

## SHOULDER AND ARM EXERCISES FOR BASEBALL PLAYERS

developed by

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## INTRODUCTION

The exercises in this booklet were developed in the Biomechanics Laboratory of Centinela Hospital Medical Center from discoveries we made about the movements of baseball pitchers when they throw the ball. Although research validated a number of things we had already known for years, we also learned significant new information.

In our research we found three general areas of concern:

- General body conditioning -- developed through many different kinds of activities. Each individual has his own method of getting into shape for spring training, and that we would not change.
- Warm-up -- must be carried out before each activity.
- Body mechanics -- a very important area. In throwing it is important that the ball be delivered such that the energy transfer from the feet up through the body to the ball is done in a smooth manner. A smooth transfer of energy does several things: it maximizes the ability of the player; it maximizes both the speed and accuracy of the ball; it prevents injuries by allowing the player to operate at a level just below the maximum that his body will tolerate.

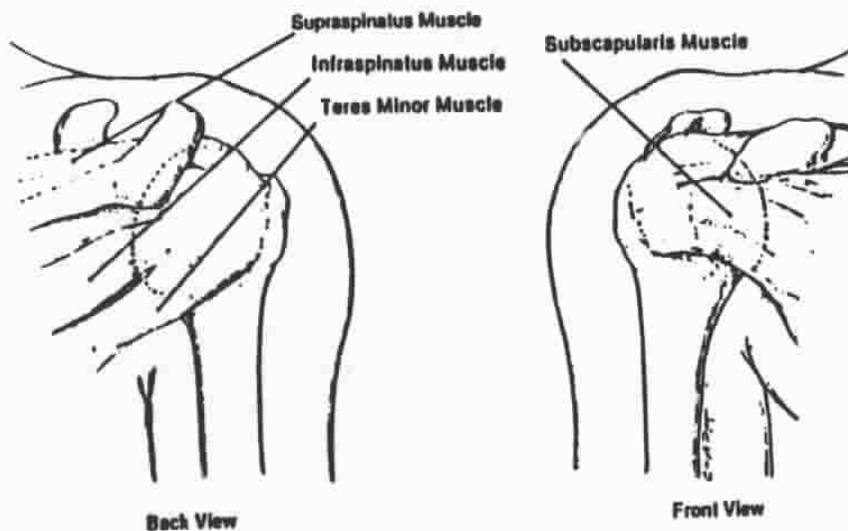
Specifically, we want to emphasize the rotator cuff (illustration on next page). We have learned that the rotator cuff is not the servant of the deltoid, as we had thought in past years. In other words, the rotator cuff needs to be cared for separately with different kinds of exercise from those done for the arm.

To summarize, the object of conditioning, warm-up and the rest of good body mechanics is to allow the player to operate at a level just below that which would cause him injury, but yet generate enough ability and force to strike out a player of equal ability.

The exercises are presented here for the first time. They have been prepared for sports medicine physicians and coaches and are meant to be used only under their supervision.

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#### COMPONENTS OF ROTATOR CUFF



*The above four muscles, underlying the deltoid muscle, are widely termed the "rotator cuff." Together they have an essential steadying effect on the head of the humerus.*

### SHOULDER AND ARM EXERCISES FOR BASEBALL PLAYERS

#### STRETCHING THE ROTATOR CUFF

##### Rotator cuff stretch at 90°

The capsule around the shoulder joint needs to be stretch before maximum movement can be obtained. Begin these exercises on a table with a small weight in your hand. Your shoulder should be over the table edge and elbow bent to 90°. Just allow the weight to pull your arm down gently in this position.



##### Rotator cuff stretch with arm at 135°

During static flexibility exercises a particular position is held for a period of time. Static stretching is the best way to initiate a sequence. After stretching, a muscle can be gently moved through the range of motion. In this exercise, raising your arm another 35° stretches more of the tissue surrounding the shoulder.

**Rotator cuff stretch with arm overhead.**

Finally, this exercise should be repeated with your arm as far overhead as possible. Your head should remain supported while the shoulder itself is over the table edge. Again, just allow the weight to pull your arm down gently.



**Posterior cuff stretch.**

The back portion of the shoulder joint can be stretched out in this position, by gently pulling your arm across your body.



**Inferior cuff stretch.**

The other portions of the rotator cuff can be stretched by reaching overhead and gently pulling on your elbow with the opposite hand.



**STRENGTHENING THE SHOULDER MUSCLES**

Although it may not seem to take enormous strength to throw a baseball, conditioning and endurance are still necessary. The strengthening exercises you will see in the next few drawings can be started with just a few pounds of weight and increased as time goes on.



