



CENTER FOR THE STUDY OF TRAUMATIC ENCEPHALOPATHY

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Mr. Chairman, Ranking Member Smith, and Members of the Committee, thank you for the invitation to testify today on brain trauma in football, an issue that has become my life's work. My name is Chris Nowinski, and currently I am a Co-Director of the Center for the Study of Traumatic Encephalopathy at Boston University School of Medicine, and Co-founder, president, and CEO of the non-profit Sports Legacy Institute, or SLI, which is dedicated to solving the sports concussion crisis, and also a member of the board of directors of the Brain Injury Association of America.

When it comes to my personal identity, I will always see myself as a former Harvard football player, and I hope this enables me to provide a unique perspective as a current brain trauma researcher, and post-concussion syndrome survivor. I began playing football in high school drawn in by the spectacle on television and the opportunity to hit people as hard as I wanted without getting in trouble. As a two-way player in high school and an All-Ivy League defensive tackle at Harvard, I probably hit my head over one thousand times a year from the ages of 13 to 21.

The concussions began happening at Harvard, and continued when I became a professional wrestler for World Wrestling Entertainment, where I played an arrogant Ivy League snob - another story for another time. My concussions began happening so frequently, and with such severe symptoms, that I was forced to retire at age 24. I was left with an unreliable memory, daily throbbing headaches, depression, and even developed a dangerous sleepwalking habit. The first seven doctors I saw couldn't figure out why my last concussion was so devastating and why I didn't bounce back.

It wasn't until I met Dr. Robert Cantu, my cofounder at SLI and now co-director at the Center at BU, who is also testifying here today, that I learned what had been happening to me. He was the first person to ask me "How many concussions have you had?" I told him one. He was the first to also ask, "How many times have you been hit in the head and become confused, dazed, or considered yourself 'dinged?'" I said "Doc, that happens all the time." He said, "The symptoms you are experiencing are likely the result of cumulative trauma. In addition, the fact that you never took a day off for those injuries means that each one was more damaging than it needed to be.. Had you chosen to rest, you would have probably recovered by now."

That was the first I heard of cumulative damage, and the first I heard of resting concussions. There I was, 24 years old and a Harvard graduate, and I had no knowledge of the consequences of the brain trauma I experienced for eleven years. When I signed up to play at age 13 and was allowed to ram my head into my friends for fun, no adult around me thought it was appropriate to give me the information and training I could have used to protect myself. I lost five years to those headaches, and only recently began enjoying waking up to face a new day again. I first chose to dedicate my life to this issue because I don't want to see that happen to others.

But while there is a 'concussion crisis' in football, I've only recently realized the scope of the true elephant in the room, that of Chronic Traumatic Encephalopathy, or CTE, a degenerative brain disease caused by the thousands of hits that football players, and other athletes like boxers, hockey players, and soccer players, receive in the course of a sports career.

My colleagues testifying here today, Dr. Cantu and Dr. Ann McKee, will explain to you the nature of this devastating disease.

In layman's term, hitting your head thousands of times appears to create a disease that slowly and quietly causes your brain cells to die. It may be happening inside my head right now. If it is, once it reaches a tipping point, I'll begin showing symptoms that are cognitive, emotional, and behavioral. I'll begin changing, I'll begin losing control, and I'll begin losing myself. If I don't die from the cognitive and emotional problems that lead CTE sufferers to hearing voices, drug problems, and suicide, I will die with dementia that may last 30 years, and bankrupt my family, if they haven't left me already because of my uncontrolled aggression and violence.

I don't know if I have CTE, and it doesn't really matter, because today we cannot diagnose it while someone is alive. We cannot treat it and we cannot cure it. Today, we can only prevent it, but to do this we have to dig deep and find the will, because this Friday night, in small towns across America, you can be sure we are creating it.

We have no idea how widespread the disease really is. Dr. McKee has diagnosed it post-mortem in 11 of 11 former college and professional football players that died at ages ranging from 37-82. It has been found in men like Andre Waters, Tom McHale, John Grimsley, Wally Hilgenberg, Terry Long, Justin Strelczyk, Mike Webster, Mike Borich, and Lou Creekmur. The early stages of the disease have even been seen in an eighteen year-old former football player. It is certainly not 100% of football players that competed eight or more years, but it is certainly not a small percentage.

Today we can decide upon a denominator to elevate our level of urgency. If the next 89 brains we examine are negative for CTE, and only 11 of 100 football players suffer from this disease, is it still a problem? I think we'd all agree that yes, if 11% of athletes develop a devastating progressive brain disease solely because they chose to play a contact sport like football, we have a catastrophic problem. I can guarantee we won't find 89 healthy brains in a row, because we have yet to find one, so the only question left is, do we have the will to take action?

The public discussion, and the primary focus of these hearings, has been on the professional game, which is appropriate due to its visibility and prominence. The NFL sets the standard for the rest of football and their players are the role models for our young people.

