

Preventing Shoulder Injuries and Treatment of Rotator Cuff Problems

By Eric McGraw, DC*

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We all know that sooner or later baseball players, especially pitchers, will incur a throwing injury or two in their career. Obviously, shoulder injuries are the most common followed by elbow injuries.

The most common throwing injuries I see in my office, involve the rotator cuff. The rotator cuff is comprised of four muscles: supraspinatus, infraspinatus, teres minor, and subscapularis. The rotator cuff is a delicate group of muscles and is responsible for stabilizing and moving the humerus (upper arm). Unfortunately, due to the poor supply of blood to the tendons of the rotator cuff muscles, and the extreme range of motion of the shoulder joint during throwing, many people have damaged rotator cuffs.

So how can we prevent shoulder injuries? Here are my top four tips for preventing shoulder injuries.

1. Warm up properly – a proper warm up consists of dynamic movements as opposed to static stretching. Stretching the muscle groups that will be utilized in an activity is essential. For a baseball player, this means the shoulder, legs (quads, calves and hamstrings) and back. Once the body has been primed for activity, an easy jog or run to start is a must! A player should touch a baseball until he has warmed up. Throwing should begin with multiple tosses at a lower velocity and small distances. As the muscles loosen, the distance and velocity of throws should increase.
2. Rest – all pitchers should have a pitch count! Repetitive motion is by far the number one contributor to muscle tears. So if you want to throw in your 40's, 50's and even into the 60's keep it at a moderate amount. Be mindful that whether you are sore or not, each throw is a small amount of trauma to the shoulder. So, if you do not take proper care of your throwing arm, you risk debilitating injury.
3. Workout your lower body – The majority of pitching power should come from the legs and core. If this does not happen, a player will compensate by adjusting his mechanics to generate the requisite power from his upper body. This will put shearing forces on the rotator cuff muscles and could result in micro tears to the muscle fibers. Healthy muscle tissue is striated and parallel. When a muscle is torn, the body will attempt to repair the tissue but scar tissue will result. This tissue is not parallel and often forms a jumble or knot. The end result is a muscle with less elasticity and suppleness; a condition that limits the muscle's functioning through a range of motion and possibly causing pain.
4. Find yourself an Active Release Provider – Active Release is the number one treatment for the removal of scar tissue. Scar tissue "knots" are commonly

formed in muscles due to repetitive motion. Scar tissue will decrease blood flow to a muscle, weaken a muscle, and lead to a loss of elasticity in a muscle.

Active Release is a patented system of manual therapy that treats the injured muscle through a range of motion and is the best approach for the removal of scar tissue. Not only is Active Release the official treatment of the Ironman Triathlon, it is also used by countless professional sports teams. As muscles began to fatigue and fail other muscles will compensate and become overused. These overused muscles will tear and become scarred. Scar tissue is certainly less elastic than healthy muscle. Patients that have a condition involving scar tissue will almost always improve after their first treatment of Active Release.

Due to the fact that scar tissue is weaker and less elastic than healthy muscle, it is a bad idea to try to strengthen these muscles. Strengthening a damaged muscle will only lead to further damage. However, once the scar tissue has been treated, it is extremely important to do so sort of exercise protocol. These exercises should be challenging, but also pain free. The best exercises for the rotator cuff muscles are external and internal rotation. Below is a series of Rotator cuff exercises designed by Dr. Frank Jobe, the noted orthopedic surgeon. Although these exercises work well to strengthen the rotator cuff, only use them if you truly have a rotator cuff problem and always consult a physician. I personally recommend the exercises with dumbbells. New research has found the therabands to be harmful.

Remember you can always trade your bats and gloves in for new ones; however you can't trade in your body. Make sure you take care of it. Follow the above tips and you'll be pitching and throwing without problems for years. If a problem (pain, decrease range of motion, or early fatigue) arises, jump on those problems quickly. If you wait to seek treatment most likely the problems will get worse. If you take time off the condition will usually improve, but as soon as your normal throwing load is started again the injury will resurface. So be smart about playing and you will be playing well into the future. To learn more about Active Release Techniques® and find a provider in your area, go to www.activerelease.com.



