imaging](#) techniques.

The teams were not named in the study, in which an independent specialist physician was present at each game and was empowered to pull any player off the ice for examination if a potential concussion was observed.

The men’s team, with 25 players and an average age of 22, played a 28-game regular season and a 3-game postseason. The women’s team, with 20 players and an average age of 20, played 24 regular-season games and no playoff games. Over the course of the season, there were five observed or self-reported concussions on the men’s team and six on the women’s team.

Researchers noted several instances of coaches, trainers and players avoiding examinations, ignoring medical advice or otherwise obstructing the study, even though the players had signed consent forms to participate and university ethics officials had given institutional consent.

“Unless something is broken, I want them out playing,” one coach said, according to the study.

In one incident, a neurologist observing the men’s team pulled a defenseman during the first period of a game after the player took two hits and was skating slowly. During the intermission the player reported [dizziness](#) and was advised to sit out, but the coach suggested he play the second period and “skate it off.” The defenseman stumbled through the rest of the game.

“At the end of the third period, I spoke with the player and the trainer and said that he should not play until he was formally evaluated and underwent the formal return-to-play protocol,” the neurologist said, as reported in the study. “I was dismayed to see that he played the next evening.”

After the team returned from its trip, the neurologist questioned the trainer about overruling his advice and placing the defenseman at risk.

“The trainer responded that he and the player did not understand the decision and that most of the team did not trust the neurologist,” according to the study. “He requested that the physician no longer be used to cover any more games.”

In another episode, a physician observer assessed a minor concussion in a female player and recommended that she miss the next night’s game. Even though the coach’s own playing career had ended because of concussions, she overrode the medical advice and inserted the player the next evening.

According to the report, the coach refused to speak to another physician observer on the second evening. The trainer was reluctant to press the issue with the coach because, the trainer said, the coach did not want the study to interfere with the team.

“Interesting gap between theory and practice,” one of the study’s physicians said in the report. “The athlete’s and coach’s decision to return to play the next day despite incurring a minor concussion reflects what occurs thousands of times every day.”

After this second instance of a coach overriding medical advice following a concussion diagnosis, the researchers talked to the coaches about the serious long-term threat their actions posed to their players’ health. By the end of the study, the teams’ cooperation improved markedly.

A similar study by Echlin's research team followed two Canadian junior hockey teams, with male players ages 16 to 20, for the 2009-10 season. [In that study](#), independent specialists examined players immediately after on-ice collisions and were able to recommend they be held out of games. Coaches and trainers resisted that study as well, and one of the two junior teams dropped out during the season.

That study found concussion rates seven times higher than previously reported. In the study to be published Friday, the male players sustained concussions at three times the rate reported in most previous studies, and the female players at five times the rate reported in most studies. The women also sustained concussions almost twice as frequently as the men, despite rules in women's hockey designed to curb body checking. The brain scans taken after the season also showed substantive metabolic changes among the majority of players, including those who were not diagnosed with concussions. Researchers said the changes in the brains might be evidence of trauma caused by subconcussive blows.

"You may not need to have a diagnosed concussion to actually have changes in your white matter," said Dr. Inga K. Koerte, a researcher in the study. "It may be that subconcussive blows to your head accumulate over time, so that you develop changes that are similar to when you have one clinical concussion."

Koerte, of Brigham and Women's Hospital in Boston, Harvard and the University of Munich, stressed that the finding in this area was preliminary and required further research.

Echlin said that dismissive attitudes toward head trauma persisted in hockey at all levels, despite the widespread attention on Sidney Crosby's drawn-out recovery from concussion symptoms in 2011 and 2012.

"This is our national game which we all love," Echlin wrote, "and it is time to consider a cultural shift to address the prevention and treatment of this serious brain injury that is occurring at epidemic proportions."