

---

# A History and Effects of Concussions in Football and Hockey

A concussion is a mild traumatic brain injury which results from a bump blow or jolt to either the head or body causing the brain to move rapidly in the skull. A concussion affects normal brain function and can have severe and long-term health effects (McGannon, et al., 2013). In this regard, an individual should not ignore the slightest bump on the head as it can have serious long-term effects. The signs and symptoms of a concussion include headaches, nausea, fatigue, memory problems, confusion and sleep disturbances or even mood changes. Symptoms manifest right after the injury, but some are not recognized until later. It is estimated that 1.6 to 3.8 concussions occur each year in the US associated with sports and recreation.

## Concussions in Football and Hockey since the 1990's

Diehl (2010), asserts that the National Football League continues to have an increased number of retired players who have suffered concussions and developed memory and cognitive issues such as Alzheimer's, depression and chronic traumatic encephalopathy (CTE). CTE is a degenerative brain disease associated with multiple head traumas.

In 1994, Paul Tagliabue the NFL commissioner created the Mild Traumatic Brain Injury committee. He also asserts that concussions are a part of the profession and as an occupational hazard. In the same year, Troy Aikman a Dallas quarterback took a knee to head an event that landed him in the hospital. In the same year, Chicago Bears Merrill Hoge retires due to multiple injuries on the head which result into not being able to recognize anyone. The NFL commissioner dismissed the reports on the media that concussions were increasing as mere assumptions. In 1995, Pellman experimented with Boomer Esiason's return from a concussion by using an unproven system involving QB's sitting before a computer screen and concentrating.

In 1997, The American Academy of Neurology published its guidelines recommending removal of players after having concussions, but NFL dismisses it.

In 1999, NFL issued millions in disability payments to retired players. In 2,000, research indicates 61% of former NFL players have had concussions. 49% of the players had numbness or tingling, 28% had neck or cervical spine arthritis, 31% had memory loss issues, and 16% could not dress while 11% could not feed themselves (Macciocchi, 2001). In 2012 NFL reported 261 concussions, 229 in 2013, 206 in 2014 and 271 in 2015. In 2016, the NFL and NFL Players' Association implemented a new policy to enforce concussion protocol.

In Ice Hockey, total concussions are relatively small as compared to football. There is lower participation in the game at both high school and college level. Research indicates that since 1990 through to 2004, the rate of concussions in men who participated in the sport stood at 0.41 per 1000. Concussions in hockey players happen at 6.3% during practice and at 10.3% during the game. The relationship between age and shocks, however, remains unclear. Since 1995 to 1997, the concussion rate was higher in ice hockey players. Since 2006 to 2013, only 511 incidents were reported in 844 games (Iverson et al., 2001).

---

How the media portrays concussions in football compared to Ice hockey?

Slobounov and Sebastianelli (2014) cite that the concussion issues in sports have recently attracted considerable media coverage in the past few years. The media focused on professional football or Ice Hockey and such like high-speed games where there is full contact between powerful players. Despite there has been a dramatic improvement on how the media reports on the severity associated with serious brain injuries and concussions, more need to be done to improve the health of the players. It is of essence that the media reports on facts rather than sensationalizing issues that could lead to misinterpretation of such sports. Hockey and Football are the collision sports with the highest rate of concussions according to media reports. The discrepancy between reported cases and actual injuries are similar in football, which has the largest cases of concussions (Womble and Collins, 2016).

The American media leaves the impression that TBI and violence are part and parcel of hockey and cannot be avoided. In the past, the media focused on TBI only when star players were affected, however, there is a shift in focus since all players are included. In both Ice Hockey and Football, the media would in the past indicate that protective gear was a way to ensure player's safety, but they now say that protective gear is part of the problem since it makes the players feel invulnerable invoking risk taking in them. The media has been blamed for fanning fear of the long-term effects associated with head injuries.

