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# Personal Injury Report

## Is The Wave Curling? Concussions In Sports

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# Commentary

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*[Editor's Note: The authors are partners at Ford Marrin Esposito Witmeyer & Gleser in New York. Visit [www.fmew.com](http://www.fmew.com) for more information. Copyright 2012 by Stuart C. Levene and Joseph D'Ambrosio. Associate John A. Mattoon assisted with this paper. Replies to this commentary are welcome.]*

### Introduction

The last few years has seen increased attention being paid to what has been labeled a “concussion crisis” in sports,<sup>1</sup> largely as a consequence of several notorious events that have been linked to the suffering of a closed head traumatic brain injury (TBI) during sports activities — such as the recovery of millions of dollars by a high schooler for permanent brain injuries he suffered in a football game, the media linking career-incurred TBIs to a lack of impulse control exhibited by some professional football players, the “premature” cognitive problems displayed by aging sports figures as a result of career-related TBIs and even the suicide of a well-known professional football player.

Graphic images of football players incurring TBIs are routinely broadcast to the sport's millions of viewers and have become a fixture in the standard chatter of color commentary, maintaining, if not increasing, the level of public awareness and concern. Look no further than the sports media frenzy surrounding the recent (December, 2011) decision of the Cleveland Browns to send their star quarterback, Colt McCoy, back into the game within two plays (roughly 4 elapsed minutes) of his having suffered a TBI in the nationally televised Monday Night football game. This growing public awareness of the incidence of sports-related closed

head TBI<sup>2</sup> goes hand-in-hand with (or is the consequence of) scientific advances in the understanding of TBI.

### An Overview Of TBI

Following reporting by the New York Times, in October, 2009, the United States Congress held hearings on the prevalence of concussions in sports. Since then, sports-related TBI awareness has greatly increased (there are reports that ER visits for TBI have increased by 60% in the last several years) with the major professional sports — basketball, hockey and football — each instituting concussion protocols to determine when a player may return to play following a TBI.<sup>3</sup> While estimates of annual sports-related TBIs vary widely from tens of thousands to millions, the Centers for Disease Control and Prevention (CDC) has estimated that 1.7M persons suffer a TBI annually, resulting in 1.36M emergency department visits, 275,000 hospitalizations and 52,000 deaths.<sup>4</sup> Of these 1.36M emergency department visits, roughly 35% are by children 0-14 years of age (who are particularly susceptible to TBI). The National Athletic Trainers Association attributes roughly 43,000-67,000 of the annual TBI count to high school football players alone.<sup>5</sup>

Efforts to arrive at the actual number of annual “mild” TBI episodes is plagued by under-reporting. It is estimated, however, that concussions (mild TBI) account for 80% of all TBI's, with the remainder being divided equally between moderate and severe TBI's.<sup>6</sup> But, whatever the actual number is, the concern for insurers and reinsurers is the same. Is this the next broad-scale “bodily injury” threat?<sup>7</sup>

As described by Dr. Jeffrey S. Kutcher in his October 19, 2011 Congressional testimony, a TBI:

occurs when the brain moves fast enough, and suddenly enough, to disrupt the normal electrical function of its component cells. Given that the brain is floating in fluid inside of the skull, and that the head can act as a pendulum when the body is struck, movements of the brain significant enough to cause concussion can occur with or without a direct blow to the head. As long as the skull, and thus the brain inside of it, is accelerated or decelerated with enough force, the normal processes of the brain may be compromised.<sup>8</sup>

The consequences of TBI are largely a reflection of force and timing and can range from short-term and relatively mild to chronic, severe damage and even death. Perhaps the most insidious is the degenerative brain condition known as Chronic Traumatic Encephalopathy (CTE), which has been tied to repetitive concussion or sub-concussions.<sup>9</sup>

A diagnosis of TBI requires the presence of at least two indicia: (1) trauma to the head/brain that (2) results in at least transient loss of normal brain function (*e.g.*, headache, blurred vision, dizziness, nausea, etc.). There is no clear threshold for the degree of force necessary to cause TBI, and the grading of a TBI on one of several scales used to classify the trauma is done in the rear view mirror based on a clinical assessment of the victim's symptomology. Dependent as it is "on the complex and variable physiological nature of each individual's brain,"<sup>10</sup> it is not surprising that, for some people, the symptoms of even a relatively mild TBI may linger for weeks, months, or years, leading to a diagnosis of "post-concussion syndrome." The symptoms generally include depression, irritation, poor concentration, memory loss, mood swings, headaches, decreased appetite, fatigue, etc.

