

COLLEGIATE FOOTBALL PLAYERS' PERCEPTIONS ON CONCUSSION MANAGEMENT

Joseph Kwame Mintah*

Jeff Evans**

Abstract

Research has investigated the adverse effects of athletic concussion and its controversy, yet little work to date has examined the perceptions of players regarding the concussion controversy. This study investigated 37 community college football players' perceptions on their knowledge and understanding of sport-related concussion. Data was categorized into evidence of concussion, knowledge of concussion management, confidence in collegiate modifications and regulations, and the significance of concussion long-term consequences to the player. Overall, no player reported sustaining three or more concussions. Participants lack knowledge about concussion rehabilitative procedures. Players felt the 7-day post concussion return to play policy is appropriate, and they would take the risk to continue play even if they feel concussed in a game.

* **Department of Health, Physical Education and Recreation, University of Cape Coast, Cape Coast. Ghana**

** **Athletics Trainer, Los Angeles Community College, Los Angeles, CA**

Introduction

Sport medicine and athletic training community have set methods of assessment and rehabilitation when working with sport related skeletal muscular injuries. However, there is a lack of consistent tools and techniques found when identifying and rehabilitating a sport related concussion (McLeod, 2009). The lack of proper diagnosis, underestimated injury significance, rehabilitation duration, and potential adverse long-term results from concussion, create an immediate need for attention to the injury for players of the past, present, and future (Cantu, 2009).

However, despite current attention and research to the issue, players continue to compete and expose themselves to the potential harmful and possible life threatening results from contact sports. Do the players, who are the focus of the controversy, care about the adverse effects associated with concussion? To what extent, do players understand the prevention, management, and symptoms associated with concussion? Finally, is the educated community doing enough to warn players of the potential harm associated with concussion? The above issues are the focus of this paper.

Concussion Definition, Causes and Symptoms

There is no consensus about the definition of concussion. McCrory et al. (2004) define concussion as a complex pathophysiological process affecting the brain induced by traumatic biomechanical forces. Concussion is an immediate and transient loss of consciousness accompanied by a brief period of amnesia after a blow to the head (Ropper, & Gorson, 2007). Regardless of the lack of agreement about the precise definition of concussion, researchers agree that concussion has adverse effect on the brain.

Concussions occur as a result of a rotational motion of the cerebral hemispheres in the anterior-posterior plane. The action involves a lack of neck support, which could be accompanied by neck injury. Therefore, it is important to note that players may require immobilization for possible spinal damage (Ropper, & Gorson, 2007). A direct blow to the head or the face often causes the athletic concussion or neck tilt accompanied by an “impulsive” force transmitted to the head (McCrory, et al, 2004).

One who diagnoses concussions will find difficulty in exact determination of the severity; however, many symptoms and signs are provided. The acute signs of a concussion include a brief loss of consciousness, light-headedness, vertigo, memory loss, blurred vision, focus difficulty, headaches, nausea, vomiting, and balance disturbance (Wojtys, et al, 1999). The delayed signs which are not as obvious include sleep irregularities, fatigue, personality changes, inability to perform usual daily activities, and depression. Further extended problems later in life are permanent memory loss, depression, motivation loss, and personality change (Miller, 2010; Tator, 2009).

Short-Term Concussion Effects

Previous research on concussion assessment is based solely on loss of consciousness (LOC) and posttraumatic amnesia (Notbaert, & Guskiewicz, 2005). However, short-term effects could result in headache, poor balance, and confusion while remaining just as damaging as LOC. Other indications of a short term concussion effects include blurred vision, difficulty concentrating, amnesia, headache, nausea, vomiting, and balance disturbance (Ropper, & Gorson, 2007). The mild traumatic brain injury is normally followed by numerous unseen cognitive adaptations for several upcoming days.

Early and immediate detection, observing and testing the previous symptoms is crucial to conducting a reliable assessment (Wojtys, et al, 1999). For example, tests for short-term concussion effects should be conducted day to day when monitoring the patient. Patients may continue to express imbalance when rapidly turning their head to one side while focusing their eyes on a fixed point. The patient may lack the fixation, which would indicate a continued adverse condition (Ropper, & Gorson, 2007). The clarification of the severity of a short-term concussion is difficult and therefore supports an athletic trainer or a coach holding the player from return-to-play until further examinations are completed (Wojtys, et al, 1999).

