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Sports Injuries

Spinal cord injuries

When Cowboys receiver Michael Irvin was tackled after a short slant pattern against the Philadelphia Eagles on Oct. 16, it wasn't an unusually hard hit that brought him down. But after he didn't get up, replays showed that his head seemed to have hit the ground at an unusual angle.

Irvin sustained a swollen spinal cord and herniated, and like teammate Daryl Johnston, who is out for the rest of this season and might have to retire because of a second neck injury in three years, Irvin's career may be in jeopardy. Obviously, neck, spine and head injuries are very serious. In this week's Special Section on sports injuries, Dr. Robert Watkins, a member of the [Association of Professional Team Physicians \(PTP\)](#) and a spinal consultant for many Los Angeles-based teams, examines the particulars of these potentially devastating types of injury and offers his suggestions on decreasing or preventing their occurrence.



Irvin

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What can cause a spinal cord injury in athletes, particularly football players?

Dr. Watkins: The most common scenario and the thing we preach against is the use of the head as an offensive weapon. When that happens, the positioning of the head aligns the spine in such a way that the force of the collision is transmitted directly down the spinal column, which can cause the bones of the vertebra to dislocate and perhaps fracture. This can lead to a bruised, crimped, crushed or even partially or fully severed spinal cord. Unfortunately, in football, using the head is a very effective way to stop someone. The improvement in helmet construction over the years to protect the head in terms of absorbing a blow ironically has led to an increase in using the head as a tackling instrument. On the other hand, the penalties designed and enforced to protect a player from getting hit with a head-shot are also in reality protecting the guy delivering the blow. Another familiar instance where we see neck injuries is when a hockey player is checked head-first into the boards or a football player's head is driven into the ground.

What are the symptoms of spinal cord injuries?

Dr. Watkins: The on-field evaluation is critical. For instance, if a player has numbness in his arm only, it may be a nerve root problem due to a compression or pinching of the vertebrae. If the player reports weakness or numbness in his legs and arms, we know it's not a nerve root -- it's a spinal cord problem.

Our baseline rule No. 1 is that anyone found down and unconscious has significant injury to the cervical spine unless proven otherwise. This is obviously an emergency situation. Anything other than that and we are talking about a wide range of injuries and resultant symptoms, all of which are determined by an initial on-the-field

examination. The mildest and most common of these are "burners" or "stingers," which is a transitory loss of motor and sensory function in the arm accompanied by a burning pain going the length of the arm. This is caused when the head is knocked towards the arm and the nerve root coming from the spinal cord is pinched, causing the burning sensation. Anytime this happens, the player will come out until the weakness or numbness disappears. If the symptoms persist, we'll keep the player out until we can do an MRI to rule out the possibility of a disk herniation.

Other, more serious scenarios are transitory quadraparesis, where athletes are literally temporarily paralyzed and another is the unconscious athlete who is not breathing.

How are spinal cord injuries diagnosed?

Dr. Watkins: The trainers and team physicians who go out on the field have to make instantaneous diagnoses and decisions, and my admiration for these people cannot be overstated. They have to know each player's medical history before each game and then run out on the field and take an abbreviated, yet critical physical examination and history. They must determine what hurts, assessing the airway and degree of paralysis or numbness. If you decide that they do have an injured neck, the athlete should be immobilized on a backboard to prevent any further damage and then transported to the nearest hospital. Once at the hospital, the emergency room doctor will call on a spinal specialist to make the thorough diagnosis. Some people we put in neck braces and send home while others may need emergency spinal surgery to remove pressure on the spinal cord.

If the injury is not life-threatening or career-ending, somewhere along the line, we'll come to the issue of returning to play. Usually, the athlete will come in the day after a neck injury to go through a series of tests, and it is our job to advise him how safe it is to return to play, if at all. These follow-up tests can, for example, point out a small fracture in the neck that may not produce pain during inactivity. We might do a head compression where we push on the top of the head and determine if there is pain present. Pain suggests some type of hairline fracture that could lead to a serious neck or spinal injury if we were to have let this athlete return to play untreated. We do many tests to cover all the parameters. It's important that everyone -- the player, the team, the coach and the doctor -- be on the same page with regards to the severity of the injury to determine if the athlete can return to play.

A recent topic addressed at a recent gathering of doctors and coaches was the issue of face mask removal. If a player is down and is not breathing from a spinal injury, you have to get the face mask off as soon as possible to restore breathing. Yet you don't want to move the neck. You must know how to get the face mask off to restore the airway yet also protect the spine.

What sort of rehabilitation and prognosis can be expected?

Dr. Watkins: Obviously, prognosis will vary depending upon the injury. For an athlete planning on returning to competition, following rehabilitation exercises is crucial

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ASK THE PRO DOC

Q: *How do you get stronger and build muscle without losing flexibility? I'm a golfer and flexibility is important to me.*

A: Dr. Nicholas DiNubile, PTP member physician and orthopaedic consultant for the Philadelphia 76ers: "A good strength training program should not sacrifice flexibility. Always work out in good form and work a given muscle group through a full range of motion. By going through a full range of motion you usually do not lose flexibility. Some individuals are tighter than others and strength training may give the feeling of extra tightness. Certainly you may add stretching for those muscle groups to maintain flexibility. As a golfer, it is important to work on shoulder and lower back flexibility. You should stretch after your weight training and prior to golfing."

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and these are centered mostly on trunk-strengthening exercises. These involve strengthening the mid-section through balance, isometric and coordination exercises. The trunk muscles are the ones that support the spine so they can also be done preventatively. These exercises help you develop a good chest-out posture, which brings the weight of your head back over your body. The athletes have to be able to practice their sport. Mostly, a good prognosis depends on the motivation of the athlete to do his exercises.

What can be done to prevent neck injuries?

Dr. Watkins: We have a "Spine in Sports" foundation dedicated to the prevention of head and neck injuries in adolescent athletes called "See what you hit" that gets high school football players to look up, keep their eyes on the people they are going to hit and look them into their grasp. This gets the younger athlete used to not lowering the head and keeps direct head tackles to a minimum.

Also, all of us seem to glorify the big hit. But all the excitement over a big hit -- the "oohs" and "ahs" -- almost always are hits with or to the head. Why not replay the great shoulder or shoestring tackle? These are the guys with great skills.

Dr. Robert G. Watkins, a member of the [Association of Professional Team Physicians \(PTP\)](#), heads the Center for Orthopaedic Spinal Surgery in Los Angeles, Calif. Dr. Watkins received his medical degree from the University of Tennessee Medical School in Memphis and did his internship and residency at the University of Southern California School of Medicine in Los Angeles. Dr. Watkins also is currently a Professor of Clinical Orthopedic Surgery at USC.

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