

## Goals and Obstacles in Legislating Concussion Management in Youth Sports

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### Introduction

Just before the start of the game Scott Eveland, a 17-year old linebacker on the Mission Hills High School football team in San Marcos, California, went to the head trainer.<sup>1</sup> It is difficult for any athlete, especially in “gladiator” sports like football, to ask to be taken out of the lineup because he is hurt. It is especially difficult for athletes to report injuries that are not outwardly apparent.<sup>2</sup> However, Scott took the difficult and courageous step to inform the trainer that he had a headache and asked to remain out of the game.<sup>3</sup> The head coach rebuked the trainer who recommended Scott ought to be kept out of the game, allegedly telling him, “You aren’t a (expletive) doctor.”<sup>4</sup> Scott, who had suffered a concussion earlier in the week during practice, collapsed about a half hour into the game, suffering from a brain bleed.<sup>5</sup> Scott is now permanently disabled, and while he was able to accumulate enough credits to graduate from high school, he still communicates mainly through a keyboard.<sup>6</sup>

Prior to 2009, there was no legislation specifically focused on regulating the handling of concussions in youth sports.<sup>7</sup> In May of that year, Washington Governor Christine Gregoire<sup>8</sup> signed into

<sup>1</sup> J. Harry Jones, *Suit Says District Liable for Athlete’s Brain Injury*, U~T TRIBUNE (Jan. 3, 2012), available at [http://hs.utpreps.com/news\\_article/show/174668?referrer\\_id=599610](http://hs.utpreps.com/news_article/show/174668?referrer_id=599610)

<sup>2</sup> See e.g., LINDA CARROLL & DAVID ROSNER, *The Concussion Crisis*, 36-67 (2011) for an excellent discussion of the “warrior ethos” or “macho” culture in football all the way down to the Pee-Wee Leagues. See also Erika A. Diehl, Note, *What’s All the Headache?* 23 J.L & HEALTH 83, 90 (2010) (discussing “he-man” mentality of many athletes.)

<sup>3</sup> Jones, *supra* note 1.

<sup>4</sup> *Id.*; See also, J. Harry Jones, *Scott Eveland Football Injury Case Settles*, U~T TRIBUNE (Mar. 2, 2012), available at <http://www.utsandiego.com/news/2012/mar/02/settlement-scott-eveland-football-injury-case/>.

<sup>5</sup> *Id.*

<sup>6</sup> *Settlement Finalized in Scott Eveland Case*, 10NEWS SAN DIEGO (Mar. 9, 2012), available at <http://www.10news.com/news/30646652/detail.html>.

<sup>7</sup> There has been legislation requiring training for coaches and trainers in extracurricular activities at public schools that included a focus on identifying concussions. For example see TEX. EDUC. CODE ANN. § 33.202 (West 2007).

<sup>8</sup> For background on Governor Christine Gregoire see *Christine Gregoire* Office of the Governor of Washington Digital Archives [http://www.digitalarchives.wa.gov/GovernorGregoire/transition/Chris\\_Bio.pdf](http://www.digitalarchives.wa.gov/GovernorGregoire/transition/Chris_Bio.pdf) (last visited Apr 5, 2013).

law what has become the model for concussion related “return-to-play” rules.<sup>9</sup> Thirty-seven states plus the District of Columbia have followed Washington’s lead and have passed legislation attempting to address the issue of concussions in youth sports.<sup>10</sup> Eleven others have legislation pending.<sup>11</sup> Congress has taken up such an interest in protecting young athletes from concussions that one bill was being considered by a committee on the same day that another committee held hearings on a separate bill to address the issue.<sup>12</sup>

This explosion in legislation mirrors the rapid growth in publicity surrounding concussions. The National Football League (NFL), the National Hockey League (NHL), and Major League Baseball (MLB) have all had high profile athletes suffer concussions. In a world with 24-hour sports networks and a 3.8 billion dollar fantasy sports industry,<sup>13</sup> these injuries alone have drawn interest, but the Washington state bill was spurred by the story of Zachery Lystedt.<sup>14</sup> Zachery was a high school player who suffered a permanently debilitating injury similar to Scott Eveland’s after returning to play in the same game where he suffered a concussion.<sup>15</sup> Stories like Zachery’s and Scott’s have initiated legislation in Washington and forty-seven other states, as well as proposals for federal action in Congress.<sup>16</sup>

The focus of this paper is concussions in youth sports. Through critical examination of the model law in Washington and the bills considered by Congress, this paper will determine what role legislation can and should play in limiting the harmful effects of concussions on young athletes. To evaluate the role legislation should play, it is necessary to first understand the types of traumatic brain injuries the legislation is meant to address, which means understanding the causes and effects of concussions. Section one of this paper will discuss the science surrounding concussions, including the increased susceptibility in young athletes and the longer recovery times required to allow their brains to fully heal. This section will also briefly discuss the Second Impact Syndrome (SIS) that has been a primary force behind the return-to-play rules. Lastly, this section will discuss the emerging science regarding the long-term effects of multiple concussions especially on the increased risk for chronic traumatic encephalopathy (CTE), dementia, and Alzheimer’s.

Section two will examine the scope of the concussion problem in sports today. Part of the goal of this section is to demonstrate that the problem in youth sports extends well beyond football and to other full contact sports like soccer, baseball, softball, and even cheerleading. Section three will set out what

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<sup>9</sup> Greg Bell, *Washington State: Tough New Sports Concussion Law*, THE SEATTLE TIMES (MAY 14, 2009), available at [http://seattletimes.nwsourc.com/html/localnews/2009221971\\_apsportsconcussionlaw1stldwritethru.html](http://seattletimes.nwsourc.com/html/localnews/2009221971_apsportsconcussionlaw1stldwritethru.html); Mike Florio, *NFL Urges 19 States to Pass Lystedt Law*, NBC SPORTS PRO FOOTBALL TALK (Jan 12, 2012), available at <http://profootballtalk.nbcsports.com/2012/01/12/nfl-urges-19-states-to-pass-lystedt-law/>.

<sup>10</sup> *Traumatic Brain Injury Legislation*, NAT’L CONFERENCE OF STATE LEGISLATURES <http://www.ncsl.org/issues-research/health/traumatic-brain-injury-legislation.aspx> (last updated Apr. 2012) (map showing every state except for Arkansas and Montana having enacted or proposed legislation specifically targeting youth-sports related concussions). See also, *Concussion Laws by State*, EDUCATION WEEK ONLINE, [http://www.edweek.org/ew/section/infographics/37concussion\\_map.html](http://www.edweek.org/ew/section/infographics/37concussion_map.html) (last visited May 1, 2012); *Concussion Legislation by State*, NFL HEALTH AND SAFETY, <http://www.nflevolution.com/article/Concussion-Legislation-by-State?ref=767> (last updated Aug. 14, 2012).

<sup>11</sup> *Id.*

<sup>12</sup> See Alan Schwarz, *Congress Considers Concussion Protections*, N.Y. TIMES ONLINE (Sep. 23, 2010), available at <http://www.nytimes.com/2010/09/24/sports/football/24concussion.html>.

<sup>13</sup> See Tom Van Riper, *The Biggest Sports Site You’ve Never Heard Of*, FORBES ONLINE (Apr. 16, 2009), available at <http://www.forbes.com/2009/04/16/fantasy-sports-ventures-business-sports-fantasy-sports.html>.

<sup>14</sup> Christine Clarridge, *Tahoma Schools Settle Football-Injury Claim for 14.6 Million*, SEATTLE TIMES (Sep. 17, 2009), available at [http://seattletimes.nwsourc.com/html/localnews/2009888680\\_weblystedtsettlement17m.html](http://seattletimes.nwsourc.com/html/localnews/2009888680_weblystedtsettlement17m.html).

<sup>15</sup> *Id.*

<sup>16</sup> For a list of states that have action see NAT’L CONFERENCE OF STATE LEGISLATURES, *supra* note 10. See Schwarz, *supra* note 12 for discussion of Congress considering two pieces of legislation.

the goals should be for any actions by local, state, or national government, as well as the challenges inherent in trying to use legislation to protect young athletes competing in competitive sports. Section four will examine the current laws enacted or being proposed both on the state and national levels. In section five, this paper will identify the strengths and weaknesses of the approaches taken by the states and considered by the federal government.

Finally, section six will argue that the state legislation being passed is properly focused on an achievable goal of preventing SIS and it can also be viewed as positive advocacy for awareness. However, broader application, stronger enforcement mechanisms and penalties would ensure these laws are not purely symbolic. Federal legislative action should be limited to ensuring all states have adopted a policy that includes strict return-to-play restrictions. This policy should cover all athletic programs for school-aged children and not just those operated by public schools. The policy should mandate student-athletes be removed from competition and kept out until cleared by a medical professional if there is any reasonable suspicion they sustained a concussion during a practice or a game.

However, Congress should not attempt to mandate federal requirements for education, training, or consent, all of which can be better addressed at the state level. Also, Congress should show restraint and not try to legislate concussions out of sports. This would include avoiding any attempt to craft a solution at the national level that would dictate how practices are run, how players are instructed, and how athletics are officiated.

Congress and executive agencies like Health and Human Services (HHS) or the Department of Education (DOE) would be better off taking two steps. First, the federal government should take action to increase the funding for independent research on concussions and other mild traumatic brain injuries. The information obtained through studies would not only allow for better understanding and treatment, but it would also allow students, parents, and youth coaches to be better educated about the risks. Depending on the results and their dissemination, this information could also lead to more exposure to civil liability when youth athletic organizations fail to put in place safe practices. Finally, the federal government can provide a setting for cooperation between various professional leagues, many of which benefit from Congressional policies like antitrust exemptions and youth sports. This platform could help find ways to better fund safer equipment, raise awareness, and promote safer play. These steps would have a real impact in protecting young student-athletes from sacrificing their long-term health in sports meant to promote healthy bodies and minds.

### **I. Types of Traumatic Brain Injuries the Legislation is Meant to Address**

In the past, concussions were often written off as “dings” or “getting your bell rung,” according to Julie Gilchrist of the Centers for Disease Control (CDC).<sup>17</sup> Not even ten years ago a high school hockey player remembers being told by trainers that an injury was not a concussion unless it caused him to throw up.<sup>18</sup> For the purpose of this paper, as well as for the purpose of combatting concussions in youth sports, it is important to have a general understanding of what the term concussion means, the effect on the brain, and the symptoms.

It is also important to discuss the science of what is occurring in the brain during and after a concussion to understand how age, as well as gender, affect the susceptibility and recovery times for

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<sup>17</sup> Jamie Gumbrecht, *Dealing with the Aftermath of a Serious High School Sports Injury*, CNN (Oct. 14, 2011), available at <http://www.cnn.com/2011/US/10/04/cnnheroes.sports.injuries/index.html>.

<sup>18</sup> See Posting of Phillip Stacy to <http://www.facebook.com/profile.php?id=2408422> (Mar. 4, 2012, 12:02 EST).

young athletes. The word “concussion” comes from the Latin word meaning “to shake violently,” which epitomizes why a concussed brain is such a serious injury.<sup>19</sup>

A concussion is a form of closed head traumatic brain injury.<sup>20</sup> Concussions are caused when a violent force is applied to the brain that forces brain tissue to compress, shear across other levels of brain tissue, or tear apart from other levels of brain tissue.<sup>21</sup> The brain, which is floating freely in cerebrospinal fluid, moves at a different speed than the skull when a collision occurs, and the force can lead the brain to collide with the skull.<sup>22</sup> This impact can happen on the same side as the impact, or on the side of the brain opposite of the impact when the deceleration causes the concussion.<sup>23</sup> The injury very often literally alters the brain’s electrochemistry, which can be compared to the software of a computer.<sup>24</sup> In some cases it can even change the brain’s structure.<sup>25</sup>

Concussions vary in severity, but are generally classified as mild traumatic brain injuries (mTBI) since they are not usually life threatening.<sup>26</sup> Moderate traumatic brain injuries and severe traumatic brain injuries involve extended periods of consciousness and greater cognitive deficits than concussions, but concussions can be accompanied by significant damage to the brain and skull.<sup>27</sup> As many as eleven percent of injuries that could be classified as mTBI or concussions include skull fractures, intracranial hemorrhages, and bruises of the brain.<sup>28</sup>

Studying and treating concussions have proven to be extremely challenging as concussions often go unidentified.<sup>29</sup> While many believe a concussion only occurs following a hard blow to the head resulting in a loss of consciousness, a concussion occurs anytime there is a change in mental status caused by a shift of the brain in the skull; regardless of whether the player loses consciousness.<sup>30</sup> In fact, concussions can occur even when the impact is not directly on the head of the athlete.<sup>31</sup> Blows to the neck

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<sup>19</sup> *Concussion Information*, SPORTS LEGACY INSTITUTE, <http://www.sportslegacy.org/cte-concussions/concussion-information/> (last visited May 1, 2012).

