

The scapula, or shoulder blade, is a large triangular-shaped bone that lies in the upper back. The bone is surrounded and supported by a complex system of muscles that work together to help you move your arm. If an injury or condition causes these muscles to become weak or imbalanced, it can alter the position of the scapula at rest or in motion. An alteration in scapular positioning or motion can make it difficult to move your arm, especially when performing overhead activities, and may cause your shoulder to feel weak. An alteration can also lead to injury if the normal ball-and-socket alignment of your shoulder joint is not maintained.

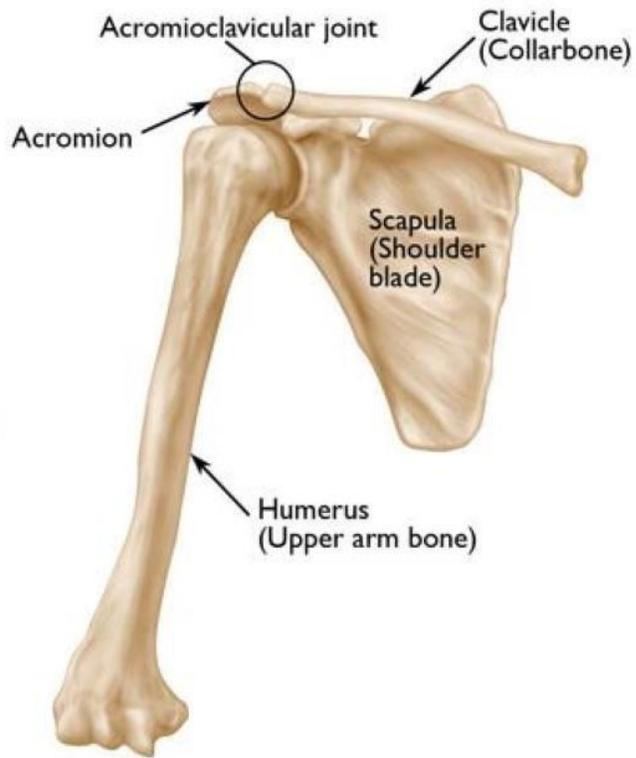
Treatment for scapular disorders usually involves physical therapy designed to strengthen the muscles in the shoulder and restore the proper position and motion of the scapula.

## **Anatomy**

Your shoulder joint is a ball-and-socket joint. The head of the humerus (upper arm bone) is the ball and the scapula (shoulder blade) forms the socket where the humerus sits.

The scapula and arm are connected to the body by multiple muscle and ligament attachments. The front of the scapula (acromion) is also connected to the clavicle (collarbone) through the acromioclavicular joint.

As you move your arm around your body, your scapula must also move to maintain the ball and socket in normal alignment.



(Left) The bones of the shoulder. The scapula serves as a site for the attachment of multiple muscles around the shoulder. (Right) The muscles and soft tissues of the shoulder.  
*Reproduced from JF Sarwak, ed: Essentials of Musculoskeletal Care, ed. 4. Rosemont, IL, American Academy of Orthopaedic Surgeons, 2010.*

## Description



This photo shows a patient with a "winged" scapula (arrow). Note the prominence of the medial (inner) border of the bone.

Disorders of the scapula result in a deviation, or alteration, in the:

- Normal resting position of the scapula, or
- Normal motion of the scapula as the arm moves

The medical term for these alterations is scapular *dyskinesia* ("dys"= alteration of, "kinesis" = movement).

In most cases, alterations of the scapula can be seen by looking at the patient from behind. The medial (inner) border of the affected shoulder blade will appear more prominent than the one on the opposite side. This prominence will often be exaggerated as the patient moves his or her arm away from the body.

This is commonly called a "winged" scapula, and is sometimes associated with an audible crunching called a "snapping" scapula.

