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NICHOLAS JOVANOVIC, Individually and  
as Administrator for the Estate of PAVLE  
JOVANOVIC,  
  
Plaintiff,  
  
vs.  
  
THE UNITED STATES OLYMPIC AND  
PARALYMPIC COMMITTEE; THE  
UNITED STATES BOBSLED &  
SKELETON FEDERATION; THE  
INTERNATIONAL OLYMPIC  
COMMITTEE, and THE  
INTERNATIONAL BOBSLEIGH &  
SKELETON FEDERATION,  
  
Defendants.

SUPERIOR COURT OF NEW JERSEY  
LAW DIVISION: OCEAN COUNTY

Docket No.: OCN-L-\_\_\_\_\_-22

Civil Action

**COMPLAINT &  
JURY DEMAND**

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Plaintiff, Nicholas Jovanovic, individually and Administrator of the Estate of Pavle Jovanovic, by and through his undersigned counsel, alleges the following for his Complaint against Defendants the United States Olympic and Paralympic Committee, the United States Bobsled & Skeleton Federation, the International Olympic Committee, and the International Bobsleigh & Skeleton Federation (hereafter, collectively “Defendants”):

## I. INTRODUCTION & NATURE OF THE ACTION

1. This action arises from Olympic bobsledder Pavle “Pauly” Jovanovic’s (Pauly or Decedent) development of traumatic brain injury (TBI) and Chronic Traumatic Encephalopathy (CTE), and his subsequent suicide, caused by Defendants’ acts and omissions in connection with Decedent’s bobsledding career. Defendants’ acts and omissions resulted in Decedent routinely suffering repeated crashes, headbanging, brain-rattling vibration, and strong gravitational acceleration forces that led directly to his TBI, CTE, and ultimately, his suicide.

2. The Olympics are a multibillion-dollar industry. When it comes to providing an audience for the world’s premier athletes, the Olympics are the crown jewel. 3.6 billion people world-wide watched the 2012 and 2016 Summer Olympics in London and Rio de Janeiro.<sup>1</sup> To put that in perspective, 96 million people watched the 2020 Super Bowl.<sup>2</sup> Countries pledge billions of dollars to renovate and innovate their cities for the opportunity to host the Games and bring that viewership to their homeland. For 2021, Japan allocated nearly \$15 billion to host the Summer Olympics in Tokyo.<sup>3</sup>

3. With half the world’s population tuning in, the International Olympic Committee

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<sup>1</sup> <https://www.reuters.com/article/us-olympics-rio-ioc-broadcast/half-the-world-watching-games-opening-ceremony-ratings-flat-ioc-idUSKCN10S1ZX>

<sup>2</sup> <https://www.nfl.com/news/super-bowl-lv-draws-audience-of-96-4-million-viewers>

<sup>3</sup> <https://www.cbssports.com/olympics/news/tokyo-olympics-and-paralympics-cost-up-22-now-sitting-at-15-4-billion/>

recorded revenues of \$3.6 billion from the 2016-2019 quadrennial.<sup>4</sup> In the 2009-2012 quadrennial, the International Olympic Committee estimated \$8 billion in revenue.<sup>5</sup> The 2016 Games in Rio generated more than \$848 million in sponsorship revenue.<sup>6</sup>

4. On May 3, 2020, that ten-figure revenue stream came at the cost of Pauly's life.<sup>7</sup> Pauly had a career that spanned 14 years proudly representing the United States of America and Serbia. He won nine gold medals, eight silver medals and two bronze medals across 28 events in 14 BMW IBSF World Cups.<sup>8</sup> He qualified for the 2002 and 2006 Olympics, coming in seventh in both the two-man and four-man bobsled in Turin. He dedicated his life Olympic Bobsled, and at one time, he was the top "brakemen" in the world.

5. On May 3, 2020, Pauly rigged a chain to a crane that he and his brother, Nick, designed and built for the shop of their family-owned metal works business located in Toms River, New Jersey, and hung himself. That Pauly was not the same Pauly his loved ones knew and loved prior to his bobsled career.

6. At the time of his death, Pauly was suffering from Chronic Traumatic Encephalopathy ("CTE"). This diagnosis was confirmed on brain biopsy by Dr. Anne McKee in her official neuropathology report dated March 17, 2021. CTE was causing all of Pauly's suffering. As expected with CTE, he was experiencing constant shakes and tremors, violent and erratic outbursts, headaches, mass confusion, loss of cognition, and depression. To cope with the suffering he turned to alcohol, but it did nothing to mask the significant buildup of p-tau neurofibrillary tangles ("NFTs") and diffuse plaques in his brain. He was competing against an

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<sup>4</sup> <http://www.thesportsexaminer.com/lane-one-iocs-2019-financial-statements-show-2-1-billion-in-advances-to-organizing-committees-will-that-money-actually-come-back/>

<sup>5</sup> [https://www.sportcal.com/pdf/gsi/sportcal\\_issue26\\_6-9.pdf](https://www.sportcal.com/pdf/gsi/sportcal_issue26_6-9.pdf)

<sup>6</sup> <https://www.statista.com/statistics/274449/marketing-revenue-of-olympic-games-from-domestic-sponsorships/>

<sup>7</sup> <https://www.nytimes.com/2020/07/26/sports/olympics/olympics-bobsled-suicide-brain-injuries.html>

<sup>8</sup> [https://www.ibsf.org/en/athletes/athlete/128883/Jovanovic?page\\_number=0](https://www.ibsf.org/en/athletes/athlete/128883/Jovanovic?page_number=0)

opponent that does not lose. On May 3, 2020, his injuries became far too intolerable for him to bear. He died at 43.

7. Pauly was not the first Olympic bobsledder to commit suicide. Since 2013, five North American Olympic bobsledders have attempted to take their own lives. Four, including Pauly, have succeeded.

8. CTE is much more pervasive in sports than is currently understood by athletes. It is not isolated to the National Football League (“NFL”). CTE has been found in athletes whose primary exposure was through careers in boxing, football, hockey, rugby, soccer, wrestling, and now sledding sports like bobsled.

9. For decades, bobsledders and their team/medical personnel have normalized classic symptoms of traumatic brain injuries and CTE by frequently using the term “sled head” to refer to instances where an athlete would be unable to communicate or function with others after a run. Upon information and belief, this term has been used since the 1980s.

10. Despite knowledge of the decades of medical science detailing the development of traumatic brain injuries in athletes who are exposed to brain trauma and the use of “sled head” within the sport of bobsled, Defendants failed to warn and protect Pauly and the other athletes who have taken their lives as a result of their injuries from repeated head trauma. Instead, they concealed from him the risks of repeated head trauma.

## **II. PARTIES**

### **A. PLAINTIFF**

11. Plaintiff, Nicholas Jovanovic, is the brother of Pavle Jovanovic, and the Administrator of the Estate of Pavle Jovanovic. At all times material hereto, Plaintiff was a resident of the State of New Jersey. He brings this action as a wrongful death and survival action.

## B. DECEDENT

12. Pavle “Pauly” Jovanovic represented the United States from 1997 to 2008, in bobsledding. During his decade-long competitive career, Pauly took thousands of runs down bobsled tracks throughout the world.

13. Upon information and belief, Pauly competed in 37 BMW IBSF World Cup events at the following tracks: Winterberg (Germany), Altenberg (Germany), Nagano (Japan), Cortina (Italy), Cesana Pariol (Italy), Calgary (Canada), Mt. Van Hoevenberg (United States), Königssee (Germany), St. Moritz (Switzerland), Utah Olympic Park (United States), Innsbruck (Austria), and La Plagne (France).

14. In addition to the 37 World Cup events, Pauly competed in three World Championships, two North American Cups, and the 2006 Winter Olympics in Turin, Italy.<sup>9</sup>

15. Every time Pauly went down the track during 37 World Cup events, three World Championships, two North American Cups, and the 2006 Winter Olympics, he was exposed to concussive and sub-concussive impacts, jarring, vibration and high gravitation forces. Pauly was exposed to these same conditions each time he went down the nearly incalculable number of training runs he had during his 12 year-year career. As a result, Pauly sustained numerous concussions, TBIs and ultimately, developed CTE, as well as other injuries.

16. At all times material hereto, Pauly was a resident in the State of New Jersey.

## C. DEFENDANTS

### 1. The United States Olympic & Paralympic Committee

17. Defendant the United States Olympic & Paralympic Committee (“USOPC”) is a

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<sup>9</sup> Pauly was set to represent the United States in the 2002 Winter Olympics in Salt Lake City but was unable to compete due to a suspension. It is believed that Pauly would have been a member of the 2010 Winter Olympics in Vancouver, but he was injured prior to Olympic qualifying and forced into a hiatus from the sport.

federally-chartered, nonprofit corporation of unlimited duration incorporated by an Act of Congress, organized and existing under the laws of the United States, with its principal place of business at One Olympic Plaza, Colorado Springs, Colorado 80909.

18. At all times material hereto, the USOPC was a member of the Olympic Movement and the governing supreme authority over United States Olympics. As the governing supreme authority, the USOPC is responsible for the development, safety, and training of athletes for their sports, as well as for entering, overseeing, and supporting United States teams for the Olympic Games and other international competitions sponsored by various international sports federations.

19. As a member of the Olympic Movement, all USOPC bylaws, statutes, practices, and activities must be in conformity with the Olympic Charter.

20. The USOPC has existed in various forms since 1894. In 1978, the USOPC in its current form was established by Congress passing the Ted Stevens Olympic and Amateur Sports Act. The USOPC is governed by a 16-member board of directors and staff of executives headed by a CEO. Additionally, the USOPC has established three constituent councils to serve as sources of opinion and advice to the board and USOPC executives. The USOPC's membership consists of approximately 47 national sports federations, including the United States Bobsled & Skeleton Federation. Under the Olympic Charter, the mission and role of the USOPC is to develop and protect the Olympic Movement in the United States, in accordance with the Olympic Charter. As previously stated herein, one of the goals set out in the Olympic Charter is to encourage and support measures relating to the medical care and health of athletes. The USOPC is provided several rights and responsibilities under the Olympic Charter to ensure its fulfillment of its mission and role.

21. The Bylaws of the USOPC provide its mission is to empower Team USA athletes to achieve sustained competitive excellence and well-being. In undertaking its mission, the Bylaws

lay out six fundamental core principles the USOPC must abide by, the first of which is to promote and protect athletes' rights, safety, and wellness.

22. In furtherance of its mission and core principles to maintain athlete safety, the USOPC via its bylaws established the Athlete and National Governing Body ("NGB") Services Committee. This Committee was to be comprised of eight members, two of which are to be representatives of the Athlete's Advisory Council. One of the primary purposes of this committee is to assist in the oversight of athlete safety issues.

23. Since 1972, in various forms, the USOPC has maintained an Athlete's Advisory Council. The purpose of this council is to ensure broadening communication between the USOPC and United States athletes. Upon information and belief, this council communicated related to the safety and welfare of athletes.

24. In addition to the Athlete and NGB Services Committee and Athlete's Advisory Council, the USOPC has established a sports medicine division, which it considers to be a world-class leader in leveraging research and technology to preserve athlete health. The USOPC says it considers its sports medicine division to be focused on the promotion of health and well-being of Team USA athletes.

25. The USOPC operates three sports medicine clinics, in Lake Placid, New York, Colorado Springs, Colorado, and Chula Vista, California. The sports medicine division provides athletes a variety of services including clinical care, in-competition support, and extended resources via its National Medical Network.

26. In 2017, the USOPC established the U.S. Coalition for the Prevention of Illness and Injury in Sport to further protect and preserve athlete health through innovative research and advancements in the field of sports medicine. Of the numerous research projects this coalition has been tasked with completing, brain injuries, head trauma, and concussions are amongst the

predominantly listed. Unfortunately for American athletes, this Coalition was formed decades after the USOPC and medical science had been aware of the dangers of TBI and concussions, and approximately seventeen years after the IOC's Medical Commission published its Summary and Agreement from the 1<sup>st</sup> International Conference on Concussion in Sport, in 2001.

27. At no point during his decade-long career was Pauly ever informed directly by the USOPC, the Athlete and NGB Services Committee, the sports medicine division, or any member of the Olympic Movement, that concussions, TBIs, or CTE were risks within his sport, and that he was at a direct risk of developing one or all of those injuries. This was a violation of the USOPC's mission and responsibilities set out in their bylaws. It was also a violation of the Olympic Charter.

## **2. The United States Bobsled & Skeleton Federation**

28. Defendant United States Bobsled and Skeleton Federation, ("USABS") is a nonprofit corporation, organized and existing under the laws of the State of New York, with its principal place of business at 196 Old Military Road, Lake Placid, NY 12946.

29. At all times material hereto, the USABS was a member of the Olympic Movement and acted as the governing supreme authority over the sport of bobsled within the United States. As a member of the Olympic Movement, all USABS statutes, bylaws, practices, and activities must be in conformity with the Olympic Charter and the bylaws of the USOPC. Further, the USABS is recognized and chartered by the USOPC as the NGB for the sports of bobsled and skeleton within the United States. Under the Ted Stevens Act, the USABS must comply with all duties and requirements provided under the Act, including the general duty to "encourage and support research, development, and dissemination of information in the areas of sports medicine and sports safety."<sup>36</sup> U.S.C. § 220524(9). The USABS recognizes its obligations to adhere to the provisions of the Ted Stevens Act, in Section 4.1(n) of its bylaws which states that it shall "perform

all other obligations and duties imposed by the Act and by the USOC on a [national sports federation].”

30. The USABS was founded in 1977 and is comprised of the Men’s and Women’s Bobsled National Teams, the Para Mono Bobsled Team, Development Teams, and Youth Teams. The USABS is also the supreme authority on which athletes are to be entered as a member of the United States Olympic bobsled team.

31. The various USABS teams actively participate in numerous domestic and international events every year including: the Winter Olympics, the BMW IBSF World Cup, the World Championships, the European Championships, the North American Cup, Women’s Monobob Event, Para Sport World Cup, and the Junior World Championships. These events take place at seventeen different tracks across twelve countries.

32. Under the Olympic Charter, IBSF Statutes, USOPC Bylaws and USABS Bylaws, one of the missions and roles of the USABS is to ensure the health and safety of athletes.

33. At no point during his decade-long career was Pauly ever informed directly by the USABS that concussions, TBIs, or CTE were a risk within his sport, and that he was at a direct risk of developing one or all of those injuries. This was a violation of the USABS’s bylaws, statutes, mission and responsibilities. It was additionally a violation of the Olympic Charter, IBSF Statutes, and USOPC Bylaws.

### **3. The International Olympic Committee**

34. Defendant the International Olympic Committee (“IOC”) is an international, non-governmental, non-profit organization, of unlimited durations, in the form of an association with the status of a legal person, recognized by the Swiss Federal Council, with its principal place of business at Olympic House, Route de Vidy 9, 1007 Lausanne, Switzerland.

35. At all times material hereto, the IOC acted as the supreme authority on the Olympic Movement. Under the supreme authority of the IOC, the Olympic Movement encompasses organizations, athletes, and other person who agree to be bound by the Olympic Charter. The three main constituents of the Olympic Movement are 1) the IOC, 2) the International Sports Federations (“IFs”), and 3) the National Olympic Committees (“NOCs”). Any person or organization belonging in any capacity whatsoever to the Olympic Movement is bound by the provisions of the Olympic Charter and must abide by the decisions of the IOC.

36. Under the Olympic Charter, one of the missions and roles of the IOC was and is to encourage and support measures relating to the medical care and health of athletes. In an effort to fulfill its obligations under its mission and role to keep athletes safe, the IOC established a Medical Commission in 1961. One of the main aims of the Commission is to coordinate the dissemination of its medical knowledge among athletes, coaches, and sports administrators through consensus statements and publications. The Commission advises the IOC Session, the IOC Executive Board and the IOC President on athletes’ health, the promotion of health and physical activity, and the protection of clean athletes.

37. In undertaking its role, the Commission considers itself to have the following key responsibilities: 1) supervising the provision of healthcare services during the Olympic and Youth Olympic Games, 2) delivering evidence-based education to athletes, 3) developing and promoting the adoption of ethical standards in sports science and medicine, 4) exploring the potential of new technologies to optimize athletes’ health, and preventing their potential damaging effects, and 5) promotion of health and physical activity for the whole population.

38. The Medical Commission claims to have five main objectives: 1) provision of excellent healthcare and doping control at Games to athletes, 2) better informed and educated athletes and entourage leading to effective prevention of injury and illness, better health care, and

faster recovery, 3) good medical practice to the highest ethical standards by individuals and organizations responsible for athletes' health, 4) effective new technologies implemented in healthcare, and 5) increase physical activity and improve health in the general population.

39. The Medical Commission highlights five strategic priority actions it will take to achieve its objectives: 1) Olympic Games knowledge management [c]ommunication...including pre-games visits and game time monitoring, 2) increase research and surveillance, maximize relevance and dissemination of consensus statements and publications, focused and effective conferences/meeting and courses, 3) adoption and implementation of the Olympic Movement Medical Code by all stakeholders for good medical practice and to respect medical standards. Safeguarding athletes, 4) establish research expert groups to explore and disseminate new technologies in health care, and identify potential dangers and harms, 5) legacy including increase physical activity and health in the general population from the Games through Global Active Cities Initiatives and improved sport and exercise medicine.

40. At no point during his decade-long career was Pauly ever informed directly by the IOC or the Medical Commission, or any member of the Olympic Movement, that concussions, TBIs, or CTE were a risk within his sport, and that he was at a direct risk of developing one or all of those injuries. This violated the IOC and the Medical Commission's charter, mission, and responsibilities.

#### **4. The International Bobsleigh & Skeleton Federation**

41. Defendant the International Bobsleigh & Skeleton Federation ("IBSF") is an international, non-governmental, non-profit organization, of unlimited duration in the form of an association with the status of a legal person, recognized by the Swiss Federal Council, with its principal place of business at Masion du Sport, Avenue de Rhodanie 45, 1007 Lausanne,

Switzerland.

42. At all times material hereto, the IBSF was a member of the Olympic Movement and the governing supreme authority over the sport of bobsled on an international level. All IBSF statutes, practices, and activities must be in conformity with the Olympic Charter.

43. The IBSF was founded in 1923, and has a current membership of seventy-five National Sport Federations, including the United States Bobsled & Skeleton Federation. The IBSF regulates six international competitions, including: the Winter Olympics, the BMW IBSF World Cup, the World Championships, the European Championships, the North American Cup, Women's Monobob Event, Para Sport World Cup, and the Junior World Championships. The IBSF maintains seventeen tracks in twelve countries, where it hosts these events.<sup>10</sup>

44. The IBSF obtains most of its funding directly from the IOC, as it is entitled to revenues derived from, amongst other sources, the exploitation of broadcast rights and licensing deals. The IBSF obtains some minor funding through its own corporate sponsorships and individual donations.

45. Under the Olympic Charter, the role of the IBSF is to: establish and enforce, in accordance with the Olympic spirit, the rules concerning the practice of its respective sport and to ensure their application; ensure the development of its sport throughout the world; and contribute to the achievement of the goals set out in the Olympic Charter. One of the goals set out in the Olympic Charter is to encourage and support measures relating to the medical care and health of athletes.

46. Further, under the Olympic Charter, the IBSF has rights and responsibilities,

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<sup>10</sup> While the IBSF maintains 17 tracks in 2021, there have been additional tracks which it has maintained throughout its history which are no longer active (but were active during Pauly's career), such as: Cesana Pariol (Italy), Cortina (Italy), Sarajevo (Bosnia), Villard-de-Lans (France), and Innsbruck (Austria).

including but not limited to: 1) establish the technical rules of its own sport, disciplines, and events, including, but not limited to, results standards, technical specifications of equipment, installations and facilities, rules of technical movements, exercises or games, rules of technical disqualification, and rules of judging and timing; 2) establish the final results in rankings of Olympic competitions; and 3) subject to the IOC's authority, exercise technical jurisdiction over the competition and training venues of their respective sports during the competition and training sessions at the Olympic Games.

47. IBSF statutes provide a similar explanation as the Olympic Charter as it relates to the purpose and tasks of the IBSF. It provides the IBSF as the governing final authority on the sport of bobsled, with the obligation to promote the sport at all levels throughout the world.

48. The IBSF statutes establish numerous committees, including the Sports Committee for Bobsleigh, Materials Committee for Bobsleigh and Tracks Committee, which shall advise the IBSF and the IBSF Executive Committee. The IBSF, with the advisement of these committees, has established the rules and safety policies governing the sport of bobsled. The IBSF and the Sports Committee for Bobsleigh create and enforce the required technical specifications for all bobsleds to be used in competition. The IBSF and the Tracks Committee are to supervise the preparatory phase of the design, the construction, and the commissioning of each track, which includes creating and enforcing the required technical specifications for all tracks to be used in training or competition.

49. Under the Olympic Charter and IBSF statutes, one of the missions and roles of the IBSF is to ensure the health and safety of athletes. In an effort to fulfill its obligations under this mission, the IBSF has created a Medical Committee. Upon information and belief, this Medical Committee advises the IBSF Executive Board and sub-committees on athletes' health, and the promotion of health and physical activity and the protection of athletes. Further, upon information

and belief, the IBSF Medical Committee works closely with the IOC Medical Commission and has access to all publications, consensus statements, and recommendations created by that Commission. Further, in the IBSF statutes, the role of the Vice President of Sport for the IBSF is to be directly responsible for the safety of athletes.

50. At least every two years, the IBSF meets with the IOC Executive Board for a periodic consultation. Upon information and belief, topics such as the health and safety of athletes could be discussed at these consultations.

51. At no point during his decade-long career was Pauly ever informed directly by the IBSF or any of its committees, that concussions, TBIs, or CTE were a risk within his sport, and that he was at a direct risk of developing one or all of those injuries. This violated the IBSF's and its Medical Committee's statutes, mission, and responsibilities. It also violated the Olympic Charter.

### **III. JURISDICTION AND VENUE**

52. This Court has jurisdiction pursuant to N.J. Court Rule 4:4-4. Venue is proper in Ocean County under N.J. Court Rule 6:1-3 because Ocean County is the County in which the Plaintiff resides and in which the cause of action arose.

53. This Court has general personal jurisdiction over the USOPC because the USOPC is a federally-chartered corporation that is at home in the United States, including in New Jersey.

54. This Court has specific personal jurisdiction over each Defendant because each Defendant purposefully availed itself of the privilege of conducting activities within New Jersey, Plaintiff's claims arise out of or relate to Defendants' contacts with New Jersey, and the exercise of jurisdiction comports with fair play and substantial justice.

55. New Jersey is where Decedent resided, where Plaintiff resides, where Defendants recruited Decedent to participate in the Olympics and domestic and international competition, where Decedent trained for the Olympics and domestic and international competition, where Decedent rehabbed from his training and competition, where Decedent was paid by Defendants, where Decedent received healthcare paid for by Defendants, where Decedent was injured by Defendants, where Decedent experienced the effects of his injuries caused by Defendants, and where Decedent committed suicide as the result of Defendants' conduct.

56. Defendants recruited Decedent in New Jersey to participate in Olympic bobsledding on behalf of the United States for the benefit of Defendants.

57. Defendants recruited other athletes in New Jersey to participate in the Olympics and other domestic and international competitions on behalf of the United States for the benefit of Defendants.

58. Decedent's training for the Olympics and other domestic and international competitions occurred in New Jersey on behalf of the United States for the benefit of Defendants.

59. Other athletes' training for the Olympics and other domestic and international competitions occurred in New Jersey on behalf of the United States for the benefit of Defendants.

60. Defendants paid Decedent in New Jersey.

61. Defendants paid other Olympic athletes in New Jersey.

62. Defendants paid for Decedent's healthcare services received in New Jersey.

63. Defendants paid for other Olympic athletes' healthcare services received in New Jersey.

64. Defendants served the New Jersey market by supplying their product, the Olympics and other domestic and international competitions, in New Jersey through television broadcasts or

the sale of broadcast rights intending and foreseeing that the Olympics and other domestic and international competitions would be broadcast nationally, including in New Jersey.

65. The USOPC and the IOC operate programs in New Jersey, including operation of the United States Equestrian Team, which is headquartered in New Jersey.

66. Defendants conducted Olympic sponsored events in New Jersey.

67. There are multiple venues in New Jersey that Defendants use as venues for competition in furtherance of the Olympic Movement.

68. And, each Defendant receives a financial benefit from sponsorship by New Jersey corporations.

#### **IV. THE FACTS**

##### **A. PAVLE “PAULY” JOVANOVIĆ**

###### **1. The Person and the Athlete**

69. Pauly was truly an elite athlete, with the rare combination of physical capability and drive to be the best. He was recognized by his peers as a dynamic, impressive, and powerful force that demanded 150 percent from every member of his team. He was relentless. Even those who possessed more skill or physical attributes were elevated by his leadership.

70. His athletic achievements were instant. As a member of the Toms River High School East football team, he was a three-year letterman, team captain, and an All-Shore and All-County linebacker. His success on the field would later earn him an induction into the Toms River Schools’ Athletic Hall of Fame.

71. In 1997, Pauly was working as a bouncer at a bar on the Jersey Shore during the summer. Fatefully, a scout for the U.S. Olympic team had set up a portable push-track - a simulator for pushing a bobsled - on the Shore’s boardwalk. The recruiter convinced Pauly to take

a break from his job and give the sled a try. Without having any training, Pauly impressed the recruiter to the point that Pauly was invited to a try out for the USABS team. He made the team, and the rest is history.

72. Over the course of his twelve-year career, Pauly became a pillar in the United States bobsled organization. He was regarded as a relentless leader demanding constant effort. Pauly was relentless in his work ethic to push further, train harder, be better prepared, and do so with the specific intention of making the team better. Pauly was a selfless leader; he cared only about the team. Everything he did was for the whole, never for himself.

73. Pauly and Plaintiff constructed a “land push track” in their parent’s backyard in New Jersey, so that Pauly could work on his start technique. They built it to model the practice push track used in Lake Placid. It consisted of approximately 168 feet of steel track with a regulation size bobsled affixed to it. In lead up to competitions and during the offseason, Pauly would spend hours in the backyard, sometimes as late as 2 or 3 in the morning, refining his technique to explode off the starting line faster and with more power.

