



Gary B. Bettman | Commissioner

July 22, 2016

The Honorable Richard Blumenthal  
706 Hart Senate Office Building  
United States Senate  
Washington, DC 20510

Dear Senator Blumenthal:

I am writing in response to your June 23, 2016 letter inquiring about concussions and the potential long-term risks of concussions. We very much appreciate this opportunity to share with you important information on these topics, particularly because we are concerned that some of the questions in your letter appear to be premised on misconceptions that have been repeatedly promoted in the media by the plaintiffs' counsel who are presently pursuing concussion-related litigation against the NHL. We therefore welcome the opportunity to correct the record. We will first summarize the NHL's positions, followed by a more detailed explication addressing your questions.

## **I. INTRODUCTION**

**First and foremost**, we want to state in no uncertain terms that the health and safety of NHL players is a top priority for the NHL and its member Clubs, as well as the National Hockey League Players' Association ("NHLPA").<sup>1</sup> The NHL cares deeply about its players, and we are committed to their well-being. Without question, head injuries, including concussions, are worthy of serious medical attention and care. To that end, and recognizing that NHL hockey is a physical contact sport played by some of the world's best athletes, the NHL and the NHLPA have collaborated closely on player safety and have launched a number of safety initiatives relating to head injuries, including concussions, such as the following:

- Since 1997, the NHL and the NHLPA have worked jointly to design, implement and continuously update a "Concussion Program" that promotes the health and safety of NHL players. The Concussion Program has established a series of concrete steps resulting from extensive discussions about how best to address concussion concerns in the NHL without eliminating the core physicality of the

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<sup>1</sup> The NHLPA is the collective bargaining representative of NHL players, and, among other things, historically has taken primary responsibility for communicating information concerning agreed-upon policies and programs to its players.

sport. The Concussion Program, with mandatory League-wide neuropsychological testing required for all NHL players, was the first of its kind in professional sport and has been a model for other professional sports leagues.

- Throughout the development and evolution of the Concussion Program, the NHL's and NHLPA's independent medical experts have carefully monitored – and continue to monitor – the evolving state of the science regarding concussions, distinguishing between scientifically established facts (information that is important for the players to know) and speculative hypotheses or questions under study (ideas or contemplated work that must be treated as such). As for what is known, the NHL and NHLPA have issued numerous warnings to players regarding the seriousness of head injuries and concussions, including the potential risk of lasting effects of concussion symptoms. For example, in a joint 1997 letter to players explaining the newly instituted neuropsychological testing requirements, NHL and NHLPA medical professionals warned that “*with repeated minor brain injury the risk that the temporary problems become permanent increases.*” The NHL and NHLPA have also provided many subsequent warnings through a variety of media, including websites, notices posted in player locker rooms, video presentations featuring medical professionals and former players, and in-person meetings with the players. (Indeed, because of the *misinformation* in the media, in 2011 the NHLPA began briefing the players on CTE.)
- Over the years, the NHL and the NHLPA have also worked to identify and address the most frequent causes of head injuries, including concussions, in order to better assess and improve player safety. Among other things, these efforts included the formation of an Injury Analysis Panel in 2000 (covering all forms of injury); numerous equipment changes geared to make the game safer, with particular emphasis on reducing head injuries; increased supplemental discipline for rule violations involving hits to the head and a new rule specifically addressing avoidable head hits (which rule itself has evolved over time). Notably, while the NHL has worked to reduce fighting, relatively few concussions result from fights, and the players themselves support some degree of “self-policing” on the ice to minimize other forms of dangerous play.
- In January 2010, the NHL and NHLPA published our first comprehensive “Concussion Protocol,” a document codifying existing practices and governing all phases of concussion evaluation and management in the NHL, the essential components of which were first established in 1997. This, too, has been continuously updated in conjunction with the NHLPA.

**Second**, the science regarding CTE, including on the asserted “link” to concussions that you reference, remains nascent, particularly with respect to what causes CTE and whether it can be diagnosed by specific clinical symptoms. In 2012, it was the consensus of medical experts on concussions in sport, including Dr. Robert Cantu (the primary expert retained by plaintiffs’ counsel in the concussion litigation currently pending against the NHL, and a member of Boston University’s CTE Center), that a causal link between concussions and CTE has not been

demonstrated.<sup>2</sup> And, as of today, the CTE Center researchers admit that the study of CTE remains in its “infancy.”<sup>3</sup> In the intervening years, leading scientists and public institutions have made similar observations, emphasizing that the relationship between concussions and the asserted clinical symptoms of CTE remains unknown:

- In 2014, the **National Athletic Trainers’ Association** Position Statement on Management of Sport Concussion concluded, “longitudinal research that can directly associate concussive and subconcussive impacts with cognitive health, while controlling for normal age-related declines and other factors, has not been completed. *As such, the relationship among concussion, subconcussive impacts, and long-term brain health is not clear.* These studies are viewed as preliminary; additional research is needed to adequately address this association.”<sup>4</sup>
- The **National Institutes of Health** stated in a report published in 2015 that “[i]t is also especially important for the community to understand that it is *not yet possible to correlate clinical symptoms or future brain health with the signature pathologic feature of CTE.*”<sup>5</sup>
- The **Department of Defense**, also in 2015, stated that “the evidence *does not allow for a conclusive determination of whether exposure to head injury is sufficient and causative in the development of CTE pathology.*”<sup>6</sup>

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<sup>2</sup> *Consensus Statement on Concussion in Sport—the 4th International Conference on Concussion in Sport*, Held in Zurich, November 2012, 23 CLINICAL J. OF SPORT MED. 89, 94, 97 (2013) [http://journals.lww.com/cjsportsmed/Fulltext/2013/03000/Consensus\\_Statement\\_on\\_Concussion\\_in\\_Sport\\_the\\_4th.1.aspx](http://journals.lww.com/cjsportsmed/Fulltext/2013/03000/Consensus_Statement_on_Concussion_in_Sport_the_4th.1.aspx).

<sup>3</sup> See Benedict Carey, *On C.T.E. and Athletes, Science Remains in Its Infancy*, N.Y. TIMES, March 27, 2016, [http://www.nytimes.com/2016/03/28/health/cte-brain-disease-nfl-football-research.html?\\_r=0](http://www.nytimes.com/2016/03/28/health/cte-brain-disease-nfl-football-research.html?_r=0) (“‘This research is in its infancy,’ said Robert Stern, a professor of neurology and neurosurgery at the Boston University School of Medicine, who works with Dr. [Ann] McKee.”).

<sup>4</sup> *National Athletic Trainers’ Association Position Statement—Management of Sport Concussion*, 49 J. OF ATHLETIC TRAINING, 245, 256 (April 2014) [https://www.nata.org/sites/default/files/Concussion\\_Management\\_Position\\_Statement.pdf](https://www.nata.org/sites/default/files/Concussion_Management_Position_Statement.pdf) (emphasis added).

<sup>5</sup> Nat’l Inst. Of Neurological Disorders & Stroke, *Report from the First NIH Consensus Conference to Define the Neuropathological Criteria for the Diagnosis of Chronic Traumatic Encephalopathy* (March 31, 2015) <http://www.ninds.nih.gov/research/tbi/ReportFirstNIHConsensusConference.htm> (emphasis added).

