

# Arm Yourself Against Injury

A torn rotator cuff can mean searing pain, slow healing, and even surgery. But yoga can strengthen your shoulders and help prevent problems.

**By Julie Gudmestad**

We tend to think of the use of our hands--to write, to play the piano, to perform surgery--as uniquely human. But without the shoulder joint, our use of the hands would be severely limited. Without the shoulder, our arms would be stuck at our sides. We wouldn't even be able to get our hands to our mouths. And we'd lose much of our yoga practice. We use our shoulders in virtually every pose, whether the arms are stretching out to the sides in Trikonasana (Triangle Pose), reaching up in Vrksasana (Tree Pose), bearing weight in Sirsasana (Headstand), or supporting the torso in Sarvangasana (Shoulderstand).

Considering the importance of the shoulders, it is surprising that they are relatively unstable, vulnerable joints. The shoulder is a ball-and-socket joint, like the hip, but unlike the hip socket, the shoulder socket is quite shallow. This shallow socket and the relative looseness of the joint allow wonderful freedom of movement: If you have normal shoulder mobility, you can sweep your arm left and right in front of you as well as circle it up and back. You can't make a circle like that with your leg unless you are a contortionist with hypermobile hips.

## **A Four-Muscle Job**

With its inherent instability, the shoulder is very dependent on its soft tissues to help hold the joint together. These soft tissues include ligaments, which join bone to bone; tendons, which attach muscle to bone; and the muscles themselves, which both move and stabilize the bones. Of particular importance in stabilizing the shoulder are the four muscles that are collectively called the rotator cuff. They wrap deep around the joint from the back, from the front, and over the top.

Stabilization of the shoulder is a complex process shared among the four muscles, whose names can be remembered with the mnemonic SITS: supraspinatus, infraspinatus, teres minor, and subscapularis. Although all of them act together to hold the head, or ball, of the humerus in the shoulder socket (which is actually part of the scapula, or shoulder blade), each muscle produces its own distinct action in the shoulder.

The supraspinatus originates on the upper scapula, just above the spine of the scapula, and inserts on the greater tuberosity of the humerus, a small lump on the outer upper part of the bone. The supraspinatus initiates shoulder abduction. If you stand in Tadasana (Mountain Pose) with your arms by your sides and then lift your arms up to a T shape for Virabhadrasana II (Warrior Pose II), the supraspinatus begins that lift. In its stabilizing function, the supraspinatus helps keep the head of the humerus from slipping down and partially out of the socket, a painful condition called subluxation. Shoulder subluxation in this direction commonly occurs when the muscle is paralyzed by a stroke.

The infraspinatus originates just below the spine of the scapula; the teres minor originates near the infraspinatus on the back of the scapula. Both cross the back of the shoulder joint to insert near the supraspinatus on the greater tuberosity of the humerus, and both are strong external rotators. If you stand in Tadasana, palms facing your body, and then turn your elbow creases forward (the palms will naturally turn forward too), you've externally rotated your shoulder--and you've just used the infraspinatus and teres minor.

Besides being external rotators, the teres minor and infraspinatus are very important in positioning the head of the humerus as you flex the shoulder (when you bring your arm forward and up overhead) and abduct the shoulder (when you bring your arm straight out to the side and up). The two muscles actually pull down on the head of the humerus as the arm elevates, to prevent the ball from crashing up into the acromion--the projection of the scapula that, like a carport roof, protects the top of the joint.

If the teres minor and infraspinatus are too weak to do their jobs or there are other problems with the movement of the scapula, you can develop impingement syndrome, in which soft tissue gets compressed between the head of the humerus and the acromion. If the damaged and inflamed tissue is a bursa, one of the cushioning pads between tendon and bone, you have bursitis. If it is a tendon (commonly the supraspinatus tendon), you have tendonitis.

The subscapularis is the hardest part of the rotator cuff to locate, and its actions are the hardest to understand. It originates on the front surface of the scapula and runs forward, forming part of the posterior fold of the armpit. It then wraps around to the inner upper shaft of the humerus and inserts there. The subscapularis is a very strong internal rotator of the shoulder, so its action opposes the actions of the infraspinatus and teres minor. Along with the rest of the rotator cuff muscles, the subscapularis helps stabilize the ball of the humerus in the shoulder socket.

### **No More Tears**

Unfortunately, it's not uncommon for the muscles of the rotator cuff to be underworked and therefore weak. This weakness can lead not only to impingement syndrome but also to tears in the rotator cuff muscles themselves, usually near where three of them insert on the greater tuberosity of the humerus. These tears are quite painful and can severely limit your ability to move your arm. Rotator cuff tears can occur during vigorous shoulder activities for which you're not conditioned--throwing a Frisbee for the first time in years, for instance--but are most common in elderly deconditioned folks, especially women, and younger, active people who fall while cycling, running, or playing a sport.

