



Golden Hills

Orthopedic and Sports Physical Therapy

september-october 2008

j o u r n a l



Seasonal Activity Spotlight: Football

Our Mission...

To further the prevention, diagnosis and treatment of movement dysfunction in order to enhance the physical health and functional abilities of our patients.

To maximize the patient's potential for regaining full physical health by providing rehabilitation through the use of advancements in physical therapy techniques and state-of-the-art equipment.

To establish a self-management program for the patient through education and a personalized home exercise program for each individual to enable the patient to maintain their physical health at home and at work.

If baseball is known as “the great American pastime,” then football is America’s great obsession. No sport—whether at the youth, high school, amateur, collegiate or professional level—commands quite the same fanaticism from fans and players alike. Football’s widespread appeal is due in large part to the intense physical demands it places on players and, of course, its reliance on direct physical contact between them. Unfortunately, these same reasons for its popularity are also responsible for its high rate of injury.

Continuing our focus on seasonal sports, recreation and exercise (SRE) activities, the September-October issue of *Golden Hills Journal* delves into football, including the most common causes of injury and Golden Hills’ approach to treating patient injuries. Our goal is to help you and your patients understand the risks inherent in this popular American pastime as well as the wide range of physical therapy services available to them.

We welcome referrals of patients who have suffered a football-related injury or who are simply looking to enhance their performance through effective training and safety practices. Just contact us at **(408) 274-0888**, or write to us at **therapy@goldenhillspt.com**.

Football: An Overview

It is estimated that there are 1.5 million junior high and high school football players in the United States. An additional 300,000 play at the organized recreation, collegiate and professional levels. The number of injuries related to football has been estimated at 600,000 per year. The injury rate has been reported to vary widely between 11% and 81%. The variation in the injury rate among studies is the result of differences in the definition of injury and severity, the identification of the population at risk and exposure time.

Football-Related Injuries

Football is a high-risk sport because of the intensely physical nature of the game, combined with the speed, strength and size of the players. Like all other sports, football-related injuries fall into two categories: acute and chronic. Acute injuries are caused by sudden trauma. Chronic, or overuse, injuries are caused by systematic, repetitive training.

Catastrophic Injuries

Football injuries resulting in death or permanent disability are very rare. The National Center for Catastrophic Sports Injury Research reported that in 1997, 6 deaths (0.333 per 100,000 participants) were directly attributed to participation

in the fundamental skills of football: 5 from brain injuries and 1 from a blow to the chest. Five of the deaths occurred as part of high school football activities and 1 as part of middle school football. There were 17 cases of permanent disability: 14 at the high school level, 2 in college football and 1 in professional football. Defensive players are at greatest risk for catastrophic injury. Seventy-one percent of the players with cervical cord injuries were playing defense, the majority of whom were tackling at the time of injury.

Severe Injuries

The National Electronic Injury Surveillance System (NEISS) indicates that football is one of 3 sports associated with the highest number of visits to emergency rooms. In 1995, the NEISS found that the vast majority of football-related injuries were strains or sprains (33%), fractures (24%) and bruises or abrasions (17%). Concussions accounted for 1.6% of the injuries, of which only 2% were subsequently admitted to hospital. The body parts most frequently injured were, in order of frequency, finger (16%), knee (10%), shoulder (10%), ankle (9%), wrist (7%), face (6%), head (5%), hand (5%), upper trunk (5%), lower arm (4%) and lower trunk (4%).

Injury Conditions

Football injuries are common and range from minor, annoying aches and pains to serious injuries. It is important for players of all ages and skill levels to use the right pads and protective gear and take other precautions to prevent injury. If an injury does occur, a customized physical therapy program can help the patient recover his or her

strength, flexibility, speed and balance and, if advisable, return to the playing field.

Knee Injuries

Anterior Cruciate Ligament (ACL) Injury

The ACL is one of the four main stabilizing ligaments of the knee, the others being the posterior cruciate ligament (PCL), medial collateral ligament (MCL) and lateral collateral ligament (LCL). The ACL attaches to the knee end of the femur (thigh bone) at the back of the joint and passes down through the knee joint to the front of the flat upper surface of the tibia (shin bone).

