

RE-EXAMINING

SPEARING

THE INCIDENCE OF CERVICAL SPINE INJURY HIDES THE RISKS

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EVERY FEW YEARS THE PROBLEM IS REDISCOVERED in the media by a cervical spine injury in the NFL. Most recently it was Detroit Lions linebacker Reggie Brown. Television networks show the hit numerous times and stories appear in newspapers and magazines. But the injury is always portrayed as an unfortunate accident. It's not used to educate the football community that there is an identified cause for these injuries. No one says, "Reggie Brown made the mistake of lowering his head at contact." No one says, "These injuries can be prevented by keeping the head up at contact." There are two tragedies here; the tragedy of the injury, and the tragedy of another missed opportunity to educate the masses.

We still have not communicated the correct message to the football practitioners. By this I mean the coaches, players, officials and administrators. The media can be included here too, because it has a great influence on the opinions of the practitioners. It's been over 20 years since Dr. Joe Torg and his colleagues established the relationship between cervical spine injuries, axial loading, and head-down contact. And yet the technique remains a common aspect of football at every level.

Quite simply, these are the facts:

- Each time a player makes contact with his head-down he risks fracturing his cervical spine and being paralyzed.
- The axial loading mechanism of injury does not discriminate by intent; an unintentional spear can result in paralysis (a.k.a. Reggie Brown).
- You can spear a member of your own team (a.k.a. Dennis Byrd).
- Spearing risks pertain to tacklers, ball carriers, and blockers.
- Spearing is most dangerous to the player who spears.
- Keeping the head up at contact protects the neck.
- Initiating contact with the shoulder while keeping the neck in extension virtually eliminates the risk of paralysis.

There are several subtle factors that have impeded the effective communication of these concepts to the football community.

A SPEARING HITCH

One problem is there are many entrenched connotations regarding the term spearing in football. One is the hit must be intentional to be a spear. Another is only tacklers can spear. A third is spearing only occurs when it's a late hit. These are all misconceptions. I define spearing as head-down contact, plain and simple. Intentional or unintentional, it's a spear. If it's a ball carrier, blocker, or tackler it's a spear. Head-down contact and spearing are one and the same.

In football circles though, spearing and head-down contact are often two entirely different entities. I believe these partisan concepts

about spearing have hindered its elimination from football. When the medical community is talking about decreasing the incidence of spearing, the football practitioners think we are talking about late hits by tacklers. It's a difficult mind set to alter. It's just this misconception of a spear that is the crux of the problem. Perhaps we should do away with the war on spearing, and just focus on eliminating head-down contact. That may get us over some major hurdles.

IT'S ALL BASS ACKWARDS

The spearing penalty is unique in football. Most penalties protect one player from the actions of another. Spearing, when properly enforced, is the only action penalty that penalizes a player for his own protection. The primary intent of the penalty is to protect the player who spears from paralysis. This puts the coach in an unfamiliar position. Protecting his players means penalizing his team. That is a bit of paradox. This paradox has in turn led to another misconception about spearing.

It's commonly thought the spearing penalty is designed to protect the player who is speared. In a survey I did of New Jersey high school officials over 1/3 felt this was the primary purpose of the penalty. The NFL reinforces this message weekly when they fine spearing only if it endangers an opponent. This ties back into the misunderstanding of what constitutes a spear. Although the rule should protect both players, the player with the primary risk of permanent paralysis is the athlete who spears.

AND THE SURVEY SAYS

There is also much work that can be done with football officials. I can count on three fingers the number of spearing penalties I have seen called in my lifetime. In 1998, I once again watched another entire season's worth of high school, college, and pro football without seeing one spearing penalty called. The NJ survey found that 87% of the officials called only between 0-3 spearing penalties for an entire season (an average of 27 games). This means an official called a paltry 1 spearing penalty in every 20 games worked. That will do little to decrease the incidence of spearing.

The survey also revealed several contradictions. One half of the officials felt a spear had to be intentional to be a penalty, while the other half indicated intent was not a factor. Over 40% of the officials felt deciding intent made the rule difficult to enforce. The intent of the spear appeared to be a major stumbling block for officials. Only one half of the officials indicated they were likely to call a spearing penalty on an athlete who accidentally speared. Ironically 97% of the officials felt a head or neck injury could occur regardless of an athlete's intent to spear.

A Louisiana survey found that nearly 1/3 of high school players did not know it was illegal to tackle with the top of the helmet or run over an opponent head first. That's simply not good enough. I am willing to speculate that number would be drastically lower regarding holding, clipping, or grabbing the facemask penalties. Why is that? Perhaps it's because these penalties are enforced regularly during games. The spearing penalty is not. It's my contention that an enforcement level of 3-4 spearing calls per game would influence coaches to spend more time educating and practicing correct technique with their players.

IT CAN'T HAPPEN HERE

I have found there is a general lack of urgency regarding spearing in the football community. I believe the apathy towards head-down contact directly relates to the infrequency with which it results in catastrophic injuries. Let me illustrate. In 1996, there were 1.8 million football players and 9 cervical spine injuries that resulted in

paralysis. This translates into .50 injuries for every 100,000 participants. Those are low numbers. Combine this with the fabulous reduction in catastrophic neck injuries since the rule change in 1976 and things look even rosier. "Well, if the numbers are that low, then there can't be too much of spearing problem." Right?