Multiple Concussions

Disagreements exist about the evidence of multiple concussion syndromes. However, returning an injured player to competition when the brain is in a state of healing is always a concern. Experts agree that returning an athlete or a player to participation prior to complete

healing from concussion can lead to death or permanent disability (Tator, 2009). As much as the propensity of a second impact syndrome is rare, its potential long-term damage is a concern (Wojtys, et al, 1999).

Injured brain cells are not destroyed. They remain alive, yet in a vulnerable state (Wojtys, et al, 1999). And, as long-term neurocognitive impairments are associated with multiple concussion impacts (Covassin, Stearn, & Elbin, 2008), athletic trainers and coaches should guide against cumulative head injury from neurological consequences among boxers, soccer players and American football players.

Multiple concussions potential could vary from sport to sport. But, research show that collegiate American football players are at three times greater risk of suffering additional concussions (Covassin, Stearn, & Elbin, 2008). This cumulative head injury or chronic traumatic encephalopathy (CTE) found in postmortem athletic brain analyses (Miller, 2010) among young players could also be found among Alzheimer's disease. Therefore, it is not surprising when research on retired professional football players with three or more concussions revealed a significant increase of cognitive impairment (Reddy, & Collins, 2009). Players who suffer three or more concussion are five times more likely to have mild cognitive impairment and three times more likely to have significant memory problems than players without a history of concussions (Crossman, 2007). Thus, multiple concussions initiate the early onset of dementia-related diseases, such as Alzheimer's.

Players who sustain three or more concussions and experience slow recovery are advised to permanently disqualify themselves from contact sports (Cantu, 2009). In addition, a player who suffers three or more concussions is three times more likely to suffer from depression than a player without a history of concussions (Crossman, 2007). For example, Ricardo McDonald, a Former National Football League (NFL) player, who accumulating over 20 career concussions is a living testimony. Ricardo played in a National Football League game with a 60% swollen brain and suffered an additional concussion as a result. Currently, Ricardo suffers from headaches and memory loss and according to his last MRI; he has the brain of an 80 year old, although only at the age of 37.

Long Term Concussion Effects

To date, there is the lack of substantial long-term evidence on the effect of concussion. But, a troubling new trend of long-term concussion effects is that most former NFL players are suffering from dementia, depression, and early onset Alzheimer's disease (Crossman, 2007). For example, former NFL great Larry Morris first described his dementia 15 years ago. Now at 73 he is unable to sign his name, complete basic hygiene tasks, and struggles to dress himself. According to his neuropsychiatrist, his disease is linked to the long-term effects of the multiple concussions suffered throughout his college and professional career (Crossman, 2007; Covassin, Stearns, & Elbin, 2008). Once considered a temporary disruption of cognitive function without future problems, research has revealed that concussion involves structural changes that result in neurobehavioral long-term impairment.

Anxiety and depression are reported by a third of post-concussion players (Ropper, & Gorson, 2007). But, it is difficult to acknowledge whether these characteristics preceded the injury. Although it is difficult to determine the extent and quantity of concussion sustained during a career, one could hypothesize the potential to be great. A typical NFL player will encounter thousands of hits to the head through high school, college and professional career (Miller, 2010).

Studies had indicated that rehabilitating an individual with traumatic brain injuries (TBI) is beneficial if conducted early. In addition, intensive rehabilitation techniques conducted over a longer period of time provides the best results for TBI individuals. The purpose of this study was to investigate concussion management. The central research questions of this study are (1) Do football players who have sustained a concussion differ in concussion management perception to those who have not sustained a concussion?(2) What is the knowledge level of current college football players concerning concussion? (3) What are the perceptions of collegiate football athletes on current collegiate concussion management? (4) How do the theorized long-term effects of a concussion change the perception of a college football player?

Method

A mixed method design was used to collect data in this study. Eight demographic data including age, race, grade, educational experience, current community residence, and athletic experience were collected.

