Concussions in Athletes: A Review of Literature

Shelby D. Nava

University of Texas at El Paso

**Concussions in Athletes, a Lifelong Effect: A Review of Literature**

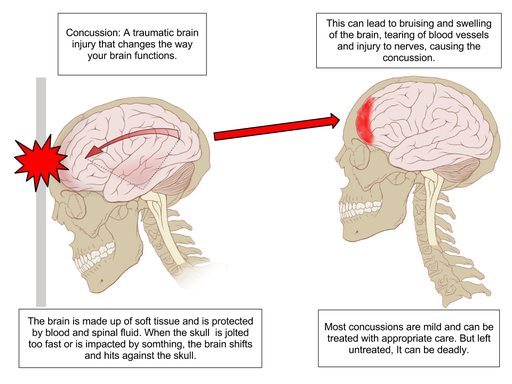
Concussions are an athletes’ worst nightmare. Everyday, an athlete puts themselves at risk to this horrible experience. Due to the amount of research that has been done on concussions, there has been an increase in safety precautions that are being taken as well as an increase in the interest of the subject. A concussion is a blow to the head that causes brain injury and can lead to life long side effects and and in the worst cases, death. Bennet Omalu, the doctor behind the Hollywood movie “Concussion” compared the damage that is done by a concussion to smoking cigarettes and consuming alcohol. He continues to state that parents do not let their children smoke or drink alcohol, so why would they let them play football knowing that they are at risk to facing serious brain damage (Good Morning America, 2015). It is proven that concussions can lead to Chronic Traumatic Encephalopathy, as known as CTE and Dementia Pugilistica. CTE is a condition where the brain begins to deteriorate and losses mass over time. Areas of the brain then come prone to expansion and will eventually become defective (“What is CTE?”).

The topic of concussions has drawn the attention of many and has even caused lawsuits placed on the National Football League (NFL). Former NFL player and Hall of Fame Linebacker, Harry Carson, decided to sue the NFL because “the NFL was negligent and mislead players about the dangers of concussions” (Rice Sports Management) although the NFL is denying this statement. Former Dallas Cowboy Tony Dorsett, former Chicago Bears Jim McMahon, and former Miami Dolphins player Mark Duper, have all showed signs of CTE due to many blows to the head within their years of play and have also decided to sue the NFL along with many other players that have experienced the same exact issue. … causing the review of the following three questions:

1. What is considered a “concussion” and what are symptoms?
2. How does the NFL deal with CTE?
3. How can a concussion be prevented and what precautions are being taken?

**What is considered a “concussion” and what are symptoms?**

The term “concussion” has several definitions, therefore causing many arguments amongst doctors and neurologist. Concussions are often referred to as Mild Traumatic Brain Injury (MTBI) (Ferullo, 2010). According the Centers for Disease Control and Prevention (CDC) there were 1.1 million emergency room visits and there were close to 235,000 people whom were hospitalized in addition to the ER visits due to head injuries in the year 2007 (Ferullo, 2010). Although the numbers seem high, there are still many more that occur each year however many athletes refuse to report them because it will result in temporary removal from practices and games. Concussions take place in but are not limited to the following: football, hockey, and basketball. Concussions do not just occur in athletes, they can happen to anyone.



Source: Nordqvist, J. (2013, June 10). Second Concussion Symptoms Last Longer. Retrieved March 27,

