

## **Spinal Injuries and Associated Sports**

By Peter Fysh, DC

Sporting injuries are frequently encountered in chiropractic practice. When sporting injuries occur in childhood or adolescence, particular care needs to be taken to ensure that subtle injuries are not overlooked. For example, a slipped epiphysis of the distal fibula may sometimes be mistaken for a simple ankle sprain.

Each sport has its most common injury patterns and each of these is discussed in this column.

In initially evaluating a child with a suspected sporting injury, some general concerns need to be considered.

### **The Limping Child**

Any child presenting with a limping gait should be suspected of having hip pathology as a primary concern. Since many pathologies of the hip region will cause a child to limp, a diagnosis of sprain/strain of the hip should be rendered only after careful evaluation of the patient. Disorders of the hip which may present with a painful limp can include Legg-Calve-Perthes disease, slipped capital femoral epiphysis, joint infection (pyogenic arthritis), infections of bone (osteomyelitis), acute lymphoblastic leukemia, transient synovitis, reactive arthritis and juvenile rheumatoid arthritis. Careful evaluation of the involved region should be carried out to rule-out the above conditions before labeling the injury as sprain/strain.

### **Fractures**

Any injury with associated suspected fracture should be evaluated by x-ray. Two opposing views are the minimum necessary to adequately assess such an injury. Frequently, comparison views of the opposite extremity or body part are helpful in assessing orthopedic problems which involve epiphyseal growth plates. Children's fractures require careful description and identification, especially when communicating the initial clinical findings to an emergency room or orthopedist. Fractures should be described by location: Which bone is involved? Where in the bone is the fracture site? What is the fracture pattern? Is it aligned and are any surrounding soft tissues affected?

## **Growth Plate Injuries**

Cartilaginous growth plates are a common result of injury in children, because the cartilaginous physis are not as strong as the surrounding bone. Trauma is more likely to cause epiphyseal separation than it is to cause fracture, especially when the trauma is close to a growth plate. Fractures which occur in the region of growth plates are likely to produce disruption of the surrounding vascular structures which may cause disturbance of the longitudinal growth or possible subsequent avascular necrosis. Care should be taken not to confuse a growth plate injury in a child with a torn ligament. An example would be to confuse a distal fibula physis separation with a ligamentous strain of the ankle. All suspected epiphyseal injuries should be referred to an orthopedist for evaluation.

## **Football**

In the U.S., football is the most common sport for "collision injuries" in children. About half of all sporting injuries to high school and college students are the result of tackling in football. In the U.S., in one 12 month period (1975-76), 13 fatalities occurred from football, while only four fatalities occurred from other sporting activities. The most common injuries occurring from football involve the head and neck. Cervical spine injuries are the greatest cause of long-term disability and therefore represent the most serious type of injury suffered. Injuries to the neck are usually the result of inappropriate tackling procedures.

The problem with head tackling as an allowable feature of the game is that inexperienced players, before a head tackle, will tend to flex the neck just prior to impact, producing the potential for axial loading of the spine to produce vertebral fractures. Severe flexion injuries may result in fracture or dislocation of the spine. One survey of collision injuries in football revealed that of 40 spinal injuries suffered, 39 were in players under the age of 20 years. Thirty-five of these players were quadriplegic upon admission and only six recovered function.

Lateral flexion injuries to the neck involving traction injury to the brachial plexus are less serious but are more common football injuries. This type of injury, known as a "burner", involves a sudden shooting or burning pain down the arm. The player has difficulty in moving the arm, but this quickly resolves leaving just a dull aching sensation in the extremity. Players with such injuries should not be allowed to continue play in that game and a detailed examination should be undertaken.

## **Water Sports and Diving**

A common sports-related injury to the cervical spine is that associated with diving.

Diving into shallow water and hitting the head on the bottom or on a submerged object is the most common cause of neck injuries caused by diving. Most injuries involve cervical spine fracture and/or spinal cord damage. Studies have shown that the velocity of the body at entry into the water is not significantly dissipated until the diver reaches a depth of 10-12 feet. Diving technique has been shown to have a significant impact on the incidence of injury. Experienced divers will use their hands to precede their bodies entry into the water. This technique significantly protects the head upon entry. Inexperienced divers, with no particular technique, tend to leave their head unprotected thus leading to a higher incidence of neck and spinal injury.

Studies of low back injuries, particularly of spondylolysis, have demonstrated a significant incidence of this type of injury in inexperienced divers. The cause of the associated fracture to the pars interarticularis appears to be poor diving technique. In particular, hyperextension of divers extended legs at the point of entry into the water can cause the lumbar spine to hyperextend and result in compression fracture of the pars interarticularis.

## **Gymnastics and Trampoline Injuries**

Gymnastics, and especially trampoline injuries, have come under considerable criticism in the literature for the high incidence of cervical spine injuries encountered. The incidence of such injuries was of great concern prior to the publication of a policy statement in 1977 by the American Academy of Pediatrics. Subsequently, banning of trampoline programs took place in most schools and the incidence of cervical spine injuries diminished. The recommendations for the use of trampolines in gymnastics programs state in part "... highly trained personnel who have been instructed in all aspects of trampoline safety must be present when the apparatus is used" and "... maneuvers, especially somersaults, should be attempted only by those qualified to become skilled performers."

## **Skiing**

Spinal injuries related to skiing are primarily associated with injuries to the cervical spine. The high incidence of collisions in which the head hits an immovable object has been cited as the major cause of these injuries. Reported injuries typically involve anterior-posterior movements with associated

hyperextension/hyperflexion rebound injuries.

### **Weightlifting**

Spinal injury due to weightlifting is a common occurrence, especially in adolescence. Hyperextension facet syndromes are the most common injuries associated with weightlifting in this age group. Spondylolysis and spondylolisthesis can be aggravated by weightlifting during the adolescent period. It is thought that lumbar hyperextension, associated with squats, is the mechanism of injury particularly during the adolescent growth spurt when the spinal structures are at their weakest. The rule is to discourage squats and power lifting in adolescents.

*Peter N. Fysh, DC*  
*San Jose, California*

Editor's Note: Dr. Fysh is currently conducting pediatric seminars. He may be contacted at (408) 944-6000.

---

Click [here](#) for more information about Peter Fysh, DC.



Page printed from:

[http://www.dynamicchiropractic.com/mpacms/dc/article.php?id=41352&no\\_paginate=true&p\\_friendly=true&no\\_b=true](http://www.dynamicchiropractic.com/mpacms/dc/article.php?id=41352&no_paginate=true&p_friendly=true&no_b=true)