

# Breaking point: When does head trauma in sports lead to memory loss?

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A new study suggests there may be a starting point at which blows to the head or other head trauma suffered in combat sports start to affect memory and thinking abilities and can lead to chronic traumatic encephalopathy, or CTE, in the brain. The research was released today and will be presented as part of the Emerging Science (formerly known as Late-Breaking Science) program at the American Academy of Neurology's 64th Annual Meeting in New Orleans April 21 to April 28, 2012.

"While we already know that boxing and other combat sports are linked to [brain damage](#), little is known about how this process develops and who may be on the path to developing CTE, which is a [degenerative brain disease](#) found in athletes and others with a history of multiple concussions and brain damage," said study author Charles Bernick, MD, of the Cleveland Clinic in Cleveland and a member of the American Academy of Neurology. CTE is only diagnosed through autopsy after death, but symptoms include memory loss, aggression and difficulty thinking.

The study involved 35 boxers and 43 mixed martial arts athletes with an average age of 29 who were part of the ongoing Professional Fighters [Brain Health](#) Study. The fighters were given computer tests that measured memory and thinking skills and underwent MRI brain scans. Years of fighting and number of fights were recorded based on self-reporting and published records. The fighters were then split into two groups: those who fought for nine or fewer years and those with more

than nine years of fighting history.

In both groups, those with more years of fighting and more fights per year were more likely to have lower brain volumes in three areas of the brain. In those with fewer than nine years of fighting, there was no relationship between the years of fighting or the number of fights per year and the results on memory and thinking tests. But for those who had fought for nine or more years, those with more fights per year performed worse on the thinking and memory tests than those with fewer fights per year.

"Our study shows there appears to be a threshold at which continued repetitive blows to the brain begin to cause measurable changes in memory and thinking, despite brain volume changes that can be found earlier," said Bernick.

Provided by American Academy of Neurology

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