<sup>6</sup> Blast Injury Research Program Coordinating Office, Dep’t of Defense, *Literature Review: The Biological Basis of Chronic Traumatic Encephalopathy Following Blast Injury*, at i (2015)

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- Also last year, in the NFL concussion litigation, **Judge Anita Brody** of the U.S. District Court for the Eastern District of Pennsylvania reviewed a full array of available expert research in the field and concluded that “*no diagnostic or clinical profile* of CTE exists.”<sup>7</sup>
- Indeed, in 2014, even the researchers at **Boston University’s CTE Center**, whose research is often cited in the media to support claims that a link between contact sports and CTE exists, acknowledged that “our neuropathologic understanding of CTE is based on a biased sample of individuals who are predominantly among those most exposed to repetitive head impacts (e.g., professional football players, professional boxers).”<sup>8</sup>

Moreover, Dr. Cantu, one of plaintiffs’ own experts in the concussion litigation against the NHL, has conceded that CTE cannot be diagnosed in living people: “There currently is no test available to make a confirmatory diagnosis of CTE in a living human being.”<sup>9</sup> (And even such a diagnosis would not establish a causative link between CTE in a person’s brain and any clinical symptoms observed in that person.) Dr. Robert Stern, also part of Boston University’s CTE Center along with Dr. Cantu, said earlier this year that it would be “[f]ive to 10 years” before researchers will be able to diagnose CTE in living patients.<sup>10</sup> And as detailed below, even where CTE is found, the consensus of medical experts is that there is insufficient science to link it to participation in professional sports or contact sports generally.

For all of these reasons, as the 2012 Consensus Statement on Concussion in Sport makes clear, it is particularly important *not* to suggest to current and/or former athletes that because of their professional sport participation, they may have a scientifically-established or diagnosable degenerative disease, which may only instill unwarranted fears that could result in potentially tragic consequences, including long-term depression and even suicide. It is this medical

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[https://blastinjuryresearch.amedd.army.mil/docs/2015\\_1006\\_CTE\\_Lit\\_Review.pdf](https://blastinjuryresearch.amedd.army.mil/docs/2015_1006_CTE_Lit_Review.pdf) (emphasis added).

<sup>7</sup> *In re Nat’l Football League Players’ Concussion Injury Litig.*, 307 F.R.D. 351, 397 (E.D. Pa. 2015) (emphasis added); *see also id.* (“The study of CTE is nascent, and the symptoms of the disease, if any, are unknown.”).

<sup>8</sup> Christine M. Baugh, Clifford A. Robbins, Robert A. Stern and Ann C. McKee, MD, *Current Understanding of Chronic Traumatic Encephalopathy*, 16 CURRENT TREATMENT OPTIONS IN NEUROLOGY 306 (2014) <https://www.bu.edu/cte/files/2009/10/Baugh-CTE-review-2014.pdf>, at 9.

<sup>9</sup> Decl. of Robert C. Cantu, M.D., Dkt. No. 250-3, ¶ 11 (D. Minn. Oct. 5, 2015).

<sup>10</sup> Michael O’Keefe, *Researcher Says in 5 Years, CTE Test Can Be Given to Living*, N.Y. DAILY NEWS, Feb. 3, 2016, <http://www.nydailynews.com/sports/football/researcher-5-years-cte-test-living-article-1.2519688> (stating that his “very strong guesstimate” is that CTE could be diagnosed in the living in “[f]ive to 10 years”).

consensus that has guided, and will continue to guide, the NHL on the topic of CTE, unless and until there is sound medical evidence to the contrary that can be relied upon.

**Third and finally**, the pending litigation in Minnesota that accuses the NHL of failing to warn players about the health risks of concussions has no merit whatsoever. As we explain below, the NHL and NHLPA have consistently warned players about known and scientifically-established risks of hits to the head, including permanent brain injury or long-term symptoms (most commonly referred to as post-concussion syndrome (“PCS”)). Perhaps for that reason, plaintiffs’ counsel in the concussion litigation have been litigating their case in the media, including making baseless accusations against the NHL. Indeed, one of plaintiffs’ counsel’s strategies was to include your letter in a public court filing in order to ensure that it received more publicity.

The NHL believes that such tactics are highly inappropriate, and the court overseeing the litigation has admonished the parties not to litigate the case in the media. Accordingly (except in response to some direct questions from the media about CTE), the NHL has refrained from participating in a public debate while the concussion litigation remains pending. However, we are responding to your letter in the hope that we will allay all the concerns you have expressed. But, going forward, we do not intend to comment publicly on the matters involved in the pending litigation.

Set forth below is our detailed response to your letter.

## **II. DISCUSSION**

The core of your letter goes to the question of why the NHL has not acknowledged a “link” between playing NHL hockey and developing CTE if an NFL executive may have done so with respect to football. Further, your letter inquires about what the NHL has done to educate players about the risks of concussions and to address issues of player safety relating to head injuries. And, finally, your letter fosters the conclusion that it would be best to tell players that there is a connection, however speculative, between playing NHL hockey and CTE. We respond to each of these subjects below and in the course of our discussion hope to answer the questions you posed.

### **A. The Modern CTE Debate and Its Relevance to NHL Hockey**

To place your questions in context, it is important to understand: (i) the evolution of the medical community’s discussions about CTE; (ii) the status of the medical community’s knowledge about CTE (particularly its causes); and (iii) why even those who hypothesize that a link between concussions and CTE exists do not assert that it necessarily applies to NHL hockey.

#### **1. Outside of Boxing, the CTE Debate Is Very Recent**

In recent years, the science concerning concussions in sport has evolved significantly. For example, the grading of a concussion in sport for many decades centered around a player’s “loss of consciousness,” which had implications for return-to-play decisions. Indeed, it was generally believed in the medical community that a player could safely return to play after

getting his “bell rung,” as long as he – in consultation with his team’s medical personnel – felt that his head had “cleared.” As one independent doctor recently summarized:

Nobody knew that concussions were potentially serious in 1976, and probably not for the remainder of the ‘80s and part of the ‘90s. It was thought to be a temporary and mild disruption of brain function that you recovered from and you could get back in there. They called it a ‘bell ringer,’ a ‘ding.’ They didn’t even call it a concussion. Not even neurologists thought they were any kind of significant injury back then. Doctors didn’t. Scientists didn’t, and that was just the level of knowledge at that time.<sup>11</sup>

Further, the same uncertainty surrounded – and still surrounds – the science on CTE and its relationship (if any) to repeated concussions. Historical studies on “dementia pugilistica” or “CTE” focused on boxers – who sustain hundreds of blows in preparation for and during single bouts (and thousands, if not tens of thousands, of head blows over the course of a career) and often continue to perform in the ring without the benefit of recovery time. And it has been (and is) generally understood that those boxing “case studies” – themselves of limited scientific value – were relevant only to boxers. Indeed, a comprehensive review of the literature on CTE concluded that when, in 2005, modern researchers began examining the relationship between “CTE” and participation in other sports, this was a major new development compared to the “classic” research studies relating exclusively to boxers.<sup>12</sup>

## **2.     The Medical Consensus Is That No Causal Link Between Concussions And CTE Has Been Scientifically Established**

It is not surprising, then, that prior to 2005, when Dr. Bennet Omalu published his article concerning the results of an autopsy of former NFL player Mike Webster,<sup>13</sup> no researcher had ever suggested that concussions in sport – outside of boxing – could or did lead to a pathological, later-in-life brain disease. Moreover, researchers that followed up on the work of Dr. Omalu, including the group of researchers now affiliated with Boston University’s CTE Center (which

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<sup>11</sup> John Vogl, *No Easy Answers in Concussion Suit*, Buffalo News, June 23, 2016, <http://sabres.buffalonews.com/2016/06/20/no-easy-answers-in-concussion-suit/> (quoting Dr. John J. Leddy, a clinical professor and director of the University at Buffalo’s Concussion Management Clinic). Prior to 1997, return-to-play decisions for NHL players who were diagnosed with a concussion were made by team doctors on a case-by-case basis based on then-existing medical knowledge. Starting in 1997, team doctors were given standardized symptom reporting and cognitive assessment tools based upon the most up-to-date medical knowledge and the state of the science at the time, as reflected in the NHL/NHLPA Concussion Program (discussed below).

