



CENTER FOR THE STUDY OF TRAUMATIC ENCEPHALOPATHY

Written Testimony of Christopher Nowinski

Co-Director, Center for the Study of Traumatic Encephalopathy
Boston University School of Medicine

President and CEO, Sports Legacy Institute

Before Committee on the Judiciary
United States House of Representatives

Hearing on "Legal Issues Relating to Football Head Injuries, Part II"

Monday, January 4, 2010

Mr. Chairman, Ranking Member Smith, and Members of the Committee, thank you for the invitation to testify again today as a part of the second hearing on brain trauma in football. My name is Chris Nowinski, and currently I am a Co-Director of the Center for the Study of Traumatic Encephalopathy (CSTE) at Boston University School of Medicine, co-founder, president, and CEO of the non-profit Sports Legacy Institute, or SLI, which is dedicated to solving the sports concussion crisis, and a member of the board of directors of the Brain Injury Association of America.

My testimony from the prior hearing on October 28, 2009, provides my background with concussions in sports, beginning with my football career at Harvard University. At the prior hearing in October, I focused my testimony on two major battles in what is appropriately described as a two-front “concussion crisis.” First, to define the issue today as we see it, football is currently plagued by a problem with concussions and also a problem with Chronic Traumatic Encephalopathy, or CTE, the progressive degenerative brain disease caused by repetitive brain trauma, including both concussions and subconcussive blows to the head.

The problem with concussions in football is that there are too many, and they need to be better prevented, reported, diagnosed, and managed. The problem with CTE in football is that in our research at the Center for the Study of Traumatic Encephalopathy at Boston University School of Medicine, we have yet to find a brain of an athlete who played football in college or beyond that doesn’t show signs of the disease; which becomes more and more shocking with each additional case. Unfortunately we cannot predict with any accuracy the risk to athletes who only play football through high school, but there is evidence to suggest that the brain damage may begin at the youth level. A recent study by Broglio et. al. that found that high school players take more force to the brain in football collisions than even college players, due partially to the fact that they have weaker necks. In addition, at our Center, Dr. Ann McKee, who testified in the first hearing, identified the beginnings of CTE in a young football player who died at 18.

Fortunately, the solution to both problems appears to be virtually the same – fewer impacts to the head, reduced total brain trauma, fewer concussions, and better diagnosis and treatment of concussions.

The two major battles that were being fought in October highlighted two different aspects of this public health crisis. The first was that truthful information on the risk of CTE and magnitude of the concussion problem, as well as meaningful information on HOW to reduce risk, was not reaching youth athletes, coaches, and parents.

The second was that the National Football League, by denying the clear link between CTE and brain trauma, as well as minimizing the risk of concussions, was subverting the positive efforts of organizations like the Centers for Disease Control and the Sports Legacy Institute. Instead of helping, the NFL was burying its head in the sand, allowing this public health crisis to flourish.

I am amazed to see how much has changed in the last two months since the last hearing. The hearings in October, backed by growing research and a changing culture, appear to have awakened the NFL in a way many never thought possible, and now the NFL is setting the standard on concussion care and research.

Among the changes announced since the hearing, the NFL, with assistance from the NFL Players Association has:

1. Changed the leadership of their Mild Traumatic Brain Injury Committee
2. Created a rule that players with diagnosed concussions must see an independent neurological expert prior to return-to-play
3. Widened the guidelines for players not allowed to return-to-play the same day of a concussion
4. Instructed the NFL Competition Committee to continue to look for ways to reduce brain trauma in games
5. Developed a committee to look for ways to reduce brain trauma outside of games
6. Influenced change in youth education through
 - a. Public Service Announcements approved by the CDC
 - b. An online coaching certification curriculum as part of the USA Football training program
 - c. Further distribution of the CDC Heads Up program
7. Announced a second mandatory “Concussion Summit” for NFL team medical staffs
8. Developed a program to test safety equipment

Other developments have occurred since that announcement. Under new executive director DeMaurice Smith, the National Football League Players Association continued its strong trajectory on addressing this issue at all levels by officially collaborating with the CSTE at Boston University. They will encourage active and retired players to participate in CSTE research.

The NFL has also taken an active role on the research front, announcing they are encouraging active and retired players to participate in our brain donation program. In addition, the NFL has offered to financially support some of the research conducted at the CSTE, although the details of the arrangement have yet to be worked out. Our research team must always have complete independence from outside interests to maintain the integrity and scientific vigor of the research, and in early conversations the NFL, they have expressed their willingness to support us in a way that maintains our independence.

The changes the NFL has made since October allow us to take a dramatic step forward in addressing this public health crisis. The researchers and advocates can spend more time addressing the actual problem of concussions and CTE, rather than the prior focus on changing the minds of those contributing to the problem.

I imagine many of my colleagues today will point out that the battle with the direction of the NFL’s leadership on this issue is far from over, and that in no way should we stop pushing for more change and action on this issue.

There are some who are concerned that the NFL is trying to silence their harshest critics through the promise of research funding.

