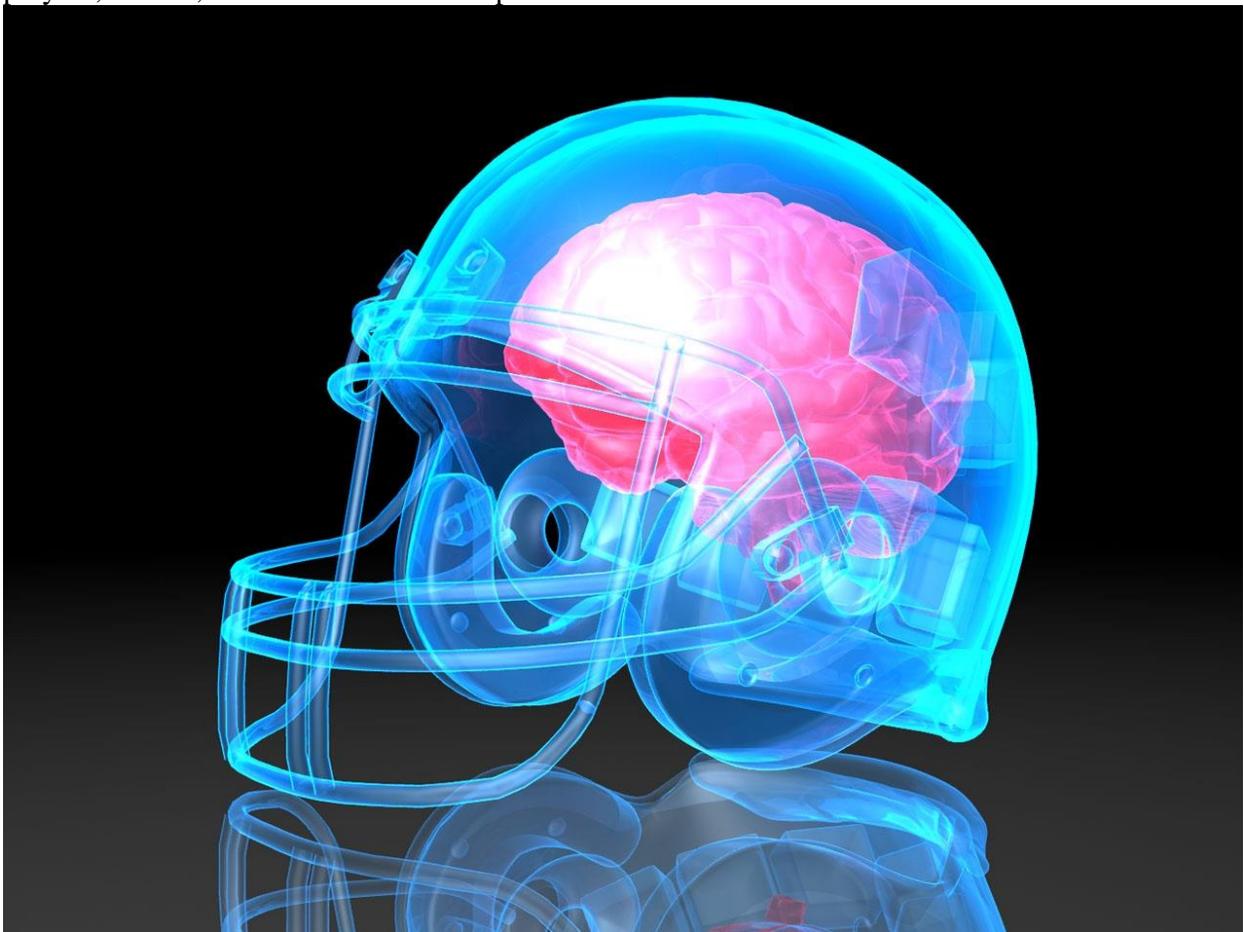


CHRONIC TRAUMATIC ENCEPHALOPATHY **DISEASE FOUND IN 99 PERCENT OF BRAINS** **DONATED BY NFL FAMILIES**

**The degenerative brain disease develops after
repeated concussions or blows to the head**

The degenerative disease, chronic traumatic encephalopathy or CTE, is common in football players, boxers, veterans and others exposed to head trauma.



Over the last decade, one of the biggest stories in sports has been the mounting evidence of chronic traumatic encephalopathy, or CTE, in football players. The degenerative brain disease develops after repeated blows to the head, and a new study finds a strong link between playing football and CTE. As [Daniella Emanuel at CNN](#) reports, the brains of 110 out of 111 NFL players that were donated to the researchers showed signs of the disease.

The study, published this week in the journal [JAMA](#), was based on autopsies of 202 deceased football players including those who did not play beyond the high school and college level. As Emanuel reports, in addition to the NFL players, the disease was found in 48 out of 53 college players and 3 of the 14 high school players.

The brains examined for the study came from subjects that ranged in age from 23 to 89 and from every position on the football field, from punters to linebackers, [Joe Ward, Josh Williams and Sam Manchester report for *The New York Times*](#). In the brains examined, the largest number of CTE cases were found in linemen, running backs and defensive backs. Eighty-six percent of the professional players in the study had severe cases of the disease as did 56 percent of the college players.

“There's no question that there's a problem in football. That people who play football are at risk for this disease,” Ann McKee, director of Boston University's CTE Center and coauthor of the study tells Emanuel. “And we urgently need to find answers for not just football players, but veterans and other individuals exposed to head trauma.”

According to the [Concussion Legacy Foundation](#), a CTE advocacy and research group, the disease occurs when clumps of a protein called Tau, which destroy brain cells, develop after repeated head trauma. The disease usually progresses over time, causing memory loss and confusion, impaired judgment and eventually dementia. The disease usually impacts a sufferer's mood and behavior in their 20s and 30s, progressing to cognitive impairments in their 40s and 50s. Besides football players, boxers and combat veterans are also at risk for CTE.

It's important to keep in mind that the samples in the study are not randomly selected. As McKee tells *The New York Times*, the study sample suffers from "tremendous" bias since most of the brains studied were donated by families that suspected their loved one suffered from CTE, which currently can only be diagnosed post-mortem. That bias makes it difficult to figure out what percentage of current football players may develop CTE.

Even so, the results strengthen the link between football and CTE and highlights what researchers don't know. “There are many questions that remain unanswered,” McKee tells [ESPN.com](#). “How common is this? How many years of football is too many? What is the genetic risk? Some players do not have evidence of this disease despite long playing years.” She also notes there is a possibility that drug use, steroids, alcohol abuse and diet could also contribute to the onset and progression disease.

As ESPN.com reports, the NFL denied the links between football and CTE for years, but in 2015 the league settled a class action lawsuit brought by former players. The league will pay up to \$1 billion in medical costs for 20,000 current and former players who suffered concussions and now experience potential CTE-related problems, [according to NPR](#). In 2016, the League [made it's first public acknowledgement](#) that there is likely a connection between playing football and CTE. And as Emanuel reports, in recent years the NFL has changed protocols surrounding concussions and discourages full-tackle football for children.

In a statement, the NFL calls the study valuable and says it is committed to supporting continued scientific research into CTE, reports [Jessica Glenza at The Guardian](#). "My hope is we'll stop arguing about whether or not this is a problem, or whether or not it needs to be addressed," McKee tells Glenza. "We need to take our heads out of the sand. It's not going away because we want it to."

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