

# Common Sports Injuries Seen by the Primary Care Physician

## Part I: Upper Extremity

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*Sports medicine is the care of medical and surgical needs of athletes. Common sports injuries of the upper extremity include traumatic and atraumatic dislocations and subluxations of the shoulder. Many traumatic dislocations in young athletic individuals will reoccur unless surgically corrected.*

*Rotator cuff problems commonly interfere with activities which require overhead motion. Injuries of the acromioclavicular joint are best categorized by their radiographic appearance.*

*Tennis elbow can usually be treated by a stepwise conservative approach. Skier's thumb is a sprain of the ulnar collateral ligament of the first metacarpophalangeal joint. The Stener lesion should be ruled out.*

*The ulnar nerve may be compressed in the palm of the hand in cyclists. This usually responds to decreasing mileage and increasing padding of the hands. Oarsman's wrist is a tenosynovitis of the wrist seen in paddlers.*

Athletic, or sports injuries are primarily injuries of the musculoskeletal system. These may be seen and treated either in the office of the primary care physician, or of the specialist. Whether treating the elite world class athlete or the weekend warrior, the following principles of diagnosis and treatment generally apply. A thorough history and physical examination will usually make precise diagnosis of the injury possible. An anatomic approach follows.

Shoulder dislocations and subluxations in sports are quite common and have affected the careers of many athletes. Two important subgroups should be identified: 1) acute traumatic dislocations; and, 2) atraumatic subluxations.

### **Traumatic Shoulder Dislocation**

The first group, acute traumatic shoulder dislocations, are approximately 98% anterior in direction.<sup>1</sup> There is usually a history of injury with an abduction and external rotation force applied to the shoulder. The physical examination of these patients should always include evaluation of the neurovascular status of the limb. The axillary nerve is the most common associated neurologic injury

with acute traumatic shoulder dislocations. Evaluation of the axillary nerve should include testing of the autonomous sensory zone located on the lateral deltoid. Numbness in this area will suggest damage to the axillary nerve.<sup>2</sup>

X-ray evaluation of the acutely dislocated shoulder should include the "trauma series" of x-rays. The trauma series includes a true A.P. x-ray of the shoulder, an axillary or "West Point" view of the shoulder, and a true lateral view in the scapular plane. This series gives views of the shoulder at right angles to one another and, in general, should be performed whenever evaluating acute traumatic episodes of the glenohumeral joint.<sup>3</sup>

Most shoulder dislocations are acutely reduced in the emergency room and these patients are then followed as outpatients, often in the primary care physician's office. Outpatient follow up is extremely important because acute anterior shoulder dislocations have a 94% recurrence rate, if the patient is under 20 years of age. In patients over 40 years of age, there is a lower recurrence rate,<sup>4</sup> but a higher instance of rotator cuff tears associated with the traumatic episodes. The patient needs to be counseled regarding the likelihood of recurrence. In the older patient, rotator cuff tear must be suspected and ruled out by physical examination, or, if necessary, by further diagnostic testing.<sup>5</sup>

After an acute shoulder dislocation, it is common practice to treat the initial injury with a sling or shoulder immobilizer, ice, and analgesics as required. Gradual return to function occurs after approximately three weeks. The length of the immobilization required is controversial and probably does not influence the likelihood of reoccurrence.

Recurrent shoulder dislocation is an indication for referral to the orthopedic surgeon. Recurrent shoulder dislocations are a disabling and disconcerting condition in the life of an athlete or active person. They can be surgically repaired with a 96-97% success rate.<sup>6,7</sup>

### **Atraumatic Shoulder Subluxation**

A second subgroup of shoulder instabilities is the atraumatic subluxation. These may be anterior, posterior, or inferior, and may also be multidirectional. The typical patient in this subgroup, however, presents to the office with a history of the shoulder slipping in and out of joint without an initial traumatic episode preceding it. Commonly, this is associated with chronic repetitive stretching injuries, such as occur in baseball pitchers, tennis players, and other overhead athletes. The patient often states that the shoulder slips in and out of joint or feels "dead", especially with a pitching or throwing motion.<sup>8,9</sup>

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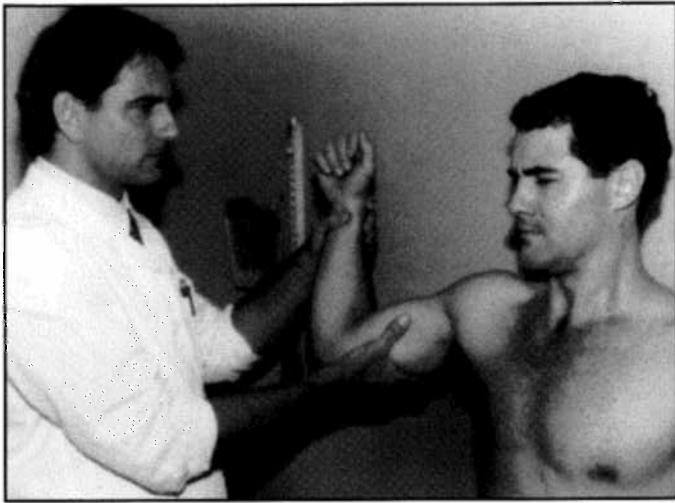


Figure 1.—To test for anterior shoulder instability, the patient's arm is abducted and externally rotated gently. The patient will display a look of apprehension as the shoulder nears a position of dislocation.



