

How to Heal (and Prevent) Shoulder Injuries

This shoulder-strengthening, chest-opening asana routine targets injuries in the rotator cuff and restores muscular balance—no surgery required!

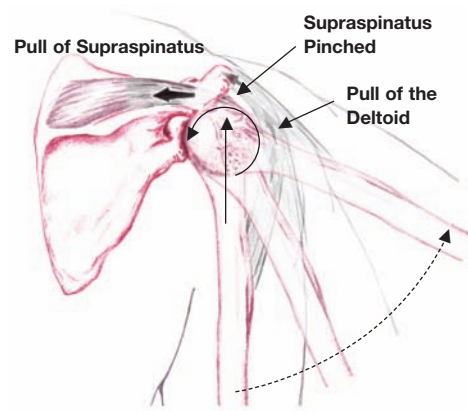
By DOUG KELLER

Each time you lift your arms, your shoulder muscles—both big and small—initiate a dance full of subtle nuances. The complex interaction of those muscles, coupled with the unique structure of the shoulder joint, gives your arms a wide range of motion. In fact, the shoulder is one of the loosest joints in the body. But this freedom of movement comes at a price: shoulders are vulnerable to injury both from sudden falls and from

repetitive action such as throwing a baseball. The muscles of the rotator cuff, the most delicate movers of the shoulders, are particularly susceptible. But here's the good news: a regular, targeted asana practice can help you maintain healthy rotator cuffs by bringing awareness to your alignment, strengthening your shoulder muscles, and opening your chest. And several of the poses described in the pages that follow can even encourage the healing of rotator cuffs if you've already injured them.

THE ANATOMY OF THE SHOULDER

Let's take a look at the special nature of the shoulder joint and, in particular, its relationship to the shoulder blade. Though it is considered a type of ball-and-socket joint, the shoulder is unusual



THE SUPRASPINATUS is the most commonly injured rotator cuff muscle. It assists the deltoid in lifting the arm overhead.

because the rounded “ball” or head of the humerus (i.e., the arm bone) doesn't have a corresponding socket. Rather, the ends of the collarbone and shoulder blade come together to form a shelf under which the humerus hangs. This shelf is known as the acromion process. Beneath it there is a rounded depression that is part of the shoulder blade. This is as close as the shoulder gets to having a “socket”; the head of the arm bone glides against this surface as it rotates, and the steady contraction of the rotator cuff helps to hold the joint together.

The rotator cuff actually comprises four separate muscles—the supraspinatus, the infraspinatus, the teres

minor, and the subscapularis—which wrap over, in front of, and behind the head of the humerus and stabilize the joint. These deeper muscles are layered over by larger, stronger muscles that attach directly to the acromion process. The muscles of the rotator cuff guide the actions of the arm bone itself, while other larger muscles control the actions of the shoulder as a whole, with both arm bone and shoulder blade functioning as a unit.

HOW INJURIES OCCUR

The most common rotator cuff injury occurs at the outermost corner of the shoulder, beneath the deltoid (the large muscle you use to lift your arm). >>

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THE DELTOID lifts the arm 80 degrees then the supraspinatus assists the deltoid for the next 30 to 40 degrees.



AS THE ARM LIFTS a shortened deltoid muscle causes the arm bone and the acromion process to pinch the supraspinatus.

The injury is to the supraspinatus, a small muscle that attaches directly to the head of the humerus and assists the deltoid in lifting the arm overhead. The very strength of the deltoid is often the cause of injury to the supraspinatus.

When you take your arms overhead, the deltoid is able to raise the arm to about 80 degrees from the body. At this point, the deltoid can't do much more lifting on its own: the arm bone is almost level with the shoulder, and from this angle the deltoid can only pull the arm bone into the joint rather than lift it higher. As the arm continues to rise, the deltoid relaxes somewhat and the supraspinatus jumps in to help: it raises the arm for the next 30 to 40 degrees, after which the deltoid can resume its work.

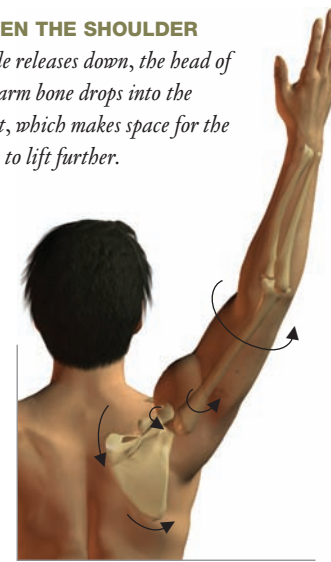
It is within this range of 80 to 120 degrees that the supraspinatus can get hurt. The tendon of the supraspinatus, which is about the size of a large rubber band, is the part of the muscle most often injured, though the muscle itself can also tear. This can happen especially in hasty and aggressive *adho mukha shvanasana* (downward-facing dog) poses as well as in flamboyant versions of the newly popular *vasisthasana* (side plank pose) and in advanced arm balances such as *tittibhasana*.

