

BUILDING THE ENLIGHTENED WARRIOR

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INTRODUCTION

Concussion awareness is rapidly expanding, thanks to the work of some courageous individuals. It appears the days of smelling salts and “you got your bell rung, get back in there” are coming to an end. The result should no doubt be a dramatic increase in neurological safety for all athletes. However, a side effect of this awareness is the perception that playing a contact sport, football in particular, destroys your brain. This perception is not accurate.

Football does not destroy your brain. Countless successful former football players are a testament to this. However, mounting evidence indicates that playing football in an extreme fashion might destroy your brain. Almost anything done to an extreme is unhealthy.

Concussions have clearly been an uncontrolled epidemic in football for decades. Epidemics are not instantly cured by simple solutions. They require complete strategies for risk reduction. The following outline provides a complete strategy.

BELIEVE IN PREVENTION

First and foremost, anyone involved in athletics should believe that prevention of neurological injury is of paramount importance. An undercurrent of “concussions are inevitable, we just have to manage them” permeates the sports world. Just because some concussions may still occur, this does not warrant an attitude of complete resignation towards preventing the injury. Prevention is possible. Prevention is critical.

IMPROVE UNDERSTANDING

The term concussion is inherently problematic, because it gives a vague sounding name to a tangible and dangerous injury. Most of the effects of a concussion are invisible symptoms; the definition of concussion is still evolving; and the awareness level of this injury varies greatly. Historically, a concussion was usually diagnosed only when a loss of consciousness occurred, perhaps making the injury seem rare. Actually, loss of consciousness is somewhat rare, while concussions are rampant.

Thus, diagnosis of concussion often hinges upon the player’s level of forthcoming, and the experience and knowledge of the person making the diagnosis, if any. Concussions cannot be seen on conventional imaging scans. We now understand that the brain requires a significant amount of time to recalibrate itself after an injury, and that repeated injuries can have a host of significantly negative outcomes.

At Xenith we use the term **concussive episode**, as opposed to concussion, and invite others to join us. ‘Episode’ is a clinically useful term, describing something with a start and finish, and a variety of possible features and descriptors. With regard to concussive episodes, a long but generally accepted list of possible signs or symptoms may be included. Diagnosed concussions are included as concussive episodes. While the concussive episode may end, particular symptoms may linger indefinitely. The term concussive episode de-emphasizes “grading” a concussion (i.e. mild, moderate, severe) in favor of describing the episode’s features; who is to say what is mild, moderate, or severe?

The term concussive episode eliminates the need to “diagnose” the concussion to make it real. It ends the confusion over so-called “dings or bell-ringers,” or episodes of “seeing stars.” They are all included because they are all real.

I've had one diagnosed concussion, but I've had five concussive episodes. One of these sent me to the hospital after about fifteen minutes of disorientation (as far as I know because I don't remember it), and resulted in me being held out of sports for a while. The other four episodes consisted of transient fogginess and visual disturbance, but through which I continued playing. I believe we can all agree that each of these five episodes, all of which resulted from head to head contact, belong on the same spectrum, and provide a better description of my history than stating, "I've had one concussion, but I know I've had my bell rung four other times."

It is evident that players of all sports experience many more concussive episodes than are actually diagnosed as concussions, perhaps ten fold more. Simply gather a group of players (preferably gathered by someone who has no influence on their playing time and promises them anonymity) and ask them how many have had concussions. Some will raise their hand. Then ask them how many have been hit and felt dazed or seen stars. Most will raise their hand.

IMPROVE THE CULTURE OF FOOTBALL

Many have heard the ubiquitous, "Football is not a contact sport. It is a collision sport." Sports Illustrated ran a cover story on big hits (warning of the culture of hitting), with a quote from a well-known player, stating, "The game is about taking another man down physically and mentally." Because of this mentality, big hits are rewarded, at least culturally, with cheering, highlight films, and awards with names like "Headhunter" and "Hammer." Young players proudly show off the marks on their helmets. "Gladiator" is the theme of choice.

