



Figure

Axial- Loading

Axial- Loading is also known as head down contact.¹ This is when you initiate contact with the top or crown of your helmet.¹ When the head is stopped the trunk of the body continues to move which crushes the spine.¹ The spine can then sustain a fracture, a subluxation of the vertebrae or a dislocation of the vertebrae.¹

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For more information read the following articles:

1. Heck Jonathan, et al. National athletic trainers association position statement: head-down contact spearing in tackle football. *Journal of Athletic Training*. 2004;39(1):101-111.
2. Chao S, et. al. The Pathomechanics, pathophysiology prevention of cervical spine and brachial plexus injuries in athletics. *Sports Med*. 2010;40(1):59-75.
3. Rihn J, et. al. Cervical spine injuries in american football. *Sports Med*. 2009;39(9):697-708.
4. Canavan T. Number 25 west Virginia rallies to beat Rutgers 41-31. *Greenwich time*. Available at <http://www.greenwichtime.com/sports/article/No-25-We-st-Virginia-rallies-to-beat-Rutgers-41-31-2242935.php>. Accessed February 11,2011.
5. Whitehead M. Cause and effect of football tackling. *Chronic Pain Community*. Available at <http://www.wellsphere.com/chronic-pain-article/the-cause-and-effect-of-football-tackling/1312964>. Accessed February 11, 2011
6. Star-Ledger Staff. Rutgers defensive tackle Eric LeGrand paralyzed from neck down. *Nj.com*. Available at <http://www.nj.com/rutgersfootball/index.s>

Dangers of Head Down Contact



Spearing is known as intentional dropping the head down to make a play, whereas head-down contact is accidentally dropping of the head before a play is made.¹ Both of these situations result in axial loading of the cervical spine and can lead to catastrophic cervical spine injuries.^{1,2}

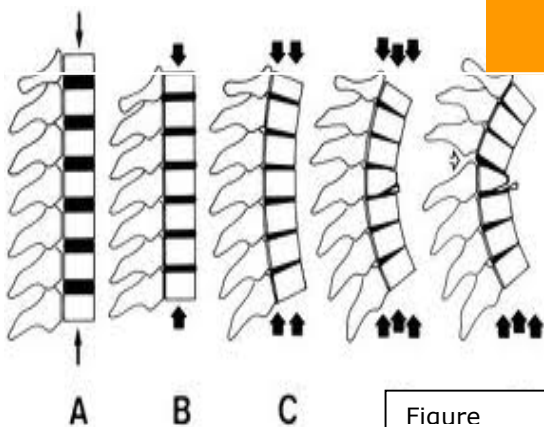
Catastrophic Cervical Spine Injuries

Catastrophic cervical spine injuries can result in the paralysis of the body.¹ Quadriplegia is known as the paralysis of both arms and legs.¹ This is the most devastating injury that can occur.¹



Figure

- Cervical spine injuries can affect all players on the field in any level of the game.^{2,3}
- Athletic injury is the second leading cause of spinal injuries in athletes from 8- 30 years old.^{2,3}
- Athletic activity is the fourth most common overall cause of spinal injuries.³
- Every time a player puts his head down prior to contact increase the risks of paralysis.¹
- Athletes need to get out of the mindset of punishing the opponent or getting the opponent.¹
- Head up contact allows the athlete to see when and how the impact is going to be.¹
- Head up allows the athlete to prepare the neck muscles for impact.
- Proper technique should be taught as early as possible.¹
- The head up contact will allow the game to be played safely, but also aggressively with less risk of injury.¹
- The technique needs to be taught, practiced and learned.¹
- Education is key with the athletes, parents, coaches, and officials.¹



Figure