The ACL is the most commonly injured ligament in the knee. The injury usually occurs when a twisting force is applied to the knee while the foot is firmly planted on the ground, or upon landing. A torn ACL can also result from a direct blow to the knee, usually the outside, as may occur during a football tackle. This injury is sometimes seen in combination with a medial meniscus tear and MCL injury, which is called O'Donohue's triad.

Symptoms may include:

- An audible pop or crack at the time of injury
- An initial feeling of instability, which may be masked later by extensive swelling
- Extreme pain
- Swelling of the knee
- Restricted movement, especially inability to fully straighten the leg
- Widespread mild tenderness
- Tenderness at the medial side of the joint

Medial Collateral Ligament (MCL) Sprain

The MCL joins the inner surfaces of the femur (thigh bone) and the tibia (shin bone). Its function is to resist forces applied from the outer surface of the knee and so to prevent the medial (inner) portion of the joint from widening under stress.

Injury to the MCL often occurs after an impact to the outside of the knee when the knee is slightly bent. The MCL on the inside of the knee becomes stretched and if the force is great enough its fibers will tear. The deep part of ligament is prone to initial damage, which may also lead to medial meniscal damage.

Grade 1 symptoms may include:

- Mild tenderness on the inside of the knee over the ligament
- When the knee is bent to 30 degrees and force is applied to the outside of the knee (stressing the medial ligament), pain is felt but there is no joint laxity

Grade 2 symptoms may include:

- Significant tenderness on the inside of the knee on the medial ligament
- Some swelling over the ligament
- When the knee is stressed as for grade 1 symptoms, there is pain and laxity in the joint

Grade 3 symptoms may include:

- A complete tear of the ligament
- Pain that varies and is sometimes not as bad as that of grade 2
- Significant joint laxity when stressing the knee
- A very wobbly or unstable knee

Meniscus Tear

Each knee joint has two crescent-shaped cartilage menisci. These lie on the medial (inner) and lateral (outer) edges of the upper surface of the tibia (shin) bone. They are essential components of the knee system, acting as shock absorbers for the knee as well as allowing for the proper interaction and weight distribution between the tibia and the femur (thigh bone).

The medial meniscus is more prone to injury than the lateral meniscus as it is connected to the medial collateral ligament and the joint capsule and so is less mobile. Hence, any forces impacting from the outer surface of the knee, such as a football tackle, can severely damage the medial meniscus. Other mechanisms of injury may be twisting of the knee or degenerative changes that are associated with age.

Symptoms may include:

- A history of trauma or twisting of the knee
- Pain on the inner surface of the knee joint
- Swelling of the knee within 24-48 hours of injury
- Inability to bend the knee fully; bending may be associated with pain or a clicking noise
- Pain when rotating and pressing down on the knee in prone position
- “Locking” of the knee
- Inability to bear weight on the affected side

Ankle Injuries

Ankle Sprain

A sprain is the stretching and/or tearing of a ligament. The most common type of ankle sprain is an

inversion sprain (or lateral ligament sprain) in which the ankle turns under so the sole of the foot faces inward, damaging the ligaments on the outside of the ankle. A medial ligament sprain is rare but can occur particularly with a fracture.

Symptoms of a first degree ankle sprain may include:

- Some stretching or even minor tearing of the lateral ankle ligaments
- Little or no joint instability
- Mild pain
- Mild swelling around the bone on the outside of the ankle
- Some joint stiffness or difficulty walking or running

Symptoms of a second degree ankle sprain may include:

- Moderate tearing of the ligament
- Some instability of the joint
- Moderate to severe pain and difficulty walking
- Swelling and stiffness in the joint

Symptoms of a third degree ankle sprain may include:

- Total rupture of a ligament
- Gross instability of the joint
- Severe pain initially followed later by no pain
- Severe swelling

Leg Injuries

Hamstring Strain

There are three hamstring muscles—the semitendinosus, semimembranosus and biceps femoris. These muscles all originate from the ischial tuberosity of the pelvis.

Biceps femoris, in addition, has a second portion that originates from

the lower outer portion of the femur bone.