<sup>20</sup> See *The Impact of Concussions on High School Athletes Before the S. Comm. On Healthy Families and Communities of the H. Comm. on Education and Labor*, 111th Cong. 10-11 (2010) (statement of Gerard A. Gioia, PhD, Chief, Division of Pediatric Neuropsychology, Children’s National Medical Center). See also *Concussion and Mild TBI*, CENTERS FOR DISEASE CONTROL AND PREVENTION, <http://www.cdc.gov/concussion/> (last visited May 1, 2012).

<sup>21</sup> See Rimma Danov, *Pediatric Traumatic Head Injuries*, in FOUNDATIONS OF SPORT-RELATED BRAIN INJURIES 291, 298-99 (Semyon Slobounov & Wayne J. Sebastianelli eds., 2006).

<sup>22</sup> Daniel H. Daneshvar, et al., *Helmets and Mouth Guards: The Role of Personal Equipment in Preventing Sport-Related Concussions*, 30 CLIN. SPORTS MED. 145, 145-146 (2011).

<sup>23</sup> *Id.*

<sup>24</sup> See statement of Gioia, *supra*, note 16.

<sup>25</sup> *Id.*

<sup>26</sup> *Concussion and Mild TBI*, CENTERS FOR DISEASE CONTROL AND PREVENTION, *supra* note 20.

<sup>27</sup> *Mild TBI/Concussion Overview*, THE JOURNEY HOME- THE CENTER OF EXCELLENCE FOR MEDICAL MULTIMEDIA <http://www.traumaticbraininjuryatoz.org/Moderate-to-Severe-TBI.aspx> (last visited May 1, 2012).

<sup>28</sup> *Traumatic Brain Injury-Mild*, NAVAL OPERATIONAL MEDICINE INSTITUTE, U.S. DEP’T OF DEFENSE, U.S. NAVY AEROMEDICAL REFERENCE AND WAIVER GUIDE, *available at* <http://www.med.navy.mil/sites/nmotc/nami/arwg/Documents/WaiverGuide/Waiver%20Guide%20-%20Neurology%20100305.pdf>. COULD NOT LOCATE WEBSITE.

<sup>29</sup> See generally CARROLL, *supra* note 2, at 10-11.

<sup>30</sup> *Id.*

<sup>31</sup> Diehl, *supra* note 2, at 87-88; Dilip R. Patel, et. al., *Management of Sport-Related Concussion in Young Athletes*, 35 SPORTS MED. 671, 675 (2005).

or shoulders can cause concussions if the force is translated to the head and causes the brain to accelerate and decelerate rapidly.<sup>32</sup>

A young athlete who has suffered a concussion will display any number of symptoms. The most common include confusion, headache, lack of balance or dizziness, and disorientation to their surroundings.<sup>33</sup> These symptoms are easier to overlook than the more outwardly visible signs like loss of consciousness, nausea or vomiting, and sensitivity to noise or light.<sup>34</sup> The fact that some lower grade concussions result only in momentary confusion or disorientation perpetuated the idea that a player could take a few plays off and return to play once he “cleared the cobwebs.”<sup>35</sup> However, just because many symptoms resolve themselves spontaneously and the player can reorient himself or herself enough to tell the coach his or her name and the score does not mean that the effects of the concussion are over.<sup>36</sup> Concussions can make it difficult to concentrate, cause memory problems, and lead to changes in temperament even after the “cobwebs” have cleared.<sup>37</sup> There is even evidence that two or more brain injuries correlate to significantly lower grade-point averages when those students are compared to similar students without a history of concussions.<sup>38</sup>

It is particularly important to recognize the symptoms of a concussion among youth athletes since their age and level of neurological development make them more susceptible to concussions and require longer recovery times.<sup>39</sup> While adults’ recovery times can vary greatly, making the recovery time in even adult athletes difficult to predict, young athletes between the ages of twelve and twenty-five have brains that are still undergoing neurological reorganization.<sup>40</sup> Dr. Dave Elleberg, a professor at the University of Montreal, conducted a recent study comparing the consequences of concussions on three different age groups.<sup>41</sup> He explained: “We know the adolescent’s brain, more specifically the areas affected by the concussion, the frontal lobe areas of the brain, are growing in spurts and when something is developing rapidly it is even more fragile to injury.”<sup>42</sup>

The frontal lobe is not fully developed until around the age of twenty-five and is an area particularly susceptible to suffering the trauma during a concussion.<sup>43</sup> This area of the brain is more vulnerable to concussions, which raises the risk of concussions in young athletes as well as the severity of the effects.<sup>44</sup> The frontal regions of the brain are vital decision-making areas responsible for planning and

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<sup>32</sup>Dilip R. Patel, et. al., *Management of Sport-Related Concussion in Young Athletes*, 35 SPORTS MED. 671, 674 (2005).

<sup>33</sup> See, generally CARROLL, *supra* note 2, at 10-11.

<sup>34</sup> Lesley Lueke, *High School Athletes and Concussions More Than A Game at Stake*, 32 J. LEGAL MED. 483, 487 (2011).

<sup>35</sup> See e.g., Mike Florio, *Bradshaw Says He’s Feeling the Effects of Concussions*, NBC SPORTS PRO FOOTBALL TALK (Apr. 12, 2011), available at <http://profootballtalk.nbcsports.com/2011/04/12/terry-bradshaw-says-hes-feeling-the-effects-of-concussions/>.

<sup>36</sup> Lueke, *supra* note 35, at 488.

<sup>37</sup> *Id.* at 490.

<sup>38</sup> Jonah Lehrer, *The Fragile Teenage Brain*, GRANTLAND (Jan. 10, 2012), [http://www.grantland.com/story/\\_id/7443714/jonah-lehrer-concussions-adolescents-future-football](http://www.grantland.com/story/_id/7443714/jonah-lehrer-concussions-adolescents-future-football).

<sup>39</sup> Lueke, *supra* note 35, at 491.

<sup>40</sup> Steven Reinberg, *Teens May Fare Worse After Concussion Than Children or Adults*, U.S. NEWS & WORLD REPORT (Feb. 28, 2012), <http://health.usnews.com/health-news/news/articles/2012/02/28/teens-may-fare-worse-after-concussion-than-children-or-adults> (citing study conducted by Dave Elleberg published in the journal *Brain Injury* on Feb. 28, 2012).

<sup>41</sup> *Id.*

<sup>42</sup> *Id.*

<sup>43</sup> *Id.*

<sup>44</sup> *Id.*

information management.<sup>45</sup> The study conducted by Dr. Elleberg measured electrophysiological signals in the brain and found that short-term memory problems, attention deficits, and abnormalities in brain function were present six months to one year after the concussion.<sup>46</sup> These problems were greater in teenagers than they were in adults or pre-adolescent children.<sup>47</sup> This study shows why it is so critical to move beyond the idea that “getting your bell rung” is something to shake off and play through, or that young athletes should be taught to bounce back from concussions in order to prove their toughness.<sup>48</sup>

In the 1971-1972 school year, just 294,015 girls participated in high school athletics.<sup>49</sup> In 2010-2011, over three million girls participated in high school sports.<sup>50</sup> This increase should be cheered, but girls’ participation has also led to surprising findings regarding concussions. The most popular girls’ sports are track, basketball, volleyball, softball and soccer.<sup>51</sup> While none of these are collision sports, and most would be viewed as having a low risk of concussions, girls playing these sports suffer concussions at a much higher rate than boys playing the same sports.<sup>52</sup> In basketball, soccer, and baseball/softball girls experienced concussions in greater numbers and higher rates than boys.<sup>53</sup> In basketball the girls concussion rate is nearly triple that of boys.<sup>54</sup> In soccer, the concussion rate, is 68% higher for girls.<sup>55</sup>

Girls are also suffering a much larger number of concussions than many might think considering the nature of the sports that are popular among girls. For example, one study found that girls’ soccer was responsible for the second highest number of concussions following football.<sup>56</sup> This study found that girls playing soccer suffered more concussions than boys competing in wrestling.<sup>57</sup>

There are many possible explanations for these increased numbers of concussions for girls. Some have hypothesized that they are really just a result of increased reporting among girls or their parents, coaches, and physicians who are seeking to protect girls based on cultural stereotypes of girls needing greater protection.<sup>58</sup> Some have argued that it could be because girls have less developed neck muscles and less muscle mass in their shoulders to absorb some of the trauma from a collision.<sup>59</sup> These arguments are bolstered by studies that have found that girls experience higher acceleration than boys when heading a ball.<sup>60</sup> It seems unlikely that girls are being over-diagnosed or reporting more frequently than boys considering not only the highly competitive nature of girls’ sports and the girls that play them, but also

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<sup>45</sup> Steven Reinberg, *Teens May Fare Worse After Concussion Than Children or Adults*, U.S. NEWS & WORLD REPORT (Feb. 28, 2012), <http://health.usnews.com/health-news/news/articles/2012/02/28/teens-may-fare-worse-after-concussion-than-children-or-adults> (citing study conducted by Dave Elleberg published in the journal *Brain Injury* on Feb. 28, 2012).

<sup>46</sup> *Id.*

<sup>47</sup> *Id.*

<sup>48</sup> See e.g., Carroll, *supra* note 2.

<sup>49</sup> NAT’L FED’N OF HIGH SCH. ASS’NS, 2010-2011 HIGH SCHOOL ATHLETICS PARTICIPATION SURVEY (2011), available at <http://www.nfhs.org/content.aspx?id=3282>.

<sup>50</sup> *Id.*

<sup>51</sup> *Id.*

<sup>52</sup> See e.g., Mallika Marar, et. al., *Epidemiology of Concussions Among United States High School Athletes in 20 Sports*, 40 AM. J. SPORTS MED. 747, 749 (2012); Katie Dzwierzynski, *Study Shows Girls Have Higher Concussion Risk Than Boys*, MEDILL REPORTS NORTHWESTERN UNIVERSITY, available at <http://news.medill.northwestern.edu/chicago/news.aspx?id=203981>; Peter Keating, *Heading for Trouble*, ESPN THE MAGAZINE (Mar. 7, 2009), available at <http://sports.espn.go.com/espn/print?id=3958650&type=story>.

<sup>53</sup> Dzwierzynski, *supra* note 53.

<sup>54</sup> Keating, *supra* note 53.

<sup>55</sup> *Id.*

<sup>56</sup> Marar, *supra* note 53.

<sup>57</sup> *Id.*

<sup>58</sup> Dzwierzynski, *supra* note 53.

<sup>59</sup> *Id.*

<sup>60</sup> Daneshvar, *supra* note 22, at 154.

the fact that most people do not associate concussions with soccer, basketball, or softball.<sup>61</sup> If anything, these numbers would seem to indicate that boys are underreporting and that girls may be physiologically more susceptible to concussions.<sup>62</sup>

It is important to note the causes of concussions in sports since it is clear that youths, especially girls, are at risk.<sup>63</sup> First, concussions are injuries caused by collisions.<sup>64</sup> Sports are only the second leading cause of concussions among youths; car accidents, which are by definition collisions, are number one.<sup>65</sup> Therefore, sports like football with rules that require collisions on every play are more likely to produce concussions.

However, concussions can occur from collisions not intended by the rules, such as collisions in mid-air as players in soccer fight for a header, or collisions occurring when a base-runner sliding into a base collides with the knee of a fielder.<sup>66</sup> Concussions can also be caused by collisions between the athlete and the playing surface, such as swimmers colliding with the wall or bottom of the pool, football players who are tackled low but strike their head on the turf, and wrestlers who are driven to the mat. In addition, concussions can be caused by collisions between the player and the ball, such as in soccer when heading and baseball or softball at the plate or in the field. These various causes of concussions demonstrate that rules and rule changes can help limit concussions, but concussions are still going to occur in competitive sports.<sup>67</sup> Concussions occur in competitive sports like tennis less often due to the nature of the game, but in contact sports where the play dictates players moving very fast in close proximity to each other, often taking place on hard surfaces and with the use of hard projectiles, concussions are going to happen.

Studies have also found that concussions are most closely linked to rotational acceleration of the head.<sup>68</sup> High impact and large forces to the top of the head are commonly linked to spinal cord injuries, however, concussions are more closely associated with head trauma that applies a lateral force on the head.<sup>69</sup> Studies of high school and college football players have shown that high school athletes who have less neck strength and poorer tackling technique tend to have more impacts to the front of the head, which produces the largest rotational acceleration.<sup>70</sup> These studies also show that impacts to the top of the head result in less acceleration.<sup>71</sup>

Much of the data about the forces on the head of athletes is based on data recorded from safety equipment like helmets and mouth guards.<sup>72</sup> While concussions are going to happen, leagues, legislators,

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<sup>61</sup> See Keating, *supra* note 53.