If you have an acutely injured rotator cuff, or one that hasn't fully recovered from an injury or surgery, it's best to leave the exercise prescription to a health care professional. Mild to moderate rotator cuff tears can be treated conservatively with medication and carefully selected exercise, while more severe tears may require surgery.

But given the challenges of healing a torn rotator cuff or recovering from impingement syndrome, it's obviously better to build and maintain the strength of the rotator cuff muscles to prevent these problems in the first place. Practicing yoga, in which you often bear weight on the arms, is a wonderful

way to do this. If you come to yoga with weak rotator cuff muscles, however, it's best not to immediately put big loads on them, as you would in Surya Namaskar (Sun Salutation) or inversions. So if you are new to yoga, are weak in your upper body, or have a previously injured (but now healed) rotator cuff, begin building strength with postures in which you bear only light weight on your arms.

To start, simply get down on your hands and knees and lift your rib cage up toward the ceiling so you're not sagging weight down into your shoulder joints. Then lift one arm up next to your ear, which will put a little more weight onto the other arm and shoulder. When you are ready for a bigger challenge, you can progressively add to the load on the shoulder muscles by doing variations of the classic push-up. Instead of pushing up from the floor, start in a standing position facing a wall with your hands on the wall at shoulder height. As you gain strength, you can bring your body closer and closer to horizontal: First move your hands from the wall to a tabletop, then to a chair seat, and finally to the floor.

If you are starting with deconditioned shoulders, be patient; it may take several weeks or even months to work your way to the floor. You can also gradually strengthen your rotator cuff with another exercise: going from Adho Mukha Svanasana (Downward-Facing Dog Pose) to Plank Pose (the "up" position in the push-up) and back again.

These transitions can be practiced with your hands on a table, a chair seat, or the floor, depending on how strong your shoulder muscles are. This work is wonderful conditioning not only for the rotator cuff but for the triceps muscle (on the back of the upper arm) and the pectoralis major (across the chest and the front of the shoulder) as well.

In almost all yoga postures with the arms forward, as in Plank, or overhead, as in Adho Mukha Svanasana, Adho Mukha Vrksasana (Handstand), and Sirsasana, the shoulder is best stabilized with moderate external rotation. This will activate and strengthen the teres minor and infraspinatus. When you externally rotate in Plank, your elbow creases turn forward somewhat; in Sirsasana, your triceps face the same direction as your nose, not out to the side. Remember that the necessary external rotation is moderate: You are overdoing it if you feel strain in your elbows or if you can't keep the base of your thumb and index finger on the floor in Adho Mukha Svanasana or Plank.

As for the other rotator cuff muscles, the supraspinatus gets a good workout when you practice a long series of standing poses. Each time you take your arms from your sides up to shoulder height, the supraspinatus works and gets stronger. It's a little harder to be sure which yoga poses strengthen the subscapularis. For one thing, the muscle is hard to isolate; internal rotation of the shoulder is a complex movement that uses several different muscles.

For another, we simply don't internally rotate our shoulders all that often in yoga. Some of the positions in which we do internally rotate include the position of the arms in Parsvottanasana (Side Stretch Pose), that of the lower arm in Gomukhasana (Cow Face Pose), and that of the arm that wraps around the knee in Marichyasana III (Pose Dedicated to the Sage Marichi III). You also internally rotate the shoulder when you reach both arms up, interlace the fingers, and stretch the palms up toward the ceiling.

To maintain the health of your rotator cuff, it's important not only to strengthen the muscles but to work on opening the chest. When the chest drops instead of opening and the fronts of the shoulders roll forward and down, your shoulder blades tip forward, which facilitates pinching between the head of the humerus and the acromion. In this position, the rotator cuff is more likely to be impinged on and strained, eventually becoming inflamed and more vulnerable to tears.

As you can see from the wide range of postures that benefit the rotator cuff, perhaps the best yoga prescription for rotator cuff health is to maintain a well-rounded asana practice. Practiced regularly, a variety of standing poses, chest openers, arm balances, and inversions can help you protect this complex and crucial part of your anatomy.

A licensed physical therapist and certified Iyengar Yoga teacher, Julie Gudmestad runs a private physical therapy practice and yoga studio in Portland, Oregon. She regrets that she cannot respond to correspondence or calls requesting personal health advice.

Source: Yoga Journal <http://www.yogajournal.com/lifestyle/1102?page=4>