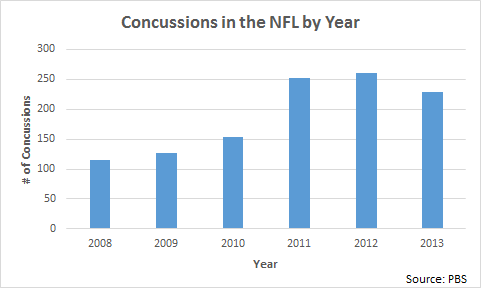
2016

One of the most common definitions is “a direct blow to the head or elsewhere in the body with an impulsive force transmitted to the head” (Ferullo, 2010). In other words a direct impact to the head. When athletes are experiencing a concussion, the symptoms are very obvious to others. Symptoms of a concussion include: dizziness, loss of memory, and the athlete is often disoriented. The athlete will want to fall asleep however it is probably one of the worst things to do. This is because if the athlete may experience acute brain swelling. Acute brain swelling is swelling that occurs inside of the brain and pressure builds up, this can eventually lead to death because the patient will become unconscious and will not be able to tell others if they are in pain or not. Other symptoms include loss of consciousness, nausea, and a decreased attention span (Ferullo, 2010). According to Ferullo, after experiencing a concussion, many athletes will complain about headaches, a lack of sleep, and vomiting. Because concussions cause a decrease in an athletes attention span, their performance in school will decline and as well as their grades. Many athletes will be excused from several homework assignments, they will be allowed to sleep during class time and in some cases, they will be allowed to miss school for several days. Symptoms of a concussion can last for days or weeks. The time it takes to recover from a concussion depends on the quality of treatment which includes rest and medical treatment.

**How does the NFL deal with CTE?**

Chronic Traumatic Encephalopathy (CTE) is a very life changing experience. It is often confused with Alzheimer's and Parkinson's disease because they share many of the same symptoms. As described above, it is caused by many blows to the head and will eventually cause detrition in certain parts of the brain the have become prone to inflammation. Symptoms of CTE include: memory loss, impaired judgment, depression, anxiety, suicidality, and with time, will cause dementia (“What is CTE?”). Dementia comprises of: memory disorders, personality changes, and impaired reasoning. CTE has caused a major conflict within the NFL that has lead to them being sued because of the lack of knowledge provided to players about the dangers of concussions (“What is CTE?”).

Players claimed that the NFL was “Negligent and was misleading” and the experiences that they had with concussions, completely changed their lives completely. Just like smoking companies were denying the fact that the use of cigarettes are the cause of lung cancer, the NFL was denying that concussions were the main cause of CTE (Rice Sports Management). Dorsey Levens, a former NFL running back from 1994-2004, stated that regardless of what happened during the game, it was necessary to stay on the field because if you did not, you were at risk of loosing your job. He could not remember how many times he would go back to the huddle trying to regain consciousness after getting tackled by the other team (Rice Sports Managemenet).



Source: Dewangan, A. (2014, July 08). NFL Players Win Settlement For Concussion-Related Claims - Money Economics. Retrieved March 27, 2016

The mentality of every football player was to shake off the injury instead of actually seeking medical attention. He continues to state that is they knew everything they know about concussions today back then, everything would be different. In 2003, Jamal Lewis was 40 yards short of breaking the NFL single season rushing record. According to Rice Sports Management, in 2009, he attempted to break the record again, however he was unsuccessful. After a hit, he was forced to end his career. Because of the impact, he began to experience memory loss. Within his career he believes that he played through eight concussions that he did not receive any medical attention for. In 1994, the Mild Traumatic Brain Injury Committee was created by NFL Commissioner Paul Tagliabue. He created this committee to study head injuries and their impact on long term health. Between the year 1994 and 2009, there were only 16 medical reports. William Barr, whom worked for the New York Jets, conducted close to 400 neurological tests on players (Marshall, 2012). The majority of these tests were ignored. He was then told that his data was not needed by the committee. Later, Eliot Pellman became the medical director of the Jets. Many neurologists came to the conclusion that because many reports written by the committee contradicted themselves, they have been excluding data. Pellman, in 2006, stated that because after experiencing a brain injury players return to play football the next season “it can be concluded that mild TBIs (traumatic brain injuries) are not serious injuries” (Rice Sports Management). After this was released, his statement has been stated word for word in many lawsuits. He has refused to participate in any interviews. The NFL did not use any data that was not their own because they did not believe them. In many court hearings, medical professionals working for the NFl tend to avoid stating that football is connected to long term effects on the brain. In 2009, at a court hearing, Roger Goodell was questioned whether or not there was a connection between head injuries and long term problems (Rice Sports Management).