Some players walk away seemingly impervious to savage head "hits" with no discernible injury. The brain scans of other players have shown subtle injury following relatively routine "hits" to the head.<sup>11</sup> It is not yet understood exactly how and why the brain responds as it does to sports-related impacts. What scientists are learning, however, is that even a single relatively low impact TBI can lead to permanent injury.<sup>12</sup> However, the greater and more concerning danger lies in the

cumulative effect of multiple, individually relatively mild TBIs or concussions or even sub-concussive events.

Athletes are peculiarly susceptible to suffering subsequent TBIs before their brains have had time to heal from the initial TBI (or previous TBIs). This can lead to "second-impact syndrome," in which the consequences of the TBI are magnified.<sup>13</sup> The University of Pittsburgh has estimated that second-impact syndrome kills seven high school football players annually.

In addition to the possibly fatal consequences of multiple "mild" TBIs in a relatively short time period, repeated mild TBIs occurring over months or years can result in cumulative neurologic and cognitive deficits, such as Alzheimer's disease, dementia, Chronic Traumatic Encephalopathy (CTE) and other chronic conditions. (CTE, which involves a toxic protein buildup in the brain that kills cells and causes severe depression or dementia, has been linked to the suicide of at least one former NFL player [Dave Duerson].)

Not surprisingly, football receives the most attention in the United States with respect to TBIs. It has been estimated that 2-4M Americans play tackle football each year.<sup>14</sup> At the same time that player size and speed have increased, the sport has evolved from a grappling contest characterized by limb and torso fractures to a striking sport characterized by closed head TBIs. According to data compiled by the Head Impact Telemetry System, or HITS, it is not uncommon for a football player at the higher levels to sustain hits equivalent to the impact of a 25 mph car crash. The forces generated by such an impact are sufficient to cause a TBI.<sup>15</sup> Football helmet design has not kept pace with the changing prevalent risks. Although most helmets provide greater protection from "open head" injuries, like skull fractures, a false sense of security induced by the improved helmets may have contributed to an increase in the number of violent blows to the head, resulting in an increase in closed head injuries.

TBIs are also being suffered in soccer, hockey, lacrosse, basketball, baseball, softball, biking, horseback riding and other popular sports (not to mention boxing).<sup>16</sup> With respect to soccer, for example, a study by the Radiological Society of North America, determined that players who "head" a soccer ball with high frequency have brain abnormalities similar to those

found in TBI patients. Attention to hockey-related TBI is driven, in part, by the TBI suffered by the Pittsburgh Penguins superstar, Sidney Crosby. Crosby was injured in January 2011 and, except for a very brief return in December 2011, has not played since. Hockey has the highest rate of TBIs in teen sports according to an ESPN study, and brain scans of high school hockey players showed subtle injury after routine hits to the head during normal play.<sup>17</sup> Like the NFL players, the NHL players are also allegedly considering litigation.<sup>18</sup>

Even baseball has had to address the effects of TBIs. Batters sometimes get hit in the helmet by balls traveling as fast as 100 mph (David Wright, of the NY Mets, for example) and base-runners sometimes collide (Justin Morneau, of the Minnesota Twins).

Unlike motorcycle helmets, there are no official state or federal regulations or guidelines for athletic helmets. Guidelines have been established by some industry organizations, most notably the National Operating Committee on Standards for Athletic Equipment (NOCSAE), but these lack a consistent focus across sports. NOCSAE's guidelines for football helmets are primarily intended to prevent skull fractures, not closed head TBI. As NOCSAE's Executive Director and Legal Counsel told Congress, "[t]here is no helmet standard available today from any source that specifically addresses concussion prevention, and the development of a concussion specific standard for any protective equipment requires substantial scientific support that compliance with such a standard will in fact further eliminate or reduce the severity of concussions without increasing the risk of injury and other areas."<sup>19</sup>