<sup>12</sup> Andrew Gardner, Grant L. Iverson & Paul McCrory, *Chronic Traumatic Encephalopathy in Sport: A Systematic Review*, 48 BRITISH J. SPORTS MED 84 (2014).

<sup>13</sup> Bennet I. Omalu et al., *Chronic Traumatic Encephalopathy in a National Football League Player*, 57 NEUROSURGERY 128 (2005) <http://www.jeannemarielaskas.com/wp-content/uploads/2015/10/CTE-NFL-part-1.pdf>.

includes Drs. Ann McKee, Stern and Cantu), have admitted that their subsequent studies of former NFL football players are necessarily “biased”: they were looking at brains of “former professional players whose lives ended tragically or in despair – a tiny sliver of the overall population of former football players and athletes in other contact sports – because tormented spouses and children are quick to come to [them] to find meaning and answers.”<sup>14</sup> Nor have these CTE Center researchers (or any other researcher for that matter) even asserted (for example, in peer-reviewed articles) that multiple concussions or so-called “sub-concussive blows” *cause* the CTE pathology or any particular clinical symptoms. They, too, knew that they could not (and still cannot) assert such a link.<sup>15</sup>

Likewise, after the CTE Center researchers published their initial findings on a small number of brains (primarily from former football players) in 2007, the medical consensus of experts examining the science was that *nothing* could even be concluded on the significance of this work, let alone whether it suggested (much less demonstrated) a link between concussions in contact sports and CTE. In fact, Dr. Cantu signed on to the 2008 Consensus Statement on Concussion in Sport, which stated:

*Epidemiological studies have suggested an association between repeated sports concussions during a career and late life cognitive impairment.* Similarly, case reports have noted *anecdotal cases* where neuro-pathological evidence of chronic traumatic encephalopathy was observed in retired football players. *Panel discussion was held, and no consensus was reached on the significance of such observations at this stage.* Clinicians need to be mindful of the potential for long-term problems in the management of all athletes.<sup>16</sup>

By 2012, however, there *was* an international medical consensus concerning CTE – a consensus that *there was no scientific proof demonstrating a causal link between concussions and the CTE pathology.* Again, Dr. Cantu (among over two dozen other medical experts) signed onto the 2012 Consensus Statement on Concussion in Sport, which stated:

*It was . . . agreed that a cause and effect relationship has not yet been demonstrated between CTE and concussions or exposure to contact sports.*

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<sup>14</sup> Brian Burnsed, *A Gray Matter*, CHAMPION MAGAZINE (Spring 2015) <http://www.ncaa.org/static/champion/gray-matter/#sthash.tQn4T53G.Mv8k1YlB.dpbs>.

<sup>15</sup> Christine M. Baugh, Clifford A. Robbins, Robert A. Stern and Ann C. McKee, MD, *Current Understanding of Chronic Traumatic Encephalopathy*, 16 CURRENT TREATMENT OPTIONS IN NEUROLOGY 306 (Sept. 2014) <https://www.bu.edu/cte/files/2009/10/Baugh-CTE-review-2014.pdf>, at 10.

<sup>16</sup> *Consensus Statement on Concussion in Sport—the 3rd International Conference on Concussion in Sport*, Held in Zurich, November 2008, 19 CLINICAL J. SPORT MED. 185, 190 (2009) [http://www.atsnj.org/documents/pdf/2010\\_Zuric\\_Consensus\\_Statement\\_on\\_Concussion\\_in\\_Sport\\_3rd.pdf](http://www.atsnj.org/documents/pdf/2010_Zuric_Consensus_Statement_on_Concussion_in_Sport_3rd.pdf) (emphasis added).



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It was agreed that chronic traumatic encephalopathy (CTE) represents a distinct tauopathy with an unknown incidence in athletic populations. ***It was further agreed that CTE was not related to concussions alone or simply exposure to contact sports. At present, there are no published epidemiological, cohort, or prospective studies relating to modern CTE. Due to the nature of the case reports and pathological case series that have been published, it is not possible to determine the causality or risk factors with any certainty. As such, the speculation that repeated concussion or sub-concussive impacts causes CTE remains unproven.*** The extent to which age-related changes, psychiatric or mental health illness, alcohol/drug use, or co-existing medical or dementing illnesses contribute to this process is largely unaccounted for in the published literature.<sup>17</sup>

Even more recently, in 2014, the National Athletic Trainers' Association set forth a position statement on the management of sport concussion. Several medical experts (again, including Dr. Cantu) reached a consensus regarding long-term consequences of concussions and, again, emphasized what is unknown to the medical community examining the science:

[L]ongitudinal research that can directly associate concussive and subconcussive impacts with cognitive health, while controlling for normal age-related declines and other factors, has not been completed. ***As such, the relationship among concussion, subconcussive impacts, and long-term brain health is not clear.*** These studies are viewed as preliminary; additional research is needed to adequately address this association.<sup>18</sup>

Also in 2014, the CTE Center researchers publicly pronounced that “[their] neuropathologic understanding of CTE is based on a biased sample of individuals who are predominantly among those most exposed to repetitive head impacts (e.g., professional football players, professional boxers).”<sup>19</sup> In fact, because of those biases and the limitations of the

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<sup>17</sup> *Consensus Statement on Concussion in Sport—the 4th International Conference on Concussion in Sport*, Held in Zurich, November 2012, 23 CLINICAL J. OF SPORT MED. 89, 94, 97 (2013) [http://journals.lww.com/cjsportsmed/Fulltext/2013/03000/Consensus\\_Statement\\_on\\_Concussion\\_in\\_Sport\\_the\\_4th.1.aspx](http://journals.lww.com/cjsportsmed/Fulltext/2013/03000/Consensus_Statement_on_Concussion_in_Sport_the_4th.1.aspx) (emphasis added).

<sup>18</sup> *National Athletic Trainers' Association Position Statement—Management of Sport Concussion*, 49 J. OF ATHLETIC TRAINING, 245, 256 (April 2014) [https://www.nata.org/sites/default/files/Concussion\\_Management\\_Position\\_Statement.pdf](https://www.nata.org/sites/default/files/Concussion_Management_Position_Statement.pdf) (emphasis added).

<sup>19</sup> Christine M. Baugh, Clifford A. Robbins, Robert A. Stern and Ann C. McKee, MD, *Current Understanding of Chronic Traumatic Encephalopathy*, 16 CURRENT TREATMENT OPTIONS IN NEUROLOGY 306 (2014) <https://www.bu.edu/cte/files/2009/10/Baugh-CTE-review-2014.pdf>, at 9.



current CTE research, they too voiced concern that the media (and no doubt others) were grossly exaggerating the potential dangers and risks of CTE:

*As CTE research has a particular ability to be misunderstood by the lay public and sensationalized in the media, caution needs to be exercised when discussing results of scientific studies and generalizing the results to the population as a whole. Many individuals have some history of head impacts incurred through sports participation or other activities. However, the pathophysiological mechanism linking this initial trauma, whether concussive or subconcussive, to later-life CTE pathology has yet to be elucidated. . . . Unfortunately the popular media, which has reported on CTE because of its association with professional athletics, often does not present findings with the same accuracy, caution, or contextualization as the original peer-reviewed scientific publications.*<sup>20</sup>