<sup>62</sup> *Id.*

<sup>63</sup> Marar, *supra* note 53.

<sup>64</sup> Daneshvar, *supra* note 22, at 145.

<sup>65</sup> Orly Avitzur, *Concussions in Young Athletes: Don't Rush to Get Back In the Game*, CONSUMER REPORTS, (Nov. 1, 2010), <http://news.consumerreports.org/health/2010/11/concussions-and-sports-head-injuries-concussions-in-young-athletes-chronic-traumatic-encephalopathy.html>.

<sup>66</sup> Patel, *supra* note 33, at 675.

<sup>67</sup> For example the number of concussions could be reduced greatly by changing the game to flag football, but concussions could still occur from accidental contact or a player falling to the turf.

<sup>68</sup> Daneshvar, *supra* note 22, at 147.

<sup>69</sup> *Id.*

<sup>70</sup> *Id.*

<sup>71</sup> *Id.*

<sup>72</sup> *Id.* See also, Dan Murphy, *Mouth Guards Aid Research at ND*, BLUE AND GOLD ILLUSTRATED, Jan. 2012, <http://notredame.247sports.com/Article/Notre-Dame-used-X2Impact-mouthguards-to-help-concussion-research-57889> (discussing mouth guards worn by University of Notre Dame football players that provide real time data to researchers).

athletes, and physicians are always looking for ways to reduce the number and severity of those concussions. Improved safety equipment is one way to do this, but even with helmets, mouth guards, and headbands, concussions have proven to be difficult to prevent. Evaluating the equipment has also proven difficult given the underreporting of concussions and the fact that many of the helmets used in high school sports are older and improperly fitted.<sup>73</sup>

While some argue that the use of helmets and other safety equipment leads to more aggressive play and more concussions as a result, the data strongly indicates that helmets help reduce the number of concussions.<sup>74</sup> Mike Ditka is one of the prominent members of the football community that has claimed helmets do more harm than good, but researchers believe helmets have been extremely productive in reducing the number of crippling head injuries as well as effective in reducing the number of concussions.<sup>75</sup>

Mouth guards are another piece of safety equipment that many have argued could help prevent or reduce the severity of concussions.<sup>76</sup> However, the evidence is less encouraging that mouth guards have a significant effect. In sports like football, soccer, and basketball, there has been little evidence to support the idea that mouth guards could offset the force of an impact to reduce the force translated to the brain.<sup>77</sup> However, there is some evidence from a study of hockey players that mouth guards did reduce the severity of symptoms immediately following a concussion.<sup>78</sup>

The fact that the number of young athletes seeking treatment for concussions has risen rapidly over the past five years is both encouraging and troubling.<sup>79</sup> It is encouraging that these young athletes are reporting the injuries and seeking treatment from qualified medical professionals. It is also troubling that these athletes, who we know are more susceptible and suffer longer from the effects, are sustaining injuries that can disrupt their academic performance and cognitive growth for periods of up to one year.<sup>80</sup> The growing concerns over the occurrence of CTE in athletes who participated in collision sports and the debilitating or deadly injuries to high school athletes who returned to play prematurely demand serious consideration from parents, schools, and legislators.

First, there is growing evidence that multiple concussions, or possibly even multiple sub-concussive traumas, can lead to a greatly increased risk of developing dementia, Alzheimer's, depression, and CTE.<sup>81</sup> The recent suicide of former Notre Dame All-American and Chicago Bears Super Bowl

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<sup>73</sup> *Id.* at 157. See also *Good Helmet Fit Key to Preventing Brain Injuries*, MEDLINE PLUS NATIONAL INSTITUTE OF HEALTH, [http://www.nlm.nih.gov/medlineplus/news/fullstory\\_122064.html](http://www.nlm.nih.gov/medlineplus/news/fullstory_122064.html) (Feb. 17, 2010).

<sup>74</sup> *Good Helmet Fit Key to Preventing Brain Injuries*, MEDLINE PLUS NATIONAL INSTITUTE OF HEALTH, [http://www.nlm.nih.gov/medlineplus/news/fullstory\\_122064.html](http://www.nlm.nih.gov/medlineplus/news/fullstory_122064.html) (Feb. 17, 2010).

<sup>75</sup> *Id.*; Drew Magery, *Paterno and Ditka: NFL Should Get Rid of Facemasks*, NBC CHICAGO, (Oct. 21, 2010), available at <http://www.nbcchicago.com/news/sports/Paterno-and-Ditka-NFL-Should-Get-Rid-Of-Facemasks-105458773.html>.

<sup>76</sup> See e.g., Jackson E. Winters Sr., *Commentary: Role of Properly Fitted Mouthguards in Prevention of Sport-Related Concussion*, 36 JOURNAL OF ATHLETIC TRAINING 339, 340 (2001).

<sup>77</sup> Daneshvar, *supra* note 22, at 154-155.

<sup>78</sup> *Id.* at 155.

<sup>79</sup> See e.g., Andrew B. Carrabis, Note, *Head Hunters: The Rise of Neuological Concussions in American Football and Its Legal Implications*, 2 HARV. J. SPORTS & ENT. L. 371, 372 (2011); *Senate Bill 40- The Jake Snakenburg Youth Concussion Act- Signed into Law*, CHILDREN'S HOSPITAL COLORADO (Mar. 31, 2011), <http://www.childrenscolorado.org/news/inthenews/2011/SB-40-Signed-Into-Law.aspx> (reporting an average annual increase of 32% in reported concussions over the last three years).

<sup>80</sup> Seidman, *supra* note 41.

<sup>81</sup> *Legal Issues Relating to Football Head Injuries (Part I): Hearing for Comm. On Judiciary*, 111th Cong. 66-67 (2009)(statement of Robert C. Cantu, M.D., Chief of Neurosurgery Service Emerson Hospital). *But see*, *Legal Issues*



Champion Dave Duerson is a tragic and high profile example of the long-lasting effects of multiple concussions.<sup>82</sup> Duerson, who in 2004 was a possible Republican nominee for a United States Senate seat in Illinois, shot himself in the chest in February 2011.<sup>83</sup> His final wishes included instructions to have his brain examined for signs of damage related to his football career.<sup>84</sup> The postmortem examination showed he suffered from CTE, and his brain was nothing like what would be expected for an otherwise healthy fifty-year old man. His family is one of 659 families suing the NFL.<sup>85</sup>

Even more troubling is how little is known about CTE.<sup>86</sup> Owen Thomas was a 21-year old defensive lineman at the University of Pennsylvania.<sup>87</sup> The All-Ivy Conference player had never been diagnosed with a concussion, but a study of his brain after he committed suicide showed signs of CTE and that his brain cells were slowing dying.<sup>88</sup>

Researchers have been aware of CTE for some time, and it was originally found in boxers who had suffered a lifetime of repeated head traumas.<sup>89</sup> We know that the overwhelming evidence points to repeated sub-lethal brain trauma occurring before the development of clinical manifestations as the cause of CTE.<sup>90</sup> While the cause is clear, research is difficult since the symptoms often manifest themselves as dementia, Parkinson's disease, Alzheimer's, or depression.<sup>91</sup> of the symptoms lead to misdiagnosis as well as a problem disaggregating occurrences of those diseases with symptoms brought on by CTE.<sup>92</sup> Pathologically, CTE is atrophy in the cerebral and medial temporal lobe and extensive tau-immunoreactive pathology throughout the brain that results in neurodegeneration.<sup>93</sup> The build-up of these tau proteins is directly related to diseases like Alzheimer's.<sup>94</sup> It is believed that strictly enforced return-to-play rules could greatly reduce sports related occurrences of CTE.<sup>95</sup>

The other major factor driving concussion legislation, especially stricter return-to-play guidelines, is deadly and permanently debilitating injuries to young athletes caused by SIS.<sup>96</sup> The law signed by

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*Relating to Football Head Injuries (Part I): Hearing for Comm. On Judiciary*, 111th Cong. 3-6 (2009)(statement of Rep. Smith, Member, House Comm. On the Judiciary)(testifying that other studies have found the rate of dementia and similar diseases for retired NFL players to be comparable to general population).

<sup>82</sup> Lester Munson, *The NFL and Dave Duerson's Brain*, ESPN (Mar. 2, 2012), [http://espn.go.com/espn/commentary/story/\\_/page/munson-120302/dave-duerson-concussion-lawsuit-put-nfl-defensive](http://espn.go.com/espn/commentary/story/_/page/munson-120302/dave-duerson-concussion-lawsuit-put-nfl-defensive).

<sup>83</sup> *Id.*

<sup>84</sup> *Id.*

<sup>85</sup> *Id.*

<sup>86</sup> *Protecting Student Athletes from Concussions: Hearing Before the Comm. On Education and Labor*, 111th Cong 43-46 (2010)(statement of Chris Nowinski, Co-Director, Center for the Study of Traumatic Encephalopathy Boston University School of Medicine).

<sup>87</sup> *Id.* at 44.

<sup>88</sup> *Id.*

<sup>89</sup> Ann C. McKee et. al., *Chronic Traumatic Encephalopathy in Athletes: Progressive Tauopathy following Repetitive Head Injury*, 68 JOURNAL OF NEUROPATHOLOGY AND EXPERIMENTAL NEUROLOGY 709 (2009) available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2945234/>.

<sup>90</sup> *Id.*

<sup>91</sup> *Id.*

<sup>92</sup> Nowinski, *supra* note 87.

<sup>93</sup> McKee, *supra* note 90, at 131.

<sup>94</sup> *Id.*

<sup>95</sup> Marie-France Wilson, *Symposium: Sports Law: Alumni Analysis and Perspectives: Young Athletes at Risk: Preventing and Managing Consequences of Sports Concussions in Young Athletes and the Related Legal Issues*, 21 MARQ. SPORTS L.REV. 241, 249 (2010).

<sup>96</sup> See e.g., Tom Wyrwich, *The Dangers of Adolescents Playing Football with Concussions*, THE SEATTLE TIMES (Nov. 4, 2008).

Governor Gregoire in Washington, known as the Lystedt Law, was motivated by an injury to a 13-year-old student-athlete.<sup>97</sup> Zachery Lystedt was a thirteen-year old playing for his junior high school football team when he suffered a concussion in the first half of a game after his head slammed hard off of the turf in the process of making a tackle.<sup>98</sup> He was removed from the game, but he returned to action after halftime.<sup>99</sup> He finished the game but collapsed afterward and had to be airlifted to a hospital for life saving surgery to reduce the building pressure on his brain.<sup>100</sup> Zachery would be unable to stand on his own again for over three years.<sup>101</sup>

SIS occurs when an athlete experiences a concussion, even a very slight one, when their brain remains in a vulnerable condition from a previous concussion.<sup>102</sup> This second concussion “triggers a cascade of neurophysiological events.”<sup>103</sup> This cascade includes vascular engorgement which leads to massive intracranial pressure and the herniation of the brain stem, resulting in severe brain damage or death.<sup>104</sup> The pressure and intracranial bleeding can occur within minutes of the second concussion.<sup>105</sup> A second impact concussion can occur minutes, days, or even weeks after the original concussion.<sup>106</sup>

SIS occurs only in individuals who are less than 23-three and it is almost entirely preventable through proper monitoring.<sup>107</sup> Not all concussions that occur in young athletes who have recently been concussed lead to SIS. One study of college football players found that repeat concussions occurred within ten days for 75% of players who received more than one concussion during a season.<sup>108</sup> While none of these players suffered from SIS after their second concussion, a player returning to play before being asymptomatic is at a much greater risk of a second concussion and risks death or severe brain damage from SIS.<sup>109</sup> Preston Plevretes was a freshman who had fought through concussion symptoms in two games after being concussed in practice three weeks earlier.<sup>110</sup> In his third game, a jarring hit left him permanently disabled and barely able to speak.<sup>111</sup> Plevretes was cleared to play after sitting out just one game without any cognitive evaluations and without regard to his persistent symptoms.<sup>112</sup> His family and the school settled a lawsuit for \$7.5 million.<sup>113</sup>

## II. Scope of Concussions Problem in Sports Today

Just how big is the concussion problem in youth sports? The National Football League generated approximately nine billion dollars in revenue in 2010.<sup>114</sup> That number is likely to grow as football

<sup>97</sup> See e.g., Bell, *supra* note 9.

<sup>98</sup> *Id.*

<sup>99</sup> LIFE CHANGED BY CONCUSSIONS (ESPN Outside the Lines 2012), available at <http://espn.go.com/video/clip?id=7525526>.

<sup>100</sup> *Id.*

<sup>101</sup> *Id.*

<sup>102</sup> Kristina M. Gerardi, *Tackles that Rattle the Brain*, 18 SPORTS LAW J. 181, 186 (2011).