Participants Demographics

Participants ($N = 37$) age ranged from 18 to 26 years ($M = 19.51$, $SD = 1.80$). There were 26(70.3%) African American, eight (21.6%) Caucasian, and one (2.7%) participant each from the Asian, Hispanic, and other category. For college standing, there were 20(54.1%) freshman, 10(27%) sophomores, five (13.5% age) grey or redshirt freshman, and two (5.4%) grey or redshirt sophomores. A breakdown of the participants' educational background showed that 31(83.8%) were high school graduates, five (13.5%) high school general education degrees, and one (2.7%) community college Associate Degree. The participants' year of experience in organized football ranged from one to ten years.

Dependent Measure

The Collegiate Football Concussion Perception Survey (CFCPS) was developed to collect data in this study. The 26-item self-reporting CFCPS requires participants to complete inquires on four primary themes. The first theme consisted of four survey items (9-12) pertaining to individuals who had or perceived to have sustained a concussion(s). The second theme which comprised of six items (13-17 and 19) collected data on participants' knowledge of concussion management and prevention techniques. The knowledge theme included a comparison of skeletal muscular injury to head-trauma injury management.

The third theme utilized four survey items (18, 20-22) that focus on player confidence in regards to current collegiate football concussion management modifications and regulations. The final theme contained three items (23-25) that required the participants to answer opinion based perception comments. This section focused on the significance of concussion long-term consequences to the individual. In addition, this final theme required participants to read an excerpt comparing a recent collegiate football player's concussion to that of a past collegiate football player's concussion. The participants were asked to record any change in previous answers post-reflection of the excerpt.

Procedure

Institutional Review Board (IRB) approved the research protocol. The Athletic Director and coaches were contacted for the release of the players to participate in the study. The CFCPS

was self-administered and collected. Each participant signed an informed consent form before completing the CFCPS. Prior to collecting data, a pilot test of the survey and reflective response component was conducted with an athletic trainer and fitness trainer at the high school level as participants. The survey questionnaire was then reformatted to meet the logistic needs of the participants based on the information received from the pilot test.

Results

The result in this study is presented around four themes: Sustained concussion, concussion management, regulation confidence, and concussion long term.

Theme One: Sustained Concussion

In this study, 16(43.2%) participants had sustained diagnosed concussion(s) from organized football. Of these individuals, 11(68.8%) had sustained one and 5(31.3%) sustained two. No participant reported sustaining three or more diagnosed concussions. With regards to non-diagnosed concussions, 9(24.3%) indicated they had experienced non-diagnosed concussion while playing football.

Theme Two: Concussion Management

A participant injury management knowledge comparison was created between a common skeletal muscle injury (example hamstring) and a concussion injury. The comparison was measured in two ways. The first compares the ability of the participant to describe preventive and rehabilitate procedures of a skeletal muscle injury and the preventive and rehabilitate procedures of a concussion. The second requires the participant to judge current skeletal muscular injury management and current concussion management.

Frequency data of the common injury indicated that 23(62.1%) strongly agreed or agreed they could describe preventive and rehabilitation procedures when working with a skeletal muscle injury such as a hamstring pull whereas 12(32.4%) strongly agreed or agreed they could describe preventive and rehabilitation procedures when working with a concussion. Further frequency analysis revealed that 23(62.1%) strongly agreed or agreed that the current management procedures were adequate in treatment and prevention of a skeletal muscle injury

with only 17(45.9%) strongly agreed or agreed that concussion management procedures are adequate in treatment and prevention. Assessment of participants' knowledge about symptoms of concussion and the susceptibility of multiple concussion showed that 28(75.1%) and 22(50.4%) were aware, respectively. Thus, a greater number of participants are familiar with the symptoms of concussion and its re-occurrence as well as common skeletal injuries, their management, treatments and prevention procedures.

Theme Three: Regulations Confidence

Frequencies were calculated to investigate player confidence in current collegiate football concussion management modifications and regulations. Survey Item 18 stated: I believe the current "7-day return policy" post-concussion provides sufficient time for recovery from most concussions. A total of 19(51.3%) participants strongly agreed or agreed with the post-concussion return policy. When players were asked if they agree with the "current football competition rules and regulations (for example, helmet to helmet personal foul) adequately protect them as a player from head trauma." 22(59.4%) participants concur. In addition, about 23(62.0%) of the participants believed helmet design and protection were adequate when worn and maintained properly.

