

Ex-NFL player helps researchers probe long-term effects of head injuries

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Brian Duncan. Photo: UT Southwestern

(HealthDay)—Brian Duncan doesn't know why his brain still works as

well as it does.

Duncan, 67, got his bell rung more than once during his life—as a professional football player, an amateur boxer and a bull rider at Texas rodeos.

He remembers one time he got slammed into the ground by L.C. Greenwood, a 6-foot, 6-inch defensive end for the Pittsburgh Steelers, so hard that he hallucinated he was back playing [high school football](#).

"We used to play a team that had a feed lot behind their football stadium," Duncan said. "I'm all of a sudden thinking I'm in high school. I'm seeing cows and stuff behind the stadium, and I'm thinking, what in the world? I'm in Three Rivers Stadium. I was in a different world."

Despite that history, Duncan is one of the lucky athletes whose past punishment has not caught up to him.

Duncan and players like him highlight what continues to be a point of ferocious debate among [brain](#) researchers—the effect of repeated [head trauma](#) on both [brain structure](#) and the brain's ability to think, remember and reason.

He's part of a recent study of National Football League (NFL) players that found no link between impaired [brain function](#) and either the number of concussions players received or the number of years they played in the NFL.

Study co-author Nyaz Didehbani said, "There was no relation between the number of concussions or years they played with poor performance on these types of cognitive measures." Didehbani is a neuropsychologist with the Peter O'Donnell Jr. Brain Institute at the UT Southwestern Medical Center in Dallas.

Findings questioned

However, the study faces criticism from other brain researchers who noted that these findings run counter to a growing mound of evidence linking brain damage to the number of years a person plays football.

"You see the same sentence repeated [in the study], almost as if they're trying to lull us with a bedtime story—'We did not find a significant linear association,' over and over," said Kristen Dams-O'Connor. She directs the Traumatic Brain Injury Research Center of Mount Sinai, in New York City.

But, "I don't think the methods of the study support that statement nearly as well as these authors seem to think," she said.

Duncan is one of more than 80 former NFL players participating in the long-range UT Southwestern study that tracks their ongoing brain health, Didehbani said.

Duncan played one season with the short-lived World Football League, and then served as a running back and kick returner for the Cleveland Browns and Houston Oilers from 1976 to 1978.

"I was a special teams player, for the most part," Duncan said. "I was the wedge buster on the kickoff team, and I was the kick return man on the receiving team. Primarily I made the football team because of my tenacity and my ability to play special teams."

The kickoff is one of the most dangerous plays in football, and Duncan took his share of damage.

"I had a lot of head trauma, so many times you couldn't count them all," Duncan said.

"There's different feelings. Sometimes you get a numbness in your eye. Sometimes you get this massive headache. Sometimes it's a dull, 'Man, that hurt,' and sometimes it's just this sharp pain that stings real bad," Duncan said. "It depends on what kind of hit you take and what kind of impact."

Duncan has paid a physical price, in the form of surgeries to fix his back, knees and hernias. But, so far, his mind has remained sharp.

Study found no link between playing time, thinking skills

He's one of 35 retired NFL players older than 50 included in the UT Southwestern study, which was published recently in the *Archives of Clinical Neuropsychology*.

These players underwent a battery of tests that measured their memory, processing speed, language skills and other brain abilities.

The researchers found that the number of concussions a player had sustained with the NFL or the number of years spent in the league had no relationship with how well they performed on brain tests.

Didehbani stressed that, "none of us believe concussions are good for the brain. Some people do have problems after multiple or even single concussions. But it's not as simple as playing football equals impairment. It's not a simple one-to-one."

But experts criticizing the study noted that Didehbani and her colleagues only counted the years players spent in the NFL in their calculations.

Other research has found that the hits a player takes in Pop Warner, high school and college football all contribute to brain injury, and that those

effects stack up over time.

For example, a 2015 study found that former NFL players who participated in tackle football before age 12 were significantly more likely to suffer memory loss and mental health issues than those who entered football at a later age.

Chris Nowinski is co-founder and CEO of the Concussion Legacy Foundation. He said, "I would argue that they didn't measure exposure, and so I would argue they should not have published the study as is. They should have gone back to those players and asked them how long they played football. That is the question, and that is the relationship that has been observed in other studies. To me, this study is meaningless without additional data regarding how many years they played."

Didehbani said her research team did not collect such information when they first started their project, but that they are going back and gathering it now.

Study weaknesses

Dams-O'Connor also criticized the small sample size of 35 players. She noted that the study's own statistics initially show a weak correlation between years played and loss of brain function, although that relationship washes out when corrected for other factors.

"I am pretty confident that if the sample size was larger, then that would have been a statistically significant association," Dams-O'Connor said.

Repeated concussions have been linked to a brain disorder called chronic traumatic encephalopathy (CTE), which is marked by structural degeneration of the brain and abnormal clusters of toxic tau protein clusters.

A 2017 study found that about 87% of former football players had signs of CTE in their brains, including 110 out of 111 NFL players. That study examined the brains of 202 deceased people who'd played football at various levels, from high school to the NFL.

But the link between CTE and a person's ability to think and remember remains murky, all experts agree.

"We know that not all NFL players are going to be suffering from consequences of head trauma," Dams-O'Connor said. "I think there's no reason to think that every single person who plays football is going to have these poor outcomes later in life."

Didehbani said that research needs to move forward to focus on individual factors that might increase the risk that a person's brain function would suffer as a result of repeated concussions.

"There are a lot of other factors and a lot of unknowns still," Didehbani said. "We're kind of jumping the gun a little too early and assuming that playing a contact sport will cause problems down the road. There are other factors we need to look at."

For his part, Duncan thinks "there's no question that head trauma causes some people to have some severe, long-term lasting injuries. To say that it's 100%, that's not correct, but on the other hand I think it probably is a good thing that awareness was brought to the situation because it's caused the NFL to recognize these problems," he added.

"There's still a lot to learn," Duncan continued. "I don't think people ought to panic about playing [football](#), but they should be aware of the issues."

More information: The U.S. Centers for Disease Control and

Prevention has more about [chronic traumatic encephalopathy](#).

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