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Ulnar Deviation

Stand with the right arm extended to the side, holding the weight in the hand. Repeat the series with the left arm.

1. Stand with the right arm extended to the side, holding the weight in the hand. Repeat the series with the left arm.
2. Bend the wrist, lifting the weight and pointing the hand toward the ceiling. Do not move the elbow. Repeat the series.
3. Return slowly to the starting position and repeat until the series is completed.



Radial Deviation

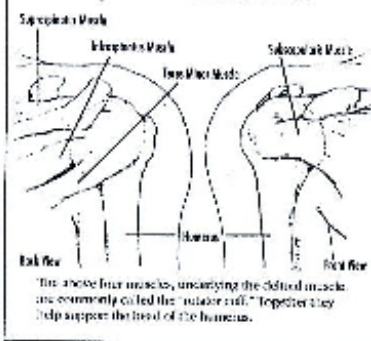
1. Stand with the right arm extended to the side, holding the weight in the hand. Repeat the series with the left arm.
2. Bend the wrist, lifting the weight and pointing the hand toward the ceiling. Do not move the elbow. Repeat the series.
3. Return slowly to the starting position and repeat until the series is completed.



We hope that by working on these specific stretches and arm conditioning, and strengthening to improve, you will be able to improve the efficiency of your shoulder and arm on any work or lifting activity.

Dr. G. K. S. M.D.
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Components of the Rotator Cuff



THE BIOMECHANICS LABORATORY

Our biomechanics laboratory is devoted to the study of the mechanics of the human body and the effects of physical activity on the human body.

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STRETCHING

We now know more about stretching and its effects on the human body. The back of the shoulder is a very important part of the shoulder and is often neglected. Do not neglect it. Do it regularly. Do it gently and slowly.

Posterior Cuff Stretch

1. Lift the right arm to shoulder height.
2. Gently, slowly, and the draw the arm towards the body. Do not pull the arm in the back of your shoulder.



Rhomboid Stretch

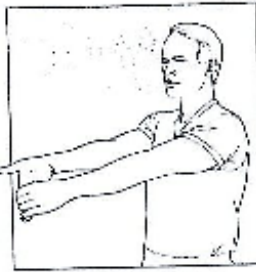
The pectoral muscles of the back and shoulder are stretched, especially by the pectorals.



1. Standing, extend your right arm to the side, holding the weight in the hand. Repeat the series with the left arm.
2. Bend the wrist, lifting the weight and pointing the hand toward the ceiling. Do not move the elbow. Repeat the series.
3. Return slowly to the starting position and repeat until the series is completed.

Wrist Flexor Stretch

1. Stand with your right arm extended forward and 90° away from your body, straight and palm up.
2. Use your opposite hand to pull the hand down, so your fingers are pointing toward the floor. You should feel the stretch in the tendons of your wrist and the entire group of forearm muscles.



Wrist Extensor Stretch

1. Stand in a sitting position with your right arm extended forward, keeping your elbow stable and palm down.
2. Use your opposite hand to pull the hand down, so your fingers are pointing toward the floor. You should feel the stretch in your wrist and the entire group of forearm muscles.

STRENGTHENING THE SHOULDER MUSCLES

Use multiple sets of 8 to 12 repetitions of each exercise with a 30-second rest period between sets. Perform each exercise with your feet shoulder-width apart, your torso upright, and your arms and shoulders relaxed.

Begin these exercises with a weight of two to four pounds. Perform each exercise slowly, but gradually increase the weight as you gain strength and confidence. Do not take more than 30 seconds in the rest period between sets. When you finish one set, rest for one to two minutes before you begin your next set. Perform each exercise 2 to 3 times a week.



Shoulder Flexion

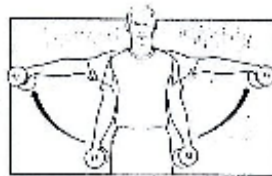
This exercise strengthens the anterior muscles and posterior muscles of the torso of the shoulder.

1. Stand with your right arm extended straight up, palm toward your right palm.
2. Keeping your elbow straight, use your right hand to pull the right arm down, so your hand is near your head.
3. Repeat slowly 8 to 12 times.
4. Repeat slowly 1 to 2 times with your left arm.

