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WHAT'S ALL THE HEADACHE?: REFORM NEEDED TO COPE
WITH THE EFFECTS OF CONCUSSIONS IN FOOTBALL

ERIKA A. DIEHL¹

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¹ J.D., expected May 2010, Cleveland-Marshall College of Law. The author would like to thank Professor Karin Mika and the Journal Editors for their contributions to this Note.

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I. INTRODUCTION

With 3:29 left in the AFC Championship game, Ravens running back Willis McGahee caught a pass from Joe Flacco and started upfield.² After taking two steps, McGahee was dropped by a violent helmet-to-helmet hit by Steelers' safety Ryan Clark.³ Instant replay showed "McGahee's body jarring violently, his neck sickeningly snapping back like a crash-test dummy."⁴ As McGahee lay motionless, an eerie silence grew over Heinz field.⁵ Onlookers prayed for movement from the downed player.⁶ Even members of the Steelers feared the worst.⁷ Thankfully, these prayers were answered, as Baltimore's team spokesman reported McGahee was "neurologically intact" and would be monitored in a Pittsburgh hospital overnight.⁸ McGahee later confirmed, "Everything is O.K. The M.R.I. and the CAT scan checked out good. I was scared, but I didn't know how serious it was. It was pretty intense."⁹ McGahee was diagnosed with a concussion and said his neck was sore.¹⁰ "I didn't even see him coming," said McGahee. "I blacked out. I woke up when they were taking my face mask off."¹¹

McGahee wasn't the only Raven who sustained a concussion during the AFC Championship game.¹² Cornerback Corey Ivy suffered one from a crackback block

² Greg Bishop, *Ravens' McGahee Injured on Helmet-to-Helmet Hit*, N.Y. TIMES, Jan. 19, 2009, at D5.

³ *Full Recovery Is Expected for McGahee*, N.Y. TIMES, Jan. 20, 2009, at B16 [hereinafter *Full Recovery*].

⁴ Mike Wise, *Violence at a Price*, THE WASHINGTON POST, Jan. 19, 2009, at D1. See Willis McGahee Gets "Jacked Up" By Ryan Clark, <http://youtube.com/watch?v=ygrfqiopctg> (last visited Sept. 1, 2009).

⁵ Wise, *supra* note 4.

⁶ *Id.*

⁷ *Id.* "I started getting a little emotional when I saw him down there and the cart was coming out," said Ben Roethlisberger. *Id.*

⁸ *Id.*

⁹ *Full Recovery, supra* note 3.

¹⁰ *Id.*

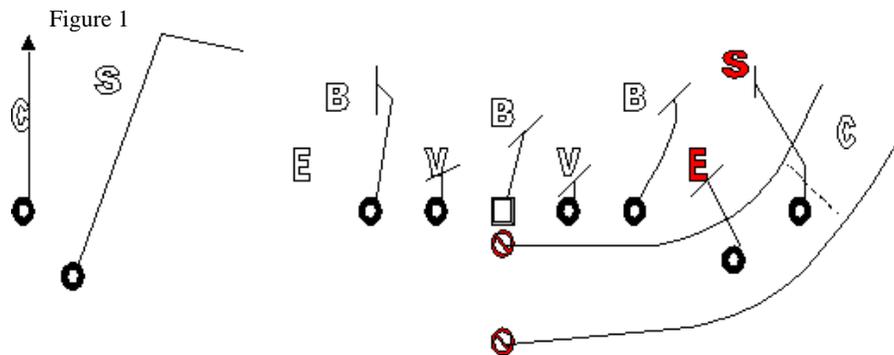
¹¹ *Id.*

¹² See Limas Sweed Big Hit on Corey Ivy, <http://youtube.com/watch?v=zik5jqu8sw8> (last visited Sept. 1, 2009). [hereinafter *Big Hit*].

¹³ from wideout Limas Sweed,¹⁴ and Daren Stone sustained one during the opening kickoff after colliding with Steelers' Carey Davis.¹⁵ In contrast to McGahee however, Stone was allowed to return to the game by team officials and coaches.¹⁶

“For every concussion we see occurring at the professional sports level, there are tens of thousands of injuries at the high school level and below,” said Dr. Mickey Collins, the Assistant Director of the Sports Medicine Concussion Program at the University of Pittsburgh Medical Center.¹⁷ In 2007 alone, three high school athletes died while sustaining head injuries in football.¹⁸ On September 18, 2008, sixteen year old linebacker, Ryne Dougherty, sustained a concussion during football

¹³ Teaching the Crack Back Block, http://www.bign2football.com/crack_back_block.htm (last visited Sept. 1, 2009) [hereinafter Teaching Crackback]. A crackback block is “generally defined as a block made on an inside defender against the flow of the play.” *Id.* The defender is typically unaware that the collision is coming. *Id.* For demonstrations of a crackback blocks; see also Blocking 101: Da Crack Back, <http://www.youtube.com/watch?v=saTSIvb8GLQ&feature=related>; CIF football Playoffs: LB Poly vs Lakewood Crack-back Block 2008, <http://www.youtube.com/watch?v=H29n8s1hjkY> (last visited Sept. 1, 2009); Crack Back, <http://www.youtube.com/watch?v=wMkJLEu1XC0&feature=related> (last visited Sept. 1, 2009); Kenny Britt Crackback Block, <http://www.youtube.com/watch?v=4HYzZzufMRU> (last visited Sept. 1, 2009). Figure 1 illustrates a play that contains a pitch to the right, with two crackbacks. Teaching Crackback, *supra* note 13. The defensive players are marked by letters and the offensive players are designated by the “O’s.” *Id.* The E (defensive-end) and S (safety) are filled in to show where the two “cracks are taking place on this one back option play.” *Id.*



Id.

¹⁴ See Big Hit, *supra* note 12.

¹⁵ Wise, *supra* note 3.

¹⁶ Mike Reiss, *Ward Takes the Cautious Route: He Doesn't Return After Knee Injury*, THE BOSTON GLOBE, Jan. 19, 2009, at D5 available at http://www.boston.com/sports/football/articles/2009/01/19/ward_takes_the_cautious_route/.

¹⁷ Susan Manko, UPMC Conference to Discuss Newest Scientific Knowledge Forcing Doctors to Re-Think How to Safely Manage Concussions in Athletes of All Levels, July 23, 2008, <http://www.medicalnewstoday.com/articles/115817.php>.

¹⁸ Michael S. Schmidt & David Caldwell, *Brain Injury Puts Player in Critical Condition*, N.Y. TIMES, Oct. 16, 2008, at B20.

practice.¹⁹ After a normal CT scan and sitting out for the mandated period, he returned to the field, only to collapse and die after sustaining a brain hemorrhage.²⁰ This problem is prevalent throughout our nation's athletic institutions. Since 1945, there have been 510 head and spine fatalities while playing football.²¹

Veteran sports agent Leigh Steinberg warned that collegiate athletes are younger, meaning there are "players who are 17 and 18 whose brains are still in formation. The potential damage to a younger brain could be devastating."²² This concern runs an even greater risk for those competing in high school and youth sports. The Center for Disease Control estimates a minimum of 96,000 children aged 5 to 18 experience sports-related concussions annually in the United States.²³ This can be particularly

¹⁹ Michael Schmidt, *School Set to Discuss Concussion Guidelines*, N.Y. TIMES, Oct. 22, 2008, at B17.

²⁰ Kevin Armstrong, *Sad, Deadly Return to the Field for Ryne Dougherty*, SPORTS ILLUSTRATED, Oct. 23, 2008, available at <http://m.si.com/news/archive/archive/detail/1219291/1>.

²¹ See Figure 2, Frederick O. Mueller & Robert C. Cantu, Annual Survey of Football Injury Research 1931 – 2007, NAT'L CTR FOR CATASTROPHIC SPORT INJURY RESEARCH DATA TABLES, available at <http://www.unc.edu/depts/nccsi/FootballInjuryData.htm/>.

Figure 2

Year	Head		Cervical Spine	
	Frequency	Percent	Frequency	Percent
1945-1954	87	17.1	32	27.3
1955-1964	115	22.5	23	19.7
1965-1974	162	31.8	42	35.9
1975-1984	69	13.5	14	12.0
1985-1994	33	6.5	5	4.3
1995-2004	44	8.6	1	0.8
TOTALS	510	100.0	117	100.0

See generally *Young Players, Serious Injuries*, N.Y. TIMES, September 16, 2007, at B16, available at http://www.nytimes.com/interactive/2007/09/16/sports/20070916_CONCUSSION_GRAPHIC.html# (describing cases of 50 high school aged and younger football players that have been killed or have sustained serious head injuries on the field since 1997).

²² Pete Thamel, *Clarity Lacking in Discipline for Hits to Head*, N.Y. TIMES, Nov. 12, 2007, at B14, available at <http://nytimes.com/200711/12/sports/ncaafotball/12colleges.html>.

²³ Gerald Tramontano, Op-Ed, *Head Games*, N.Y. TIMES, Sept. 13, 2008, at A19.

damaging because adolescent brain tissue is still developing.²⁴ In addition, high school athletes typically receive “less capable medical care, or none at all.”²⁵ “Poor management of high school player’s concussions isn’t just a football issue. It’s a matter of public health,” warned Robert Sallis, president of the American College of Sports Medicine.²⁶

In order to effectively manage this public health concern,²⁷ it is imperative to gain an understanding of the issues surrounding head injuries in sporting events. This Note will discuss the increasing frequency and dangers of concussions in amateur and professional football.²⁸ It will suggest that athletes, schools, coaches, and doctors must become more educated on the causes and dangers of concussions in order to ensure the safety of participants.²⁹ In order to do so, this Note introduces a medical overview of concussions, while briefly outlining the diagnosis,³⁰ long-term effects,³¹ and management of concussions.³² Part III discusses the legal theories athletes and their families may pursue, as well as potential defenses the defendants might utilize.³³ Part IV describes what legislatures³⁴ and amateur³⁵ and professional³⁶ sports organizations are doing in an attempt to combat the epidemic. Part V offers potential solutions for reform, including increasing congressional funding to help amateur organizations offset the rising costs of effective concussion management.³⁷

II. MEDICAL OVERVIEW OF CONCUSSIONS

According to the International Convention of Concussion in Sports, a “[c]oncussion is defined as a complex pathophysiological process affecting the brain, induced by traumatic biomechanical forces.”³⁸ The common features that may be used in the definition of concussion include:

²⁴ *Id.*

²⁵ Alan Schwarz, *Silence on Concussions Raises Risks of Injury*, N.Y. TIMES, Sept. 15, 2007, at A1, available at <http://www.nytimes.com/2007/09/15/sports/football/15concussions.html?fta=y> [hereinafter *Silence*].

²⁶ *Id.*

²⁷ *Id.*

²⁸ See *infra* Section II.

²⁹ See *infra* Section V.

³⁰ See *infra* Section II.B.

³¹ See *infra* Section II.E.

³² See *infra* Section II.C.

³³ See *infra* Section III.

³⁴ See *infra* Section IV.A.

³⁵ See *infra* Section IV.B and Section IV.C.

³⁶ See *infra* Section IV.D.

³⁷ See *infra* Section V.

³⁸ M. Aubry, et al., Summary and Agreement Statement of the First International Conference on Concussion in Sport, Vienna 2001, 36 BR. J. SPORTS MED. 6, 6 (2002).

- (1) may be caused by a direct blow to the head, face, neck, or elsewhere on the body with an “impulsive” force transmitted to the head.
- (2) typically results in the rapid onset of short lived impairment of neurological function that resolves spontaneously.
- (3) may result in neuropathological changes but the acute clinical symptoms largely reflect a functional disturbance rather than structural injury.
- (4) results in a graded set of clinical syndromes that may or may not involve loss of consciousness. Resolution of the clinical and cognitive symptoms typically follows a sequential course.
- (5) typically associated with grossly normal structural neuroimaging studies.³⁹

“Even what seems to be a mild bump or blow to the head can be serious.”⁴⁰

According to research conducted by the NFL’s Committee on Mild Traumatic Brain Injury (MTBI), a “concussion in professional football involves a mean impact velocity of 9.3 m/second (20.8 mph) and a head velocity change of 7.222 m/second (16.1 mph).⁴¹ To put this finding into perspective, they explain car accidents usually “involve impact durations of less than 6 m/sec for head impacts.”⁴²

It is estimated that 3.8 million sports and recreation related concussions occur each year in the US.⁴³ Conservative estimates indicate that more than 300,000 sport-related concussions occur each year in the United States,⁴⁴ but that figure only represents head injuries resulting in hospital admissions.⁴⁵ An equal quantity of MTBIs are treated by general practitioners and do not result in hospital admission.⁴⁶ In contrast to the decline of other serious injuries over the past ten years, a study by the Center for Injury Research and Policy in Columbus, Ohio determined that the

³⁹ *Id.*; see also Tim Anderson, Marcus Heitger, & A. D. Macleod, *Concussion and Mild Head Injury*, 6 PRAC. NEUROLOGY 342, 343 (2006) (While the terms concussion, mild head injury, and traumatic brain injury technically have different definitions, in the context of clinical research and practice, they are used interchangeably) [hereinafter Concussion].

⁴⁰ CTR. FOR DISEASE CONTROL & PREVENTION, Learn to Prevent & Recognize Concussion, <http://www.cdc.gov/Features/Concussion/>.

⁴¹ Elliot J. Pellman & David C. Viano, *Concussions in Professional Football: Summary of the Research Conducted by the National Football League’s Committee on Mild Traumatic Brain Injury*, 21 NEUROSURGICAL FOCUS 1, 2 (2006).

⁴² *Id.*

⁴³ J. A. Langlois, W. Rutland-Brown, & M. Wald, *The Epidemiology and Impact of Traumatic Brain Injury: A Brief Overview*, 21 J. HEAD TRAUMA REHAB. 375, 375-78 (2006).

⁴⁴ Cynthia W. Majerske, et al., Concussion in Sports: Postconcussive Activity Levels, Symptoms, and Neurocognitive Performance, 43 J. ATHLETIC TRAINING 265, 265 (2008).

⁴⁵ D. J. Thurman, C. M. Branche, & J. E. Snizek, The Epidemiology of Sports-Related Traumatic Brain Injuries in the United States: Recent Developments. 13 J. HEAD TRAUMA REHABIL. 2, 1-8 (1998).

⁴⁶ P. McCrory, et al., Can We Manage Sport Related Concussion in Children the Same as in Adults? 38 BRIT. J. SPORTS MED. 516, 516 (2004) [hereinafter Manage in Children].

incidence of concussions has doubled.⁴⁷ It is projected that sports-related concussions comprise of twenty percent of the mild head injuries in the US.⁴⁸ Although concussions can occur in any sport or leisure activity, the potential for concussions is greatest in collision sports.⁴⁹ In collision sports, athletes “purposely hit or collide with each other or with inanimate objects (including the ground) with great force.”⁵⁰ Approximately 60,000 concussions occur at the high school level, the majority of which are sustained during football activities.⁵¹

A. Grades of Concussions

There are over forty-one methods employed to measure the severity or grade of a MTBI,⁵² and no general consensus among the profession on which approach is the best.⁵³ This has become problematic, as the return-to-play decision is frequently based on the grade of concussion.⁵⁴

Symptoms of concussions vary, but may include: headache, nausea, amnesia, balance problems, dizziness, fatigue, irregular sleeping patterns (i.e. trouble falling asleep, sleeping more than usual, sleeping less than usual, drowsiness), irritability, sensitivity to light, sensitivity to noise, increased sadness, nervousness, feeling more emotional, numbness or tingling, feeling slowed down, sensation of being “in a fog,” difficulty with concentration, difficulty with memory, and visual problems.⁵⁵ Because of the difference in how the brain tolerates biomechanical forces in adults and children, children show symptoms of concussions after greater impact of force than adults.⁵⁶ In fact, a “two to three fold greater impact force is required to produce clinical symptoms in children,”⁵⁷ resulting from a combination of factors, including

⁴⁷ Bob Meadows, *Concussions: Is Football Too Dangerous?*, PEOPLE MAGAZINE, Oct. 8, 2007.