## Cause

Causes of scapular dyskinesis include:

- Weakness, imbalance, tightness, or detachment of the muscles that control the scapula
- Injuries to the nerves that supply the muscles
- Injuries to the bones that support the scapula or injuries within the shoulder joint

## Symptoms

The most common symptoms of scapular dyskinesis include:

- Pain and/or tenderness around the scapula, especially on the top and medial (inner) border
- Weakness in the affected arm—your arm may feel "tired" or "dead" when you try to use it vigorously
- Fatigue with repetitive activities, especially overhead movements
- Limited range of motion—you may be unable to raise your arm above shoulder height
- A "crunching" or "snapping" sound with shoulder movement
- Noticeable protrusion or "winging" of the scapula
- A drooped or forward tilted posture on the affected side

## Home Remedies

In some cases, the symptoms of scapular dyskinesis may improve with simple home treatment that includes:

**Restoring good posture.** As you perform your everyday activities, try to stand and sit properly. To do this, pull your shoulder blades back together, and bend your elbows down and back as if you are trying to put them in your back pockets.

**Balancing your exercise routine.** If you are in a regular exercise program, make sure your upper body strength sessions are balanced. For every set of "presses" that you perform, you should do one set of "flies" and two sets of "rows." Your program should also include stretching exercises for your front shoulder muscles and for shoulder joint rotation.

**Heat therapy.** Soaking in a hot bath or using a heating pad may help alleviate tight shoulder muscles.

If your symptoms persist, it is important to contact your doctor. He or she can help determine the exact cause of your dyskinesis and provide treatment options.

# Doctor Examination

## *Physical Examination*

Your doctor will talk with you about your medical history and general health and ask about your symptoms. He or she will examine your entire shoulder and scapula, looking for injury, weakness, or tightness. In most cases, the physical exam will include the elements below.

**Visual observation.** Your doctor will look at your affected scapula from behind, comparing it to the noninvolved side. In order to see if scapular dyskinesis is present, your doctor may ask you to move your arms up and down 3 to 5 times, sometimes with light weights in your hands. This will usually reveal any weakness in the muscles and display the dyskinetic patterns.

**Manual muscle testing.** Your doctor will perform strength testing of your shoulder and scapular muscles to determine if muscle weakness is contributing to the abnormal scapular motion.

**Corrective maneuvers.** Specific tests involve corrective maneuvers that will help your doctor learn more about your condition. These tests include:

- **Scapular Assistance Test (SAT).** In this test, the doctor will apply gentle pressure to your scapula to assist it upward as you elevate your arm. If your symptoms are relieved and the arc of motion is increased, it is an indication that your muscles are not strong enough to raise your arm.



In the Scapular Assistance Test, the doctor manually assists the scapula upward as the patient elevates his or her arm.

- **Scapular Retraction Test (SRT).** In this test, the doctor will test your arm strength by pushing down on your extended arm. He or she will then manually place the scapula in a retracted position and test your strength again. In patients with scapular dyskinesis, muscle strength will improve when the shoulder blade is retracted.



In the Scapular Retraction Test, the doctor manually retracts the scapula while pushing down on the patient's extended arm.

### **Imaging Studies**

Imaging studies are not always necessary to diagnose scapular dyskinesis. Your doctor may, however, order an imaging study, such as an x-ray, computerized tomography (CT) scan, or magnetic resonance imaging (MRI) scan, if he or she suspects a bony abnormality of the scapula (such as an osteochondroma) or an injury to another part of the shoulder.

## *Treatment*



Physical therapy exercises will focus on strengthening and stretching the muscles around the shoulder.

## **Nonsurgical Treatment**

In almost all cases, the symptoms of scapular dyskinesis will improve with nonsurgical treatment.

Nonsurgical treatment may include:

**Nonsteroidal anti-inflammatory drugs (NSAIDs).** NSAIDs, such as ibuprofen and naproxen, can help relieve pain and swelling.

**Physical therapy.** Your doctor or physical therapist will provide an exercise program that targets the specific causes of your dyskinesia. Physical therapy usually focuses on:

- Strengthening the muscles that stabilize and move the scapula, and
- Stretching the muscles that are tight and limiting scapular motion

## **Surgical Treatment**

Most patients who have general dyskinesia due to muscle weakness or tightness do not need surgery.

However, if your dyskinesia is being caused by an injury to your shoulder joint, your doctor may perform a procedure to repair or reconstruct the injured tissues. This will be followed by rehabilitation to restore the scapula's normal motion.

## *Long-Term Outcomes*

Once the causes for your dyskinesia have been addressed and normal scapular position and motion are restored, your doctor may recommend a maintenance conditioning program of flexibility and strengthening. This is especially important if your job or recreational activities involve vigorous or repetitive shoulder and arm movements. These exercises should be done 3 times a week or as recommended by your doctor.