### Risk Mitigation

Nevertheless, some helmet manufacturers are attempting to address the problem. For example, Riddell, Inc., which supplies helmets to approximately 84% of the NFL players, has introduced what it calls "Concussion Reduction Technology" and is marketing a "smart" helmet, which would use sensors to measure the impact of a hit to assist medical professionals in the evaluation and diagnosis of concussions and other brain injuries. Another manufacturer, Xenith, is offering a relatively new "double-shell" design. The player's head sits in a plastic, inner "shell" or "liner" that is affixed to the exterior shell and separated from the exterior shell by small, air-filled rubber bladders, intended to absorb and deflect the forces generated by a hit to the helmet.<sup>20</sup>

Xenith claims a 60% reduction in diagnosed concussions among teams using its helmet.

Dr. Kutcher is less than sanguine about the ability of helmet manufacturers to design a device that effectively prevents concussions to the same degree they prevent skull fractures.<sup>21</sup> The biomechanics are simply more complex for the former as efforts to affect the momentum of the brain are impeded by the intervening skull and source of the force. A helmet that may be effective against TBI associated with direct cranial blows, may not reduce TBI's associated with other forces causing intra-cranial brain movement (body checks in hockey, falls to the ground, etc.).<sup>22</sup>

The most serious injuries occur when an athlete is subjected to a serious head trauma before a prior head injury has time to heal. Therefore, several leagues are beginning to put protocols in place to better detect concussions<sup>23</sup> and, thereafter, restrict when an athlete may return to full contact following an injury.

The NFL, for example, has taken steps over the last three years to address concussion concerns by implementing and enforcing restrictions on helmet-to-helmet contact. The league has reduced the number of full-pad practices during training camp, and has implemented new kickoff rules after reports showed that players are more likely to suffer TBIs during kickoff returns than other parts of the game. Further, a certified, league paid, athletic trainer is to be at each game to monitor play and provide medical staffs with "any relevant information that may assist them in determining the most appropriate evaluation and treatment." The trainers will not diagnose or prescribe treatment and cannot order that players be removed from a game. However, NFL team medical staffs will be permitted to use cell phones during games to gather information relating to the care of an injured player. The NFL will also begin using sideline video monitors to assist team medical personnel in diagnosing and treating injuries. Players with TBI symptoms will not be allowed to play or practice until cleared by a neurologist.

Other professional sports have taken similar steps to improve care for injured athletes. For example, Major League Soccer (MLS) has created a concussion committee and assigned a neurologist to each team.

Reports indicate that the professional leagues' "proactive" stance has not trickled down. While the

NCAA requires that all Division 1, 2 and 3 schools have a "concussion management plan," the NCAA does not set a uniform standard, delegating the specifics of the plan to the member schools.

At the high school level, thirty-one states have enacted laws that restrict high school players from returning to action too soon after a TBI. Generally speaking, these laws include (1) mandates for formal training of coaches about how to identify signs and symptoms of a concussion, (2) requirements regarding removal from competition, and (3) "return to play" protocols. Most of these laws are modeled after the "Lystedt law" in Washington State, which was named after Zachery Lystedt, a high school football player who suffered severe TBI after returning to play before healing from a prior concussion.

### Tort Claims And Defenses

So what does the legal landscape look like? Not surprisingly, it depends.

There are several theories on which a plaintiff/athlete may base a tort claim against a school or athletic league to recover for a sports-related TBI. The traditional negligence theories upon which claims would be based include the provision of inadequate safety equipment (*e.g.*, outdated helmets), inadequate information provided to player and parents and negligent supervision and magnification of the obvious risks of the sport. Because of the increased awareness of the severe consequences of second impact syndrome and cumulative concussion or sub-concussions, plaintiffs may focus on whether the defendant implemented a concussion protocol, and whether the concussion protocol was flawed or ignored by the school.

As for the helmet manufacturers and re-conditioners, they will be subject to the same general types of product liability claims that they have historically faced. For strict liability claims, plaintiffs will be required to establish that the helmet was unreasonably dangerous for its intended purpose as a result of either design (most likely) or manufacturing defect or a failure to warn that the helmet does not protect against closed head TBI. For negligence claims, plaintiffs must show that the manufacturer did not use the degree of care that a person of ordinary prudence would have used under similar circumstances.