⁴⁸ D. M. Sosin, J. E. Sniezek, & D. J. Thurman, *Incidence of Mild and Moderate Brain Injury in the United States, 1991*, 10 BRAIN INJ. 47 (1996).

⁴⁹ John. W. Powell, *Cerebral Concussion: Causes, Effects, and Risks in Sports*, 36 J. ATHLETIC TRAINING 307, (2001).

⁵⁰ Stephen G. Rice & the Council on Sports Medicine and Fitness, *Medical Conditions Affecting Sports Participation*, 121 PEDIATRICS 841, 841 (2008).

⁵¹ Majerske et al., *supra* note 43 at 265.

⁵² Anderson et al., *Concussion*, *supra* note 39.

⁵³ Robert C. Cantu, *Posttraumatic Retrograde and Anterograde Amnesia: Pathophysiology and Implications in Grading and Safe Return to Play*, 36 J. ATHLETIC TRAINING 244, 244 (2001).

⁵⁴ *Id.* at 246; *see also* NAT'L CTR. FOR INJURY PREVENTION & CONTROL, CTR. FOR DISEASE CONTROL & PREVENTION, *Report to Congress on Mild Traumatic Brain Injury in the United States: Steps to Prevent a Serious Public Health Problem (2003)*, available at <http://www.cdc.gov/ncipc/tbi/mtbi/mtbireport.pdf> (discussing the damaging effects of TBI on a child's health and development, and ramifications stemming from no standardized, efficient method to monitor the health of children after sustaining a TBI).

⁵⁵ Majerske et al., *supra* note 43, at 265.

⁵⁶ McCrory et al., *Manage in Children*, *supra* note 46.

⁵⁷ *Id.* at 516.

“an age dependent physiological response to mechanical stress, the differing geometry of the skull and brain, and the constitutive structural properties of the head.”⁵⁸

B. Diagnosis

Diagnosis of concussions can be a challenge, as athletes seldom self-report concussive symptoms.⁵⁹ This is due in part because athletes are not always aware of the symptoms.⁶⁰ When anonymously surveyed, fifteen percent of high school football players reported sustaining concussions.⁶¹ This number jumped to close to fifty percent when descriptions of the symptoms were listed and the word concussion was omitted; thirty-five percent admitted to two or more.⁶²

Not only have studies shown that athletes are not aware of the ramifications from ignoring head injuries, but also that athletes want to continue playing because they do not want to be perceived as weak.⁶³ This lack of knowledge and “He-man” mentality is not confined to high school football; it is prevalent throughout athletics.⁶⁴ Researchers from a study of 461 male and female competitive athletes at the University of Akron found that thirty-two percent reported experiencing a blow to the head that caused dizziness and over twenty-five percent confirmed symptoms

⁵⁸ *Id.*

⁵⁹ William P. Meehan & Richard G. Bachur, *Sport-Related Concussion*, 123 PEDIATRICS 114, 114 (2009).

⁶⁰ Schwarz, *Silence*, *supra* note 25.

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.* When asked if high school senior Kelby Jasmon would report a concussion to a coach or trainer, he replied, “No chance. It’s not dangerous to play with a concussion. You’ve got to sacrifice for the sake of the team. The only way I come out is on a stretcher.” *Id.* “Our coaches would take us out in a second. So why would we tell them?” stated lineman Matt Selvaffio. *Id.* Senior quarterback Garrick Jones said despite being knocked unconscious during a game, he got up and threw another pass. *Id.* “I couldn’t come out. [M]y team needed me,” Jones said. “You have to keep playing until you can’t.” *Id.* Josh Bailey, a senior safety said he suffered a concussion during a game, but no one noticed. *Id.* “Football, it’s all about contact; you kind of have to suck it up, because you’re going to feel pain. That’s what the game is about. If you don’t put yourself through that, you don’t really love the game.” *Id.*

⁶⁴ See generally Ray Glier, *Church Has Mild Concussion, but He Plans Quick Return*, N.Y. TIMES, May 22, 2008, D5, available at <http://www.nytimes.com/2008/05/22/sports/baseball/22shea.html?scp=30&sq=concussion&st=cse> [hereinafter Church]. New York Mets outfielder, Ryan Church lay motionless on the second base after colliding with the Atlanta Braves’ shortstop. “I’ll take a day,” Church said. “It wasn’t a concussion. When the CAT scan comes back and the doctor tells you it’s normal, I don’t know that you can call it a concussion,” he later told reporters. After Church was told by his manager that he did have a concussion, he relayed the message to the reporters, but still assured them he wouldn’t miss any games because the team had been struggling. *Id.* There are a few players who acknowledge injuries. See, e.g., note 16. “It’s just a sprained knee,” Steelers receiver Hines Ward said. “They said it’s nothing structurally. I was going to come back, but I didn’t want to come back at 75 or 80 percent. It gave an opportunity for other guys to step up and they did that.” *Id.*

of seeing stars, nausea or vomiting, and head pain.⁶⁵ Written responses to survey questions were used to identify signs and symptoms of concussions.⁶⁶ Thirty percent of the athletes surveyed continued to play in spite of the symptoms.⁶⁷ The study further revealed fifty-six percent had no knowledge of the consequences of a head injury.⁶⁸

To compound the problems of self-reporting, traditional structural neuroimaging techniques, such as CTs, MRIs, and EEGs, are not helpful in the diagnosis of a concussion, as concussions are metabolic injuries.⁶⁹ These tests typically come back normal, even in an athlete who has suffered a severe concussion.⁷⁰ It is recommended that coaches, trainers, and parents become aware of the warning signs to aid athletes in recognizing these head injuries.⁷¹ G. Robert Nugent, a neurosurgeon specializing in football sports medicine, recommends more practical symptom advice for coaches, trainers, and parents:

A detached or vacant facial expression; inappropriate responses and irrelevant statements; the repeating of statements and questions; unexpected emotional reactions such as crying; a delay in responding to commands; or an unrealistic assurance that all is 'ok.' More obvious

⁶⁵ Kevin. P. Kaut, et al., Reports of Head Injury and Symptom Knowledge among College Athletes: Implications for Assessment and Educational Intervention, 13 Clin J. Sport Med. 213, 213 (2003).

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ See ImpactTest.com, Impact Background, <http://www.impacttest.com/impactbackground.php> (last visited Aug. 24, 2009); see also MayoClinic.com, CT Scan, <http://www.mayoclinic.com/health/ct-scan/MY00309> (last visited Aug. 24, 2009) (defining a computerized tomography, or CT scan, as an "X-ray technique that produces images of your body that visualize internal structures in cross section rather than the overlapping images typically produced by conventional X-ray exams."). *Id.* See MayoClinic.com, MRI, <http://www.mayoclinic.com/health/mri/MY00227> (last visited Aug. 24, 2009) (stating Magnetic Resonance Imaging (MRI) utilizes a magnetic field and radio waves to create 3-D cross-sectional images of the organs and tissues within the body). *Id.* See WebMd.com, Electroencephalogram, <http://www.webmd.com/epilepsy/electroencephalogram-eeeg-21508> (last visited Aug. 24, 2009). (stating that an electroencephalogram (EEG) "measures and records the electrical activity of the brain.") *Id.*; see also MedLine Plus, EEG, <http://www.nlm.nih.gov/medlineplus/ency/article/003931.htm> (last visited Aug. 24, 2009) (stating that the test is typically administered to diagnose why a patient has seizures, "to find the causes of confusion, and to evaluate head injuries, tumors, infections, degenerative diseases, and abnormal changes in body chemistry that affect the brain."). *Id.*

⁷⁰ See Impact Background, *supra* note 68.

⁷¹ CTR. FOR DISEASE CONTROL & PREVENTION (CDC), Free CDC Tool Kit on Concussion for High School Coaches, http://www.cdc.gov/ncipc/tbi/Coaches_Tool_Kit.htm (last visited Aug. 24, 2009) [hereinafter Coaches Tool Kit].

problems include disorientation, difficulty reversing a series of digits and serial subtractions, and evidence of amnesia.⁷²

C. Second-Impact Syndrome

The result of improper diagnosis can be devastating and deadly. Since 1984, second-impact syndrome has been recognized as a rare, but often fatal complication, occurring predominately in children and teenagers, after sustaining a second head injury before symptoms from the first have subsided.⁷³ The second injury causes cerebral edema and brainstem herniation, which may lead to “collapse and death within minutes.”⁷⁴ According to Dr. Ruben Tenorio, a ringside physician and leading authority on second-impact syndrome in San Antonio, the mortality rate for second-impact syndrome is fifty percent, while the rate of disability stemming from the disorder is almost one hundred percent.⁷⁵ In recent years however, many experts have begun to speculate over the existence of second-impact syndrome. Studies have increasingly found a lack of conclusive evidence of the syndrome,⁷⁶ and it “is more likely that a single impact of any severity may result in this rare complication,” especially in the developing brain.⁷⁷

D. Long-term Effects of Concussions

While the full extent of long-term effects of concussions is unknown, there seems to be a strong connection between serious head injury and future risk of

⁷² G. R. Nugent, *Reflections on 40 Years as a Sideline Physician*, 21 NEUROSURGICAL FOCUS 1, 4 (2006).

⁷³ Robert C. Cantu, *Second-impact Syndrome*, 17 CLIN. SPORTS MED. 37 (1998).

⁷⁴ David Cifu, Brian D. Steinmetz, & David F. Drake, *Repetitive Head Injury Syndrome*, <http://emedicine.medscape.com/article/92189-overview> (last accessed Aug. 24, 2009). See generally *Sports-Related Recurrent Brain Injuries United States*, 46 MORBIDITY & MORALITY WKLY. REP., 224, (1997), available at <http://www.cdc.gov/mmwr/preview/mmwrhtml/00046702.htm>; see also J. P. Kelly, et al., *Concussion in Sports: Guidelines for the Prevention of Catastrophic Outcome*, 266 J. AM. MED. ASSOC. 2867, 2867 (1991) (stating that brain swelling results from a failure of autoregulation of cerebral circulation that causes vascular congestion and increased intracranial pressure, which may be difficult or impossible to control); See also Barry. P. Boden, et al., *Catastrophic Head Injuries in High School and College Football Players*, 35 AM. J. SPORTS MED. 1075, 1075 (2007) (An average of 7.08 catastrophic head injuries per year was reported in high school football, compared with 0.15 for college football from 1989-2002).

⁷⁵ J. Whisler, *Fighting for Safety*, SAN ANTONIO EXPRESS, http://www.mysanantonio.com/sports/MYSA27_01C_BOXimpact27a_104207aa_html.html, September 8, 2007 (“Second-impact syndrome carries a 50 percent mortality rate. But it carries a 100 percent morbidity rate, which means everyone who suffers from it receives some sort of lifelong damage.”)

⁷⁶ See Paul. R. McCrory & S. F. Berkovic, *Second Impact Syndrome*, 50 NEUROLOGY 677 (1998) (finding no documented second impact after re-analyzing cases previously reported as those diagnosed with second-impact syndrome).

⁷⁷ McCrory et al., *Manage in Children*, *supra* note 45. See also Nugent, *supra* note 71, at 5 (hypothesizing that second-impact syndrome is really “more of a first-impact syndrome that is unique to injury in the young brain”).

Alzheimer's.⁷⁸ An analysis of the brain tissue of four⁷⁹ NFL players and one professional wrestler finding abnormal proteins typical of an 80-or 90- year-old with dementia⁸⁰ has led a dozen athletes, including six NFL players, to donate their brains to Boston University's Center for the Study of Traumatic Encephalopathy for research on the long-term effects of concussions.⁸¹ While the NFL disputes this finding,⁸² there is credible evidence that it could be accurate.⁸³ Dr. Bennet Omalu, the forensic neuropathologist who conducted the autopsies on the deceased athletes, responded to the NFL's criticisms, and questioned the Committee's selection of "experts."

Dr. Pellman, Casson, and Viano attacked us, claiming that we seriously misinterpreted the neuropathological findings in the case and that we had a complete misunderstanding of the relevant medical literature. Neither Dr. Pellman, Dr. Casson, nor Dr. Viano was a neuropathologist. I wondered how doctors who were not neuropathologists could interpret neuropathological findings better than neuropathologists, especially when these doctors did not think that it was prudent to appoint a neuropathologist to their committee, even in an advisory capacity.⁸⁴

After analyzing the brain tissue of former Western Illinois wide receiver Mike Borich, who overdosed at the age of 42, Dr. Ann McKee, an associate professor of neurology and pathology at the [Boston University](#) School of Medicine and co-director of its [Center for the Study of Traumatic Encephalopathy](#) is concerned about

⁷⁸ Alz.org, Risk Factors, http://www.alz.org/alzheimers_disease_causes_risk_factors.asp (last visited Aug. 24, 2009); see also P. N. Nemetz, C. Leibson, J. M. Naessens, et al., *Traumatic brain injury and time to onset of Alzheimer's disease: a population-based study*, 149 AM. J. EPIDEMIOLOGY 32 (1999) (finding patients with a history of traumatic brain injury were found to express Alzheimer's disease a median of eight years younger than patients without a history of brain injury).

⁷⁹ Dr. Omalu and Dr. Julian Bailes have since revealed the seventh and eight cases of Encephalopathy (C.T.E.) that were found in NFL players Gerald Small, 52, and Curtis Whitley, 39. Alan Schwarz, *Concussion Trauma Risk Seen in Amateur Athlete*, N.Y. TIMES, Oct. 22, 2009, B14 available at <http://www.nytimes.com/2009/10/22/sports/ncaafootball/22concussions.html?scp=2&sq=concussion&st=cse> [hereinafter Amateur Risk].

⁸⁰ See BENNET OMALU, PLAY HARD, DIE YOUNG: FOOTBALL DEMENTIA, DEPRESSION, AND DEATH 2-4 (2008).

⁸¹ Alan Schwarz, *Twelve Athletes Leaving Brains to Concussion Study*, N.Y. TIMES, Sept. 24, 2008, at D1 available at <http://usatoday.com/sports/football/24concussions.html> [hereinafter Leaving Brains].

⁸² See Gary Mihoces, *NFL Disputes Doctor's Diagnosis of 'Footballer's Dementia'*, USA TODAY, June 18, 2007, available at http://www.usatoday.com/sports/football/nfl/2007-06-18-doctors-sidebar_N.htm.

⁸³ See OMALU, *supra* note 79, at 40-41.

⁸⁴ *Id.*

the concussive impact on developing brains.⁸⁵ Borich never played in the NFL, indicating that collegiate and high school athletes could be subjected to similar risks as professionals.⁸⁶

The long-term effects of MTBIs are serious and real for many former athletes.⁸⁷ As stated by veteran sports agent Leigh Steinberg at the concussion summit in Marina Del Ray, California, "It's one thing to go out and play football and understand that when you turn 40, you can bend over to pick up your child and have aches and pains. It's another thing to bend down and not be able to identify that child."⁸⁸ What makes this even scarier is the lack of empirical data on the long-term effects of concussions for youths.