However, a careful reading of the National Federation of High Schools Football Rule book, Section 1 Article 1, reveals the following:

"It is the object of the game for one team to carry or pass the ball across the opponent's goal line or to kick the ball through the opponent's goal by a place kick or drop kick. The game is won by the team which accumulates the most points."

There is absolutely nothing in the rule book that rewards hitting; nothing about being a gladiator. The "rewards" are entirely cultural, and the dangers entirely real.

Most have come to expect and accept that football is an inherently violent sport, but it is really not supposed to be. It evolved from rugby, which is widely accepted as physical, but not necessarily described as violent. Should football be physical? Absolutely. Violent? This was clearly not the intention, and the result is neurological injuries.

Think about it this way: Who sends their kids out on Friday night to take another kid down physically and mentally? Who goes into coaching to teach kids to collide? Parents send their kids into football for its benefits, and coaches go into coaching presumably to provide these benefits to kids. Any good coach will spend more time talking about what players went on to do in life than they will spend talking about wins and losses (and those coaches usually have the most wins).

The media and imagery revolving around football is a huge problem. The violence and hitting are played up to the highest degree. Why? Because we watch, cheer, and pay. Responsible media outlets would do a tremendous benefit

to players everywhere by focusing on great plays, and not on big hits. Fans can do their part in small ways, like complaining to media outlets, and by not cheering as the big screen shows players headhunting.

Simply put, we must end the gladiator mentality that permeates football. In ancient Rome, a gladiator was defined as a professional combatant or a captive who entertained the public by engaging in mortal combat. While this sounds about right in describing football these days, at least at the highest levels, this must come to an end. If you want Gladiator, rent the movie. If you want collisions, go to a demolition derby.

It is critical to realize that football has always been popular, and will continue to be popular. The game can remain physical, fast, and entertaining, and will likely attract even more young athletes if it can become a safer activity. This is no longer about being a gladiator. It is about being an Enlightened Warrior.

IMPROVE THE GAME OF FOOTBALL

Football rules and techniques must be thoroughly examined, with the goal of eliminating neurological injuries. The most effective rules and techniques will be geared towards eliminating the use of the head for contact. Coaches, leagues and officials should take a zero tolerance policy towards this practice. Eliminating head first contact will not only minimize concussive episodes, it will minimize other more severe injuries, including spinal cord injuries.

I believe the most effective, and completely unrecognized, effort would penalize ball carriers for lowering their head. It is actually quite easy for an official to see ball carriers doing this, and I believe this technique is responsible for a majority of head to head collisions. Ball carriers with lowered heads incentivize tacklers to do the same, resulting in mutually dangerous activity. A ball carrier with his head up would actually reduce the incentive of the defender to use his head, and make doing so much more apparent to officials. The result would be a significant decline in head to head collisions.

Most commentary on head to head hits focuses on defenders. As a former defensive end at the youth level, and as a free safety at the high school level, I certainly led with my head all the time. I have now learned that it is entirely possible, and preferable, to tackle without using one's head. Xenith sponsors a very effective tackle training technique, coached by Bobby Hosea, called "Dip n' Rip". This technique has players deliver an upward thrust, with contact made across the chest and shoulders. This technique drives the runner upright, while the head remains out of the impact. Players make sound tackles with the focus on stopping forward progress.

A particularly vulnerable group is receivers. The NFL has begun to flag defenders for impacts to the head or neck of a "defenseless" receiver. I believe this situation would be further improved by requiring that defenders make a sincere effort to play the ball rather than the man while the ball is in the air. This would eliminate the many "blow up" hits delivered on receivers.

The defender's first purpose is to create an incomplete pass, and he should be required to make that effort. Once the ball is caught, there should be a sound tackling technique applied. Yes, there will be some gray area on this regarding the timing of tackles, but the intent is a **zero tolerance policy** for neurological injuries. Some may argue that this takes the toughness out of football. What is so tough about hitting someone in the head when they are not looking?

Linemen may experience a head to head hit every play. The practice of starting linemen upright, as opposed to starting in a down stance, is gaining momentum. It is difficult for some to conceive how a lineman can be effective without using his head, but once you ask the question, "how would you play if you weren't wearing a helmet?" the answer becomes evident. Blocking should occur with the arms and hands, not the head.