A hamstring strain is a tear to one of the three hamstring muscles. This most commonly occurs when sprinting or changing direction quickly.

Symptoms may include:

- A sudden sharp pain at the back of the leg during exercise
- Hamstring muscle spasm
- Swelling and bruising

Dead Leg

“Dead leg” is another expression for a leg contusion, which occurs as the result of a direct blow to a muscle, crushing it against the bone.

Symptoms may include:

- Pain
- Swelling or bruising
- Restricted movement

Hip Pointer

A hip pointer injury occurs following an impact to the iliac crest (hip bone) or greater trochanter (bony protrusion at the top of the femur), often by a helmet. The force of the impact causes a contusion of the iliac crest and sometimes an avulsion fracture, in which a small part of bone is pulled away by the attached muscle.

Bleeding usually occurs around the front and side of the hip, into the abdominals and hip abductors (gluteus medius and minimus).

Symptoms may include:

- Obvious bruising and swelling
- Pain or tenderness on palpation
- Reduced range of motion and strength at the hip joint

Shoulder Injuries

Shoulder Dislocation

In most shoulder dislocations, the humerus (upper arm bone) is forced forward when the arm is turned outward (externally rotated) and held out to the side (abducted).

Dislocations often cause damage to the glenoid labrum, the ring of cartilage that forms the glenohumeral (shoulder) joint. There may also be damage to the surrounding ligaments, nerves and blood vessels, fractures of other bones, and in some cases tears in the labrum.

Symptoms may include:

- Sudden onset of severe pain
- A feeling of the shoulder “popping out” of the socket
- Visible dislocation
- A sensation of numbness through the arm and hand

Acromioclavicular (AC) Joint Injury

The acromioclavicular joint is formed by the outer end of the clavicle (collar bone) and the acromion process of the scapula (shoulder blade). The acromion is a bony process that protrudes forward from the upper part of the scapula.

The most common way of injuring the AC joint is by landing on the shoulder, elbow or an outstretched hand.

Symptoms may include:

- Pain at the end of the collar bone
- Widespread pain throughout the shoulder
- Swelling and step-deformity
- Pain on moving the shoulder

Stingers

A “stinger” is a condition common in contact sports, especially football. Stingers are due to either the stretching or compression of the brachial plexus.

Symptoms may include:

- A burning or stinging pain in the shoulder or neck area that may radiate into the arm and hand
- Numbness and weakness in the shoulder or arm

Head Injuries

Concussion

A concussion is an injury to the brain caused by impact against the skull. Concussions can be classified as mild, moderate or severe.

Symptoms of a mild concussion may include:

- Slight mental confusion
- Some memory loss
- Mild tinnitus (ringing in the ears), dizziness or headache
- Pain in the area of the trauma

Symptoms of a moderate concussion may include:

- Mental confusion
- Post traumatic memory loss
- Moderate tinnitus, dizziness or headache
- Moderate balance disturbance
- Nausea and vomiting
- Loss of consciousness no longer than 5 minutes

Symptoms of a severe concussion may include:

- Mental confusion lasting 5 minutes or more
- Severe tinnitus, dizziness or headache
- Prolonged retrograde amnesia
- Loss of consciousness longer than 5 minutes
- Possible increase in blood pressure with decrease in heart rate

Physical Therapy Approach

When a football-related injury occurs, Golden Hills’ physical therapists are prepared to help your patients heal from the injury and recover their pre-injury levels of performance, including strength, flexibility, balance and endurance.

In past issues of *Golden Hills Journal*, we have discussed in depth our treatment approach for injuries to specific joints or biomechanical systems. The following table shows which areas are discussed in which issues. Please contact us if you would like another copy of any of the issues!

Biomechanical System	Discussed in Issue
Shoulder	Aug-Sep 2006
Elbow	Oct-Nov 2006
Hand/Wrist	Jan-Feb 2007
Knee	Jun-Jul 2006
Foot/Ankle	Mar-Apr 2007

Golden Hills’ skilled physical therapists are committed to working closely with you, the patient and the patient’s coach to help the patient achieve his or her recovery goals and return safely to a regular training program. Just contact us today for more information at **(408) 274-0888**, or **therapy@goldenhillspt.com**.