E. Management of Concussions

A concussion sets off a

release of excitatory neurotransmitters, which result in cellular membrane disruption and ionic imbalances. Increasing amounts of adenosine triphosphate (ATP) are required in an attempt to correct these ionic imbalances, and an increase in glucose metabolism is observed within the first 24 hours after concussion. This increased glucose metabolism, combined with an initial decrease in cerebral blood flow, results in a mismatch between the energy required and that available to brain structures. The increase in glucose metabolism is followed by a period of reduced glucose uptake and metabolism, which may last for as long as 1 month. Exercise also modulates glucose uptake in the brain and increases cortisol in a dose-dependent manner, both of which could worsen the neuronal energy mismatch after concussion.⁸⁹

It is therefore imperative to develop an effective post-concussion management plan. Research suggests that antiquated grading systems and return-to-play guidelines be abandoned in favor of more individualized assessment and management.⁹⁰ In determining when to return to the field, athletes should consult a health care

⁸⁵ Schwarz, *Amateur Risk*, *supra* note 78. McKee attributes Borich's problems with depression and drugs to the severe encephalopathy found because the disease kills cells in the cortex responsible for judgment and mood moderation. *Id.*

⁸⁶ *Id.*

⁸⁷ See *infra* notes 266-79. Ted Johnson, John Mackey, and Ralph Wenzel are among the many former NFL players currently suffering from dementia. See generally Brian Lipsky, *Dealing with the NFL's Concussion Problems of Yesterday, Today, and Tomorrow*, 18 FORDHAM INTELL. PROP. MEDIA & ENT. L.J. 959, 959-71 (2008).

⁸⁸ Dave Scheiber, *Concussions on Their Minds: Organizations are Taking More Steps to Recognize and Treat Concussions. But What of the Lingering Effects on Lives?*, ST. PETERSBURG TIMES, Aug. 5, 2007, http://www.sptimes.com/2007/08/05/Sports/Concussions_on_their_.shtml.

⁸⁹ Majerske et al., *supra* note 43, at 265-66.

⁹⁰ Paul. McCrory, et al., Summary and Agreement Statement of the Second International Conference on Concussion in Sport, Prague 2004, 15 CLIN J SPORT MED. 48, 48-55 (2005).

professional and gradually restore to normal physical and academic activities.⁹¹ Athletes with a history of serious head trauma or abnormality and those with a history of MTBI and/or complex concussions may participate in collision or contact sports with proper evaluation by a medical professional.⁹² A conservative approach should be exercised in concussion management, including not participating in athletics while symptoms remain and gradually returning to full activity.⁹³ A recent study revealed high school athletes suffer from prolonged memory dysfunction compared with college athletes, and should therefore be treated more conservatively.⁹⁴

To aid in the difficulty of concussion diagnosis, experts at University of Pittsburgh Medical Center (UPMC) have developed a computer-based test, ImPACT (Immediate Postconcussion Assessment and Cognitive Testing).⁹⁵ ImPACT is a 20-minute test battery that evaluates and documents multiple aspects of brain function, including impulse control, sustained attention, visual-motor processing speed, visual and verbal memory, working memory, selective attention, reaction time, and response variability.⁹⁶ It is recommended that baseline tests be administered to all athletes at the start of a season, and post-injury tests conducted after a potential concussion has occurred.⁹⁷ In order to make a “decision about whether cognition has changed from baseline following concussion,” the individuals reading the tests must be knowledgeable of how performance may change on specific tests if one has sustained a MTBI.⁹⁸ Training workshops are available to assist athletic trainers in using the ImPACT software.⁹⁹

⁹¹ *Id.*

⁹² Stephen G. Rice, *Medical Conditions Affecting Sports Participation*, 21 NEUROSURGICAL FOCUS 12, 13 (2006).

⁹³ *Id.* See also Edward M. Wojtys, et al., *Current Concepts: Concussion in Sports*, 27 AM. J. SPORTS MED. 676, 676-87 (1999); Aubry et al., *supra* note 37, at 6–11; S. A. Herring, et al., *Concussion (Mild Traumatic Brain Injury) and the Team Physician: A Consensus Statement*, 38 MED. SCI. SPORTS EXERC. 395, 395–99 (2006); K. M. Guskiewicz, et al., *National Athletic Trainers' Association Position Statement: Management of Sport-Related Concussion*, 39 J ATHL TRAIN. 280, (2004).

⁹⁴ Anita Sim, Lori Terryberry-Spohr, & Kathryn R. Wilson, *Prolonged Recovery of Memory Functioning After Mild Traumatic Brain Injury in Adolescent Athletes*, 108, J. NEUROSURGERY. 511, 516 (2008).

⁹⁵ Amber Corrin, *Concussions Pose Threat for Young Athletes*, UNITED PRESS INTERNATIONAL. Sept. 11, 2008 available at http://www.impacttest.com/pdf/concussions_pose_threat.pdf.

⁹⁶ ImpactTest.com, *ImPACT Executive Summary 3* (2006), http://www.impacttestoffice.com/Executive_Summary.pdf.

⁹⁷ *Id.* at 4.

⁹⁸ McCrory et al., *Manage in Children*, *supra* note 45, at 517.

⁹⁹ ImpactTest.com, *ImPACT*, <http://www.impacttestoffice.com/> (then follow “REGISTER FOR OUR TRAINING SESSIONS”). Training workshops provided to ATC’s for \$150. *Id.*

With ImPACT software packages ranging from \$500 to \$1,000, schools and athletic organizations may choose the package that best fits their needs and their budget.¹⁰⁰ Coaches and trainers also have the option to have the “Sideline ImPACT” added to their PDA for an extra \$100.¹⁰¹ Over 1,000 high schools, 300 colleges, 250 sports medicine centers, and professional teams are using the technology.¹⁰²

III. LEGAL ISSUES STEMMING FROM CONCUSSIONS

A. Liability Overview

Head injuries often result in lawsuits by injured athletes, their families and/or estates against other players, coaches, school districts, sports associations (including the NCAA, NFHS, and NFL), athletic trainers, physicians, helmet manufacturers, helmet reconditioners, and retailers.¹⁰³ Lawsuits are typically brought under theories of negligence,¹⁰⁴ breach of implied or express warranties,¹⁰⁵ and strict liability.¹⁰⁶ To shield themselves from liability, defendants may rely on assumption of risk,¹⁰⁷ comparative negligence, contributory negligence, and sovereign immunity.¹⁰⁸ In addition, in the professional context, a plaintiff’s claims may be precluded by workers’ compensation systems, federal preemption, and mandatory arbitration procedures outlined in players and teams collective bargaining agreements.¹⁰⁹

¹⁰⁰ *Id.* There are currently two versions of the ImPACT test: the “online version” and the “desktop version”. *Id.* Both require yearly subscriptions and athletic departments can choose between three packages. *Id.* The least expensive package is \$500 per school/organization per year. *Id.* During the first year, up to 300 athletes can get baseline tests, and 30 post-injury tests are available. *Id.* If schools choose this option, after the first year, 150 baseline tests and 30 post-injury tests will be added. *Id.* For \$750 per year, up to 600 athletes can get baseline testing, with 60 post-injury tests available. *Id.* After the first year, schools will get an additional 300 baseline tests and 60 post-injury tests. *Id.* The final package is \$1,000 per year. *Id.* If schools choose this option, they can administer up to 1,000 baseline tests to athletes, and 100 post-injury tests are available in the first year. *Id.* For the following years, an additional 500 baseline tests and 100 post-injury tests are available. *Id.* Regardless of the package that schools/organizations choose, they may purchase additional tests on an as-needed basis. *Id.* Baseline tests are \$2 each and must be purchased in increments of 50: \$100 for 50, \$200 for 100, \$400 for 200. *Id.* Post-injury tests are \$10 each and must be purchased in increments of 10: \$100 for 10, \$200 for 20, \$300 for 30. *Id.*

¹⁰¹ *Id.*

¹⁰² Corrin, *supra* note 95; *see also* ImpactTest.com, *Complete List of Users*, <http://www.impacttest.com/currentusers.php>.

¹⁰³ *See infra* Section III.

¹⁰⁴ *See infra* Section III.B.

¹⁰⁵ *See infra* Section III.C.

¹⁰⁶ *See infra* Section III.D.

¹⁰⁷ *See infra* Section III.B.2.

¹⁰⁸ *See infra* Section III.B.3.

¹⁰⁹ Timothy Davis, *Tort Liability of Coaches for Injuries to Professional Athletes: Overcoming Policy and Doctrinal Barriers*, 76 U.M.K.C. L. REV. 571 (2008).

B. Negligence

1. Coaches and Co-participants

In order for a plaintiff to prevail in a typical negligence action, he or she must allege sufficient facts to prove: (1) the defendant had a duty to protect the plaintiff, (2) the defendant breached that duty, (3) the plaintiff was actually injured as a result of the defendant's actions, and (4) the breach was the proximate cause of the plaintiff's injury.¹¹⁰ However, in contact sports, the majority of jurisdictions recognize an exception to this ordinary care standard in an effort to "strike a balance between protecting participants in sporting activities and the voluntary nature of participation in games where physical contact is inherent and inevitable."¹¹¹ The general rule is that coaches and co-participants are not liable in negligence for injuries to athletes that result from risks inherent to the sport at issue.¹¹² The rationale behind this recklessness standard is that ordinary negligence would chill athletic competition¹¹³ and could encourage litigation "based on an inadvertent violation of a contest rule."¹¹⁴ Furthermore, the risk of injury and rule violations are "common and inherent" in sports.¹¹⁵

In *Karas v. Strevall*, the plaintiff brought suit on behalf of his minor son, who sustained serious injury to his neck and head during a hockey game.¹¹⁶ Plaintiff alleged the players' conduct on the opposing team was a reckless, willful, and/or wanton disregard for the minor's safety, when they body checked him from behind, despite a rule prohibiting the conduct.¹¹⁷ Plaintiff also brought suit against the opposing team, the association of the officials, and the hockey league for negligently and recklessly causing the injury.¹¹⁸ In addition, the plaintiff claimed the league and

¹¹⁰ Sandage v. Bankhead Enters., Inc., 177 F.3d 670, 675 (8th Cir. 1999), *cert. denied*, 528 U.S. 1019 (1999).

¹¹¹ Azzano v. Catholic Bishop of Chi., 710 N.E.2d 117, 120 (Ill. App. Ct. 1999); *see also* Pfister v. Shusta, 657 N.E.2d 1013, 1015 (Ill. 1995); Nabozny v. Barnhill, 334 N.E.2d 258, 260--61 (Ill. App. Ct. 1975).

¹¹² Knight v. Jewett, 834 P.2d 696, 710 (Cal. 1992).

¹¹³ *See* Bowman v. McNary, 853 N.E.2d 984, 992 (Ind. Ct. App. 2006); Gauvin v. Clark, 537 N.E.2d 94, 96 (Mass. 1989); Ross v. Clouser, 637 S.W.2d 11, 14 (Mo. 1982) (en banc).

¹¹⁴ Jaworski v. Kiernan, 696 A.2d 332, 338 (Conn. 1997) ("If simple negligence were adopted as the standard of care [in athletic contests], every punter with whom contact is made, every midfielder high sticked, every basketball player fouled, every batter struck by a pitch, and every hockey player tripped would have the ingredients for a lawsuit if injury resulted.") (alteration to the original in the quoted text); *see also* Savino v. Robertson, 652 N.E.2d 1240, 1245 (Ill. App. Ct. 1995).

¹¹⁵ Mark v. Moser, 746 N.E.2d 410, 419 (Ind. Ct. App. 2001). *See also* Gauvin, 537 N.E.2d at 97 (holding defendant had not acted willfully, wantonly, or recklessly when he "butt-ended" plaintiff in the abdomen, in violation of a safety rule, causing plaintiff to undergo surgery and subsequently lose his spleen).

¹¹⁶ Karas v. Strevell, 884 N.E.2d 122, 124-25 (Ill. 2008).

¹¹⁷ *Id.* at 124-25.

¹¹⁸ *Id.* at 124.

officials' association were liable for neglecting to enforce the rule that resulted in the injury.¹¹⁹ In dismissing the negligence claims, the court held that the contact sports exception was applicable not only to co-participants, but also to the hockey league, the officials' organization, and the amateur hockey association.¹²⁰ The court then determined that the rule violations in question were an "inherent, fundamental part of the sport," and therefore did not rise to the level of willful and wanton conduct.¹²¹

2. Assumption of Risk

In *Knight v. Jewett*, the Court held the plaintiff, who sustained a broken finger by the defendant during a touch football game, did not have a cause of action when the injury arose from "ordinary careless conduct committed during the sport...."¹²² In making its decision, the court relied on the primary assumption of risk doctrine.¹²³

While a participant's "consent" to join in a sporting activity is not a waiver of all rules infractions, nonetheless a professional clearly understands the usual incidents of competition resulting from carelessness, particularly those which result from the customarily accepted method of playing the sport, and accepts them. They are within the known, apparent and foreseeable dangers of the sport and not actionable....¹²⁴

Because head injuries are an inherent risk from playing football, assumption of risk will preclude most plaintiffs from recovery for such injuries.

3. School Districts

The general rule is that a public school cannot be held liable for injuries sustained during a school sporting event.¹²⁵ In *Churilla v. School Dist. For City of East Detroit*, the court held a public school is entitled to immunity when operating its

¹¹⁹ *Id.* at 124.

¹²⁰ *Id.* at 125. The court relied on *Kahn v. East Side Union High School District*, which held a coach may be liable for breach of a duty of care to a student athlete "only if the instructor intentionally injures the student or engages in conduct that is reckless in the sense that it is 'totally outside the range of the ordinary activity' involved in teaching or coaching the sport." *Kahn*, 75 P.3d 30, 32-33 (Cal. 2003).

¹²¹ *Karas*, 884 N.E.2d at 132. The court noted that in "full-contact sports such as ice hockey and tackle football where physical contact between players is not simply an unavoidable by product of vigorous play, but is a fundamental part of the way the game is played.") *Id.*; see also D. Lazaroff, *Torts & Sports*, 7 U. MIAMI ENT. & SPORTS L. REV. 191, 213 (1990) (stating that the infliction of pain with the knowledge of danger is inherent in certain sports such as football and hockey).

¹²² *Knight v. Jewett*, 834 P.2d at 7112.

¹²³ *Id.* at 712.

¹²⁴ *Turcotte v. Fell*, 502 N.E.2d 964, 970 (N.Y. 1986).

¹²⁵ See, e.g., *Watson v. Bay City Sch. Dist.*, 36 N.W.2d 195, 199 (Mich. 1949) ("The football game was part of the school's physical education program. The function is inherently educational, a governmental function without doubt. ... The incidental profit or revenue does not operate to change the character of that function.").

football program, and therefore cannot be liable when a student suffered serious injury after making contact with a team member during practice.¹²⁶ The court reasoned that the operation of a public school requires substantial funding from the state, and in allowing athletic competition, it is executing a governmental function “vested in it by law.”¹²⁷

The rationale includes policy concerns: participants accept an assumption of risk when engaging in the sport, maintaining athletic teams is a vital part of physical education, and various governmental agencies are protected by immunity.¹²⁸ In the past, plaintiffs have recovered on the following theories: permitting injured¹²⁹ or unfit players to compete;¹³⁰ unsafe facilities or equipment;¹³¹ administration of negligent medical care;¹³² and failure to provide proper supervision¹³³ or training.¹³⁴

¹²⁶ 306 N.W.2d 381, 381 (Mich. App. 1981).

