

The Complex Shoulder >> Made Simple

By Andrew C. McCole, MS, PT, OCS

The shoulder is the body's most mobile joint. Unfortunately, the complexity involved in this function makes it more injury prone.

Many shoulder injuries result from poor posture alone, which is preventable relatively simply with behavioral and ergonomic training, strength and mobility exercises, and a basic understanding of body mechanics. Shoulder trauma may also result from football, baseball, tennis, gymnastics, and other athletic activity. Another cause is sudden, unexpected events such as falls or motor vehicle accidents.

Although they have similarities, each shoulder injury has unique characteristics. Whatever the problem, physical therapists bring a complete understanding of shoulder structure and function and thorough knowledge of effective treatments to bear to achieve the best outcome for every patient.

Inside the Shoulder

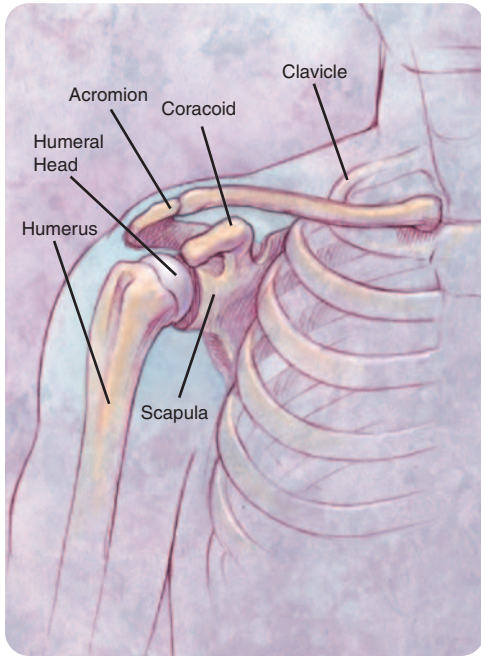
The shoulder joint comprises three different bones — the scapula, the clavicle, and the humerus — as well as multiple connecting ligaments and roughly 20 different muscles. The main articulation is known as the glenohumeral joint, which is connected by ligaments and a group of muscles and tendon attachments known as the rotator cuff. Problems with the rotator cuff are a major source of shoulder pain and disability.

The shoulder's complex structure allows it the greatest range of motion of any joint. The upper extremity can rotate up to 180 degrees in three different planes to perform a versatile range of activities. Because the shoulder joint structure is relatively shallow compared, for example, to the ball-and-socket design of the hip and leg, the shoulder is not very stable. Ligaments help keep every other joint in the body in place, but the shoulder joint is held together by only the capsule and the small rotator cuff muscles. This makes the amazingly agile joint prone to various types of injury.

Sources of Shoulder Problems

Most shoulder problems result from poor posture, neglect, aging, or trauma. For example, about half of the shoulder problems I encounter, such as tendonitis and bursitis, develop from poor posture or misuse of the shoulder after a period of relative inactivity.

In today's computer-centered workplace, people often work in a slouched position with the head and shoulders thrust for-



Shoulder structure

ward. This posture creates stress on the posterior (back) muscles that should work in balance with the anterior (front) muscles of the shoulder, neck, and back for optimum health.

Those who frequent gymnasiums for strength training often ignore the back and shoulder blade muscles. They may develop impressive biceps and pectoral muscles yet suffer from shoulder pain. This results from the posterior muscles straining to compensate for shoulder joint imbalance. The remedy for this situation is to make the patient more aware of posture. Patients are encouraged to exercise the muscles that “pinch” the shoulder blades and to use resistance bands and weights to improve posture.

THE GLENOHUMERAL JOINT

The glenohumeral joint is one of the most commonly dislocated joints in the body. In younger adults, most shoulder dislocations result from direct trauma or sports injuries. Falls are the main cause of glenohumeral dislocation in elderly persons, and the dislocation is usually accompanied by fracture. Anterior (frontal) dislocations usually come from excessive rotation or abduction force, and posterior (back) dislocations typically result when the humeral head is driven back with great force.

One good generic exercise to strengthen the scapula muscles is the “reverse fly.” Extend your arms overhead and then gradually bring them lower, pinching the shoulder blades together. Repeat the exercise in sets of 10 to strengthen the scapula muscles. Conditioning work with the thoracic and trunk muscles also helps.

Although more common in older people, injuries to the rotator cuff can occur at any age. A rotator cuff tear causes pain and difficulty in rotating the arm. This type of injury can result from a major fall, a motor vehicle accident, a shoulder dislocation, or simple wear and tear. Overuse injuries to the rotator cuff generally occur in athletes and are more frequent with advancing age. Sports injuries are common among young athletes but may also occur among “week-end warriors” who throw themselves into a game of family softball without adequate warm-up or conditioning.

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The clavicle, the only bony connection between the axial skeleton and the upper extremity, overlies and protects the brachial plexus, pleural cap, and great vessels of the upper extremity. Injuries to the clavicle are usually caused by falls on the lateral shoulder or by direct blows or falls on outstretched arms. Clavicle fractures are among the most common acute shoulder injuries. Humeral head fractures are less common and usually occur in older persons. In young adults, a direct blow can cause this type of fracture.

In athletes and active people, acromioclavicular (AC) joint sprains are common. These injuries usually result from direct blows to the acromion with the humerus in an adducted position. Indirect trauma, such as falling on an outstretched arm or elbow, may also be a cause. The ligaments holding

this joint together can be sprained, detached, disrupted, or separated.

Determining Needs and Treating Problems

The common shoulder problems treated by physical therapists are grouped into several categories:

- Overuse injuries resulting from repetitive motion involved in activities such as swimming, throwing, manual labor, or wheelchair use
- Postoperative pain in patients who have received treatment but have recurrent complaints in the neck, arm, or shoulder
- Traumatic injuries such as broken bones, shoulder dislocations, and acute muscle tears
- Stroke with resulting shoulder weakness or spasticity

In treating shoulder cases, I also find a fair amount of tendonitis due to impingement among middle-aged patients, which is often postural in origin.

Maintaining shoulder stability is the key to this joint’s mobility. As a physical therapist, I see those in our profession as “body mechanics.” We work to help patients correct problems and increase function.

In the case of injury, an experienced therapist working in conjunction with physicians can do many things to overcome disability and recover the use of this important joint. If you should experience any kind of pain or injury in your shoulder, see your physician and ask about treatment from a qualified physical therapist who can evaluate and treat your problem. 🧠



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