

What Athletes Should Know About CTE

What is CTE?

Chronic Traumatic Encephalopathy (CTE) is a progressive brain disease associated with repeated hits to the head.

Researchers believe the risk is primarily related to the **total number and strength of repetitive head impacts** a person experiences over their life. Right now, CTE can only be definitively diagnosed after death through examination of brain tissue.

What causes CTE?

The strongest evidence points to repeated head impacts as the main risk factor for CTE. These impacts can include:

Concussions

Nonconcussive hits
(hits that do not
cause symptoms)

Repeated contact over
many seasons or years

Who is at risk for CTE?

CTE has been found in athletes who played football, ice hockey, soccer, rugby, wrestling and other contact sports, as well as some military veterans and non-athletes exposed to repetitive head impacts. Research has consistently shown a **dose-response** relationship, meaning:

The more years of repetitive head impacts someone experiences, the higher their risk of developing CTE.

Examples from published research include:

- Every additional year of tackle football, ice hockey and rugby participation is associated with increased odds of developing CTE.
- Former tackle football players who received more total force to the head were significantly more likely to have CTE than those who received less force.

Important facts

- Repeated head impacts — **not just diagnosed concussions** — drive CTE risk.
- Number of concussions **does not predict** who gets CTE.
- **Not everyone who plays contact sports** develops CTE.
- Scientists are actively researching why **some people may be more vulnerable** than others.
- Researchers are working to develop ways to **diagnose CTE during life**.

Possible symptoms associated with CTE

Some people later diagnosed with CTE experienced problems with:

Thinking and
memory

Decision-
making

Controlling
behavior

Depression

Dementia
(later in life)

What athletes can do to help prevent CTE

Because repeated head impacts are believed to drive CTE risk, the best-known prevention strategy is to reduce the number and force of repeated head hits.

Ways to reduce exposure:

- Limit unnecessary contact in practice
- Reduce repetitive head impacts during drills
- Learn techniques that avoid head contact
- Follow rules designed to reduce dangerous hits

What has **NOT** been proven

- **No helmet or helmet cover** has been proven to prevent CTE or reduce CTE risk.
- **No mouthguard** has been proven to prevent CTE or reduce CTE risk.
- **No neck equipment** has been proven to prevent CTE or reduce CTE risk.
- **No supplement or medication** has been proven to prevent or treat CTE.
- **No concussion protocol** has been proven to eliminate or reduce CTE risk.

Why this matters

Sports provide important benefits, including:

Physical
fitness

Teamwork

Leadership

Discipline

Friendship and
community

Understanding the science of brain health helps athletes, families, coaches, and schools make informed decisions about reducing unnecessary head impacts while continuing to enjoy the benefits of sports.

*This educational material is intended for high school athletes (approximately ages 14+) and older.
Educational information only. This fact sheet is not medical advice.*

Learn More



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