And there are others, including our many brain donors that are retired NFL players, that will say these changes are too little too late, and that the NFL is still accountable for those injured during the years of denial.

I believe that the fight is far from over, but I am pleased with the direction in which the NFL is moving and impressed with how much has been accomplished; I am now going to focus on what needs to be accomplished going forward. I will say that the NFL's current actions do not erase the past, but from the perspective of saving lives, the only way we can undo the damage is through prevention and developing a treatment or cure for CTE. We do that by moving forward. We've temporarily won the public relations battle and the hearts and minds campaign, but we still can't be sure the changes that have been made will truly protect children playing the game today from developing the cognitive and behavioral impairments caused by CTE in the future.

I'd like to focus on where we go from here to protect those most vulnerable. To begin, we must recognize that not every concussion can be prevented. But in a perfect world, athletes do not suffer unnecessary concussions, athletes do not suffer 'too many' concussions, and concussions are always reported, properly diagnosed, and properly managed.

In a perfect world, sports evolve to reduce total brain trauma (including those milder, repetitive subconcussive hits to the head) to a 'tolerable' level, whatever that may be, so that athletes do not eventually develop CTE due to recreational sports.

Reaching this perfect world has always required a culture change, and a culture change in football has always required a change in the attitudes of NFL players. NFL players are role models and heroes of younger football players. Because of the educational efforts of a large group of doctors, advocates, and members of the media, the information has reached NFL stars. Now that the NFL culture has stopped punishing players for suffering and sitting out with concussions, we've seen that culture change happens virtually overnight.

I was overjoyed to hear Kurt Warner, quarterback for the Arizona Cardinals, say in December, "I can tell you I wrestled with it when I was going down to that room to talk to them (before the game), saying, 'Do I not want to tell them everything so I can play?' But I had to go, 'What are you thinking? This is bigger than that.' The easy thing to do is play. The hard thing is to make that decision where you feel like you could be hurting your team, but you don't know whether you're putting yourself at risk or not."

It's becoming abundantly clear that we've all been locked in a game of chicken. No one wanted to be the first to flinch and admit they'd prefer to sit out when they have a concussion because the culture would question their commitment or strength. Now that athletes are advised to sit out, we are seeing a revolution overnight, and it was clearly simmering just below the surface this whole time. Players can rest with their reputations intact because management and doctors are playing the role of the 'bad guy,' forcing players to sit out 'against their will,' or at least that is the perception. This has also allowed management to step back and see that this behavior actually protects their multi-million dollar investments. I anticipate fewer great players retiring early from concussions. It's really a win-win all around.

It's encouraging to discover NFL players are gaining awareness of the risks of CTE and are willing to discuss it. Philadelphia Eagles running back Brian Westbrook recently said, "That's my biggest concern. How am I going to be when I'm 50 or when I'm 60? Will I have all these brain diseases and will I have a problem remembering things? . . . Now, I'm trying to get myself together with the help of the doctors as well as coach [Andy] Reid and the training staff. Now, the most important thing is to get 100 percent healthy - and not play football . . . until I'm 100 percent healthy."

I felt a hint of nostalgia when the Pittsburgh Steelers' Hines Ward questioned Ben Roethlisberger's commitment when Ben sat out with a concussion. Ward said, "I could see some players or teammates questioning, like, 'It's just a concussion. I've played with a concussion before.' It's almost like a 50-50 toss-up in the locker room. Should he play? Shouldn't he play? It's really hard to say. I've been out there dinged up. The following week, got right back out there."

What Hines said was irresponsible and wrong, but I don't really blame him, because I'm pretty confident no one has ever sat down with him and explained concussions, second-impact syndrome, or CTE. He has likely not seen the ravaged brain tissue of the dead athletes with CTE that our center has studied. And, he has likely not sat down with the widows of deceased players whose CTE destroyed their lives, their marriages, and their families. But what was most fascinating is that no player publicly came to his defense. I think that Ward may have made the last public statement by an NFL player that questions a player sitting out with a concussion. At least, I hope so.

This culture change will almost certainly trickle down to youth sports, especially at the high school level, where athletes are mature enough to understand the risks but less able to incorporate that understanding into behaviors. We must always remember that 95% of football players are under the age of 18 and under the age of consent, so it is our responsibility to not let them throw away their futures with our endorsement.

Teenagers love to imitate their sports heroes, and every NFL player that acts and speaks responsibly on concussions sets a tremendous example.

Smoking has provided many great analogies during these hearings, and it provides another here. Today, close to 100% of Americans know that smoking cigarettes is hazardous to their health. Yet 20% still smoke. And 80% choose not to. I anticipate we can expect a similar level of success, if we can ever reach 100% penetration on education and awareness. Imagine youth sports with an 80% concussion reporting rate. Sure, with player surveys showing concussion rates of around 50%, we may not have enough players left to field a team by the end of the year, but maybe that will inspire us to more urgently find ways to play a safer game.