Simple accidents can also injure the supraspinatus tendon. For example, if you slip in an icy parking lot and use your arm to break the fall, the humerus gets jammed in the socket, pinching the supraspinatus against the acromion process or even tearing the tendon. The simple repetitive action of raising your arm can also be at fault. When you reach for something on a shelf above you, the deltoid can pull the arm bone up too hard, pressing it against the acromion process, thus pinching the supraspinatus. Over time, these little injuries add up to a more serious problem.

The shoulder is built to avoid this pinching, but our patterns of use and everyday life lead to imbalance, pain, or lack of mobility. The problem starts with postural habits: many of us overuse the muscles of the shoulders to support the weight of our arms. The muscles closest to the neck (the rhomboids) and those running from the tops of the shoulder blades up into the neck itself (the levator scapulae) take the brunt of the weight. This is especially problematic during arm-intensive activities such as typing, when your shoulders become set in a perpetual shrug. Chronic tension builds up, pulling the inner corners of your shoulder blades up toward your ears, causing your back to

WHEN THE SHOULDER

blade releases down, the head of the arm bone drops into the joint, which makes space for the arm to lift further.



round and your shoulders to hunch. This is the beginning of a vicious cycle: the more your shoulder blades creep up the back from the pull of these muscles, the more your muscles tense and shorten, pulling your shoulder blades up even higher.

As a result of this tension and the postural misalignment that ensues, the deltoid is far less likely to relax when it's supposed to. If your shoulders roll forward and the deltoid remains fully engaged as you lift the arm from 80 to 120 degrees, it can cause the humerus to press against the acromion process, pinching the rotator cuff tendon.

There are a variety of yoga poses that can help break the cycle and restore strength and balance to the shoulder muscles—from simple standing poses in which you hold your arms aloft in various positions to those in which your arms directly support the weight of the body. The standing poses described below can help you reestablish the healthy mobility of the shoulder blades as you lift your arms; they will also enable you to activate other muscles to ease the burden on the rhomboids and levator scapulae. The inversions, particularly headstand, strengthen the shoulder muscles, keeping them more open and stress-free. >>

Doug Keller's yoga journey includes 14 years of practicing in Siddha yoga ashrams, intensive training in the Iyengar and Anusara methods, and nearly a decade of teaching in the US and abroad.

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TENSE WARRIOR II *If your deltoids are tense they will cause your shoulders to bunch.*

RELAXED WARRIOR II *If your shoulders are relaxed, you'll feel the upper inner corners of your shoulder blades release down, as the neck softens.*

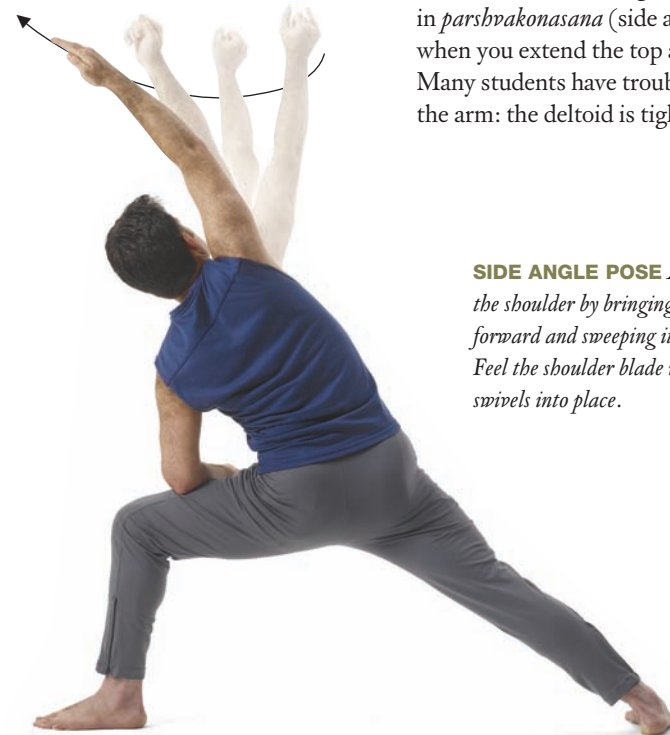
FREEING THE SHOULDER BLADES

To begin, extend your arms out to either side in warrior II pose. Make sure your arms are in the same plane as your shoulders or slightly forward of the shoulders. To experience “the shrug,” rotate your hands and arms so your thumbs face downward: feel how the muscles on either side of your neck hunch upward, the deltoids tense, and the shoulders feel blocked.