Just one year later, in 2015, researchers from two leading federal government institutions (among many others) also highlighted the infancy of the research and the lack of an established or proven “causative” link between concussions and CTE. The National Institutes of Health “identified numerous important [] areas that need to be addressed to more fully understand CTE,” emphasizing that it is “especially important for the community to understand that *it is not yet possible to correlate clinical symptoms or future brain health with the signature pathologic feature of CTE.*”<sup>21</sup> Likewise, the Department of Defense publicly stated that “the evidence *does not allow for a conclusive determination of whether exposure to head injury is sufficient and causative in the development of CTE pathology.*”<sup>22</sup>

Given this indisputable medical and scientific consensus, it is not surprising that the only federal court to assess the state of the science concerning CTE reached the same conclusion just last year (even as to NFL football). Judge Anita Brody of the U.S. District for the Eastern District of Pennsylvania, who presided over the NFL concussion litigation, reviewed extensive expert evidence and concluded that science has not established a causal connection between head hits sustained in contact sports and long-term brain diseases, including CTE. As Judge Brody explained, “the association between repeated concussive trauma and long-term neurocognitive impairment remains unclear.” *In re Nat’l Football League Players’ Concussion Injury Litig.*, 307 F.R.D. 351, 388 (E.D. Pa. 2015). With regard to CTE, Judge Brody found: “researchers know very little about CTE”; “[t]hey have not reliably determined which events make a person

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<sup>20</sup> *Id.* at 10 (emphasis added).

<sup>21</sup> Nat’l Inst. Of Neurological Disorders & Stroke, *Report from the First NIH Consensus Conference to Define the Neuropathological Criteria for the Diagnosis of Chronic Traumatic Encephalopathy* (March 31, 2015) <http://www.ninds.nih.gov/research/tbi/ReportFirstNIHConsensusConference.htm> (emphasis added).

<sup>22</sup> Blast Injury Research Program Coordinating Office, Dep’t of Defense, *Literature Review: The Biological Basis of Chronic Traumatic Encephalopathy Following Blast Injury*, at i (2015) [https://blastinjuryresearch.amedd.army.mil/docs/2015\\_1006\\_CTE\\_Lit\\_Review.pdf](https://blastinjuryresearch.amedd.army.mil/docs/2015_1006_CTE_Lit_Review.pdf) (emphasis added).

more likely to develop CTE”; and the “clinical study of CTE is in its infancy.” *Id.* at 398. In that same opinion, Judge Brody recognized that “no one can conclusively say that someone had CTE until a scientist looks at sections of that person’s brain under a microscope” – meaning that CTE “is a neuropathological diagnosis that currently can only be made post mortem.” *Id.* at 397.

The confusion in the press about CTE – no doubt further fueled by plaintiffs’ counsel in the NHL litigation – relates to the simple and incontrovertible fact that none of the brain studies conducted to date can, as a matter of accepted scientific methodology, prove anything about causation, a primary subject of your letter. The disconnect stems from a failure to recognize the critical difference between brain pathology research (that is, looking for the presence of CTE pathology) versus the type of study required to demonstrate a causal link between CTE pathology and repeated concussive and sub-concussive impacts or any specific type of clinical symptoms in living persons. While an important beginning, a “case study” or “case series” of the CTE pathology (such as the research at Boston University’s CTE Center) can only show that a person who has died had what is now believed to be a unique “tauopathy” identified as CTE. But such a conclusion or finding does not speak to the subject of causation, the critical issue that must be addressed and resolved before proclaiming a public health risk. As various statements issued by medical experts studying the subject of concussions (noted above) demonstrate, in order to be scientifically relevant and reliable for establishing a causal link, studies must not only include a “control group,” but also must account for other illnesses, genetic differences and any other factor that may lead to the same pathology or clinical symptoms. In this respect, of course, we know there are *millions* of former athletes who played contact sports at the high school, collegiate and/or professional levels who show no persistent and/or continuing signs or symptoms of concussion injury or other cognitive or behavioral dysfunctions and who lead happy, productive lives. At bottom, the science just has not advanced to the point where causation determinations can responsibly be made.<sup>23</sup>

Thus, while we agree that the ongoing research is very important, it is particularly unfair to criticize the NHL when we have followed the medical consensus of experts examining the science.<sup>24</sup> The statements that I have made concerning CTE (which actually have only been

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<sup>23</sup> As another neuropathologist has recently written: “Between 1928 and 2013 there have been a total of 153 unique cases of autopsy confirmed CTE published in the medical literature. That means most of what we know about CTE comes from just 153 brains. Of the 153 brains, 63 were individuals who played amateur or professional football. As awareness has grown around CTE, there have been more cases reported, but the number remains about 100 of the millions who have played football. In the scientific community, this population size is too small to form any firm conclusions. The truth is we don’t really know the incidence of CTE in any sport, including football. But that doesn’t stop some from wildly speculating.” Dr. Peter Cummings, *What is CTE? A Neuropathologist Explains*, USAFootball.com, July 1, 2016, <http://usafootball.com/blogs/health-and-safety/post/12516/what-is-cte?:-a-neuropathologist-explains>.

<sup>24</sup> In the interest of brevity, we are also attaching (as Appendix A) a sample bibliography of leading, peer-reviewed medical journal articles confirming that a causal link between concussions and CTE has not been established.

responses to direct media questions) merely track this medical consensus. If that consensus changes, so, too, will my answers.

### 3. NHL Hockey Is Different Than NFL Football

Until recently, the medical community's discussions about CTE did not even touch upon NHL hockey; indeed, researchers at Boston University's CTE Center – the most publicized researchers on CTE in football – told the NHL (and me personally) that they believe that NHL hockey is a vastly different sport than football, making it difficult to necessarily relate or link hypotheses on CTE as between the two sports. Likewise, any suggestion that the NHL has been “dismissive” of a potential causal link between concussions and CTE is simply not true.

In December 2009, it was announced that a former NHL player (Reggie Fleming) was determined to have some level of CTE upon his death (at age 73 of natural causes) – the first such determination ever made regarding a former NHL player. Thereafter, in the fall of 2010, NHL executives and medical advisors for the NHL and NHLPA met with researchers from Boston University's CTE Center to better understand their research and its potential implications for NHL players. The CTE Center researchers *confirmed* directly to the NHL and NHLPA that (i) the study of CTE was in its infancy; (ii) they had not even studied – let alone concluded – whether there is a scientifically-based causal link between concussions and CTE; and (iii) the frequency of hits to the head and concussions in the NHL (versus NFL football) was so relatively low that, in their view, NHL players did not face the same type or degree of concern as might a professional football player (while, again, acknowledging that, even as to football, their work was only in the form of case studies of the CTE pathology and did not address causation as it related to symptoms or concussions themselves). Indeed, in 2011, Dr. Ann McKee publicly compared concussions in football and hockey, stating “[t]hey’re both collision sports, but in football every single day there are subconcussive hits . . . Hockey doesn’t have those.”<sup>25</sup> We had another meeting with these researchers in 2012 in New York – *a meeting I personally attended* – at which they re-confirmed these same points.

What *is* certain is that by 2010, everyone who followed – or played – sports had begun hearing about CTE and its possible connection to sports other than boxing. Not only was it widely covered in the media each time an NFL (or, later, NHL) player was found, post-mortem, to have had CTE, but there also was extensive press coverage when former athletes announced their intentions to donate their brains to research post-mortem in order to further these nascent CTE brain studies. At first, the individuals announcing these intentions were primarily NFL football players, but by 2009, we believe at least 10 NHL players had similarly announced their decisions to donate their brains. Most notably, also in 2009, former NHL player Keith Primeau publicly announced he would do the same, stating: “Ultimately, it comes down to what the research shows. . . . it comes down to awareness, recognition and treatment. By stepping out, I

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<sup>25</sup> John Powers, *A Head-Scratcher for NHL*, BOSTON GLOBE, Feb. 24, 2011, [http://archive.boston.com/sports/hockey/b Bruins/articles/2011/02/24/a\\_head\\_scratcher\\_for\\_nhl/?page=full](http://archive.boston.com/sports/hockey/b Bruins/articles/2011/02/24/a_head_scratcher_for_nhl/?page=full).

hope that I can have an impact.”<sup>26</sup> In short, while the science did not establish a causal link between concussions and the CTE pathology, players were aware of what researchers at Boston University’s CTE Center and others were studying, and several were willing to participate in order to support their continuing research.

