

Strength Training for the Shoulder

This handout is a guide to help you safely build strength and establish an effective weight-training program for the shoulder.

Starting Your Weight Training Program

- Start with three sets of 15-20 repetitions
- Training with high repetition sets ensures that the weights that you are using are not too heavy.
- To avoid injury, performing any weight training exercise to the point of muscle failure is not recommended.
- “Muscle failure” occurs when, in performing a weight training exercise, the muscle is no longer able to provide the energy necessary to contract and move the joint(s) involved in the particular exercise.
- Joint, muscle and tendon injuries are more likely to occur when muscle failure occurs.
- Build up resistance and repetitions gradually
- Perform exercises slowly, avoiding quick direction change
- Exercise frequency should be 2 to 3 times per week for strength building
- Be consistent and regular with the exercise schedule

Prevention of Injuries in Weight Training

- As a warm-up using light weights, you can do the rotator cuff and scapular strengthening program (see next page)
- Follow a pre-exercise stretching routine (see next page)
- Do warm-up sets for each weight exercise
- Avoid overload and maximum lifts
- Do not ‘work-through’ pain in the shoulder joint
- Stretch as cool-down at end of exercise
- Avoid excessive frequency and get adequate rest and recovery between sessions.
- Caution: Do not do exercises with the barbell or dumbbell behind the head and neck. For shoulder safety when working with weights, you must always be able to see your hands if you are looking straight ahead.

Return to Weight Training After Shoulder Surgery

Your doctor or therapist should test your motion and strength and give you clearance before you start weight training.

Criteria:

- Full, pain-free range of shoulder motion
- Normal strength in the rotator cuff and scapular muscles

Rotator Cuff and Scapular Strengthening Program

The rotator cuff and scapular exercises are intended to isolate the essential muscles of the shoulder that provide strength to the rotator cuff and control the scapula (shoulder blade). Each exercise should be done for one set of 15 repetitions prior to a weight training workout or 2-3 times a week for good shoulder strength and muscle balance. Weights used with these exercises should be built up gradually in increments of no more than 1 pound per week. Each exercise is described and illustrated in the back of the handout.

Basic Shoulder Stretching Program

The following stretching exercises are intended to improve or maintain normal flexibility and range of motion of the shoulder. 1 or 2 of each stretch should be done before weight training (after warming up) and 3 to 5 of each stretch should be done after finishing your workout. Each stretch should be held for 10 to 15 seconds in a static fashion without bouncing or oscillation. Stretching should be done gently, without pain. Illustrations and instructions are in the back of the handout.

Weight Training Program

The following upper body and shoulder strength program is usually safe and provides a good basic foundation of upper body and shoulder strength when combined with the basic shoulder strength and stretch program outlined earlier. The strength program can be followed 2 to 3 times a week. 3 sets of 10 to 15 repetitions can be done for each exercise. You can follow the principles of PRE and RM as outlined in the next section to know when to increase weights in programs where the goal is to increase strength.

Exercise Machines with Free Weight Counterpart Exercises

1. Biceps curl machine or free weight biceps curl
2. Triceps machine or free weight triceps exercise
3. Chest press machine or bench press
4. Seated row machine or bent over dumbbell rows
5. Cable pull down in front of chest or pull ups
6. Shoulder press machine with forward grip or military press

Weight Training Exercises to Avoid

The following weight training exercises should always be avoided to help prevent injury to the shoulder:

- Pull downs behind-the-neck (wide-grip)
- Behind-the-neck shoulder press
- Wide-grip bench press



- Standing lateral deltoid raises
- Triceps press overhead
- Chest fly exercises

Precautions for Specific Exercises

Pull downs

- Perform exercise in **front** of the head, to the chest, with a medium width (not wide) grip. Palm-up grip is the safest.

Bench Press

- Your grip should be no wider than the width of your shoulders. This is usually 17 to 18 inches.
- Grip is made measuring between the knuckles of the index fingers.
- Grip with the palm facing you is the safest.

Military Press (Press Overhead)

- Overhead exercises are very stressful to the rotator cuff and shoulder ligaments, especially when done with the weight behind the neck or head.
- Start and finish overhead presses in front of the shoulder.

Lateral Deltoid Raises

- Should be avoided due to the impinging and wearing effect on the rotator cuff.
- Lateral raises from the prone or bent over position can be done as a substitute for standing lateral deltoid raises.

Forward Raises

- Perform exercise in the “thumb-up” position. It is usually safer and can be done with reasonable weights. Do not use a palm down grip.