Now rotate your hands and arms so the palms face up, even reaching your little

fingers upward. The hunching dissipates: the upper inner corners of your shoulder blades release down your back, softening the sides of your neck. Feel how the weight of your arms is supported more by your shoulder blades, which are planted firmly on your back, and less by your neck: you'll especially feel a firming of the muscles at the outer edges of your shoulder blades, as the deltoids soften and the shoulder joints begin to feel more open and free. Do a few small arm circles to feel the support offered by the shoulder blades.

The same hunching tends to happen in *parshvakonasana* (side angle pose) when you extend the top arm overhead. Many students have trouble straightening the arm: the deltoid is tight, the shoulder



SIDE ANGLE POSE *Avoid pinching in the shoulder by bringing your arm slightly forward and sweeping it in a C-shaped arc. Feel the shoulder blade release as the arm swivels into place.*

is pinched, and the neck feels cramped, making it uncomfortable to turn the head. The problem begins once again with the shoulder blade, which fails to release down the back so that the arm can swing into place in the shoulder joint.

To release the shoulder in side angle pose, take your top arm slightly in front of your body and, while extending out through the little finger, rotate your arm in a tiny arc, making a C shape with your hand, as if you were dipping your little finger in a bowl of ice cream. The shoulder blade will release down your back and away from your ear, and the humerus will swivel into place next to your ear, making space for your head to turn. It's this simple yet elegant move-

A regular, targeted asana practice can help you maintain healthy rotator cuffs by bringing awareness to your alignment, strengthening your shoulder muscles, and opening your chest.

ment of the shoulder blade that opens the shoulder, and also, through a subtle downward pull of deeper muscles in the back and shoulders, prevents pinching of the rotator cuff.

PROTECTING THE SHOULDER JOINT

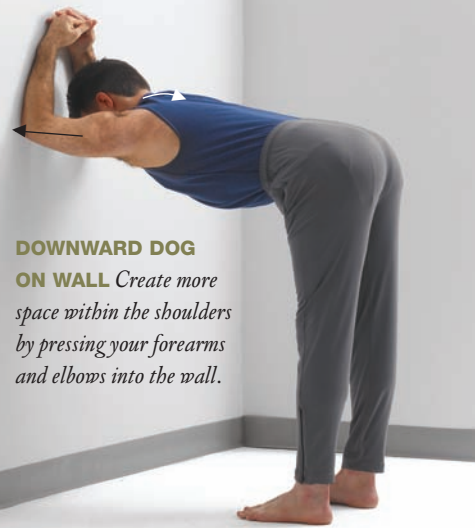
Freeing the shoulder blades is just the beginning. Protecting and healing the rotator cuffs—the supraspinatus in particular—involves not just realigning the bones, but activating and strengthening the muscles meant to counteract the upward pull of the deltoid. Straight-arm poses such as downward-facing dog and *adho mukha vrikshasana* (handstand) certainly make use of these muscles, but the shoulder is also at its most mobile and vulnerable in these positions. It's safer to begin with variations on *shirshasana* (headstand), in which the position of the arms and shoulders is more stable. And since the aim of these headstand preparation exercises is to make the arms more weight-bearing, the neck can remain safe: little, if any, weight needs to be placed upon the head. >>

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DOWNWARD DOG ON WALL Create more space within the shoulders by pressing your forearms and elbows into the wall.

DOWNWARD DOG ON THE WALL

This exercise will help you establish correct alignment in your shoulders without putting weight on your arms. Stand facing the wall and place your forearms on the wall in headstand position, with your fingers interlaced and your elbows shoulder-width apart. Keep the palms of your hands separated so that your arms form an

upside-down U shape, rather than a V. Walk your feet back as you bend forward from the hips. Maintaining the U shape, let your arms slide down the wall until your body is at more or less a right angle (knees can be bent if necessary), and your head is in line with your upper arms; the top of your head should not touch the wall.

Lightly engage the inner edges of your biceps, drawing energy from your inner elbows toward your armpits. This action stabilizes and protects your shoulders because, when engaged, the biceps draw the arm bones back into the shoulder joints. To keep your shoulders open and prevent pinching in the joints, isometrically squeeze your elbows toward each other while firming the biceps, as if you were squeezing a beach ball between your elbows. Feel how your upper back broadens, much as it did when you turned your little fingers upward in the warrior II exercise.