The NHL, of course, has no issue with the valuable research that is being done, which some day may reach scientifically useful conclusions about what causes the CTE pathology and whether it is related to various clinical symptoms in living persons. And while NHL and NHLPA medical consultants will continue to closely monitor these ongoing brain studies as well as any other CTE-related research, the bottom line is that none of the research to this point in time has established a causal link between CTE and concussions in team sports generally, much less in NHL hockey. As it is, *to this day* – let alone prior to the start of the NHL/NHLPA Concussion Program in 1997 – *no medical scientific study has ever concluded that concussions suffered by players who have played hockey at the NHL level can or do cause degenerative “brain diseases.”*

#### **B. The NHL and NHLPA Concussion Program and the Ongoing Education of Players Concerning the Risks Associated with Concussions**

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What is not well known in the media is the fact that in the late 1990s, the NHL and NHLPA took special notice of the subject of concussions, creating a concussion program that educates players and has adopted numerous measures to enhance their safety.

Beginning in the 1990s, the medical community generally began to gain a better understanding as to the nature and complexities of concussions. Researchers began to recognize indications that hits to the head – even without loss of consciousness – could affect brain function. There also was an emerging concern that if players returned to play while they were still symptomatic of concussion, there might be a greater risk that they would suffer another concussion, possibly requiring a longer time to recover. And the medical community began to understand that for very few athletes, it was possible that one or more concussions could result in PCS, where symptoms (or additional clinical problems) lingered for months or, in rare instances, permanently.

In 1996, NHL team physicians – who had, with NHL support, already formed their own association (the Team Physicians Society) – approached the NHL about the possibility of starting a concussion program that would be initially focused on the neuropsychological testing of NHL players. That discussion was soon joined by the NHLPA – which as an organization was increasingly focusing on concussions as well – and the joint NHL/NHLPA Concussion Program (discussed in detail below) was launched at the beginning of the 1997-98 NHL season.

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<sup>26</sup> Mark Kram, *Former Flyer Primeau Talks About His Decision to Donate Brain for Research*, philly.com, Apr. 9, 2009, [http://articles.philly.com/2009-04-09/sports/24984228\\_1\\_multiple-concussions-chronic-traumatic-encephalopathy-sports-legacy-institute](http://articles.philly.com/2009-04-09/sports/24984228_1_multiple-concussions-chronic-traumatic-encephalopathy-sports-legacy-institute).

## **1. The NHL/NHLPA Concussion Program**

We want to highlight the NHL/NHLPA Concussion Program and its evolution to date, including what it means in terms of player safety and education. The Concussion Program – established almost 20 years ago in 1997 – was the first of its kind in professional sport and set an example for other professional and amateur sports leagues.

The central and founding tenant of the Concussion Program is the *mandatory* neuropsychological testing of all NHL players. Generally, before the beginning of the regular season, team neuropsychologists perform neuropsychological testing on players when they are in their normal, asymptomatic state to establish their “baseline” neuropsychological test scores. Then, following a diagnosed concussion, the team neuropsychologist repeats the test to establish a post-injury score. The two tests can be compared to help determine if an injured player is cognitively “at baseline.” Those results then become part of an overall assessment by individual team doctors, in consultation with the team neuropsychologist and the player, on whether (and when) a player may be cleared to return to play. Further, under the NHL and NHLPA’s collective bargaining agreement, a player may obtain a second medical opinion on any aspect of his medical care, including care related to concussions.

Over the years, the NHL/NHLPA Concussion Program has continued to evolve to reflect relevant medical knowledge and best practices, including the Consensus Statements on Concussion in Sport issued following conferences in 2001, 2004, 2008 and 2012. This includes the complex issue of whether and under what conditions returning to play in the same game is appropriate for professional athletes with ready access to medical professionals – a subject that itself evolved between the 2008 and 2012 Consensus Statements. For example, consistent with the 2008 Consensus Statement, the NHL and NHLPA Concussion Program at that time permitted same-game return to play in rare instances where a player diagnosed with a concussion experienced rapid and complete recovery of symptoms at rest and upon exertion. When the medical consensus changed in 2012 and experts recommended against same-game return to play, the NHL and NHLPA promptly decided that, based on this evolving medical knowledge, players should not return to play in the same game if they have been diagnosed with a concussion, even if their symptoms resolve, either immediately or in relatively short order during the game.

In January 2010, the NHL and NHLPA published our first comprehensive “Concussion Protocol,” a document codifying existing practices and governing all phases of concussion evaluation and management in the NHL, the essential components of which were first established in 1997. That document has been regularly updated to, among other things: (i) require that the concussion evaluation take place in what is referred to as the “quiet room” (i.e., a distraction-free environment); (ii) continuously update the tools and methods used to assist in concussion evaluation and management; and (iii) provide for designated team and League “spotters” who watch each NHL game and look out for signs of concussion exhibited by players that might not be detected by other personnel (i.e., the players, team trainers, doctors, coaches and officials who also look for these signs).

In this context, your letter asks whether the NHL will commit “to using the latest concussion diagnosis standard,” as recommended by the Centers for Disease Control and Prevention. While it is not clear what “standard” you are referring to, over the last two decades

the NHL and the NHLPA have developed state-of-the-art and industry-leading concussion management and evaluation standards – including tools for diagnosing concussions and educational materials that improve awareness – that are the gold standard for professional sports. As importantly, the NHL and NHLPA medical experts are committed to continuing to look at ways to improve the Concussion Program when any such steps are warranted by sound medical science as appropriate for professional ice hockey at its highest level.

## 2. NHL and NHLPA Education and Warnings to Players

It is simply not credible for anyone to suggest that NHL players are unaware of the health risks posed by concussions. Indeed, both the neuropsychological testing of players required by the Concussion Program and the administration of an acute assessment tool themselves educate players on those risks. Further, players presumably are well aware of the concussion-related retirements of a number of prominent NHL players, including Brett Lindros (1996), Nick Kypreos (1997), Pat LaFontaine (1998), Jeff Beukeboom (1999), Keith Primeau (2006), Eric Lindros (2007) and Paul Kariya (2011). Several of these retirements were caused by well-publicized cases of PCS, leading some players to speak publicly about the long-term risks of concussions even as far back as the late 1990s.<sup>27</sup>

Further, since the NHL/NHLPA Concussion Program began, the NHL and the NHLPA have issued numerous warnings and educational materials to players regarding the seriousness of head injuries, including, among other things, the potential risk of long-term effects that might result from these injuries.<sup>28</sup> For example, in a joint 1997 letter from the NHL and NHLPA to players explaining the newly implemented neuropsychological testing requirements and describing how the brain's cognitive process works as well as the typical symptoms of concussion, NHL and NHLPA medical professionals warned that “*with repeated minor brain injury the risk that the temporary problems become permanent increases.*”

The NHL and NHLPA have provided subsequent warnings and educational materials to NHL players consistent with the state of “concussion science” by: (i) direct written communications to players; (ii) notices posted in the player locker rooms; (iii) video presentations featuring medical professionals and former players; (iv) in-person meetings with

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<sup>27</sup> See, e.g., Robin Finn, *Hockey: LaFontaine Leaves the Game Reluctantly*, N.Y. TIMES, Aug. 18, 1998, <http://www.nytimes.com/1998/08/12/sports/hockey-lafontaine-leaves-the-game-reluctantly.html> (“Every time you sustain a head injury, the risks go up further and further, and I always said that if it ever got to the point where there was more than minimal risk, I would stop playing hockey, and it’s at that point now,” said LaFontaine.”); Gerald Eskenazi, *NHL Playoffs; Brett Lindros Calls It Quits*, N.Y. TIMES, May 2, 1996, <http://www.nytimes.com/1996/05/02/sports/nhl-playoffs-brett-lindros-calls-it-quits.html> (“Brett Lindros said yesterday that he was quitting because he did not want to risk ‘the possibility of blindness as well as permanent brain damage.’”).