Incline Bench Press

- There is a danger of shoulder dislocation if the lifter loses control of the weight behind the head.
- Always have a spotter for removing and replacing the barbell in this exercise.
- Using dumbbells is more risky for losing control of the weight and causing injury.

Supine Chest Fly Exercise

- Do not do any chest-fly exercise if your elbows are straight. Always allow the elbows to bend.
- Never lower your hands (holding dumbbells) below the level of your chest.

“Pec Deck” Exercise

- If you are using a “Pec-Deck” machine, never let the weight stretch the arms so that your elbows pass behind your chin.
- You can set the arms on this machine a few clicks forward to adjust the maximum motion allowed.

Parallel Bar Dips

- If you are performing “dips” using a set of parallel bars, never lower yourself below the point where the elbows reach a 90° angle.

Triceps Exercises

- For triceps exercises, triceps pushdowns on a pulley system are safe as well as bent-over triceps extensions.
- Avoid overhead triceps exercises.

Upright Row Exercise

- Keep your grip at least 12 inches apart.
- When pulling the bar upward toward the chin, do not raise the bar higher than the point at which the elbow reaches shoulder level.

Strength Training Principles

Progressive Resistance Exercise (PRE) Principle

- To build muscle strength and size, the amount of resistance used must be gradually increased.
- The exercises should be specific to the target muscles
- The amount of resistance should be measurable and gradually increased over a longer period of time
- To avoid excess overload and injury, the weight or resistance must be gradually increased in increments of 5 to 10 %
- Resistance can be increased gradually every 10 to 14 days when following a regular and consistent program
- Adequate rest and muscle recovery between workout is necessary to maximize the benefit of the exercise
- If the PRE principle is followed too strictly, the weights potentially will go higher and higher.
- At a certain point, the joints and muscles will become overloaded and injury will occur.
- This eventuality can be avoided by refraining from using excessive weight during strength training.

Repetition-Maximum Principle

Knowing when to increase the weight you are using in a strength-training program is based upon the ‘repetition-maximum ‘(RM) principle. For example, a 10 RM for the leg press exercise is the amount of weight that can be lifted "just 10 times", and no more, before fatigue or failure sets in. That is, the particular weight being lifted is so heavy that an 11th repetition is not possible.

In a typical strength improvement program, the workout might look like this:

Exercise: Chest press

Intensity: 10 RM

10 RM Weight (Determined by trial): 100 pounds



- Set 1: 1/2 10 RM (50 lb.) 10 repetitions
- Set 2: 3/4 10 RM (75 lb.) 10 repetitions
- Set 3: 10 RM (100 lb.) Up to 10 repetitions
- Set 4: 10 RM
- Set 5: 10 RM

1. If 10 repetitions of 100 lb is achieved on the third set, then the 10 RM can be raised by 5 lb for the next set/exercise session.
2. If 10 repetitions are not achieved on the third set, then the 10 RM weight remains the same (100 lb) for the next workout or any subsequent sets.
3. If you reached the 10 RM on the third set, and wished to do a 4th and 5th set, then the weight can be raised to the new 10 RM.

4. If you did not reach the 10 RM on the 3rd set, then the 4th and 5th sets would remain at the original 10 RM.
5. The 1/2 and 3/4 RM set should always be done to gradually ramp-up the weight to the 10 RM set(s).
6. The 3rd, 4th and 5th sets are considered the ‘working sets.’
7. The number of repetitions you choose for your RM will depend upon the goals of your strength training program:

- 15 to 20 RM Builds muscle size and definition
- 8 to 10 RM Builds muscle size and force capability (pure strength)
- 3 to 5 RM Builds maximal force capability, minimal size gains (high power)

Returning to High Intensity Training

- If your goal is returning to high level weight training or weight lifting, it will take over six months of cautious, gradual progression to return to top form.
- In general, avoid increasing the amount of weight lifted by more than 10-15% (at a time) of your present working weight every 10-14 days.

If you have questions regarding exercises, call MGH Sports Physical Therapy at 617-643-9999.

Shoulder Rotator Cuff and Scapular Strengthening Program

External Rotation

Attach the theraband at waist level to a doorknob or post. While standing sideways to the door and facing straight ahead, grasp one end of the band and pull the band all the way through until it is taut. Feet are shoulder width apart and the knees are slightly flexed. The elbow is placed next to the side with the hand as close to your chest as possible (think of this elbow as being a hinge on a gate). Taking the cord in the hand 'set' the shoulder blade and move the hand away from the body as far as it feels comfortable. Return to the start position.