Helmet manufacturers may become more vulnerable under both theories if they do not adopt the latest technologies. As the technology and understanding improves, the liability bar will change.

Plaintiffs will have the burden of linking their sports-related TBI to health problems. Where the symptoms complained of succeed in short order after the TBI, causation will not be a tremendous evidentiary hurdle. Where, however, there is a "latency" period of years or decades (such as may be the case with CTE), the causation issue may become more problematic from the player's perspective. One concern from a defense perspective is the application of today's medical knowledge to the past acts/omissions. No doubt, in part, to address this (and any laws protecting defendants from the known and obvious risks of a hazardous sport), NFL players have alleged that the league knew for decades about the harm caused by blows to the head, but misrepresented the information to players. For similar reasons, we see allegations in the professional players' suits of team or league provided pain killers that falsely masked from the players the consequences of their TBIs.<sup>24</sup>

And what are some of the possible defenses to such suits? From a high level, these include the traditional array of negligence and products liability defenses, including pre-participation waivers and releases, causation (previously alluded to), contributory/comparative negligence and assumption of the risk (whether under the common law or as imposed by a state's hazardous sports statute), feasibility and efficacy of alternative design, warnings, etc. For example, NFL players, such as Maurice Jones-Drew of the Jacksonville Jaguars, have admitted that they would "hide" a concussion to play, even if doing so meant future medical problems (sound bites from the plaintiffs' bar are hinting at an economic duress argument). However, one does not necessarily assume those risks to the extent that they have been increased by a defendant's actions without the plaintiff's knowledge.<sup>25</sup> Coaches and leagues have a duty not to increase the risks inherent in sports participation such as by playing a player whose existing concussion has not yet healed or failure to regulate its member schools.<sup>26</sup>

On the professional level, claims may be limited by collective bargaining agreements or Workers' Compensation laws.

## Insurance Issues

This brings us to the question of insurance. Sports-related closed head injuries raise a host of insurance questions. For professional athletes, they will have access to disability and workers' compensation policies<sup>27</sup> as well as, in many instances, CGL policies.

On the amateur level, the largest exposure for insurers and reinsurers will be CGL policies issued to high schools and colleges. Schools typically purchase institutional package policies that provide, among others, traditional CGL coverage.<sup>28</sup>

The standard CGL policy does not contain any exclusions that would preclude coverage for the typical TBI, leaving the insurer with such fact specific defenses as known loss, expected and intended, trigger, number of occurrences, late notice, etc. Questions will also be raised regarding who is an insured. Typical CGL policies issued to high schools and colleges provide coverage for the school, as well as its executive officers and directors, but only with respect to their official duties.<sup>29</sup> Employees of the school (other than executive officers) will also be covered, but only for "acts within the scope of their employment by [the school] or while performing duties related to the conduct of [the school's] business." But, employees are not generally covered for "bodily injury" "[a]rising out of his or her providing or failing to provide professional health care services."<sup>30</sup>

The issue of the appropriate trigger of coverage will most likely be raised in the context of long-tail TBI claims (those in which the TBI symptoms were not immediately known). Perhaps guidance will be sought by the courts in their asbestos bodily injury rulings in which exposure (when the hits/contacts take place), injury-in-fact (when brain injury actually occurs), manifestation (when brain injuries become manifest) or continuous (exposure through manifestation) triggers have been utilized. Of course, depending on the nature of the injury and trigger, the usual issues of contribution among insurers will be encountered.

Even when a compensable "bodily injury" took place the number of "injuries" and/or occurrences may be up for grabs. For example, does each sub-concussive hit that an athlete incurs constitute a compensable bodily injury? Or, where serious injury occurs following multiple "mild" TBIs would all policies be triggered from the first to the last concussion, or only the policies in effect

at the time of the final concussion? And how many occurrences would an insurer be confronting?<sup>31</sup>

With respect to claims against schools, the determination of the number of occurrences will likely hinge on the plaintiffs' theory of liability. Where liability results from a school or league's decision not to put a concussion policy in place, it is possible that a single occurrence could be found, even in an "effects" test jurisdiction. However, where injuries occur because of a school's failure to follow its concussion policy, courts may find that each concussive claimant or event constitutes a single occurrence as the circumstances of the harm will be unique.

