

Former NFL Pro Supports Study of Brain Injuries and Dementia in Football



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As the preseason gets underway in the National Football League, one former Denver Bronco is placing himself at the forefront of a health concern that has plagued the sport for years: Chronic traumatic encephalopathy (CTE) from repeated blows to the head that is believed to contribute to dementia among retired players.

James Joyce was a defensive end for the Broncos in the early 1980s and went on to become a biotech entrepreneur, founding San Diego-based Aethlon Medical in 1998. The company develops diagnostic devices but has struggled to gain much traction: It has no revenues and yesterday [it announced a second-quarter loss of \\$1.8 million.](#)



Do repeated head blows put football players at risk of a brain disorder that could be detected in blood? One former NFL player is supporting research aimed at answering that question. (Photo by Rob Carr/Getty Images)

But that isn't deterring Joyce from a goal he's had ever since he suffered the loss of his friend and college teammate Tom McHale, an NFL offensive guard who died of a drug overdose in 2008 at the age of 45. An autopsy revealed signs of CTE from repeated head trauma. Aethlon subsidiary Exosome Sciences is now supporting a study of 200 pro football players that's aimed at validating a biomarker of CTE—a protein signature that may someday be the basis of a test for detecting the disorder in living players long before it progresses to dementia. The study is set to begin around Labor Day.

“Sports franchises and players need information,” Joyce says. “It’s quite scary for former players right now because of the high incidence of CTE found at autopsy. But nobody knows what all this means. Is it really triggered by repetitive blows? Is it concussion-driven? Is it part of the brain’s protective response? There are so many things that need to be learned.”

The study follows a smaller research effort that Exosome undertook with scientists from Boston University and the University of Washington. The research team developed a test for measuring the protein tau in exosomes, which are components of cells that are cast out into the bloodstream. Excessive tau has been linked to Alzheimer's and other brain diseases.

In examining 78 former NFL players and comparing them to 17 former athletes from non-contact sports, the researchers demonstrated that [tau levels were significantly higher in the football veterans](#)—and that high levels of tau-positive exosomes in blood were linked to poor performance on memory tests. The research was published last year in the *Journal of Alzheimer's Disease*.

CTE was launched back into the spotlight a few weeks ago, when the *Journal of the American Medical Association* (JAMA) published a study led by Boston University that showed [the disease was present in the brains of 110 out of 111 deceased NFL players](#).

As informative as such post-mortem studies are, Joyce says, studying brains of living players could be even more valuable, he believes. The larger study that Aethlon is supporting seeks to enroll players as young as 24, Joyce says. "We're looking at CTE as a chronic neurological disorder," he says. Measuring tau in young players will not only answer the question of whether CTE risk increases with more years of play, it might also provide players the opportunity to establish a baseline level of brain health that can be tracked over time, Joyce says.

"Getting a baseline measurement would allow us to see changes and potential elevations of the biomarker that might identify somebody who's at risk," Joyce says. "If we could monitor the biomarker, the player can make a decision about whether or not he should continue to play the sport."

Aethlon is supporting this study with scarce resources, however. The company has just \$327,000 in cash. Top executives said yesterday during the earnings announcement that they're seeking to raise \$7.5 million in capital.

The biggest hope on the near-term horizon for Joyce's company is Hemopurifier, a product that's designed to filter viral pathogens out of blood. Hemopurifier brought Aethlon a brief moment of fame during the Ebola crisis of late 2014, when the device was used to lessen the viral load of a critically ill patient being treated in Germany. A few months later, the FDA [approved a clinical trial protocol to test the device in up to 20 U.S. victims of Ebola](#), driving

Aethlon's stock price to \$19.50. But the Ebola threat waned, Aethlon struggled to chart a path to FDA approval, and the stock is now trading at \$1.45.

During a call with investors after yesterday's earnings announcement, Joyce announced that Aethlon finalized its submission for approval under the FDA's Expedited Access Pathway (EAP) program, which the agency put in place earlier this year as part of the 21st Century Cures Act. If accepted into the program, the agency will work closely with Aethlon to try to reduce the time and cost of getting Hemopurifier to approval.

Regardless of how that effort plays out, Joyce has made it clear to investors that Aethlon will continue its involvement in CTE research. And he hopes his work supporting research into the disease will draw other scientists to the cause—and ultimately win over the NFL. "I think the NFL has maintained a certain level of silence [about CTE] that makes them seem suspect. But the science keeps advancing," Joyce says. "We can't deny that CTE exists. Having more researchers involved could actually be beneficial to the NFL."