**Supraspinatus.**

The rotator cuff in the shoulder needs to be strengthened separately from the other shoulder muscles. This first exercise should be done with the elbow straight and thumb turned toward the floor. Rather than putting the arm straight out to the side, slowly raise your arm in a plane about 30° forward of that posture. Do not lift your arm higher than just below shoulder level; slowly lower it to the starting position and repeat.

### External rotation.

Another part of the rotator cuff can be strengthened by lying on your side with your elbow held close against your ribs. Slowly raise the weight until it is pointed at the ceiling, and then lower it in a controlled fashion.



### Internal rotation.

The other portion of the rotator cuff should be exercised while lying on your back. Again, with your arm held at the side, raise the weight until it is pointed toward the ceiling and then lower it slowly back to the starting position.



### Shoulder flexion.

This particular exercise strengthens a portion of the deltoid as well as other muscles in the front of the shoulder. In this and in succeeding exercises it is important to move the weights slowly, controlling both the lifting and lowering. The elbow should be kept straight throughout the exercise.



### Shoulder abduction.

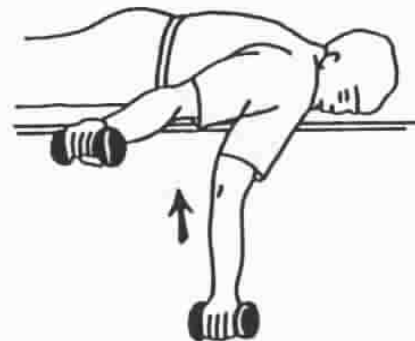
Lifting the weight out to the side and then overhead strengthens the central part of the deltoid, which is one of the most powerful muscles in the shoulder. Note how the hand slowly changes position as the exercise progresses until the palm faces the opposite side as your arm reaches straight overhead.



## STRENGTHENING THE BACK MUSCLES

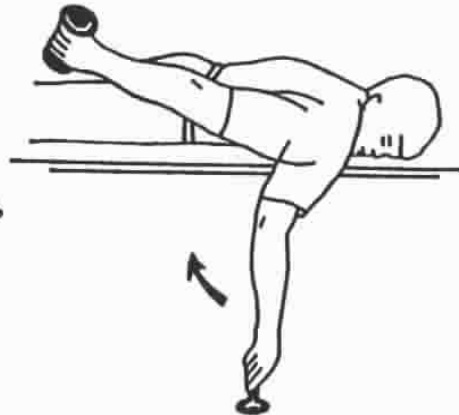
### Rhomboids

Back muscles are also important in throwing. Lying on your stomach, grasp the weight firmly and raise it until your arm is straight out to the side, keeping the elbow extended. Slowly lower it to the starting position.



### Lower trapezius

To strengthen muscles lower in your back, remain in the same position on the table and, this time, raise your arm behind you as high as possible, remembering to keep your elbow straight.



### Triceps

To exercise the triceps muscle, lie on your back with your throwing arm extended up towards the ceiling, and have your elbow completely flexed. Use your opposite hand to help support your arm, just below the elbow. Then, extend the elbow completely while holding onto a weight.

## STRENGTHENING THE FOREARM AND ELBOW

### Elbow Flexion

The muscles in the arm which surround the wrist and elbow must be strengthened as well. The biceps can be exercised in a number of ways, one of which is demonstrated here in the standing position. Keeping the elbow held at the side, lift the weight slowly by bending the elbow, and then return slowly to the starting position



### Forearm supination.

The musculature of the forearm and wrist plays an important part in the ultimate control of the ball. To strengthen the forearm, two separate exercises can be done. First, while seated at a table and holding a bar weighted at one end, rotate your forearm until the bar is pointed at the ceiling.



### Forearm pronation.

The second forearm exercise is also done seated, only this time with palm turned up while holding onto the weighted bar. Rotate the bar from right to left, until it is pointed straight up to the ceiling. Pay some attention to keeping your elbow motionless as possible.



## STRENGTHENING THE WRIST

### Wrist Flexion

There are several exercises which can help strengthen the wrist muscles. This one is done while seated, with the forearm supported on the table and the wrist over the edge, palm facing up. Use the opposite hand to help stabilize the forearm. Lift the weight slowly, flexing the wrist, and then lower the weight back to the starting position.



### Wrist extension

While in the same position as the previous exercise, this time turn the palm down toward the floor. Lift the weight by extending the wrist and then lower it back to the original position.



### Ulnar deviation

To strengthen the muscles which control the side to side motion occurring at the wrist, stand with your arm at your side, holding onto the end of a weighted bar. Lift the weight as shown here by bending the wrist laterally. Return slowly to the starting position.



These exercises should be done daily. Begin the program by doing two sets of 10 each, using a light (two pound) weight for resistance. The amount of weight can be increased later, but this should be done gradually so that it does not cause soreness.

We hope that by working on these specific shoulder and arm conditioning and strengthening techniques, you may be able to avoid injury and to improve the efficiency of your throwing motion.