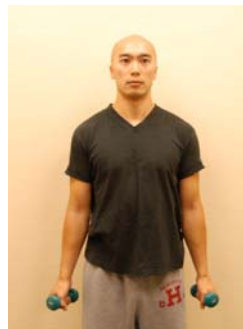
Internal Rotation

Attach the Theraband at waist level in a doorknob or post. While standing sideways to the door and looking straight ahead, grasp one end of the handle and pull the cord all the way through until it is taut. Feet are shoulder width apart and the knees are slightly flexed. The elbow is placed next to the side and is flexed at 90 degrees (think of this elbow as being a hinge on a gate). Taking the cord in the hand, 'set' the shoulder blade and move the hand toward the belly as far as it feels comfortable, or to where the endpoint of pain limits you. Return to the start position.



Lateral Raises

Stand with the arm at your side with the elbow straight and the hands rotated so that the thumbs face forward. Raise the arm straight out to the side, palm down, until the hands reach shoulder level. Do not raise the hands higher than the shoulder. Pause and slowly lower the arm.



Standing forward flexion ('full-can') exercise

Stand facing a mirror with the hands rotated so that the thumbs face forward. While keeping the shoulder blade 'set' and keeping the elbows straight, raise the arms forward and upward to shoulder level with a slight outward angle (30°). Pause for one second and slowly lower and repeat.



Sidelying external rotation

Lying on the non-operated side, bend your elbow to a 90-degree angle and keep the operated arm firmly against your side with your hand resting on your abdomen. By rotation at the shoulder, raise your hand upward, toward the ceiling through a comfortable range of motion. Hold this position for 1 to 2 seconds, and then slowly lower the hand.



Prone extension

The starting position for this exercise is to bend over at the waist so that the affected arm is hanging freely straight down. Alternatively, lie face down on your bed with the operated arm hanging freely off of the side. While keeping the shoulder blade 'set' and keeping the elbow straight, raise the arm backward toward your hip with the thumb pointing outward. Do not lift your hand past the level of your hip.



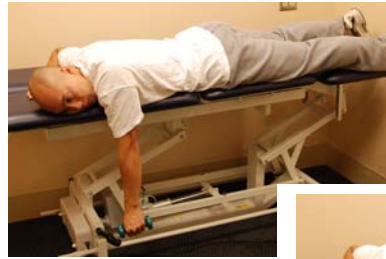
Prone rowing exercise

The starting position for this exercise is to bend over at the waist so that the affected arm is hanging freely straight down. Alternatively, lie face down on your bed with the operated arm hanging freely off of the side. While keeping the shoulder blade 'set', raise the arm up toward the ceiling while bending at the elbow. The elbow should be drawn along the side of the body until the hands touch the lower ribs. Always return slowly to the start position.



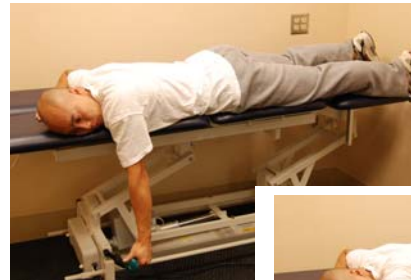
Prone horizontal abduction ('T's)

The starting position for this exercise is to bend over at the waist so that the affected arm is hanging freely straight down. Alternatively, lie face down on your bed with the operated arm hanging freely off of the side. Rotate your hand so that the thumb faces forward. While keeping the shoulder blade 'set' and keeping the elbows straight, slowly raise your arm away from your body to shoulder height, through a pain-free range of motion (so that your hand now has the thumb facing forward, and aligned with your cheek .) Hold that position for 1 to 2 seconds and slowly lower. Limit the height that you raise the arm to 90 degrees, or in other words, horizontal to the floor.



Prone scaption ('Y's)

The starting position for this exercise is to bend over at the waist so that the affected arm is hanging freely straight down. Alternatively, lie face down on your bed with the operated arm hanging freely off of the side. Keep the shoulder blade 'set' and keep the elbows straight. Slowly raise the arm away from your body and slightly forward through a pain-free range of motion (so that your hand now has the thumb facing up, and is aligned with your forehead). Hold that position for 1 to 2 seconds and slowly lower. Limit the height that you raise the arm to 90 degrees, or in other words, horizontal to the floor.