Players may continue to grow bigger, faster, and stronger, which contributes to the energy of collisions. Perhaps limits on Body Mass Index should be considered, but a total commitment must be made to eliminating the head as a primary point of contact. Anyone in the player's sphere of influence can be effective in reducing this practice.

REDUCE EXPOSURES

One of the factors that must be addressed is the number of exposures that athletes are subjected to. An exposure is an activity that subjects the athlete to potential for injury. This may be a practice, a game, or an extended drill. Simply put, the more you play, the more exposures you have. Extended seasons, double or triple sessions, spring practices, or long practices with "live" contact will increase the player's risk of injury. Teams would greatly improve safety by considering the number of exposures players are subjected to. This would of course reduce the risk of all other injuries as well.

IMPROVE PROTECTIVE EQUIPMENT

Protective equipment receives a tremendous amount of attention, both positive and negative, with regard to injury prevention. Some may blindly look for technology solutions, perhaps only after the problem has reached significant magnitude, at which point it is likely too late. Others believe that protective equipment cannot help, or they perceive that protective equipment leads players to take more risks, thereby making the problem worse. In reality, protective equipment can play an important role when applied in the proper context.

To understand the role of protective equipment, it is important to understand the mechanism of a concussive episode. The human brain has often been described as "jello-like," but I prefer describing it as a "balloon full of spaghetti." Of course, the spaghetti is actually countless nerve cells organized in an intricate pattern, orchestrating a complex array of functions, while suspended within the human skull.

The brain's function is disrupted by a sudden movement of the skull, which causes movement of the brain inside. The brain may slam into the skull, but it does not necessarily do this in a concussive episode. The key factor is sudden movement. Gradual movement is fine; sudden movement is not. Most of the time this sudden movement results from a direct contact to the head, but the brain can be injured by sudden movement even without direct contact to the head.

All things being equal, more sudden movement is more dangerous. Sudden change causes high force. Gradual change causes low force. Physics equations prove this. One can imagine that suddenly moving a balloon full of spaghetti will cause the spaghetti to be stretched, twisted, or damaged. In the actual brain, the effects of this movement and the disruption to nerve cells can vary widely between individuals. The outcome may be a spectrum of signs (visible to an observer) or symptoms (experienced by the individual) that will vary in duration and severity.

Therefore, protective equipment that minimizes the sudden movement of the head will reduce the risk of brain injury. The human body functions within very narrow ranges of tolerance. Small changes mean a lot. The difference between functional cartilage and a healthy knee joint versus dysfunctional cartilage and an unhealthy knee joint is millimeters and milliseconds of adaptive compressive ability in the cartilage. Protective equipment that alters the movement profile of the head, even by millimeters or milliseconds, will make a difference.

However, no responsible equipment manufacturer believes that equipment alone can completely solve the problem of concussive episodes. No responsible equipment manufacturer wants their equipment to create a false sense of security. No responsible equipment manufacturer wants their equipment used as a weapon. However, better equipment is clearly a piece of the risk reduction strategy.

IMPROVE RECOGNITION

Even in the best of circumstances, it is logical to expect that injuries will inevitably occur as a result of accidental circumstances. Arguably the biggest problem in football is “playing through” a concussive episode; this is an extreme thing to do, and dramatically increases the risk of further injury and increased disability. This is a result of the gladiator mentality, which mandates playing through pain.

Playing through an ankle sprain is understandable, but this mentality has been carried too far with regard to concussive episodes. Nerve cells do not heal the way other body tissues heal. In short, no one’s brain is “tough”. Players may come forward to reveal symptoms of a concussive episode, but it remains likely that players will work to stay on the field. It will be up to those around the players to recognize and report injuries.

Certified athletic trainers are often closest to players regarding physical injuries, and are therefore in a logical position to spot concussive episodes, or elicit honest information from players. Efforts to increase or mandate the presence of athletic trainers are certainly likely to result in better injury recognition.