¹²⁷ *Id.* at 382.

¹²⁸ See generally Anthony S. McCaskey & Kenneth W. Biedzynski, *A Guide to the Legal Liability of Coaches for a Sports Participant's Injuries*, 6 SETON HALL J. SPORT L. 7, 47-48, 66-72, 85-87 (1996).

¹²⁹ See *Morris v. Union High Sch. Dist.*, 294 P. 998, 999 (Wash. 1931) (allowing claim against a school district to proceed where a coach should have known that plaintiff's minor son had not recovered after sustaining injury to his back and spine during practice, and where a coach persuaded and coerced the minor to return to play). See also *Jarreau v. Orleans Parish Sch. Bd.*, 600 So.2d 1389, 1393 (La. Ct. App. 1992) (holding a coach and team trainer liable for a football player's injuries where player was allowed continue playing despite a known injury to the athlete's wrist).

¹³⁰ See *Cerny v. Cedar Bluffs Junior/Senior Pub. Sch.*, 679 N.W.2d 198, 205 (Neb. 2004) (noting a coach can be held liable for breaching the reasonably prudent coach standard when allowing an injured athlete to return to play before a medical determination of player's fitness to return to play).

¹³¹ See *Henney v. Shelby City Sch. Dist.* No. 2005 CA 0064, 2006 WL 747475, *1, *4 (Ohio Ct. App. Mar. 23, 2006) (finding school district and track coach not immune from a negligence action brought by a member of a visiting team who was injured because of missing side panels, in violation of safety rules set by NFHS).

¹³² *Kleinknecht v. Gettysburg Coll.*, 989 F.2d 1360, 1370 (3rd Cir. 1993) (holding a university liable when administering negligent emergency medical assistance procedures because the possibility of severe and life-threatening injury is reasonably foreseeable during contact sports).

¹³³ *Carabba v. Anacortes Sch. Dist.* No. 104, 435 P.2d 936, 946 (Wash. 1967) (noting that school districts owe student athletes a duty to provide nonnegligent supervision).

¹³⁴ *Scott Rapides Parish Sch. Bd.*, 732 So.2d 749, 755 (La. Ct. App. 1999) (finding a school district liable for negligence when a coach did not teach at least the basic technical skills to instruct a student who was injured while attempting a long jump).

C. Express and Implied Warranties

Because a helmet is a “good,”¹³⁵ liability for defective helmets may arise from express or implied warranties under the Universal Commercial Code (UCC).¹³⁶ An express warranty arises when a seller makes a statement or engages in conduct to create buyer expectations about the characteristics or performance of the goods.¹³⁷ The plaintiff in *Bell Sports, Inc. v. Yarusso* purchased a helmet manufactured by the defendant because it was advertised in its manual as being especially protective for off-road use.¹³⁸ Plaintiff Yarusso flipped over his handle bars and landed on his head after hitting a mogul on an off-road course.¹³⁹ The impact rendered the plaintiff a quadriplegic.¹⁴⁰ In finding that defendant Bell Sports had breached an express warranty that proximately caused the Yarusso’s paralysis, the Court reasoned “express warranties can arise from similar textual representations found in owners’ manuals even where not specifically labeled as such.”¹⁴¹ In order to prevent liability for an express warranty, a helmet manufacturer should avoid affirmative statements and conduct that might create it.¹⁴²

¹³⁵ U.C.C. § 2-103(1)(k) states in pertinent part that the definition of a “goods” is “all things that are movable at the time of identification to a contract for sale. The term includes future goods, specially manufactured goods...” U.C.C. § 2-103 (1977).

¹³⁶ See generally U.C.C. Art. II (1977).

¹³⁷ U.C.C. § 2-313 states in pertinent part:

- (1) Express warranties by the seller are created as follows:
 - (a) Any affirmation of fact or promise made by the seller to the buyer which relates to the goods and becomes part of the basis of the bargain creates an express warranty that the goods shall conform to the affirmation for promise.
 - (b) Any description of the goods which is made part of the basis of the bargain creates an express warranty that the goods shall conform to the description.
 - (c) Any sample or model which is made part of the basis of the bargain creates an express warranty that the whole of the goods shall conform to the sample or model.
- (2) It is not necessary to the creation of an express warranty that the seller use formal words such as "warrant" or "guarantee" or that he have a specific intention to make a warranty, but an affirmation merely of the value of the goods or a statement purporting to be merely the seller's opinion or commendation of the goods does not create a warranty. U.C.C. § 2-313 (1977).

(3)
¹³⁸ *Bell Sports, Inc. v. Yarusso*, 759 A.2d 582, 593 (Del. 2000).

¹³⁹ *Id.* at 584.

¹⁴⁰ *Id.*

¹⁴¹ *Id.* at 593.

¹⁴² See U.C.C. § 2-316(1):

Words or conduct relevant to the creation of an *express* warranty and words or conduct tending to negate or limit warranty shall be construed wherever reasonable as consistent with each other; but subject to the provisions of this Article on parol or extrinsic evidence (§ 2-202) negation or limitation is inoperative to the extent that such construction is unreasonable. U.C.C. § 2-316 (1977).

Implied warranties are automatically incorporated into a sales contract unless the seller takes affirmative action to remove them.¹⁴³ Under § 2-314, helmets must be fit for the ordinary purpose for which they were intended.¹⁴⁴ In order for § 2-314 to apply, the seller must be a “merchant with respect to goods of that kind.”¹⁴⁵ For a plaintiff to be protected from § 2-315, a seller must, at the time of contracting, have “reason to know of the particular purpose for which the goods are required.”¹⁴⁶ In addition, the buyer must rely on the seller’s skill or judgment in selecting the goods.¹⁴⁷ Even if a manufacturer uses conspicuous language to disclaim any implied warranties,¹⁴⁸ liability may be imposed based on a strict liability in tort theory.

D. Strict Liability

Strict liability holds manufacturers and retailers liable for the sale of defective products that subsequently cause harm to consumers.¹⁴⁹ Traditionally, strict products liability stemmed from defective manufacture and design, and failure to warn.¹⁵⁰ Restatement § 402A provides for strict liability in tort for those who sell a product in a defective condition, unreasonably dangerous to the user or consumer or his property.¹⁵¹ The seller must sell the products in the ordinary course of his

¹⁴³ U.C.C. § 2-316(2) (1977).

¹⁴⁴ U.C.C § 2-314 states:

Unless excluded or modified (Section 2-316), a warranty that the goods shall be merchantable is implied in a contract for their sale if the seller is a merchant with respect to goods of that kind.

Goods to be merchantable must be at least such as

- (a) pass without objection in the trade under the contract description; and
- (b) in the case of fungible goods, are of fair average quality within the description; and
- (c) are fit of the ordinary purposes for which such goods are used; and
- (d) run, within the variations permitted by the agreement, of even kind, quality and quantity within each unit and among all units involved; and
- (e) are adequately contained, packaged, and labeled as the agreement may require; and
- (f) conform to the promises or affirmations of fact made on the container or label if any.

U.C.C. § 2-314 (1977).

¹⁴⁵ U.C.C. § 2-314(1) (1977). A merchant is defined as a person that deals in goods of the kind or otherwise holds itself out by occupation as having knowledge or skill peculiar to the practices or goods involved in the transaction or to which the knowledge or skill may be attributed by the person's employment of an agent or broker or other intermediary that holds itself out by occupation as having the knowledge or skill. U.C.C. § 2-104(1) (1977).

¹⁴⁶ U.C.C. § 2-315 (1977). A seller is “a person that sells or contracts to sell goods.” U.C.C § 2-103(1)(o) (1977).

¹⁴⁷ U.C.C. § 2-315 (1977).

¹⁴⁸ U.C.C. § 2-316 (1977).

¹⁴⁹ Restatement (Second) of Torts § 402A (1965).

¹⁵⁰ See *Jackson v. Johns-Manville Sales Corp.*, 727 F.2d 506, 515 (5th Cir. 1985).

business.¹⁵² Comment *i* to § 402A suggests utilizing a “consumer expectations” standard¹⁵³ when deciding whether a product is “unreasonably dangerous.”¹⁵⁴

In *Rawlings Sporting Goods Co. v. Daniels*, the court held that manufacturers have “a duty to warn of dangers in the use of its product of which it knows or should know.”¹⁵⁵ Rawlings dealt with a high school quarterback who was left with severe permanent brain damage after colliding helmet-to-helmet with a teammate during practice.¹⁵⁶ The collision caused the helmet to indent one and one-half to two inches.¹⁵⁷ With the implementation of NOCSAE testing standards,¹⁵⁸ it is unlikely that this scenario would occur today. However, the possibility remains.

The economic cost of lawsuits is passed onto many consumer goods and services. Many estimate that up to fifty percent of the cost of a football helmet is a “hidden tort tax” as a result of litigation.¹⁵⁹ Consequently, strict products liability has evolved in recent years.¹⁶⁰ The 3rd Restatement of Torts retains strict liability only for

¹⁵¹ RESTATEMENT (SECOND) OF TORTS § 402A (1965) provides:

- (1) One who sells any product in a defective condition unreasonably dangerous to the user or consumer or to his property is subject to liability for physical harm thereby caused to the ultimate user or consumer, or to his property, if:
 - (a) the seller is engaged in the business of selling such a product, and
 - (b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold.
- (2) The rule stated in Subsection (1) applies although
 - (a) the seller has exercised all possible care in the preparation and sale of his product, and
 - (b) the user or consumer has not bought the product from or entered into any contractual relation with the seller. *Id.*

¹⁵² *Id.*

¹⁵³ Consumer expectation standard depends on whether the article is dangerous to an extent beyond that which would be contemplated by the ordinary consumer who purchases it, with the ordinary knowledge common to the community as to its characteristics. RESTATEMENT (SECOND) OF TORTS § 402A cmt. i (1965).

¹⁵⁴ *Id.*

¹⁵⁵ *Rawlings Sporting Goods Co. v. Daniels*, 619 S.W.2d 435, 439 (Tex. App. 1981).

¹⁵⁶ *Id.* at 437.

¹⁵⁷ *Id.* at 437-38.

¹⁵⁸ See generally NAT'L OPERATING COMM. ON STANDARDS FOR ATHLETIC EQUIP. (NOCSAE), About NOCSAE: History and Purpose, <http://www.nocsae.org/about/history.html> [hereinafter NOCSAE History].

¹⁵⁹ William A. Worthington, The "Citadel" Revisited: Strict Tort Liability and the Policy of Law, 36 S. TEX. L. REV. 227, 250 (1995); See also Kirk W. Dillard, Illinois' Landmark Tort Reform: The Sponsor's Policy Explanation, 27 LOY. U. CHI. L.J. 805, 811 n. 27 (1996); George N. Meros, Toward a More Just and Predictable Civil Justice System, 25 FLA. ST. U. L. REV. 141, 143 (1998).

¹⁶⁰ See Restatement (Third) of Torts: Products Liability (1998).

manufacturing defects, and adopts a negligence standard for defective design and warning/misinformation defects.¹⁶¹ Although it may be more difficult to pursue a claim under the new standards, it is not impossible.

In an attempt to decrease labor and insurance costs, the second largest helmet reconditioner, Circle Systems Inc., performed impact tests on fewer helmets than it was required to under NOCSAE¹⁶² guidelines.¹⁶³ As a result, about 4,000 helmets were improperly returned and worn by more than 200,000 athletes, from 8 year old youths to Division I college students, in 2005 and 2006.¹⁶⁴ Although it is unclear whether any players were hurt by this company's failure to subject the helmets to a formal drop-test,¹⁶⁵ NOCSAE data indicates in general, one in every 300 helmets fail this testing procedure.¹⁶⁶ During a drop test, helmets are subjected to strong forces from different directions.¹⁶⁷ The helmets that fail to withstand this applied pressure should be destroyed because they may leave players vulnerable to a fractured skull or a brain hemorrhage.¹⁶⁸ David Drill, former President of Circle Systems, pled guilty in District Court for failure to conduct these tests and to conspiracy to commit mail fraud.¹⁶⁹ The District Attorney on the case issued a statement that some school officials had knowledge of Drill's actions.¹⁷⁰

¹⁶¹ *Id.*

¹⁶² *See generally*, NOCSAE History, *supra* note 157. NOCSAE was formed in 1960 in an attempt to reduce injury. Since 1973, NOCSAE has required that helmets undergo a formal testing procedure and those that pass, must contain a NOCSAE label before they are released into the market. *Id.* at 32.

NOCSAE: All players shall wear helmets that carry a warning label regarding the risk of injury and a manufacturer's or reconditioner's certification indicating satisfaction of NOCSAE test standards. All such reconditioned helmets shall show recertification to indicate satisfaction with the NOCSAE test standard.



NOCSAE labels look like: *Id.*

¹⁶³ Alan Schwarz, *Some Used Helmets Did Not Have Proper Testing*, N.Y. TIMES, Dec. 12, 2007, at D1 [hereinafter *Used Helmets*].

¹⁶⁴ *Id.*

¹⁶⁵ Alan Schwarz, *A Guilty Plea for Failing to Test Youth Helmets Properly*, N.Y. TIMES, Dec. 23, 2008, at B12 [hereinafter *Guilty Plea*].

¹⁶⁶ *Id.*

¹⁶⁷ Schwarz, *Used Helmets*, *supra* note 162; *see also* Brian J. Mills, *Football Helmets and Products Liability*, 8 SPORTS LAW. J. 153, 155-158 (2001).

¹⁶⁸ Schwarz, *Used Helmets*, *supra* note 162.

¹⁶⁹ Schwarz, *Guilty Plea*, *supra* note 164.

¹⁷⁰ *Id.* United States Attorney Ralph J. Marra Jr. said, "Drill admitted to submitting hundreds of fake invoices and price quotations, sometimes on competitors' letterhead; bribing

Although there have been many improvements to helmets in recent decades, in part due to the NOCSAE test standards, problems continue. While the NOSAE standards have helped prevent many injuries, the standards are ineffective in addressing concussions.¹⁷¹ While a recent Biokinetics study by the NFL could help change this,¹⁷² it may also invite litigation.¹⁷³ As a result, manufacturers have been quick to point out that no helmet is “concussion-proof.”¹⁷⁴

IV. WHAT VARIOUS ORGANIZATIONS ARE DOING ABOUT THIS PROBLEM

A. Congress and State Legislatures

Costing the nation nearly \$17 billion each year, MTBIs have been characterized as a national public health issue.¹⁷⁵ In an attempt to help curtail this epidemic, Congress passed the *Children’s Health Act of 2000*.¹⁷⁶ This Act delegated responsibilities of research, prevention, and surveillance to the Center for Disease Control (CDC).¹⁷⁷ The CDC was required to determine the best way to measure the

school officials with gifts like golf clubs and clothes, billing the cost back to schools under the guise of professional services; and double-billing, sometimes with knowledge of the school officials involved.” *Id.*

¹⁷¹ Pellman, *supra* note 40.

