

# Former NFL players who played tackle football before age 12 at increased risk of memory and thinking problems later

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Former National Football League (NFL) players who participated in tackle football before the age of 12 were more likely to have memory and thinking problems in adulthood, according to a new study published in the January 28, 2015, online issue of *Neurology*, the medical journal of the American Academy of Neurology.

For the study, researchers tested 42 former NFL players with an average age of 52. All of the participants had experienced memory and thinking problems for at least six months. Half of the players participated in tackle football before the age of 12 and half did not. The number of concussions sustained was similar between the two groups.

The study found that compared with former NFL players who started football at age 12 or later, former players who started before age 12 performed significantly worse on all test measures, even after researchers took into account the total number of years of football played and the age of the players at the time of the tests. For example, those who played before age 12 recalled fewer words from a list they had learned 15 minutes earlier, and made more repetitive errors on a test of mental flexibility, compared with those who started playing at age 12 or later. The differences between the two groups represented approximately a 20-percent difference in level of current functioning on several measures. Study author Robert Stern, PhD, with Boston University School of Medicine said that both groups scored below

average on many of the tests.

"Our study suggests that there may be a critical window of brain development during which repeated head impacts can lead to thinking and memory difficulties later in life," said Stern. "If larger studies confirm this association, there may be a need to consider safety changes in youth sports."

"Football has the highest injury rate among team sports," said Christopher M. Filley, MD, with the University of Colorado School of Medicine in Aurora, CO, in an accompanying editorial. Filley is a Fellow with the American Academy of Neurology. "Given that 70 percent of all football players in the United States are under the age of 14, and every child ages nine to 12 can be exposed to 240 head impacts during a single football season, a better understanding of how these impacts may affect children's brains is urgently needed."

Stern said that because the study focused on NFL players, the results may not be applicable to the general public and more research is needed before policy changes are implemented. "There are tremendous benefits of participating in youth team sports. The goal is to make them safer."

"While the researchers did take into account the total years of football played, they were unable to assess the total number of head impacts. So it's possible that the number of impacts is responsible for the reported results rather than the early age of exposure to football," said Filley.

Provided by American Academy of Neurology

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