In the absence of certified athletic trainers, coaches, officials, parents, and players still have a role. One concept, promoted by Dr. Gerry Gioia of Children’s National Medical Center, is called “Carry the Clipboard.” The Centers for Disease Control (CDC) offers free materials, designed to attach to a clipboard, providing a helpful checklist for awareness and management of concussive episodes. Carry the Clipboard suggests that one adult at each sporting event be assigned to carry the CDC information on a clipboard, designating that adult as responsible for recognizing players who appear to be debilitated, and for contacting a local expert.

Even though players may attempt to conceal their own symptoms, their teammates may be valuable partners in reporting a concussive episode. This unique form of honor code creates a team approach to risk reduction. Parents being attuned to their child’s behaviors may be the most critical element.

A major cultural shift is underway, which should lead to increased recognition of concussive episodes. As the veil is lifted on this injury, a significant short term increase in diagnoses may result. Over time, a corresponding decrease in actual injury risk and diagnoses should occur.

IMPROVE MANAGEMENT AND RETURN TO PLAY

Once an injury is experienced, proper management under the care of an expert (or someone closely aligned with an expert) is imperative. Improper management, or no management, dramatically increases the chances for repeated injury, prolonged dysfunction, progressive disease, or fatality.

Modern standard of care for a concussive episode involves not just physical, but also mental rest. The metabolic dysfunction incurred during a concussive episode requires the brain to recalibrate itself, and physical or mental exertion may exacerbate symptoms during the period of recovery. Managed return to play involves resolution of symptoms, followed by progressively increasing activity over a period of time. There is no set time table; each individual will vary.

One increasingly utilized tool is neuropsychological testing. This type of testing involves athletes performing a series of tests, in order to gauge their “baseline” level of cognitive function. These tests are then repeated after the injury and during the period of recovery. Some mistakenly perceive these tests as pass/fail. In reality, these tests are part of the overall management plan, and when utilized properly, will contribute to the overall clinical picture.

With an athlete claiming no symptoms, performing well on neuropsychological testing helps confirm that the athlete is recovering well. Performing poorly indicates that the athlete is not yet recovered, or may be attempting to hide symptoms in an effort to return to play. Engaging in these tests also increases the likelihood that the athlete is managed by an expert, or managed by someone with access to experts.

Return to play decisions are rarely clear cut, but the science is evolving rapidly, and conservative management is always warranted. A great rule of thumb is “when in doubt, sit them out.” Sometimes, someone needs to step forward to remove all doubt. After the concussive episode that sent me to the hospital, my mother simply declared that I was done playing for the season, case closed. I wasn’t happy about it, but there was no debate. This was early in the 1985 season, and I was in seventh grade. Few knew anything about managing concussive episodes, and the advice of the ER was the routine three days off and I’d be fine. Knowing what we know now, it was the best thing she could have done for me, proving that parental instincts can play an important role in addressing this issue.

MANDATES

The epidemic of concussive episodes is a major public health issue. A role for legislation or mandates clearly exists. Several states have passed or are considering measures that require players to receive medical clearance before returning after a diagnosed concussion. This is a step in the right direction, but is relevant after the fact, and assumes a diagnosis was actually made; it is aimed at secondary prevention, and is not going to affect the vast majority of the injuries that go undiagnosed.

Primary prevention, the goal of preventing an injury from ever occurring, must be paramount. Legislation by the government, or mandates by institutions, aimed at educating anyone involved in overseeing athletic activities and minimizing exposures, would prevent countless injuries. If a youth football coach knew the dangers of concussive episodes, and was compelled to think about the practices he ran, the techniques he taught, and the behavior he rewarded, primary prevention would be a reality, and the gladiator mentality would die out. The enlightened warrior would be born.

CONCLUSION

Concussive episodes in football have reached epidemic proportion, and a complete risk reduction strategy must be built. Football has evolved over decades into something it was not intended to be, and the sport is often played in an extreme way. The extreme form of football must be eliminated, so the benefits of the game, including teamwork, selflessness, overcoming adversity, and achieving goals, can be maximized.

After finishing double sessions or an early morning training session, everything else in life feels much easier. Coming from behind for a last second victory really does make you feel like anything is possible. Helping an opposing player up from the ground after you've tackled him is an excellent guide for how to compete in life. The game of football will become even more popular, and will influence other sports for the better. It is time for some enlightenment.

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