¹⁷² See Shelly Anderson, *New Helmet Designs Have Concussions in Mind*, POST-GAZETTE, July 28, 2002, available at <http://www.post-gazette.com/steelers/20020728helmets0728p4.asp> [hereinafter *New Helmet Designs*]; see also Micky Collins, et al., *Newer Football Helmet Design May Reduce Incidence Of Concussions In High School Players, Shows University Of Pittsburgh Study*, UNIV. OF PITTSBURGH MED. CTR., Jan. 9, 2006, <http://www.upmc.com/mediarelations/newsreleases/2006/pages/collinshelmetstudy2006.aspx>. The Revolution helmet was developed and manufactured after several years of biomechanical laboratory testing, by Riddell to reduce the incidence and severity of concussions. *Id.* However, one of the authors of the study is Thad Ide, who employed in research and product development by Riddell, Inc. *Id.* Therefore, the results of the study may be skewed.

¹⁷³ *Id.* This suggests that the results of the study may be skewed. See, e.g., Alan Schwarz, *Studies for Competing Design Called Into Question*, N.Y. TIMES, Oct. 27, 2007, available at <http://www.nytimes.com/2007/10/27/sports/football/27riddell.html?scp=1&sq=Revolution%20helmet&st=cse> Although the Journal of Neurology published that Riddell’s newly designed and marketed Revolution helmet reduced concussions by thirty-one percent, the study was commissioned by Riddell, the manufacturer, and the new helmets were tested “against reconditioned traditional models of indeterminate age.” *Id.*

¹⁷⁴ Anderson, *New Helmet Designs* *supra* note 171.

¹⁷⁵ D. Thurman, et al., *Traumatic Brain Injury in the United States: A Report to Congress*. Atlanta: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control (1999) [hereinafter *Report to Congress*].

¹⁷⁶ Children’s Health Act of 2000, Pub. L. No. 106-310, § 114 STAT. 1101 (2000); see also Ctr. for Disease Control & Prevention, *Report to Congress on Mild Traumatic Brain Injury in the United States: Steps to Prevent a Serious Public Health Problem* (2003), <http://www.cdc.gov/ncipc/tbi/mtbi/mtbireport.pdf>.

¹⁷⁷ US DEPT. OF HEALTH AND HUMAN SERV., *Traumatic Brain Injury (TBI) Program*, <http://mchb.hrsa.gov/programs/tbi.htm> (last visited Oct. 1, 2009) [hereinafter *TBI Program*].

incidence and prevalence of MTBI and to report its findings to Congress.¹⁷⁸ In response, the CDC formed the Mild Traumatic Brain Injury Work Group to determine appropriate and feasible methods for assessing the incidence and prevalence of MTBI in the United States.¹⁷⁹ The CDC has provided funding to various universities to learn more about the problems resulting from MTBIs.¹⁸⁰ In addition, the CDC has published extensive materials as a part of its "Head's Up" Campaign to increase awareness about the dangers of concussions for high school athletes.¹⁸¹ CDC has put together quite an impressive marketing campaign, with separate materials tailored to physicians, coaches, parents, and players.¹⁸² These materials include informative brochures, posters, videos, and return-to-play guidelines for physicians; all can be ordered free of charge from the CDC website.¹⁸³

In addition to the federal government, individuals are taking action. Shortly after the tragic death of his 17 year old son, who collapsed and died on the sidelines after suffering from a vicious helmet-to-helmet hit two weeks prior, Dick Benson took his concerns to his state's Senate.¹⁸⁴ Benson urged the Texas state legislature to pass a bill that would require safety and emergency procedures to coaches and trainers, something that may have saved his son.¹⁸⁵ In June of 2007, Will's Bill,¹⁸⁶ an act that requires every public school coach to be CPR certified and trained in the use of a defibrillator, was signed into law.¹⁸⁷ While the legislation originally applied to public,

¹⁷⁸ *Id.* Incidence is defined as "the rate at which new cases of MTBI occur." *Id.* Prevalence is "the proportion of the U.S. population at any given time that is experiencing the effects." *Id.*

¹⁷⁹ *Id.*

¹⁸⁰ CTR. FOR DISEASE CONTROL & PREVENTION, Traumatic Brain Injury, <http://www.cdc.gov/ncipc/factsheets/tbiactivities.htm>. Baylor College of Medicine in Houston, Texas received funding to study problems resulting from mild to moderate TBI, and The Johns Hopkins University received funding to conduct a three-year evaluation of methods used to measure physical and psychosocial health outcomes of children with TBI. *Id.*

¹⁸¹ See generally NAT'L FED'N OF STATE HIGH SCHOOL ASS'N, Concussion Point of Emphasis, http://www.nfhs.org/web/2006/10/concussion_point_of_emphasis.aspx. During the 2006-2007 academic year, CDC distributed a booklet entitled "Proper Procedures for Handling Apparent Concussions" to high schools across the nation. *Id.*

¹⁸² See generally Coaches Tool Kit, *supra* note 71; see also CTR. FOR DISEASE CONTROL & PREVENTION, Heads Up: Brain Injury in Your Practice Tool Kit, http://www.cdc.gov/ncipc/pub-res/tbi_toolkit/toolkit.htm; CTR. FOR DISEASE CONTROL & PREVENTION, Heads Up: Brain Injury in Your Practice A Tool Kit for Physicians, http://www.cdc.gov/ncipc/tbi/physicians_tool_kit.htm;

CTR. FOR DISEASE CONTROL & PREVENTION, Heads Up: Preventing Brain Injuries, http://www.cdc.gov/ncipc/pub-res/tbi_toolkit/patients/preventing.htm.

¹⁸³ Coaches Tool Kit, *supra* note 70.

¹⁸⁴ Schwarz, *Silence*, *supra* note 25.

¹⁸⁵ TEX. STATE ATHLETIC TRAINERS' ASS'N, SB 82 Information, <http://www.tsata.com/>; see also TEX. EDUC. CODE § 33 (2007).

¹⁸⁶ TEX. EDUC. CODE § 33 (2007).

¹⁸⁷ Schwarz, *Silence*, *supra* note 25.

parochial, and private schools, state senator Leticia Van de Putte said the reach of the law had to be reduced “over politics.”¹⁸⁸ At a shared cost of \$300,000 per year¹⁸⁹ for school districts,¹⁹⁰ the training places special emphasis on awareness of concussion symptoms for coaches and players.¹⁹¹ Although Will’s Bill offers protection to volunteers who follow the state mandates, it does not waive immunity nor does it create liability against a school district or its officers or employees.¹⁹²

Washington state enacted comparable legislation in July 2009 in response to a similar tragedy.¹⁹³ In 2006, Zackery Lystedt, a 13 year old linebacker collided with another player at a junior high game.¹⁹⁴ After sitting out for approximately fifteen minutes, Lystedt returned, only to later collapse on the field from a hemorrhaging brain.¹⁹⁵ Although he is alive today, Lystedt will never lead a normal life.¹⁹⁶ The state legislature expressly acknowledged that youth athletes are put back on the field prematurely, even though return to play standards for concussions are currently in place.¹⁹⁷ In response, the state mandated that each school district collaborate with the Washington Interscholastic Activities Association to develop concussion management guidelines and a plan for improved symptom awareness.¹⁹⁸ The bill requires parents and athletes to sign an information form prior to each season.¹⁹⁹ Known for its stringent requirements, the law prohibits those under 18, who are suspected of sustaining a concussion, from returning to play without a licensed

¹⁸⁸ *Id.*

¹⁸⁹ TEX. DIV. OF POLICY COORDINATION, Fiscal Impact, *available at* <http://ritter.tea.state.tx.us/rules/commissioner/proposed/1208/76-1003-ltrprop.html> (last visited Aug. 26, 2009). The new rule will require the roughly 6,000 staff to maintain two-year certifications at a cost of about \$50 per individual. *Id.*

¹⁹⁰ *Id.* “There would be no fiscal implications anticipated for the state.” *Id.*

¹⁹¹ Leticia Van de Putte, *Bill Summary: 80th Legislative Session*, 3 (2007) *available at* <http://www.senate.state.tx.us/75r/senate/members/dist26/pdf/NLFall2007.pdf> (last visited Sept. 29, 2009).

¹⁹² Tex. Educ. Code § 33.210 (2007); Tex. Educ. Code § 33.211 (2007); *see also* Leticia Van de Putte, Summary of SB 82: Extracurricular Safety-Training, 80th Legislative Session: Final Bill Report 42 (2007) *available at* <http://www.senate.state.tx.us/75r/Senate/members/dist26/pr07/p060607a.htm> (last visited Sept. 29, 2009).

¹⁹³ WASH. REV. CODE § 28A.600.190 (2009).

¹⁹⁴ Chantal Anderson, *State Lawmakers Approve Concussion Bills for Young Athletes*, THE SEATTLE TIMES, *available at* http://seattletimes.nwsources.com/html/politics/2008838865_concussionbill10m.html.

¹⁹⁵ *Id.*

¹⁹⁶ *Id.*

¹⁹⁷ WASH. REV. CODE § 28A.600.190(1)(c) (2009).

¹⁹⁸ WASH. REV. CODE § 28A.600.190(2) (2009).

¹⁹⁹ *Id.*

health care provider's written approval.²⁰⁰ In addition, volunteer health care providers who clear an athlete are insulated from civil liability.²⁰¹

B. At the High School Level

National Federation of State High School Association (NFHS) establishes policy for high schools around the nation.²⁰² State athletic associations follow mandates by the NFHS, but may strengthen certain regulations.²⁰³ To reduce the incidence of injury, the NFHS Football Rules Committee²⁰⁴ has made several rule changes. Beginning with the 2006-2007 academic year, the Committee mandated that all helmets have a four-snap chin strap, and that all athletes wear colored mouthguards.²⁰⁵ Although “initial contact with the head while blocking or tackling” has been illegal in high school football since 1977, the Committee has continued to find ways to “take the head out of football.”²⁰⁶ In 2006, the word “intentional” was removed from the definition of spearing,²⁰⁷ in an effort to “eliminate[] the official's burden of reading *intent* into a clearly unsafe act before imposing the appropriate rule infraction penalty.”²⁰⁸ In addition, NFHS offers “suggestions” when dealing with brain and spinal cord injuries at athletic events.²⁰⁹ The recommendations include: preseason physicals be administered to all athletes, a physician present at all

²⁰⁰ WASH. REV. CODE § 28A.600.190(3), (4) (2009).

²⁰¹ WASH. REV. CODE § 28A.600.190(4) (2009).

²⁰² National Federation of State High School Associations, About Us Page, <http://www.nfhs.org/activity3.aspx?id=3260&linkidentifier=id&itemid=3260> (last visited Sept. 3, 2009).

²⁰³ Bob Herman, *2007 Football Fatality Survey Shows Decrease of Deaths*, NAT'L FED'N OF STATE HIGH SCHOOL ASS'N, available at http://www.nfhs.org/web/2008/02/2007_football_fatality_survey_sh.aspx

²⁰⁴ The Committee is comprised of one voting member from each NFHS state high school association and representatives from the NFHS Coaches Association and NFHS Officials Association. NAT'L FED'N OF STATE HIGH SCHOOL ASS'N (NFHS), *Changes Made in Spearing Rule, Uniforms in High School Football*, Jan. 31, 2006, available at http://www.nfhs.org/web/2006/01/changes_made_in_spearing_rule_uniforms_in_high_school_football.aspx [hereinafter *Changes*].

²⁰⁵ *Id.*

²⁰⁶ *Id.*

²⁰⁷ *Id.* at Rule 2-40. See also NCAA, NCAA 2008 FOOTBALL RULES AND INTERPRETATIONS 52 (2008), http://www.ncaapublications.com/uploads/pdf/football_rulesadc982b5-03fb-4e27-828c-c2d26b95e6c1.pdf [hereinafter *Rules*]. Spearing is the use of the helmet (including the face mask) in an attempt to punish an opponent. *Id.*

²⁰⁸ Brad Cashman, executive director of the Pennsylvania Interscholastic Athletic Association and chair of the NFHS Football Rules Committee, explained why “intentional” was removed from the spearing rule. NFHS, *supra* note 191.

²⁰⁹ Frederick O. Mueller, Ph.D. & Robert C. Cantu, M.D., *Reducing Brain and Spinal Injuries in Football and Other Athletic Activities*, NAT'L FED'N OF STATE HIGH SCHOOL ASS'N, available at http://www.nfhs.org/web/2003/11/sports_medicine_reducing_brain_and_spinal_injuries_in_football.aspx

games and practices, exercising and strengthening neck muscles, proper blocking and tackling without the head, and properly fitted helmets.²¹⁰ NFHS has designated procedures for handling concussions:

- (1) remove athlete from play; (2) ensure that the athlete is evaluated by an appropriate health-care professional and don't try to judge the seriousness of the injury yourself; (3) inform the athlete's parents or guardians about the known or possible concussion and give them the fact sheet on concussion; and (4) allow the athlete to return to play only with permission from an appropriate health-care professional.²¹¹

With more than seven million participants in high school sports,²¹² these recommendations could have lasting effects on the lives of athletes and their families. While many school districts require paramedics and an ambulance to be present during football games, only forty-two percent of high schools in the United States have certified athletic trainers.²¹³ Bob Colgate, the assistant director of the National Federation of State High School Associations, admitted the main culprit was a lack of funding.²¹⁴

C. At the College Level

The NCAA, originally called Intercollegiate Athletic Association of the United States (IAAUS), originated from President Theodore Roosevelt's reservations about football.²¹⁵ In the early 1900s, the game resulted in many serious injuries and deaths.²¹⁶ Roosevelt assembled leaders from 13 collegiate institutions to reform or abolish the game.²¹⁷ Consequently, the American Football Rules Committee was formed to make football safer.²¹⁸ The Rules Committee implemented changes, including introducing the forward pass, increasing the distance for a first down from five to ten yards, and banning all mass formations and gang tackling.²¹⁹

²¹⁰ *Id.*

²¹¹ *Changes, supra* note 203.

²¹² Jason Mihalik, *Managing the Student-Athlete Suffering From Concussion: Is it Worth The Headache?*, *HIGH SCHOOL TODAY*, Oct. 2007.

²¹³ Schwarz, *Silence, supra* note 25. *See also* OHIO HIGH SCH. ATHLETIC ASS'N (OHSAA), 2008 FOOTBALL MANUAL 21 (2008), *available at* <http://www.ohsaa.org/sports/ft/boys/manual.pdf>. "There is no OHSAA requirement that physicians, trainers or EMT's (squad) be present at regular season football games."

²¹⁴ Schwarz, *Silence, supra* note 24. "Budgets are tight... You hate to say that, but it's a reality." *Id.*

²¹⁵ NCAA.ORG, *The History of the NCAA*, <http://www.ncaa.org/wps/ncaa?ContentID=1354> [hereinafter *History*].

²¹⁶ *Id.*; *see also* THEODORE ROOSEVELT ASS'N, *President Roosevelt Saves the Game*, <http://www.theodoreroosevelt.org/kidscorner/football.htm>. Eighteen players died in 1905 with 20 times fewer players than there are today. *Id.*

²¹⁷ NCAA, *History, supra* note 214.

²¹⁸ Theodore Roosevelt Ass'n, *supra* note 215.