<sup>103</sup> *Id.*

<sup>104</sup> *Second Impact Syndrome*, SPORTS CONCUSSIONS <http://www.sportsconcussions.org/ibase/second-impact-syndrome.html> (last updated Jan. 05, 2012).

<sup>105</sup> *Id.*

<sup>106</sup> *Id.*

<sup>107</sup> *Id.*; See E:60 SECOND IMPACT (ESPN 2010), available at <http://espn.go.com/video/clip?id=5163151>.

<sup>108</sup> Gerardi, *supra* note 103, at 184.

<sup>109</sup> *Id.* at 187.

<sup>110</sup> E:60, *supra* note 108.

<sup>111</sup> *Id.*

<sup>112</sup> *Id.*

<sup>113</sup> *Id.*

<sup>114</sup> *Sports Industry Overview*, PLUNKETT RESEARCH, LTD., <http://www.plunkettresearch.com/sports-recreation-leisure-market-research/industry-statistics> (last accessed May 2, 2012).

continues to entrench itself as America's game, with 49% of Americans in one poll stating that pro or college football is their favorite sport.<sup>115</sup> There is little argument that the NFL product is strong. However, a series of articles, including one co-authored by an economics professor at University of Oklahoma, where football is king, say it is not so outrageous to believe football may begin disappearing within the next fifteen years.<sup>116</sup> According to these authors, the end of football begins with the effects of concussions on high school and college players.<sup>117</sup>

One argument put forth in these articles and others is that youth and high school football will be undone by liability from lawsuits.<sup>118</sup> The lawsuits would lead to a loss of insurance, which would lead to the school shutting down their football program.<sup>119</sup> While the argument by economists Cowen and Grier in "What Would the End of Football Look Like?" downplays how difficult it is to win lawsuits against athletic leagues for injuries, there have been several successful claims regarding concussions and Second Impact Syndrome.<sup>120</sup> The school district in Tahoma, Washington, for whom Zachery Lystedt was playing football, settled a lawsuit for negligently allowing him to re-enter the game for \$14.6.<sup>121</sup> Scott Eveland, who was a senior at the time of his injury, settled his lawsuit against Mission Hills High School and the San Marcos Unified School District for \$4.4.<sup>122</sup> Along with allegations that the head coach dismissed the concerns of the head trainer and said something along the lines of, "These are my players and I'll decide who plays and who doesn't," a student trainer involved testified in a deposition that obvious signs of an earlier concussion were ignored.<sup>123</sup> This settlement was made despite the fact that California case law sets out a very high bar for finding that a sports instructor breached a duty of care to a student.<sup>124</sup> The California standard is that a breach occurs "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."<sup>125</sup>

While the argument by Grier and Cowen seems to center around the lawsuits that can arise from immediate catastrophic injuries, primarily SIS, an article by Jonah Lehrer focuses on the other factor of long-term health effects.<sup>126</sup> In *The Fragile Teenage Brain*, Jonah Lehrer looks at the science behind

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<sup>115</sup> *Poll Shows Popularity of Pro Football Continues Growing while Baseball Slides*, SPORTS BUSINESS JOURNAL DAILY, <http://www.sportsbusinessdaily.com/Daily/Issues/2012/01/26/Research-and-Ratings/Harris-Poll.aspx> (Jan. 26, 2012).

<sup>116</sup> Tyler Cohen & Kevin Grier, *What Would the End of Football Look Like?*, GRANTLAND (Feb. 9, 2012), [http://www.grantland.com/story/\\_id/7559458/cte-concussion-crisis-economic-look-end-football](http://www.grantland.com/story/_id/7559458/cte-concussion-crisis-economic-look-end-football); Lehrer, *supra* note 39. *But see* Doug Farrar, *Could Concussions Actually Kill Football?* YAHOO! SPORT (Feb. 14, 2012); Joel Slater, *Could Litigation Kill Football?* VANDERBILT J. OF ENTERTAINMENT AND TECH. LAW BLOG (Feb. 24, 2012), available at <http://www.jetlaw.org/?p=10338>; Ilya Somin, *Will Tort Lawsuits be the Downfall of the NFL?*, THE VOLOKH CONSPIRACY (Feb. 12, 2012), available at <http://volokh.com/2012/02/12/will-tort-lawsuits-be-the-downfall-of-the-nfl/>.

<sup>117</sup> *Id.*

<sup>118</sup> *See* Cohen et. al., *supra* note 117. *See also* Ivan Cole, *Threat of Concussions Bringing Down the NFL is Very Real Possibility*, BEHIND THE STEEL CURTAIN (Feb. 24, 2012), available at <http://www.behindthesteelcurtain.com/2012/2/24/2817819/why-football-fans-should-be-very-concerned-about-the-issue-of>.

<sup>119</sup> Cohen, *supra* note 117.

<sup>120</sup> Somin, *supra* note 117.

<sup>121</sup> Clarridge, *supra* note 14.

<sup>122</sup> *San Diego Area School District to Pay 44 Million for Football Head Injury*, NBC NEWS (Mar. 10, 2012), [http://usnews.msnbc.msn.com/\\_news/2012/03/10/10635259-san-diego-area-school-district-to-pay-44-million-for-football-head-injury](http://usnews.msnbc.msn.com/_news/2012/03/10/10635259-san-diego-area-school-district-to-pay-44-million-for-football-head-injury).

<sup>123</sup> Jones, *supra* note 1.

<sup>124</sup> *Kahn v. E. Side Union High Sch. Dist.*, 75 P.3d 30, 32-33 (Cal. 2003).

<sup>125</sup> *Id.*

<sup>126</sup> Lehrer, *supra* note 117.

concussions and the uncertainty about how much damage concussions can cause to brains that are still developing.<sup>127</sup> In that article, Bruce Rollison, the head coach at prestigious and prodigious football powerhouse Mater Dei High School in California, discussed his school's efforts to reduce the impact of concussions and sub-concussive impacts.<sup>128</sup> Rollison, who coached Heisman trophy winner Matt Leinart and current Heisman hopeful Matt Barkley, observed that "most of my players aren't going to play ball for a living. I know they don't want to hear that, but it's the truth. So there's really no reason they should risk messing up their brain."<sup>129</sup> His words seem particularly acute when you consider that one of the brains studied by the Center for the Study of Traumatic Encephalopathy found advanced signs of CTE in the brain of an 18-year-old high school football player.<sup>130</sup> It is this type of finding that has led some former players like Troy Aikman to wonder if they, knowing the risks, would allow their children to play football.<sup>131</sup> Lehrer asserts that eventually parents may begin to think like Aikman or former NFL player Dave Pear and simply prohibit their children from risking their brains to play a game.<sup>132</sup>

Approximately 7.6 million students participated in high school sports according to the National Federation of State High School Associations.<sup>133</sup> While it is difficult to know the exact number of concussions sustained by these students, one study approximated that nearly 136,000 concussions occur annually.<sup>134</sup> That estimate probably falls well short of the actual number of concussions suffered by high school athletes since it did not count unreported head injuries or concussions that did not keep the athlete out of play for at least one day.<sup>135</sup> Football accounts for 41% of these concussions, but that number is slightly misleading since it also has the greatest number of student-athletes participating. In fact, the 1.1 million high school football players are twice as many as participate in high school basketball for example.<sup>136</sup> Still, a majority of the concussions come from sports other than football.<sup>137</sup>

Studies have been successful in determining the relative occurrence of concussions in the various sports. Football was responsible for the largest percentage of those injuries. Approximately 55,000 concussions were suffered by high school football players, but some estimates are as high as 67,000.<sup>138</sup> The majority of those concussions occurred in games, but a large number occurred in practice.<sup>139</sup> Again, it is worth repeating that these numbers probably underestimate the number of concussions that occur.

Girls' soccer consistently ranks second in the occurrence of concussions.<sup>140</sup> With nearly 30,000 concussions, girls' soccer accounts for 22% of the reported concussions suffered in high school sports

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<sup>127</sup> *Id.*

<sup>128</sup> *Id.*

<sup>129</sup> Michael Grimala, *Mater Dei is Quarterback High*, ESPN (Jan. 19, 2012), available at [http://espn.go.com/high-school/football/great-state-debate/story/\\_/id/7476557/mater-dei-earns-nickname-quarterback-high](http://espn.go.com/high-school/football/great-state-debate/story/_/id/7476557/mater-dei-earns-nickname-quarterback-high).

<sup>130</sup> Cantu, *supra* note 82, at 67; *Case Study 18 Year Old High School Football Player*, CENTER FOR THE STUDY OF TRAUMATIC ENCEPHALOPATHY BOSTON UNIVERSITY, <http://www.bu.edu/cste/case-studies/18-year-old/> (last accessed May 2, 2012).

<sup>131</sup> Gregg Doyel, *Death of Football That's Crazy Until You Start Thinking about It*, CBS SPORTS (Feb. 24, 2012), available at <http://www.cbssports.com/nfl/story/17423602/death-of-football-thats-crazy-until-you-start-thinking-about-it>; Jeff Pearlman, *Former NFL Star Dave Pear is Sorry He Ever Played Football*, SPORTS ILLUSTRATED (Dec. 18, 2009), available at [http://sportsillustrated.cnn.com/2009/writers/jeff\\_pearlman/12/18/pear/index.html](http://sportsillustrated.cnn.com/2009/writers/jeff_pearlman/12/18/pear/index.html).

<sup>132</sup> *Id.*

<sup>133</sup> Lueke, *supra* note 35 at 485.

<sup>134</sup> Luke Gessell, et. al., *Concussions Among High School and Collegiate Athletes*, 42 J. ATHLETIC TRAINING 495, 496 (2009), available at (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2140075/pdf/i1062-6050-42-4-495.pdf>).

<sup>135</sup> *Id.*

<sup>136</sup> Lueke, *supra* note 35, at 485.

<sup>137</sup> Gessell, *supra* note 135, at 496.

<sup>138</sup> Gerardi, *supra* note 103, at 190.

<sup>139</sup> *Id.*

<sup>140</sup> Gessell, *supra* note 135, at 497.

despite the fact that it is only the fifth most popular sport for girls, and has the tenth highest participation overall.<sup>141</sup> Concussions make up 15% of the injuries that occur in girls' soccer, and the majority of the concussions are caused by contact with another player.<sup>142</sup> However, a significant number are caused by contact with the playing surface or the ball itself.<sup>143</sup>

Boys' soccer is also a significant contributor to concussions in high school athletes with nearly 21,000 concussions each year.<sup>144</sup> While this number makes up about 15% of the total number of concussions in high school athletics, it is interesting to note that this number is significantly less than the 30,000 concussions suffered by girls.<sup>145</sup> While some argue that the culture of boys' sports versus girls' sports may explain some of the disparity in reported concussions,<sup>146</sup> there is scientific evidence that girls are more susceptible to concussions.<sup>147</sup> While 30,000 more boys compete in soccer each year, there are fewer concussions than in girls' soccer.<sup>148</sup>

Girls' basketball, boys' basketball, and wrestling, are also major contributors to concussions.<sup>149</sup> However, sports like baseball, softball, and hockey also see significant numbers of concussions.<sup>150</sup> Even non-contact sports like swimming or athletic activities like cheerleading are dealing with the challenges of handling concussions.<sup>151</sup>

While these numbers show that concussions and traumatic brain injuries account for nine percent of all high school injuries, they do not include the concussions being suffered outside of high school athletics.<sup>152</sup> Private youth leagues for sports like baseball, football, and basketball are very popular.<sup>153</sup> These athletes are often young children rather than high school age students. Research has shown that youth can be a risk factor in injury, especially in contact sports.<sup>154</sup> There are many explanations for youth as an increased risk factor, including poor technique, undeveloped neck muscles, and a more fragile still developing brain.<sup>155</sup> While it is difficult to estimate how many young athletes suffer concussions in these leagues, there is certainly some number of students who will.

The other factor to be considered when trying to determine the magnitude of the problem is the rapid increase in reported concussion among youth athletes. While no study has been able to determine if more concussions are actually occurring, one study found that there has been nearly a 17% increase in the

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<sup>141</sup> Survey, *supra* note 50.

<sup>142</sup> Gessell, *supra* note 135, at 497-499.

<sup>143</sup> *Id.*

<sup>144</sup> *Id.*

<sup>145</sup> *Id.*; Survey, *supra* note 50.

<sup>146</sup> Dzwierzynski, *supra* note 53.

<sup>147</sup> Keating, *supra* note 53.

<sup>148</sup> Survey, *supra* note 50.

<sup>149</sup> Gessell, *supra* note 135, at 497-499.

<sup>150</sup> *Id.*

<sup>151</sup> See e.g., Jamie Gumbrecht, *Dealing with the Aftermath of a Serious High School Sports Injury*, CNN, Oct. 4, 2011 available at <http://www.cnn.com/2011/US/10/04/cnnheroes.sports.injuries/index.html>; Lueke, *supra* note 35 at 485.