Not necessarily. The reality is the correlation between spearing incidents and incidents of paralysis is very low. Researchers Hodgson and Thomas have stated, "... the number of paralyzed players evidently does not come close to identifying the extent of the risk of hitting with the head-down." Not every head-down contact results in axial loading to the cervical spine, but just about every cervical spine fracture has resulted from head-down contact and axial loading.

Don't be fooled. It can happen here. It happens at about 10 different high schools every year. Every time a player makes head-down contact he rolls the dice. And there is no trade off for a normal healthy life. Develop a clear philosophy regarding the reduction of head-down contact for your program. Convey this philosophy to the coaching staff with the same emphasis as offensive and defensive strategies. That is the ultimate commitment to your players.

THE NUMBERS SPEAK

In a 1996 article, I estimated there were 200 spears during one team's season (9 games) and 2.8 million head-down contacts nationally between tacklers and ball carriers. This translated into 1 case of quadriplegia for every 251,000 spears. Based upon these numbers, a high school should have 1 case of quadriplegia for every 11,000 games. These are rough estimates at best. But they do demonstrate the point. The injuries are few and the exposures are many.

In my research, I have found head-down contact occurs on 41% of the plays during a high school game. That is once in every 2.4 plays. Head-down contact occurred on 38% of the running plays and 37% of the kick returns. Tacklers made head-down contact on 26% of the plays. Defensive backs and linebackers accounted for 72% of the defensive spears. Ball carriers speared on between 16 and 20% of the plays. Running backs accounted for 85% of ball carrier spears.

Ball carrier spearing is interesting in that defensive players were 4 times more likely to hit with their head-down when tackling a spearing ball carrier. I believe a spearing ball carrier influences tacklers to "get lower" than the ball carrier or take him on in similar fashion. Both usually result in the tackler dropping his head at contact. This coincides well with research finding that tacklers were more likely to spear when tackling below the waist.

MAKING THE GAME SAFER

When I began this research on spearing in 1990, I felt the incidence of 8-12 catastrophic injuries per year were inherent in the sport. I no longer believe that is true. We traditionally have focused solely on the number of times a spear results in catastrophic injury. The time has come to focus on the frequency of head-down contact. And 2.8 million spears indicates there is plenty of room for improvement.

It stands to reason that a reduction in the cause (head-down contact) will further reduce the effect (cervical spine fracture). Intentional and unintentional head-down contact by tacklers, ball carriers, and blockers has resulted in serious injury at varying rates. Allowing any type of head-down contact to remain in football is a distressing misuse of information. Regardless of the injury rate, all is not well in football as long as the mechanism of injury remains.

Initiating contact with the shoulder while keeping the head up is the safest way to play football. The game can be played as aggressively with this technique with much less risk of serious injury. Tacklers can still "unload" a big hit and ball carriers can still break tackles in this manner. However, it is a technique that must be learned. To be learned, it must be practiced extensively.

WHAT'S A COACH TO DO?

Coaches have done a good job in teaching players to approach contact with the head up. However, that is only half of the battle. It is instinctive to drop the head at contact to protect the eyes and face. I believe players who lower their head's at the last instant have not received enough practice time to overcome this powerful instinct. It's time to teach players to keep their head up at contact. Because football is a high speed, change of direction sport, not every contact can be initiated with the shoulder. But with proper instruction players can keep their head up. This greatly reduces the risk of axial loading to the cervical spine.

One common coaching error is the teaching of face-first contact. Initiating contact with the facemask is a high school rules violation and teaching it creates a liability nightmare. More importantly, poor execution of this technique places athletes in the spearing position and at risk of paralysis. There is a fine line between initiating shoulder contact with the head up and initiating face first contact. But it must be clearly drawn regarding what is taught. It is crucial for your entire coaching staff to be on the same page regarding these concepts.

The majority of coaches, officials, and players have never been associated with a catastrophic neck injury. Realistically most never will. Regardless of the probability, you must appreciate the movement to reduce head-down contact in the sport. Put the research and information to work. Eliminate head-down contact and the risk of paralysis goes with it. Increase the time spent on practicing correct contact techniques. Design drills that focus on shoulder contact with the head-up for all positional players. Run them regularly. The weekly review of game film presents an excellent opportunity to give players regular feedback on head position. There are roughly 20 spears per team in a game. Every coaching staff should aim toward keeping head-down contacts by their team to five or less.

Everyone associated with football has a moral responsibility to do all in their power to eliminate head-down contact from the sport. This includes coaches, medical professionals, officials, and administrators. Before an injury occurs we all must be able to say— "I've done everything possible to protect my athletes from paralysis."— and say it in good conscience. Because sometimes it may take 250,000 spears before an injury occurs and sometimes it will take only one. ▲

This article contains many references to studies and other research. For a complete list of the references used by the author, go to www.afcoach.com.

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