<sup>28</sup> In addition to these efforts for players, the NHL and NHLPA have created educational initiatives on concussions geared towards Club athletic trainers/therapists, Club physicians, Club consulting neuropsychologists, general managers, coaches and officials.

the players; and (v) other digital media communication – including postings on NHL.com and the NHLPA’s own dedicated website for player communications (which we understand is also accessible to retired NHL players). These materials reflect the growing focus on the potential dangers of concussions:

(a) **Notices on Concussions**

- (i) In 1997, a joint NHL/NHLPA letter, discussed above, warned that “*with repeated minor brain injury the risk that the temporary problems become permanent increases.*”
- (ii) In 2001, NHL/NHLPA-issued notices were posted in all NHL Club locker rooms – which were to remain there – exhorting players to wear proper helmets, tighten their chin straps and to use mouth guards, as well as warning them that the “consequences of sustaining a direct blow to your head without head protection could not only be career ending (i.e. *permanent brain injury*) but also fatal (i.e. death).”
- (iii) In 2008, the NHL and NHLPA updated these notices to warn players that continuing to play with concussions and failing to report concussion-related “symptoms may lead to extended time loss, ending your career and *permanent brain damage.*”
- (iv) Since 2009, subsequent NHL/NHLPA-issued notices similarly have warned players that failure to report concussion-related symptoms may result in “permanent injury and even end your career.”
- (v) Since 2013, an NHL/NHLPA concussion poster has been posted in NHL player locker rooms and distributed to players delineating the signs and symptoms of concussions and underscoring the importance of reporting symptoms promptly and accurately to Club medical staffs.
- (vi) In 2016, the NHL/NHLPA Concussion Subcommittee developed an educational brochure for Clubs to provide to players who have been diagnosed with and are currently being treated for concussion. This brochure included information on PCS and CTE.

(b) **Educational Videos on Concussions**

- (i) In 2002, the NHL and NHLPA created an educational video and required it to be shown to all players during training camp prior to the 2002-03 season. The video featured Brett Lindros, a former NHL player (who, as mentioned above, retired as a result of concussions) warning that “*injuries to the head can end hockey careers and can adversely affect a player’s life and lifestyle after*



*hockey.*” He further advised players: “As most of you know my career was cut short due to post-concussion syndrome. . . . Head injuries are serious and need to be treated as such.”<sup>29</sup>

- (ii) In 2008, the NHL and NHLPA, along with the National Academy of Neuropsychology, created a new video to warn players about concussions. In this video, Eric Lindros (who, like his brother Brett, retired from the NHL as a result of concussions) warned that “a concussion you get now could have *long-term lasting effects that can be with you the rest of your life.*”<sup>30</sup>
- (iii) In 2015, the NHL/NHLPA Concussion Subcommittee produced another educational video that the players viewed at training camps preceding the most recent NHL season. The video included discussion of topics including the importance of symptom reporting and immediate evaluation for concussion in order to minimize the chances of a second concussion, which could lead to more long-term symptoms; the variability in recovery timetables from player to player and the importance of being symptom free before returning to play; the prolonged symptoms that some players may experience, including cognitive and psychological difficulties; the difficulty in knowing how many concussions is too many; and (as discussed in more detail below) information on CTE.<sup>31</sup>

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<sup>29</sup> This video may be accessed at <https://www.nhl.com/video/concussion-video-2002/t-277350912/c-44400003>.

<sup>30</sup> This video may be accessed at [https://nanonline.org/NAN/\\_Research\\_Publications/Concussions\\_in\\_Sport.aspx](https://nanonline.org/NAN/_Research_Publications/Concussions_in_Sport.aspx).

<sup>31</sup> The NHL and NHLPA also helped Dr. Charles Tator and ThinkFirst Canada create an educational video in 2001 titled, “Smart Hockey: More Safety, More Fun.” The video provided advice for hockey players of all ages (from youth players to “old-timers”), as well as advice for coaches, referees, trainers, instructors and parents. In the video, the narrator states, “The worst thing a concussed player can do is to return to play before he or she is fully recovered. In fact, it is very risky to that player’s long-term health.” Dr. Tator then states: “There are two major risks in returning to play before complete recovery from a concussion. The most serious is the second impact syndrome in which the brain can swell and the player can even die. The other serious risk is the possibility of long-term brain dysfunction like memory loss or personality change.”

And, of course, the NHLPA has for many years been telling players repeatedly – via educational materials, in-person meetings and through its dedicated website – about the risks of concussions.<sup>32</sup>

These various and comprehensive educational steps and initiatives conclusively demonstrate that the NHL and NHLPA have neither been “dismissive” about the risks of concussions, nor abstained from educating players about those risks.<sup>33</sup>

**(c) Information on the CTE Debate**

Finally, your letter assumes that players have not been informed about the debate over CTE, no matter how speculative or theoretical the related science may be (as detailed above). To be clear, the NHL and NHLPA’s position is that a “warning” about CTE is, at best, premature and also potentially dangerous (as discussed further below). But players have certainly been made aware of the medical community’s robust discussions and ongoing research about CTE. The details about precisely what the NHLPA told its members as part of its commitment to safeguard their interests is presently the subject of confidential discovery in the pending concussion litigation. But it is clear that, beginning as early as 2011, the NHLPA and its medical consultants, Drs. John Rizos and Jeffrey Kutcher, conducted in-person information sessions at every team’s training camp to educate players “about the potentially catastrophic ramifications of playing through a head injury.”<sup>34</sup>

As to your question about what players have been told about the science of concussions, we can tell you what the NHL and NHLPA advised players at their 2015 training camps preceding the most recent NHL season. Through an educational video prepared by the NHL/NHLPA Concussion Subcommittee, all players were told:

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<sup>32</sup> For example, players have also been warned – by former star players themselves – that the failure to report and address concussions can lead to PCS, which can cause, among other things, serious depression. It was in this context that an NHL executive observed (referenced in your letter) that, for some players, fighting can result in a concussion, which in turn could contribute to depression and could potentially end in tragic consequences. The e-mail exchange did not concern the CTE debate, but rather addressed known risks of PCS that players have been warned about.

<sup>33</sup> We believe these educational initiatives are having their intended effect. Feedback from various NHL constituencies has suggested a cultural shift in the game, with increased awareness of the seriousness of concussions and greater player willingness to report symptoms and seek out medical care.

<sup>34</sup> Adam Proteau, *NHLPA Raising Awareness About Concussions*, THE HOCKEY NEWS, Nov. 24, 2011, <http://www.thehockeynews.com/articles/43146-NHLPA-raising-awareness-about-concussions.html>. In addition, starting in 2013, the NHL and NHLPA have coordinated on a Rookie Orientation Program (a professional development program for new NHL players), which includes a Health & Medical session where Dr. Kutcher and Dr. Ruben Echemendia speak to players on the myths and realities regarding long-term neurocognitive changes.