A few hypotheticals illustrate the complexity of these issues.

*Hypothetical No. 1. Former NFL players (who played between 1973 and 2003) sue helmet manufacturer claiming design defect and failure to warn that helmets did not protect against TBI. Each player suffered a concussion during his playing days but they have had different post-concussion scenarios, some have mild post-concussive syndrome, others have dementia/CTE. Let's assume that the manufacturer has CGL coverage (primary of \$1M p/o with a \$2M products aggregate) for entire period. How would a court analyze the "number of occurrences"? The interests of primary and excess insurers diverge as they did in the asbestos context. Primary carriers want single occurrence (\$1M limit). Excess carriers want multiple occurrences to keep the primary layer on the hook until the \$2M aggregate has been reached.*

The determination of the number of occurrences under this hypothetical likely will turn on whether the court applies a "cause" or "effects" test.

Under the "cause" test, the number of occurrences is based on the "cause" of the accident or harm, as opposed to the "effect." For manufacturers, the "cause" of ultimate products liability is the decision to manufacture the helmet as it did. As a result, one would expect that all of claims would be aggregated into a single occurrence. Assuming that the manufacturer's primary policy has an aggregate limit higher than the per occurrence limit, the primary policy would exhaust once the combined indemnity payments for all concussion-related products claims reached \$1M (the per occurrence limit).

Under the “effects” test, on the other hand, the claim of each individual NFL player would likely be considered a separate occurrence, and the primary policy would not fully exhaust until the combined indemnity payments reached the higher \$2M aggregate limit.

*Hypothetical No. 2. Former college football players sue NCAA alleging that they now suffer TBI caused by repeated sub-concussive blows during their playing day, and that the NCAA did not implement an adequate national collegiate policy to test the impact of sub-concussive blows on collegiate athletes. Each player suffered symptoms of TBI after his playing days ended. Which NCAA policies are triggered? Just the ones in effect during each athlete's collegiate playing career or each policy in effect between the athlete's playing career and the time each was diagnosed with TBI.*

The answer to this question likely will be determined by the trigger theory applied to toxic tort claims:

- In states that apply the “exposure” trigger, all policies in effect when the player was an active collegiate player incurring sub-concussive blows likely would be triggered.
- In states applying the “injury-in-fact” trigger, only those policies in place when a claimant was actually injured likely would be triggered. For example, New York uses an injury-in-fact trigger for toxic tort claims, which is described as “actual impairment of a bodily function.” An injury need not manifest itself during the policy period if its existence during the policy period can be proven in retrospect. This determination in the concussion context would likely involve a scientific review of each player's medical records and comparative information known about brain proteins and other markers of long-term brain damage to determine when injury took place.
- Manifestation has been described as the “time at which the disease is reasonably capable of medical diagnosis.” Under a “manifestation” trigger, those policies in place years after the playing when the TBI symptoms became manifest would be triggered.
- With a “continuous” trigger, all policies would be triggered from the date of the player's first

game/practice through the date when his/her injuries became manifest.

*Hypothetical No. 3. Ten high school football players on the same team sue the school district, trainer and coach for allowing them to continue playing after suffering concussions just to increase the team's chances of winning the state championship. How many occurrences do we have?*

The answer to this question will be of importance in determining when the school district's primary policies exhaust. Under the “effects” test applied in a minority of jurisdictions, the injuries to each individual player would likely be separate occurrences. Injuries to multiple claimants are only aggregated under the “effects” test when the injuries result from the same accident.

However, in the majority of jurisdictions that apply the “cause” test, the number of occurrences may be determined by the claimants' theory of liability. For example, if the school district simply did not have a concussion protocol in place, the “cause” of the injuries would arguably be the school's failure to implement a concussion policy. This could result in all ten injuries constituting a single occurrence.

If the school district did have a concussion policy but the coach and trainer refused to follow the policy on these ten separate occasions, there is a strong argument that the “cause” of the injury was distinct for each claimant, thereby resulting in a finding of multiple occurrences.