**How can a concussion be prevented and what precautions are being taken?**

The Super Bowl is considered a holiday to thousands of Americans. Many families spend their Sundays’ watching football games till the date of the Super Bowl. Till the Super Bowl, many players experience serve blows to the head. Over 100,000 concussions occur in football due to impacts to the head. On average, the speed of head to head impact is at 20 miles per hour (Kasparian). This can be compared to getting hit in the head with a sledgehammer, a large hammer that is used to break rocks into small pieces. Within .15 seconds, a players’ life can change completely. In a survey, because of head to head collisions, 9 out of 10 players suffer from pain daily, 91% of these players blame their pain on football. In another survey that was conducted, 9 out of 10 retired NFL players suffered concussions, 6 out of 10 players experienced more than 3 concussions and 2 out of 3 players are still experiencing symptoms from their concussion (Kasparian). The least paid NFL player gets $400,000. It may seem like a lot of money however; they are suffering in the long run. By the time that they are thirty years old, it is like they are living in a seventy year olds body because all of the damage that has been done (Rice Sports Management).

Since many players experience concussions, it is necessary to be cleared by doctors’ appropriately. Because many doctors have different opinions on this subject, they all have different ways to determine whether or not a player can return to play. One of the most common factors in this situation includes observing the player while at rest (Ferullo, 2010). It is also recommended that an athlete does not consume any type of medication because this can affect any type of pain that they might feel and influence their behavior. There is no actual way to prevent concussions from occurring however they can decrease chances of concussions occurring. This is possible by creating better equipment that will protect the brain from such a hard impact. In addition to creating better equipment, there have been new rules and guidelines that have to be followed (Ferullo, 2010).

**Conclusion/ Synthesis**

In conclusion, this literary review has answered the questions listed above: What is considered a “concussion” and what are symptoms? How does the NFL deal with CTE? And how can a concussion be prevented and what precautions are being taken? The topic of concussions creates a mega argument within the NFL as well as within the medical society. As much as the NFL tried to deny the fact that concussions do occur in football and it is connected to CTE, they have finally admitted to the fact it is true. Because of the pain that many players go through, they would not advise their own children to take play in the sport. Research within the topic of concussions continues to grow as well as the safety precautions that are being taken. It is extremely hard to completely prevent a concussion however it is possible to reduce the amount of concussions that occur each year by creating better equipment and by adding rules to the game of football.

Primary Research

**Purpose: Concussions in College Athletes**

By conducting an interview, I hope to find out how often concussions occur in UTEP student athletes.

**Methods Used**

I will conduct my primary research by interviewing student athletic trainers in the Larry K Durham center located in the Sunbowl.

**Results of Primary Research**

I interviewed two student athletic trainers a total of 4 questions that were related to the topic of concussions.

1. How do you define a concussion

2. How often do you see athletes with concussions

3. How do you think they can be prevented

4. Which sport has the most concussions

Athletic trainer #1 responded:

1. A concussion is any form of head injury there is no longer a grade scale for severity any hit to the head is defined as a concussion

2. Every season and off season I see least 5 or more people who receive concussions

3. Prevention can start with educating the community not just schools with sports about signs and symptoms of concussion and the risk that are run if not taken care of properly and can result in death.

4. Football, rodeo and hockey are the sports with the most head and cervical injuries

Athletic trainer #2 responded:

1. I would define a concussion as a hit to the head that causes temporary unconsciousness and many have after affects such as headaches or confusion.
2. Me myself, I don’t see athletes with concussions that often.
3. Its very difficult to prevent concussions. Abiding by the rules and improving equipment may decrease percentages but not prevent them.
4. Football causes the most concussions than any other sport because of the high impacts that are involved.

**Implications of Primary Research**

Based on the interviews conducted, a concussion is defined as a hit to the head. It is also predicted that majority of concussions come from football or other sports that have constant head on collisions.

Annotated Bibliography

Decq, P., Gault, N., Blandeau, M., Kerdraon, T., Berkal, M., ElHelou, A., & ... Peyrin, J. (2016). Long-term consequences of recurrent sports concussion. Acta Neurochirurgica, 158(2), 289-300. doi:10.1007/s00701-015-2681-4

Concussions have been suspected in the cause of the development of long term neurological disorders. This article includes a study done of 239 retired rugby players and 138 other sports players. The purpose of the study was to see the types of disorders that are caused by concussions in the future. It also includes a study on the annual amount of concussions. This article is relevant to the literature review because it includes information on the long term effects of concussions. It also includes statistics on the amount of concussions a year.