The NHL accused media of speculation and spreading fear rather than having scientific evidence (Niranjan and Lunsford, 2014). Further, the Commission denied media reports that concussions are likely to lead to CTE in the long run. The media has covered all players who have died in the NHL as being suspected of having CTE. The media has investigated all deaths of Ice hockey players by first assuming that they had brain related injuries, as a result of concussions they acquired from the field. It is no different with football players in the NFL. Despite numerous reports associating head injuries to brain damage, the NFL still denies the connection. The media reports about the players who are reluctant to report injuries for fear of missing play time. Such players do not realize the long term effects until they retire from the field.

Concussions in Ice hockey and football

Both football and hockey are physical contact sports that can have strenuous effects on the body. In respect to concussions or overall injuries, football appears to be affected than hockey. The American Sports data carried out research in 2006 that indicates that in every 100 participants of ice hockey 9.5 received concussions while the number doubled in football. Other determinants of injuries include the position of the players in both games. Defensemen and forwards in hockey are likely to sustain concussions since they spend a lot of time skating and in contact with others. In football, however, goalkeepers are less liable to sustain injuries as compared to other players in touch with the opposition.

Concussions are similar in both sports with most of them resulting from T-bone hits or between the eyes. The hit rattles the brain's center of gravity. Further, the run makes the mind to rock dangerously forward and backward such that it hits the skull. In younger players, the brain is flush with the bone making the effect less severe. What's more, helmet to helmet hits can cause serious injuries. Bumps to the side of the head are far more serious since the spinning of the brain during a rotational concussion can lead to serious injuries. Experts assert that

---

rotational forces result in breakage of nerve cells and fibers eventually causing a stretch in the blood vessels beyond their ability to stay intact. After a hit, the brain gradually accelerates releasing neurotransmitters which eventually become chaotic and useless. The cell fails to transmit nerve impulses since it's impaired and not –functional.

### Protocols for football and hockey athletes

Throughout history, considerable information has been accumulated regarding the psychological and physical attributes of high profile players. Based on the present information, desirable fitness profiles are laid out for elite players particularly in hockey, and the patterns are used to compare future players. The protocols are necessary to identify a player's weaknesses, fitness and physical or physiological capability of a player. There is a model for sports injury prevention which follows a conceptual process. The model determines the extent of harm; it also determines the mechanism of particular injury that needs to be prevented, developing and implementing interventions as well as reassesses the injury incidence to determine whether the process was a success.

The NHL and NFL have come up with measures to prevent concussions likely to lead to brain damage in the future. They organizations have established concussion management protocols which entail baseline testing that requires all athletes to complete an Impact Neurocognitive as well as a Biodex balance system baseline test before they are cleared as first-year athletes. The test includes checking concussion history, cognitive assessment, and symptom evaluation.

The NHL and NFL have made significant strides in reducing the number of a concussion occurring in the field. While concussions cannot be eliminated, they can be reduced. In this regard, technological advancements in finding solutions have been adopted. The NFL, for instance, introduced protective gear and new helmets, therefore making profound changes progressively and quickly.

The newly introduced helmets have a cut out at the front meant to make it flex more but at the same time maintain an overall stiffness. Additionally, the thick padding that is behind the free space makes it move less, but just enough such that the player can take big hits. The impact from any side allows flex in the helmet such that it can dissipate the hit before the impact is felt on the head. Those are just a few of the features relating to new helmets and mouth guards intended to reduce injuries. It is worth noting that the new initiatives introduced before there are significant reduction and significance to the athletes.

Besides new improved attire, the league implemented two rule changes with an objective of augmenting athlete's safety. Firstly, an offensive player intending to catch a ball that has already been intercepted will be ruled as defenseless, therefore, cannot be attacked in the neck area or head by the opposition as possession changes and a penalty will be enforced. Moreover, the league has issued certified players trainers who are located in sky boxes in every game the mandate to stop play at the touch of a button once they see a player exhibiting injury signs even if he sustained the injuries in previous games. What's more, the NFL is liaising with Canadian football league to improve concussion treatment. NHL, on the other hand, recommends the use of standardized helmets to reduce incidents of skull injuries besides issuing proper training to determine head and neck injury. The NHL concussion protocol stipulates that players must get approval from the team doctor before returning to play. They are taken to a calm place to be evaluated; their memories, balance as well as general awareness

---

are assessed.