74. Pauly’s teammates were some of the best bobsledders in United States history: Steven Holcomb, Steve Mesler, Todd Hayes, Bill Schuffenhauer, and Brock Kreitzberg. Each considered Pauly one of the best brakemen of his time, and the standard for the team’s work ethic.

75. Pauly never sought out the spotlight. He did not pose for magazines or give TV interviews. He preferred for his teammates to get recognition while he stayed in the background. In 2002, HBO’s Real Sports with Bryant Gumbel wanted to do a segment on the United States bobsled team in their preparation for the Olympics in Salt Lake City. To pay tribute to their friend who often went unnoticed, the team nominated Pauly to be the feature piece of the show’s story.

76. Pauly represented the United States in nine BMW IBSF World Cups, where he won nine gold medals, eight silver medals and two bronze medals across twenty-six events.<sup>11</sup> He was a cornerstone member and leader for the United States Olympic bobsled teams during the 2002, 2006 and 2010 Olympic cycles. Unfortunately, due to injury and wrongful circumstances, Pauly competed in only the 2006 Olympics.

77. For all of Pauly's athletic accomplishments, he was far prouder of the success he achieved off the ice. During his twelve-year career he frequently gave back to the communities in which he was training, going to elementary and middle schools to speak to classes. At home in New Jersey, he was a caring, loving, and loyal son, brother, and uncle to his family. He was an ardent, compassionate, positive, and sensitive friend. In 2010, Pauly returned to Rutgers to complete his degree in Civil Engineering. He made the Dean's list. After obtaining his degree he started working with Nick at his metal works business and spent the next several years working on projects. Pauly had an incredible capacity to do complicated mathematical calculations in his head that made him an asset.

## 2. The Downward Spiral

78. Most with CTE never know they have it. It is not apparent on the surface like a bone break, nor can it be diagnosed with medical imaging like a ligament tear. CTE is invisible, untreatable, and it can be diagnosed only posthumously, as was the case with Pauly.

79. CTE can be a lonely walk towards destroyed relationships, substance abuse, severe depression and eventually death. The rapid and dramatic decline in the person's behavior and cognitive ability can lead to ostracism amongst friends and family, and the disease's invisibility and anonymity can cause the person to feel misunderstood and alone.

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<sup>11</sup> The IBSF did not start recording results of the IBSF World Cup until 2003-2004.

80. Pauly's decline began upon returning home in New Jersey in 2006. He had just finished competing in the 2006 Olympics in Turin, Italy, and he appeared exhausted. However, unlike the post-competition fatigue that Pauly had experienced in the past, this time it never dissipated.

81. In 2008, Pauly began to exhibit the first signs of cognitive impairment, frequently appearing confused and disorganized. Simple, ordinary, daily work tasks could no longer be done without effort and frustration. Pauly also began to exhibit behavior impairment, developing a short fuse and showing anger.

82. In 2009, Pauly's interior decline began to manifest in his exterior appearance. He developed a severe sensitivity to light and often wore multiple pairs of sunglasses both indoors and outdoors. He began wearing bizarre outfits and altering his appearance by coloring his hair. He also spoke in languages and accents that were not native to him.

83. In 2010, Pauly fell into the beginning of his long battle with alcohol abuse -- a common self-medication for those with CTE. He became distant from his family - physically and emotionally. In 2010, Plaintiff and his family heard from Pauly only when he needed money.

84. By 2011, Pauly's downward spiral began to impact the family business. He was becoming increasingly more forgetful and unable to concentrate and focus. He could not remember discussions, appointments, or work projects. The quick spark to anger that had begun in 2008, evolved into full on emotional and behavioral instability, which caused him to occasionally explode on clients and coworkers. Twenty-year business relationships were gone within months. Additionally, Pauly began to show financial impulsivity. Pauly had been frugal, conscientious, and responsible with his finances. In 2011, Pauly impulsively sold his cars, his grandmother's jewelry, his Olympic ring, and anything else he could find that had value.

85. In 2012, Pauly traveled to Serbia to join the Serbian bobsled team but was dismissed from the team after only a few months due to misconduct.

86. In 2013, Pauly encountered the first of what would be more than a dozen interactions with police. One evening in the spring, while staying over at Plaintiff's house, Pauly's nephew made a joke which triggered Pauly to grab him by the throat and strangled him.

87. Over the next five years, Pauly frequented psychiatric facilities for evaluation and treatment where he and his treating physicians tried to identify the source of his erratic and unusual behaviors. He had become a shell of the man he used to be. He had developed Parkinson's-like symptoms, constantly shaking. His communication was incoherent at times. He fell further into his alcoholism. Plaintiff received numerous phone calls from Pauly's friends expressing concerns regarding his behavior. In late 2017, Pauly grabbed Plaintiff and threw him into one of the walls of their family shop.

88. Upon information and belief, Pauly's last visit to a psychiatric facility was in 2018. He had been diagnosed with alcoholism, bi-polar disorder, and depression. He was taking a Brompton cocktail of prescription drugs, prescribed by his many doctors for what appeared to be his mental health problems. These included Benztropine, a common drug prescribed to Parkinson's patients. The medications did not help. There is no medication for CTE.

### **3. The Death**

89. In his final weeks, Pauly had become hidden to the outside world. He spent most of days sleeping, head covered under a blanket on the couch, in the dark. He was severely disassociated and showed little interest in socializing with family and friends.

90. On May 3, 2020, Pauly woke late into the day at his parent's house. He did yardwork for his mother, something which he hadn't offered to do for some time. After having dinner with his father, Pauly told his family members that he needed to borrow his sister Susan's

car to go run an errand. When Pauly pulled out of the driveway, it would be the last time his family would see him.

91. In the evening hours of May 3, 2020, his body and life ravaged by CTE, Pauly rigged a chain to a crane in the family's shop and hanged himself. While the chain caused his death, CTE took his life. He was 43.

#### **4. The Diagnosis**

92. On or around September 2020, Plaintiff donated sample tissue from Pauly's brain to Dr. Ann McKee, who is the Director of the CTE Center at Boston University. Dr. McKee is one of the leading neuropathologists and experts in neurodegenerative diseases, in the research and discovery of CTE in the tissue samples of former athletes. Dr. McKee has been credited with publishing over 70% of the world's cases of CTE and has confirmed the presence of CTE in the brain tissue of more than 450 deceased athletes.

93. On March 17, 2021, Dr. McKee concluded the sample tissue from Pauly's brain evidenced "Tauopathy, with changes highly suggestive of CTE." Dr. McKee further concluded that "the density of the NFTs (p-tau neurofibrillary tangles) suggests moderate disease. The finding of moderate disease likely puts finding the severity of Pauly's CTE on the same stage as Junior Seau and Aaron Hernandez, two former NFL players whose brains were studied by Dr. McKee post-mortem.

94. Pauly is the first former Olympic bobsledder to be posthumously diagnosed with CTE.

### **B. A PRIMER ON HEAD INJURIES**

#### **1. Introduction**

95. The word concussion derives from the Latin *concutere* for “to shake violently.” Concussions are just that - a shaking of the brain inside the skull that changes the alertness of the injured person. That change can be relatively mild (“she was slightly dazed”) or severe (“she was unconscious”). Both situations fall within the definition of concussion. The Centers for Disease Control and Prevention (“CDC”) classifies concussions as a form of traumatic brain injury (“TBI”).

96. With a blow to the front of the head, the brain pushes forward until it crashes into the skull, reverses, and bumps against the back of the skull. This action produces an initial *coup*, then a *contrecoup* injury.

97. The American Association of Neurological Surgeons (the “AANS”) defines TBI as:

...a blow or jolt to the head, or a penetrating head injury that disrupts the normal function of the brain. TBI can result when the head suddenly and violently hits an object, or when an object pierces the skull and enters brain tissue. Symptoms of a TBI can be mild, moderate or severe, depending on the extent of damage to the brain. Mild cases may result in a brief change in mental state or consciousness, while severe cases may result in extended periods of unconsciousness, coma or even death.

98. Concussions and TBIs can and frequently do occur without any contact with the head. Rather, they can occur when the athlete’s body receives a jolt that causes his shoulders and head to change speed or direction violently, is subjected to continuous violent jarring or vibration, or is rotated rapidly.

99. There is a “silent epidemic”<sup>12</sup> of sports-related brain injuries. According to the CDC, nearly four million sports-related concussions are recognized every year within the United

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<sup>12</sup> National Center for Injury Prevention and Control, *Report to Congress on Mild Traumatic Brain Injury in the United States: Steps to Prevent a Serious Public Health Problem* (Atlanta, GA: Centers for Disease Control and Prevention, 2003)

States.<sup>13</sup> This figure of nearly four million might be underreported as concussions often go unrecognized; it is likely the problem is even greater than what is currently known. While these statistics are indicative of concussions reported in America, the issue of sports-related concussion and TBI is very much prevalent globally and in the Olympics.

## 2. Two Forces—Linear and Rotational

100. Concussions are caused by two types of forces in the form of accelerations, linear and rotational. Linear acceleration is akin to the straight-on force of a car smashing into a tree. At the moment of impact, the driver's head snaps violently. The collision causes direct brain injury. That damage is worse than it would otherwise be because the inside of the skull is rough, not smooth. Contact between the brain tissue and bony surface can be irritating, sometimes bruising or even tearing brain tissue.

101. The second type of force is rotational acceleration. Think of a football player running from sideline to sideline and a head-hunting defensive player appearing out of nowhere to make a crunching tackle from the side. The force of the collision violently whips the ball carrier's head to one side. If jolting enough, the brain comes into contact with the skull. The cerebrospinal fluid in which the brain floats protect the brain and dampens the impact. However, if the force is large enough, an injury occurs. Driven into the skull by rotational accelerations, the brain can stretch and shear. Blood vessels and brain tissue exposed to this trauma may tear.

102. The effects of rotational accelerations can be much worse than those from linear accelerations. Concern about this type of force caused in the course of play has caused multiple sports leagues to outlaw blind-side or defenseless player hits.<sup>14</sup> On virtually every hit to the head,

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<sup>13</sup> <http://www.cdc.gov/concussion/sports/>

<sup>14</sup> The NFL and National Hockey League have imposed strict rules banning these types of hits from occurring in the game. The National Basketball Association has imposed rules for fouls involving a defenseless player

both the linear and rotational accelerations are present. Among researchers and other experts, it is believed that rotations forces are more injurious.

103. Although they are considered to be less severe than a full-blown concussive impacts, sub-concussive impacts happen much more frequently. Sub-concussive impacts are those below the threshold to cause or elicit any clinical signs of a concussion. Similar to concussions, sub-concussive impacts have the potential to transfer a high degree of linear and rotational acceleration forces to the brain and cause pathophysiological changes.

104. Clinical and neuro-pathological studies by some of the nation's foremost experts demonstrated that this form of brain trauma may have a cumulative effect and lead to permanent brain damage later in life. Evidence that subconcussive impacts may adversely affect cerebral function has been reflected in documented changes in cerebral function (i.e., visual working memory declines), and altered dorsolateral prefrontal cortex activation as assessed by functional magnetic resonance imaging in high school football athletes in the absence of clinical signs of concussion. In lay terms, one study on high school football players found that players who received normal football brain trauma and did not report any concussion symptoms still had functional MRI changes that mimicked concussed players.

105. Similarly, in a study of college football players released in 2013, researchers found that the more hits to the head a player absorbed, the higher the blood levels of a particular brain protein, S100B, that is known to leak into the bloodstream after a head injury. Even though none of the football players in the study suffered a concussion during the season, four of them showed signs of an autoimmune response, the presence of S100B antibodies in the players' blood. The players with the highest number of hits also showed abnormal diffusion tensor imaging findings on

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(i.e. a player whose legs are taken out in the middle of a layup). Players who commit these types of hits are ejected from the game and subjected to suspension/fine.

MRI DTI studies.

106. Some studies have suggested that concussion or a combination of concussions and sub-concussive head impacts may lead to conditions such as CTE, mild cognitive impairment, and/or depression.

### **3. High G-Forces**

107. Chronic exposure to high G-forces can lead to concussions and TBI.

108. The human body, much like the rest of life on this planet, has adapted to a terrestrial life in which we are always exposed to the Earth's gravitational force, which is 1G at its baseline. As objects accelerate through the air toward or away from the ground, gravitational forces exert resistance against them. As a person accelerates faster or flies higher, the gravitational impact on the human body grows greater. Magnitudes of g-forces are expressed numerically, 1G, 2G, 3Gs: a person "pulling 3 Gs" is experiencing three times the normal gravitational force put on their body. The effect of these forces would cause a person weighing 150lbs at 1G to weigh 450lbs at 3Gs.

109. As a person is exposed to increased g-forces, the body experiences certain physiological changes in response. The circulatory system is the most significantly affected by increase G-force, as the discrepancy of blood pressures between the brain and lower extremities greatens. At a certain point, intracranial perfusion can no longer be maintained, and significant cerebral hypoxia follows. This phenomenon is what leads to fighter pilots or passengers in fighter jets to experience tunnel vision, or grey outs, followed by going unconscious.

110. Repeated loss of consciousness can lead to serious brain injury. This risk led to the military providing fighter pilots with g-suits to wear during flights. These suits are fitted with inflatable bladders which are pressurized upon exposure to high G-force. The bladders then

squeeze the pilots abdomen and legs, restricting the draining of blood away from the brain.

111. Other systems of the body are impacted by exposure to high G-forces, too. The cardiovascular system is impacted because the heart is forced to work harder in order to get blood to the head. Blood can shift to the base of the lungs which collapses the alveoli and creates a general perfusion mismatch where air is trapped in the upper lung. A person can also experience pain in his or her muscles and punctate bruises from busted capillaries.

112. In addition to the direct physiological changes and side effects caused by continuous exposure to high G-forces, acute exposure to such forces, like a bobsled sliding through a high-speed and high G-force corner, can directly lead to concussions and TBI through sub-concussive and concussive impacts. When a person is subjected to high G-forces in a short or unexpected interval his or her head can be snapped forward, back or to the sides without warning. That motion is the coup, contrecoup, or whiplash injury that is associated with brain injury. Further, if the person happens to be proximate to a firm object, like a car seat, car window, or bobsled frame, the force of the whiplash could send his or her head into that object causing even greater injury to the brain.

#### **4. Constant Vibrations**

113. Chronic exposure to vibration has also been discovered to lead to concussions and TBI.

114. Brain injury from whole body vibrations is a cumulative process starting with cerebral vasoconstriction, squeezing of the endothelial cells, increase free radicals, decreased nitric oxide, insufficient blood supply to the brain, and repeated reperfusion injury to brain neurons. There are indications that chronic exposure to vibration can lead to permanent brain injury. A rat study released in 2015, found that in comparison to normal controls, rats subject to chronic

vibration performed significantly worse in a variety of tests that judged neural function. Those rats exhibited somatic and cognitive symptoms, moving at a slower pace, and exhibiting a greater number of errors during maze tests. As the duration of exposure to vibration increased, the rats' performance continued to decline in comparison to the controls. Further, historical analysis of brain tissue from the rats post-vibration was conducted at each week time point. After an eight-week period, the rats which were exposed to vibration had a significant increase in the number of dark shrunken neurons as well as increase neuronal atrophy. These findings are suggestive that chronic exposure to whole body vibrations can cause permanent brain damage and severely impact cognitive function and reactive capabilities.

## **5. Pathological Changes**

115. Pathological changes to the brain's structure - tears and other injuries - are difficult to see on routine imaging. They are often invisible on head CT scans and routine magnetic resonance imaging (MRI), the imaging tests upon which physicians most often rely. For that reason, misconceptions exist about the damage that occurs to the brain from a concussion. Through the years, even medical professionals have questioned whether the structure of the brain was different after a concussion than before.

116. At the Center for the Study of Traumatic Encephalopathy (CSTE) at Boston University, the brains of nearly 500 deceased professional and amateur athletes have been studied. Several of these athletes died within days of concussion. Several of their deaths were suicides. These brains were examined by Dr. Ann McKee.

117. Her findings revealed multiple microscopic changes -- such as widespread diffuse axonal swelling and other abnormalities -- that would have been missed if they had been tested by conventional imaging when they were living. Some changes were limited to one region of the brain.

In other cases, the pathology was widespread over several areas from the cortex and brainstem down to the spinal cord. All of the injuries were microscopic, but real.

118. CTE neuropathology is characterized by p-tau positive glia, intraneuronal neurofibrillary tangles (NFTs), and small punctate aggregates, which appear early in the frontal cortex and later in the medial temporal lobe (MTL), primarily in association with small cerebral vessels in the depths of sulci.<sup>15</sup> The MTL memory circuit is also a primary site of tau pathology in the aged<sup>16</sup> and Alzheimer's disease (AD) brain.<sup>17</sup> Clinicopathological studies have shown that NFTs are an excellent correlate of cognitive impairment in AD and other tauopathies, indicating a strong association between affected brain structure and functional impairment.<sup>18</sup> In contrast to AD Braak staging where NFT tau pathology begins in the MTL, for CTE the disease-associated MTL tau pathology is not observed until later stages while the frontal cortex is affected early.<sup>19</sup> To date there have been no rigorous quantitative studies of p-tau lesions in the MTL of CTE brains.<sup>20</sup> Interestingly, in contrast to extensive amyloid pathology seen in the MTL in AD,<sup>21</sup> amyloid-beta (A $\beta$ )-positive plaques are not a consistent finding in CTE, and it is unclear whether their presence

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<sup>15</sup> Armstrong RA, McKee AC, Stein TD, Alvarez VE, Cairns NJ (2018) Cortical degeneration in chronic traumatic encephalopathy and Alzheimer's disease neuropathologic change. *Neurol Sci*. <https://doi.org/10.1007/s10072-018-3686-6>

<sup>16</sup> Mufson EJ, Perez SE, Nadeem M, Mahady L, Kanaan NM, Abrahamson EE et al (2016) Progression of tau pathology within cholinergic nucleus basalis neurons in chronic traumatic encephalopathy: a chronic effects of neurotrauma consortium study. *Brain Inj* 30(12):1399–1413. <https://doi.org/10.1080/02699052.2016.1219058>

<sup>17</sup> Braak H, Braak E (1991) Neuropathological staging of Alzheimer-related changes. *Acta Neuropathol* 82(4):239–259. <https://doi.org/10.1007/bf00308809>

<sup>18</sup> Iqbal K, Liu F, Gong CX (2016) Tau and neurodegenerative disease: the story so far. *Nat Rev Neurol* 12(1):15–27. <https://doi.org/10.1038/nrneurol.2015.225>

<sup>19</sup> McKee AC, Cairns NJ, Dickson DW, Folkerth RD, Keene CD, Litvan I et al (2016) The first NINDS/NIBIB consensus meeting to define neuropathological criteria for the diagnosis of chronic traumatic encephalopathy. *Acta Neuropathol* 131(1):75–86. <https://doi.org/10.1007/s00401-015-1515-z>

<sup>20</sup> McKee AC, Stern RA, Nowinski CJ, Stein TD, Alvarez VE, Daneshvar DH et al (2013) The spectrum of disease in chronic traumatic encephalopathy. *Brain* 136(Pt 1):43–64. <https://doi.org/10.1093/brain/aws307>

<sup>21</sup> Mufson EJ, Chen EY, Cochran EJ, Beckett LA, Bennett DA, Kordower JH (1999) Entorhinal cortex beta-amyloid load in individuals with mild cognitive impairment. *Exp Neurol* 158(2):469–490. <https://doi.org/10.1006/exnr.1999.7086>

represents a state distinct from aging without TBI.<sup>22</sup>

## 6. Symptoms

119. All concussions and TBI are accompanied by symptoms which fall into four major categories: somatic, emotional, sleep disturbance, and cognitive.

120. The somatic symptoms that appear from concussions are: headaches, nausea, vomiting, balance and/or visual problems, dizzy spells, and issues such as sensitivity to light and noise.

121. The emotional symptoms that appear are: anxiety, sadness often the point of depression, loss of appetite, reduced sex drive, sudden irritability or anger, and unstable emotion or mood.

122. It is common for those with a concussion or TBI to have unstable sleeping patterns, often sleeping more or less than they ordinarily would.

123. The cognitive symptoms that appear are: brain fog, difficulty concentrating, deficits in cognitive function, forgetfulness, loss of memory, and reduced processing speed.

124. Symptoms are clues. They reveal many things – the severity of the injury and the pace of recovery, for example. The number and combination of symptoms also can pinpoint areas of the brain affected by concussion. Those cases in which the symptoms are focal, i.e., the injury is to one brain area, tend to have fewer symptoms of shorter duration. When trauma is diffuse, i.e. spread across several brain regions, the patient has more symptoms that persist longer.

## 7. CTE is Pervasive in Sports

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<sup>22</sup> Alabayram O, Kondo A, Mannix R, Smith C, Tsai CY, Li C et al (2017) Cis P-tau is induced in clinical and preclinical brain injury and contributes to post-injury sequelae. *Nat Commun* 8(1):1000. <https://doi.org/10.1038/s41467-017-01068-4>

125. “Concussions are a growing problem in sport that we need to address. Only through the cooperation of sporting bodies can we develop the right answer to protect the health of athletes.” Dr. Patrick Schamasch<sup>23</sup>

126. Once a person suffers a TBI, he is up to four times more likely to sustain a second one. Additionally, after suffering even a single sub-concussive or concussive blow, a lesser blow may cause a TBI, and the injured person requires more time to recover. Further, if a person is subject to repeated and continuous jarring or vibration of the head, a lesser blow may cause a TBI, and the injured person requires more time to recover.

127. Clinical and neuro-pathological studies by some of the nation’s foremost experts demonstrate that multiple head injuries, concussions, or repeated traumatic head impacts (including concussion and sub-concussive blows and repeated continuous jarring and vibration) sustained during an athlete’s career can cause severe neuro-cognitive problems.

128. Studies on many former athletes, including NFL players, have established that those who sustain repetitive head trauma while playing have suffered and continue to suffer brain injuries that result in any one or more of the following conditions: early-onset Alzheimer’s Disease, dementia, depression, deficits in cognitive functioning, reduced processing speed, attention and reasoning, loss of memory, sleeplessness, mood swings, personality changes, neurological deficits impacting judgement, and CTE.

129. Traumatic brain injuries and CTE in sports obtained mainstream coverage after the class action known as *Turner vs. the NFL (In re NFL Players’ Concussion Injury Litigation)* was certified. *Turner* was an aggregation of lawsuits brought by thousands of former NFL players.

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<sup>23</sup> 2001, Patrick Schamasch is the former IOC Medical Commission Director.

130. There is pervasive problem concerning athletes developing CTE in American sports, and it is not limited to the NFL.

131. CTE has been found in athletes whose primary trauma was through boxing, football, hockey, rugby, soccer, wrestling, and now, Olympic bobsled. The changes in the brain caused by repetitive trauma are thought to begin when the brain is subjected to that repetitive trauma, but symptoms may not appear until months, years, or even decades after the last traumatic impact or the end of active athletic involvement.

### **C. A PRIMER ON BOBSLED**

#### **1. Introduction**

132. Bobsledding is a winter sport that involves sliding down an ice-covered natural or artificial incline on a four-runner sled, which carries either two- or four-man teams.

133. In 1923, bobsled became an internationally recognized sport with the establishment of the IBSF. Its first inclusion into the Olympic Winters games was in Chamonix, France, in 1924.

134. A standard bobsled run is divided into three main stages: start, drive, and finish. The crew starts by pushing the sled as the clock is triggered by a photocell at 16 yards from the start line. As the sled gains speed, the riders jump in, the driver in front and the crewmen and brakeman entering last in the middle and back. The drive stage of the run is mostly dependent on the driver's skills and the sled's performance. Speeds average around 80 mph on the easiest sections of the track. The highest recorded speed during competition was 125 mph.

135. The earliest bobsleds were built mostly of wood. Steel runners were added to the sleds within a few years and at some point in the 20<sup>th</sup> Century, steel and aluminum were used throughout the sleds' chassis and body frame. Today, the sleds are highly regulated by the IBSF and mostly comprised of lightweight composite metals with no permissible suspension apart from a

single leaf spring in the front.

136. The tracks used in international competitions are to be between 1,312 and 1,750 yards long, with an average slope of between 8 and 15 percent and a total vertical drop of approximately 131 yards. According the IBSF's regulations and specifications, no track design should create more than a maximum gravitational force of 5Gs, however, the reality of whether modern tracks comply with that figure is in question.<sup>24</sup>

## 2. Bobsled Design

137. In its infancy, bobsleds were designed with little more than a few ideas and materials to make a means of transportation fit to slide on ice. However, over the last 140 years bobsled design has changed materially due to considerable rule changes set out by the IBSF. The total weight, permitted materials and overall design of the bobsleds are heavily regulated by the IBSF.

138. In the 1880s, bobsleds were adapted from wooden delivery sleds. The entire system was two skeleton sleds attached together with a board and a steering mechanism at the front. The earliest iterations of the sled utilized a steering wheel to turn, now the steering mechanism is comprised of two pieces of rope joined to a steering bolt for turning the front frame of the bobsled.

139. As technology and investment in the sport increased, the materials used to construct the bobsled shell and chassis gradually changed from wood to fiberglass and very light composite metals. Countries like the United States, Germany, Italy and Switzerland have seen

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<sup>24</sup> While there is no known study of gravitational forces readings on a bobsled, in 2013, Alexis Morris, a former Canadian skeleton athlete volunteered to make a run-down Whistler Olympic track with an accelerometer attached to his helmet. In Connors 14, 15, and 16, the accelerometer reported a series of g-force readings that maxed out at 84.5 Gs. More than 79 Gs above the IBSF's published specifications. Due to the greater weight and speeds of a bobsled compared to a skeleton sled, it can be hypothesized that the gravitational forces experienced on a bobsled run would be even larger than those experienced by Alexis.

massive success in recent years due to the partnerships with industry leaders in aerodynamics like BMW, Ferrari, McLaren, BAE Systems, and A2 Wind Tunnel.