Shoulder Abduction

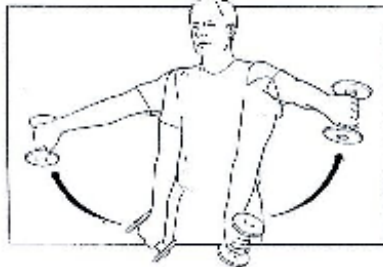
This exercise weakens the deltoid muscle and one of the most powerful muscles in the shoulder. It increases efficiency and decreases the risk of injury to the 90° elevation.

1. Stand with arms at your sides.
2. Lift arms to shoulder height, keeping elbows straight.
3. Lower arms slowly to starting position and repeat.



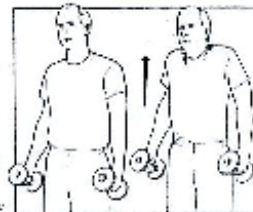
Rotator Cuff Elevation (Supraspinatus)

1. Stand with one or two 5-pound weights in hand. Keeping your elbows straight, turn arms in so that the hands are pointing toward you.
2. Lift your arms to level of shoulder height or your head.
3. Raise your arms 90° keeping your elbows straight and hands pointing toward the floor.
4. Slowly lower your arms to starting position and repeat.



Shoulder Shrugs

1. Stand with arms at your sides, feet shoulder-width apart.
2. Shrug your shoulders, lifting them as high as you can. Keep your elbows flexed slightly throughout the exercise.
3. Return slowly to the starting position, repeat the exercise 8 to 12 times every 3 to 4 minutes necessary to restore your shoulder.



Military Press

1. Sit with the weight held overhead.
2. Raise your arms straight overhead from your palm to the top.
3. Descend slowly to the starting position. Do not rest your hands on your knees.

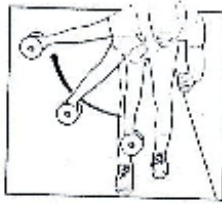


Horizontal Abduction

This exercise strengthens the posterior deltoid muscle, which contributes to posture and balance during the normal walking gait cycle.

1. Stand on a mat or bare feet, leaning forward so that the hips are in line with the feet.
2. Lift your right leg to the side, keeping your elbow straight. Continue lifting until your arm is parallel to the floor. Make sure you are in your starting position when you stand up.
3. Lower slowly to the starting position. Repeat the exercise with the left leg. Ankle weights are optional.

For an extra challenge, you can walk on the edge of a curb or sidewalk.

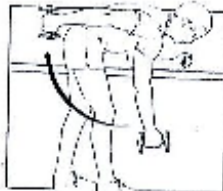


Shoulder Extension

The muscles of the posterior part of the shoulder are important for posture. These muscles are essential for proper control of the arm during activities of the upper part of a normal walking gait cycle.

1. Stand on a mat or bare feet, leaning the hips and the ankles over the foot of the right leg. Allow the right arm to hang parallel to the floor.
2. Holding a weight in the right hand, raise it until it is parallel to the floor, straight out to the side. Lower slowly to the starting position. Repeat the exercise with the right arm raised straight up to the ceiling and then straight out to the side.

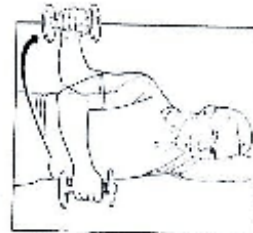
For an extra challenge, you can stand on the edge of a curb or sidewalk.



External Rotation (Deltoid posterior and teres minor)

1. Lie on the side with your feet flat on the floor.
2. Lift your arm to the side, keeping it parallel to the floor.
3. Lift your hand and the elbow, keeping your arm parallel to the floor.

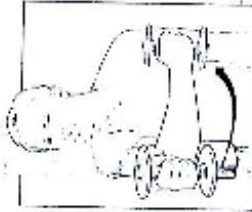
4. Lower slowly to the starting position.



