

A Public Message to Athletes, Families, & Coaches Chronic Traumatic Encephalopathy (CTE): Questions and Answers

Athletes and their families hear news reports about the risk of brain injury in sports. They hear that some athletes who have had repeated concussions or played contact sports for many years may experience changes in the way they think, feel, or behave. For some athletes, when doctors looked at their brains after their deaths, abnormal changes in brain cells were seen. Some scientists have called this type of change *Chronic Traumatic Encephalopathy* or *CTE*. They think that CTE is a result of concussions and/or repeated hits to the head during a player's career. Understandably, CTE can cause much fear and worry for athletes, their families, and their friends. CTE is real, but we are still learning about it. Just because you play contact sports or have had concussions does not mean you will develop CTE. So, what do we know and what don't we know about CTE?

What is CTE?

CTE is an abnormal build-up of a protein called "*tau*" in brain cells in specific locations in the brain. Tau can be seen with a microscope after death. Abnormal *tau* is found in other parts of the brain in many medical conditions and is present in the brains of people who never played contact sports or had concussions. We still do not know what exactly causes this abnormal *tau* build up. Some studies suggest a relationship between the number of years playing contact sports and the development of CTE, but the research is not clear. Right now, CTE can only be diagnosed **after a person's death**. Special lab tests are used to examine brain tissue after death to look for abnormal *tau* in the brain. At this time there is no lab test for detecting CTE in a living person.

What are the signs that someone has CTE?

Although much research is being conducted, the simple answer is we do not yet know. There are no *validated criteria* (proven rules) for diagnosing the clinical syndrome of CTE in a living person. We do not know whether CTE is associated with specific mental health or neurological problems. Some of the problems reported in people who are later diagnosed with CTE include being more forgetful, feeling depressed, being irritable, and/or behaving in a way that was unusual for that person. However, these problems can also be seen in people with other medical conditions that are not associated with CTE, like depression, anxiety, dementia, and substance abuse.

Are children who play contact sports going to get CTE later in life?

There is very little research on this topic. In one study, a small percentage of men who played contact and collision sports in high school were found to have CTE in their brains after death. On a positive note, several large studies have found that men who played high school football, and other contact sports, were not at greater risk for later in life neurological diseases, depression, or cognitive impairment. Research in this area is ongoing.

Can CTE be prevented?

Right now, we do not know how to prevent it. However, we do know that for all sports, we can play smart. **Protect** the brain by avoiding hits to the head. **Control** contact in practices. **Teach** safe techniques and skills. **Wear** gear that fits right. **Play** fair. Sports and exercise are important to overall health and we need to make them as safe as possible. We need coaches, parents, and all those who help with youth sports to learn about concussion and how to protect our kids. And we need to be clear that playing sports does not mean a person will develop CTE.

What should you do if a sports player feels changes in her or his mental abilities?

If you are worried about unusual changes in health, mood or behavior, or about CTE, talk with a licensed doctor who understands CTE, concussion, and sports play. There are treatments to help with these symptoms and disorders.

For other information about CTE, please see "Answering Questions about Chronic Traumatic Encephalopathy CTE" at <https://www.cdc.gov/traumaticbraininjury/pdf/CDC-CTE-FactSheet-508.pdf>

To find a neuropsychologist doctor in your area of the country who understands brains and sports, go to www.sportsneuropsychologysociety.com.

Disclaimer: Information presented in this document is not intended as medical consultation, guidance, prescription, or advice. It is based on our current scientific knowledge of CTE at the time of publication. The reader should consult a licensed health care provider about any health concerns.