Prone external rotation at 90° abduction ('U's)

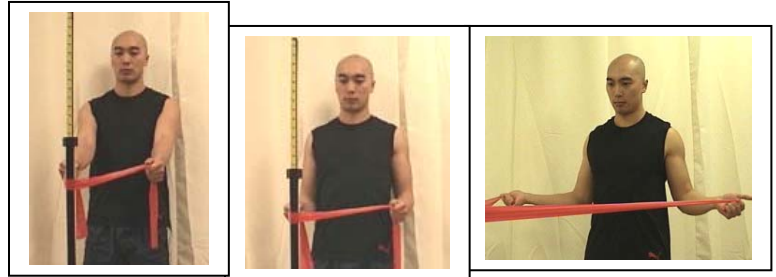
Lie face down on a table with your arm hanging over the side of the table. Raise the arm to shoulder height at a 90° angle to the body. While holding the arm in this position, rotate the hand upward, until the hand is even with the elbow. Hold one second and slowly let the hand rotate to the starting position and repeat.





'W's

With the tubing attached in front of you, stand with the tubing in both hands with the elbows bent at 90° and fixed at your side. Pull the band outward, keeping the elbow at your side. The arms rotate outward making the shape of a 'W'.



Dynamic Hug

With the tubing attach behind you at shoulder height, grip both ends of the tubing in your hands with the tubing on the outside of your shoulders. Pull the band forward and slightly downward in a 'hugging' motion, or as if you were wrapping both arm around a small tree. Pause and return slowly to the starting position.



Shoulder Stretching Exercises

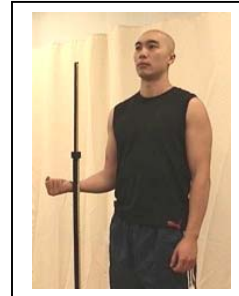
Internal Rotation Behind-the-Back Stretch

Place the hand of the affected arm behind your back at the waistline. Use your opposite hand or a stick to help lift the other hand toward the shoulder blade of the opposite shoulder.



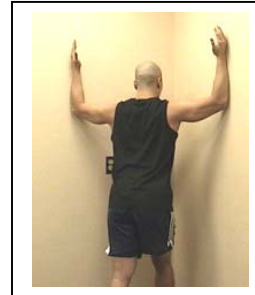
Standing Neutral External Rotation

Place your hand inside a post or doorway with the palm facing up. While keeping the involved arm firmly against your side and the elbow at a right (90 degree) angle, rotate your body away from the door to produce outward rotation at the shoulder.



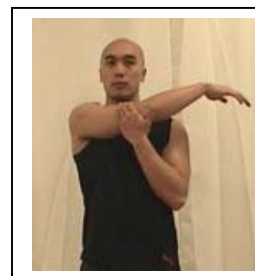
External Rotation in Corner/Doorway

Standing facing a corner or in a doorway, position the arms as illustrated with the elbows at shoulder level. Lean your body gently forward toward the corner until a stretch is felt.



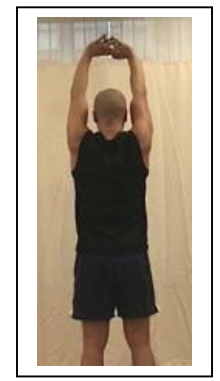
Cross Arm - Horizontal Adduction

Reach across the chest as if to bring the elbow toward the opposite shoulder. Grasp the elbow and pull gently in that direction.



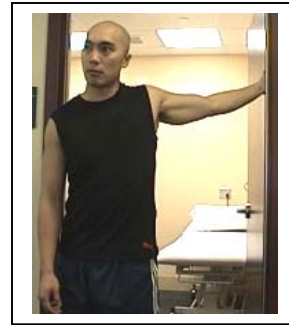
Overhead Stretches

Stretch the arms overhead as shown



Chest Stretch in Doorway

Stand near a doorway. With the palm facing outward, grasp the edge of the doorway with one arm. Keeping the elbows straight, lean gently forward and rotate your body away from the arm.



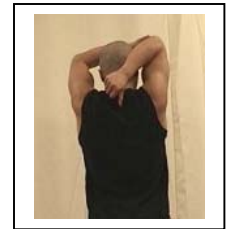
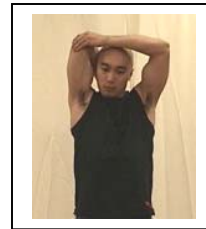
Internal Rotation in Abduction

Lie on your side with the arm positioned as shown. Keeping the elbow at a right angle, rotate the arm as if to touch the thumb to the table. Apply a gentle stretch with the opposite arm.