<sup>152</sup> Andrew Lincoln et al., Trends in Concussion Incidence in High School Sports, *AM. J. OF SPORTS MED.*, Jan. 29, 2011, available at [http://www.medstarsportshealth.org/documents/Am\\_J\\_Sports\\_Med-2011-Lincoln-0363546510392326%5B1%5D.pdf](http://www.medstarsportshealth.org/documents/Am_J_Sports_Med-2011-Lincoln-0363546510392326%5B1%5D.pdf).

<sup>153</sup> For example, USA Football has 3 million participants between the ages of 6 and 14. *Legal Issues Relating to Football Head Injuries (Part II): Hearing Before the Comm. On the Judiciary*, 111th Cong. (2010) (statement of Scott Hallenbreck, Executive Dir. Of USA Football).

<sup>154</sup> Seidman, *supra* note 41.

<sup>155</sup> *Id.*

concussion rate among scholastic sports since 1997.<sup>156</sup> This number is startling even if the cause of the increase is unclear. One logical argument is that concussion awareness has increased and coaches, athletes, and trainers are doing a better job identifying concussions.<sup>157</sup> Other explanations include the fact that there is higher participation in high school athletics and often a larger amount of competition.<sup>158</sup> Regardless of the cause, the rapid growth in the concussion rate is a signal that the numbers may not tell the whole story.

### III. Goals for Local, State, and National Governments

Concussions have gained a great deal of attention because of the growing awareness of their short-term and long-term consequences as well as their prevalence in sports like football at the professional and amateur levels. Congress has held four committee hearings, to gain a better understanding of the issues.<sup>159</sup> Two of these hearings were on protecting student-athletes from concussions, and the other two were on head injuries in football specifically.<sup>160</sup> It is important for policymakers and advocates to identify the appropriate goals of any actions that could be taken. Policymakers can then identify the obstacles that would hinder attaining those goals. This section of this paper is dedicated to those two steps, which will allow a clearer picture of what actions should be taken and who should take them.

The number one goal of any legislative action should be to eliminate deaths and life-changing injuries in young athletes caused by SIS. The injury of Zachery Lystedt and SIS is what spurred the Washington state legislature to act as a result of SIS.<sup>161</sup> Legislative action should be the number one goal because SIS is preventable.<sup>162</sup> Concussions and serious spinal injuries that occur in sports, car accidents, and falls are tragic, but often understood as part of the risk in engaging in activities like sports or driving a car. Preston Pleveretes is now an advocate for concussion awareness, and has said raising awareness was very important to him because he did not want anyone to end up like him.<sup>163</sup> As he puts it, "I could have sat out one more game."<sup>164</sup> Sitting out one more game or even a season of high school sports is often difficult for a young athlete to accept, but if those students, parents, coaches, and administrators are aware of the risks, SIS could be eliminated.

The second goal policymakers should have is to reduce the total number of concussions. This goal is actually closely related to the goal of eliminating the occurrence of SIS in high school athletes since the first step is to prevent students who are more susceptible to another concussion by participating before they have fully recovered. The research has clearly shown that athletes, especially young athletes, are more likely to suffer another concussion even from a less severe impact when their brain is still recovering.<sup>165</sup> Strictly enforced return-to-play rules would reduce the number of total concussions.<sup>166</sup>

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<sup>156</sup> Lueke, *supra* note 35, at 485.

<sup>157</sup> *Id.*

<sup>158</sup> *Id.*

<sup>159</sup> *Legal Issues Relating to Football Head Injuries (Part I): Hearing Before the Comm. On the Judiciary*, 111th Cong. (2009); *Legal Issues Relating to Football Head Injuries (Part II): Hearing Before the Comm. On the Judiciary*, 111th Cong. (2010); *The Impact of Concussions on High School Athletes: Hearing Before the Comm. On Education and Labor*, 111th Cong. (2010), *The Impact of Concussions on High School Athletes: Hearing Before the Comm. On Education and Labor*, 111th Cong. (2010).

<sup>160</sup> *Id.*

<sup>161</sup> Clarridge, *supra* note 14.

<sup>162</sup> E:60, *supra* note 108.

<sup>163</sup> *Id.*

<sup>164</sup> *Id.*

<sup>165</sup> *Id.*

<sup>166</sup> Carrabis, *supra* note 80, at 377.

Players, coaches, and parents embrace the competitive nature of sports even at the high school level, but student-athletes should be restrained from returning to competition until they are asymptomatic. Unlike broken bones, torn ligaments, and other injuries that have more visible symptoms and limit an athlete's ability to compete, concussed athletes might be able to compete at a high level even when suffering from symptoms. Therefore, it would be especially important to ensure that the desire to compete does not overwhelm medical prudence. This goal would be best served by ensuring that players gradually return to physical activity and are checked for symptoms at each stage to ensure they are ready to return to competition.<sup>167</sup>

The third goal that policymakers should be focusing on is raising awareness and educating all those involved with youth sports. One common link in the stories of Dave Duerson, Zachery Lystedt and Preston Preverles is lack of knowledge. Policymakers that want to address the concussion problem should set the goal of ensuring that every coach, player, parent, referee, and league administrator has a basic understanding of the signs, symptoms, and consequences of concussions. This goal would go a long way in changing the culture that Linda Carrol and David Rosner write about in the *The Concussion Crisis*.<sup>168</sup> Changing the "macho culture" would help encourage student-athletes to report concussions and concussion-like symptoms to coaches or trainers.<sup>169</sup> This goal explains why Chris Nowinsky, the head of the Sports Legacy Institute described John Madden's decision to change how concussions are handled in his popular video game as "brilliant."<sup>170</sup> In the latest addition of Electronic Arts Madden NFL video game, players who suffer a concussion are prevented from returning for the remainder of the game.<sup>171</sup> John Madden believes that this will help kids learn about the seriousness of concussions.<sup>172</sup> It certainly is an improvement over the versions of Madden where he would gleefully rejoice in a big hit saying, "Whoa! Better break out the smelling salts after that hit."<sup>173</sup>

This goal would also allow everyone involved with the game to be educated observers who could identify a concussion or possible concussion. Having a high level of awareness on the field with educated referees, coaches, and players, as well as parent awareness in the stands would mean more people could monitor for warning signs. This would not guarantee that concussions would not be missed or dangerous and illegal plays would not go uncalled. Millions of eyes were on the Steelers and Browns game in 2011 when Colt McCoy suffered a concussion and was returned to play just two plays later.<sup>174</sup> But it would increase the chances that someone would raise a warning flag when reckless behavior is taking place.<sup>175</sup>

Education of coaches, players, trainers, and parents would also encourage safer practices and more sound playing techniques. While it is undesirable for legislatures to try and set out how coaches should conduct practices or teach their players, educated coaches working with leagues and associations could create a safer environment for young players. For example, football players being taught proper tackling technique would be less likely to launch themselves helmet first at other players. While coaches and leagues have to determine the proper balance between live play, full-contact practices and non-contact drills, educated coaches and leagues are more likely to seek the proper balance for safety rather than try, to use them to instill "toughness."

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<sup>167</sup> *Id.*

<sup>168</sup> CARROLL, *supra* note 2.

<sup>169</sup> *Id.* at 273.

<sup>170</sup> Alan Schwarz, *Madden Put Concussions in New Light in His Game*, N.Y. TIMES (Apr. 3, 2011), at SP1.

<sup>171</sup> *Id.*

<sup>172</sup> *Id.*

<sup>173</sup> *Id.*

<sup>174</sup> *See* Farrar, *supra* note 117.

<sup>175</sup> *Id.*

Coaches who are educated about the risks to young students who are put in their care are unlikely to engage in reckless behavior like that of Gregg Williams and the New Orleans Saints franchise in the recent bounty scandal.<sup>176</sup> Again, this education would increase safe play and enforce the idea that competitive desire should be constrained by playing inside the rules.

While the National Federation of High School Associations, the NCAA, and school districts are likely to become educated based on the possibility of lawsuits, these bodies often set the rules of the game and eligibility rules that their member teams have to follow. Any action taken by policymakers should recognize and value the power and flexibility of these organizations to enact directed policies that could reduce the number of concussions.

Finally, policymakers should be seeking to preserve athletic competition and all the benefits sports offer society. These benefits include collision sports like football, sports based on physical violence like wrestling, and sports like girls' soccer which accounts for a large number of concussions.

With these goals in mind, a number of obstacles become apparent. First, it is difficult to change the culture surrounding something like sports that is steeped in tradition.<sup>177</sup> While media coverage of concussions, disciplinary actions like those taken by Roger Goodell on the New Orleans Saints for their bounty program, and changes to video games may raise public awareness, it is difficult to change the culture surrounding sports.<sup>178</sup> For example, baseball is a sport with a long history that resists changes to safety even when they are fairly obvious changes. Helmets for pitchers have been developed as a way to protect young pitchers from hard line drives off of aluminum bats at the high school level, but leagues, players, and coaches are not embracing the idea.<sup>179</sup> Base coaches did not wear helmets at the professional level until a minor league coach was killed by a line drive.<sup>180</sup> Even the idea of using a clean baseball was resisted until the death of Ray Chapman in 1920.<sup>181</sup> Players at all levels are going to be slow to accept the idea that reporting a concussion and sitting out games is the right thing to do.

Closely related to the culture of sports is the competitiveness of athletes and coaches. One of the best indicators of when a player has recovered from a concussion is when their performance on a series of tests matches their pre-concussion baseline performance.<sup>182</sup> However, it is common to hear about players purposefully performing poorly on these baseline tests to ensure they can return to play sooner than they would otherwise be able to.<sup>183</sup> This type of attitude is the same attitude that would encourage a high school athlete, even one that understands the risks, to try to and hide a concussion in order to play in a game that they consider to be critical.

Players are not the only ones who lose sight of the fact that the competition of high school athletes should not just be about winning. Coaches are often tempted to return players to the game out of a desire to win. It is also conceivable that under some circumstances coaches could try to remove the star

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<sup>176</sup> Judy Batista, *Tape Reveals Coach Asking for Injuries*, N.Y. TIMES (Apr. 6, 2012), at B15.

<sup>177</sup> See CARROLL, *supra* note 2.

<sup>178</sup> CARROLL, *supra* note 2, at 269.

<sup>179</sup> Matt Snyder, *Easton-Bell Sports Unveil New Pitcher's Helmet*, YAHOO SPORTS (Mar. 7, 2011), available at <http://www.cbssports.com/mcc/blogs/entry/22297882/27795470>.

<sup>180</sup> MLB Base Coaches Don Protective Helmets, But Some See Kinks in New Rule, ESPN (Feb. 27, 2008), available at <http://sports.espn.go.com/mlb/spring2008/news/story?id=3267836>

<sup>181</sup> See MIKE SOWELL, *THE PITCH THAT KILLED* (2003).

<sup>182</sup> See Lueke, *supra* note 35 at 488; *The Impact of Concussions on High School Athletes: Hearing Before the Comm. On Education and Labor*, 111<sup>th</sup> Cong. 22-28 (May 2010) (statement of James C. Schmutz, Exec. Dir. American Sport Education Program).

<sup>183</sup> See, e.g., Andy Benoit, *How Players are Cheating on Concussion Tests*, CBS SPORTS (Apr. 22, 2011), available at <http://www.cbssports.com/mcc/blogs/entry/22475988/28737071>.



players from their opponent's team by disingenuously raising the concern that the player suffered a concussion.

Another major obstacle at the youth and high school level is funding. Policymakers need to be concerned with the ability of schools and school districts to comply with legislation or directives. While the Riddell Revolution helmet has been shown in some studies to reduce the force of an impact on a player's head and may reduce the number of concussions, schools are not necessarily going to be able to buy new helmets for an entire team or multiple teams of football players.<sup>184</sup> A school that cannot afford new safety equipment also has to overcome difficulty in ensuring the proper fit and maintenance of older equipment, which is critical to the helmet being as effective as possible.<sup>185</sup>

Similarly, the ImPact baseline-testing system is an excellent tool for ensuring students are not returned to play before they are fully recovered.<sup>186</sup> However, this computerized testing system has costs, and each test has a cost associated with it.<sup>187</sup> While some school districts can afford this tool and others have been able to pass the cost on to willing parents, other districts might not be able to fund a program that requires baseline testing for every student to participate in athletics.<sup>188</sup>

Another related obstacle is the lack of funding for or availability of qualified medical professionals to act as trainers. While having highly-qualified medical professionals on hand at every sporting event is something that some schools and school districts have the capability of doing, other school districts might be located in places that would limit the amount of qualified personnel or their ability to afford to have staff qualified.<sup>189</sup>

Finally, the still emerging science around concussions and CTE will be an obstacle. The NFL only recently acknowledged that there is a link between multiple concussions or head traumas and future neurological diseases.<sup>190</sup> The strength of that link is still unclear.<sup>191</sup> While most would consider the evidence to be strong enough to establish safer practices regarding high school athletes, others would resist costly or intrusive actions that are based on what they believe is less than certain science.<sup>192</sup>

#### IV. Current Laws Enacted or Proposed on Both the State and National Level

The goals and obstacles set out above can be used in evaluating the actions taken or contemplated at both the state and federal level. The states have taken the lead on this issue. A majority of states have adopted statutes or recently passed legislation modeled after Washington legislation. This section will start by laying out the three main components of these legislation efforts, how these components are enforced or carried out, and some of the differences between the individual approaches. The three main components that most of the proposals share in some form or another are return-to-play rules, informed consent requirements, and education for coaches.<sup>193</sup>

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<sup>184</sup> Patel, *supra* note 33 at 675.