In short, the threat posed to insurers by TBI claims is certainly real enough to warrant advance planning by carriers. There is a developing body of science to support the problems associated with all levels of TBI and certainly an extremely large pool of potential plaintiffs — even if one discounts the high profile professional plaintiffs.

Perhaps holding back the wave are the recent rulings by the United States Supreme Court and several lower courts regarding the class action certification. The U.S. Supreme Court's decision in *Dukes v. Wal-Mart Stores, Inc.*, 564 U.S. —, 131 S. Ct. 2541 (2011) will make it very difficult for these sports-related TBI claims to be maintained as class actions. Although *Dukes* involved an employment discrimination claim, the Court's ruling applies generally to federal class

certification in any context. Given the differences in each player's TBI, individual health background, exactly how and when the injury(ies) occurred, and their respective damages, it is doubtful that class actions could ever be maintained for "monetary damages" under F.R.C.P. 23 (b)(3). That would leave only F.R.C.P. 23 (b)(2), which is limited to class actions for "injunctive" relief. But, the *Dukes* decision basically guts this mechanism for class actions, even in the medical monitoring context, by noting that the "equitable" relief of medical monitoring does not constitute the "injunctive" relief necessary to satisfy Rule 23 (b)(2).

In this new class action landscape, any effort to piggyback individual monetary damages onto a Rule 23 (b)(3) "injunctive" class action likely will be rejected for the simple reason that each person's TBI (even if "caused" by the same act or omission) is necessarily unique and, therefore, each person's damages would be different, not "common." For example, a person suffering from mild TBI, such as headaches and dizziness, would not be seeking the same damages as someone suffering from a more serious brain injury, such as early onset dementia or Alzheimer's. Given the dubious prospect for future class certification in this context, we expect the future wave of TBI claims to be more individual-based than class action-based.

Nonetheless, insurers should prepare now to address these claims if and when they arise, and pro-actively work to educate potential target insureds in an effort to reduce future claims. For example, Chartis recently launched an education and awareness program called "aHead of the Game," to help reduce the risk of concussions and other brain injuries in youth sports.<sup>32</sup> As part of this program, Chartis created educational materials, including posters and newsletters, for its brokers to distribute to at-risk insureds, such as sports leagues, schools, coaches, athletic directors, and trainers.

In sum, the defense of sports-related TBI claims will be complex and heavily dependent on scientific and, depending on the insured, products liability type experts (as to design, warnings, etc.). Perhaps a team of claims analysts should be marshaled (or at least identified) to decrease the opportunity for inconsistent claims handling and coverage positions. Potential defense counsel (and, perhaps, national coordinating counsel) should be identified to facilitate the building

of institutional knowledge regarding the legal and technical issues to reduce ultimate aggregate defense costs. The risk should be taken seriously and addressed in a pro-active manner.

## Endnotes

1. Boston University's Center for the Study of CTE (Chronic Traumatic Encephalopathy). While a "concussion" is a form of "mild" TBI, the term concussion is also often used to refer generally to all degrees of closed-head TBIs. See <http://www.cdc.gov/concussion/index.html>. Here, we use the term to connote "mild" TBIs.
2. As seen by the spate of recent books being directed at the general public, such as *THE CONCUSSION CRISIS: ANATOMY OF A SILENT CRISIS*, Carroll, Linda and Rosner, David (Simon & Schuster 2011); *KIDS, SPORTS, AND CONCUSSIONS: A GUIDE FOR COACHES AND PARENTS*, Meehan, William (Praeger, 2011); *HEAD GAMES: FOOTBALL'S CONCUSSION CRISIS FROM THE NFL TO YOUTH LEAGUES*, Nowinski, Christopher and Ventura, Jesse (The Drummond Publishing Group, 2007); *THROWAWAY PLAYERS: CONCUSSION CRISIS FROM PEE WEE FOOTBALL TO THE NFL*, Culverhouse, Guy (Behler Publications 2012).
3. See, e.g., <http://www.nba.com/2011/news/12/12/nba-concussions.ap/index.html>; <http://www.nhl.com/ice/news.htm?id=555985>; <http://www.nfl.com/news/story/09000d5d81e78cc4/article/nfl-announces-new-sideline-concussion-assessment-protocol->
4. <http://www.cdc.gov/traumaticbraininjury/statistics.html>.
5. Some experts estimate that 3,750 college athletes receive a concussion each year, while others estimate that one in three college football players have experienced a concussion before or during their collegiate careers. See 19 Health Matrix 279, 310-11.
6. Written testimony of Ann C. McKee, M.D. before the United States Senate Committee on Commerce, Science, and Transportation, October 19, 2011 ("McKee Congressional Testimony"). Dr. McKee is a professor of Neurology and Pathology at Boston University School of Medicine, Director of the VSN-1 Neuropathology Laboratory for the New England Veterans Affairs Medical Centers, Director of the Brain Banks for the Boston



