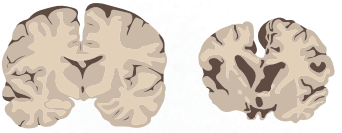
Study links American football and brain disease

Research published in the *British Medical Journal* estimates a minimum one-in-four prevalence of C.T.E. among deceased NFL players – with data indicating that the sobering reality could be potentially far greater

WHAT IS C.T.E.?

Chronic Traumatic Encephalopathy *is a degenerative brain disease associated with repeated impacts to the head*

- Neurological condition can only be definitively diagnosed after death – caused by not only major concussions, but cumulative subconcussive hits



Normal brain ***C.T.E. brain***

Repeated lifetime trauma causes brain cells to die and tissue to shrink

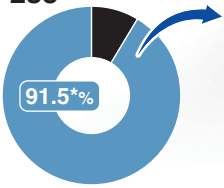
Symptoms

- Memory loss and confusion
- Mood changes
- Executive dysfunction
- Impulsive behaviour, depression and addiction

STUDY FINDINGS

*Researchers identified **878** former NFL players – who died between 2016 and 2021 – and carried out postmortem diagnoses*

Brains examined
235



Diagnosed with C.T.E.
215

*If minimum **24.5%** rate applied to NFL rosters, equivalent would be **13** players per team*



Total 1696 NFL players, 32 teams. ≈416 C.T.E. cases

24.5% ***Minimum prevalence across entire cohort (215 of 878), even though almost three-quarters were never tested***

THE AMERICAN DREAM

*Growing number of C.T.E. cases has had negligible effect on NFL's popularity, which generated **$23bn** revenue in 2024. Meaningful change may have to begin at grassroots level*

Levels of American football

Youth → High school → College football → NFL

- **Reducing risk:** Researchers recommend children avoiding full-contact youth football – C.T.E. has been found in 15-year-old boys
- **Equipment myths:** No evidence found to indicate helmets and mouth guards effectively reduce brain injuries



LEGACY

*Growing awareness of C.T.E. has expanded sample size for research. Eight members of 1972 **Miami Dolphins** – only undefeated team in NFL history – have been diagnosed with disease, including **Mercury Morris** (inset) who died in 2024, age 77*

Sources: New York Times, Guardian

*91.5% of examined brains had CTE

Pictures: Pexels (Kodi Baines), Getty Images

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