²¹⁹ *Id.*

Over the years, the NCAA has continued to maintain safety standards and has developed guidelines for recruiting and financial aid.²²⁰ The NCAA Football Rules Committee believes the helmet is “for protection of the player” and has designated using the helmet as a weapon as an unethical practice.²²¹ The Committee specifies that “intentional helmet-to-helmet contact is never legal, nor is any other blow directed toward an opponent’s head” and directs that “flagrant offenders shall be disqualified.”²²² Although officials reserve the right to eject a player who delivers a helmet-to-helmet hit, “disciplinary measures are rare and difficult to enforce because ... they come from conference offices, and not the NCAA.”²²³ University of Hawaii Coach, June Jones, cautioned that the NCAA was “behind” the NFL in dealing with helmet-to-helmet hits and that it is something that needs to be addressed.²²⁴ He advised that the only way to stop these flagrant fouls was to have conference commissioners review game tapes and suspend athletes.²²⁵

The increased press on the potential long-term effects of concussions may be one reason that the NCAA enacted rule changes in 2008.²²⁶ According to Rule 9-1-3-a and 9-1-3-b “no player shall initiate contact and target an opponent with the crown of his helmet. No player shall initiate contact and target a defenseless opponent *above the shoulders* (whether or not with the helmet.)”²²⁷ The rule also notes that although rare, “an offensive player can be penalized should he use his helmet to punish a player.”²²⁸ Violation of these rules results in a 15 yard penalty, and if a

²²⁰ NCAA, *History*, *supra* note 214. These values are demonstrated in its mission statement. The NCAA’s Mission is to “govern competition in a fair, safe, equitable and sportsmanlike manner, and to integrate intercollegiate athletics into higher education so that the educational experience of the student-athlete is paramount.” NCAA.org, Our Mission, *available at* <http://www.ncaa.org/wps/ncaa?key=/ncaa/NCAA/About%20The%20NCAA/Overview/mission.html> (last visited Oct 1, 2009).

²²¹ Rules, *Supra* note 206, at 9.

²²² *Id.* at 10.

²²³ *See* Thamel, *supra* note 21.

Both Dave Parry, who works with officials in the Big Ten, and Verle Sorgen, who works with the Pac-10 officials, could not recall a specific instance in their conferences in which a player was given a punishment, like a suspension, in the aftermath of an illegal or dangerous hit. (The NFL has commonly fined players this season.) Neither could specifically cite an instance of a player being ejected for a helmet-to-helmet hit in recent years. *Id.*

²²⁴ *Id.*

²²⁵ *Id.*

²²⁶ *See* NCAA, Protect Your Head and Neck poster, *available at* http://www.ncaa.org/wps/wcm/connect/e91d35804e0db1b3aab1fa1ad6fc8b25/2008_football_poster.pdf?MOD=AJPERES&CACHEID=e91d35804e0db1b3aab1fa1ad6fc8b25 (last visited Oct. 1, 2009) [hereinafter poster]; *see also* Rules, *supra* note 206; *but see* Ray Glier, *End Zone to Danger Zone*, N.Y. TIMES, Aug. 26, 2009, *available at* <http://www.nytimes.com/2007/08/26/sports/ncaafootball/26kickoff.html?scp=9&sq=ncaa%202008%20rule%20change%20helmet%20to%20helmet&st=cse> [hereinafter *End Zone*].

²²⁷ Rules, *supra* note 206 (emphasis added).

²²⁸ *Id.*

defensive player is penalized, an offensive first down.²²⁹ The committee also introduced Rule 9-1-3, which prohibits initiating contact with and targeting a defenseless²³⁰ opponent.²³¹ The sports medicine handbook indicates that these rules are for the protection of both, the player delivering the blow and the player receiving the hit.²³²

Despite what appears to be an increase in the prevention of concussions in collegiate football athletes, the NCAA ignores other prevention aspects of the game. Even with these rule changes, ball carriers may still be hit helmet-to-helmet with no violation.²³³ Furthermore, in an effort to reduce touchbacks,²³⁴ NCAA enacted a rule change that would move the kickoff team back five yards to its 30 yard line.²³⁵ Many have publicly opposed this decision. Former Purdue Coach, Joe Tiller, opposed the rule change, as he said it “seemed contrary to the NCAA’s effort to create a safer game.”²³⁶ Harold King, ten year trainer for the Atlanta Falcons, expressed his concern about the change.²³⁷ “I’m ... worried about ... the concussions from giving these guys five more yards of speed to run into each other and increasing the number of times they can do that, maybe by four to six more returns a game.”²³⁸

On-the-field rules are not the NCAA’s only problem. According to Rule 15.3.3.1.1, financial aid may only be awarded on a one year basis, and the student

²²⁹ *Id.*

²³⁰ The rules indicate that a defenseless player is any of the following:

The quarterback moving down the line of scrimmage who has handed or pitched the ball to a teammate, and then makes no attempt to participate further in the play; the kicker who is in the act of kicking the ball, or who has not had a reasonable length of time to regain his balance after the kick; the passer who is in the act of throwing the ball, or who has not had a reasonable length of time to participate in the play again after releasing the ball; the pass receiver whose concentration is on the ball; the pass receiver who has clearly relaxed when the pass is no longer catchable; the kick receiver whose attention is on the downward flight of the ball; the kick receiver who has just touched the ball; the player who has relaxed once the ball has become dead; and the player who is obviously out of the play. *Rules, supra* note 206.

²³¹ *Id.* at 119.

²³² NCAA, 2008-09 NCAA Sports Medicine Handbook 96 [Hereinafter Handbook].

²³³ *See e.g. Rules, supra* note 206, at 9, 67-8.

As ball carrier A20 sweeps around the end and heads upfield, he lowers his head and contacts defensive end B89 who is trying to tackle him. The players meet helmet to helmet. Ruling: No foul. Conduct of players and others subject to rules foul. Neither A20 nor B89 is a *defenseless* player and neither has *targeted* his opponent in the sense of Rule 9-1-3.” *Id.*

²³⁴ Mike Clark, chairman of the rules committee and coach at Bridgewater College (Virginia) stated that the reasoning behind the rule change was to reduce touchbacks, thereby lengthening games without taking time off of the clock. Glier, *End Zone, supra* note 225.

²³⁵ *Id.*

²³⁶ *Id.*

²³⁷ *Id.*

²³⁸ *Id.*

athlete must be informed that the renewal will not be automatic.²³⁹ Once an athlete has been injured, the colleges and universities have full latitude to determine whether or not to continue to extend an athletic scholarship.²⁴⁰ Although it is unlikely that this rule will have an actual impact on student-athletes because scholarships may be extended to these individuals and not counted toward the institutional maximums, it remains a possibility.²⁴¹

Like state high school athletic associations,²⁴² the NCAA has a catastrophic injury insurance (CAT) policy that covers student-athletes injured while participating in a covered intercollegiate athletic activity.²⁴³ While the policy covers a maximum lifetime benefit of \$20,000,000, it has a \$75,000 deductible that must be met prior to any payouts.²⁴⁴ As a part of the White Case Settlement, the NCAA has adopted Proposal 2005-102, a new rule permitting Division I institutions to provide year-round, comprehensive health insurance to student-athletes.²⁴⁵ The settlement also grants permission for universities to “provide basic accident coverage for student-athlete injuries stemming from athletics’ participation,” in addition to the NCAA’s CAT policy.²⁴⁶

The NCAA has laid out criteria for sideline assessment of a possible brain injury, which includes questioning downed-players on the field, documenting all present symptoms, determining whether further medical action is needed, and providing follow-up care.²⁴⁷ Like other athletic organizations, the NCAA focuses on individual concussion management based on baseline neurological testing and a gradual return-

²³⁹ NCAA RULE 15.3.3.1.2, 2008-09 NCAA D-1 MANUAL at 179. *But see* NCAA, *White v. NCAA Settlement*, NCAA.org, available at www.ncaa.org/wps/ncaa?ContentID=29642. [hereinafter *White Case Settlement*]. A provision of the White Case Settlement may allow for colleges and universities to extend multi-year scholarship. *Id.*

²⁴⁰ NCAA RULE 15.3.3.1.3, 2008-09 NCAA D-1 MANUAL at 180, which states
It is not permissible for an institution to assure the prospective student-athlete that it automatically will continue a grant-in-aid past the one-year period if the recipient sustains an injury that prevents him or her from competing in intercollegiate athletics, *but* an institutional representative may inform the prospective student-athlete of the regular institutional policy related to renewal or continuation of aid past the one-year period for recipients who become ill or injured during their participation. *Id.*

²⁴¹ NCAA RULE 15.5.1.3, 2008-09 NCAA D-1 MANUAL at 182, “A counter who becomes injured or ill to the point that he or she apparently never again will be able to participate in intercollegiate athletics shall not be considered a counter beginning with the academic year following the incapacitating injury or illness.” *Id.*

²⁴² OHSAA, OHSAA Catastrophic Accident Insurance, available at <http://www.ohsaa.org/members/insurance.htm>.

²⁴³ NCAA, Student Athlete Insurance Programs: Catastrophic Injury Insurance Program, <http://www.ncaa.org/wps/ncaa?contentID=4386>.

²⁴⁴ *Id.* NCAA, Student Athlete Insurance Programs: Catastrophic Injury Insurance Program, <http://www.ncaa.org/wps/ncaa?ContentID=4368>.

²⁴⁵ White Case Settlement, *supra* note 238.

²⁴⁶ *Id.*

²⁴⁷ *See generally Handbook, supra* note 231, at 49-52.

to-play process once symptoms have subsided.²⁴⁸ Although the handbook stresses that “it is essential that *no* athlete be allowed to return to participation when *any* symptoms, including mild headache, persist,”²⁴⁹ the handbook goes on to conclude that “for any injury that involves significant symptoms, long duration of symptoms or difficulties with memory function (either retrograde or antegrade), not be allowed to return to play during the same day of competition.”²⁵⁰ It would seem that a coach, trainer, or athlete could comply with the NCAA sports medicine standards and choose to return to competition before recovery, as long as it is not within the same day.

D. At the Professional Level

The NFL has implemented several moderate changes in an attempt to decrease head injuries: including fines, baseline testing for effective management of concussions, and “whistle-blower” systems.²⁵¹ The NFL also intends to enforce rules requiring players to properly buckle their chin strap, and to distribute a brochure “to players to help educate them and their families about concussions.”²⁵² In addition, the NFL has shared concussion research with the Department of Defense.²⁵³

1. Prevention and Management

a. Fines

NFL Commissioner Roger Goodell believes that increased monetary penalties have already made an impact on player safety.²⁵⁴ After viewing game tapes from the second half of the 2008 season, Goodell commented that the tackling techniques that lead to injury had decreased following the imposition of fines.²⁵⁵ While the NFL continues to stiffen the financial penalties against players who engage in unnecessarily rough hits, some players have spoken out against the plan. Pittsburgh Steelers’ strong safety Troy Palomalu complained that the fines are more about

²⁴⁸ *Id.*

²⁴⁹ *Id.*

²⁵⁰ *Id.*

²⁵¹ *NFL to Blow Whistle on Concussions*, PITTSBURGH TRIBUNE-REVIEW, June 20, 2007, available at http://www.Pittsburghlive.com/x/dailycourier/sports/highschoolcentral/s_513408.html [hereinafter *Blow Whistle*].

²⁵² *Id.*

²⁵³ *Nfl.com, Commissioner Goodell Optimistic New Labor Deal Will Get Done*, Jan. 31, 2009, <http://www.nfl.com/news/story?id=09000d5d80e741dd&template=without-video&confirm=true>.

²⁵⁴ *Id.*

²⁵⁵ *Id.* “We have to do whatever we can to remove any of the techniques and any of the tactics that can unnecessarily risk injury to those players,” he said. “We have very aggressively done that.” *Id.*

increasing revenue than player safety.²⁵⁶ There may be some validity in Palomalu's argument. Defensive end, Jared Allen has been fined over \$90,000 this year for a series of late hits.²⁵⁷ Defensive-end Julius Peppers was fined \$10,000 in October 2008 for a late hit on Green Bay's quarterback and again on December 5, 2008, for a helmet-to-helmet hit on Atlanta's quarterback.²⁵⁸ Even if the NFL is concerned about the physical well-being of its players, this may indicate the fines imposed by the NFL are not the most effective means to deter illegal hits.²⁵⁹ Palomalu even criticized that football "loses so much of its essence when it becomes ... a pansy game" created by less aggressive hits.²⁶⁰

b. Baseline tests

Beginning with the 2007 season, the NFL mandated that all players undergo baseline testing.²⁶¹ On June 19, 2007, all 32 teams were ordered to send their doctors and trainers to a meeting in Chicago for the first league-wide concussion summit.²⁶² At the conference, Goodell and Dr. Joseph Maroon, the Steelers' neurological surgeon, mandated a "standard of care" for all teams to adopt: administering a baseline test "before each season and after head trauma occurs."²⁶³ "The athletes must return to the 'before' standard prior to being allowed to resume play."²⁶⁴ It appears, however, that the NFL has not strictly enforced this regulation.²⁶⁵ Some attribute this to the NFL's perceived desire to base return-to-play decisions solely to increase the bottom line.²⁶⁶

²⁵⁶ Espn.com, Polamalu Says NFL's Fines for Hits More about Money, Not Player Safety, Oct. 17, 2008, available at <http://sports.espn.go.com/nfl/news/story?id=3646392&campaign=rss&source=ESPNHeadlines> [hereinafter Espn].

²⁵⁷ SportsIllustrated.com, NFL Fines Allen, Peppers, Dec. 5, 2008, <http://sportsillustrated.cnn.com/2008/football/nfl/12/05/fines.ap/index.html>.

²⁵⁸ *Id.*

²⁵⁹ *Id.*

²⁶⁰ Espn, *supra* note 255.

²⁶¹ Goodell Orders Teams to Attend Concussion Summit, USA TODAY, May 2, 2007, available at http://www.usatoday.com/sports/football/nfl/2007-05-02-concussion-summitt_N.htm?csp=34

²⁶² Dave Goldberg, Goodell Pushes for NFL Concussion Summit, The Washington Post, May 3, 2007, available at http://www.washingtonpost.com/wp-dyn/content/article/2007/05/03/AR2007050300031_pf.html

²⁶³ Blow Whistle, *supra* note 250.

²⁶⁴ *Id.*

²⁶⁵ *See* Reiss, *supra* note 15.

²⁶⁶ *See e.g.* Gary Mihoces, Concussions Force Hard Look Inward Around NFL, USA Today, June 19, 2007, available at http://www.usatoday.com/sports/football/nfl/2007-06-18-concussions-cover_N.htm [hereinafter Inward Look]. Attorney Michael Kaplen, president of the Brain Injury Association of New York State, stated that the NFL is "taking guys and letting them go back to play very shortly after they have this concussion, within the same game. There's no reason for them to return except for the dollars and cents of the league." *Id.* See generally Justin P. Caldarone, Professional Team Doctors: Money, Prestige, and Ethical

c. *Whistleblower system*

Goodell announced NFL plans to establish an anonymous “whistle-blower” system in an attempt to ensure that medical concerns override competitive decisions.²⁶⁷ This announcement followed accusations by Ted Johnson, former Patriots’ middle linebacker, that Coach Bill Belichick pushed him to return to the field before he had recovered from a concussion.²⁶⁸ Once a player makes a report, the NFL will conduct investigations to determine whether further action is necessary.²⁶⁹

d. *The ‘88 Plan’*

The ‘88 Plan’ (Plan), named after retired NFL tight-end John Mackey, age 67, provides up to \$88,000 a year for nursing care or daycare or \$50,000 for in-home care for ex-players who have dementia or Alzheimer’s.²⁷⁰ Sylvia Mackey, John Mackey’s wife, is content with the Plan, and has turned down countless attorneys who would like to bring suit on her husband’s behalf.²⁷¹ The NFL disclaims any

Dilemmas, 9 Sports L.J. 131, 131-43 (2002) (describing team doctors’ standard of care, the legal implications that arise from the breach of that standard, and potential solutions to avoid future compromises to an athlete’s health for monetary gain).

