

NFL players may be at higher risk for depression as they age

16 January 2013

National Football League (NFL) players may be at increased risk of depression as they age due to brain damage resulting from concussions, according to two studies released today that will be presented at the American Academy of Neurology's 65th Annual Meeting in San Diego, March 16 to 23, 2013.

"The [Centers for Disease Control and Prevention](#) estimates that about 1.6 to 3.8 million sports concussions occur each year. While it is known that sports concussions can cause immediate disturbances in mood and thinking, few studies have investigated the long-term effects that may emerge later in life, especially those related to depression," said study author Nyaz Didehbani, PhD, of the Center for BrainHealth at The University of Texas at Dallas. "Our study shows that athletes who have sustained concussions in [early adulthood](#) may be at a higher risk for developing depression as they age compared to the general population. It is important when a concussive experience occurs that medical professionals appropriately include [depression screening](#) in their follow-up assessment. Depression is a treatable condition if the proper and necessary steps are taken."

In the first study, researchers evaluated 34 retired NFL athletes with a history of concussion and 29 people of the same age from the general population with no [concussion](#) history. Participants were tested for depression. Concussions were retrospectively graded based on American Academy of Neurology guidelines. The researchers examined thinking skills, mood and the physical [symptoms of depression](#).

The study found that those athletes who exhibited greater symptoms on the Beck Depression Inventory scored significantly higher than the minimal range for [depressive symptoms](#). The [Beck Depression Inventory](#) measures symptoms related to thinking, mood and the physical signs of

depression. The retired athletes included in the study reported an average of four concussions, reinforcing the correlation between depression scores and the number of lifetime concussions.

The second study included 26 retired NFL athletes. Of those, five had depression and 21 did not have depression. Diffusion tensor MRI brain scans were used to measure damage to white matter in the brain. White matter contains tissue and nerve fibers that help carry signals from one part of the brain to another. Damage to white matter occurs in traumatic brain injury and also has been seen in some people with depression.

By looking at the amount of white matter damage in one area of the brain, researchers could predict which former players had depression with 100 percent sensitivity and 95 percent specificity. Sensitivity is the percentage of actual positives that are correctly identified as positive, and specificity is the percentage of negatives that are correctly identified. The severity of the depressive symptoms was also associated with the degree of white matter damage in a wide range of brain regions.

"Aside from providing important insights into the nature of [depression](#) as it relates to [brain damage](#) in retired NFL athletes who have been exposed to concussive and repetitive head injuries, this study also may help us to understand the similar behavioral symptoms seen in other sports-related head injuries and in combat-related blast injuries seen in armed service members," said study author Kyle Womack, MD, of the University of Texas Southwestern Medical Center in Dallas.

Both studies were primarily supported by the the BrainHealth Institute for Athletes at the Center for BrainHealth, a research center at the University of Texas at Dallas. The second study also was supported by the National Institutes of Health.

Provided by American Academy of Neurology

APA citation: NFL players may be at higher risk for depression as they age (2013, January 16) retrieved 5 May 2021 from <https://medicalxpress.com/news/2013-01-nfl-players-higher-depression-age.html>

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