Internal Rotation (Subscapularis)

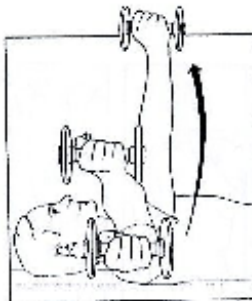
1. Lie on the side of your dominant arm. Make sure your elbow is parallel to the floor and your arm is slightly in front of your head.
2. Lift your arm and your elbow to the ceiling.
3. Hold your arm and elbow in a straight line.

4. Hold the arm and elbow in a straight line, keeping the elbow 90 degrees to the floor. The arm is held by the elbow, not the shoulder.
5. Lower slowly to the starting position.



Horizontal Adduction

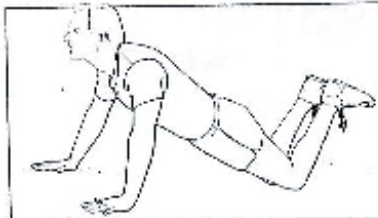
1. Lie on the floor on your back.
2. Lift your arm to the side with the elbow to the side and the knee being straight.
3. Raise your arm slowly until the hand is parallel to the floor.
4. Lower slowly to the starting position, making sure you move the arm parallel to the floor.



Push-Ups

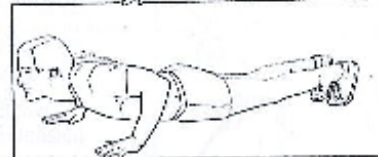
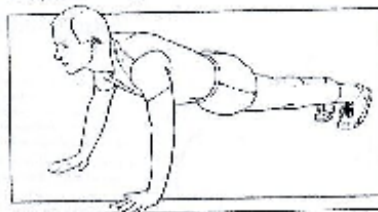
Push-ups help strengthen the muscle groups in the chest and arms.

1. Get on your hands and knees on the floor.
2. Place your elbows on the floor with your shoulder.
3. Lift your arms, keeping your back straight throughout.



To strengthen your chest and arm muscles, you can:

1. Lift the floor with your arms, lifting your hands to shoulder level with your feet and elbows parallel to the side.
2. Hold your arms and lift your whole body on your feet. Keep your back and legs extended while standing on your arms.



Chin-ups

1. Stand facing the chin-up bar. Grasp the bar with your hands shoulder-width apart and pull your feet under your feet.
2. With your feet hanging, pull your body up to the bar and your chin should be above your hands. Do not use your legs to move your body.
3. Lower your body slowly to the starting position. Do not allow the elbows to extend completely in the lowered position.



STRENGTHENING THE FOREARM AND ELBOW

Elbow Flexion

The muscles around the elbow flex the arm, pulling the forearm and hand toward the arm. They can be strengthened using the following four exercises.

1. Stand with your arm at your side, palm facing forward.
2. Bend the elbow, lifting the weight slowly.
3. Return to the starting position.



Elbow Extension

The triceps are the primary elbow extensors. While pushing your hand away from the body, the triceps extend the elbow.

1. Lie on your back with your arms extended and the weight on the floor.
2. Push the weight up and over your head.
3. Return to the starting position.
4. Repeat the exercise.



Forearm Supination

The muscles of the forearm and wrist play an important part in controlling a still object, such as a ball. Exercises that strengthen them separately are as follows:

1. Sit at the forearm support with your forearm over the table. With your forearm down, hold a bar, weight, ball, or any other object. The object is:
2. Raise your forearm and the bar or object in the ceiling, keeping your elbow as still as possible.
3. Return to the starting position and repeat.



Forearm Pronation

When you do the second forearm exercise while seated in the same position, you keep the elbow as still as possible.

1. Sit with your arm supported on a table. With your palm facing up, hold a weighted bar.
2. Turn the bar until the weight is pointed toward the ceiling.
3. Return to the starting position and repeat the exercise.

STRENGTHENING THE WRIST

Wrist Flexion

1. Sit with your arm supported on a table or bench. The palm is on the forearm.
2. Sit at the forearm support with the weight on the floor and lift your arm slowly, only flexing the wrist.
3. Return to the starting position and repeat until you complete the set.



Wrist Extension

1. Sit with your arm supported on a table or bench. The palm is on the forearm.
2. Bring your arm over your head, lift the bar, and let the weight slowly extend your wrist.
3. Return to the starting position and repeat until you complete the set.