Narrator: “A different focus of scientific inquiry has been CTE. Some researchers have suggested a relationship exists between head impact in sport and CTE. Other researchers and international bodies state that a causal link between head impacts in sport and CTE has not been established. However, researchers agree that further study is needed to fully understand what relationship may exist between the two.”

Dr. Kutcher (NHLPA medical consultant): “At this stage of our understanding, our scientific understanding of CTE, we do not have a clear understanding of the precise risk factors, the precise things that go into defining who is at risk.”

Narrator: “The key is to become educated. Talk with trusted medical experts about CTE and other possible long-term consequences of head injuries.”

These statements regarding CTE are not “warnings,” but rather educational messages to address the *misinformation* on the topic in the media.

In sum, it is clear that over many years, the NHL and NHLPA have made reasonable and responsible efforts to provide players with relevant and reliable information about concussions.

### **3. The NHL and NHLPA Have Also Worked Together to Reduce the Incidence of Concussions in the NHL**

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The NHL and NHLPA have also worked diligently to make the game safer, while still ensuring the physicality of the sport at the professional level (which is among its primary appeals both to spectators *and* participants).

Hockey, by its very nature, is a physical contact sport played in a confined space by players of different sizes, speeds and skill levels. Injuries in our sport – including concussions – are inevitable. The NHL, along with the NHLPA, has worked to identify changes to both the playing environment and the playing rules that may reduce the incidence of injuries, including concussions, without undermining or eliminating the essential physical nature of the sport.

In September 2000, the NHL and NHLPA formed an Injury Analysis Panel, a multidisciplinary working group comprised of players, Club General Managers, team physicians, athletic trainers, equipment managers, on-ice officials and NHL and NHLPA executives/representatives. The group was charged with (i) examining injury data (including data regarding head injuries and concussions); (ii) commencing the process of identifying the most frequent causes of player injury; and (iii) providing recommendations to improve player safety, including proposed rule changes. In 2006, following a year-long labor dispute and work stoppage, the NHL/NHLPA Health Management Panel was formed as a successor body to the Injury Analysis Panel for the purpose of continuing its work. Essentially the same body exists now in the form of the NHL/NHLPA Joint Health and Safety Committee, with its responsibilities specifically provided for in the NHL/NHLPA collective bargaining agreement. Thus, for the last 16 years, the NHL and NHLPA have maintained an organized working group of professionals who have been charged with overseeing the safety of the game, identifying the most frequent causes of injuries and providing recommendations in furtherance of player safety.

In further pursuit of improved player health and safety, the NHL, on its own initiative, created the Department of Player Safety following the 2010-11 NHL season. The Department of Player Safety – the first of its kind in professional sports – is charged with developing, recommending and ultimately executing policies and initiatives designed to make the game safer for NHL players, including principally by establishing standards for and imposing supplemental discipline (i.e., suspensions above and beyond what penalties may be called on the ice) to deter dangerous plays in the game.

**(a) Equipment/Environment Changes**

The NHL and NHLPA have undertaken an extensive evaluation of numerous pieces of playing equipment and other aspects of the playing environment, all with a view toward making the game safer for the players. In 1979, the NHL and NHLPA for the first time jointly agreed to impose a mandatory helmet requirement. Later on, in 1997, the NHL and NHLPA agreed to require “certified helmets” when it became apparent that some players were not utilizing state-of-the-art head protection. In 2003, the NHL and NHLPA prohibited elbow pads with less than one-half inch of padding on all areas that could contact opponents, a change intended to address the concern that hard plastic pads could be contributing to head injuries. In 2009, for similar reasons, the NHL and NHLPA adopted a similar prohibition on shoulder pads with less than one-half inch of padding. In 2013, a mandatory visor rule, applicable to all new NHL players, was implemented to help reduce head and eye injuries. When concerns were raised that modern in-arena glass and board systems were too rigid and might be contributing to player injuries, Clubs were mandated to retrofit and/or replace the board and glass systems to ensure the use of more flexible systems. In sum, over many decades, the NHL and NHLPA have consistently taken steps to make player equipment and the playing environment more safe, and we will continue to consider and evaluate sound proposals and methods to make further improvements in the future.

**(b) Changes in Supplemental Discipline**

With respect to your inquiries on the subject, I note that the NHL and NHLPA have used supplemental discipline to emphasize to players the severe consequences of illegal hits intentionally delivered to opponents’ heads.<sup>35</sup> Dating back to at least the 1996-97 season, the NHL – with the NHLPA’s involvement and consent – has applied a very strict supplemental discipline standard to punish illegal hits in all circumstances in which a player is deemed to have intentionally directed contact to an opponent’s head. Prior to the 2000-01 season, the NHL enumerated specific types of acts that would give rise to more severe discipline than in past seasons, including blows delivered to the head forcefully by a deliberately raised elbow, forearm or stick, as well as hits from behind. Beginning with the 2007-08 season, the NHL emphasized it

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<sup>35</sup> The NHL believes that supplemental discipline helps deter player conduct that is inconsistent with the physical contact permitted in NHL hockey. The collectively bargained supplemental discipline system provides, among other terms, that a suspended player must forfeit a portion of his salary, which can cost a player tens of thousands of dollars (and in some cases, hundreds of thousands of dollars). The forfeited money is placed in a collectively bargained Emergency Assistance Fund, which is used primarily for the benefit of retired NHL players in need.

would further increase supplemental discipline for such hits when directed at the head of unsuspecting and vulnerable players.

All of this information is provided directly to players at the start of each season, when players are advised of the supplemental discipline standards that will apply for the upcoming season and sign a document acknowledging receipt of such standards. In connection with the increased levels of discipline, the NHL and NHLPA have repeatedly warned and educated players regarding the strict supplemental discipline standard that would occur following a hit to an opponent's head. Notices about supplemental discipline and the enforcement priorities were, and continue to be, distributed to the players on a regular and consistent basis. To further increase transparency, in 2011, the Department of Player Safety began creating and publicly sharing videos educating players both on the rationale behind individual supplemental discipline decisions and on various types of plays in the game, distinguishing those that are legal under NHL playing rules from those that are illegal and will be subject to scrutiny and additional punishment.

**(c) Changes to Rules Concerning Hits to the Head**

In March 2010 (mid-season), the NHL and NHLPA – based in part on an analysis generated under the auspices of the Concussion Program – decided to make a certain type of head hit illegal, applying supplemental discipline for lateral and blindside hits targeting an opponent's head, regardless of how the hit was delivered.<sup>36</sup> At the same time, the Club General Managers unanimously agreed the NHL would move to implement a new playing rule imposing on-ice penalties for lateral, blindside head hits, in addition to supplemental discipline, at the beginning of the following season – allowing time for proper implementation and education during the offseason. Following the 2009-10 season, the NHL and NHLPA instituted that new playing rule – Rule 48, which took effect at the start of the 2010-11 season. Subsequent amendments to Rule 48 have expanded its scope to prohibit all hits where the head is the main point of contact and the hit was otherwise avoidable. This process has had a beneficial impact on the culture of hockey and the way the game is played, with a net result that concussions caused by intentional hits directed at an opponent's head have notably decreased. While hits to the head accounted for 62% of video-analyzed concussions in the 2010-11 season, that percentage dropped to 29% for the 2014-15 season.

Your letter also inquires about the role of NHL Officials and asks about their education on calling dangerous, illegal plays. NHL Officials are the best and most skilled hockey officials in the world. They receive extensive preseason training on the NHL Rule Book and proper rule interpretation, and they are provided weekly instructional updates on rules enforcement to ensure they are up-to-date on all current developments. On top of their rules training, NHL Officials also are required to participate in in-person educational sessions related to various aspects of the

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<sup>36</sup> The eventual creation of Rule 48 was informed by a “video analysis project” of the NHL/NHLPA Concussion Working Group that provided data suggesting that “lateral” and “blindside hits” to the head were causing a significant and disproportionate number of concussions in the game. That work, along with further analysis by the Concussion Subcommittee, has assisted the NHL and NHLPA in its subsequent refinements of the Rule.