University Alzheimer's Disease Center, Framingham Heart Study, and Centenarian Study and Co-Director, Center for the Study of Traumatic Encephalopathy.

7. The potential is real. For example, in *Frith v. Lafayette County School District (Missouri)*, a high school football player received a \$3MM settlement for a permanent brain injury after the school allowed him to continue playing football even after his doctor diagnosed him with a concussion and prohibited football or other physical contact. The suit was brought against the school's coaches and administrators in order to avoid Missouri's sovereign immunity caps on damages. In *Lystedt v. Taboma School District (2009, WA)* a junior high school football player was injured in the first half of a game, but was allowed to play in second half of the same game. The player collapsed right after the game, having incurred second impact syndrome. The suit was settled for \$14.6MM. In *Prevetes v. LaSalle*, LaSalle University paid \$7.5M to provide care to a football player who suffered a severe brain injury in a 2005 game, settling a case that questioned how the school handled a concussion the player allegedly suffered a month earlier.
8. Written testimony of Jeffrey S. Kutcher, MD, before the United States Senate Committee on Commerce, Science, and Transportation, October 19, 2011 ("Kutcher Congressional Testimony") at 2-3. Dr. Kutcher is a member of the University of Michigan, Department of Neurology and the Director of Michigan Neurosport Clinic. Dr. Kutcher is currently the Chair of the Sports Neurology Section of the American Academy of Neurology.
9. It is postulated that "repetitive concussive and subconcussive injury superimposed on unresolved nerve cell and axonal injury initiates a series of metabolic, ionic, membrane, and cytoskeletal disturbances that triggers the pathological cascade that leads to CTE." (McKee Congressional Testimony at 4).
10. Kutcher Congressional Testimony at 6.
11. See *Magnetic Resonance Imaging*, Vol. 30, Issue 2, Pages 171-80 (citing a study by the University of Rochester Medical Center).
12. *Journal of Neurotrauma*, Feb. 2009.
13. As Dr. McKee explained to Congress:

The brain continues to develop and mature, laying down myelinated fiber tracts, until the mid-twenties. Children and young adults recover more slowly from a concussion than adults. Youth athletes are also more at risk for concussion due to their disproportionately large head size compared to body size and the weakness of their neck musculature. Further evidence of the enhanced susceptibility of young athletes to mTBI is second-impact syndrome (SIS), an entity that has only been reported in athletes 24 years and younger, and the vast majority of the SIS cases in the literature have involved athletes under the age of 18.

SIS occurs when a young athlete sustains an initial head injury and then suffers a second head injury before the symptoms associated with the first impact have cleared (Cantu and Gean 2010). Typically, the athlete suffers post-concussion symptoms after the first head injury, which may include headache; dizziness; visual, motor, or sensory changes; confusion and memory problems. Before these symptoms resolve, which may take days or weeks, the athlete returns to competition and receives a second blow to the head. The second blow may be remarkably minor. The affected athlete may appear stunned, usually does not experience loss of consciousness but in the next few seconds to several minutes, the athlete, who is conscious yet stunned, precipitously collapses to the ground, semicomatose. The outcome is often fatal or associated with severe permanent disability. The pathophysiology of the SIS is generally believed to be caused by a loss of autoregulation of the cerebrovasculature. This dysautoregulation leads to precipitous brain swelling, high intracranial pressure, brain herniation and often, death. The adolescent or youth brain does not autoregulate well and is more susceptible to poor outcomes following mTBI (Chaiwat 2009).

McKee Congressional Testimony at 4-5.

