

Study casts doubt on theory that retired NFL players suffer unique cognitive disorder

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The media have widely reported that retired NFL players are at risk for a neurodegenerative disorder called chronic traumatic encephalopathy (CTE), which causes symptoms such as aggression, depression, suicidality and progressive dementia.

But a study of retired NFL [players](#), led by Christopher Randolph, PhD, of Loyola University Medical Center, has found no evidence to support this theory.

Randolph and colleagues report their findings in the *Journal of the International Neuropsychological Society*.

While there are no clearly defined [diagnostic criteria](#) for CTE, the condition has been suggested to be characterized by irritability, impulsivity, aggression, depression, [short-term memory](#) loss and heightened suicidal thinking or behavior.

Randolph and colleagues conducted a two-part study. The first part involved a telephone survey examining the prevalence of possible cognitive impairment in 531 retired NFL players over age 50. In the second part, researchers recruited a sample of players who appeared to have significant cognitive impairments, and examined them directly with neuropsychological testing.

The players who participated in the telephone survey had an average age of 64 and had played in the NFL for an average of 7.5 years. Thirty-five

percent of this sample had possible cognitive impairment based on a screening interview known as the AD8.

A subsample of 41 retired NFL players were recruited for evidence of probable mild cognitive impairment. They underwent in-person neuropsychological assessments at the Center for the Study of Retired Athletes at the University of North Carolina, Chapel Hill. They then were compared with healthy controls and with non-athlete patients with a [clinical diagnosis](#) of mild cognitive impairment (MCI), commonly presumed to reflect the earliest stage of Alzheimer's disease.

While the retired NFL players were clearly impaired relative to healthy controls, the patterns of their impairments were virtually identical to those exhibited by the non-athletes with MCI.

"The retired NFL players basically look like regular patients who have mild cognitive impairment and have never played football," Randolph said.

Randolph continued: "The rate of possible cognitive impairment in the NFL retirees was higher than we expected. But it is important to note that we did not have any controls in that part of the study, so we still do not know whether or not NFL players actually have a higher risk of later-life cognitive impairments than men in the general population. When we look closely at those players who do have [mild cognitive impairment](#), they are clinically indistinguishable from non-athletes with a clinical diagnosis of MCI."

Randolph believes that if there is indeed an increased risk of late-life [cognitive impairment](#) in NFL retirees, it is probably due to diminished cerebral reserve. This theory is based on the possibility that repetitive head trauma over a long playing career results in a loss of brain cells. This cell loss is not severe enough to produce symptoms when players

are young or middle-aged. But it could lead to the earlier expression of age-related neurodegenerative diseases such as Alzheimer's, due to insufficient reserve to cope with the disease-related cell loss.

"We still do not know if NFL players have an increased risk of late-life neurodegenerative disorders," Randolph said. "If there is a risk, it probably is not a great risk. And there is essentially no evidence to support the existence of any unique clinical disorder such as CTE."

In their paper, Randolph and colleagues wrote that media coverage of this issue "continues to far outweigh any meaningful results from sound experimental science, and a definitive epidemiological study still has yet to be done."

More information: The study is titled "Prevalence and Characterization of Mild Cognitive Impairment in Retired National Football League Players."

Provided by Loyola University Health System

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