Footballers could be at risk of dementia from blows to the head, study suggests

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Wednesday 15 February 2017 00.01 GMTLast modified on Wednesday 22 February 2017 17.37 GMT

Findings show potential link between repeated sub-concussive head impacts and degenerative disease, although no clear link to football established

Years of heading balls and colliding with other players could be damaging footballers’ brains and putting players at risk of developing dementia, scientists have suggested.

The claim comes from the researchers behind a small study which examined the brains of six footballers who developed dementia after long careers in the sport.

Postmortems found that all six had [Alzheimer’s disease](https://www.theguardian.com/society/alzheimers), while four also showed evidence of [chronic traumatic encephalopathy](https://www.theguardian.com/sport/2016/feb/03/oakland-raiders-ken-stabler-cte) (CTE) – a degenerative disease linked to repeated blows to the head. Both CTE and Alzheimer’s disease are linked to the build up of clumps of particular proteins in the brain – although the location of these proteins is crucial in diagnosing CTE, which can only be done after death.

“Our findings suggest that there is a potential link between repetitive sub-concussive head impacts from playing football and the development of CTE,” said Helen Ling, a co-author of the study from Queen Square Brain Bank for Neurological Studies at the University College London Institute of Neurology.

However, others were quick to warn of the study’s limitations, pointing out that it showed no clear evidence that playing football could increase the risk of developing dementia. What’s more, neither genetic or wider aspects of the players’ lifestyle were taken into account – factors which are known to influence the risk of developing dementia.

The authors admit that it was also not clear whether the players would have gone on to develop dementia if they hadn’t spent time on the pitch.

“The most pressing question now to ask following up [on] this study would be how common dementia is among retired footballers,” said Ling. “If we can demonstrate that the risk is higher than the normal population that we will know we really need to urgently look at who is at risk and put protective strategy in place.”

The [impact of blows to the head on the health of those who take part in sports](https://www.theguardian.com/sport/2014/mar/08/rugby-sport-head-games-film-brain-damage-dementia) has received growing attention in recent years, most notably in American football and boxing. According to research from the Boston University CTE centre, 90 of 94 former NFL players whose brains were studied tested [positive for the disease](http://www.bu.edu/cte/our-research/case-studies/), and last year the NFL officially [acknowledged the link](https://www.theguardian.com/sport/2016/mar/14/cte-nfl-link-football-brain-disease-senior-official-acknowledges) between head trauma and CTE.

In football – or soccer – the issue has received less attention, although the situation is beginning to change. In 2002 an inquest found that veteran player Jeff Astle [died from “industrial disease”](https://www.theguardian.com/uk/2002/nov/12/football.stevenmorris), ruling that the player’s dementia was the result of repeatedly heading the ball.

Published in the journal [Acta Neuropathologica](http://dx.doi.org/10.1007/s00401-017-1680-3)by a team of British researchers and funded by the Drake Foundation – an organisation dedicated to exploring the impact of concussion in sport – the new study found that the six men who underwent postmortems had a variety of other conditions present among them that would have contributed to symptoms of dementia, with all six showing signs of Alzheimer’s. All six showed tearing of the septum pellucidum, a thin membrane in the centre of the brain. “This is a feature very common in professional boxers and it’s been linked to repetitive traumatic brain injury,” said Ling.

With previous studies having shown the rate of CTE in the general elderly population to be around 12% and tearing of the septum pellucidum around 6% in the general population, the scientists say the higher prevalence in the new study could be down to impacts to the head during the men’s football careers.

The authors admit that it is not known how frequently, or with what force, blows to the head could trigger CTE. With only five of the six who underwent postmortem reported to have had concussions during their career, and then only once each, the study suggests sub-concussive blows could take their toll.

But Huw Morris, another author of the research from UCL, played down the need for concern among those who enjoy a kickabout. “I don’t think that in general terms these are findings that can be extrapolated to the general population,” he said. “These are people with very high amount of playing and exposure to whatever the head injury risks are within football.”

The team say more research, and larger studies, will be needed to unpick the issue further and welcomed research attempting to pick up signs of CTE before death.

Peter Jenkins, a neurologist and researcher in traumatic brain injury from Imperial College London, who was not involved in the study, emphasised the small scale of the research, adding that it does not tackle the issue of how common CTE is in footballers, or what sort of blows could cause it. “We need to spend more time really determining how many people get dementia who have a history of head injuries and then how we can determine what is actually attributable to the head injuries and what is just going to happen anyway,” he added.

Morris agreed that people should not hang up their boots just yet. “One of the really important risk factors for dementia is cardiovascular risk. Ex-footballers have much lower cardiovascular mortality – hypertension, heart attacks and strokes – than do the general population,” he said.

“So it remains the case that football is overall beneficial for your overall health. Ex-footballers have a lower mortality than the general population, but nevertheless we need to understand a lot more about these brain diseases, especially as we are all part of an ageing population.”