

At least one in four former NFL players in study suffered from degenerative brain disease CTE

At least one in four former NFL players who died between 2016 and 2021 was found to [have had chronic traumatic encephalopathy](#) (CTE), according to a study released on Tuesday.

Out of the 878 former players who died during that time frame, 235 donated their brains for study, researchers said, with 215 of those donated brains found to have CTE, a degenerative disease that can only definitively be diagnosed after death. CTE is associated with repeated blows to the head, including concussions. [Symptoms include](#) difficulty with attention and memory, dementia, mood disorders and headaches.

An [NFL](#) spokesperson said: "The NFL continuously strives to make the game of football safer, including by implementing strategies to reduce concussions and head impacts.

"The NFL remains committed to ensuring that the NFL community has access to a robust – and expanding – set of resources to enhance their physical and mental well-being.

"We encourage former players to utilize these resources to identify and seek treatment when they are concerned about their health."

The study's lead author Daniel Daneshvar, the chair of physical medicine and rehabilitation at Mass General Brigham and an associate professor at Harvard Medical School, said that repeated traumatic brain injuries are a known factor in elevated rates of neurodegenerative disease.

"Similarly, we and others have shown that in NFL players, specifically, there is about a four times higher rate of death from neurodegenerative disease than the general population," he added.

The study from Mass General Brigham, Boston University and the Concussion +

CTE Foundation also found dementia was common among brain donors, with researchers urging prevention measures that focus on cutting down on repetitive head impacts across all levels of the sport.

“The bulk of the head impacts that these former NFL players experienced didn’t occur at the NFL level. They occurred at the collegiate level ... and at the high school level and in many cases the youth level. And all of those cumulative hits to the head added up to result in an increased risk,” Daneshvar said.

A number of high-profile NFL players who took their own lives – including Junior Seau, Dave Duerson and Aaron Hernandez – were found to have had CTE when their brains were analyzed after their deaths.

The NFL’s 2011 collective bargaining agreement limited the number of contact practices during the season. The Ivy League banned full-contact tackling during practices five years later.

The US supreme court cleared the way for the NFL’s settlement of concussion-related lawsuits with thousands of retired players in 2016.

“If the changes that have been implemented at the NFL level, including reducing the amount of contact in sports practices to less than one per week, were propagated at the collegiate, high school, and youth levels, athletes would be better off,” said Daneshvar, who urged current and former athletes experiencing cognitive symptoms to seek a neurodegenerative disease expert evaluation.

“We know that nearly 70% of head impacts are occurring in practice. So without changing a single minute of game time at any of those levels, we can be substantially reducing the cumulative head impact burden that these individuals are experiencing throughout their lives.”

Source: [The Guardian](#), 8/25/2026