The final item in this theme asked participants if greater education should be provided regarding the prevention and adverse effects of a sport-related concussion. Again, 22(59.4%) of the participants believed greater concussion education should be provided. In summary, participants think the seven day post concussion return policy provides sufficient time for recovery from most concussions even though they think more education on concussion is needed to diagnose concussed and non-concussed players.

Theme Four: Concussion Long-Term

Three questionnaire items, 23, 24, and 25 focused on Theme Four. For example, item 23 in the survey stated: If I knew I may have received a concussion in a game; however, believed I could "play through it" I would continue to play. The response to this item revealed that majority of the participants, 21(56.8%), remained neutral. Only 13(35.1%) strongly agree or agreed they would continue to play. Perhaps majority of the participants love to play their sport, but

juxtaposing that with the danger of multiple concussions made them pause, reflected on the future health implications and stayed neutral.

Items 24 and 25 referred to the football athletes' own thoughts on the impact of multiple concussions. Item 24 asked: "If I knew multiple concussions cause long-term negative side-effects (for example memory loss, depression, and early onset of Alzheimer's) and I was diagnosed with a third concussion, I would retire from football." For this item, 20(54.1%) of the participants stayed neutral with only five (13.5%) indicating that they would retire after sustaining multiple concussions.

Item 25 provided participants with a hypothetical choice between playing four years in the National Football League (NFL) with the possibility of sustaining multiple concussions detrimental to one's health or choose not to play. For this item, there was a split; 17(45.9%) stayed neutral, 18(48.6%) said they would risk their health for a four year NFL opportunity. Only 2(5.4%) decided they would rather resist injury exposure.

Discussion, Conclusion and Recommendation

This study finding indicated that few participants had sustained concussion before. Perhaps the relatively young nature of these participants' in terms of playing experience is a contributory factor. Frequency data showed that the players ranged in playing experience from one year to ten years. For such relatively young players, it is likely they have not had much traumatic injuries. Another possible reason could be that the sports medicine team who attend to these players when hit might not have been able to differentiate traumatic injuries from concussion. This is because past research on concussion assessment has been based solely on the loss of consciousness and posttraumatic amnesia (Notbaert, & Guskeiwicz, 2005). This improper assessment and diagnosis on the part of the medical team might have made some of the players think they have never had concussion more than once.

In this study, participants felt they could describe preventive and rehabilitative procedures when working with skeletal muscle injury better than concussion and its management. This is expected as the symptoms of concussion are many and players find it difficult to keep track. For

example, a short term concussion effects might include headache, poor balance and confusion (Notbaert, & Guskiewicz, 2005), the moderate effects might manifest in sleep irregularities, blurred vision, nausea, vomiting (Ropper, & Gorson, 2007), and the long term consequences could include cognitive impairment, depression, personality change and dementia (Miller, 2010; Tator, 2009). These numerous symptoms associated with the different levels of concussion could confuse the football players. It is therefore not surprising when football players indicated that they could describe preventive and rehabilitative procedures of skeletal muscle injury better than concussion and its management, which is complex.

The 7-day post-concussion return policy was fully endorsed by the football players as they felt it was adequate for them to return to full fitness and participation. This was expected as most players would not like to stay away from their sports once cleared to compete even though research evidence to support this 7-day return policy is mixed; some felt it should be based on the severity of the concussion. Regardless of what a concussed player wants to do, the likelihood of multiple concussions occurring and leading to death or permanent disability is high (Tator, 2009). As a result, the medical team should ensure that the injured brain cells are fully healed to avoid further neurocognitive impairments (Covassin, Stearn, & Elbin, 2008).

It was worrying to find out that majority of the players in this study wanted to finish a game even if they are concussed. A plausible reason for the players to continue play when concussed could be the diehard tough spirit instill in them by their coaches and team mates. Most football players feel that giving in is a failure and a big disappointment to their coaches and colleagues. Hence, their refusal to give up when concussed. As much as these players want to compete under unfavourable health conditions, coaches and medical personnel should put players' health and safety first. In addition, they should intensify education on the short and long term effects of concussion.

In conclusion, there is a knowledge gap about the description, prevention and rehabilitation procedures of concussion. Coaches and athletic medical staff should continue to educate contact sports players about the dangers of multiple concussions and its future ramifications. Research is needed to better understand why players would like to continue to play under concussed condition.

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