Figure 2.—Tennis elbow pain may be relieved by a tennis elbow splint or Nirschl band placed snugly about the forearm.

On physical examination, there is a positive apprehension sign (Figure 1). The patient indicates apprehension when the arm is abducted and externally rotated. Pain is often reproduced with a dislocation maneuver, and relieved by a reduction maneuver. One should always check for generalized ligamentous laxity, including a sulcus sign, hyperextension of the elbow joint, or the ability to touch the thumb to the wrist. In some athletes, the shoulder slips in and out of joint because the ligaments are so lax that they just do not hold the joints in place.

Radiographic evaluation, once again, should consist of the "trauma series." A mnemonic, "AMBRI," outlines the treatment of atraumatic subluxations. If the initiating event is Atraumatic, and especially if the direction of instability is Multidirectional; if the condition is Bilateral, then the treatment is Rehabilitation with dynamic stabilization of the shoulder in physical therapy. An Inferior capsular shift may be necessary if surgery is performed.<sup>3</sup>

### Rotator Cuff Injuries

The next group of shoulder injuries which we will discuss includes acute and chronic injuries to the rotator cuff. This broad area includes acute strains or tears of the rotator cuff, and chronic repetitive attrition of the rotator cuff associated with impingement. The rotator cuff is composed of the tendons of the supraspinatus, infraspinatus, subscapularis, and teres minor. These tendons coalesce at their insertion on the greater tuberosity of the humerus. During abduction of the shoulder, the supraspinatus is exposed to friction against the undersurface of the acromion. Sudden pain, or chronic pain with throwing, paddling, tennis serve, bench press, or other shoulder activity, may indicate a strain or tear of the rotator cuff. The diagnosis of this disorder continues with the physical examination. There is often a painful arc of motion between 70 degrees of abduction and 120 degrees of abduction. There may be a positive impingement sign. The impingement sign is elicited by having the patient abduct his shoulder 90 degrees, while the examiner gently internally rotates the arm. In the presence of a rotator cuff tear or other rotator cuff injury, this usually will reproduce pain which the patient can pin point at the top of the shoulder, or rotator

cuff region. There is often weakness or pain with abduction of the shoulder or with forward flexion against resistance. In an acute rotator cuff tear, there is often a positive "drop arm test". In this test, the physician elevates the patient's arm passively. If he then begins to remove his support from the patient's arm, the patient reports the sensation that his arm will "drop".<sup>10,3</sup>

Plain film x-rays, the trauma series, are again indicated in most cases. The treatment for acute shoulder strains is rest, ice, analgesics as needed and gradual return to function as pain subsides. In the face of an acute full thickness rotator cuff tear, surgical repair is indicated in most young athletic individuals. Conservative management of the full thickness rotator cuff tear might be considered in debilitated, elderly, or otherwise low activity patients, or if the patient is a poor surgical candidate.

Rotator cuff problems do not always present with an acute injury as those described above. There is often a history of chronic pain with certain activities, such as throwing, swimming, weight lifting, etc. The physical examination should include evaluation of strength and range of motion of the shoulder, with testing for an impingement sign and instability. If the pain or weakness is severe, an arthrogram or MRI might be considered to rule out rotator cuff tear. If the pain is milder, or if a rotator cuff tear is not suspected, nonsteroidal anti-inflammatory drugs and a shoulder rehabilitation program to emphasize internal and external rotation strengthening should be performed. If no relief is obtained, a subacromial cortisone injection should be considered. Obviously, rest from aggravating activities or modification of the activity itself, should be addressed. If the pain cannot be resolved with conservative management, arthroscopic examination is considered. In most cases, with chronic impingement, six months of conservative management and modification of activities will precede consideration of arthroscopic evaluation, unless suspicion of a torn rotator cuff or damage to other significant shoulder structures is strongly suspected. The arthroscope has proven extremely valuable in evaluation of the shoulder and in treatment of certain rotator cuff lesions. Diagnostically, the arthroscope can be used to evaluate the rotator cuff and confirm or exclude the presence of partial or full thickness rotator cuff tears.

The condition of the biceps tendon and other potentially involved structures can be evaluated. Furthermore, the arthroscope can be used in conjunction with specialized instruments to decompress the undersurface of the acromion where bony structures may be impinging on the rotator cuff.<sup>11,12</sup> Arthroscopically assisted rotator cuff repair methods are available.