140. The IBSF sets maximum weight specifications for both the two-man and four-man bobsleds (384 and 463lbs). By utilizing lighter materials to reduce the weight of the hull and chassis, the manufacturer then has the flexibility to place weight ballasts in different positions on the sled to find the perfect center of gravity for maximum acceleration.

141. While these improvements and partnerships have led to faster runs down the track and decrease in weight, these improvements and certain design specifications enforced by the IBSF have left athletes more susceptible to brain injuries.

142. The IBSF's regulations for bobsled design prohibit the use of any suspension or shock absorbers outside of the single leaf spring on the front runners. This results in the bobsled having no other means of absorbing energy outside of what the hull of the bobsleds itself can absorb. This absorption is minimal, however, as the hull of the bobsled needs to be rigid and strong enough to withstand the wear and tear of daily runs down a track.

143. With there being no means of providing shock absorbers or suspension systems, the bobsledders are exposed to full force of the energy exerted upon them. This is what leads them to experience constant vibration and jarring.

144. In both two-man and four-man bobsleds teams, the athletes behind the driver (the crewmen and and/or brakeman) sit in a curled position, with their head tucked against their knees to maximized aerodynamics and lessen the drag placed on the sled. There are no restraints or forms of seatbelts permitted by the IBSF; the only means of stability offered to the athletes are two small handlebars affixed to the bottom of the hull. Further, there is no cushioning or padding on the inside of the hull; the walls are left bare. The consequence of this riding position and interior design specifications is the athletes jostling inside the hull of the bobsled, frequently having their

heads and chins impact their knees or the walls of the hull. These impacts can be severe enough to cause the athletes to lose consciousness.

### 3. Track Design

145. St. Moritz, Switzerland is the birthplace of bobsled, though that accolade comes with some controversy.<sup>25</sup> In the early years, the town's alley and roads were used as tracks. After incidents involving collisions with pedestrians, the first ice track with a half-pipe was built in the 1870s. In 1902, the half pipe was replaced with the first ever official bobsled track built, known as St. Moritz-Celerina Olympia. Over the last 119 years, several modifications have been made to the track, especially in the lower sections of the track to adapt to the higher speeds of the sleds and the increased braking issues.

146. St. Moritz-Celerina is constructed out of ice and snow, as such, the track is not perfectly identical from year to year. The track is 1,722 meters (5,649 feet) long with nineteen curves, a vertical drop of 130 meters (426 feet), a maximum gradient of 15% and an average elevation grade of 8.14%.

147. The evolution of innovation and technology within the sport of bobsled can be seen by looking at competition results at St. Moritz-Celerina over the last hundred years. In 1928, at the Second Winter Olympics, the fastest time was set by the USA II team at 1:38.9. In contrast, at the 2021 BMW IBSF World Cup, the fastest time was set by Germany at 1:04.75.

148. In racing, one second is an eternity. In Formula 1, for instance, one second might be the gap between 1<sup>st</sup> and 13<sup>th</sup> place on a given lap. Mathematically, one second is equivalent to a distance gap of 90 feet at 60 mph. So, to use St. Moritz-Celerina to visualize the improvement in speed of bobsled over the last hundred years, it would have the 1928 USA II team at the push line

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<sup>25</sup> Lake Placid, New York has also made a claim as the birthplace of Bobsled.

and the 2021 German team more than halfway down the track.<sup>26</sup>

149. Bobsled tracks are designed to be dangerous - they are intended to provide breakneck speeds, tight banking corners, and high G-forces. The usage of natural ice as the sliding surface coupled with the lack of suspension or shock absorbers in the bobsleds produces the constant vibrations the riders experience. The nature of the track designs leaves athletes more susceptible to brain injuries.

150. As of August 2021, there are a total of sixteen active bobsled, luge and skeleton tracks around the world in use by the Defendants for competitions. While all sixteen tracks possess a design that produces brain injuries, there are several that are considered even more challenging and dangerous than the rest. Moreover, there are two non-active tracks in Italy - Cesana Pariol and Cortina d'Ampezzo that had a reputation for being dangerous.

151. Altenberg, in Saxony, Germany, is 1413 meters (4635 feet) long, with a vertical drop of 122 meters (400 feet), 17 curves, a maximum gradient of 15% and an average gradient of 8.66%. Since its construction in 1987, it has maintained a reputation amongst the IBSF and bobsled athletes as one of the most challenging and dangerous tracks in the world. In 2012, Team Canada pulled out of the BMW IBSF World Cup citing safety concerns after a crash sent three of the team's athletes to the hospital with serious injuries.

152. Cesana Pariol, in Cesana, Italy, was one of two home tracks for the Italian sledding teams. The track is 1435 meters (4708 feet) long, with a vertical drop of 114 meters (374 feet), and nineteen curves. In 2005, one year after the track was built, discussions were held amongst the IBSF and the IOC regarding refitting the track for safety reasons. This discussion was spurned after a flurry of crashes within a week lead to several athletes suffering severe injuries. Ultimately

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<sup>26</sup> 90 feet multiplied by 34 seconds equals a distance of 3,060 feet. Which is 54% of the track length for St. Moritz-Celerina.

the track's final curves 16-19 were modified to lessen the difficulty and reduce the speed through those curves.

153. Cortina d'Ampezzo, aka the Eugenio Monti Olympic Track, in Cortina, Italy, was the second of two homes for the Italian Sledding Teams. The track is 1350 meters (4429 feet) long, with a vertical drop of 120 meters (393 feet), sixteen curves, a maximum elevation grade of 15.9% and an average elevation grade of 9.3%. Cortina d'Ampezzo has played an important role in safety, having been banned from hosting competitive events from 1966 to 1981. The ban stemmed from the death of two bobsledders in 1939 and 1966. While the IBSF deemed the track safe enough to hold competitive in 1981, American Jim Morgan died during the four-man event that same year, after his sled whipped onto its right side after taking the final curve at 93 mph and sent him slamming into a wooden guardrail.

154. Mt. Van Hoevenberg, in Lake Placid, New York, is the home track for the USOPC and USABS. The track is 1680 meters (5511 feet) long, with a vertical drop of 128 meters (419 feet), twenty curves, a maximum gradient of 20% and an average gradient of 9%. Mt. Van Hoevenberg bobsled run was built after the IOC deemed the original bobsled run located in Lake Placid was too dangerous to host the 1932 Olympic bobsled competitions. Ironically, since its inception in 1930, the track has gone on to maintain a long-standing reputation as the world's most dangerous bobsled run. Over the last 90 years, the track has been remodeled three times due to safety concerns as the track has witnessed hundreds of crashes and three deaths.

155. Despite more than a hundred years of knowledge surrounding the inherent dangers from the design of bobsled tracks, the Defendants have shown no sign of decreasing speeds, lessening G-forces, lowering average elevation gradients, or widening the curves of the track.

156. The four newest tracks used for international competitions are the Whistler Sliding Center, in Vancouver, Canada, which was built for the 2010 Winter Olympics; the Sanki Sliding

Center, in Sochi, Russia, which was built for the 2014 Winter Olympics; the Alpensia Sliding Centre, in PyeongChang, South Korea, which was built for the 2018 Winter Olympics; and the Yanqing National Sliding Center in Beijing, China, which hosted the 2022 Winter Olympics, all were designed to increase those dangers.

157. All four were designed with high maximum gradients and significant vertical drop, both of which maximize the top speed of the bobsled. Whistler has a maximum gradient of 20% and a vertical drop of 148 meters (485 feet); Sanki has a maximum gradient of 22%, an average gradient of 20% and a vertical drop 124 meters (406 feet); Apensia has a maximum gradient of 25% and a vertical drop of 117 meters (383 feet); and Yanqing has a maximum gradient of 18% and a vertical drop of 121 meters (396 feet). Further all four maintain multiple if not more than 50% high G-force hairpin corners.

158. The dangerous combination of high speeds and high G-force curves leads to higher chance of brain injury via crashes or sub-concussive and concussive impacts from bobsledder's head slamming against the interior of the shell of the bobsled, his own body, or his teammate.

#### **4. Rough and Tough Sledding**

159. Bobsled, at its baseline, is violent. Bobsledders and other sledding athletes have been vocal about their displeasure about the experience. Going down the track is not something they enjoy, and in many instances, the athletes recognize its violence.

160. Over the last 97 years, the sport of bobsled has seen an industry-wide interest to increase speeds, G-forces, and grade of incline on the track. In 1932, at the first Winter Olympics that were held in Lake Placid, New York, the top speed of any bobsledder was 60 miles per hour. Today, bobsled and track design has evolved to 80+ miles per hour and 5-10G being considered a routine run down a track. That is a baseline of more than 20 miles per hour quicker than the

fastest speeds in 1932, and G-forces that exceed what fighter pilots experience in a high-G turns or astronauts experience on re-entry.<sup>27</sup> Upon information and belief, in the quicker and more aggressive corners of certain tracks, speeds can reach in excess of 100 miles per hour and G-forces in excess 50G.

161. In a modern bobsled, a crash is not necessary to suffer a brain injury. When barreling down the track at breakneck speeds and high G-forces in the corners, it is common for a bobsledder's head to be slammed against the side of the bobsled or his chin to be snapped into his bent knees, while going through a corner. These impacts occur on almost every run. Additionally, vibrations are constant during runs.

162. When one crashes in a bobsled, the sled tips over and lands on top of the riders, pinning their heads against the ice and dragging them down the track. The fabric of their tracksuits tears and they suffer burns on their skin. Furthermore, as we know from the 2010 Olympics in Vancouver, when a crash goes outside the norm, the results are deadly.<sup>28</sup>

163. Bobsled has been referred to as the Formula 1 on ice. However, Formula 1 has made consistent modifications and progression in driver safety, including protections against brain injuries. Formula 1 drivers are held in place by a seven-point harness, similar to the harness used by fighter pilots. This protects the drivers from any jarring or impacts against the inside frame of the car. Drivers are also equipped with head and neck support (HANS) devices, which are connected to the driver independently from the harness, and solely protects against brain and neck injuries from micro-concussive and concussive impacts. Moreover, within the last five years,

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<sup>27</sup> When Fighter pilots perform their tightest maneuvers, while wearing a G-suit, they experience up to 8Gs. Astronauts typically experience 3G during launch and 8G on re-entry into the atmosphere.

<sup>28</sup> Nodar Kumaritashvili, a Georgian Luger, was killed in practice after his sled went up the side of the wall on a corner and threw him off the track and into a structural concrete pole.

Formula 1 implemented “the Halo,” a large U-shaped bar which connects to both sides of the rear cockpit and a single support column in the front. The Halo’s sole purpose is to protect the driver’s head from potential blunt force impacts from objects during crashes. In 2020, during the Bahrain Grand Prix, Romain Grosjean lost his back end on a straight and impacted a safety barrier at 119 miles per hour and 67Gs. As a direct consequence of Formula 1’s safety innovations in the seven-point harness, HANS device, and Halo, Romain walked away alive, fully conscious.

164. Over the last thirty years, these Defendants failed to show the same interest in maintaining consistent progress in athlete safety. To the contrary, the modification and changes these Defendants have made have the bobsleds less protective and the tracks more hazardous. Those modifications and changes put athletes at an increased risk for concussions, TBIs, and CTE.

165. Bobsled is more violent than the Defendants led the Pauly, and other athletes, to believe. Every time he took to the track, he was subjected to vibrations, micro-impacts, and concussive impacts to his brain which put him at risk of developing concussions, TBI, and/or CTE.

## 5. “Sled head”

166. The Defendants have failed to properly inform, prevent, protect and treat their bobsled athletes from the known short-term and long-term risks of exposure to concussive impacts, sub-concussive impacts, vibrations and high G-forces.

167. Since the 1980s, bobsled athletes have used the term “sled head” to refer to instances when they experience confusion, problems with immediate recall, disorientation to time, place and person, anterograde and retrograde amnesia, fatigue, blurred vision, brain-fog and/or difficulty communicating. This term is directly associated with concussions, concussion-like symptoms, TBI, and CTE.

168. During the course of his twelve-year career, Pauly suffered dozens of crashes, some resulting in concussion-like symptoms and burns on his arms and shoulders from scraping the ice. He also frequently experienced “sled head, losing consciousness and having no memory of the run he just finished.

169. In the 2005, the Summary and Agreement Statement between the IOC and other sports authorities, typical symptoms of TBI and concussions were: headaches, balance problems and dizziness, feeling “dinged,” “foggy” or “dazed,” visual problems (e.g., seeing stars), slow to answer questions, vacant stare and decreased playing ability. Every one of these symptoms were and are those symptoms bobsledders have used “sled head to describe.

170. In 2014, Duff Gibson, the head coach of Canada’s skeleton team, instituted a cap on training runs at three per day.<sup>29</sup> This cap was created a preventative measure to avoid his athletes suffering from “sled head and its underlying TBI. Gibson applied this cap to all athletes regardless of their health. Any athletes exhibiting signs of “sled head, or concussions was prohibited from participating in any training runs or competitions. The Defendants never instituted a cap such as this, despite being in a position to do so.

171. At all times material hereto, the Defendants knew or should have known that “sled head was indicative of concussions, concussion-like symptoms, TBI, and CTE. Furthermore, the Defendants failed to act on their athletes’ complaints of experiencing “sled head, greatening their risk of suffering a concussion, TBI, or CTE.

## **6. The IOC and USOPC Glorify and Profit off the Violence of Bobsled**

172. The Defendants generate revenue mostly through marketing sponsorships,

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<sup>29</sup> <https://www.theglobeandmail.com/sports/more-sports/canadas-skeleton-team-limits-training-runs-to-prevent-head-injuries/article14671480/>

licensing merchandise, and selling both international and national broadcast rights to the Olympic games and other events.

173. In 1995, the IOC created the Olympic Partners programme. It is the highest level of sponsorship, granting category-exclusive marketing rights to the Games to a select group of global partners. Currently, the IOC has 15 partners within the Olympic Partners programme. While the cost of entry is unknown, it is reported that the IOC received a revenue of more than \$1 Billion in the 2013-2016 quadrennial.

174. The IOC is the owner of the global broadcast rights for the Olympic Games - including broadcasts on television, radio, mobile, and internet platforms - and is responsible for allocating Olympic broadcast right to media companies throughout the world through the negotiation of rights agreements.

175. The IOC established the Olympic Broadcasting Services (“OBS”) in 2001, to serve as the permanent host broadcaster for the Olympic Games, eliminating the need to continually rebuild the broadcast operation for each edition of the Games. A major initiative of the OBS has been to optimize the digital viewership of the Olympics by increasing their accessibility.

176. During the 2014 Winter Olympics in Sochi, the OBS recorded more than 269.3 million hours and 3.2 billion videos of the games were watched on digital platforms.<sup>30</sup>

177. As a direct result of their substantial viewership, the IOC recorded a revenue of more than \$4 billion in the last quadrennial, just from broadcast rights alone. NBC, the IOC’s largest broadcast partner, sold more than \$1 billion in advertising.

178. Quadrennially, the IOC redistributes portions of their revenue from the Olympic Partner programme and broadcast rights to its International Sports Federations and National

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<sup>30</sup> <https://olympics.com/ioc/broadcasters>

Olympic Committees. The USOPC receives the largest percentage of those revenues, obtaining approximately 20% from the Olympic Partner programme and 12.75% from broadcast. In the IOC's annual report from 2018 reported that the USOPC received \$213 million from the IOC. The other National Olympic Committees shared 20% of the sponsorship revenue and received zero percentage of the broadcast revenue.

179. Part of the Defendants' strategy to promote the Olympics and the sport of bobsled, has been to glorify the danger, violence, and ferocity of hurtling down an ice track at 90 mph. Cameras depict head on points of view, so the audience has an intimate perspective of the bobsled hurtling down the track towards them. The viewer is given access to witness every vibration, rattle, smack and bang the athletes experience. A speedometer graphic is shown on the screen so the viewer can appreciate the speeds of these athletes as they round the fastest corners. Announcers make a point to emphasize the speeds and physical forces the athletes experience in real time.

180. The IOC, IBSF and NBC provide full length footage and recap clips of every notable bobsled run from the Olympics on their respective YouTube pages. Further, the IBSF both on its website and YouTube page offers videos of each bobsled track from a first-person perspective.

181. These efforts to promote viewership and exploit the dangers of the sport deemphasize the acute and chronic risks associated with head impacts. It is a deep culture of exploitation and purposeful financial gain off the health and welfare of athletes.

182. As of 2021, 73% of the IOC's revenue is generated through broadcasting rights, and 18% through the Olympic Partner Programme.

## **7. Athletes Have Died as A Direct Result of This Violence**

183. The Defendants have been aware of the dangers of TBI and concussions for

decades because medical science has known of these dangers for many decades. Further, these Defendants have known of “sled head” and terms describing TBI in other sports<sup>31</sup>, being used by athletes since in the 1980s.

184. Athletes suffering from CTE are at a higher risk of suicide and substance abuse. This has been well documented in the NFL litigation and media coverage over the last few decades. Like the development of CTE, the symptoms of TBI and CTE and their ultimate manifestation of suicides and substance abuse are not isolated to the NFL - they have been present within the sport of bobsled for nearly two decades.

185. Randy Will, a former American bobsledder and bobsled coach, who last competed in the 1992 Winter Olympics, has been outspoken about his experience in the sport. Randy has been suffering from what doctors have diagnosed as Parkinson’s disease. He has stated that by the end of his career, he would see stars nearly every time his head hit the sled coming out of a turn. Randy contemplated committing suicide, going so far as writing a suicide note, but fortunately, Randy was able to seek treatment in time to save his life.

186. In 2003, Eugenio Monti, a former Italian bobsledder, and six-time gold medalist, committed suicide at age 75. For years after his retirement, Eugenio was suffering from what doctors diagnosed as Parkinson’s Disease.

187. In 2004, former Canadian bobsledder, Christina Smith retired from the sport after competing in the 2002 Olympic games, in Salt Lake City, Utah. For the years following her retirement, she openly discussed her battles with depression, moodiness, memory loss and sleep problems. Scans of her brain measuring its electrical function revealed severe damage to her rear and frontal lobes.

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<sup>31</sup> As an example, “slap back” is a term used by Olympic Aerial Skiers for when their head slaps backwards against the snow.

188. Steven Mesler, a former American bobsledder and who currently serves on the board of directors for the United States Olympic Committee, has been outspoken about his concerns for the number of teammates he has lost in the recent years.<sup>32</sup>

189. Since 2013, five North American Olympic bobsledders have attempted to take their own lives by suicide. Three, including Pauly, have succeeded. Additionally, two American Olympic bobsledders have lost their lives to overdose. Adam Wood, a former Canadian bobsledder, hanged himself in 2013 at age 32. A year later in 2014, Travis Bell, a former American bobsledder committed suicide at age 42. In 2016, Earl Shepherd, a former American bobsledder, died of an overdose at the age of 46. In 2017, Steven Holcomb, perhaps the most famous American bobsledder, died of an overdose in his home at age 37.

190. In 2016, former American bobsledder, Bill Schuffenhauer, sliced open his wrists in an attempted suicide. If it were not for his girlfriend walking in their residence at that moment, Bill would be another former athlete who lost his life from brain trauma incurred as a result of his sledding career.

191. The families of Travis Bell and Steven Holcomb donated tissue samples from their brains to researchers to investigate the presence of CTE. Bell and Holcomb showed symptoms of and likely were suffering from a TBI. As Dr. Robert Stern, the Director of Clinical Research for Boston University has said, “not every symptom we see in former football players is because of CTE, but they are still the result of repeated impacts to the head.”

192. At all times, the Defendants were in a unique position which afforded them unparalleled access to the readily accessible data above relating the effect of head impacts on

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<sup>32</sup> In an Instagram post made in tribute of Pavle Jovanovich (and Steve Holcomb), Mesler said, in part, “Today I mourn the second of the six men I competed at the Olympics for my country with to be laid to rest to soon. ‘Bro’, that’s a problem.”

Olympic bobsledders. The Defendants have known or should have known about the risks for TBI, the scientific studies linking brain trauma with significant risks for permanent brain injury, including CTE, and about the increased incidence of depression, dementia, and cognitive impairment and memory problems in Olympic bobsledders.

**D. CONSENSUS BEST PRACTICES FOR THE TREATMENT OF CONCUSSION FOR THE PERIOD OF 1991 TO PRESENT.**

**1. 1991 to 1996 - the Colorado Medical Society and American Academy of Neurology**

193. The intersection of brain concussion and athletic injuries have been discussed by those in the field of sports medicine and science within the United States since 1966, but prior to 1991, there had not been a movement to reach a consensus in how this intersection should be defined, managed and treated.

194. In 1991, the Sport Medicine Committee from the Colorado Medical Society was the first to undertake the task of developing the best method to prevent catastrophic outcomes of acute structural brain injury, second impact syndrome, and cumulative brain injury due to repetitive trauma.<sup>33</sup>

195. In 1996, expanding upon the consensus created by the Colorado Medical Society, the American Academy of Neurology (“AAN”) published “*Diagnosis and Management of Concussion in Sports*,” which developed guidelines for neurologists for diagnostic procedures, treatment modalities, and clinical disorders. By training and knowledge, neurologists and neurosurgeons are qualified to develop and disseminate guidelines for managing the athlete who

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<sup>33</sup> Colorado Medical Society. Report of the Sports Medicine Committee: Guidelines for the management of concussions in sports (revised). Denver: Colorado Medical Society, 1991.

suffers a concussion in sports.<sup>34</sup>

196. The AAN defined a concussion as “trauma-induced alteration in mental status that may or may not involve loss of consciousness.”

197. They stated that common features of concussion that are frequently observed are:

- Vacant stare (befuddled facial expression).
- Delayed verbal and motor responses (slow to answer questions or follow instructions).
- Confusion and inability to focus attention (easily distracted and unable to follow through with normal activities).
- Disorientation (walking in the wrong direction, unaware of time, date, and place).
- Slurred or incoherent speech (making disjointed or incomprehensible statements).
- Gross observable incoordination (stumbling, inability to walk in a straight line).
- Emotions out of proportion to circumstances (distraught, crying for no apparent reason).
- Memory deficits (exhibited by the athlete repeatedly asking the same question that has already been answered, or inability to memorize and recall three of three words or three of three objects in 5 minutes).
- Any period of loss of consciousness (paralytic coma, unresponsiveness to arousal).

198. They further stated that symptoms the athlete may experience can be divided into “early” and “late” categories.

Early Symptoms (Minutes and Hours):

- Headache.

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<sup>34</sup> Kelly, JP; Rosenberg, JH. *The diagnosis and management of concussion in sports*. Neurology 1997; 48:575-580.

- Dizziness or vertigo.
- Lack of awareness of surroundings.
- Nausea or vomiting.

Late Symptoms (Days to weeks):

- Persistent low-grade headache.
- Light-headedness.
- poor attention and concentration.
- Memory dysfunction.
- Easy fatigability.
- Irritability and low frustration tolerance.
- Intolerance of bright lights or difficulty focusing vision.
- Intolerance of loud noises, sometimes ringing in the ears.
- Anxiety and/or depressed mood.
- Sleep disturbance.

199. "Confusion and amnesia are the hallmarks of concussion. Although disorientation may be present during a confusional state, more subtle abnormalities are typical...Close observation and assessment of the athlete over some period of time is necessary to see if the evolving neuropathologic change associated with concussion leads to physical signs and symptoms or to the development of memory dysfunction."

200. The AAN further stated: "the adoption of a single concussion grading scale is essential to the advancement of clinical research into the incidence of concussion, patterns of recovery, risks of neurosurgical emergencies, and the development of permanent neurological

dysfunction” and recommended that the grading scale arrived at by the Colorado Medical Society be adopted:

Grade 1:

1. Transient confusion.
2. No loss of consciousness.
3. Concussion symptoms or mental status abnormalities on examination resolved in less than 15 minutes.

Grade one concussion is the most common yet the most difficult form to recognize. The athlete is not rendered unconscious and suffers only momentary confusion or mental status alterations. Players commonly refer to this state as having been “dinged” or having their “bell rung.”

Grade 2:

1. Transient confusion.
2. No loss of consciousness.
3. Concussion symptoms or mental status abnormalities on examination lastign more than 15 minutes.

With grade 2 concussion, the athlete is not rendered unconscious but experiences symptoms or exhibit signs of concussion or mental status abnormalities on examination that last longer than 15 minutes. Any persistent grade two symptoms warrant medical observation.

Grade 3:

1. Any loss of consciousness, either brief or prolonged.

Grade 3 concussion is usually easy to recognize - the athlete is unconscious for a period of time.

201. With regard to sideline evaluation, the AAN stated: “All athletes suspected of having sustained concussions should undergo thorough evaluation, including mental status testing, neurological screening examination, and exertional provocative maneuvers”:

Mental Status Testing

- Questions concerning orientation (such as, time, place, person, and situation).
- Questions testing concentration (such as, listen and response with backwards order of digits [3-1-7, 4-6-8-2, 5-3-0-7-4], or providing the months of the year in reverse order.)
- Questions testing memory (such as, names of teams in prior contests, recall of three words and three objects at zero and five minutes, recent newsworthy events, details of the contest just played.

#### External Provocative

- Physical Test (such as, 40-yard sprint, 5 pushups, 5 sit ups, 5 knee bends), any appearance of associated symptoms is abnormal, e.g. headaches, dizziness, nausea, unsteadiness, blurred or double vision, emotional lability, or mental status changes.

#### Neurologic tests

- pupils (symmetry and reaction.)
- coordination (finger-nose-finger, tandem gate)
- sensation (finger-nose-finger [eyes closed] and Romberg.

202. The AAN emphasized the risks of an athlete suffering repeated concussions: “For more than two decades, we have known that repeated concussions... have been shown to impart cumulative neuropsychological and neuroanatomical damage, even when incidents are separated in time by months or years.” Further, “these concerns have led to a heightened awareness in the athletic and medical communities that criteria are needed for the retirement of athletes from high-risk contact sports.”