Press your forearms into the wall to stretch your upper body, through the

shoulders and away from the wall. If you are nursing an injury, go only as far as you can without pain or stiffness in your shoulders; your head may only be an inch or two from the wall at first. That's fine. Notice how pressing through your elbows makes your shoulder blades firm into the back, creating more space within the shoulders. For comparison, press more with your wrists and see how your triceps and deltoids activate, making your shoulders tighten and hunch. Pressing through the elbow when the arm is weight-bearing activates the deeper muscles—latissimus dorsi, subscapularis, and teres major—that pull the head of the arm bone down and back, away from the acromion process; this prevents the pinching of the supraspinatus. While extending back as you press through your forearms into the wall, avoid overly rounding your upper back: let your spine descend from between your shoulder blades toward the floor while keeping your arms active. Hold the stretch for about 30 seconds.



VARIATIONS IN HEADSTAND Build strength in your shoulders and protect your neck by pressing your whole forearm into the floor.

HEADSTAND WITH A CHAIR

In the next variation, the arms bear more weight. This is where a prop becomes helpful. Place a sturdy chair against a wall so that it will not slide. Sit in front of the chair, facing away from it, and extend your legs so that you can measure a leg's distance from the chair. When you go into the pose, you will place your elbows where your heels are.

Now come away from the chair and place your hands and arms in headstand position, with the elbows on the floor at the spot you just measured. With your feet on the floor, toes curled under, lift your hips up as if you were doing downward-facing dog. Lightly engage your inner biceps and push your forearms down and away from you as you lift and stretch your hips back, creating a straight line from your elbows to your hips. Rest the crown of your head on the floor

between your hands, pressing through the arms firmly enough so that most of your weight is on your arms, not your head. Hold the stretch for about 30 seconds, keeping the arms engaged.

If you can keep most of your weight on your forearms and do not experience pinching in the shoulder joints, then step first one foot and then the other onto the chair to elevate the hips, bringing more weight into your arms. (To protect your neck and build strength in your shoulders, you may want to practice with your head entirely off the floor, lifting so that your head comes in line with your upper arms.) Press the whole forearm into the floor, especially through the elbows.

HEADSTAND VARIATIONS

In the next exercise, remove the chair, then measure a leg's distance from the wall. Rest the crown of your head on the floor between your hands, with your fingers interlaced, your hands cupped around the back of your head, and your wrist bones perpendicular to the floor.

If you have neck concerns, you'll still want to keep your head off the floor, although it will be rather demanding. Come into the downward dog version first, then step your feet up to the wall, so that your body is at a right angle—an upside-down version of the exercise with which we began. This pose is sometimes called *urdhva dandasana*. Press through your arms to take the weight off your neck and to lift your shoulders away from your ears and toward your waist. This engages and strengthens the muscles that pull your arm bones away from the acromion process, keeping the supraspinatus safe and allowing it to heal.

How effective are these exercises for mending rotator cuff injuries? In one study published in the *International Journal of Yoga Therapy* in 2005, 10 people with rotator cuff injuries practiced similar variations of the headstand for 30 seconds daily for six weeks, with follow-up sessions every six weeks for four months. Nine out of 10 patients reported improved range of motion in the shoulders and reduced shoulder pain after the initial 30-second session. After four >>

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HEADSTAND Collapsed shoulders causes the body to arch into a banana shape (left), which strains the rotator cuffs. To prevent this from happening, press through the forearms while lifting the shoulder away from the neck (right).

months, eight patients showed significantly improved range of motion and a 75 percent reduction in pain. None went on to surgery, which is unusual for people with rotator cuff injuries who report their pain at [TK] level.

If you already practice the full headstand and are aware of the alignments and precautions, you can include this asana in your shoulder-strengthening-and-healing routine. While in the pose, your whole forearm should press fully into the floor to distribute your body's weight.

In the headstand, the shoulders have a tendency to hunch toward the ears. As a result, the body takes on a "banana pose." If you feel compression in your lower back or neck, it's a sign that you are indeed in a banana shape. Press a bit more through your elbows. At the same time, with your thighs firm and steady, take your hips back slightly to align them more directly over your shoulders, and take your feet forward, reaching up through your inner heels and the mounds of your big toes. Keep your lower belly

firm to steady yourself; you should feel your neck lengthen as you extend down through the crown of your head.

As you press your elbows more fully into the floor, you will be able to broaden your shoulders, lifting them away from your ears and toward your waist. Feel how the outer edges of your shoulder blades engage. The muscles you are using are the very muscles which, when awakened and strengthened through practice, create balanced action within your shoulders and protect the rotator cuffs from injury.

Because your shoulders play an important role in so many daily activities—playing musical instruments, typing, driving, not to mention practicing yoga and playing sports—it's well worth the effort to include inversions and shoulder-strengthening exercises in your daily routine. And in the end, when the burdens of the world prove to be a bit much for your shoulders, the work of turning upside down can give them some welcome relief. Atlas himself could have used a good headstand. +

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