14. See <http://www.nytimes.com/2010/10/21/sports/football/21helmets.html>.
15. See Guskiewicz, et al., *Measurement of Head Impacts in Collegiate Players: Relationship Between Head Impact Biomechanics and Acute Clinical Outcome After Concussion*, *Neurosurgery*, Volume 61, Issue 6, pp. 1244-53 (December 2007).
16. These injuries are not limited to male athletes. One study reported that female high school soccer players had the second highest concussion rate of participants in 12 sports in Virginia.

17. See *Magnetic Resonance Imaging*, Vol. 30, Issue 2, Pages 171-80.
18. See <http://nhl-red-light.si.com/2011/08/23/nhl-vulnerable-to-nfl-concussion-lawsuit>.
19. Statement of Mike Oliver before the U.S. Senate Committee on Commerce, Science and Transportation, dated October 19, 2011 ("Oliver Congressional Statement"), at 3. Oliver is the Executive Director and Legal Counsel for the NOCSAE.
20. <http://www.xenith.com/football/innovation/#shock-bonnet>. See also <http://www.schuttsports.com/asp/Sport/ProductCatalog.aspx?id=108>.
21. Kutcher Congressional Testimony at 5.
22. As Oliver told Congress:
- What the NOCSAE standard cannot yet address, and which is not addressed by any other helmet standard in the world, is how to establish and incorporate a threshold for rotational accelerations of the head that result from impact forces that are not directed through the center of gravity of the head. These rotational accelerations are directly involved in causing a significant number of concussions, and these types of accelerations can occur even without a blow to the head. Even less is known scientifically about concussion threshold values when the blow to the head results in a combination of linear and rotational accelerations occurring at different points in the same impact and with different magnitudes.
- Oliver Congressional Statement at 3.
- This question of feasibility is, of course, relevant to the potential liability of equipment manufacturers under both negligence and strict products liability theories.
23. ImPACT (Immediate Post-concussion Assessment and Cognitive Testing) consists of baseline testing given before the season begins and then comparing the scores to same test given after a player is suspected of suffering a closed head injury.
24. *Vernon Maxwell v. NFL*, BC465842 (Cal. Super. Ct.); *Lewis v. NFL*, United States District Court for the Northern District of Georgia (Atlanta); *Surtain, Gadsden v. NFL*, United States District Court for the Southern District of Florida (Miami).
25. Thus, the allegations in *Horn. v. NFL*, United States District Court for New Jersey, that accuse the NFL and its teams of repeatedly administering the painkiller Toradol before and during games, worsening high-risk injuries like concussions.
26. *Avila v. Citrus Community College*, 38 Cal. 4th 148 (2006); *Arrington v. NCAA*, United States District Court for the Northern District of Illinois (Chicago); *Jacobs v. NFL*, United States District Court for the Southern District of New York (the player plaintiffs are seeking a declaration that the league knew or should have known that repeated head impacts and concussions put the players at risk of developing degenerative brain diseases later in life).
27. California has a notoriously expansive Workers' Compensation Law that has been found to cover any professional player that can show that he played one professional game in the state. This, tied to California's lenient limitations period, which does not begin to run until the employer advises the employee of California Workers' Compensation rights creates a double-whammy for the teams.
28. CGL Form § I, Cov. A[1][a], § III[2] & Decl. P., Item 4.
29. *Id.* § II[1][d].
30. *Id.* § II[2][a].
31. The majority of courts follow the "cause" test, in which the number of occurrences is based on the "cause" of the accident or harm, as opposed to the "effect." For helmet manufacturers, the "cause" might be the decision to utilize a particular design or "warning" (or absence thereof). See \_\_\_\_.
- However, some jurisdictions focus on the "effect" of a risk in determining the number of occurrences. For example, in the product liability/asbestos bodily injury context, courts applying the "effects" test have held that the similar claims presented multiple occurrences. See *Appalachian Ins. Co. v. General Elec. Co.*, 8 N.Y.3d 162, 166 (2007).
32. See [http://www.chartisinsurance.com/aHead-of-the-game-Home\\_295\\_356176.html](http://www.chartisinsurance.com/aHead-of-the-game-Home_295_356176.html). ■

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