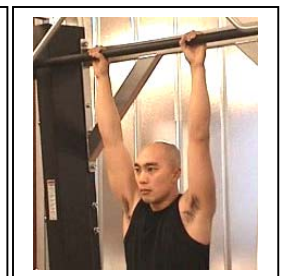
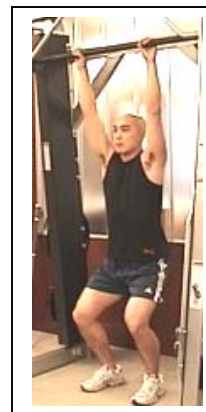
Lateral Shoulder and Tricep Stretch

Place the forearm behind the head. With the opposite hand, grasp the elbow and pull the arm back behind the ear.



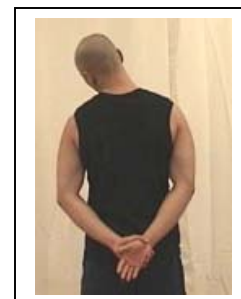
Bar Hang Stretch

Hang from a horizontal bar. Keep the feet in contact with the floor to avoid excessive strain on the shoulders.



Lateral Neck and Upper Trapezius Stretch

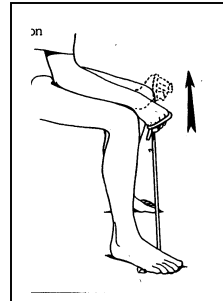
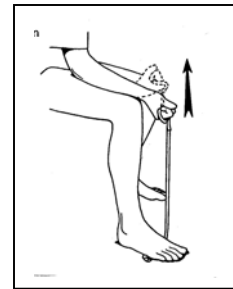
Grasp the right arm with the left hand and pull down and to the left. While maintaining arm position, tilt head to left and hold 10 to 15 seconds. Also stretch the head to the left while letting the chin drop toward the chest. Alternate sides.



Wrist and Elbow Strengthening and Stretching Exercises

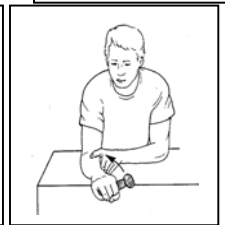
Resisted Wrist Flexion

With tubing wrapped around the hand and the opposite end secured under foot, keep the palm facing up and bend the wrist and hand upward as far as you can. Hold one count and lower slowly 3 counts. This exercise can also be done with a dumbbell.



Resisted Wrist Extension

With tubing wrapped around the hand and the opposite end secured under foot, keep the palm facing down and bend the wrist and hand upward as far as you can. This exercise can also be done with a dumbbell.

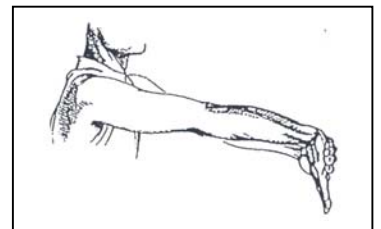


Resisted Forearm Supination and Pronation

Holding a dumbbell, with the forearm supported on your thigh, slowly turn the palm facing up and then slowly turn the palm facing down. Make sure to hold the elbow still and only move the forearm.

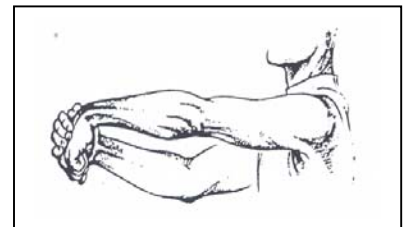
Wrist Flexor Stretch

Hold the arm with the elbow straight and the palm facing up. Grasp the involved hand at the fingers and stretch the wrist backward, until a stretch is felt on the inside of the forearm.



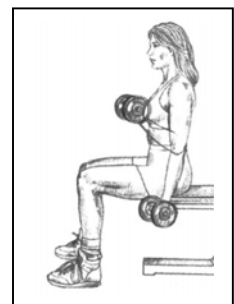
Wrist Extensor Stretch

Hold the arm with the elbow straight and the palm facing down. Push downward on the back of the involved hand until a stretch is felt in the muscles on the outside of the forearm.



Biceps Curl

Stand or sit on a bench or chair. With the palm facing forward and the elbow against your side, raise the weight up toward the shoulder. Keep the elbow firmly against your side and lower the weight back to the starting position.



Triceps Extensions

Lie on your back on a weight bench. Hold a dumbbell starting with the elbow straight. Keep your upper arm vertical while slowly bending the elbow toward the forehead. Slowly return to the upright position.