<sup>185</sup> Lueke, *supra* note 35 at 488.

<sup>186</sup> *Id.*

<sup>187</sup> *Id.*

<sup>188</sup> *Id.*

<sup>189</sup> *Id.*

<sup>190</sup> Greg Tyler, *Duerson Death Back in the News*, SPORTS DIGEST (Feb. 29, 2012), available at <http://thesportdigest.com/2012/02/duerson-death-back-in-the-news/>.

<sup>191</sup> See e.g., *Legal Issues Relating to Football Head Injuries (Part I): Hearing for Comm. On Judiciary*, 111th Cong. 3-6 (2009)(statement of Rep. Smith, Member, House Comm. On the Judiciary).

<sup>192</sup> *Id.*

<sup>193</sup> NFL HEALTH AND SAFETY, <http://nflhealthandsafety.com/zackery-lystedt-law/states/> (last updated Nov. 28, 2011).

The return-to-play rules are at the heart of every state statute addressing concussions and player safety. The Washington statute requires that student-athletes suspected of having a concussion be immediately removed from play and prohibited from returning to play until cleared by a licensed healthcare provider in writing.<sup>194</sup> While the bill does not define exactly what constitutes a suspicion of a concussion, it does set out that the primary purpose is to protect student-athletes from serious injuries resulting from premature return to play.<sup>195</sup> The bill seems to indicate a relatively low threshold of what would constitute a suspicion. Under this statute and those that take similar positions, a player is to be immediately removed whenever there is a suspicion of a concussion, whether it occurs during practice or a game.<sup>196</sup> The statutes commonly leave open the question as to who has to have that suspicion or how strong the suspicion has to be.<sup>197</sup>

Some states have attempted to fill a few of these gaps. For example, Arizona's bill states that a "team athlete, team coach, official, licensed healthcare provider, team volunteer or team parent" can be the one to pull the player from competition or practice.<sup>198</sup> The Arizona bill is also unique in that it allows a player to return to play the same day if a healthcare provider present at the time rules out a concussion.<sup>199</sup> This stipulation is unique in that most states make no explicit authorization allowing a student-athlete to return to play immediately if cleared. Some states have a conjunctive requirement that the player be removed for that day and not return until cleared by a medical professional, while others seem to assume they would not be able to return until a subsequent day since they require written clearance.<sup>200</sup> Many of the other statutes require a parent or guardian to be notified as well prior to return to play, which would also limit the possibility that the student-athlete could return the same day.<sup>201</sup>

The Washington statute is the template and its return to play requirement is seen as one of the three pillars of effective legislation at the state level. Other states have been more exacting in what constitutes a suspicion and how the student should be returned to play.<sup>202</sup> Connecticut and New Mexico, for example, place the responsibility on the coach by requiring him or her to remove any student participating in intramural or interscholastic activity that "(A) is observed to exhibit signs, symptoms or behaviors consistent with a concussion following an observed or suspected blow to the head or body, or

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<sup>194</sup> Wash. Rev. Code Ann. § 28A.600.190 (West 2009).

<sup>195</sup> *Id.*

<sup>196</sup> Lueke, *supra* note 35 at 488.

<sup>197</sup> Wash. Rev. Code, *supra* note 195. For similar statutes and recent legislation see NFL HEALTH AND SAFETY, *supra* note 194; NT'L CONF. OF STATE LEGISLATURES, *supra* note 10; EDUCATION WEEK, *supra* note 10.

<sup>198</sup> S.B. 1521, 50th Leg., 1st Reg. Sess. (AZ 2011), available at

<http://www.azleg.gov/legtext/50leg/1r/bills/sb1521p.pdf>.

<sup>199</sup> *Id.*

<sup>200</sup> For an example of a bill that explicitly requires a student to remain out of competition for the remainder of the day where a concussion is suspected see S.B. 1, 49th Leg., 2nd Reg. Sess. (NM 2010) available at <http://www.nmlegis.gov/sessions/10%20Regular/bills/senate/SB0001.pdf>. Most proposals and enacted statutes are more similar to Washington which suggests that students would not be able to return the same day because they must be cleared in writing. See Wash. Rev. Code, *supra* note 195.

<sup>201</sup> See e.g. COLO. REV. STAT. ANN. § 25-43-103(West 2012)(states in pertinent part: "If a youth athlete is removed from play pursuant to subsection (3) of this section and the signs and symptoms cannot be readily explained by a condition other than concussion, the school coach or private or public recreational facility's designated personnel shall notify the athlete's parent or legal guardian and shall not permit the youth athlete to return to play or participate in any supervised team activities involving physical exertion, including games, competitions, or practices, until he or she is evaluated by a health care provider and receives written clearance to return to play from the health care provider").

<sup>202</sup> NFL HEALTH AND SAFETY, *supra* note 193.

(B) is diagnosed with a concussion, regardless of when such concussion or head injury may have occurred.”<sup>203</sup>

The statutes and pending legislation also set out a two-step process for athletes to return to play. First, the player must receive written clearance from a medical professional to return to any type of supervised activities.<sup>204</sup> Second, the player may not return to full participation until he or she is symptom-free at rest and under exertion, and have once again received written clearance from a medical professional.<sup>205</sup> Minnesota’s statute was based off a bill with a unique proposal that added protection by requiring that any healthcare provider’s recovery plan for the student-athlete be implemented to ease the athlete back into competition.<sup>206</sup>

The required removal of an athlete suspected of having a concussion or showing symptoms of a concussion is found in all but one of the 44 statutes passed or currently pending legislation.<sup>207</sup> Wyoming is unique in that it does not explicitly require removal or clearance by a medical professional, but instead requires the state Superintendent of Public Institutions to develop a model protocol and to assist school districts in developing protocols for addressing risks associated with concussions from school athletics.<sup>208</sup>

The second tenant that the Washington statute included and that the NFL has promoted is informed consent.<sup>209</sup> This aspect of the legislation requires that schools or athletic associations obtain written consent from the participant or a legal guardian before participating in any workout, competition, or practice.<sup>210</sup> This requirement could be lampooned since sending a piece of paper home as essentially a permission slip may not raise awareness or educate students and parents about the symptoms or risks related to concussions in athletics. However, because the policy could be implemented in many different ways, the requirement does provide an opportunity to educate parents and obtain written consent.

Finally, the third tenant adopted by nearly every state that has enacted youth sports concussion-related legislation is education requirements for coaches.<sup>211</sup> While the recent legislation varies in who has the responsibility for producing the educational materials or funding the training, as well as who should receive the training, legislation at a minimum includes some requirement that coaches are trained on the signs and risks associated with concussions.<sup>212</sup> Some of the statutes, like the one in Illinois, extend the training and education requirement to the student-athletes and their parents.<sup>213</sup>

Rhode Island is one of the few states that does not leave the creation of educational material up to the state athletic associations or some state agency, but instead requires that the CDC’s Heads Up training

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<sup>203</sup> See State School Health Policy Database, NAT’L ASS’N. OF STATE BOARDS OF EDUC., [http://nasbe.org/healthy\\_schools/hs/bytopics.php?topicid=3121&catExpand=acdntm\\_catC](http://nasbe.org/healthy_schools/hs/bytopics.php?topicid=3121&catExpand=acdntm_catC) (last visited May 7, 2012). See also, NAT’L CONFERENCE OF STATE LEGISLATURES, *supra* note 10.

<sup>204</sup> *Id.*

<sup>205</sup> *Id.*

<sup>206</sup> See H.F. 905, 87th Leg. (MN 2011). But see MINN. STAT. § 121A.38 (West 2012) (does not include similar provision).

<sup>207</sup> NFL HEALTH AND SAFETY, *supra* note 193.Cite

<sup>208</sup> See NAT’L ASS’N. OF STATE BOARDS OF EDUC., *supra* note 204; NFL HEALTH AND SAFETY, *supra* note 194; NAT’L CONFERENCE OF STATE LEGISLATURES, *supra* note 10.

<sup>209</sup> *Id.*

<sup>210</sup> *Id.*

<sup>211</sup> NFL HEALTH AND SAFETY, *supra* note 194.

<sup>212</sup> *Id.* See also NAT’L CONFERENCE OF STATE LEGISLATURES, *supra* note 10; NAT’L ASS’N. OF STATE BOARDS OF EDUC., *supra* note 204.

<sup>213</sup> See, e.g., 105 ILL. COMP. STAT. ANN. 5/10-20.53 (West 2012). See also NAT’L CONFERENCE OF STATE LEGISLATURES, *supra* note 10.

material be used.<sup>214</sup> Rhode Island is also considering an amendment that would require coaches to certify they have completed refresher training annually.<sup>215</sup> This amendment would also include a requirement that all students undergo baseline testing prior to beginning competition.<sup>216</sup>

While nearly every state has passed or is considering passing a statute addressing head injuries in youth sports, Congress has also been considering action.<sup>217</sup> House Resolution 1347 was proposed in 2010 with the title, “Concussion Treatment and Care Tools Act of 2010” or the “ConTACT Act of 2010.”<sup>218</sup> This bill required the Secretary of Health and Human Services to develop guidelines for the “prevention, identification, treatment, and management of concussions.”<sup>219</sup> These guidelines would include return-to-play requirements, but the substance of those requirements would be left for the Secretary to decide.<sup>220</sup> The bill also authorized the Secretary to make grants to states for things like collecting data related to head-injuries, implementing baseline and post-injury computerized testing, and any other activity deemed necessary.<sup>221</sup>

In 2010, a bill entitled Protecting Student-Athletes from Concussions Act was introduced into the House.<sup>222</sup> It died in committee and was reintroduced in 2011.<sup>223</sup> Unlike the ConTACT Act the Protecting Student-athletes from Concussions Act laid out specific requirements for states and local educational agencies. The bill would require local school districts to develop a concussion safety and management plan.<sup>224</sup> This plan would need to educate students, parents, and school personnel, support for students recovering from a concussion, and policies governing the response to a concussion in athletics.<sup>225</sup>

The education aspect of the bill is actually much more substantive than the state bills. The bill sets out that education would include training and certification of coaches, athletic trainers, and nurses, as well as obtain standardized release forms.<sup>226</sup> The bill would also require processes to be put in place for record keeping that would track concussion management from the release form through treatment plans, reporting forms, and post-injury fact sheets.<sup>227</sup> It would also require the school to post information on concussions in a visible place somewhere on school grounds as well as on the school website in the hopes of better educating the parents and students regarding the risks and appropriate responses to a concussion.<sup>228</sup>

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<sup>214</sup> Lueke, *supra* note 35, at 494-495.

<sup>215</sup> NFL HEALTH AND SAFETY, *supra* note 194 (discussing Rhode Island Bill). See also H.R. 5440, 2012 Gen. Assemb., Reg. Sess. (R.I. 2013), available at <http://webserver.rilin.state.ri.us/BillText11/HouseText11/H5440A.pdf>.

<sup>216</sup> *Id.*

<sup>217</sup> See NAT’L CONFERENCE OF STATE LEGISLATURES, *supra* note 10; NAT’L ASS’N. OF STATE BOARDS OF EDUC., *supra* note 204.

<sup>218</sup> H.R. 1347, 111th Cong., 2d Sess. (2010) (enacted), available at <http://www.gpo.gov/fdsys/pkg/BILLS-111hr1347rfs/pdf/BILLS-111hr1347rfs.pdf>.

<sup>219</sup> *Id.*

<sup>220</sup> *Id.*

<sup>221</sup> *Id.*

<sup>222</sup> H.R. Res. 6172, 111th Cong., 2d Sess. (2010) (enacted), available at <http://www.gpo.gov/fdsys/pkg/BILLS-111hr6172ih/pdf/BILLS-111hr6172ih.pdf>.

<sup>223</sup> H.R. Res. 469, 112th Cong. (2011) (enacted), available at <http://www.gpo.gov/fdsys/pkg/BILLS-112hr469ih/pdf/BILLS-112hr469ih.pdf>.