²⁶⁷ Mihoces, *Inward Look*, supra note 265. See also Gary Mihoces, *NFL Tries to Improve Players’ Understanding of Injury*, USA Today, June 18, 2007, available at http://www.usatoday.com/sports/football/nfl/2007-06-18-league-sidebar_N.htm. Goodell stated, “The whistle-blower concept is there to ensure that if anyone feels under pressure or seems under pressure to return to play before they are physically capable, then we will find that out on a confidential basis and look at it.” Gene Upshaw, former executive director of the NFL Players Association and now deceased, also stressed the need to “take the coach out of the decision-making. It’s the medical people that have to decide.” Alan Schwarz, *Dark Days Follow Hard-Hitting Career in NFL*, N.Y. Times, Feb. 7, 2007, at A1 [hereinafter *Dark Days*].

²⁶⁸ Schwarz, *Dark Days*, supra note 266. Ted Johnson made headlines after commenting, “There’s something wrong with my brain. And I know when it started.” *Id.* At age 34, Johnson was diagnosed with “permanent and degenerative problems with memory and depression” as a result of sustaining repeated concussions. Schwarz, *Leaving Brains*, supra note 80. Johnson attributes his decline to a concussion he sustained during a game in August 2002. Schwarz, *Dark Days*, supra note 267. Four days later, Johnson said he sustained another concussion during practice, after Coach Bill Belichick disregarded the trainer’s recommendation, and subjected him to full-contact play. *Id.* In 2005, Johnson announced his retirement. “I can no longer ignore the severe short- and long-term complications of the concussive head injuries I have sustained over the years.” Patriots.com, *Ted Johnson Announces His Retirement*, July 28, 2005, <http://www.patriots.com/news/index.cfm?ac=latestnewsdetail&pid=12227&pci=47>.

²⁶⁹ Clifton Brown, *NFL Welcomes Whistle-Blowers on Concussions*, N.Y. TIMES, May 23, 2007, available at http://www.nytimes.com/2007/05/23/sports/football/23nfl.html?_r=1&scp=1&sq=NFL+whistle+blower&st=nyt.

²⁷⁰ *For Ailing NFL Players, a New Program*, INTERNATIONAL HERALD TRIBUNE, March 23, 2007 [hereinafter *For Ailing NFL Players*]. The monetary amount was originally set at \$85,000, but changed to 88, Mackey’s number after his wife, Sylvia, pushed for the program. *Id.*

²⁷¹ Alan Schwarz, *Wives United by Husbands’ Post-N.F.L. Trauma*, N.Y. TIMES, March 14, 2007, available at <http://query.nytimes.com/gst/fullpage.html?res=9a03e6d81131f937a25>

responsibility and denies that the conditions may have been exacerbated by injuries sustained while competing.²⁷² Their motivation instead comes from the “growing population of aging former players.”²⁷³ NFL spokesman, Greg Aiello, stated “It is a matter of addressing a need, without regard to cause or circumstances.”²⁷⁴

The plan was a long-time coming for the families of many former players who have made sacrifices to pay for the needed care of loved ones, due to their declining health.²⁷⁵ Former players who suffer from dementia do not qualify for the NFL’s disability insurance plan because both the NFL and Players Association do not consider the condition “football-related.”²⁷⁶ This is contrary to research that indicates a link between football and subsequent problems.²⁷⁷ Ninety-seven former players are currently receiving assistance.²⁷⁸ Dr. Eleanor Peretto, wife of former lineman Ralph Wenzel, remains skeptical that the Plan will work as designed.²⁷⁹

750c0a9619c8b63&sec=health&spon=&scp=2&sq=tod%20johnson%20dementia&st=cse [hereinafter *Wives United*]. “This is better, because everyone who is affected will benefit, whether they were stars or Hall of Famers or just regular players.” *Id.*

²⁷² *Id.*

²⁷³ For Ailing NFL Players, *supra* note 269.

²⁷⁴ *Id.*; see also George Vecsey, *Don’t Close the Door on the Wives of Ex-Players*, N.Y. TIMES, Dec. 17, 2008, at B10.

The neglect reminded me of covering Appalachia in the early ’70s — the coal industry came up with doctors who insisted coal dust wasn’t so bad. Heck, they said, it might even be a cure for the common cold. Then I ran into a maverick physician from West Virginia who carried around a post-mortem slide of a miner’s lung, which showed the grime and damage from pneumoconiosis, or black lung disease. That cured me of trusting industry medical experts. *Id.*

²⁷⁵ Schwarz, *Wives United*, *supra* note 270. Dr. Peretto, a senior director in health policy for Pfizer, said long-term care for her husband, Ralph Wenzel would leave their retirement accounts bankrupt. *Id.* Wenzel’s monthly pension from the NFL is \$925, and the assisted living center where he resides is approximately \$65,000 per year. *Id.* Kay Morris, age 70, works almost full-time to assist with her husband’s medical expenses. Alan Schwarz, *N.F.L. Meeting Irks Wives of Ill Retirees*, N.Y. TIMES, Dec. 12, 2008, at D4. At 65, Sylvia Mackey was forced to return to work as a flight attendant for United Air Lines because her husband’s pension of \$2,450 a month was not adequate to cover their expenses. Schwarz, *Wives United*, *supra* note 270. John regularly attends adult day-care at a cost of \$76 per day. *Id.* Sylvia acknowledged that if it wasn’t for the 88 Plan, she would likely have to sell her home. *Id.* In addition, families may have difficulty finding facilities to house these former athletes because of their size and the propensity for those who suffer from Alzheimer’s to become violent. *Id.*

²⁷⁶ *Id.*

²⁷⁷ See OMALU, *supra* note 79. Mr. Wenzel’s neurologist determined “on-field brain trauma was the probable cause of his Alzheimer’s-type dementia.” Schwarz, *Wives United*, *supra* note 270. A 2003 study of 2,500 retired NFL players conducted at the University of North Carolina indicated 263 ex-players believed concussions have permanently affected their ability to think and remember as they aged. For Ailing NFL Players, *supra* note 269.

²⁷⁸ Vecsey, *supra* note 273.

²⁷⁹ Schwarz, *Wives United*, *supra* note 270. She shares this skepticism with Sharon Hawkins, wife of former Raiders’ offensive lineman. *Id.* “Many former NFL players and their families have complained that the league’s disability insurance system is far too strict, with thresholds too high and hurdles too numerous for the deserving to get help.” *Id.*

Gene Upshaw, former executive director of the NFL Players Association and now deceased, acknowledged these concerns and promised less “red tape” for the ‘88 Plan.²⁸⁰ However, the ‘88 Plan’ will be determined by the same six-member panel as the existing disability policy.²⁸¹ In order to qualify for the funds, players will have to take a baseline test to determine dementia or Alzheimer’s.²⁸²

e. Recent Studies

A preliminary study commissioned by the NFL and conducted at University of Michigan’s Institute for Social Research, found players aged 30-49 are 19 times more likely to experience Alzheimer’s disease or similar memory-related diseases than the national average,²⁸³ while those over the age of 50 are five times more likely.²⁸⁴ The NFL has noted that this study is questionable, as it has not been peer reviewed, and was based on questions asked to 1,063 retired players chosen at random via a telephone interview.²⁸⁵ Despite the NFL’s reservations, the recent findings have caught the interests of Congress. On October 28, 2009, the House Judiciary Committee held a hearing, where the NFL and the Player’s Union were criticized for their minimization of the mounting evidence and that their “solutions” thus far have been inadequate.²⁸⁶

V. OPTIONS FOR REFORM

A. Potential Implementations

1. Baseline Tests

The first step in effective management of concussions is to increase the administration of ImPACT or similar baseline tests in high schools and colleges throughout the country. For schools currently using this technology, baseline tests should be administered at least once per year.²⁸⁷ It is recommended that baseline tests be given every six months to athletes whose ages are 8-15, because the brain is

²⁸⁰ Schwarz, *Wives United*, *supra* note 270.

²⁸¹ *Id.*

²⁸² Dave Goldberg, *Not Forgotten, Just Forgetting*, THE HERALD TRIBUNE, March 25, 2007, at C11, available at <http://www.heraldtribune.com/article/20070325/SPORTS/703250703> (last visited Oct. 1, 2009).

²⁸³ 1.9 percent compared to 0.1 percent. Alan Schwarz, *Dementia Risk Seen in Players in N.F.L. Study*, N.Y. TIMES, Sept. 30, 2009, A1 available at <http://www.nytimes.com/2009/09/30/sports/football/30dementia.html?adxnnl=1&adxnnlx=1257577339-z1TRJhMcbzX7lvIp3cSYw&pagewanted=all>.

²⁸⁴ 6.1 percent compared to 1.2 percent. *Id.*

²⁸⁵ *Id.*

²⁸⁶ Daniel Malloy, *Hearing Spotlights NFL Concussions*, PITTSBURGH POST-GAZETTE, Oct. 29, 2009, available at <http://www.post-gazette.com/pg/09302/1009168-66.stm>; see also Goodell Defends NFL Efforts on Concussions to House Committee, Oct. 29, 2009, available at <http://sportsillustrated.cnn.com/2009/football/nfl/10/28/congress.head.injuries.ap/index.html>; Alan Schwarz, *N.F.L. Players and Union Say They Share Blame on Head Injuries*, N.Y. TIMES, Nov. 1, 2009, SP 1, available at <http://www.nytimes.com/2009/11/01/sports/football/01union.html?scp=14&sq=concussion&st=cse>.

²⁸⁷ McCrory et al., *Manage in Children*, *supra* note 45 at 517.

cognitively maturing throughout the childhood and adolescent years.²⁸⁸ “Any assessment of baseline or post-injury cognitive function needs to factor in the normal maturation in cognition that is occurring over this period.”²⁸⁹ Once an athlete reaches 15, annual baseline testing would be adequate, as it is in adult athletes.²⁹⁰ However, such regular testing is beyond the financial resources of most schools and individuals.²⁹¹

2. Identify Athletes with Increased Risk of Concussions

There is evidence that one’s DNA may predict those at greater risk for long-term problems arising from mild head injuries.²⁹² Preliminary data has identified an association between the apolipoprotein Eε4 allele and poor clinical outcomes.²⁹³ These findings suggest a possibility to tailor future management practices towards this newly acquired information.²⁹⁴ As more data is obtained on the issue, it may be possible to regulate which positions athletes with this genetic makeup may play.²⁹⁵

3. Properly Fitted, Pressure-Laminated Mouthguards

Preliminary studies show that a properly fitted, pressure-laminated mouthguard may reduce concussive forces applied to the brain.²⁹⁶ The theory is that a properly fitted mouthguard with a posterior separation of 3 to 4 mm, will effectively increase the time and distance, over which acceleration occurs, if an upward blow is delivered to the head through the mandible.²⁹⁷ The disadvantage of pressure-laminated mouthguards is that they can cost in excess of \$200.²⁹⁸

²⁸⁸ *Id.*

²⁸⁹ *Id.* at 516,

²⁹⁰ *Id.* at 517.

²⁹¹ *Id.*

²⁹² *See infra* Liberman, note 276.

²⁹³ Joshua N. Liberman, et al., Apolipoprotein E ε4 and Short Term Recovery from Predominantly Mild Brain Injury. 58 *NEURO.* 1038, 1038-44 (2002).

²⁹⁴ McCrory et al., *Manage in Children*, *supra* note 46, at 517.

²⁹⁵ DVD: *Heads UP: Reducing the Risk of Head and Neck Injuries in Football* (Nat’l Trainers Athletic Ass’n 2006) available at <http://www.nata.org/video/headsup/index.htm>. Defensive backs are the athletes most prone to head injury in defensive positions. *Id.* Ball carriers being tackled are the most at risk in offensive positions. *Id.*

²⁹⁶ Jackson E. Winters, Commentary: Role of Properly Fitted Mouthguards in Prevention of Sports-Related Concussion, 36 *J. ATHL. TRAIN.* 339, 339-341 (2001). But see Cynthia R. Labella, et al., Effects of Mouthguards on Dental Injuries and Concussions in College Basketball, 34 *MED. & SCI. IN SPORTS & EXERCISE* 41, 41-44 (2002) (finding no significant differences between mouthguard users (.035) and nonusers (.055) in rates of concussions).

²⁹⁷ Winters, *supra* note 295.

²⁹⁸ James Blear, *WBC Reviews Mouthguards, Referees*, [boxingscene.com](http://www.boxingscene.com/?m=show&opt=printable&id=8416), <http://www.boxingscene.com/?m=show&opt=printable&id=8416> (Apr. 29, 2007).

4. New Helmet Designs

Traditionally, it has been thought that helmets were ineffective in reducing concussions.²⁹⁹ Some even believed helmets may increase injury among children.³⁰⁰ However, a recent study conducted by the NFL's Committee on Mild Traumatic Brain Injury offers hope.³⁰¹ The Committee researched the effectiveness of improved helmet design in protection against MTBIs.³⁰² The first step was to analyze game tapes from various angles to determine the location of impacts that resulted in concussions.³⁰³ Laboratory tests were then conducted with dummies to reenact the events leading up to the concussions.³⁰⁴ The study concluded that the risks of concussion are greater when hits are "low on the side and back and oblique to the face mask."³⁰⁵ Furthermore, tackling in the head-down position "involves a sixty-seven percent greater mass of the striking player by engaging his torso into the collision."³⁰⁶ These findings did not come as a surprise to industry experts.³⁰⁷ With these results in mind, manufacturers have attempted to increase padding on the sides and make helmets and face masks lighter, to enable athletes to keep their head up when fatigued.³⁰⁸

B. Funding

Various non-profit organizations and governmental institutions offer grants to organizations that research head injuries. NOCSAE offers funding for projects and research that may increase "understanding of sports injury mechanisms and injury prevention through the use of protective sports equipment."³⁰⁹ The Traumatic Brain

²⁹⁹ McCrory et al., *Manage in Children*, *supra* note 45, at 517.

Although helmet use may be effective in preventing superficial head injury in children, its role in preventing concussion and other forms of traumatic brain injury remains unproven. Furthermore, recent studies have shown a differential behavioral response of children to protective equipment with some adopting increased risk taking behavior and hence paradoxically increasing their risk of sustaining a concussive injury by wearing a 'protective' helmet. *Id.*

³⁰⁰ *Id.*

³⁰¹ See Pellman, *supra* note 41.

³⁰² *Id.*

³⁰³ *Id.* at 2.

³⁰⁴ *Id.* at 3.

³⁰⁵ *Id.*

³⁰⁶ *Id.* at 4.

³⁰⁷ Anderson, *New Helmet Designs*, *supra* note 172. Biokinetics president and biomechanical engineer Marc Beusenbergh stated, "The helmet wasn't originally designed to protect the side of the head." *Id.*

³⁰⁸ *Id.*

³⁰⁹ See Preliminary Grant Application Instructions, NOCSAE.org, <http://www.nocsae.org/research/application-p.html> [hereinafter Grant].