203. Finally, the AAN also provided guidelines for return to play (“RTP”) protocols after a concussion:

#### Grade 1:

1. Remove from contest.
2. Examine immediately and at 5 minute intervals for the development of mental status abnormalities or post-concussive symptoms at rest and with exertion.
3. May return to contest if mental status abnormalities or post-concussive symptoms clear within 15 minutes.

4. A second Grade 1 concussion in the same contest eliminate the player from competition that day, with the player returning only if asymptomatic for one at rest and with exercise.

#### Grade 2:

1. Remove from contest and disallow return that day.
2. Examine on-site frequently for signs of evolving intracranial pathology.
3. A trained person should re-examine the athlete the following day.
4. A physician should perform a neurologic examination to clear the athlete for return to play after 1 full asymptomatic week at rest and with exertion.
5. CT or MRI scanning is recommended in all instances where headache or other associated symptoms worsen or persist longer than one week.
6. Following a second Grade 2 concussion, return to play should be deferred until the athlete has had at least two weeks symptom-free at rest and with exertion.
7. Terminating the season for that player is mandated by any abnormality on CT and MRI scan consistent with brain swelling, contusion, or other intracranial pathology.

#### Grade 3:

1. Transport the athlete from the field to the nearest emergency department by ambulance if still unconscious or if worrisome signs are detected.
2. A thorough neurological evaluation should be performed emergently, including appropriate neuroimaging procedures when indicated.
3. Hospital admission is indicated if any signs of pathology are detected, or if the mental status of the athlete remains abnormal.
4. If findings are normal at the time of the initial medical evaluation, the athlete may be sent home. Explicit written instructions will help the family or responsible party observe the athlete over a period of time.
5. Neurologic status should be assessed daily thereafter until all symptoms have stabilized or resolved.
6. Prolonged unconsciousness, persistent mental status alterations, worsening postconcussion symptoms, or abnormalities on neurologic examination require urgent neurosurgical evaluation or transfer to a trauma center.
7. After a brief (seconds) Grade 3 concussion, the athlete should be withheld from play until asymptomatic for 1 week at rest and with exertion.
8. After a prolonged Grade 3 concussion, the athlete should be withheld from play for 2 weeks at rest and with exertion.
9. Following a second Grade 3 concussion, the athlete should be withheld from play for a minimum of 1 asymptomatic month. The evaluating physician may elect to extend that period beyond 1 month, depending on clinical evaluation and other circumstances.
10. CT or MRI scanning is recommended for athletes whose headache or other associated symptoms worsen or persist longer than 1 week.
11. Any abnormality on CT or MRI consistent with brain swelling, contusion,

or other intracranial pathology should result in termination of the season for that athlete and return to play in the future should be seriously discouraged in discussion with the athlete.

204. Following the publication of the *Diagnosis and Management of Concussion in Sports*, the AAN published *Practice Parameter: The Management of Concussion in Sports (Summary Statement)*. The statement iterated all of the guidelines and recommendations provided in the main publication, and additionally proffered the following recommendations for future research:

- Development of a valid, standardized, systematic sideline evaluation designed for the immediate assessment of concussion in athletes.
- Development of a standardized, neuropsychological test battery designed to detect impairment associated with concussion.
- Multicenter prospective studies documenting baseline physical, neurologic, and neuropsychological data in athletes and changes in these measurements following concussion.
- Multicenter prospective studies to determine the physical, neurologic, and neuropsychological outcomes of multiple concussions.

## 2. 1999 - American Medical Association - “Current Issues in Managing Sports-Related Concussion”

205. In 1999, the American Medical Association (“AMA”) published “Current Issues in Managing Sports-Related Concussion” primarily to address the issue of determining the readiness of athletes to return to action following a head injury.

206. The AMA states that better strategies are needed to adequately manage and treat concussions.

As outlined by the American Academy of Neurology, there are 3 important considerations in management of the athlete with a concussion. First, immediate neurological emergencies must be identified. Second, prevention of catastrophic outcome from second impact syndrome should be prevented. At least 17 deaths possibly related to second impact syndrome have been reported. All victims returned to play before symptoms relate to an initial concussion had been resolved. Finally, cumulative and chronic brain injury from

repeated concussions should be avoided. The cumulative effects of repeated concussions have been implicated recently in cognitive impairments among college football players, as well as poor neuropsychological functioning in amateur pictures players.

207. The AMA further stated that at least fourteen RTP protocols have been published since 1973. While these protocols have provided benefit in regard to establishing some consensus on how to manage and treat concussions, many concerns remained. “These grading systems have promoted the use of uniform technology and increased awareness of concussion signs and symptoms. There have been ongoing concerns, however, regarding the lack of scientific method in constructing the management guidelines. Further, they assume a standard use for all groups in playing levels, and do not account for individual variability in symptom presentation, or for different ages. Current grading systems also weigh loss of consciousness much more than other makers of concussion.”

208. The AMA goes on to discuss two separate cases involving a 19-year-old football player and a 25-year-old hockey player. The 19-year-old made helmet to helmet contact with the linebacker. After only suffering 5 seconds of loss of consciousness he was able to walk off the field under his own power, reported no symptoms, and was able to pass a cursory mental status examination at 5, 10, and 15 minute intervals. Under the Colorado guidelines, this individual, who suffered a grade 3 concussion, should be transported to a hospital and prohibited from practicing or playing until he has been asymptomatic for two weeks. The AAN guidelines would disallow return to play for one week and recommend careful observation. They Cantu guidelines would classify the incident as a grade 2 concussion in the athlete would return to participation two weeks later if the athlete remains asymptomatic at rest and exertion for one week. The 25-year-old received an elbow to the face. Initially he experienced a one-to-two-minute period of confusion but suffered no loss of consciousness. He denied headache, nausea, and dizziness, and was able to

pass a mental status evaluation. After 30 minutes, the athlete reported nausea, dizziness, and “not feeling right.” He also performed poorly on the memory component of a mental status evaluation. Under the Colorado and AAN guidelines, this athlete experienced a grade one concussion and return to play would have been allowed after 20 and 15 minutes, respectively. Under the Cantu guidelines, a grade one concussion would probably be diagnosed and immediate return to play would be likely, this is despite his later developing signs and symptoms suggesting a more severe injury.

209. The AMA uses these two cases to establish the need for further research:

These two cases represent relatively common scenarios that face the sports medicine physician. In both cases, the application of current concussion guidelines would lead to less than optimum management of the injured athlete. In case one the benching of the player for one to two weeks is probably too conservative, while the hasty return of the athlete in case two may play some at increased neurologic risk.

It is our opinion that concussion management guidelines have not yet evolved to the extent that they can be used to make reliable return to play decisions. Because current guidelines are not evidence based, concussion is difficult to categorize. Further, response to injury is highly individualized. The best that can be said at present is that general agreement for acute management of injury appears to have been attained for several categories of concussions.

A recent roundtable of experts has emphasized the following: (1) physicians should carefully assess every athlete with a concussion; (2) no athlete should be allowed to return to play while still exhibiting either signs or symptoms of concussion; and (3) regular ongoing and repeated examination of the athlete should be conducted following injury. This ongoing evaluation should involve a thorough assessment of the athlete symptoms and a sideline mental status examination to measure basic cognitive processes. It should be emphasized, however, that brief sideline assessment of the athlete provides only a gross characterization of his or her level of cognitive function, and that returned to play should not be based solely on these results.

More formal neuropsychological evaluation can delineate the subtle cognitive changes associated with concussion and is most affective if completed within 24 hours of injury. This should involve the careful

assessment of specific cognitive functions such as: attention, memory and information processing speeds, instead of just administering sideline mental status tests, which do not adequately assess these domains... The most effective use of the neuropsychological evaluation includes a baseline assessment of the athletes preinjury level of cognitive functioning this allows for direct comparison to postconcussion test results and takes into account the variability in test performance that exists across athletes.

**3. 1999 - The American Journal of Sports Medicine, Vol. 27, No. 5, - “Concussion in Sports”**

210. In 1999, the American Journal of Sports Medicine published a special report of the findings of the Concussion Workshop, which was sponsored by the AAOSM in Chicago in December of 1997 (the “Workshop”).<sup>35</sup> Some of the attendees included: the American Association of Neurological Surgeons, the National Hockey League, the American College of Sports Medicine, the UCLA School of Medicine, the AAN, the American Medical Society for Sports Medicine, the National Athletic Trainers Association, the NFL, the American Osteopathic Academy of Sports Medicine, the NCAA, and the American Orthopedic Society For Sports Medicine.

211. In the years prior, many of these types of brain injuries had been capturing headlines and forced football and hockey players into retirement. Early detection through a thorough knowledge of the signs and symptoms and specific documentation of the injury is critical to the management of concussions. However, attempts to characterize and classify the spectrum of concussions by stratifying the signs and symptoms as indicators of relative severity have made such early detection difficult. The Workshop came at the hope of defining areas of agreement and disagreement in the detection and management of concussion in sport.

Realizing that difference do exist among clinicians regarding the safety of return to play at various time points after concussion,

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<sup>35</sup> Edward M. Wojtys, et al., *Concussion in Sports: From the AOSSM Concussion Workshop Group, Rosemont, Illinois*, THE AMERICAN JOURNAL OF SPORTS MEDICINE, Vol. 27, No. 5 (1999).

defining areas of disagreement was also a goal of the concussion workshop so that these differences could be subjected to discussion and investigation. Lastly, participants focused on the key elements of the initial evaluation of concussion so that data collection, future studies, and follow up reports could benefit from the use of common terminology and evaluation tools.

212. Essential to this discussion was the fact that during the minutes to few days after a concussion injury, brain cells that are not irreversibly destroyed remain alive but exist in a vulnerable state. From whatever mechanism, it was then clear that although cerebral concussion may not, in and of itself, produce extensive neuroanatomic damage, the surviving cells are placed in a state vulnerability. This vulnerability is perhaps best characterized in terms of a metabolic dysfunction.

213. The added concern of surviving brain cells being left in a state of vulnerability placed an even greater importance on the Workshop leading to an even greater consensus in the definition and prioritization of steps that should be taken in response to an on-field concussion. The Workshop provided that the evaluation process should be addressed on the playing field, when an athlete is down, and those that can performed on the sideline after the player has either been removed from the playing surface or has come off the field independently.

214. For the on the field evaluation:

The most important objective of on the field evaluation is to make an accurate and complete diagnosis of the level of consciousness and to rule out the presence of significant associate injuries, especially to the cervical spine.

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This should include the presence of adequately trained personnel, appropriate equipment, and an emergency backup plan to evacuate a critically injured player safely and promptly, should it become necessary.

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Medical personnel must understand the mechanisms of head injury, realizing that concussions may occur either by direct contact of the

head against a hard surface or from sudden rotation or shear forces transmitted to the brain. Rapid acceleration or deceleration of the head and neck from a whiplash type of force can be as harmful as direct contact with a hard surface.

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When approaching a player who is injured, observing the posture of the athlete and noting any spontaneous motion or verbalization from the player is the first step. Total lack of motion in the extremities should always alert those at the scene to the potential for a cervical spine injury. Incoherent speech would suggest a significant concussion.

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Athletes with closed-head injuries frequently have a blank expression, may appear confused, exhibit delayed verbal responses, and seem emotionally labile. The standard method of assessing the level of consciousness is by establishing a Glasgow Coma Scale rating.

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The athlete's orientation to time, place, and person, should be determined by asking the date, month, day of the week, the score, the period of the game, or the play in which he or she was injured. It is also important to establish the presence of retrograde amnesia, which is associated with a more significant injury. This can be done by asking about events earlier in the day, such as what was consumed for breakfast, how the athlete traveled to the game, or the location of the locker room. The presence of symptoms such as dizziness, blurring of vision, and head or neck pain should be noted before moving the patient.

215. For the on the bench evaluation:

When a player with a head injury is brought to the sidelines, he or she should be thoroughly evaluated in a routine manner that defined the level of injury. This should include a review of systems, a careful neurologic examination, and neuropsychologic testing. Players with concussions are frequently confused, irritable, and at times, even combative. They frequently ask to be left alone. It is preferable to take the player to a quiet spot on the sidelines near the end of the bench or into the locker room. The players should be questioned about symptoms of dizziness, lightheadedness, vertigo, blurring, or double vision, photophobia, ringing in the ears, headache, nausea, and vomiting.

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Visual acuity (ability to read small print), visual fields, extraocular motion, the level of the eyes (asymmetric with infraorbital blowout fracture), and the presence of nystagmus should be part of the initial assessment. Nystagmus may be seen after a sudden rotational or shearing injury to the brainstem.

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On the sidelines, neuropsychological testing can be performed to document defects in orientation, concentration, and memory. Orientation and retrograde amnesia are usually evaluated on the field. If the player has come off the field under his or her own power and was not examined on the field, these functions should be assessed immediately. Memory can be tested by asking the player to recall 3 words or three objects at zero and five minutes. Detailed concentration can be evaluated by asking the player to repeat 3, 4, and five digits backward, to recite the months of the year in reverse order, or to do serial 7s. Knowledge of the players capabilities through preseason testing is usually necessary and evaluating cognitive performance.

A player should be initially observed for a minimum of 15 minutes on the sidelines and reevaluated as needed. If any symptoms develop, the athlete should not return to competition that. If the player has not lost consciousness, is oriented, and is asymptomatic, provocative testing should be performed next to determine whether symptoms will occur with physical stress. A 40-yard dash, 5 sit-ups, 5 pushups, or five deep knee bends are usually adequate to increase intracranial pressure. Having the patient reclined supine with feet elevated for several seconds may also increase intracranial pressure sufficiently to cause symptoms. If there are any symptoms after these maneuvers come out the players should not be allowed to return to play.

If a player is asymptomatic and returns to the game, it is essential that the athlete be reevaluated repeatedly during the contest to detect any changes in clinical course... It is also helpful to communicate to the player the importance of being extremely honest about symptoms, realizing that many players will deny symptoms to be able to return to competition. The seriousness of the second impact syndrome and post-concussion syndrome should be explained to the player before he or she is allowed to return to competition.

216. The Workshop further described the importance of neuropsychological assessment

of the athlete when there is suspicion that they suffered a concussion.

Although the majority of athletes who experience a concussion are likely to recover completely, and unknown number of these athletes may experience chronic cognitive sequelae. In some cases, these difficulties can be permanent and disabling... While most clinicians are aware of the fact that suffering a second blow to the head while symptomatic from a previous concussion can have severe consequences, as in the case of second impact syndrome, many may not realize that concussions can lead to impairment of cognitive processes, mood, and behavior.

If pre injury evaluations have been performed, neuropsychological testing may be the most sensitive method of detecting post concussive dysfunction.

217. The American Orthopedic Society For Sports Medicine (“AOSSM”) agreed that the most appropriate baseline neuropsychological assessment is the approach that has been used by the “Pittsburgh Steelers since 1993 and was based on the University of Virginia study and involves the systematic testing of the athlete at set times before and after a suspected concussion.” “[T]esting is then repeated within 24 hours after a suspected concussion, and again approximately 5 days after the injury.” If new neuropsychologic testing is going to be used to evaluate the athlete with concussion, preseason baseline evaluation of the athletes is recommended whenever possible.

218. The AOSSM further stated that the “initial evaluation of the athlete with concussion begins on the playing field and should continue until symptoms have completely resolved... if the athlete displays any deficits on neuropsychological testing, a follow up evaluation should be undertaken within 48 hours. The interval of five days represents a useful and practical follow-up interval.”

219. Most importantly, the AOSSM further defined the golden rule as it relates to sports concussions—in general, if an athlete has any symptoms on the field that are related to a concussion, the athlete should not be allowed to play.

220. Lastly, the AOSSM provided recommendations, including:

1. Every athlete with concussion should be evaluated by a physician.
2. Loss of consciousness precludes return to play that day.
3. Persistence of (longer than 15 minutes) or delayed onset of any symptoms such as headache, dizziness, malaise, slowness to respond mentally or physically at rest, or with provocation or with exercise precludes return to play that day.
4. Any deterioration in physical or mental status after the initial trauma such as increasing headache, dizziness, or nausea, warrants immediate transport to an emergency facility or neurologic or neurosurgical consultation and neuroimaging are available.
5. When prolonged symptoms (greater than 15 minutes) are experienced after a concussion, great care must be exercised in returning an asymptomatic athlete to practice or competition. Without at least five to seven days of rest, neural function may not yet be normal. Further research is needed to demonstrate the association, or lack of association, between symptoms, neurocognitive function, and injury susceptibility. Until this age specific information is available, such decisions must be approached with great concern. Repeated examinations of the athlete are needed during a gradual increase in physical exertion to determine if the stresses trigger symptoms. If symptoms reoccur, the athlete is not ready to return to play. Current neuroscience knowledge in humans does not give a safe, Fern timetable to return to play after a concussion in most circumstances. Therefore, each athlete with prolonged symptoms (more than 15 minutes) must be evaluated individually. Repeated and thorough evaluations, preferably by the same clinician, are most helpful in determining readiness to play.

#### 4. 2001 - The Vienna Protocol

221. By 2002, international consensus had been reached in the medical and scientific community for the cornerstones of the management and treatment of concussions in sport.

222. The “summary and agreement statement of the first international conference on concussion in sport, Vienna 2001” (“international consensus statement” or “Vienna protocol”) was published in early 2002 simultaneously in the *Clinical Journal of Sports Medicine, Physician in Sports Medicine* and *British Journal of Sports Medicine*.<sup>36</sup> The expert group who compiled the

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<sup>36</sup> M. Aubry et al., *Summary and Agreement Statement of the First International Conference on Concussion in Sport, Vienna 2001*, 36 BRIT J. SPORTS MED. 6 (2002)(“Vienna Protocol”)

international consensus statement, known as the “concussion in Sports Group,” was comprised of a panel of world experts and was organized by the International Ice Hockey Federation, the Federation Internationale de Football Association Medical Assessment and Research Center, and the Medical Commission of Defendant IOC. The international consensus statement was intended to be, and was accepted as, “a comprehensive systematic approach to concussion to aid the injured athlete and direct management decisions.” It was also intended to be “be widely applicable to sports related concussion” and “developed for use by doctors, therapists, health professionals, coaches, and other people involved in the care of injured athletes, whether at the recreational, elite, or professional level.”

223. The Vienna protocol recommended specific RTP guidelines. The Vienna protocol stated: “when a player shows any symptoms or signs of a concussion: (1) the players should not be allowed to return to play in the current game or practice; (2) the players should not be left alone; regular monitoring for deterioration is essential; (3) the player should be medically evaluated after the injury. Return to play must follow a medically supervised stepwise process. A player should never return to play while symptomatic. “When in doubt, sit them out!”

224. The Vienna protocol also recommended an RTP stepwise process as follows:

It was the consensus of the CISG that a structured and supervised concussion rehabilitation protocol is conducive to optimal injury recovery and safe and successful return to play. The rehabilitation principles were common to all identified programs and are outlined below. Important principles state that the athlete be completely asymptomatic and have normal neurological and cognitive evaluations before the start of the rehabilitation program. Therefore, the more prolonged the symptom duration, the longer the athlete will have sat out. The athlete will then proceed stepwise with gradual incremental increases in exercise duration and intensity and pause or backtrack with any recurrence of concussive symptoms. It is appreciated that, although each step may take a minimum of one day, depending on the duration of symptoms, proceeding through each step may take longer in individual circumstances.

225. The Vienna protocol provided that RTP after a concussion follows a stepwise process: (1) no activity, complete rest period once asymptomatic, proceed to level; (2) light aerobic exercise such as walking or stationary cycling; (3) sports specific training - for example, skating in hockey, running in soccer; (4) noncontact training drills; (5) full-contact training after medical clearance; and finally, (6) gameplay. “[W]ith this stepwise progression, the athlete should continue to proceed to the next level if asymptomatic at the current level. If any symptoms occur after concussion, the patient should drop back to the previous asymptomatic level and try to progress again after 24 hours.”

226. In regard to sideline evaluation, the Vienna protocol noted that “sideline evaluation includes clinical evaluation of signs and symptoms, ideally using a standardized scale of post-concussion symptoms for comparison purposes, and acute injury testing as described below under neuropsychological testing period.” The Vienna protocol recommended tests such as the Maddock’s Questions and Standardized Assessment of Concussion (SAC) as effective in concussion diagnosis and also stated:

Sideline evaluation including neurological assessment and mental status testing is an essential component in the protocol. These evaluations are ideally developed in language translations for international sporting groups... In the acute assessment of concussive injury- that is, concussion diagnosis - brief neuropsychological test batteries that assess attention in memory function have been shown to be practical and effective. Such tests include the Maddock’s Questions and Standardized Assessment of Concussion (SAC). It is worth noting that the standard orientation questions- for example, time, place, person - have been shown to be unreliable in the sporting situation compared with memory assessment.

It is recognized, however, that abbreviated testing paradigms are designed for rapid evaluation of concussion on the sidelines and are not meant to replace comprehensive neuropsychological testing, which is sensitive enough to detect subtle deficits that may exist beyond the acute episode.

227. In regard to baseline testing and neuropsychological testing, the Vienna protocol provided that “overriding principles common to all neuropsychological test batteries is the need for and benefit of baseline preinjury testing and serial follow-up.” It noted that the application of neuropsychological testing “has shown to be of value and continues to contribute significant information in concussion... It has been shown that cognitive recovery may precede or follow resolution of clinical symptoms, suggesting that the assessment of cognitive function should be an important component in any return to play protocol.” Further, “the consensus of the CISG was that neuropsychological testing is one of the cornerstones of concussion evaluation and contributes significantly to both understanding of the injury and management of the individual. Organized sport federations have access to and should attempt to employ such testing as appropriate. To maximize the clinical utility of such neuropsychological assessment, baseline testing is recommended.”

228. Finally, the Vienna protocol acknowledged education of athletes, colleagues, those working with athletes and the public as a “mainstay of progress in the field.” The Vienna protocol also recommended the “consideration of rule changes” and noted that “rule enforcement critical aspect of such approaches and referees play an important role.”

##### **5. 2004 - National Athletic Trainers’ Association Position Statement: Management of Sport-Related Concussion**

229. A second consensus document on concussion management was issued in 2004 when the National Athletic Trainers Association (NATA) published a position statement regarding concussion management.<sup>37</sup> NATA provided extensive recommendations including that “decisions about an athlete’s return to practice should never be based solely on the use of any one test.” It

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<sup>37</sup> K.M. Guskiewicz et al., *National Athletic Trainers’ Association Position Statement: Management of Sport-Related Concussion*, 39 J. ATHLETIC TRAINING 280 (2004) (“NATA 2004 STATEMENT”)

also recommended a “cautious clinical judgment” which “takes into account all evaluation options.”

230. Specifically, the NATA position statement stated:

Return to participation after severe or repetitive concussive injury should be considered only if the athlete is completely symptom free and has a normal neurologic examination, normal neuropsychological and postural-stability examinations, and if obtained, normal neuroimaging studies (ie., MRI with gradient echo). It may not be practical or even possible to use all of these assessments in all athletes or young children, but a cautious clinical judgment should take into account all evaluation options. Each injured athlete should be considered individually, with consideration for factors including age, level of participation, nature of the sport (high risk versus low risk), and concussion history. Standardized neuropsychological testing, which typically assesses orientation, immediate and delayed memory recall, and concentration may assist the ATC and physician in determining when to disqualify an athlete from further participation. Balance testing may provide additional information to assist the clinician in the decision-making process of whether to disqualify an individual after a concussion. When to disqualify the athlete is one of the most important decisions facing the ATC and team physician when dealing with an athlete suffering from a concussion. This includes not only when to disqualify for a single practice or event but also want to disqualify for the season or for a career.

231. It further stated:

the decision to disqualify an individual from further participation on the day of the concussive episode is based on the sideline evaluation, the symptoms the athlete is experiencing, the severity of the appearance symptoms, and the patients past history. The literature is clear: any episode involving LOC or persistent symptoms related to concussion (headache, dizziness, amnesia, and so on closed parentheses, regardless of how mild and transient, warrants disqualification for the remainder of that day's activities.

232. The NATA position statement similarly recommended baseline testing; the use of objective concussion assessment tools; a combination of screening tools for the sideline; and implementation of a neuropsychological testing program with evaluations by persons appropriately trained in the test administration and scoring (ideally by a neuropsychologist).

## 6. 2006 – American College of Sports Medicine Concussion: Consensus Statement

233. The American College of Sports Medicine's "concussion (mild traumatic brain injury) and the team physician: a consensus statement" provided that a detailed/systematic plan for the team physician to follow in the evaluation of an individual for concussion on the sideline should be developed; post-injury neuropsychological data is more useful if compared to a baseline; a team physician should perform serial neurological assessments as an essential function; it is desirable that the education of the athlete and others about concussions; and helmets do not prevent, and may actually increase, the incidence of concussion.<sup>38</sup>

234. Regarding same-day RTP, the consensus statement provided:

It is essential the team physician understand:

- There is agreement that athletes with significant, persistent or worsening signs and symptoms (e.g., abnormal neurological examination, ongoing RGA or PTA, prolonged LOC) should not RTP.
- For other athletes with concussion, significant controversy exists for a same-day RTP decision and no conclusive evidence-based data are available. Areas of controversy include:
  - Returning an athlete with any symptoms to play.
  - Returning an athlete with fully resolved symptoms to play.
  - Certain symptoms, even if resolved, are contraindications to same-day RTP (e.g., any LOC, PTA, and RGA).
  - The duration and severity of symptoms are the determining factors of RTP.
  - It is the safest course of action to hold an athlete out.

235. Regarding postgame RTP, the consensus statement provided:

It is essential the team physician:

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<sup>38</sup> American College of Sports Medicine, *Concussion (Mild Traumatic Brain Injury) And the Team Physician: A Consensus Statement*, MED. SCI. SPORTS & EXERCISE, 395, 396 (2006).