### **Acromioclavicular Joint Separation**

Acromioclavicular joint separation, also known as shoulder separation, commonly occurs as a result of athletic injury. The athlete may present with pain and swelling at the end of the collar bone. These injuries often occur with a direct force to the point of the shoulder, such as a tackle or fall resulting in a direct impact between the shoulder and the ground. This force is directed from the point of the shoulder to the AC joint, causing the ligaments to tear in a variable pattern with the end of the clavicle popping out of place. These injuries are graded from I-VI, depending upon their severity.<sup>5</sup> For the most part, the grading of these injuries is based on their radiographic appearance. The type I AC joint separation is a mild sprain of the joint. It is treated with a sling and rest for one to two weeks or until the tenderness resolves. The type II AC joint separation is a slight elevation of the clavicle seen on x-ray. These are commonly treated with a sling and rest for three to six weeks, followed by progressive strengthening. Often the athlete will need to wait eight to twelve weeks for return to contact sports.<sup>10</sup> The type III shoulder separation represents a more significant injury. In type III separation, the distal clavicle is elevated completely above the superior border of the acromion. The type IV AC joint separation presents with the end of the clavicle impaled through the trapezius. The type V shoulder separation is one in which a severe dislocation of the joint leaves the end of the clavicle elevated, almost to the base of the neck, and the type VI AC joint separation is an inferior dislocation of the distal end of the clavicle to a subcoracoid position. In general, the type I and II AC joint separations are always treated conservatively with a sling and rest for a few weeks, depending on the severity of the injury, followed by progressive strengthening and gradual return to sports. The treatment of the grade IV through VI injuries is always surgical, for these represent severe disruption of the normal anatomy. The treatment of the grade III separation is somewhat controversial, although more physicians are leaning towards the conservative management of these injuries. This, however, should be individualized, depending upon the specific characteristics of the injury and the demands or requirements of the patient. The above described evaluation of the AC joint is very dependent upon obtaining high quality x-rays. X-ray evaluation of the AC joint requires less x-ray penetration than x-ray evaluation of the shoulder joint itself. Specific radiographic evaluation of the acromioclavicular joint is required.<sup>3,5</sup>

### **Tennis Elbow**

Tennis elbow is a term that is usually synonymous with lateral epicondylitis. Occasionally, the term tennis elbow may be used to describe pain of the medial epicondyle of the humerus. This latter condition is also known as golfer's elbow. The patient with tennis elbow usually complains of pain at the lateral epicondyle of the humerus which may radiate proximally or distally. In tennis, the pain is often associated with the backhand stroke.<sup>13,14</sup>

### **Physical examination**

The athlete will complain of pain with resisted extension of the wrist. The pain should localize to the epicondyle region, and should reproduce the patient's symptoms.

### **Treatment**

The initial treatment of tennis elbow should include stopping or modifying the offending activity. Abstaining from, or at least reducing the amount of tennis may be helpful. In milder cases, simply adjusting the tennis stroke and correcting training errors may be helpful. In tennis this is especially important in the backhand stroke. The player should be instructed in using less wrist extension in his stroke, or switching to a racquet that is not as stiff. Nonsteroidal anti-inflammatory drugs are often utilized initially. Counterforce bracing, utilizing a tennis elbow splint or "Nirschl" band (Figure 2), is inexpensive and protects the origin of the extensor tendons at the lateral epicondyle during healing.

If the above measures do not result in improvement, one might consider a cortisone injection, further rest from the offending activities, or possibly a course of formal physical therapy. Eighty to ninety percent of appropriately treated tennis elbow cases should resolve within six months with conservative measures alone.

Surgical treatment is indicated in those cases of tennis elbow which do not respond to six months of appropriate conservative management.<sup>15</sup>

### **Skier's Thumb**

"Skier's thumb," or "gamekeeper's thumb," is a sprain of the ulnar collateral ligament at the base of the thumb metacarpophalangeal joint. This is considered to be the most common skiing injury, and may occur with forced abduction of the thumb associated with a fall while holding the ski pole. Milder sprains are usually treated with splinting or protective taping. It is important to distinguish between a partial and a complete rupture of the medial collateral ligament. In certain more severe sprains, the tendon may become interposed between the proximal and distal ends of the torn medial collateral ligament. This is the so-called "Stener lesion." In these cases, surgical repair is often needed to restore pinch strength and prevent chronic instability and pain of the joint.<sup>10,16</sup>

### **Ulnar Nerve Compression In Cyclists**

Cyclists may develop numbness in the ulnar nerve innervated digits from chronic compression of their ulnar nerve in the palm of the hand which occurs while riding. In addition to numbness, intrinsic muscle weakness of the hand may also occur. Treatment should include thickly padded handlebar cushions or tape, padded cycling gloves, and restricting mileage.

### **Oarsman's Wrist**

Oarsman's wrist is an extensor tenosynovitis of the radial wrist extensors seen primarily in rowers and paddlers, and sometimes in racquet sports. Pain, tenderness, and swelling may be present at the dorsal wrist. The treatment is rest, splinting, and nonsteroidal anti-inflammatory drugs. Occasionally a steroid injection might be considered. Correction of training errors, with adequate rest periods and more gradual building of strength and endurance are helpful in prevention.<sup>10</sup>

This series on common sports injuries for the primary care physician will be continued with part II, Lower Extremity, in a subsequent issue.

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