As we push ahead, let's remember that these educational programs do not do a great job protecting the youngest athletes. Younger players cannot understand concussion risks, and they cannot verbalize their symptoms. Therefore, in this changing culture it seems logical that we rethink how we introduce them to contact and collision sports. It's been said time and time again,

but the younger brain is more vulnerable to brain trauma, and the fewer lifetime hits to the head, the better.

At the first hearing on this issue I entered into the record the Sports Legacy Institute's 10 Point Plan to Save Football. It provides a strong framework to assess our progress in addressing the options available to us to make sports safer.

1. Reevaluate how the game is **practiced**
 - Status – little formal discussion of reducing brain trauma in practice
2. Encourage mandatory brain trauma and concussion **education** for coaches, athletic trainers, parents, and athletes
 - Status – legislation has been passed requiring formal education for high school coaches in Washington, Oregon, and Texas
3. Reevaluate **protective equipment**
 - Status – of the two most obvious options, there is a healthy discussion on helmets, and zero discussion of shoulder pads. The role of mouthguards in concussion reduction remains unclear.
4. Develop better methods of concussion detection and **diagnosis**
 - Status - ongoing
5. Develop better methods of concussion **management**
 - Status - ongoing
6. Consider minimum **medical resources**
 - Status – some discussion of requiring athletic trainers to play football
7. Reevaluate **techniques** of tackling and blocking
 - Status – little formal discussion
8. Reevaluate the **rules**
 - Status – NFL has made changes
9. Reevaluate **rule enforcement** and the role of **referees**
 - Status – not enough discussion
10. Reconsider the **culture** of the game
 - Status – changed at the professional level, trickling down to lower levels

If I could snap my fingers and make changes prior to the 2010 season, I would change the following:

1. **Education for Coaches** – Our Sports Legacy Institute has traveled to schools and gyms to conduct 90 minute Coaches Concussion Clinics for the few programs that so far have chosen to make concussion education a priority. However, we have limited resources, and we cannot be everywhere. The best alternative to live, comprehensive presentation is a shorter, online course. And if it were free and developed by top independent experts, there would be no barriers to adoption. If only it existed!

The CDC informed me last week that they are in the process of developing a simple, 20 minute certification course using their widely accepted Heads Up program that they hope to be ready within six months. When it is up and running, I would make an online concussion certification program mandatory for all youth coaches, similar to CORI checks. The only problem preventing this from being up and running as quickly as possible is funding – somehow the CDC has not been able to secure the

measly \$100-200 thousand dollars required to make it a top notch program. Considering the availability of bailout money from the government, as well as our willingness to spend into debt, I think the government needs to take a look at this as an investment that is easily recouped in lowered future health care costs.

I would then want this program made mandatory through all sports leagues, including USA Football, Pop Warner, American Youth Football, and other football leagues and similar organizations in other sports. I am concerned they do not have the guts to mandate such a program by the fall of 2010 without serious pressure from outside sources, so I also have a plan to create that pressure.

I plan to work with and through parents to get this free online program widely adopted. Because parents sign their kids up for sports, and because parents sign the checks, they can make demands. Parents need to be told this program is available, and free, and that coaches refuse to spend 20 minutes to be certified. I would ask them the following question:

- Is a coach who refuses to invest 20 minutes to protect your child's health **responsible enough** to coach your child?

If they answer is no, then I would ask parents to refuse to sign their kids up for programs that do not require CDC certification.

If organizations continue to refuse to make this education mandatory for their coaches, I can assure them that there are many like-minded groups, including the Brain Injury Association of America and their state affiliates, that are prepared to push through legislature that would require it. I hope it doesn't come to that.

Similar education for athletes and parents should quickly follow.

2. **Management** – The latest concussion management guidelines support the recommendation that no youth player who is diagnosed with a concussion be allowed to return to the same game. I would ask that all organizations formally adopt that guideline and expand this, as the NFL has, to include practices.
3. **Rule Enforcement and Role of Referees** – Referees should continue to increase penalizing helmet-to-helmet hits. Referees should also immediately be trained to recognize symptoms of concussions and given the authority, and the expectation, to send a player to the sideline for evaluation when they appear to have suffered a concussion.
4. **Practice** – We need to put together a commission of medical experts, youth coaches, and youth sports organizations and investigate where we can reduce unnecessary brain trauma in practice, and consider reducing how many days of full contact younger players are allowed. If a handful of drills with higher risk for brain trauma aren't discouraged or banned by fall of 2010, then we are not trying. I dare you to

watch this video on YouTube of eight year-olds and not imagine think there is a better way to train children to play football. http://www.youtube.com/watch?v=Vf-ggqLqzds&feature=player_embedded

The other parts of the 10 Point Plan require ongoing discussions in which we can make incremental gains each year. But again, it will be a question of will. Post concussion syndrome is a terrible burden on a child, and CTE is an even worse burden on a family.

I believe the biggest barrier to making sports safer for the brain has been overcome. Now that the NFL is putting their immense resources behind solving the concussion crisis, it is up to the rest of us to execute the solutions.