Injury (TBI) Act of 1996³¹⁰ “gave the Health Resources and Services Administration (HRSA) authority to establish a grant program for states to assist it in addressing the needs of individuals with TBI and their families.”³¹¹ The federal TBI program offers planning³¹² and implementation grants³¹³ to states.³¹⁴ From 1997 to 2007, forty-eight states, two territories, and the District of Columbia received at least one state agency grant.³¹⁵ For 2008, forty-seven states, the District of Columbia and one territory have received funding for Implementation Partnership grants.³¹⁶ Although the 2008 budget was \$8,910,000, the money went predominately to TBI’s, and not MTBIs.³¹⁷

While the need for research to understand post-concussive effects continues, the largest obstacle facing reform at the high school level is funding.³¹⁸ If the complaint is that NFL just wants to fatten their pockets by increasing player’s fines,³¹⁹ then perhaps the fines should go directly in a fund for the ‘88 Plan³²⁰ or towards baseline tests,³²¹ more protective helmets³²² and mouthguards for youth athletes.³²³ While Congress and state legislatures³²⁴ have gotten involved, there is much work to be

³¹⁰ Traumatic Brain Injury Act of 1996, Pub. L. No. 104-166, 110 STAT. 1446, 1446-50 (1996) (prior to 2000 amendment).

³¹¹ *Traumatic Brain Injury (TBI) Program*, US DEPT. OF HEALTH AND HUMAN SERV., available at <http://mchb.hrsa.gov/programs/tbi.htm>.

³¹² *Id.* “Planning grants are available for up to two years and allow states to build suprastructure through the Program’s four core components—establishing a TBI Statewide Advisory Board, identifying of a Lead Agency, conducting a Needs and Resources Assessment, and developing a TBI State Action Plan.” *Id.*

³¹³ Implementation grants are available for three years and provide up to \$200,000 per year for the purposes of improving access to services for individuals with TBI and their families. *Id.* In addition,

Implementation Partnership grants are available for up to three years and up to \$118,600 per year for states and up to \$85,000 per year for Territories. Created in April 2006, this category supplants the former Planning, Implementation, and Post-Demonstration grants. These grants allow State agencies to conduct any of the activities of the former grant categories, depending on what needs to be done to expand or improve their systems of services and supports, and what is best suited to the development of a State. *Id.*

³¹⁴ *Id.*

³¹⁵ *Id.*

³¹⁶ *Id.*

³¹⁷ *Id.*

³¹⁸ See Schwarz, *Silence*, *supra* note 25.

³¹⁹ See Espn, *supra* note 255.

³²⁰ See *supra* Section IV.D.1.d.

³²¹ See *supra* Section V.A.1.

³²² See *supra* Section V.A.4.

³²³ See *supra* Section V.A.3.

³²⁴ *Id.*

done. It is vital that we increase funding to public schools to effectively deal with concussion management for our youth.

C. Legal Reform

It is undisputed that the federal government, states, and athletic associations have increased safety procedures and, as a result, reduced injuries. However, there is a continued need to strengthen regulations and increase awareness of this national public health issue. Congress should mandate that all athletes in collision sports undergo annual baseline testing.³²⁵ The requirement should incorporate testing every six months for participants under the age of fifteen.³²⁶ Like The No Child Left Behind Act,³²⁷ this requirement could be tied to federal funding. For example, districts who do not require baseline tests would forego two percent of federal education funding for that fiscal year.³²⁸ States could follow Texas' lead,³²⁹ in enacting safety training programs. In the future, these plans could focus on concussion management and prevention, and be based on the most recent available research. States and the federal government could increase funding for further studies and for the purchase of more protective equipment, including improved helmets³³⁰ and mouthguards.³³¹ To raise revenue, a small tax could be added to amateur, college and professional athletic tickets. While many districts are unable to afford the cost of having a physician present at athletic events,³³² tax-deductible donations could be used by physicians who volunteer their time on a sideline.

States and athletic organizations could adopt a whistle-blower system³³³ for youth and college athletes to anonymously report if they feel pressured to return to the field before they are ready. Because of the "He-man" mentality³³⁴ and lack of knowledge of the symptoms and long-term effects of concussions,³³⁵ young athletes may not be initially receptive to the system. However, through a continued increase of education and positive role models,³³⁶ this may change. Another viable option may be to develop a hotline for troubled athletes to call if they are concerned they might have a concussion.

³²⁵ See McCrory et al., *Manage in Children* *supra* note 287.

³²⁶ *Id.*

³²⁷ No Child Left Behind Act of 2001, Pub. L. No. 107-110, 115 STAT. 1425 (2002).

³²⁸ *South Dakota v. Dole*, 483 U.S. 203, 211 (1987) (noting that two percent of funding is a "relatively small percentage of certain federal [education] funds").

³²⁹ See, e.g., TEX. EDUC. CODE § 33 (2007).

³³⁰ See *supra* Section V.A.4; see also Mueller, *supra* notes 208-09.

³³¹ See *supra* Section V.A.3; see also Mueller, *supra* notes 208-09.

³³² See Schwarz, *Silence*, *supra* note 214; see also Mueller, *supra* notes 208-09.

³³³ See *supra* Section IV.D.1.c.

³³⁴ See Schwarz, *Silence*, *supra* note 62; see also Glier, *Church*, *supra* note 63.

³³⁵ Schwarz, *Silence*, *supra* note 25 and accompanying notes 59-61; see also Davis, *supra* note 109 at 576-79.

³³⁶ See Reiss, *supra* note 16.

Organizations should become stricter when handling rule violations that occur during competition. Athletes who engage in conduct that typically results in head injury, particularly helmet-to-helmet³³⁷ and “head-down” tackling,³³⁸ could be ejected from a game for their first offense.³³⁹ For continued violations, offenders could face game suspensions, season suspensions and ultimately be banned from competition. Surveys indicate kids will do anything to stay in the game.³⁴⁰ Being sidelined due to violations of safety rules may be an effective deterrent.

Courts should adopt a “know or reason to know” standard³⁴¹ for coaches and parents who purposely disregard or neglect to see the warning signs of concussions and allow their children to continue playing. This “reason to know” standard could be borrowed from agency principles.³⁴² A person has “reason to know” a fact if they could figure out that fact “on the basis of inferences reasonably to be drawn from [other] facts known to [the person.]”³⁴³ Although an argument may be made that this higher standard would “chill athletic competition,”³⁴⁴ this opposition would be unfounded. Here, liability would not be imposed based on a simple rule violation³⁴⁵ but because of a disregard for the athlete’s safety. This gross deviation of care should be enough to overcome statutory governmental immunity³⁴⁶ as it should be characterized as “an extreme departure from the ordinary standard of conduct.”³⁴⁷

If it can be proven that a coach or trainer knew or had “reason to know” that a participant continued to play through symptoms of a concussion, then school districts and universities that hire these individuals should be also accountable for their coach’s actions. It is imperative that society hold these individuals and institutions accountable as well to deter future neglect. Such imputation “creates incentives for a [school district and university] to choose agents carefully,”³⁴⁸ and “encourages a [school district and university] to develop effective procedures” for communication.³⁴⁹ While head injuries are an “inherent”³⁵⁰ part of collision sports, continued play despite the injury does not have to be.

³³⁷ See NCAA, *Rules*, *supra* note 206, at 10.

³³⁸ Pellman, *supra* note 289.

³³⁹ See Thamel, *supra* notes 210-12.

³⁴⁰ See Schwarz, *Silence*, *supra* note 25.

³⁴¹ See Restatement of the Law (Second) of Agency § 5.01 cmt. b (1958).

³⁴² *Id.*

³⁴³ *Id.*

³⁴⁴ See discussion *supra* note 112 (citing *Bowman*, 853 N.E.2d at 992; *Gauvin*, 537 N.E.2d at 96; *Ross*, 637 S.W.2d at 14).

³⁴⁵ See discussion *supra* note 115 (citing *Karas*, 884 N.E.2d at 132).

³⁴⁶ See discussion *supra* note 130 (citing *Henney*, 2006 WL 747475, at *4 -*7).

³⁴⁷ See *Decker v. City of Imperial Beach*, 257 Cal. Rptr. 356, 363 (Cal. Ct. App. 1989).

³⁴⁸ Restatement of the Law (Second) of Agency § 5.01 cmt. b (1958).

³⁴⁹ *Id.*

³⁵⁰ See discussion *supra* note 115 (citing *Karas*, 884 N.E.2d at 132).

It appears that organizations are moving in the right direction;³⁵¹ however, there is room for improvement. One thing is clear, aggressive changes must be implemented. The future of collision sports may depend upon it.³⁵²

VI. CONCLUSION

The media has brought increased awareness to the issue of MTBIs occurring in sports.³⁵³ In contrast to the decline of other serious injuries over the past ten years, the incidence of concussions has doubled.³⁵⁴ While spotlighted by replays of vicious helmet-to-helmet hits leaving athletes unconscious on NFL Sundays,³⁵⁵ for every concussion that occurs at the professional sports level, there are tens of thousands of injuries in high schools across the United States.³⁵⁶ Conservative estimates indicate that more than 300,000 sport-related concussions occur each year in the United States.³⁵⁷ Concussions sustained during the period of cognitive maturation is particularly damaging to the young, developing brain.³⁵⁸ As compared to their professional counterparts, high school athletes typically receive less capable medical care or none at all.³⁵⁹ Robert Sallis, President of the American College of Sports Medicine has designated poor management of high school player's concussions a "matter of public health."³⁶⁰

Costing the nation approximately \$17 billion each year,³⁶¹ the government and various organizations have gotten involved in an attempt to help curtail this epidemic.³⁶² Congress delegated increasing awareness of concussion symptoms and finding methods of prevention to the CDC.³⁶³ States have enacted legislation requiring emergency procedures and safety training in high schools.³⁶⁴ NCAA and NFHS have enacted rule changes to reduce vicious hits that often result in head injuries.³⁶⁵ The NFL has increased fines for illegal hits,³⁶⁶ mandated that all players

³⁵¹ See *supra* Section IV.

³⁵² See NCAA, *History*, *supra* notes 214-16; see also Theodore Roosevelt Ass'n, *supra* notes 215, 218.

³⁵³ See *supra* Section I.

³⁵⁴ Meadows, *supra* note 46.

³⁵⁵ See *supra* Section I.

³⁵⁶ Manko, *supra* note 16.

³⁵⁷ Majerske, *supra* note 43.

³⁵⁸ McCrory et al., *Manage in Children*, *supra* note 45, at 517.

³⁵⁹ Schwarz, *Silence*, *supra* note 25.

³⁶⁰ *Id.* at note 25.

³⁶¹ Thurman, et al., *Report to Congress*, *supra* note 174.

³⁶² See *supra* Section IV.

³⁶³ TBI Program, *supra* note 176.

³⁶⁴ See, e.g., TEX. EDUC. CODE § 33.086 (2007); see also *supra* Section IV.A. ¶ 2.

³⁶⁵ See *supra* Section IV.B.; see also *supra* Section IV.C.

³⁶⁶ See *supra* Section IV.D.1.a.

have "baseline" tests of brain function to determine readiness to play after a concussion,³⁶⁷ established an anonymous whistle-blower system,³⁶⁸ and implemented an '88 Plan' to help players and ex-players cope with the costs of dementia.³⁶⁹ Various non-profit organizations offer grants for projects that may increase the understanding of sports injury mechanisms and injury prevention through the use of protective sports equipment.³⁷⁰

The high cost of MTBIs may be attributed to litigation expenses.³⁷¹ Head injuries often result in lawsuits by injured athletes, their families and/or estates under theories of negligence, strict liability, and breach of implied or express warranties against other players, coaches, school districts, sports associations, athletic trainers, physicians, helmet manufacturers, helmet reconditioners, and retailers.³⁷² To shield themselves from liability, defendants often rely on assumption of risk and sovereign immunity.³⁷³ Courts generally apply a recklessness standard to sports activities, rather than a negligence standard, because to hold otherwise would likely curtail athletic competition.³⁷⁴ Because of heightened standards, it has been difficult for plaintiffs to prevail on injuries "inherent" in the sport.³⁷⁵

While the federal government, states, and athletic associations have reduced injuries by increasing safety procedures, there is a continued need to strengthen regulations and increase awareness of this national public health issue.³⁷⁶ Congress should require all athletes in collision sports to undergo baseline testing at least once per year.³⁷⁷ States and the federal government should increase funding for further studies and for the purchase of more protective equipment.³⁷⁸ A whistle-blower system should be established for youth and college athletes.³⁷⁹ State athletic associations and sports organizations should increase penalties for rule violations to discourage individuals from violating safety regulations.³⁸⁰ Courts should adopt a

³⁶⁷ See *supra* Section IV.D.1.b.

³⁶⁸ See *supra* Section IV.D.1.c.

³⁶⁹ See *supra* Section IV.D.1.d.

³⁷⁰ See Grant, *supra* note 308.

³⁷¹ See *supra* Section III.

³⁷² *Id.*

³⁷³ *Id.*

³⁷⁴ See discussion *supra* note 112 (citing *Bowman v. McNary*, 853 N.E.2d 984, 992 (Ind. Ct. App. 2006); *Gauvin v. Clark*, 537 N.E.2d 94, 96 (Mass. 1989); *Ross v. Clouser*, 637 S.W.2d 11, 14 (Mo. 1982) (en banc)).

³⁷⁵ See discussion *supra* note 114 (citing *Mark v. Moser*, 746 N.E.2d 410, 419 (Ind. Ct. App. 2001)).

³⁷⁶ See *supra* Section IV.C.

³⁷⁷ See McCrory et al., *Manage in Children*, *supra* notes 46.

³⁷⁸ See *supra* Section V.A.3; *supra* Section V.A.4; see also Mueller & Cantu, *supra* note 196.

³⁷⁹ See *supra* Section IV.D.1.c.; see also *supra* Section V.C. ¶ 2.

³⁸⁰ See *supra* Section V.C. ¶ 3.

“know or reason to know” standard, borrowed from agency principles, for coaches and parents who ignore the warning signs of concussions and permit their child to continue playing.³⁸¹ This gross deviation of care should be enough to overcome statutory governmental immunity³⁸² as it should be characterized as “an extreme departure from the ordinary standard of conduct.”³⁸³ If it can be proven that a coach or trainer knew or had “reason to know” that a participant continued to play through symptoms of a concussion, then school districts and universities that hire these individuals should be also accountable for their coach’s actions.³⁸⁴ Although a head injury is an “inherent”³⁸⁵ part of football, poor concussion management and lack of understanding about the injury does not have to be. By implementing some of the before mentioned suggestions for reform,³⁸⁶ we will be one step closer to preventing and effectively managing concussions.

³⁸¹ See RESTATEMENT OF THE LAW (SECOND) OF AGENCY § 5.01 *cmt* b (1958), *supra* note 342.

³⁸² See discussion *supra* note 130 (citing *Henney v. Shelby City Sch. Dist.* 2006 WL 747475 at *4 -*7).

³⁸³ See *Decker*, 257 Cal. Rptr. at 363.

³⁸⁴ See RESTATEMENT AGENCY, *supra* notes 347-48.

³⁸⁵ See discussion *supra* note 115 (citing *Karas v. Strevell*, 884 N.E.2d 122, 132 (Ill. 2008)).

³⁸⁶ See *supra* Section V.