Ferullo, S. M., & Green, A. (2010). Update on concussion: Here's what the experts say. Journal Of Family Practice, 59(8), 428-433.

In the article, they describe what a concussion is. It also gives an in depth analysis on the symptoms that an athlete may face right after the concussion as well as what they might experience after the concussion. It also discusses the precautions that may be taken. This article is related to the literature review because it gives a very precise in depth review on the overall subject.

Good Morning America. (n.d.). Real-life Doctor Behind Will Smith's 'Concussion' Speaks Out. Retrieved March 04, 2016, from <https://www.youtube.com/watch?v=ciM1P_Smpq8>

In this video, there is an interview with the doctor behind the movie “Concussion”. He claims that concussions are the cause for CTE which results in memory loss, depression and suicidal thoughts. This is relevant because he explains the risk of developing CTE. Also, because he gives a very important view of concussions in the NFL as well as in children.

Marshall, C. M. (2012). Sports-related concussion: A narrative review of the literature. Journal Of The Canadian Chiropractic Association, 56(4), 299-310.

The topic of concussions has gained attention in the most recent years. This is because of the long term consequences that athletes have began to experience. The article includes the biomechanics of the impact to the brain. It also includes the symptoms of concussions as well as treatment. This article is relevant to the literature review because it includes how the topic of concussions has risen in interest within the past years. Also, because it goes more in depth on what the brain experiences during a concussion and what the athlete feels immediately after experiencing one.

Kasparian, A. (n.d.). NFL Football Hits, Concussions, Injuries & a Lifetime of Pain. Retrieved March 04, 2016, from <https://www.youtube.com/watch?v=UT__BsZlHSc>

Over 100,000 concussions occur in football caused by impacts to the head. In the NFL the average speed of head to head impact is at 14 miles per hour. It is like getting hit in the head with a sledgehammer. This video is relevant because it shows what the brain experiences. it also includes future technology that maybe developed to help prevent concussions.

Piazza, S. (2014). Why Is It So Hard to Stop Sports Concussions? Amer. Scientist American

Scientist Amer. Sci. Am. Sci. Am. Scientist, 102(5), 346.

The majority of concussions take place in sports. This author creates an argument the that human behavior and the impacts to the head are the main reasons concussions occur so often. He continues to explain the damage that the brain experiences when hit with such high forces. He also includes way to protect the brain from future damage. This article is relevant to the literature review because it includes information on damage to the brain as well as why they occur so often. It is also relevant because it gives the perspective of a doctor, showing credibility that is necessary.

Rice Sports Management. (n.d.). Former NFL players suing the league over concussions - Outside the Lines. Retrieved March 04, 2016, from <https://www.youtube.com/watch?v=Y5S7VZhD2LA>

The video is about a former NFL player. Because of a concussion that he experienced, he has deiced to sue the NFL for “deception and denial”. He claims that he has also been mislead. This video is relevant to the literature review because it includes statistics on the concussions in the NFL. Also because it shows that the topic of concussions is neglected for entertainment.

Robeson, R., & King, N. P. (2014). Loss of Possession: Concussions, Informed Consent, and Autonomy. Journal Of Law, Medicine & Ethics, 42(3), 334-343. doi:10.1111/jlme.12150

Many families who's athlete plays in the NFL are often misled on the dangers that may be faced. This article focuses mostly on concussions experienced in the NFL. Concussions in the NFL have become more and more of a concern. It includes the decision that many athletes are facing whether or not they should continue to play. This article is relevant to the literature review because it gives the perspective of the NFL and their families. By using this article, it gives a different perspective.

What Is CTE? (n.d.). Retrieved March 24, 2016, from http://www.protectthebrain.org/Brain-Injury-Research/What-is-CTE-.aspx

CTE is caused by concussions. Many NFL players suffer from CTE and because of it may face death. CTE causes detrition inside the brain and causes memory loss. Many NFL players are suing because they have experienced CTE. This is related to the literature review because it is a major problem within the topic of concussions.