- determine the athlete is asymptomatic at rest before resuming any exertional activity.
- Understand amnesia may be permanent.
- Utilize progressive aerobic and resistance exercise challenge tests before full RTP.
- Consider factors which may affect RTP, including:
  - severity of the current injury.
  - Previous concussions (number, severity, proximity).
  - Significant injury in response to a minor blow.
  - Age (developing brain may react differently to trauma than mature brain).
  - Sport.
  - Learning disabilities.
  - Understand contraindications for return to sport (e.g., abnormal neurological examination, signs or symptoms with exertion, significant abnormalities on cognitive testing or imaging studies).
  - Controversy exists for post-game RTP decisions.

It is desirable that team physician:

- Coordinate a team to implement progressive aerobic and resistance exercise challenge tests before full RTP.
- Recognize challenging cognitive effort may exacerbate symptoms of concussion and retard recovery.
- Discuss status of athlete with parents, caregivers, teachers, certified athletic trainers and coaching staff within disclosure regulations.
- Consider neuropsychological testing.

## 7. 2007 - NFL Return to Play Protocol

236. The NFL is now known to have hidden for at least a decade its knowledge of

concussion injuries so it is hardly a paradigm of concussion management.

237. The first return to play/concussion standards in the NFL were adopted in 2007. While the adoption by the NFL of the policy was late and incomplete, it reflected an important change that should have caused the Defendants to adopt rules also.<sup>39</sup>

238. The 2007 policy placed an emphasis on taking a conservative approach to managing concussions including “giving full consideration to a player's medical history, including his history of concussions and recovery from any previous concussions, and taking the necessary time to conduct a thorough neurological examination, including mental status at rest in post exertion before making a decision on the returning a player to practice or play.”

239. The 2007 policy also mandated baseline testing:

Neuropsychological baseline testing will be required for all NFL players beginning this season, using a standardized test to establish an individual functional baseline. Neuropsychological testing is one tool of physician can use to assist and the management of MTBI. It cannot be used by itself to make clinical decisions. For players removed from games due to concussions, repeated testing will be done during the season to track recovery and to help decide when they can return to play. These players also will be re stated against their baseline performance the following season at training camp.

240. In addition, the NFL took some steps to educate players in a 2007 “concussion pamphlet”:

( 1 ) the players should be completely asymptomatic and have normal neurological tests results, including mental status testing at rest and after physical exertion before returning to play; ( 2 ) symptoms to be taken into account include confusion, problems with immediate recall, disorientation to time, place and person, anterograde and retrograde amnesia, fatigue, and blurred vision; ( 3 ) if an NFL player sustains a loss of consciousness, as determined by the team medical staff, he should not return to the same game or

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<sup>39</sup> press release, NFL outlines standards for concussion management (May 22nd, 2007 ), available at [http://www.nflevolution.com/wordpress/wp-content/uploads/2012/08/concussion\\_standards-508.pdf](http://www.nflevolution.com/wordpress/wp-content/uploads/2012/08/concussion_standards-508.pdf); NCAA10044661-62.

practice; ( 4 ) NFL team physicians and athletic trainers will continue to exercise their medical judgment and expertise and treating concussions, including considering any history of concussion a player.

## 8. 2008 - The Zurich Protocol

241. The third international conference on concussion in sport was held in Zurich in November of 2008, which resulted in an update of the Vienna and Prague protocols (“Zurich protocol”).<sup>40</sup> Once again, the Zurich protocol reaffirmed the need for a graduated stepwise RTP process after a concussion with a 24 hour wait. Between each step the Zurich protocol mirrors the Prague protocol in many respects. However, the Zurich protocol abandoned this simple versus complex terminology developed in Prague and also identified “concussion modifiers” which may affect the recovery and outcome of RTP progress. In addition, the Zurich protocol more specifically enumerated a process for sideline evaluation and developed another standardized concussion assessment tool (SCAT 2) for use in concussive evaluation.

242. In regard to RTP, the Zurich protocol noted:

The cornerstone of concussion management is physical and cognitive rest until symptoms resolve and then a graded program of exertion prior to medical clearance and returned to play. The recovery and outcome of this injury may be bonafide by a number of factors that may require more sophisticated management strategies. These are outlined in this section on modifiers below. As described above, the majority of injuries will recover spontaneously over several days. In these situations, it is expected that an athlete will proceed progressively through a stepwise return to play strategy. During this period of recovery while symptomatic, following an injury, it is important to emphasize to the athlete that physical and cognitive rest is required. Activities that require concentration and attention (e.g., scholastic work, video games, text messaging, etc.) may exacerbate symptoms and possibly delay recovery period in such cases, apart from limiting relevant physical and cognitive

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<sup>40</sup> P. McCrory, et al., *Consensus Statement on Concussion in Sport: The 3<sup>rd</sup> International Conference on Concussion in Sport held in Zurich*, 43 BRIT. J. SPORTS MED., i76, i78 (2009) (“Zurich Protocol”).

activities (and other risk-taking opportunities for reinjury) while symptomatic, no further intervention is required during the period of recovery and the athlete typically resumes the sport without further problem.

243. The protocol further stated:

Return to play protocol following a concussion follows a stepwise process... With this stepwise progression, the athletes should continue to proceed to the next level if asymptomatic at the current level. Generally, each step should take 24 hours so that an athlete would take approximately one week to proceed through the full rehabilitation protocol once they are asymptomatic at rest and with provocative exercise. If the post-concussion symptoms occur while in the stepwise program, the patient should drop back to the previous asymptomatic level and try to progress again after a further 24-hour period of rest has passed.

244. The protocol included the following chart:

Graduated return to play protocol:

Rehabilitation stage	Functional exercise at each stage of rehabilitation	Objective of each stage
1. No activity	Complete physical and cognitive rest	Recovery
2. Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity <70% maximum predicted heart rate No resistance training	Increase heart rate
3. Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities	Add movement
4. Non-contact training drills	Progression to more complex training drills, eg passing drills in football and ice hockey May start progressive resistance training)	Exercise, coordination, and cognitive load
5. Full contact practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6. Return to play	Normal game play	

245. The Zurich protocol provided: “an important consideration in RTP is that concussed athletes should not only be symptom free but should also not be taking any

pharmacological agents or medications that may mask or modify the symptoms of concussion.”

246. In regards to “same day RTP,” the protocol stated:

with adult athletes, in some settings, where there are physicians experienced in concussion management insufficient resources (e.g., access to neuropsychologist, consultants, neuroimaging, etc.) as well as access to immediate neurocognitive assessment, returned to play management may be more rapid. The RTP strategy must still follow the same basic management principles namely full clinical and cognitive recovery before consideration of returned to play. This approach is supported by published guidelines, such as the American Academy of neurology, U.S. team physicians’ consensus statement, and U.S. national athletic trainers’ association position statement. This issue was extensively discussed by the consensus panelists and it was acknowledged that there is evidence that some professional American football players are able to RTP more quickly, with even same day RTP supported by National Football League studies without a risk of reoccurrence or sequelae. There are data however, demonstrating that at the collegiate and high school level, athletes allowed to RTP on the same day may demonstrate NP deficits post injury that may not be evident on the sidelines and are more likely to have delayed onset of symptoms. It should be emphasized however that the young elite athlete should be treated more conservatively even though the resources may be the same As for an older professional athlete.

247. The protocol also noted that the panel agreed that a range of “modifying factors” may affect concussion management: “a range of modifying factors may influence the investigation and management of concussion and in some cases, may predict the potential for prolonged persistent symptoms.” *Id.* at i79.

Concussion modifiers:

Factors	Modifier
Symptoms	Number Duration (>10 days) Severity
Signs	Prolonged loss of consciousness (>1 min), amnesia
Sequelae	Concussive convulsions
Temporal	Frequency—repeated concussions over time Timing—injuries close together in time “Recency”—recent concussion or traumatic brain injury
Threshold	Repeated concussions occurring with progressively less impact force or slower recovery after each successive concussion
Age	Child and adolescent (<18 years old)
Co- and pre-morbidities	Migraine, depression or other mental health disorders, attention deficit hyperactivity disorder, learning disabilities, sleep disorders
Medication	Psychoactive drugs, anticoagulants
Behaviour	Dangerous style of play

248. The Zurich protocol also re-emphasize the importance of neuropsychological and comparative baseline testing but noted that it should not be used as a standalone tool or form the sole basis of management decisions but rather as an aid to the clinical decision-making process. In addition, the Zurich protocol noted that the “neuropsychologists are in the best position to interpret NP tests by virtue of their background and training... however, there may be situations where neuro psychologists are not available and other medical professionals may perform or interpret NP screening tests.” The Zurich protocol recommended that all high-risk sports have formal baseline neuropsychological screening, stating “although formal baseline MP screening may be beyond the resources of many sports or individuals, it is recommended that in all organized high risk for its consideration be given to having this cognitive evaluation regardless of the age or level of performance.” Finally, the Zurich protocol noted that “in the absence of NP and other testing, a more conservative return to play protocol approach may be appropriate.”

249. The Zurich protocol also expanded upon the sideline evaluation of concussion and formulated the SCAT2. The Zurich protocol specifically stated:

When a player shows any features of a concussion:

- The player should be medically evaluated on site using standard Emergency Management principles in particular attention should be given to excluding a cervical spine injury.
- The appropriate disposition of the player must be determined by the treating health care provider in a timely manner. If no health care provider is available, the player should be safely removed from practice or play and urgent referral to a physician arranged.

- Once the first aid issues are addressed, then an assessment of the concussive injury should be made using the SCAT2 or other similar tool.
- The player should not be left alone following the injury and serial monitoring for deterioration is essential over the initial few hours following injury.
- A player with diagnosed concussions should not be allowed to return to play on the day of the injury. Occasionally in adult athletes, there may be returned to play on the same day as the injury.

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Sideline evaluation of cognitive function is an essential component in the assessment of the injury. Brief neuropsychological testing batteries that assess attention and memory function have been shown to be practical and effective. Such tests include the Maddocks questions and the standardized assessment of concussion. It is worth noting that the standard orientation questions (e.g., time, place, person) have been shown to be unreliable in the sporting situation when compared with the memory assessment. It is recognized however, that abbreviated testing paradigms are designed for rapid concussion screenings on the sideline and are not meant to replace comprehensive neuropsychological testing which is sensitive to detect subtle deficits that may exist beyond the acute episode; Nor should they be used as a standalone tool for the ongoing management of sports concussions. It should also be recognized that the appearance of symptoms might be delayed several hours following a concussive episode.

250. The Zurich protocol again emphasized the necessity of concussion education period “as the ability to treat or reduce the effects of concussive injury after the event is minimal, education of athletes, colleagues and the general public is a mainstay of progress in this field. Athletes, referees, administrators, parents, coaches and health care providers must be educated regarding the detection of concussion, its clinical features, assessment techniques and principles of safe to return to play.”

251. Finally, the Zurich protocol noted that there is no evidence that protective

equipment, including helmets, will prevent concussion. “Biomechanical studies have shown a reduction in impact forces the brain with the use of headgear and helmets, but these findings have not been translated to show a reduction in concussive incidence.”

### 9. 2009 - NFL Return to Play Protocol Updated

252. In 2009, the NFL medical committee on concussions, in conjunction with team doctors, outside medical experts, and the NFL Players Association, adopted stricter standards of return to play decisions after concussions.<sup>41</sup>

253. The 2009 standards provided that a player who suffers a concussion should not return to play or practice on the same day if he shows any signs or symptoms of a concussion. The statement mandates:

Once removed for the duration of the practice or game, the players should not be considered for return to football activities until he is fully asymptomatic, both at rest and after exertion, normal neurological examination, normal neuropsychological testing, and has been cleared to return by both his team physician and the independent neurological consultant. These independent consultants have been approved by both the NFL medical advisor and the medical director of the NFL Players Association.

A critical element of managing concussions is candid reporting by players of their symptoms following an injury. Accordingly players are to be encouraged to be candid with team medical Staffs and fully disclose any signs or symptoms that may be associated with a concussion.

254. The 2009 NFL standards stated that a player who suffers a concussion should not return to play or practice on the same day if any of the following symptoms are identified based on the initial medical evaluation of the player:

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<sup>41</sup> See Press Release, *NFL Adopts Stricter Statement on Return-to-Play Following Concussions* (Dec. 2, 2009), available at [http://www.nflevolution.com/wordpress/wp-content/uploads/2012/08/nfl\\_adopts\\_stricter\\_statement\\_on\\_return-to-play\\_following\\_concussions-508.pdf](http://www.nflevolution.com/wordpress/wp-content/uploads/2012/08/nfl_adopts_stricter_statement_on_return-to-play_following_concussions-508.pdf); see also NCAA10044551-62.

- Loss of consciousness.
- Confusion as evidenced by disorientation to person, time or place; Inability to respond appropriately to questions; Or inability to remember assignments or plays.
- Amnesia as evidenced by a gap in memory for events occurring just prior to the injury inability to learn and retain new information; Or a gap in memory for events that occurred after the injury.
- Abnormal neurological examination, such as abnormal pupillary response, persistent dizziness or Vertigo, or abnormal balance on sideline testing.
- New and persistent headache, particularly if accompanied by photo sensitivity, nausea, vomiting or Disney; and
- Any other persistent signs or symptoms of concussion.

#### **10. 2011 – NFL Standardized Concussion Assessment Protocol**

255. In 2011, the NFL implemented standardized sideline concussion tests to be administered to the injured athletes called the “NFL sideline concussion assessment protocol” and also a standardized baseline test.

256. The sideline protocol was apparently a result of a survey of team medical staffs and input from the players union and mirrors many aspects of the 2008 Zurich SCAT 2 protocol. Notably, the NFL protocol was developed by its head, neck, and spine committee, and specifically the return to play subcommittee which is chaired by Dr. Margot Putukian, who also consults to the NCAA.

257. First, players must take a baseline test prior to the season. Once the player is injured, the player must be evaluated with a standardized test “derived from the standardized concussion assessment tool 2 (SCAT 2) and represents a standardized method of evaluating players for concussion consistent with a reasonable, objective practice of the health care profession.” the protocol states that “if ANY significant abnormality is found, a conservative, ‘safety

first' approach should be adopted. An athlete suspected of sustaining a concussion is a 'No Go' and does not return to play in the same game or practice period" moreover, the comparison is being done in real time in the NFL using iPad apps.

258. The NFL explained: "the hope is that being able to compare the results of a baseline test and post injury tests side-by-side in real time will speed diagnosis and help doctors and trainers recognize when a player should be removed from a game period the league also plans to have independent neurological consultants on the sideline during each game to assist the team physician and diagnosing and treating players."

#### **11. 2011 - American College of Sports Medicine: Concussion (Mild TBI) and the Team Physician: An Updated Consensus Statement**

259. In 2011, the American College of sports medicine revised and updated its recommendations regarding mild traumatic brain injury from the 2006 edition.<sup>42</sup> Their 2011 update provided:

- No same day return to play.
- Neurological examination emphasizing cognitive function and balance.
- Role and limitations of neuropsychological testing.
- Utility of standardized baseline and post injury assessments.
- Importance of preseason planning.
- Acknowledged importance of cognitive rest.
- Acknowledged emerging technologies and their role in concussing research.
- Legislation and governing bodies regulations for concussion.

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<sup>42</sup> American College of Sports Medicine, *Concussion (Mild Traumatic Brain Injury) and the Team Physician: A Consensus Statement – 2011 Update*, MED. SCI. SPORTS & EXERCISE 2412, 2415 (2011).

260. In addition, the 2011 update provided:

It is essential that team physician understand:

- before resuming exercise, the athlete must be asymptomatic or return to baseline symptoms at rest and has no symptoms with cognitive effort.
  - Amnesia surrounding the event may be permanent.
- An athlete should no longer be taking medications that may mask or modify concussion symptoms.
- The athletes clinical neurological examination (cognitive, cranial nerve, and balance testing) have returned to baseline before resuming exercise.
- If performed, NP testing returns to at least baseline before resuming contact and collision activities.
- Progressive aerobic and resistance exercise challenge tests should be utilized before full RTP:
  - the process may take days, weeks, or months.
  - Recurrence of symptoms and or signs warrants additional rest in monitoring.
- Certain risk factors may affect RTP decision making.
- Additional factors may affect RTP decision making:
  - Risk taking behaviors.
  - Type of sport.

It is desirable that team physician:

- coordinate a team to implement sports specific progressive aerobic and resistance exercise challenge tests before full RTP.
- Facilitate academic accommodations for symptomatic student athletes.
- Discuss status of athletes with parents or guardians, caregivers, certified athletic trainers, coaches, school officials, and others within disclosure regulations.

261. The ACSM also published a 2012 update. Regarding “establishing a return to play

process,” the 2012 update states:

Establishing a process for returning an athlete to play is the essential first step in deciding when an injured or ill athlete may safely return to practice or competition. This process should include evaluation of the athlete's health status, participation risk, and extrinsic factors. The final RTP decision is made by the team physician.

It is essential that team physician:

- Understand the RTP process should be established during the offseason.
- Coordinated chain of command regarding decisions to return an injured or ill athlete to practice or competition.
- Evaluate the athlete's health status:
  - Medical factors including history, symptoms, signs, and additional tests.
  - Psychological factors, including readiness and coping mechanisms.
  - Functional testing to evaluate readiness to RTP.
  - Nature of the illness and injury including mechanism of injury, and Natural History, and known risks of participating after injury or illness.
- evaluate the athlete's participation risk:
  - Demands of the athlete's sport, including the position and competitive level of play.
  - Role of taping, bracing, or orthoses to protect the athlete.
  - Role of medical interventions that allow an athlete to play (e.g., analgesics or injections, inhalers, and intravenous fluids).
  - RTP may affect other athletes (e.g., bracing, casting, in disease transmission).
- understand extrinsic factors that may modify the acceptable level of risk (risk or gain ratio) for the individual athlete (e.g., pressure from parents, team and or coaches, conflicts of interest and other ethical considerations, fear of litigation, point in athlete's season, or career).
- Communicate the RTP process to players, families, certified athletic trainers, coaches, administrators, and other health care providers.

- Confirm a system for medical documentation is in place.
- Establish protocols within disclosure regulations for the release of information regarding an athlete's ability to return to practice or competition after an injury or illness.
- Understand certain sports have governing body rules and regulations regarding participation that affect the RTP decision (e.g., no knee brace in rugby and skin infection in wrestling).
- Understand federal, state, and local regulations and legislation related to returning an injured or ill athlete to practice or competition.

It is desirable that team physician:

- work with the athletic care network to educate athletes, parents, and coaches about the RTP process.
- Prepare a letter of understanding between the team physician and the administration that defines the authority, responsibilities, and RTP decisions.

## 12. 2013 – American Academy of Neurology Update

262. On March 18, 2013, the AAN replaced its 1997 practice parameters regarding sports concussions with a Summary of Evidence Based Guideline Update: Evaluation and Management of Concussion In Sport.<sup>43</sup>

263. The AAN update recommended the following diagnostic tool as a useful in identifying those within question: Post-Concussion Symptoms Scales or Graded Symptom Checklist; Standardized Assessment of Concussion; neuropsychological testing; Sensory Organization Test; and diagnostic measures used in combination. With respect to neuropsychological testing, the AAN stated that such testing:

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<sup>43</sup> American Academy of Neurology, *Summary of Evidence Based Guideline Update: Evaluation and Management of Concussion in Sports (2013)*, available at <http://neurology.org/content/early/2013/03/14/WNL.0b013e31828d57dd>.

...generally requires a neuropsychologist for accurate interpretation, although it may be administered by a non-neuropsychologist. It is likely that a neuropsychological testing of memory performance, reaction time, in speed of cognitive processing, regardless of whether administered by paper and pencil or computerized methods, is useful in identifying the presence of concussion.

264. The AAN Further stated that the above diagnostic tools may be used to identify athletes with “chronic neurobehavioral impairments.”

265. The AAN also provided respective recommendations, regarding: (1) participation counseling; (2), diagnosis, and management of suspected connections, (3) the management of diagnosis concussions (including acute management, RTP, environment).

266. First, with respect to preparticipation counseling, the AAN recommended that “school based professional too educated by experience licensed health care providers designated by their organization or institutions understand the risks of experiencing a connection so that they may provide accurate information to parents and athletes.”

267. Second, with respect to the management of diagnosed concussion, the AAN update address RTP and the risk of recurrent concussion, and provided:

(1) In order to diminish the risk of recurrent injury, individuals supervising athletes should be careful prohibit athlete with concussion from returning to play or practice or any contact risk activity until and licensed health care provider how to judge the concussion has resolved.

(2) In order to diminish the risk of recurrent injury, individuals supervising athletes should prohibit an athlete with concussion from returning to play or practice or any contact with activity the athlete is asymptomatic off medication.

268. The AAN also recommended “cognitive restructuring counseling” consisting of “education, reassurance, and reattribution of symptoms,” which has been shown to decrease the proportion of individuals with TBI who developed product post-concussion syndrome.

269. Finally, the AAN stated licensed health care professionals “council athletes with a history of multiple concussions and subjective persistent neurobehavioral impairment about the risk factors for developing permanent or lasting neurobehavioral or cognitive impairments.”

### 13. 2013 - Zurich II Protocol

270. The 4<sup>th</sup> International Conference on Concussion In Sport was held in Zurich in November of 2012, in an update of Vienna, fraud in Zurich protocols (“Zurich II”).<sup>44</sup>

271. With respect to pre-participation concussion management, Zurich II stated:

Recognizing the importance of a concussion history, and appreciating the fact that many athletes will not recognize all the concussions they may have suffered in the past, a detailed concussion history is of value. Such a history may preidentify athletes who fit into a high-risk category and provides an opportunity for the healthcare provider to educate the athlete in regard to the significant of concussive injury. A structured concussion history should include specific questions as to the previous symptoms of a concussion and length of recovery; not just the perceived number of past concussions. It is also worth noting that the dependence on the recall of concussive injuries by teammates or coaches has been demonstrated to be unreliable.

The clinical history should also include information about all previous head, face or cervical spine injuries as these may also have clinical relevance. It is worth emphasizing that in the setting of maxillofacial and cervical spine injuries, coexistent concussive injuries may be missed unless specifically assessed. Questions pertaining to disproportionate impact versus symptom severity matching may alert the clinician to a progressively increasing vulnerability to injury. As part of the clinical history, it is advised that details regarding protective equipment employed at the time of injury be sought, both for recent and remote injuries.

There is an additional and often unrecognized benefit of the preparticipation physical examination insofar as the evaluation allows for an educative opportunity with the player concerned as well as consideration of modification of playing behavior if required.

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<sup>44</sup> P. McCrory et al., *Consensus statement on concussion in sport: the 4<sup>th</sup> International Conference on Concussion in Sport held in Zurich 2012*, 47 BRIT. J. SPORTS MED. 250 (2013), available at <http://bjsm.bmj.com/content/47/5/250.full.pdf+html>. (“Zurich II Protocol”).

272. Zurich II also emphasized the necessity of concussion education before a concussion has occurred, stating:

As the ability to treat or reduce the effects of concussive injury after the event is minimal, education of athletes, colleagues and the general public is a mainstay of progress in this field. Athletes, referees, administrators, parents, coaches and healthcare providers must be educated regarding the detection of concussion, its clinical features, assessment techniques and principles of safe return to play.

273. In regard to “Same day RTP” after a concussion, Zurich II again reinforced:

It was unanimously agreed that no RTP on the day of concussive injury should occur. There are data demonstrating that at the collegiate and high school levels, athletes allowed to RTP on the same day may demonstrate NP deficits postinjury that may not be evident on the sidelines and are most likely to have delayed onset of symptoms.

274. With respect to return to play, Zurich II stated: “the cornerstone of concussion management is physical and cognitive rest until symptoms resolve and then a graded programme of exertion prior to medical clearance and return to play.”

275. Zurich II further stated:

Return to play protocol following a concussion follows a stepwise process...with this stepwise progression, the athlete should continue to proceed to the next level if asymptomatic at the current level. Generally, each step should take 24h so that an athlete would take approximately one week to proceed through the full rehabilitation protocol once they are asymptomatic at rest and with provocative exercise. If any postconcussion symptoms occur while in the stepwise programme, then the patient should drop back to the previous asymptomatic level and try to progress against after a further 24h period of rest has passed.

276. Zurich II included the following chart:

Graduated Return to Play Protocol:

<b>Rehabilitation stage</b>	<b>Functional exercise at each stage of rehabilitation</b>	<b>Objective of each stage</b>
1. No activity	Symptom limited physical and cognitive rest	Recovery
2. Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity <70% maximum permitted heart rate No resistance training	Increase HR
3. Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities	Add movement
4. Non-contact training drills	Progression to more complex training drills, eg, passing drills in football and ice hockey May start progressive resistance training	Exercise, coordination and cognitive load
5. Full-contact practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff

<b>Rehabilitation stage</b>	<b>Functional exercise at each stage of rehabilitation</b>	<b>Objective of each stage</b>
6. Return to play	Normal game play	

277. Zurich II explained that a single RTP paradigm should be used for all athletes and that formal neuropsychological testing should be used in high risk sports regardless of age or level of competition, explaining:

All athletes regardless of level of participation should be managed using the same treatment and return to play paradigm. The available resources and expertise in concussion evaluation are of more importance in determining management than the separation between elite and non-elite athlete management. Although formal NP testing may be beyond the resources of many sports of individuals, it is recommended that, in all organized high-risk sports, consideration be given to having this cognitive evaluation, regardless of the age or level of performance.

278. Zurich II also re-emphasized the importance of neuropsychological testing but

noted that it should not be used as a stand-alone tool or formed the sole basis of management decisions but rather as an aid to the clinical decision-making process. In addition, Zurich II recommended that “all athletes should have a clinical neurological assessment (including assessment of their cognitive function) as part of their overall management,” and that NP testing should ideally be performed by trained neuro psychologists who are in “the best physician to interpret NP tests by virtue of their background in training...” Zurich II recommended that all high risk sports, regardless of the age or level of performance, have formal baseline neuropsychological screening.