It is also appropriate because the NFL has been the loudest and most significant voice dismissing the evidence that there is a problem in football. I don't know why they are so critical. Based on the research their own Mild Traumatic Brain Injury Committee has conducted, I am confident they are not sticklers for scientific truth. Whatever their motivation, for the last five years they have been a major impediment to children and parents learning about this disease, and taking steps to prevent it.

Some parents still see the NFL as something romantic, rather than simply another business owned by billionaires. Therefore, they still believe the NFL when they doubt the research on CTE, and they still sign up their kids with the dream of them becoming NFL stars, blind to the risks of the game.

As someone who showed up to class in college, I can tell you that when NFL spokespersons refute the risk of CTE by saying to the New York Times, "There are a great many people who have played football and other contact sports for many years and at high levels who do not appear to have suffered these types of deficits," they are being intellectually dishonest. People smoke and don't get lung cancer, but enough people do that if I lit up a cigarette in this room right now people would get angry and I'd be fined. Those at the NFL who give those quotes are not stupid, so belittling this important research with such pithy comments is something sinister, a choice to intentionally mislead the public about the risk that playing football has to their health. As someone who really could have used that information when choosing to play the game, it makes me more than a little upset.

So as we move forward, I hope we can recast this issue as a public health crisis. We must remember that 95% of football players are under the age of 18 and under the age of consent, so the idea that "we know what we are getting into" is erroneous.

- We must also remember that this affects millions of young boys. In fact, one in eight high school boys play football in America, and millions more participate at the junior high and elementary levels.
- We must remember that the young, developing brain is more sensitive to trauma.
- We must remember that younger players have weaker necks than adults, making head trauma more damaging to the brain. In fact, a recent study out of the University of Illinois actually found high school players take greater forces to the brain than college players.
- We must remember that most concussions, perhaps as many as 90%, go undiagnosed.
- We must remember that nearly half of players, even when diagnosed, return-to-play too soon, before their brains have had the chance to recover physiologically.

- And we must remember that most children don't have access to medical care or oversight at football practices and games. Less than half of high schools have athletic trainers.

As we try to assess the options available to us, we must remember that the game of football has not always been played as it is today. In fact, the most consistent aspect of the game has been change. In 1905 the game was so dangerous, regularly killing participants, that President Theodore Roosevelt summoned the coaches of Harvard, Yale, and Princeton to Washington D.C. for a summit on how to make the game safer and threatened to take action in the absence of significant reform.

Out of that meeting came the American Intercollegiate Football Rules Committee, and that Committee, among other things, legalized the forward pass and made other changes to eliminate dangerous collisions. Over and over, football has had to be changed to be made safer, but now we face a new challenge. CTE is a deceptive, quiet killer. The disease begins during a player's career and then hides, quietly killing brain cells until the athlete begins showing symptoms years later.

Football collisions may now be more dangerous to the brain than ever with the combination of bigger, stronger, and faster players and hard-shelled helmets that are often used as a weapon to initiate contact, creating a type of repetitive trauma to the brain that has never existed before.

The discovery of CTE inside the brains of so many ex-football players has shown us that it may be time for new change, and a new Committee. Except this time, it is a Committee to Save Football. In light of the new evidence of CTE in 100% of players studied at Boston University's Center for the Study of Traumatic Encephalopathy, it seems appropriate that we again reevaluate how we play the game of football before the 2010 season and at all levels of play: youth, high school, college, and professional.

If we can agree that the game is broken and needs to be fixed, we can pursue a number of paths to a safer game **without fundamentally changing football**. This morning we posted a 10 Point Plan to Save Football on the website of the Sports Legacy Institute at www.sportslegacy.org. The proposals include 10 different avenues to create a safer game. The first proposal, to reevaluate how we practice -how often we allow players to hit and the drills we use - could cut the number of blows to the head in half. Combined, the ten point plan could easily eliminate 75% of brain trauma and concussions. All can be enacted by the 2010 season. It is simply a question of leadership.

Part of the reason I have a voice in this debate, apart from my personal and professional experiences, is that in this debate I've always been reasonable, and when I've said the problem is worse than we realize, unfortunately I've been proven right. And with that in mind, I urge you to take swift action to change the course of this problem. This is not hyperbole, this is not exaggeration, this is not an emotional plea. This is a unique opportunity to change the course of the lives of millions of young men and women and to cut off a growing public health problem at the pass.

So much of this battle has mirrored the Big Tobacco problem of the last 50 years. I ask you, if you were able to create all the smoking laws and awareness we have today back in the 1950's, when the first conclusive pathological research was done linking smoking to lung cancer and cardiovascular disease, would you choose to save those millions of people who did not understand the risks of smoking?

In this case, we are dealing with children, and we are dealing with a problem that can be significantly remedied quickly and cheaply tomorrow. We just have to decide if we have the will.