However, the NHL and NFL need to do much more to reduce incidents of injury in the field. Firstly, there should be mandatory sit out periods for concussed players. Additionally, there should be independent doctors to examine the players. The NHL and NFL should ensure retired players are taken care of with proper remuneration as well as medical covers.

#### Evolving Technologies likely to prevent concussions

Lots of focus has been placed on developing technologies and equipment with an objective of preventing head injuries. Since 1990's, helmets were designed to minimize head injury resulting in morbidity and mortality. Such helmets were nothing more of leather padding, therefore, were slowly replaced with metal helmets with plastic to reinforce protection. Although helmets can assist players to minimize the extent of the injury sustained, recent innovations such as the Q-collar made by Q-30 innovations utilizes a radical approach to determine the extent of injuries on a player (Fainaru-Wada and Fainaru, 2014). The device lightly clamps down a player's jugular veins causing the brain to swell and fit more appropriately within the skull. The idea is to create a backfill in the brain such that the volume of blood increases. The device, therefore, assists in determining the actual number of hits a player sustains. Current technologies seem to concentrate on improving helmets by redesigning them such that they can displace the force of a blow or minimize the impact for the part of the face or head that takes the most hit.

#### NFL and NHL health care plan for players

Health and wellness entail much more than the emotional or physical well-being. It means having resources and support to ensure stability and productivity in all areas of life. Players need health care benefits as well as specialized treatment programs. What's more financial assistance and career building are imperative. The NFL offers a comprehensive wellness program to its athletes (Webbe, 2011). The program involves providing free consultation on a medical issue for the players and their family.

Players are checked before games and have a health insurance package. Moreover, retired players have access to a neurological care program that provides access to comprehensive tests in six hospitals across the US. The players also have access to the spine treatment program across selected hospitals in the US. Moreover, they have a joint replacement program, prescription drug card program, priority access to assisted living as well as a vested inactive life insurance. NHL, on the other hand, provides medical cover for the players on a contractual base of seven years and beyond that if a player sustains injuries. Moreover, the league provides insurance to some players through a temporary total disability program where each team pays a premium according to the salaries of the five top paid players but it can administer the coverage in a manner it sees fit.

#### Effects of Concussions on NHL and NFL players

Concussions, as established earlier, have long become part of hockey and football. However, minimal concussions can be experienced through recommended precautionary measures combined with the recent technologies. It is imperative that players maintain their well-being for the sake of the game as well as their lives in the long haul. Concussions have led to a loss of

---

talented athletes or long term irreversible injuries. Once a player sustains a head injury, the resulting effect is that he gets pulled out of the game, sometimes never to play again which is a costly affair to the team. Benefits packages offered to players who have had concussions can affect the associations negatively such that they may fail to have enough resources for the active players. Concussion issues have led to numerous lawsuits that are costly for both leagues (Robidoux, 2001).

#### Long-term effects of multiple concussions

Exposure to concussions can cause an individual player to have mild cognitive impairments (MCI's), CTE as well as other adverse outcomes. Additionally, multiple concussions can lead to post-concussion syndrome (PCS) (Robidoux, 2001). As such, it is paramount that a player fully recovers from a single concussion rather than risking a subsequent concussion. Failure to adhere could lead to severe neurological damage. With such an understanding, managing concussions calls for comprehensive, specialized and state of the art methods.

#### Conclusion

The media has taken personal interest researching and reporting on concussions experienced in football, ice hockey, and all contact sports. Despite the growing awareness about the long-term effects of concussions from contact sports, calls by the media and the public to burn such sports may be premature. Collision sports expose individuals to neurological dangers, but they come with a host of benefits as well. The media has sensitized the public about the dangers linked to concussions prompting the NHL and NFL to take appropriate actions to reduce concussion rates. As such, one could argue that the media has played a significant role in saving the lives of individual players or highlighting their plight. Many athletes have received treatment and benefits due to media exposure.