279. Zurich II also suggests that changes in the rules and rule enforcement are critical: “consideration of rule changes to reduce the head injury incidence or severity may be appropriate where a clear-cut mechanism is implicated in a particular sport.... It is important to note that rule enforcement may be a critical aspect of modifying injury risk in these settings, and referees playing important role in this regard.

280. In regards to sideline assessments, Zurich two requires “sufficient time for assessment... in some sports, this may require a rule change to allow an appropriate off field medical assessment to occur without affecting the flow of the game or unduly penalizing the injured players team.”

281. The documents set forth above constitute the consensus specs practices and the proper assessment and management of concussions for all physician, subspecialty, and allied health professionals, including athletic trainers and those responsible for the safety, well-being and treatment of athletes.

**E. THE POWER OF THE USOPC TO PROTECT AMERICAN ATHLETES ON A DOMESTIC LEVEL.**

## 1. The IOC Statutes

282. Chapter 4, Rule 27 of the Olympic Charter provides that in order to develop and promote the Olympic Movement the IOC may recognize National Olympic Committees who shall have the exclusive authority for the representation of their respective countries at the Olympic Games and at the regional, continental or international competitions patronized by the IOC. The NOCs are permitted to cooperate with governmental bodies, but they must always remain in compliance with the Olympic Charter.

283. Rule 27.2.7 states that one of the roles of the National Olympic Committees is to “encourage and support measures relating to the medical care and health of athletes.”

284. Further, the USOPC was and is required to comply with the Medical Code. As the governing authority for the sport of bobsled, under Chapter 4, Article 4.1.2, of the Medical Code, the IBSF had the power to exceed the baseline medical and safety standards and protocols if it was needed to protect the welfare of its athletes.

285. Despite its duties and authority provided by the IOC through the Olympic Charter and Medical Code, the USOPC has undertaken no changes to eliminate or minimize the head injuries suffered by bobsledders.

## 2. The USOPC Bylaws

286. The USOPC Bylaws recognize the USOPC’s role as the supreme authority over every aspect of the Olympic Movement within the United States, and the development and promotion of United States athletes.

287. Section 2.1 of the USOPC Bylaws states that the core principles of the USOPC include **promoting and protecting athletes’ rights, safety, and wellness**.

288. The USOPC maintains various “standing committees” which are intended to be

advisory to the USOPC, its board of directors and its CEO regarding the subject matter it has been assigned to oversee. One such committee is the “Athletes and NGB Engagement” committee.

289. Section 5.3.3 states that one of the responsibilities of the Athletes and NGB Engagement committee is “**athlete safety issues generally...**”

290. Section 14 establishes the Athletes’ Advisory Council and US Olympians and Paralympians Association. Upon information and belief, this association functions similar to a Player’s Union in American sports, serving as a link between the athletes and the USOPC to provide a chain of communication as well as advocacy for the best interest of athletes.

291. Despite its duties and authority provided under its own rules, the USOPC has undertaken no changes to eliminate or minimize the head injuries suffered by bobsledders.

### **3. The USOPC’s Sports Medicine Division**

292. United States athletes who train with the intent of performing at the Olympic Games are distributed throughout the country. In order to help meet high performance needs, the USOPC is required to implement multiple strategies to provide care and support to US Olympic and Paralympic athletes. The USOPC’s high performance goal is to provide stable and successful services in support of U.S. athletes. To achieve this, the USOPC has created a hybrid approach to provide efficient and effective sport performance services.

293. This hybrid approach includes three principal vectors of performance-related support. The first is through the USOPC’s own Olympic Trainings, the second is through national governing body driven high performance centers, and the third is USOPC affiliated medical centers. This hybrid approach creates the broadest plan of care for the athletes to meet their geographic and service-level needs.

294. The USOPC has three Olympic Training Centers strategically dispersed across the

country in Lake Placid, New York, Colorado Springs, Colorado, and Chula Vista, California. This disparity insures the USOPC is able to cover their athletes across the geography of the United States. The Olympic Training Centers offer athletes support housing, dining, training facilities, local transportation, recreational facilities, athlete services, and professional development programs. Typical sports performance services provided at the Olympic Training Centers also include sports medicine, exercise physiology, strength and conditioning, sports nutrition, sports psychology, and biomechanical analytics.

295. Many of these services are under the direct control of the “United States Olympic & Paralympic Committee’s Sports Medicine Division” that operates out of the USOPC’s three Olympic Training Centers.

296. The Sports Medicine Division is led by the managing director of sports medicine who reports to the executive administrative officer, and it is responsible for clinical services at the Olympic training centers, games, medical services, and the development and maintenance of a nationwide network of medical providers who provide services in support of the athletes.

297. According to the IOC, it is the responsibility of the sports medicine professionals to care for the health and welfare of Olympic athletes, treat and prevent injuries, conduct medical examinations, evaluate performance capacity, provide nutritional advice, prescribe and supervise training programs, and monitor substance abuse. The USOPC sports medicine division follows this pathway by recognizing that sports medicine is an interdisciplinary field concerned with the prevention, diagnosis, and treatment of injuries and illnesses associated with participation in sport, exercise, and other forms of physical activity.

298. The Sport Medicine Division as described by the USOPC’s website:

...is a world-class leader in leveraging research and technology to preserve athlete health, while giving Team USA a competitive edge. The USOPC sports medicine staff offers athletes a variety of

services, including clinical care, in-competition support, and extended resources via the National Medical Network. Regardless of the injury or illness, the USOPC is equipped to offer athletes patient-centered care through an integrated multi-disciplinary team of USOPC staff and medical partners.

299. The website continues:

Preventing injury and illness is a fundamental and desired outcome for the USOPC clinicians. The USOPC's sports medicine department has a robust sports medicine analytics program to identify opportunities to prevent injury and illness. There have been significant case studies showing decreased injury obtained through the analysis of how injuries occur. The USOPC measures 1,000 variables and its athlete population to identify trends, implement corrective actions and observed high performance outcomes.

300. The USOPC has made significant efforts to make its Sports Medicine Division the world leader in athlete wellness, safety, and injury prevention:

The Colorado Springs Olympic & Paralympic Training Center is home to the only one stop comprehensive sports medicine assessment facility in the United States. The center is operated by a fully integrated, multidisciplinary sports medicine staff- consisting of internationally renowned physicians, chiropractors, physical therapists, athletic trainers, massage therapists in sports analysts. It is equipped with state-of-the-art technology, including muscular skeletal ultrasound, X ray, extremity MRI, Lunar iDXA, cardiac ECG testing, spirometry, Biofire® Film Array testing.

301. Additional facility features include an open treatment area, physician exam rooms, sports optometry center, recovery center, hydrotherapy room and the active care center which houses a variety of rehabilitation machines-including an anti-gravity treadmill, 3D motion analysis system, pressure sensor treadmill and Pilates equipment. All USOPC athletes have access to this one stop comprehensive facility, and much of this equipment can also be found in the sports medicine clinics located in Lake Placid in Chula Vista.

302. Approximately 25,000 patient visits occur annually across the three USOPC sports medicine clinics. Each Olympic training centers sports medicine clinic is staffed with a

combination of athletic trainers, physical therapist, and doctors of chiropractic with specialty training in sports medicine. In addition to full-time clinical staff, local physicians of multiple specialties are utilized on a consulting physician basis for code management of select conditions. These include weekly rotations by family practice physicians and orthopedic surgeons affiliated with each clinic. Other specialties are called upon on an as needed basis, including orthopedic surgeons specializing in the spine, hand, foot and ankle, neurosurgeons, internal medicine specialists, endocrinologists, podiatrists, radiologists, gynecologists, pain management physicians, neuropsychologists, optometrists, dentists and sport dietitians.

303. Clinical staffing is further supported by a network of volunteer sports medicine clinicians on an as needed basis. The national volunteer program hosts athletic trainers, physical therapists, doctors of chiropractic with specialty training and sports medicine, medical doctors and doctors of osteopathy from multiple specialties.

304. In addition to the Sports Medicine Division's duties and responsibilities set forth by itself, it is also bound to those duties and responsibilities created by the IOC, the IOC Medical Commission, and the IOC Medical Code.

305. Further, under the Ted Stevens Act, the USOPC maintained the duty to "encourage and support research, development, and dissemination of information in the areas of sports medicine and sports safety."<sup>45</sup>

306. Despite its duties and power provided by its own Sports Medicine Division, and its duties and power provided by the IOC Medical Commission and Medical Code, the USOPC has never undertaken changes to eliminate or minimize the head injuries suffered by bobsledders, nor informed its athletes of such risk.

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<sup>45</sup> 36 U.S.C. § 220503(11).

**4. The USOPC Failed to Protect American Athletes by Failing to Provide Adequate Protocols to Protect Athletes from Concussions, TBI, and CTE**

**a) *The USOPC was in a Superior Position of Knowledge and Authority Regarding Concussions, TBI and CTE in Sport, and knew or should have known the consensus best practices.***

307. The USOPC knew or should have known that there had been discussions in the field of sports medicine and science of the intersection of brain concussion and athletic injuries, since 1966. Further, it knew or should have known that regulatory bodies and sports medicine and science organizations had been working to find consensus domestically within the United States on that intersection, since 1991 and that multiple best protocols had been published and available.

308. On November 2nd and 3rd, 2001, the IOC participated in the first international conference on concussion in sport in Vienna, which resulted in the publication of the Vienna protocol in early 2002.

309. The IOC documented its role in the First International Conference on Concussion in Sport on its website and acknowledged that the conference would result in a unanimous decision to develop a concussion protocol, global in scope:

The IOC, together with the International Football Federation (FIFA) and the international ice hockey federation (IIHF), agreed to create a working group which aim would be to prepare the ground for a consensus on how concussions are to be defined, diagnosed, and treated. This decision was taken during the international symposium on concussion in sport, held in Vienna, Austria on the 2nd and 3rd November 2001, and attended by 150 medical experts representing more than 15 sports organizations.

310. From 2001 onward, the IOC took an active, leading role in producing an international consensus on how to stop the pervasive problem of concussions in Sport. The IOC, along with FIFA and the IIHF, organized and hosted the 2nd, 3rd, and 4th International Conferences on Concussions in Sport. These Conferences were held with the goal of continuing to

progress the recognition, evaluation, and treatment of concussion in sport. Building off the work that had been done over the thirty-five years prior.

311. The USOPC knew or should have known of the IOC's efforts to create consensus of the intersection of brain concussion and athletic injuries and the best practices published in relation to those efforts.

312. Lastly, the NFL has been a subject of criticism and litigation within the United States since the 1990s for its failure to protect athletes from sports related concussion. For the last 30 years, the NFL has faced hundreds of lawsuits, the first being filed by Mark Weber in 1997, and much has come to light as a result of these lawsuits. Additionally, the NFL has, transparently, made changes to its organizational structure and policies and procedures to better protect athletes from sports related concussions, including the creation of their Mild Traumatic Brain Injury Committee, in 1994. The USOPC knew or should have known about the connection between the NFL and sports related concussions and all the studies published, rule changes within the game, and committees created in order to protect athletes within the sport.

**b) *The USOPC Failed to Modify its Own Policies and Procedures to Protect American Athletes and Failed to Adopt the Consensus Guidelines Promulgated Since 1991.***

313. The USOPC as the supreme authority over the Olympic Movement within the United States, is committed to the protection of the health of all American Athletes particularly through illness and injury prevention. It fulfills this commitment through its Sports Medicine Division, which it holds out to be one of the world leaders in Medical and Scientific Research and Sports medicine. It also fulfills this commitment by using its powers to make necessary modifications to the policies and procedures governing the Olympic Movement within the United States as a whole, and those policies and procedures, established by or governing the National Sports Federations, like the USABS.

314. Despite the USOPC's knowledge of documented consensus guidelines regarding the intersection of brain concussion and sports injuries since 1966, the USOPC still fails to implement brightline policies governing those federations, organizations, and persons in the Olympic Movement within the United States, that protect American athletes and are consistent with the internationally accepted guidelines.

315. Upon information and belief, at no point during Pauly's career was he ever provided with any training, education, knowledge, warning, or information about the effects of repeated concussive and sub-concussive impacts, shaking, rattling, G-Force exposure, or any other injuries he might have suffered as a result of the effects of "sled head."

316. Upon information and belief, at no point during Pauly's career was he ever provided with any medical evaluations related to concussive or sub-concussive impacts, or his suitability to continue participating in bobsled.

317. Upon information and belief, at no point during Pauly's career was he ever provided with any testing, monitoring, or education regarding the effects of sledding, when to seek medical treatment, limitations on the amount of practice or sledding to mitigate damage, and instead was encouraged to continue sledding.

318. Upon information and belief, to this day, the USOPC has not conducted research in an attempt to design training that minimizes the risk of athletes developing "sled head" like symptoms, traumatic brain injuries and or CTE.

319. Upon information and belief, to this day the USOPC does not warn, monitor, educate, or inform its athletes about the risks and dangers of "sled head", traumatic brain injury and/or CTE.

320. Further, it is clear that the USOPC has failed to require (much less explain) the

appropriate consensus guidelines. In comparison to the most recent Zurich II Protocol, created in 2013, and other guidelines in publications from that time period from 1966 to present, during Pauly's career, the USOPC failed to implement, and require those federations, organizations and persons in the Olympic Movement within the United States to implement, the following best practices of concussion management:

- A rule that a player may not return to play on the same day of a concussion;
- A mandatory 24 hours stepwise return to play guideline which accounts for the fact that today is needed between return to play steps and that typically a week of asymptomatic time is needed to resolve symptoms relating to a concussion prior to return to play;
- Formal baseline testing regardless of the age or level of performance of the players and neuropsychological testing to evaluate injury;
- Require that a player with a concussion or suspected concussion be evaluated, managed, and cleared by medical personnel with specific expertise in concussion diagnosis, treatment, in management; and
- rule changes to account for proper concussion management.

321. Consensus was reached in 2002 - and reinforced with each subsequent international consensus statement - that athlete suffering concussion symptoms should never be returned to play in the same game. In addition, consensus was also reached in 2002 that coaches, players, trainers, and physicians should follow a systematic return to play policy that includes systematic and graded return to exertion following injury, systematic reevaluation well maybe not maybe not rose of symptoms following each exertional state, and they collective understanding that the patient is completely asymptomatic at rest, asymptomatic with exertion, and has intact neurocognitive performance prior to final clearance. The best practice consensus guideline has continually been reinforced since the Vienna protocol.

322. During Pauly's career, the USOPC failed to implement or require the implementation of the consensus return to play guidelines set forth in the Vienna protocol - and

updated with the Prague, Zurich, and Zurich II protocols. For example, the Vienna protocol recommended specific return to play guidelines that continue to be followed today:

when a player shows ANY symptom or sign of a concussion:

1. the players should not be allowed to return to play in the current game or practice.
2. The player should not be left alone: and a regular monitoring for deterioration is essential.
3. The player should be medically evaluated after the injury.

Return to play must follow a medically supervised stepwise process. Players should never return to play while symptomatic. “when in doubt, sit them out!”

323. The necessity of a stepwise RTP protocol has been reinforced continuously and consistently since the intersection of brain concussions and sports injuries was first investigated in 1966. The USOPC failed to implement or require the implementation of the consensus return to play guidelines from any of those publications described in the paragraphs above.

324. The consensus statements provide the neuropsychological testing is one of the “cornerstones” of appropriate concussion management and contributes significantly to both understanding the injury and management of the individual. For example, the Vienna protocol provided that neuropsychological testing “has shown to be a value and continues to contribute significant information in concussion evaluation... It has been shown that cognitive recovery may precede or follow resolution of clinical symptoms, suggesting that the assessment of cognitive function should be an important component in any of return to play protocol.”

325. The importance of neuropsychological testing has been discussed since the 1990s, was reinforced with Zurich protocol, and with each subsequent International Consensus Statement. For example, the Zurich II protocol recommends that “all athletes should have a clinical neurological assessment (including assessment of their cognitive function) as part of their

overall management,” and that all high-risk sports, regardless of the age or level of performance, have formal baseline neuropsychological screening.

326. Upon information and belief, during Pauly’s career, the USOPC’s policies and procedures failed to mention, much less require, formal baseline testing or the use of neuropsychological testing to assess injury. Upon further information and belief, the USOPC failed to mention that in the absence of neuropsychological testing, a more conservative return to play approach may be appropriate.

327. The USOPC’s failure to require a formal baseline testing and to utilize neuropsychological testing is in contravention of consensus best practices. Without a formal baseline, it is very difficult for a physician to determine when a patient has recovered. And returning a player to play before they are fully recovered negligently puts them at risk for permanent brain injury.

328. The USOPC’s policies and procedures made no mention of the special considerations in concussion management that athletes be withheld from play until completely symptom free.

329. Lastly, since the 1990s, all consensus statements have provided that concussions be managed on site by medical personnel with specific expertise in concussion diagnosis, treatment, and management. The Zurich II protocol provides the following in regard to medical evaluation of when a player shows any feature of a concussion:

When a player shows ANY features of a concussion:

- A. Players should be evaluated by a physician or other licensed health care provider on site using standard Emergency Management principles in particular attention it should be given to exclude a cervical spine injury.
- B. The appropriate disposition of the player must be determined by the treating healthcare provider in a timely manner. If no health care provider is available, the players should be safely removed from practice or play and urgent referral to a physician arranged.

- C. Once the first eight issues are addressed, an assessment of the concussive injury should be made using the SCAT3 or other sideline assessment tools.
- D. The players should not be left alone following the injury and serial monitoring for deterioration is essential over the initial few hours following injury.
- E. A player with diagnosed concussion should not be allowed to return to play on the day of the injury.

330. Upon information and belief, during Pauly's career, the USOPC failed to implement or require the implementation better player be evaluated by a physician on the sideline and before returning to play.

331. Upon information and belief, during Pauly's career, the USOPC had also failed to implement or require the implementation of the SCAT3 sideline evaluation test, it does not indicate or require that a physician or other licensed health care provider administer the test.

332. The USOPC's failure to implement or require the implementation of a policy requiring administration of a standardized sideline evaluation tool such as the SCAT3 is in contravention of best practices, including Zurich II protocol, which requires that a "players should be evaluated by a physician or other licensed health care provider on site policies"

333. The USOPC's failure to implement or require the implementation of a policy that requires physician involvement and that a player with concussion symptoms be seen and cleared by medical personnel who are experienced in concussion is in contravention of best practices.

**c) *The USOPC Failed to use its Position within the Olympic Movement to Force Necessary Changes to Protect American Athletes on an International Level.***

334. The United States has unparalleled influence within the Olympic Movement. The United States has fielded more Olympians than any other country in history by a substantial margin, the United States has won the most medals in Olympics history (nearly 2000 more than

the next country), American Corporations are amongst the largest sources of sponsorship money for the IOC, American citizens are their largest source of viewership and television revenue, and the innovation by the USOPC and their national federations has done more to progress the sports within the Olympic Movement than any other Country.

335. The United States is the IOC's largest export and its greatest resource. The United States' position of influence within the Olympic Movement is reflected in the distribution percentage of IOC revenue it receives, approximately 20% from the Olympic Partner programme and 12.75% from broadcast. The other National Olympic Committees shared 20% of the sponsorship revenue and received zero percentage from broadcast revenue.

336. In addition to its failures in protecting American athletes on a domestic level, the USOPC failed in using its power and influence within the Olympic Movement to create change within the Olympic Medical Code and policies and procedures within the individual sports necessary to be in concert with the consensus best practices. If necessary, the USOPC could have pulled all of their athletes from sledding competition until change was made.

**F. THE POWER OF THE OF THE USABS TO PROTECT AMERICAN ATHLETES WITHIN THE SPORT OF BOBSLED ON A DOMESTIC LEVEL**

**1. The IOC Charter**

337. Chapter 4, Rule 32 of the Olympic Charter provides that to develop and promote the Olympic Movement, NOCs, such as the USOPC, must be composed of national federations affiliated to the IFs governing sports included in the programme of the Olympic games. National federations, as defined by the IOC, are also referred to as NGBs by some entities within the Olympic Movement like the USOPC and USABS and should be considered interchangeable.

338. Rule 33 of the Olympic Charter provides that national federations (NGBs) must

exercise a specific and real sports activity, be affiliated to an IF recognized by the IOC and conduct its activities in compliance with both the Olympic Charter and the rules of its IF.

339. Further, the USABS was and is required to comply with the Medical Code. As the governing authority for the sport of bobsled on a domestic level within the United States, under Chapter 4, Article 4.1.2, of the Medical Code, the USABS had the power to exceed the baseline medical and safety standards and protocols if it was needed to protect the welfare of its athletes.

340. Despite its duties and authority provided by the IOC through the Olympic Charter, the USABS has undertaken no changes to eliminate or minimize the head injuries suffered by bobsledders.

## **2. IBSF Statutes**

341. Section 5 of the IBSF Statutes recognize that the IBSF may recognize organizations concerned with bobsled or skeleton that have their headquarters established in the country they represent and seek to promote and develop the sports at all levels within their respective country.

342. Section 7 of the IBSF Statutes states that any application to become a member of the IBSF must include a formal agreement to be subject to the IBSF statutes, the IBSF international rules, IBSF anti-doping rules, the IBSF code of ethics and all relevant IBSF codes of conduct.

343. The dissemination of relevant medical and scientific information to athletes and the taking of meaningful steps to protect athletes from harm are two predominant duties established by the IBSF's statutes.

344. Further, nothing within the plain language of the IBSF statutes provides that member organizations (NGBs) like the USABS do not have the power to enforce their own return to play protocols, limitations on training runs, etc., within their respective countries.

345. Despite its duties and powers provided under the statutes of the IBSF, the USABS has undertaken no changes to eliminate or minimize the head injuries suffered by bobsledders.

### **3. The USOPC Bylaws**

346. The USABS has received recognition as the NGB for the sports of bobsled and skeleton within the United States, by the USOPC, pursuant to Section 8 of the USOPC's bylaws.

347. Section 8.4.1 provides that in order to be recognized and certified, each NGB is required to and must satisfy, amongst other things, fulfillment of all responsibilities as an NGB as set forth in the Act<sup>46</sup>; adopt and maintain an athletes advisory council; adopt and enforce ethics policies and procedures; maintain and execute on a strategic plan that is capable of supporting athletes in achieving sustained competitive excellence, and in growing the sports; and satisfy such other requirements as are set forth by the corporation.

348. Further, as a member NGB of the USOPC, the USABS had a duty to further and support the Mission and Core Principles of the USOPC, including the promotion and protection of athletes' rights, safety, and wellness.

349. Despite its duties and powers provided under the statutes of the IBSF, the USABS has undertaken no changes to eliminate or minimize the head injuries suffered by bobsledders.

### **4. The USABS Bylaws**

350. The USABS bylaws recognize the USABS as the national governing authority over every aspect of bobsled and skeleton within the United States. Section 4.1 states that their governance must be autonomous by independently determining and controlling all matters central to such governance, by not delegating any of that determination or control, and by being free from

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<sup>46</sup> Referencing the duties and responsibilities set forth for NGBs under the Ted Stevens Act.

outside restraint.

351. Section 3.1 states that the mission of the USABS shall be to enable United States bobsled and skeleton athletes to achieve sustained competitive excellence in international and Olympic competitions and to promote and grow the sports within the United States.

352. Section 15.3 establishes the requirements for an amateur sports organization or person seeking to sanction an international or national bobsled competition within the United States. Such organization or person must be able to demonstrate that proper medical supervision is provided for athletes who will participate in the competition, and that proper safety precautions have been taken to ensure the personal welfare and safety of athletes. While the USABS bylaws do not expressly place the same duties on the USABS for their own events - it is fair to assume that the USABS would not hold amateur organizations to a higher standard for the protection of its athletes than it would hold on itself.

353. Lastly, Section 4.1(n) states that the USABS shall “perform all other obligations and duties imposed by the [Ted Stevens] Act and by the USOPC on an NGB.” The Ted Stevens Act, requires that each NGB, for the sport it governs, “encourage and support research, development, and dissemination of information in the areas of sports medicine and sports safety.”<sup>17</sup>

354. Despite its duties and power provided by its own bylaws, and its duties and power provided by the Ted Stevens Act, the USABS has never undertaken changes to eliminate or minimize the head injuries suffered by bobsledders, nor informed its athletes of such risk.

**5. The USABS Failed to Protect American Athletes by Failing to Provide Adequate Protocols to Protect Athletes from Concussions, TBI, and CTE**

**a) *The USABS was in a Superior Position of Knowledge and Authority Regarding Concussions, TBI and CTE in Sport, and knew or should have known the consensus best***

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<sup>17</sup> 36 U.S.C. § 220524(9).

*practices.*

355. The USABS knew or should have known that there had been discussions in the field of sports medicine and science of the intersection of brain concussion and athletic injuries, since 1966. Further, it knew or should have known that regulatory bodies and sports medicine and science organizations had been working to find consensus domestically within the United States on that intersection, since 1991 and that multiple best protocols had been published and available.

356. On November 2nd and 3rd, 2001, the IOC participated in the first international conference on concussion in sport in Vienna, which resulted in the publication of the Vienna protocol in early 2002.

357. The IOC documented its role in the First International Conference on Concussion in Sport on its website and acknowledged that the conference would result in a unanimous decision to develop a concussion protocol, global in scope:

The IOC, together with the International Football Federation (FIFA) and the international ice hockey federation (IIHF), agreed to create a working group which aim would be to prepare the ground for a consensus on how concussions are to be defined, diagnosed, and treated. This decision was taken during the international symposium on concussion in sport, held in Vienna, Austria on the 2nd and 3rd November 2001, and attended by 150 medical experts representing more than 15 sports organizations.

358. From 2001 onward, the IOC took an active, leading role in producing an international consensus on how to stop the pervasive problem of concussions in Sport. The IOC, along with FIFA and the IIHF, organized and hosted the 2nd, 3rd, and 4th International Conferences on Concussions in Sport. These Conferences were held with the goal of continuing to progress the recognition, evaluation, and treatment of concussion in sport. Building off the work that had been done over the thirty-five years prior.

359. The USABS knew or should have known of the IOC's efforts to create consensus

of the intersection of brain concussion and athletic injuries and the best practices published in relation to those efforts.