<sup>224</sup> *Id.*

<sup>225</sup> *Id.*

<sup>226</sup> *Id.*

<sup>227</sup> *Id.*

<sup>228</sup> H.R. Res. 469, 112th Cong. (2011) (enacted), available at <http://www.gpo.gov/fdsys/pkg/BILLS-112hr469ih/pdf/BILLS-112hr469ih.pdf>.

The bill calls for an individual on the school staff to oversee and monitor each student's recovery, as well as for accommodations to be made for the student as they recover.<sup>229</sup> These academic accommodations would go as far as to refer the student for evaluation under the Individual with Disabilities Education Act (IDEA).<sup>230</sup>

Finally, the act would mandate that guidelines be developed regarding removal from play and return-to-play.<sup>231</sup> These guidelines would include the immediate removal from the activity if a concussion is suspected and would require that the student remain out of the activity for the day the concussion occurs and (this appears to be a conjunctive requirement) until cleared in writing by a health care professional.<sup>232</sup> The bill would also require notification of a parent or legal guardian as to the nature of the injury and the circumstances surrounding the injury.<sup>233</sup> The bill also makes clear that it envisions developing a plan to gradually return the athlete to play.<sup>234</sup>

The bill differs from the ConTACT Act and the state legislation in that it links funding to the state's fulfillment of the law's requirements.<sup>235</sup> In this case that includes the receipt of a description of the plan put in place and assurances that the plan has been implemented.<sup>236</sup> The bill also differs from some of the state statutes since it is limited to public school athletic programs whereas some of the states extended the mandates to all youth athletic organizations or to any youth organization that utilizes public school facilities.<sup>237</sup>

## V. Strengths and Weaknesses of the Approaches taken by both the State and Federal Government

Washington's Lystedt Law has served as the model for almost every state that has passed a statute in the subsequent years, making it relatively easy to assess the strength and weakness of the majority of state laws.<sup>238</sup> Some states have strengthened the law, clarified the language, or broadened the scope, but generally, the state laws share the similar attributes, which are subject to similar praise or criticism.<sup>239</sup>

The Washington law and those that emulate it are all successful in mandating that students who may have suffered a concussion be removed from play and not returned to play until cleared by a medical professional qualified to treat traumatic brain injuries.<sup>240</sup> This mandate is relatively modest and simple, and it may seem to do little more than what would be required by common sense; yet it reinforces with the power law has to implement concussion management.<sup>241</sup>

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<sup>229</sup> *Id.*

<sup>230</sup> *Id.*

<sup>231</sup> *Id.*

<sup>232</sup> *Id.*

<sup>233</sup> H.R. Res. 469, 112th Cong. (2011) (enacted), available at <http://www.gpo.gov/fdsys/pkg/BILLS-112hr469ih/pdf/BILLS-112hr469ih.pdf>.

<sup>234</sup> *Id.*

<sup>235</sup> *Id.*

<sup>236</sup> *Id.*

<sup>237</sup> See, e.g., UTAH CODE ANN. § 26-53-201 (West 2011); COLO. REV. STAT. ANN., *supra* note 202 (extending coverage to private organizations).

<sup>238</sup> NFL HEALTH AND SAFETY, *supra* note 194.

<sup>239</sup> *Id.*

<sup>240</sup> *Id.*

<sup>241</sup> See e.g., *Concussion in AAU Sports- A Guide for Parents, Coaches, and Club Contacts*, AMATUER ATHLETIC UNION available at <http://www.ieaa.org/lystedtlaw/AAUConcussioninYouthSportsGuideforCoaches.pdf>; Tim Flannery, National Federation of State High School Associations' "Concussion in Sports" Course Free to Coaches, Parents, Players, NAT'L FED'N OF HIGH SCHOOL ASSOC., Aug. 26, 2010 available at

The mandate also theoretically takes the decision of when a student should return to competition out of the hands of coaches, players, and parents. By requiring the written clearance of a medical professional, who is usually a medical professional qualified to manage concussions, the decision is isolated from the desire to win that is shared by coaches, players, and even parents. The decision is also left in the hands of an individual that is going to err on the side of caution. Whether it is due to their oath, respect for the risks inherent in a head injury, genuine concern for the student, or fear of a malpractice suit, doctors are likely to give clearance only after the student is asymptomatic and safe to return to participation.

The state laws also attempt to address the awareness of coaches, players, and parents. Awareness is an important part of reducing the number of concussions; the occurrence of SIS, and in promoting informed decisions about when competing in sports is no longer worth the long-term health risks. The increased media coverage of concussions combined with efforts by the NFL, NHL, and other professional sports leagues to strongly discourage unsafe plays has already helped make the dialogue more about concussion management than breaking out the smelling salts. The NFL has made rule changes in order to limit the number of concussions, including changes that have reduced the number of kick-off returns and the distance the kicking team covers.<sup>242</sup> This change has been copied at the college level.<sup>243</sup> These types of rule changes demonstrate awareness surrounding head injuries, which have led to a reduction in the concussion risks associated with competition.

The first way the laws encourage awareness is by requiring informed consent of the athlete or a legal guardian if the athlete is under 18.<sup>244</sup> The other way the laws encourage awareness is through training requirements for coaches, athletic trainers, and nurses who may witness a concussion or become involved with the management of a student-athlete after a concussion.<sup>245</sup> While most of the laws leave open how the training is conducted and how the informed consent is obtained, these requirements are actually very useful in combatting concussions.

The more parents, players, and coaches know, the more they will advocate for safer rules of play, better safety equipment, and the more attune they will be to identifying possible concussions. This awareness can reduce concussions in many ways. If concussions are reported more reliably or identified more consistently, players will not be as likely to receive multiple concussions or suffer from SIS by returning to play too soon. Players and parents are less likely to condone or encourage activities that used to be considered “hard-nosed,” like hitting a defenseless wide receiver high or throwing high and tight at a hitter crowding the plate. Finally, awareness will allow players who have suffered one or more concussions to make decisions in conjunction with their parents on whether their continued participation

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<http://www.nfhs.org/content.aspx?id=4187>(citing language of new guideline “Any athlete who exhibits signs, symptoms or behaviors consistent with a concussion, such as loss of consciousness, headaches, dizziness, confusion or balance problems, shall be immediately removed from the contest and shall not return to play until cleared by an appropriate health-care professional”).

<sup>242</sup>Jarrett Bell, *New NFL Kickoff Rule Could Be Game Changer*, USA TODAY (Sep. 11, 2011), [http://usatoday30.usatoday.com/sports/football/nfl/2011-09-08-new-nfl-rule-could-change-kickoff-return-strategy\\_n.htm](http://usatoday30.usatoday.com/sports/football/nfl/2011-09-08-new-nfl-rule-could-change-kickoff-return-strategy_n.htm). See also *NFL: Concussions Down on Kickoffs*, ESPN (Mar. 26, 2012), [http://espn.go.com/nfl/story/\\_/id/7740025/rich-mckay-says-nfl-kickoff-tweak-reduced-concussions](http://espn.go.com/nfl/story/_/id/7740025/rich-mckay-says-nfl-kickoff-tweak-reduced-concussions) (reporting that the measure worked to reduce the number of concussions).

<sup>243</sup>John Taylor, *Change in Kickoffs, Touchbacks Approved By NCAA Panel*, NBC SPORTS (Feb. 24, 2012), <http://collegefootballtalk.nbcsports.com/2012/02/24/change-in-kickoffs-touchbacks-approved-by-ncaa-panel/>.

<sup>244</sup>NFL HEALTH AND SAFETY, *supra* note 194.

<sup>245</sup>*Id.*

in a sport is worth further risk since science demonstrates that someone who has suffered a concussion is more susceptible to additional concussions in the future.

These state laws have four main weaknesses. First, the language of the law is rather general and could allow the letter of the law to be followed without achieving the law's purpose. The removal-from play and return-to-play rules are triggered when someone suspects a student-athlete has suffered a concussion or when "exhibiting signs, symptoms, or behaviors consistent with a concussion."<sup>246</sup> It is not entirely clear what level of concern arises to a suspicion that a concussion has occurred. It is also not clear if a student-athlete in a state using the "signs, symptoms, and behaviors" language should be removed from a game if someone suspects a concussion even though the student-athlete shows no indication that one occurred. The statutes are also not explicit concerning whose responsibility it is to make the decision to remove the athlete from the game. If the opposing coach suspects the other team's star quarterback has suffered a concussion, would that coach's suspicion trigger the requirement that the quarterback be removed? Who needs to suspect the concussion occurred, and what degree of suspicion is necessary to trigger this requirement?

Similarly, the informed consent and education requirements are often vague or left to the discretion of the school districts. Some laws state what information needs to be included in any letter seeking informed consent and that the consent must be written, but this does not mean that the letter to the parents will be given due consideration.<sup>247</sup> It is quite possible that this requirement simply leads to a page-long permission slip that parents or student-athletes sign without reading.<sup>248</sup> The consent form requirements do not require the information be presented in any way that would lead parents to give it more merit than any one of the numerous permission slips and waivers that they sign for their child.

Some states are better than others regarding clarity in the education requirement. Connecticut's recent session law requires the training program be certified by the state board of education.<sup>249</sup> Connecticut also requires annual training on how to identify concussions as well as a refresher course every five years in order to be eligible for a coaching permit.<sup>250</sup> Illinois, on the other hand, requires that the Illinois High School Athletic Association provide school districts with educational material and that schools use the material to educate coaches, players, and parents.<sup>251</sup> However, there are no required courses or annual certifications set out in the statute.<sup>252</sup> Other states like Rhode Island specifically require the use of the CDC Heads Up program and their educational material.<sup>253</sup>

Another shortcoming of many state laws is the limited reach of the statutes and proposals. Many of the statutes apply only to public school districts and athletic programs connected with those schools.<sup>254</sup> Other states have broadened the scope by including any athletic program that utilizes a public school athletic facility.<sup>255</sup> Still, others have extended the requirements to public schools, private schools, and

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<sup>246</sup> For "signs, symptoms..." language see proposed Iowa S.F. 367 at NAT'L CONFERENCE OF STATE LEGISLATURES, *supra* note 10.

<sup>247</sup> Lueke, *supra* note 35, at 294.

<sup>248</sup> *Id.*

<sup>249</sup> NAT'L CONFERENCE OF STATE LEGISLATURES, *supra* note 10 (citing to 2010 Conn. Acts, P.A. 10-62 (Reg. Sess.)(2010 SB456)).

<sup>250</sup> *Id.*

<sup>251</sup> *Id.*

<sup>252</sup> *Id.*

<sup>253</sup> See NFL HEALTH AND SAFETY, *supra* note 216.

<sup>254</sup> NAT'L CONFERENCE OF STATE LEGISLATURES, *supra* note 10; See NAT'L ASSOC. OF STATE BOARDS OF EDUC, *supra* note 204.

<sup>255</sup> *Id.*

park district teams, as well as teams utilizing public facilities.<sup>256</sup> A few, like Colorado and Utah, for example, have extended the law to all youth athletic activities.<sup>257</sup> Considering the popularity and sheer number, of participants in little league baseball, pop-warner football, AAU basketball, and other club sports, it would seem any effective law would be expansive enough to protect youth athletes in these organizations.<sup>258</sup>

Funding is a concern with any governmental action or mandate and these statutes are no exception. The state laws add to the fiscal burdens of school districts, schools, and park districts, while also adding a burden on private organizations like state athletic associations. Yet, none of these enacted laws nor the pending legislation provide extra funding to meet funding requirements.<sup>259</sup> Even the states that authorize the creation of working groups, such as Maine, a state allowed to make recommendations about baseline and post-concussion testing, fail to set aside funds.<sup>260</sup> It is unclear what would happen if the working group in Maine made the recommendation that ImPact baseline testing and post-concussion testing should be a critical part of the state's efforts regarding concussion management.<sup>261</sup> ImPact testing is expensive and school budgets are already stressed.

The final major deficiency in the state laws is that the statutes also fail to provide funding to monitor these organizations conformity with the law. There is no enforcement mechanism and very little to ensure that the laws become anything greater than suggestions. While the violation of a statute could be strong evidence of negligence, some school districts would be able to escape liability under governmental immunity.<sup>262</sup> The immunity would also likely apply to the most egregious cases of coaches who clearly had a suspicion or knowledge of a concussion and returned a student-athlete to competition.

However, it is difficult to imagine exactly what type of enforcement mechanism is the most effective. Creating civil penalties might just encourage schools to eliminate the program or punish schools that are in need of funds. Making state funds or other grants dependent on meeting the requirements would have similar drawbacks. One interesting suggestion has been to punish programs that fail to meet any of the requirements by suspending the athletic program, causing teams to forfeit games, or barring them from competing from tournaments where public facilities are used.<sup>263</sup> These punishments are promising and creative ways to ensure conformity with the requirements and promote safety in interscholastic athletics.