Concussion Program, including all aspects of the Concussion Protocol, identifying visible signs of concussions, and when to alert team medical staff when they suspect a player may be concussed.

**(d)     The Issue of Fighting**

With respect to your questions about fighting in the NHL, we wish to report that the level of fighting in the NHL has not only decreased significantly in recent years, but relatively few concussions actually result from fighting. As to the decrease in fighting, we provide the following information:

- Fighting is at an all-time low in the modern game with 76% of all regular-season games being fight free; and
- Major penalties for fighting have declined by 37% since the 2011-12 season

In addition, rule changes, including the mandatory wearing of visors and an additional minor penalty for players who remove their helmets during an altercation, have also led to the significant decline in the incidence of fighting.

Perhaps more importantly, fighting is the cause of only a small percentage of concussions. As part of the Concussion Program, the NHL and NHLPA carefully track the mechanisms of concussion, including the number of concussions that result from fighting. In the 2014-15 NHL regular season, only 2% of video-analyzed concussions resulted from fighting (i.e., two total concussions). And that percentage is decreasing – in the 2010-11 season, 9% of video-analyzed concussions resulted from fighting.

The subject of fighting in the game is, of course, a frequent subject of discussion and debate both in NHL circles and with the NHLPA. While the NHL and NHLPA have instituted agreed-upon rules over the years aimed at reducing the amount of fighting (e.g., rules to prevent bench-clearing brawls, rules more severely penalizing players who instigate fights, etc.), there have been certain aspects of fighting that the NHL has sought unsuccessfully to address. Specifically, the NHL has proposed implementing more significant penalties for fights that are initiated immediately following a face-off without any clear provocation (so-called “staged fighting”), but the initiative has never gained the requisite approval that would be necessary and required under the collective bargaining agreement. Any discussion of “staged fighting,” however, is becoming increasingly academic in any event, as the number of such fights continues to diminish.<sup>37</sup>

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<sup>37</sup> Outside of the context of so-called “staged fighting,” we note also that players (not just Club General Managers) believe that some types of fighting – though penalized – play a useful and worthwhile role in protecting “skilled players” from being targeted by more aggressive opponents because any such “targeting” activity is capable of being appropriately “policed” by a teammate. Again, even this form of fighting has fallen off dramatically in recent years. Many players and Club General Managers also believe that spontaneous fights – which, of

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**C. The NHL and the NHLPA Will Continue to Work Together to Promote the Safety and Welfare of Players Based on Scientific Consensus Rather Than Speculation and Fear Mongering**

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Ultimately, the most concerning aspect of the current public dialogue about concussions in professional sports (as well as youth sports) is the implicit premise that the hundreds of thousands – if not millions – of individuals who have participated in contact sports at the high school, collegiate and/or professional levels are not only at a high level of risk for, but actually are more than likely to develop, a degenerative, irreversible brain disease (i.e., CTE) and that they should be informed as such. The NHL chooses to be guided on this very serious subject by the medical consensus of experts examining the science, not the media hype driven in part by plaintiffs' counsel.

To be sure, there are serious questions for researchers to address, and the NHL – along with the NHLPA and each organization's respective medical advisors – will continue to monitor the progress of that important work. But absent new developments, the NHL will follow the guidance of the 2012 Consensus Statement on Concussion in Sport, which not only concludes that the "speculation" concerning a causal connection between concussions and CTE "remains unproven," but expressly voices concern over undue panic caused by the media and others: "***At present, the interpretation of causation in the modern CTE case studies should proceed cautiously. It was also recognized that it is important to address the fears of parents/athletes from media pressure related to the possibility of CTE.***"<sup>38</sup> And it is here where the public discourse has failed.

Critically, such fear mongering – from any quarter – should not be taken lightly. Last year, Hockey Hall of Famer Pat LaFontaine (who himself retired because of multiple concussions and is a very active public speaker on the subject of concussions) testified in a deposition that he was concerned about the widely-publicized misinformation relating to a supposed causal connection between concussions and CTE. He said that based on his interactions with retired players, he worried that the media scare could lead to tragic

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course, also are penalized – provide a "safety valve" that enables players to confront opposing players in a less dangerous fashion than they might otherwise engage in through dangerous "stick work" or cheap shots.

<sup>38</sup> *Consensus Statement on Concussion in Sport—the 4th International Conference on Concussion in Sport*, Held in Zurich, November 2012, 23 CLINICAL J. OF SPORT MED. 89, 97 (2013) [http://journals.lww.com/cjsportsmed/Fulltext/2013/03000/Consensus\\_Statement\\_on\\_Concussion\\_in\\_Sport\\_the\\_4th.1.aspx](http://journals.lww.com/cjsportsmed/Fulltext/2013/03000/Consensus_Statement_on_Concussion_in_Sport_the_4th.1.aspx) (emphasis added). See also Christine M. Baugh, Clifford A. Robbins, Robert A. Stern and Ann C. McKee, MD, *Current Understanding of Chronic Traumatic Encephalopathy*, 16 CURRENT TREATMENT OPTIONS IN NEUROLOGY 306 (2014) <https://www.bu.edu/cte/files/2009/10/Baugh-CTE-review-2014.pdf>, at 10 ("In order to avoid causing undue panic in individuals who have a history of concussions or other traumatic brain injuries, the scientific community and the media need to clearly address the considerable gaps that exist in our understanding of CTE.").



consequences for those who might be seriously depressed for any number of reasons, but believe they must have CTE, often characterized as an irreversible brain disease. Unfortunately, just a few weeks after Mr. LaFontaine's deposition, his concerns proved prophetic. It was determined that Todd Ewen, a former player and so-called "enforcer" who had committed suicide and donated his brain to a "brain bank" to study, *did not have CTE*.<sup>39</sup> As Dr. Lili-Naz Hazrati, the neuropathologist who conducted Mr. Ewen's autopsy, explained:

These results indicate that in some athletes, multiple concussions do not lead to the development of C.T.E. Our findings continue to show that concussions can affect the brain in different ways. *This underlines the need to not only continue this research, but also be cautious about drawing any definitive conclusions about C.T.E. until we have more data.*<sup>40</sup>

Mr. Ewen's wife told the press "We were very surprised by the results, *as we were sure Todd must have had C.T.E.* . . . We hope that anyone suffering from the effects of concussion takes heart that their symptoms are not an automatic diagnosis of C.T.E. Depression coupled with other disorders can have many of the same symptoms of C.T.E."<sup>41</sup>

This, sadly, is precisely the type of tragedy that can result when plaintiffs' lawyers and their media consultants jump ahead of the medical community and assert, without reliable scientific support, that there is a causal link between concussions and CTE. Certainly, a more measured approach consistent with the medical community consensus would be a safer, more prudent course.

I hope this letter satisfactorily responds to your inquiry.

Sincerely,

A handwritten signature in black ink that reads "Gary B. Bettman". The signature is written in a cursive, flowing style.

Gary B. Bettman

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<sup>39</sup> John Branch, *Autopsy Shows the N.H.L.'s Todd Ewen Did Not Have CTE*, N.Y. TIMES, Feb. 10, 2016, <http://www.nytimes.com/2016/02/11/sports/hockey/autopsy-shows-the-nhls-todd-ewen-did-not-have-cte.html>.

<sup>40</sup> *Id.* (emphasis added).

<sup>41</sup> *Id.* (emphasis added).

## APPENDIX A

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