360. Lastly, the NFL has been a subject of criticism and litigation within the United States since the 1990s for its failure to protect athletes from sports related concussion. For the last 30 years, the NFL has faced hundreds of lawsuits, the first being filed by Mark Weber in 1997, and much has come to light as a result of these lawsuits. Additionally, the NFL has, transparently, made changes to its organizational structure and policies and procedures to better protect athletes from sports related concussions, including the creation of their Mild Traumatic Brain Injury Committee, in 1994. The USABS knew or should have known about the connection between the NFL and sports related concussions and all the studies published, rule changes within the game, and committees created in order to protect athletes within the sport.

**b) *The USABS Failed to Modify its Own Policies and Procedures to Protect American Athletes and Failed to Adopt the Consensus Guidelines Promulgated Since 1991.***

361. The USABS as the supreme authority over the sport of bobsled within the United States, is committed to the protection of the health of all American athletes particularly through illness and injury prevention. It fulfills this commitment by using its powers to make necessary modifications to the policies and procedures governing the sport of bobsled within the United States.

362. Despite the USABS's knowledge of documented consensus guidelines regarding the intersection of brain concussion and sports injuries since 1966, the USABS still fails to implement brightline policies within the sport that protect American athletes and are consistent with the internationally accepted guidelines.

363. Upon information and belief, at no point during Pauly's career was he ever

provided with any training, education, knowledge, warning, or information about the effects of repeated concussive and sub-concussive impacts, shaking, rattling, G-Force exposure, or any other injuries he might have suffered as a result of the effects of “sled head”.

364. Upon information and belief, at no point during Pauly’s career was he ever provided with any medical evaluations related to concussive or sub-concussive impacts, or his suitability to continue participating in bobsled.

365. Upon information and belief, at no point during Pauly’s career was he ever provided with any testing, monitoring, or education regarding the effects of sledding, when to seek medical treatment, limitations on the amount of practice or sledding to mitigate damage, and instead was encouraged to continue sledding.

366. Upon information and belief, to this day, the USABS has not conducted research in an attempt to design equipment - either for personal protection or the bobsleds themselves - that minimizes the risk of athletes developing “sled head” like symptoms, traumatic brain injuries and or CTE.

367. Upon information and belief, to this day the USABS does not warn, monitor, educate, or inform its athletes about the risks and dangers of “sled head”, traumatic brain injury and/or CTE.

368. Further, it is clear that the USABS has failed to require (much less explain) the appropriate consensus guidelines. In comparison to the most recent Zurich II Protocol, created in 2013, and other guidelines in publications from that time period from 1966 to present, the USABS has failed to implement the following best practices of concussion management:

- A rule that a player may not return to play on the same day of a concussion;
- A mandatory 24 hours stepwise return to play guideline which accounts for the fact that today is needed between return to play steps and that typically a week of asymptomatic time is needed to resolve symptoms relating to a

concussion prior to return to play;

- Formal baseline testing regardless of the age or level of performance of the players and neuropsychological testing to evaluate injury;
- Require that a player with a concussion or suspected concussion be evaluated, managed, and cleared by medical personnel with specific expertise in concussion diagnosis, treatment, in management; and,
- rule changes to account for proper concussion management.

369. Consensus was reached in 2002 - and reinforced with each subsequent international consensus statement - that athletes suffering concussion symptoms should never be RTP in the same game. In addition, consensus was also reached in 2002 that coaches, players, trainers, and physicians should follow a systematic RTP policy that includes systematic and graded return to exertion following injury, systematic reevaluation well maybe not maybe not rose of symptoms following each exertional state, and they collective understanding that the patient is completely asymptomatic at rest, asymptomatic with exertion, and has intact neurocognitive performance prior to final clearance. The best practice consensus guideline has continually been reinforced since the Vienna protocol.

370. Upon information and belief, during Pauly's career, the USABS has failed to implement or require the implementation of the consensus RTP guidelines set forth in the Vienna protocol - and updated with the Prague, Zurich, and Zurich II protocols. For example, the Vienna protocol recommended specific RTP guidelines that continue to be followed today:

when a player shows ANY symptom or sign of a concussion:

4. the players should not be allowed to return to play in the current game or practice.
5. The player should not be left alone; and a regular monitoring for deterioration is essential.
6. The player should be medically evaluated after the injury.

Return to play must follow a medically supervised stepwise process. Players should never return to play while symptomatic. “when in doubt, sit them out!”

371. The necessity of a stepwise return to play protocol has been reinforced continuously and consistently since the intersection of brain concussions and sports injuries was first investigated in 1966. The USABS has failed to implement or require the implementation of the consensus return to play guidelines from any of those publications described in the paragraphs above.

372. The consensus statements provide the neuropsychological testing is one of the “cornerstones” of appropriate concussion management and contributes significantly to both understanding the injury and management of the individual. For example, the Vienna protocol provided that neuropsychological testing “has shown to be a value and continues to contribute significant information in concussion evaluation... It has been shown that cognitive recovery may precede or follow resolution of clinical symptoms, suggesting that the assessment of cognitive function should be an important component in any of return to play protocol.”

373. The importance of neuropsychological testing has been discussed since the 1990s, was reinforced what Zurich protocol, and with each subsequent International Consensus Statement. For example, the Zurich II protocol recommends that “all athletes should have a clinical neurological assessment (including assessment of their cognitive function) as part of their overall management,” and that all high-risk sports, regardless of the age or level of performance, have formal baseline neuropsychological screening.

374. Upon information and belief, during Pauly’s career, the USABS’s policies and procedures failed to mention, much less require, formal baseline testing or the use of neuropsychological testing to assess injury. Upon further information and belief, the USABS failed to mention that in the absence of neuropsychological testing, a more conservative return to play

approach may be appropriate.

375. The USABS's failure to require a formal baseline testing and to utilize neuropsychological testing is in contravention of consensus best practices. Without a formal baseline, it is very difficult for a physician to determine when a patient has recovered. And returning a player to play before they are fully recovered negligently puts them at risk for permanent brain injury.

376. The USABS's policies and procedures made no mention of the special considerations in concussion management that athletes be withheld from play until completely symptom free.

377. Lastly, since the 1990s, all consensus statements have provided that concussions be managed on site by medical personnel with specific expertise in concussion diagnosis, treatment, and management. The Zurich II protocol provides the following in regard to medical evaluation of when a player shows any feature of a concussion:

When a player shows ANY features of a concussion:

- F. Players should be evaluated by a physician or other licensed health care provider on site using standard Emergency Management principles in particular attention it should be given to exclude a cervical spine injury.
- G. The appropriate disposition of the player must be determined by the treating healthcare provider in a timely manner. If no health care provider is available, the players should be safely removed from practice or play and urgent referral to a physician arranged.
- H. Once the first eight issues are addressed, an assessment of the concussive injury should be made using the SCAT3 or other sideline assessment tools.
- I. The players should not be left alone following the injury and serial monitoring for deterioration is essential over the initial few hours following injury.
- J. A player with diagnosed concussion should not be allowed to return to play on the day of the injury.

378. Upon information and belief, during Pauly's career, the USABS failed to

implement or require the implementation better player be evaluated by a physician on the sideline and before returning to play.

379. Upon information and belief, the USABS had also failed to implement or require the implementation of the SCAT3 sideline evaluation test, it does not indicate or require that a physician or other licensed health care provider administer the test.

380. The USABS's failure to implement or require the implementation of a policy requiring administration of a standardized sideline evaluation tool such as the SCAT3 is in contravention of best practices, including Zurich II protocol, which requires that a "players should be evaluated by a physician or other licensed health care provider on site policies"

381. The USABS's failure to implement or require the implementation of a policy that requires physician involvement and that a player with concussion symptoms be seen and cleared by medical personnel who are experienced in concussion is in contravention of best practices.

**c) *The USABS Failed to use its Position within the Sport of Bobsled to Force Necessary Changes to Protect American Athletes.***

382. The United States has significant influence within the sport of bobsled. The United States is one of only a few countries making a significant financial investment to push innovation and progress within the sport. While there might be other countries who have more success on the track, there are few that possess more importance off the track than the United States.

383. In addition to its failures in protecting American athletes on a domestic level, the USABS failed in using its power and influence within the sport to create change to the policies and procedures necessary to provide more protection to its athletes and in concert with the consensus best practices. If necessary, the USABS could have made the affirmative decision to change the aspects of the sport within its control (like Team Canada did in 2014) or have pulled all of their

athletes from sledding competition until change was made.

**G. THE POWER OF THE IOC TO PROTECT AMERICAN ATHLETES ON AN INTERNATIONAL LEVEL.**

**1. The IOC's Statutes**

384. Each year the IOC publishes updates and maintains a current version of the "Olympic Charter." The Charter was created to provide a set of rules and guidelines for the governing of the Olympic Movement.

385. Chapter 1, Rule 1 of the Olympic Charter establishes the IOC's supreme authority and control over every aspect of the Olympics and the Olympic Movement at every level.<sup>48</sup> Article 1 further establishes that the Olympic Movement will be comprised of three main constituents of the Olympic Movement 1) the IOC, 2) the International Sports Federations ("IFs"), and 3) the National Olympic Committees ("NOCs"). In addition to the three primary constituents, the athletes, the judges, referees, coaches and other sports officials and technicians as well as others are considered part of the Olympic Movement.

386. Under Article 1 any person or organization belonging in any capacity whatsoever to the Olympic Movement is bound by the provisions of the Olympic Charter and shall abide by the decision of the IOC. Rule 2 states the mission and role of the IOC within the Olympic Movement includes encouraging and supporting measures relating to the medical care and health of athletes.

387. Chapter 2, Rule 21 establishes the IOC may create commissions for the purpose of advising the Session, the IOC Executive Board or the President as the case may be. Since 1961, there has been a Byelaw to Rule 21 establishing the IOC Medical and Scientific Commission.

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<sup>48</sup>[https://stillmed.olympics.com/media/Document%20Library/OlympicOrg/General/EN-Olympic-Charter.pdf?\\_ga=2.209058898.115654283.1629210630-1193300750.1629210630](https://stillmed.olympics.com/media/Document%20Library/OlympicOrg/General/EN-Olympic-Charter.pdf?_ga=2.209058898.115654283.1629210630-1193300750.1629210630)

388. The safety and wellbeing of athletes is a fundamental principal to the Olympic Movement and the Olympic Charter. The duty to uphold this principal is placed on the IOC via Rule 2, the International Federations via Rule 26, and the National Olympic Committees via Rule 27.

389. Despite its duties and supreme authority provided under its own Charter, the IOC has never undertaken changes to eliminate or minimize the head injuries suffered by bobsledders.

## **2. The IOC Medical Commission and the IOC Medical Code**

390. Chapter 2, Rule 21 establishes the IOC may create commissions for the purpose of advising the Session, the IOC Executive Board, or the President as the case may be. Since 1961, there has been a Byelaw to Rule 21 establishing the IOC Medical and Scientific Commission.

391. Under Bylaw 7 to Rule 21, the IOC Medical Commission (the “Commission”) had the duty to elaborate guidelines relating to the medical care and health of athletes.

392. As stated on the Commission’s page of the IOC’s website, the Commission considers itself to have the following key responsibilities:

1. Supervising the provision of health care and open control services during the Olympic and youth Olympic Games.
2. Delivering evidence-based education to athletes and their entourage.
3. Developing and promoting the adoption of ethical standards in sports science and medicine.
4. Exploring the potential of new technologies to optimize athletes’ health and preventing their potential damaging effects.
5. Promotion of health and physical activity for the whole population.

393. The Commission also states the following objectives it wishes to achieve by having these responsibilities:

1. Provisional excellent health care and doping control at Olympic Games to athletes

and their entourage.

2. Better informed and educated athletes in entourage leading to effective prevention of injury and illness, better health care and faster recovery.
3. Good medical practice to the highest ethical standards by individuals and organizations responsible for athletes' health.
4. Effective new technologies implemented in healthcare and anti-doping.
5. Increase physical activity and improve health in the general population.

394. The Commission continues by providing key strategic priority actions will be taken to achieve these Objectives:

1. Olympic Games knowledge management communication with OCOG's including pre-games visits and game time monitoring.
2. Increase research, and surveillance, maximize relevance and **dissemination of consensus statements and publications**, focused and effective conferences/meetings and courses.
3. **Adoption and implementation of Olympic movement medical code by all stakeholders for good medical practice and to respect medical standards. Safeguard athletes.**
4. Establish research expert groups to explore and **disseminate new technologies in healthcare** and anti-doping, and identify potential dangers in harms.
5. Legacy, including increased physical activity and health in the general population from the Games through Global Active Cities Initiative (GACI) and improved sports and exercise medicine.

395. In October 2005, the IOC Executive Board adopted a medical code proposed by the Commission. This code is intended to apply to the Olympic Games, the various competitions held by the International Federations, and any other competition in which the IOC grants its patronage or support or otherwise fall within the Olympic Movement.

396. The dissemination of relevant medical and scientific information to athletes and the taking of meaningful steps to protect athletes from harm are two predominant duties established by the IOC Medical Code (the "Medical Code").

397. The Medical Code's Preamble states:

1. The Olympic Movement, to accomplish its mission, encourages all stakeholders **to take measures to ensure that sport is practiced to minimize harm to the health of athletes** and with respect for fair play and sports ethics. To that end, it encourages **those measures necessary to protect the health of participants by minimizing the risks of physical injury, illness and psychological harm**. It also encourages measures that will protect athletes in the relationships with physicians and other health care providers.
2. This principle objective of protecting the health of athletes necessitates ongoing education based on the ethical values of sport and the recognition of each individual's responsibility to protect their health and the health of others.
3. The Olympic medic movement medical code recognizes the primacy of the athlete's self, mandates best practice in the provision of care to the athletes, and the protection of their rights as patients. That reflects the universal principles enshrined in international codes of medical ethics. It supports and encourages the adoption of specific measures to achieve those objectives, recognizes the principles of Fair play and sports ethics and embodies the tenets of the world anti-doping code.
4. The code applies at the Olympic Games and has potential application to all sport, weather and training or in competition, including championships of the international federations and competitions to which the International Olympic Committee grants its patriot patronage or support.

398. Chapter 1, Article 1.1.1 of the Medical Code states that "athletes enjoy the same fundamental rights as all patients in their relationships with physicians and health care providers, in particular, respect for: their human dignity; **their physical and psychological well-being; the protection of their health and safety**; their self-determination; and their rights to privacy and confidentiality."

399. Article 1.2.1 of the Medical Code states that "**athletes must be informed**, in a clear and appropriate way, regarding their health status and any specific diagnosis; preventive measures; proposed medical interventions, together with the risks and benefits of each intervention; alternatives to proposed interventions, including the consequences of non-treatment for their health and for their return to sports practice; the progress of treatment and rehabilitation measures

and their ultimate prognosis.”

400. Article 1.6.1 of the Medical Code states that “the same ethical principles that apply to the practice of medicine apply within the practice of sports medicine. The principal duties of physicians and other health care providers in sport settings include: **doing no harm**; and making the health of athletes a priority.”

401. Medical Code Article 1.6.3 states “athletes health care providers must act in accordance with the latest medical knowledge. Any health care provider should, when possible, reflect evidence-based medicine. They must refuse to provide any intervention that is not medically indicated, even following the request of the athletes, their entourage, or another health care provider. Health care providers must refuse to falsify medical certificates concerning the fitness of an athlete to participate in training or competition.”

402. Medical Code Article 1.6.4 states: “when due to their medical condition, the health or well-being of an athlete is at an increased risk, **health care providers must inform them accordingly**. When the risk is severe, they must strongly discourage the athlete from continuing training or competition including, if necessary, by providing a written certificate of unfitness to practice.”

403. Chapter 2, Article 2.1.2 of the Medical Code states: “in each sports discipline, **minimal safety requirements must be defined and applied with a view to protecting the health of the participants** and the public during training and competition...”

404. Medical Code Article 2.1.4 states: “for the for the benefit of all concerned, **measures to safeguard the health of athletes in to minimize the risks of physical injury and psychological harm must be publicized**.”

405. Article 2.1.6 of the Medical Code states: “**advances in sports medicine and sports**

science should not be withheld, and should be publicized and widely disseminated.”

406. The Medical Code is intended to establish the baseline medical standards and protocols that members of the Olympic Movement. However, given that it is a baseline, the standards of care can always be increased as is provided by Chapter 4, Article 4.1.2: “the signatories are free to grant wider protection to their athletes.”

407. Despite its duties and power provided by its Medical Commission and Medical Code, the IOC has never undertaken changes to eliminate or minimize the of head injuries suffered by bobsledders.

**3. The IOC Failed to Protect American Athletes by Failing to Provide Adequate Protocols to Protect Athletes From Concussions, TBI, and CTE.**

**a) *The IOC was in a Superior Position of Knowledge and Authority Regarding Concussions, TBI and CTE in Sport, and knew or should have known the consensus best practices.***

408. The IOC, as the leader of the Olympic movement and the sport sector at large, is committed to the protection of athlete’s health particularly through illness and injury prevention. It fulfills this commitment through its Medical Committee, that is considered to be one of the world leaders in Medical and Scientific Research and Sports Medicine.

409. The IOC knew that there had been discussions in the field of sports medicine and science of the intersection of brain concussion and athletic injuries, since 1966. Further, it knew that regulatory bodies and sports medicine and science organizations had been working to find consensus domestically within the United States on that intersection, since 1991.

410. On November 2nd and 3rd, 2001, the IOC participated in the first international conference on concussion in sport in Vienna, which resulted in the publication of the Vienna protocol in early 2002.

411. The IOC documented its role in the First International Conference on Concussion

in Sport on its website and acknowledged that the conference would result in a unanimous decision to develop a concussion protocol, global in scope:

The IOC, together with the International Football Federation (FIFA) and the international ice hockey federation (IIHF), agreed to create a working group which aim would be to prepare the ground for a consensus on how concussions are to be defined, diagnosed, and treated. This decision was taken during the international symposium on concussion in sport, held in Vienna, Austria on the 2nd and 3rd November 2001, and attended by 150 medical experts representing more than 15 sports organizations.

412. From 2001 onward, the IOC took an active, leading role in producing an international consensus on how to stop the pervasive problem of concussions in sport. The IOC understood its position as a world leader in sports science and research and sports medicine, and its self-imposed duty to encourage and support measures relating to the medical care and health of athlete across all international sports.

413. The IOC, along with FIFA and the IIHF, organized and hosted the 2nd, 3rd, and 4th International Conferences on Concussions in Sport. These Conferences were held with the goal of continuing to progress the recognition, evaluation, and treatment of concussion in sport. Building off the work that had been done over the thirty-five years prior.

414. The IOC's efforts to lead this progress remain to this date. In October of 2022, the IOC is set to organize and host the 6<sup>th</sup> International Conference on Concussion in Sport along with the FIFA, the IIHF, the International Rugby Board, the Federation Internationale de l'Automobile, and the International Federation for Equestrian Sports, in Amsterdam.

**b) *The IOC Failed to Adopt the Consensus Guidelines Promulgated Since 1991 Throughout the Entire Olympic Movement.***

415. Despite the IOC's knowledge of documented consensus guidelines regarding the intersection of brain concussion and sports injuries since 1966, and the IOC's documented

attendance at International Conferences on Concussion in Sport for nearly 21 years - the IOC still fails to adopt the internationally accepted guidelines and it continues to fail in disseminating its knowledge.

416. There have been dozens of articles written in the past seven years that shine a spotlight on the IOC's lack of response to the consensus protocol. These articles have discussed the IOC's inaction in the sports of bobsled<sup>49</sup>, skiing<sup>50</sup>, soccer<sup>51</sup>, and more.

417. It is clear that during Pauly's career the IOC failed to require (much less explain) the appropriate consensus guidelines. In comparison to the most recent Zurich II Protocol, created in 2013, and other guidelines in publications from that time period from 1966 to present, the Defendants have failed to implement, and require those within the Olympic Movement to implement, the following best practices of concussion management:

- A rule that a player may not return to play on the same day of a concussion;
- A mandatory 24 hours stepwise return to play guideline which accounts for the fact that today is needed between return to play steps and that typically a week of asymptomatic time is needed to resolve symptoms relating to a concussion prior to return to play;
- Formal baseline testing regardless of the age or level of performance of the players and neuropsychological testing to evaluate injury;
- Require that a player with a concussion or suspected concussion be evaluated, managed, and cleared by medical personnel with specific expertise in concussion diagnosis, treatment, in management; and,
- rule changes to account for proper concussion management.

418. Consensus was reached in 2002 - and reinforced with each subsequent international

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<sup>49</sup> <https://www.nytimes.com/2020/11/20/sports/olympics/skeleton-concussion-bobsled-head-injuries.html>

<sup>50</sup> <https://www.usatoday.com/story/sports/olympics/2018/02/18/hard-falls-at-olympics-but-no-hard-rules-about-concussions/110574882/>

<sup>51</sup> <https://www.forbes.com/sites/dandiamond/2014/07/13/another-world-cup-match-another-ugly-concussion-if-fifa-cared-heres-how-theyd-fix-this/?sh=28ba9137430c>

consensus statement - that athletes suffering concussion symptoms should never be returned to play in the same game. In addition, consensus was also reached in 2002 that coaches, players, trainers, and physicians should follow a systematic return to play policy that includes systematic and graded return to exertion following injury, systematic reevaluation well maybe not maybe not rose of symptoms following each exertional state, and they collective understanding that the patient is completely asymptomatic at rest, asymptomatic with exertion, and has intact neurocognitive performance prior to final clearance. The best practice consensus guideline has continually been reinforced since the Vienna protocol.

419. During Pauly's career the IOC has failed to implement or require the implementation of the consensus return to play guidelines set forth in the Vienna protocol - and updated with the Prague, Zurich, and Zurich II protocols. For example, the Vienna protocol recommended specific return to play guidelines that continue to be followed today:

when a player shows ANY symptom or sign of a concussion:

7. the players should not be allowed to return to play in the current game or practice.
8. The player should not be left alone: and a regular monitoring for deterioration is essential.
9. The player should be medically evaluated after the injury.

Return to play must follow a medically supervised stepwise process. Players should never return to play while symptomatic. "win in doubt, sit them out!"

420. The necessity of a stepwise RTP protocol has been reinforced continuously and consistently since the intersection of brain concussions and sports injuries was first investigated in 1966. During Pauly's career, the IOC has failed to implement or require the implementation of the consensus RTP guidelines from any of those publications.

421. The international consensus statements provide the neuropsychological testing is

one of the “cornerstones” of appropriate concussion management and contributes significantly to both understanding the injury and management of the individual. For example, the inner protocol provided that neuropsychological testing “has shown to be a value and continues to contribute significant information in concussion evaluation... It has been shown that cognitive recovery may precede or follow resolution of clinical symptoms, suggesting that the assessment of cognitive function should be an important component in any of return to play protocol.”

422. The importance of neuropsychological testing has been discussed since the 1990s, was reinforced what Zurich protocol, and with each subsequent International Consensus Statement. For example, the Zurich II protocol recommends that “all athletes should have a clinical neurological assessment (including assessment of their cognitive function) as part of their overall management,” and that all high-risk sports, regardless of the age or level of performance, have formal baseline neuropsychological screening.

423. The IOC's website fails to mention, much less requires, formal baseline testing or the use of neuropsychological testing to assess injury. Further, the IOC fails to mention that in the absence of neuropsychological testing, a more conservative return to play approach may be appropriate.

424. The IOC's failure to require a formal baseline testing and to utilize neuropsychological testing is in contravention of consensus best practices. Without a formal baseline, it is very difficult for a physician to determine when a patient has recovered. And returning a player to play before they are fully recovered negligently puts them at risk for permanent brain injury.

425. The IOC's website makes no mention of the special considerations in concussion management that athletes not be RTP until completely symptom free.

426. Lastly, since the 1990s, all consensus statements have provided that concussions be managed on site by medical personnel with specific expertise in concussion diagnosis, treatment,

and management. The Zurich II protocol provides the following in regard to medical evaluation of when a player shows any feature of a concussion:

When a player shows ANY features of a concussion:

- K. Players should be evaluated by a physician or other licensed health care provider on site using standard Emergency Management principles in particular attention it should be given to exclude a cervical spine injury.
- L. The appropriate disposition of the player must be determined by the treating healthcare provider in a timely manner. If no health care provider is available, the players should be safely removed from practice or play and urgent referral to a physician arranged.
- M. Once the first eight issues are addressed, an assessment of the concussive injury should be made using the SCAT3 or other sideline assessment tools.
- N. The players should not be left alone following the injury and serial monitoring for deterioration is essential over the initial few hours following injury.
- O. A player with diagnosed concussion should not be allowed to return to play on the day of the injury.

427. During Pauly's career the IOC has failed to implement or require the implementation better player be evaluated by a physician on the sideline and before returning to play.

428. During Pauly's career the IOC failed to implement or require the implementation of the SCAT3 sideline evaluation test, it does not indicate or require that a physician or other licensed health care provider administer the test.

429. The IOC's failure to implement or require the implementation of a policy requiring administration of a standardized sideline evaluation tool such as the SCAT3 is in contravention of best practices, including Zurich II protocol, which requires that a "players should be evaluated by a physician or other licensed health care provider on site policies"

430. The IOC's failure to implement or require the implementation of a policy that

requires physician involvement and that a player with concussion symptoms be seen and cleared by medical personnel who are experienced in concussion is in contravention of best practices.

431. Moreover, because of the IOC's inherent power as the supreme authority over every aspect of the Olympic movement, it knew that its failure to adopt best practices for concussion management and its failure to disseminate its knowledge of those best practices would have the effect of its members within the Olympic movement not considering best concussion management practices to be a part of the Olympic movement.

#### **H. THE POWER OF THE IBSF TO PROTECT AMERICAN ATHLETES WITHIN THE SPORT OF BOBSLED ON AN INTERNATIONAL LEVEL.**

##### **1. The IOC's Statutes**

432. Chapter 3, Rule 25 of the Olympic Charter provides that in order to develop and promote the Olympic Movement, the IOC may recognize International Federations to govern one or more sports at the international level. In their role as the governing authority on their respective sport(s), any statutes, bylaws, practices, or activities of the International Federations must at all times be in conformity with the Olympic Charter.