While the two federal laws share a common goal, they have vastly different approaches. The ConTACT Act is hard to evaluate since it is just a mandate for the Secretary of Health and Human Services to develop guidelines. One immediate reaction is that the proposal would give a large amount of discretion to a federal government agency that may not be well situated to deal with an issue that crosses into other fields like education. However, the proposal has quite a few strengths. First, it places a lot of importance on coordinating with "high school sports associations, youth sports associations, athletic

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<sup>256</sup> *Id.*

<sup>257</sup> *See supra* note 239.

<sup>258</sup> *See e.g., Benefits of Playing Pop Warner, POP WARNER LITTLE SCHOLARS* <http://www.popwarner.com/aboutus/benefits.asp> (last visited May 7, 2012)(over 400,000 members); *Participation in Little League Baseball Reaches 3-Year High, LITTLE LEAGUE* [http://www.littleleague.org/media/newsarchive/03\\_2006/06participation.htm](http://www.littleleague.org/media/newsarchive/03_2006/06participation.htm) (last visited May 7, 2012)(over 2,500,000 participants).

<sup>259</sup> NAT'L CONFERENCE OF STATE LEGISLATURES, *supra* note 10; *See NAT'L ASSOC. OF STATE BOARDS OF EDUC, supra* note 204.

<sup>260</sup> *Id.*

<sup>261</sup> *Id.*

<sup>262</sup> Slater, *supra* note 117.

<sup>263</sup> Lueke, *supra* note 35, at 500.



trainer associations, and local chapters of national brain injury organizations.<sup>264</sup> Considering how pivotal these organizations would be in any attempt to implement government guidelines or mandates, this is an astute recognition that they would have a role to play. The bill also recognizes that funding would be required and authorizes the Secretary to make grants to states in order for them to comply with things like baseline testing, post-concussion testing, data collection, and other requirements.<sup>265</sup> Finally, the proposal it seems to have a very broad scope since the guidelines to be promulgated would be for school-aged children, not necessarily just school athletic programs.<sup>266</sup>

The Protecting Student-athletes from Concussions Act has a great deal of substance and elevates the scrutiny concussion management receive.<sup>267</sup> The purposes of the bill show that there is a strong case for the federal government to treat concussions in youth sports as an epidemic. One of the findings states that 40% of student-athletes return before fully recovered.<sup>268</sup> The bill also extends the concern to activities beyond interscholastic sports to gym classes and playground activities when considering the 400,000 students that suffered concussions in just five sports at the high school level.<sup>269</sup> With these numbers in mind, as well as “the tremendous benefits for the physical, social, emotional, and cognitive development of students,” the bill would introduce a great deal of federal oversight into youth sports.<sup>270</sup>

Despite the fact that the bill has virtually no chance of being passed into law, it is a commendable effort to comprehensively address concussion management in youth sports.<sup>271</sup> It requires each school district to develop and implement a concussion management plan.<sup>272</sup> The law does not explicitly require that these plans require everything mentioned in the act, but it sets out what an effective plan would contain.<sup>273</sup> This language would seem to allow some flexibility, and it is hard to argue that if every school developed plans that included all the “such as” suggestions the risk to student-athletes would decrease.<sup>274</sup> Again education and training for parents, school personnel, and students is an integral part of reducing the concussion epidemic in youth sports.<sup>275</sup>

The bill is unique in that it sets out academic support and emphasizes the importance of a gradual return to activities.<sup>276</sup> Further, it actually identifies who is responsible for removing the student and whose suspicion is enough to require a student’s removal from competition.<sup>277</sup> Coaches and athletic trainers are explicitly cited, but the removal of the student-athlete would be required if any public school personnel

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<sup>264</sup> H.R. 1347, *supra* note 216.

<sup>265</sup> *Id.*

<sup>266</sup> *Id.*

<sup>267</sup> H.R. Res. 469, *supra* note 224.

<sup>268</sup> *Id.*

<sup>269</sup> *Id.*

<sup>270</sup> *Id.*

<sup>271</sup> See *H.R. 469 Bill Overview*, GOVTRACK, <http://www.govtrack.us/congress/bills/112/hr469> (estimating 1% chance the bill will become law).

<sup>272</sup> H.R. Res. 469, *supra* note 224.

<sup>273</sup> *Id.* For example, this includes training for staff, using and maintaining standardized release form, and assigning an individual to monitor academic progress.

<sup>274</sup> *Id.*

<sup>275</sup> *Id.*

<sup>276</sup> *Id.* The specific language of the proposal is as follows:

(B) may require the student to follow a plan designed to aid the student in recovering and resuming participation in such activities in a manner that--

(i) is coordinated, as appropriate, with periods of cognitive and physical rest while symptoms of a concussion persist; and

(ii) reintroduces cognitive and physical demands on such student on a progressive basis only as such increases in exertion do not cause the reemergence or worsening of symptoms of a concussion.

<sup>277</sup> H.R. Res. 469, *supra* note 224.

suspected a concussion.<sup>278</sup> Coaches would be required to yield to any other school personnel that brought to his attention a suspicion that a student had suffered a concussion. Finally, the bill includes an enforcement mechanism, which many of the state laws lack.<sup>279</sup>

Despite attempting to institute a comprehensive approach to concussion management that would stretch from academic accommodations to a progression in physical activity before full participation is allowed, the bill is limited in scope, applying only to public schools.<sup>280</sup> The bill also seems to limit the removal, return-to-play restrictions, and academic accommodations to students who were injured in “school-sponsored activity.”<sup>281</sup> This limitation could be seen as permitting a school to return a student to play prior to receiving a doctor’s clearance if the student was injured in a private league activity.

The other weakness is that the enforcement mechanism is draconian. The removal of federal funding for failure to produce a plan and assure the federal government that the plan has been implemented would punish students and student-athletes.<sup>282</sup> While it would likely be effective in spurring local school districts to comply, it would be hard to imagine anyone willing to pull critical funds from a school and reducing the ability to carry out the critical mission of educating American children.

One of the reasons that the states may be in a better position to carry out legislation is that they can craft an enforcement mechanism with their state athletic associations that would concentrate any punishment on athletic programs. While student-athletes and students who take pride in their school’s sports teams would be negatively affected, punishing the athletic program would not affect the academic progress of students. States also have broader power to regulate private sports leagues that operate in their state.

## VI. State Legislation is Positive Advocacy for Awareness for Preventing Second Impact Syndrome

States passing legislation aimed at reducing the number of students who continue to participate in athletic competition after a concussion is an admirable venture. States passing legislation reducing the number of students who return to competition before they are fully recovered is an effective approach to reducing concussions and preventing serious brain injuries. These requirements when combined with the education, training, and consent requirements, heighten public awareness surrounding concussions. All of this awareness will lead to schools, leagues, and coaches that know how to work with doctors, parents, and students to properly manage concussions.

These statutes have their weaknesses and run the risk of being simply unenforceable suggestions or unfunded, unmonitored mandates on schools. However, there is value in the legislation being debated. Similarly, Congress holding hearings and considering legislation serves to heighten public awareness.

However, there are two examples of schools practicing superb concussion management that demonstrate why legislatures should not try to solve this problem solely through legislation. The first is North Kitsap High School in Washington. North Kitsap had more concussions sustained by swimmers than football players last year.<sup>283</sup> North Kitsap’s concussion management program embodies all the best

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<sup>278</sup> *Id.*

<sup>279</sup> *Id.*

<sup>280</sup> *Id.*

<sup>281</sup> *Id.*

<sup>282</sup> H.R. Res. 469, *supra* note 224.

<sup>283</sup> *Concussions Done Right: North Kitsap High School*, SPORTS CONCUSSIONS <http://www.sportsconcussions.org/ibaseline/concussions-done-right-north-kitsap-high-school.html> (last visited May 7, 2012).

policies that state and federal lawmakers have considered, but they are accomplished in unique ways that maximize their effect. For example, the school curriculum supports an athletic medicine program that trains 150 students at three levels.<sup>284</sup> These students fill various roles in the athletic programs, but they also serve as ambassadors to educate coaches, parents, and players about concussions.<sup>285</sup>

The school also benefits from having two full-time athletic trainers who assist coaching staff in ensuring safety equipment is properly fitted and maintained. The trainers take the extra care to protect against concussions by ensuring that the football team's helmets are refit before each game to ensure safety.<sup>286</sup>

The school also benefits from the fact that it has the funding for baseline testing using the ImPact program every two years for each student-athlete in the school.<sup>287</sup> This baseline test combined with a very clear procedure allows concussions to be handled in a way that minimizes the chance a player will be exposed to unnecessary risk. The trainer evaluates a player suspected of having a concussion.<sup>288</sup> After the initial evaluation, the results of the evaluation and a head injury information sheet are shared with the parents of the player.<sup>289</sup> The teachers, nurses, and other school personnel are made aware of the concussion and the player is expected to check in once a day with the trainer who tracks the student's recovery.<sup>290</sup>

The second example is Mater Dei High School in California that was discussed earlier. Coach Bruce Rollison has changed his program's approach to practice and to summer training camp to try and reduce the risk of concussions.<sup>291</sup> Mater Dei is a wealthy school with funding for ImPact testing, athletic trainers, and top-of-the-line safety equipment.<sup>292</sup> It is a school with well-educated parents and knowledgeable coaches who have received concussion training.<sup>293</sup> Mater Dei is a school that would have concussion guidelines requiring the removal of a player and restricting his return regardless of legislation.<sup>294</sup> However, Rollison makes it clear that what is currently in place is not enough. He talks about creating a team culture where players report their own injuries as well as concerns about teammates to cut down on the number of unreported concussions.<sup>295</sup> He talks about striking a balance between reducing the number of hits and the amount of contact in practices while still ensuring that players know the proper technique so they are not more at risk from tackling improperly in the heat of competition.<sup>296</sup>

North Kitsap and Mater Dei schools are examples of what well-funded, aware schools with trained personnel can do to protect student-athletes. However, not all schools have the funding and not all coaches are as educated in concussion risks and management. We do not want legislation dictating practice techniques or determining the proper amount of contact in drills. We do not want legislatures and

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<sup>284</sup> *Id.*

<sup>285</sup> *Id.*

<sup>286</sup> *Id.*

<sup>287</sup> *Id.*

<sup>288</sup> *Concussions Done Right: North Kitsap High School*, SPORTS CONCUSSIONS

<http://www.sportsconcussions.org/ibase/line/concussions-done-right-north-kitsap-high-school.html> (last visited May 7, 2012).

<sup>289</sup> *Id.*

<sup>290</sup> *Id.*

<sup>291</sup> Lehrer, *supra* note 39.

<sup>292</sup> *Id.*

<sup>293</sup> *Id.*

<sup>294</sup> *Id.*

<sup>295</sup> *Id.*

<sup>296</sup> *Id.*

executive agencies wrestling with changes to the rules of the game or trying to mandate certain one size fits all management procedures.

Legislatures should want to continue to increase awareness, to provide schools with resources, and to aid schools in developing best practices that fit their circumstances. The federal government can support these efforts by working with the states, national health organizations, national athletic organizations, and professional organizations that rely on the next generation for the continued vitality of their businesses. The federal government can also support research like that done by the Sports Legacy Institute so future generations have a better understanding of the risks that football and other sports entail. CTE has been a concern for young athletes who compete in boxing for years, and the sport at many levels has changed to better protect amateur boxers.<sup>297</sup>

States can continue to work with state departments of education and athletic organizations in their state to make concussion awareness part of the culture of sports. The state statutes that have the broad scope reach to cover all youth athletic organizations are already doing this. Informed consent and educational requirements may seem imperfect on some levels, but they will continue to raise awareness.

## VII. Conclusion

States and the federal government should work together to ensure that all 50 states have the minimum requirement that players who are suspected of having a concussion are removed from play and not permitted to return until cleared by a medical professional. Most leagues and high school associations have already adopted this requirement, but placing the force of law behind it should solidify teams' adherence to the rule. Second Impact Syndrome is preventable and the model set out by the Lystedt Law is effective. States should work aggressively to establish enforcement mechanisms like the forfeiture of games, reduction of practice time, or suspension of programs for teams that do not take their obligation seriously.

Youth sports and interscholastic athletics offer incredible benefits to America's youth. These competitive athletic activities come with the risk of injury, and concussions will occur. However, the goal should be to ensure that those risks are minimized.

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<sup>297</sup> See e.g., William G. Gilroy, *Bengal Bout Participants Aid in Concussion*, UNIVERSITY OF NOTRE DAME (Mar. 02, 2012), available at <http://foundations.nd.edu/news/29334-bengal-bouts-participants-aid-in-concussion-research/> (discussing concussion management and study done by amateur boxers participating in boxing at University of Notre Dame).