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NFL's Progress on Concussions Blurred by Poor Sideline Testing



[Daniel Lewis](#), Yahoo Contributor Network
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It was November 11 at Candlestick Park. [San Francisco 49ers](#) quarterback Alex Smith scrambled to his left, trying to revive a busted play as [St. Louis Rams](#) linebacker Jo-Lonn Dunbar closed in on him. Smith saw the tackle coming and spun to his left, but found himself unable to avoid a vicious hit to the back of his head.

Halfway across the country at Soldier Field, just hours later, a similar event took place. After leaving the pocket, [Chicago Bears](#) quarterback [Jay Cutler](#) absorbed a crushing helmet-to-helmet hit from [Houston Texans](#) linebacker Tim Dobbins that left him lying listlessly on the ground.

Both starting signal callers suffered concussions, yet amazingly and almost shockingly, they were both cleared to return to the field. Smith even managed to throw a touchdown pass despite experiencing blurred vision after the brain-rattling hit. Only until both concussed quarterbacks became ineffective were they finally replaced by their backups.

The fact that they were permitted to resume playing, illustrates the gray area, if not a dangerously large loophole, in the NFL's protocol for diagnosing and handling concussions.

Even worse, the league maintained that team doctors and trainers fully complied with the ramped-up concussion guidelines.

"Our medical advisors routinely review with team medical staffs all significant injuries," NFL spokesman Greg Aiello announced. "In these cases, we learned that the [teams handled the injuries properly](#) and removed the players from the game as soon as they displayed symptoms and were diagnosed with a concussion."

Therein lies the problem. Smith and Cutler may very well have been cleared to return to the field, but whether they were actually fit to do so is an entirely different question, one that the current NFL concussion protocol still fails to pose.

Despite the laundry list of rule changes, improvements in helmet technology, and donations to the National Institutes of Health, the NFL somehow still lacks a coherent and effective way of diagnosing concussions on a game's sidelines.

Although players receive high-quality care after their concussions are properly diagnosed, the problem is they are often not properly diagnosed, particularly during a game.

Armed with a wide array of diagnostic tools, physicians remain more than capable of managing concussions in a hospital setting. The current protocol on the sidelines of a football field, on the other hand, involves little more than a trainer holding up his or her hand and asking a player, "How many fingers do you see?"

What is the date today? Who scored the last touchdown? What year is it? If a player answers these basic questions correctly, he may be able to return to the game after a hit to the head.

The league currently uses the [Sideline Concussion Assessment Tool \(SCAT\)](#) in evaluating players suspected to have suffered a concussion. Developed by a panel of international experts in 2008, it represents an adaptation of the Sports Concussion Assessment Tool 2 (SCAT2), the generally accepted standard in diagnosing concussions sustained in sports.

Conducted on the sidelines, SCAT is a nine-part physical and cognitive test that lasts about 10-15 minutes. A physician recites a series of numbers or words and then asks the player to repeat them. Athletes also answer simple questions about their surroundings and complete coordination and balance tests that include having the player assume three different stances for 20 seconds each.

The SCAT consists of two parts: a baseline evaluation typically taken before the season begins as well as one conducted after an athlete may have suffered a concussion.

The player usually takes the baseline test during training camp to establish values for memory, concentration, and balance before an injury occurs. If he is suspected of having sustained a concussion, then he will retake the test at that time. Physicians can then compare pre-and post-injury scores to determine whether an athlete is ready to return to the field.

The player is graded in nine different areas and awarded a total score, but there is no definitive cut-off score that dictates whether a player can or cannot return to the game. Instead, the score is compared to the baseline test, forcing the sideline physician to make an incredibly subjective decision based upon any marked decline in the player's scores.

Another pitfall of using SCAT is that a key component, the Glasgow Coma Scale (GCS), is hardly applicable to sports concussions. The GCS was developed primarily as a way to gauge severe forms of head trauma, as in an automobile accident-not concussions. As a result, players often score well on the GCS part, providing less weight to more relevant parts of the test.

In effect, the test provides little more than a cursory assessment of a player's cognitive state. Simply put, it does not measure concussions very well. In order to diagnose in-game concussions more accurately, the league must employ more effective tests .

The King-Devick test, for example, has been tested on boxers and MMA fighters with promising results. It requires players to recite a written list of numbers as quickly as possible. Concussed athletes encounter great difficulty in processing the numbers and often take minutes to finish the test, if they do not give up entirely. A healthy player, meanwhile, takes only 40 seconds to complete it.

Unlike SCAT, the King-Devick test is also more straightforward for a physician to score. It is not only less subjective than SCAT, but also more informative. In fact, in trials for the test, many concussed athletes have passed SCAT but failed the King-Devick test.

One main reason why concussions go undiagnosed when SCAT is administered is that the test contains no real visual component, since it predominantly tests memory and balance, which constitute smaller functions of the nervous system. However, vision accounts for more than half of the brain's pathways, and many of the structures for vision are coupled with those for cognition. Thus, unlike the King-Devick test, SCAT leaves large portions of the nervous system untested.

Despite other far superior experimental tests, the NFL still clings to SCAT largely because of information overload. From the league's perspective, there is simply too much information to consider-too many studies, too many tests, and too many opinions. Thus, it is too easy, simple, and unfair to cast the blame on the NFL and team neurologists.

Besides, the problem extends beyond the limitations of SCAT itself and includes the difficulty of any form of sideline testing. Using computerized neurological tests that are usually only available in hospitals, physicians can diagnose a concussion effectively, grade its severity, and map a full recovery schedule. Amid the energy of a game and surrounded by raucous fans, diagnosing a player who so desperately wants to remain in the game is far more challenging.

Despite mishandling several players' concussions this past season, the NFL is clearly working toward

a solution. The league did take another step to help resolve the issue in January when it announced [it will place independent neurologists on the sidelines](#) for the upcoming season. Enlisting unbiased experts on Sundays certainly seems prudent.

But it is important to highlight that despite all the medical advancements in identifying and managing concussions in the days after the initial injury, the league still remains woefully unequipped to do so in the moments immediately after a hit to a player's head.

Until the league can identify a proper way to diagnose concussions on the sidelines, the NFL's concussion problem will continue to remain a recurrent headache for the NFL, its physicians, and its players.

1. The Associated Press. "[High-profile QBs suffer concussions](#)", *The Boston Globe*.
2. The Associated Press. "[NFL expects to have neurologists at games in 2013](#)", Yahoo! Sports.
3. Sean Conboy. "[Why the NFL Sucks at Concussion Testing, And What It Can Do About It](#)", *Wired*.

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I have a passion for sports, be it playing, watching, or writing. I enjoy watching professional basketball, football, and tennis. I treat sports almost as a field of study, watching highlights and attempti... [View profile](#)



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