433. Rule 26 states the mission and role of all International Federations as is to be defined by the Olympic Charter. In part, International Federations are to “establish and enforce, in accordance with the Olympic spirit, the rules concerning the practice of their respective sports and to ensure their application” to “ensure the development of their sport(s) throughout the world” and to “encourage and support measures relating to the medical care and health of athletes.”

434. Further, the IBSF was and is required to comply with the Medical Code. As the governing authority for the sport of bobsled, under Chapter 4, Article 4.1.2, of the Medical Code, the IBSF had the power to exceed the baseline medical and safety standards and protocols if it was

needed to protect the welfare of its athletes.

435. Despite its duties and authority provided by the IOC through the Olympic Charter, the IBSF has undertaken no changes to eliminate or minimize the head injuries suffered by bobsledders.

## **2. IBSF Statutes.**

436. The IBSF statutes recognize the IBSF's role as the Supreme Authority over every aspect of Bobsled and member of the Olympic Movement.

437. Article 1.3 of the Statutes' Preamble states: "the IBSF is the Supreme Authority" in all matters relating to international bobsleigh and skeleton. In that capacity, the IBSF assert its authority over all current and future forms, variations and derivatives of the sport, including those forms, variations and/or derivatives modified or derived from its traditional form.

438. Article 1.4 states that "the IBSF cooperates with the IOC...and other International Federations on all matters related to the governance of sports and the Olympic Family. The IBSF recognizes and observes the Olympic Charter..."

439. Section 3 sets out the purpose and tasks charged to the IBSF. Article 3.1 states one purpose is to "promote and develop the sports of Bobsleigh and Skeleton at all levels throughout the world and to supervise and direct all their activities at the international level." Article 3.6 continues: "to administer and control participation in the Olympic Winter Games; World and Continental Championships; World and Continental Cups as well as other competitions or events which are approved by the Congress or Executive Committee..." Article 3.7 states: "to establish rules for all competitions approved by the IBSF." Article 3.9 states that the IBSF is to "serve as the highest authority for all questions concerning the sports of Bobsleigh and Skeleton and its Rules and Regulations."

440. The dissemination of relevant medical and scientific information to athletes and the taking of meaningful steps to protect athletes from harm are two predominant duties established by the IBSF's statutes.

441. Section 10, Article 10.9 establishes that one of the primary responsibilities for the Vice President of Sport for the IBSF is to oversee all matters that concerns organization, operation, and validation of IBSF competitions for bobsleigh and skeleton including: rules, tracks, juries, and the safety of athletes.

442. Section 13 of the IBSF's statutes establish various committees, which are intended to be advisory to the IBSF, its executive committee and its President regarding the subject matter it has been assigned to oversee.

443. Article 13.1.6 establishes the IBSF Medical Committee. Upon information and belief, the IBSF Medical Committee is responsible for all medical aspects of bobsled and skeleton, including disseminating relevant medical and scientific information, remaining active in medical research, paying special attention to protecting the wellbeing of athletes, improving the standard of care within the sports, as well as the education and training of physicians, physiotherapists, coaches and players of the IBSF and IBSF Members.

444. Article 13.1.7 establishes the Athletes Committee. Upon information and belief, the Athletes Committee, similar to a Player's Union in American sports, is an elected body intended to serve as a link between the athletes and the IBSF to provide a chain of communication as well as advocacy for the best interest of athletes.

445. Despite its duties and authority provided under its own rules, the IBSF has undertaken no changes to eliminate or minimize the head injuries suffered by bobsledders.

3. **The IBSF Failed to Protect American Athletes by Failing to Provide Adequate Protocols to Protect Athletes from Concussions, TBI, and CTE**

a) ***The IBSF was in a Superior Position of Knowledge and Authority Regarding Concussions, TBI and CTE in Sport, and knew or should have known the consensus best practices.***

446. The IBSF knew or should have known that there had been discussions in the field of sports medicine and science of the intersection of brain concussion and athletic injuries, since 1966. Further, it knew or should have known that regulatory bodies and sports medicine and science organizations had been working to find consensus domestically within the United States on that intersection, since 1991 and that multiple best protocols had been published and available.

447. On November 2nd and 3rd, 2001, the IOC participated in the first international conference on concussion in sport in Vienna, which resulted in the publication of the Vienna protocol in early 2002.

448. The IOC documented its role in the First International Conference on Concussion in Sport on its website and acknowledged that the conference would result in a unanimous decision to develop a concussion protocol, global in scope:

The IOC, together with the International Football Federation (FIFA) and the international ice hockey federation (IIHF), agreed to create a working group which aim would be to prepare the ground for a consensus on how concussions are to be defined, diagnosed, and treated. This decision was taken during the international symposium on concussion in sport, held in Vienna, Austria on the 2nd and 3rd November 2001, and attended by 150 medical experts representing more than 15 sports organizations.

449. From 2001 onward, the IOC took an active, leading role in producing an international consensus on how to stop the pervasive problem of concussions in Sport. The IOC, along with FIFA and the IIHF, organized and hosted the 2nd, 3rd, and 4th International Conferences on Concussions in Sport. These Conferences were held with the goal of continuing to progress the recognition, evaluation, and treatment of concussion in sport. Building off the work

that had been done over the thirty-five years prior.

450. The IBSF knew or should have known of the IOC's efforts to create consensus of the intersection of brain concussion and athletic injuries and the best practices published in relation to those efforts.

**b) *The IBSF Failed to Modify its Own Policies and Procedures to Protect American Athletes and Failed to Adopt the Consensus Guidelines Promulgated Since 1991.***

451. The IBSF as the supreme authority over the sport of bobsled on an international level, is committed to the protection of the health of all American Athletes particularly through illness and injury prevention. It fulfills this commitment by using its powers to make necessary modifications to the policies and procedures governing the sport of bobsled.

452. Despite the IBSF's knowledge of documented consensus guidelines regarding the intersection of brain concussion and sports injuries since 1966, the IBSF still fails to implement brightline policies within the sport that protect American athletes and are consistent with the internationally accepted guidelines.

453. Upon information and belief, at no point during Pauly's career was he ever provided with any training, education, knowledge, warning, or information about the effects of repeated concussive and sub-concussive impacts, shaking, rattling, G-Force exposure, or any other injuries he might have suffered as a result of the effects of "sled head".

454. Upon information and belief, at no point during Pauly's career was he ever provided with any medical evaluations related to concussive or sub-concussive impacts, or his suitability to continue participating in bobsled.

455. Upon information and belief, at no point during Pauly's career was he ever provided with any testing, monitoring, or education regarding the effects of sledding, when to seek

medical treatment, limitations on the amount of practice or sledding to mitigate damage, and instead was encouraged to continue sledding.

456. Upon information and belief, to this day, the IBSF has not conducted research in an attempt to design equipment - either for personal protection or the bobsleds themselves - that minimizes the risk of athletes developing “sled head” like symptoms, traumatic brain injuries and or CTE.

457. Upon information and belief, to this day the IBSF does not warn, monitor, educate, or inform its athletes about the risks and dangers of “sled head”, traumatic brain injury and/or CTE.

458. Further, it is clear that the IBSF has failed to require (much less explain) the appropriate consensus guidelines. In comparison to the most recent Zurich II Protocol, created in 2013, and other guidelines in publications from that time period from 1966 to present, the IBSF has failed to implement the following best practices of concussion management:

- A rule that a player may not return to play on the same day of a concussion;
- A mandatory 24 hours stepwise return to play guideline which accounts for the fact that today is needed between return to play steps and that typically a week of asymptomatic time is needed to resolve symptoms relating to a concussion prior to return to play;
- Formal baseline testing regardless of the age or level of performance of the players and neuropsychological testing to evaluate injury;
- Require that a player with a concussion or suspected concussion be evaluated, managed, and cleared by medical personnel with specific expertise in concussion diagnosis, treatment, in management; and,
- rule changes to account for proper concussion management.

459. Consensus was reached in 2002 - and reinforced with each subsequent international consensus statement - that athletes suffering concussion symptoms should never be returned to play in the same game. In addition, consensus was also reached in 2002 that coaches, players,

trainers, and physicians should follow a systematic return to play policy that includes systematic and graded return to exertion following injury, systematic reevaluation well maybe not maybe not rose of symptoms following each exertional state, and they collective understanding that the patient is completely asymptomatic at rest, asymptomatic with exertion, and has intact neurocognitive performance prior to final clearance. The best practice consensus guideline has continually been reinforced since the Vienna protocol.

460. Upon information and belief, during Pauly's career, the IBSF has failed to implement or require the implementation of the consensus return to play guidelines set forth in the Vienna protocol - and updated with the Prague, Zurich, and Zurich II protocols. For example, the Vienna protocol recommended specific return to play guidelines that continue to be followed today:

when a player shows ANY symptom or sign of a concussion:

10. the players should not be allowed to return to play in the current game or practice.
11. The player should not be left alone: and a regular monitoring for deterioration is essential.
12. The player should be medically evaluated after the injury.

Return to play must follow a medically supervised stepwise process. Players should never return to play while symptomatic. "when in doubt, sit them out!"

461. The necessity of a stepwise return to play protocol has been reinforced continuously and consistently since the intersection of brain concussions and sports injuries was first investigated in 1966. The IBSF has failed to implement or require the implementation of the consensus return to play guidelines from any of those publications described in the paragraphs above.

462. The consensus statements provide the neuropsychological testing is one of the

“cornerstones” of appropriate concussion management and contributes significantly to both understanding the injury and management of the individual. For example, the inner protocol provided that neuropsychological testing “has shown to be a value and continues to contribute significant information in concussion evaluation... It has been shown that cognitive recovery may precede or follow resolution of clinical symptoms, suggesting that the assessment of cognitive function should be an important component in any of return to play protocol.”

463. The importance of neuropsychological testing has been discussed since the 1990s, was reinforced what Zurich protocol, and with each subsequent International Consensus Statement. For example, the Zurich II protocol recommends that “all athletes should have a clinical neurological assessment (including assessment of their cognitive function) as part of their overall management,” and that all high-risk sports, regardless of the age or level of performance, have formal baseline neuropsychological screening.

464. Upon information and belief, during Pauly’s career, the IBSF’s policies and procedures failed to mention, much less require, formal baseline testing or the use of neuropsychological testing to assess injury. Upon further information and belief, the IBSF failed to mention that in the absence of neuropsychological testing, a more conservative return to play approach may be appropriate.

465. The IBSF’s failure to require a formal baseline testing and to utilize neuropsychological testing is in contravention of consensus best practices. Without a formal baseline, it is very difficult for a physician to determine when a patient has recovered. And returning a player to play before they are fully recovered negligently puts them at risk for permanent brain injury.

466. The IBSF’s policies and procedures made no mention of the special considerations in concussion management that athletes be withheld from play until completely symptom free.

467. Lastly, since the 1990s, all consensus statements have provided that concussions be

managed on site by medical personnel with specific expertise in concussion diagnosis, treatment, and management. The Zurich II protocol provides the following in regard to medical evaluation of when a player shows any feature of a concussion:

When a player shows ANY features of a concussion:

- P. Players should be evaluated by a physician or other licensed health care provider on site using standard Emergency Management principles in particular attention it should be given to exclude a cervical spine injury.
- Q. The appropriate disposition of the player must be determined by the treating healthcare provider in a timely manner. If no health care provider is available, the players should be safely removed from practice or play and urgent referral to a physician arranged.
- R. Once the first eight issues are addressed, an assessment of the concussive injury should be made using the SCAT3 or other sideline assessment tools.
- S. The players should not be left alone following the injury and serial monitoring for deterioration is essential over the initial few hours following injury.
- T. A player with diagnosed concussion should not be allowed to return to play on the day of the injury.

468. Upon information and belief, during Pauly's career, the IBSF failed to implement or require the implementation better player be evaluated by a physician on the sideline and before returning to play.

469. Upon information and belief, the IBSF had also failed to implement or require the implementation of the SCAT3 sideline evaluation test, it does not indicate or require that a physician or other licensed health care provider administer the test.

470. The IBSF's failure to implement or require the implementation of a policy requiring administration of a standardized sideline evaluation tool such as the SCAT3 is in contravention of best practices, including Zurich II protocol, which requires that a "players should be evaluated by a physician or other licensed health care provider on site policies"

471. The IBSF's failure to implement or require the implementation of a policy that requires physician involvement and that a player with concussion symptoms be seen and cleared by medical personnel who are experienced in concussion is in contravention of best practices.

## **V. CAUSES OF ACTION**

### **COUNT 1 NEGLIGENCE (Against All Defendants)**

472. Plaintiff adopts and incorporates by reference all of the preceding allegations set forth above as if fully set forth herein.

473. Plaintiff Nicholas Jovanovic brings this wrongful death and survival cause of action on behalf of the estate of decedent and all successors-in-interest therein pursuant to N.J.S.A. 2A § 15-3, N.J.S.A. 2A § 31-1 and N.J.S.A. 2A § 31-4.

474. The IOC, as the Supreme Authority for the Olympic Movement and the Olympic Medical Code, owed Pauly a duty to use reasonable care in researching, studying, and/or examining the dangers and risks of head injuries and/or concussions to all athletes within the Olympic Movement, to inform and warn its athletes of such risks, and to implement reasonable modifications to the Olympic Medical Code and/or take other reasonable action to minimize the risks of head injuries.

475. The IOC affirmatively and voluntarily established the IOC Medical and Science Commission to provide a guiding reference for all other sports organizations on matters relating to the protection of the health of athletes. The IOC was responsible for the staffing and conduct of the Commission.

476. The IOC knew that through the Olympic Charter and as the Supreme Authority over the Olympic Movement and the Olympic Medical Code, they had the power to direct and influence how all members of the Olympic Movement were required to detect, treat and prevent to head injuries and/or concussions.

477. The IOC and its Medical and Scientific Commission failed to use reasonable care in researching, studying, and/or examining the risks of head injuries and/or concussions in professional football, and in downplaying and in many cases denying both the severity of such injuries and the clear link between concussions and brain damage, thereby breaching its duty to its players, including Pauly.

478. The IBSF, USOPC, and USABS all owed Pauly a similar duty of care as the IOC in researching, studying, and/or examining the dangers and risks of head injuries and/or concussions to all athletes, to inform and warn its athletes of such risks, and to implement reasonable modifications to their policies and procedures and/or take other reasonable action to minimize the risks of head injuries.

479. The IBSF, USOPC, and USABS all affirmatively and voluntarily established their own medical and scientific committees or organizations as a guiding reference for all other sports organizations on matters relating to the protection of the health of athletes. The IBSF, USOPC, USABS were responsible for the staffing and conduct of the Commission.

480. The IBSF, USOPC, and USABS all individually had the power to direct and influence how all members of those individuals and entities within their authority and control were required to detect, treat and prevent to head injuries and/or concussions.

481. The IBSF, USOPC, and USABS failed to use reasonable care in researching, studying, and/or examining the risks of head injuries and/or concussions in sports, and in

downplaying and in many cases denying both the severity of such injuries and the clear link between concussions and brain damage, thereby breaching its duty to its athletes, including Pauly.

482. Each Defendant acted carelessly, negligently, grossly negligent and with an intentional disregard for the safety of others in their positions as regulatory bodies for sport and athletes like Pauly. In addition, these Defendants knew or should have known that their action or inaction in light of the rate and extent of concussions in sport and made known to these Defendants would cause harm to players in both the short and long term.

483. Each Olympic Defendant separate from their duties established by the Olympic Charter, had an independent duty to enact and enforce policies and procedures relating to concussions and concussion management that properly protect their athletes, like Pauly.

484. Since 1991, each Olympic Defendant knew or should have known of the consensus best practices regarding the intersection of brain concussion and athletic injuries, including the risks of short and long-term neurocognitive disabilities and deficits to athletes exposed to concussive and sub-concussive impacts and vibration.

485. Since the sport began, each Olympic Defendant knew or should have known that it was the practice within bobsled to compel or cajole players to play with injuries, including concussive and sub-concussive injuries and injuries involving a loss of consciousness.

486. Since 1991, each Olympic Defendant had superior knowledge (as compared to the athletes themselves) that athletic sporting events causing concussive and sub-concussive injuries posed a serious risk for short and long-term cognitive disabilities.

487. Each Defendant was careless, negligent, grossly negligent, and acted with an intentional disregard for the safety of others by breaching the duty of care it assumed for the

benefit of their athletes like Pauly, both generally and in the following particular respects as set forth above and summarized below:

- a. Disregarding decades of independent scientific consensus statements that articulated the risks regarding the intersection of brain concussion and athletic injuries.
- b. Failing to acknowledge, either publicly or to its athletes, the clear link between concussions and brain injuries being suffered by its athletes;
- c. Failing to educate and inform athletes of the symptoms that may indicate a concussion has occurred;
- d. Failing to warn of the risk of unreasonable harm resulting from repeated concussions, the accumulation of sub-concussive impacts, and vibrations;
- e. Failing to disclose the risks of long-term complications from repeated concussions and return to play;
- f. Failing to disclose the role of repeated concussions or accumulation of sub-concussive hits in causing chronic life-long cognitive decline;
- g. Failing to promulgate rules and regulations to adequately address the dangers of repeated concussions and accumulation of sub-concussive hits, and a return to play policy to minimize long-term chronic cognitive problems;
- h. Concealing and misrepresenting pertinent facts that athletes and parents needed to be aware of to make determinations of the safety of return to play;
- i. Failing to adopt rules and reasonably enforce those rules to minimize the risks of athletes suffering debilitating concussions;
- j. Failing to mandate modifications to the design specifications of bobsled that provide protection against concussive and sub-concussive impacts and vibrations;

- k. Failing to mandate modifications to the design specifications of bobsled tracks that provide protection against concussive and sub-concussive impacts and vibrations;
- l. Causing, by and through its negligent conduct and omissions, a culture within the sport of bobsled in which “sled head” is considered commonplace and its risk of harm to athletes is downplayed;
- m. Other acts of negligence or carelessness that may materialize during the pendency of this action.

488. It was reasonable and foreseeable to each of the Defendants that their failures would flow downstream.

489. Given the Defendants superior knowledge on the issue of head injuries and concussions, Olympic athletes reasonably relied to their detriment on the Defendants’ actions and omissions on the subject.

490. Pauly reasonably relied to his detriment on the Defendants’ actions and omissions on the subject.

491. The failure by the Defendants to exercise reasonable care in both their voluntarily assumed duties and independent duty, increased the risk that athletes like Pauly would suffer long-term neurocognitive injuries.

492. Under all of the above circumstances, it was foreseeable that their failure to exercise reasonable care in the execution of their duties would cause or substantially contribute to athletes, like Pauly, suffering personal injuries.

493. As a direct and proximate result of the Defendants careless, negligent, grossly negligent, and willful and wanton conduct and omissions as discussed above, Pauly suffered serious

injury, including but not limited to the slow development of chronic traumatic encephalopathy, the sequelae suffered therefrom, and death.

494. As a direct and proximate result of the Defendants careless, negligent, grossly negligent, and willful and wanton conduct and omissions as discussed above, Pauly suffered a loss of opportunity of employment, lost wages, years of medical aid and attention with a resultant cost therefrom, and continuous pain and suffering and severe emotional distress.

**WHEREFORE**, Plaintiff demands judgment against the Defendants jointly, severally and/or in the alternative, for such damages as may be permitted pursuant to the laws of the State of New Jersey, including punitive damages, together with interest thereon, costs of suit, attorney's fees, and such other relief as this Court shall deem equitable and just.

**COUNT II**  
**NEGLIGENT MISREPRESENTATION**  
**(Against All Defendants)**

495. Plaintiff adopts and incorporates by reference all of the preceding allegations set forth above as if fully set forth herein.

496. The Defendants misrepresented the dangers that athletes, including Pauly, faced in returning to play to quickly after experiencing the symptoms of "sled head" or sustaining a head injury. The IOC and USOPC, through their Medical and Science Commission and Sports Medicine Division, knew or should have known of the consensus best practices regarding the intersection of brain concussion and athletic injuries, that had been in existence since the 1960s.

497. Upon information and belief, material misrepresentations were made by staff members, medical staff, trainers and coaches of the Defendants and those within the Olympic Movement, including but not limited to statements made to athletes, like Pauly, downplaying the seriousness of "sled head" or sustaining a head injury, continuing to let him practice/compete and/or advising him that "a cigarette and a beer" will cure any "sled head" symptoms.

498. The Defendants, therefore, misrepresented the dangers athletes faced in returning to action after sustaining “sled head” and the short and long-term effects they could face in continuing to participate.

499. Pauly’s reliance on the Defendants’ misrepresentations was reasonable, given their superior and unique vantage point on those issues.

500. The Defendants made these misrepresentations and actively concealed true information at a time when they knew, or should have known, because of their superior position of knowledge, that athletes faced serious health problems if they returned to a game too soon after sustaining a concussion.

501. The Defendants knew or should have known the misleading nature of their statements when they were made.

502. As a direct and proximate result of Defendants’ negligent misrepresentations, Pauly suffered a physical injury, including but not limited to, existing and latent cognitive conditions that created diminished cognitive function, non-economic losses, and economic losses including but not limited to lost and/or reduced income during his life.

503. The Defendants misrepresentations and obfuscation have continued beyond Pauly’s bobsled career.

504. Since 1991, the IOC’s Medical and Science Commission had participated in five international conferences on concussion and sport, and from such participation have made public statements and published consensus statements on their findings. Despite such participation, the IOC’s Medical and Science Commission continues to obfuscate the truth to its athletes by stating that there is no scientifically proven link between repetitive head impacts and later-in-life cognitive/brain injury, including CTE and its related symptoms.

505. Upon information and belief, the USOPC and their Sports Medicine Division continues to make similar statements regarding their being no scientific link between repetitive head impacts and later-in-life cognitive/brain injury, including CTE and its related symptoms.

506. The Defendants, therefore, continue to misrepresent the dangers athletes faced in returning to action after sustaining “sled head” and the short and long-term effects they could face in continuing to participate.

507. As a result of the Defendants’ misconduct as alleged herein, the Defendants are liable for Pauly’s injuries caused as a result of said misconduct.

**WHEREFORE**, Plaintiff demands judgment against the Defendants jointly, severally and/or in the alternative, for such damages as may be permitted pursuant to the laws of the State of New Jersey, including punitive damages, together with interest thereon, costs of suit, attorney’s fees, and such other relief as this Court shall deem equitable and just.

**COUNT III**  
**WRONGFUL DEATH**  
**(Against All Defendants)**

508. Plaintiff adopts and incorporates by reference all of the preceding allegations set forth above as if fully set forth herein.

509. Plaintiff, Nicholas Jovanovic, is the brother of Pavle Jovanovic, and the Administrator for the Estate of Pavle Jovanovic, and therefore is entitled to bring this wrongful death action pursuant to N.J. Stat. Ann. § 2A: 31-4.

510. As a direct and proximate cause of the conduct alleged herein, all of the named Defendants caused Pauly to develop cognitive/brain diseases, including CTE.

511. As a result of these cognitive/brain diseases, Pauly suffered from anxiety, sadness often to the point of depression, loss of appetite, reduced sex drive, sudden irritability or anger, and unstable emotion or mood, brain fog, difficulty in concentrating, deficits in cognitive function, forgetfulness, loss of memory, and reduced processing speed.

512. Pauly's untimely death was a direct and proximate result of having suffered multiple past traumatic brain injuries while competing as a member of the United States and Serbian bobsled teams from 1997 to 2012.

513. As a direct and proximate result of the untimely death of Pauly, his respective survivors have been deprived of the earnings, maintenance, guidance, support and comfort that they would have received for the rest of their natural lives and have suffered commensurate pecuniary and non-pecuniary losses because of his wrongful death.

514. As a result of the Defendants' misconduct as alleged herein, they are liable to Plaintiff for, and Plaintiff seeks, the full measure of damages allowed under applicable New Jersey law.

***WHEREFORE***, Plaintiff demands judgment against the Defendants jointly, severally and/or in the alternative, for such damages as may be permitted pursuant to the laws of the State of New Jersey, including punitive damages, together with interest thereon, costs of suit, attorney's fees, and such other relief as this Court shall deem equitable and just.

#### **JURY DEMAND**

Plaintiff hereby demands trial by jury on all issues so triable.

#### **DESIGNATION OF TRIAL COUNSEL**

Andrew J. D'Arcy, Esq. is hereby designated as trial counsel for Plaintiff.

**D'ARCY JOHNSON DAY**  
*Attorneys for Plaintiff*

Dated: February 23, 2022

By: /s/Andrew J. D'Arcy  
Andrew J. D'Arcy

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\* Counsel will be seeking admission *pro hac vice*.

**DEMAND FOR DISCOVERY OF INSURANCE COVERAGE**

Pursuant to Rule 4:10-2(b), demand is made that Defendants disclose to Plaintiff's attorney whether or not there are any insurance agreements or policies under which any person or firm carrying on an insurance business may be liable to satisfy part or all of a judgment which may be entered in this action or indemnify or reimburse for payments made to satisfy the judgment and provide Plaintiff's attorney with true copies of those insurance agreements or policies, including, but not limited to, any and all declaration sheets. This demand shall include and cover not only primary coverage, but also any and all excess, catastrophe and umbrella policies.

**D'ARCY JOHNSON DAY**  
*Attorneys for Plaintiff*

Dated: February 23, 2021

By: */s/Andrew J. D'Arcy*  
Andrew J. D'Arcy

**CERTIFICATION PURSUANT TO RULE 4:5-1**

On information and belief, the matter in controversy is not the subject of any other action pending in any court, is not the subject of pending arbitration proceeding, and is not the subject of any other contemplated action or arbitration proceeding. I certify that the foregoing statements are true, and that if the statements are willingly false, then I may be subject to punishment.

Dated: February 23, 2021

*/s/ Andrew J. D'Arcy*  
Andrew J. D'Arcy

