

Once your doctor has given permission to begin exercise, the goal is to slowly increase the strength of the primary and rotator cuff muscles to a higher than pre-injury strength level. This reduces the chance of further injury, helps diminish or eliminate joint pain and reduces the chance of developing osteoarthritis.

*(For more information regarding strengthening exercises and osteoarthritis, please see our brochures on these subjects at the club or on our website.)*

In general, the body heals more quickly with activity. Joint injuries heal faster when the muscles supporting the joint are strengthened. As muscles strengthen, all the tissue around them strengthens. The key is strengthening without aggravating the injury, which requires strictly limiting all exercise to a pain free range of motion. This means stopping BEFORE the point of pain! Initially the range of motion may need to be very short, perhaps only a matter of inches.

It's essential to resist the temptation to see where the point of pain is each time the exercise is performed. Continued movement to the point of pain will prevent healing (like picking a scab each day to see if a cut is healing).

These principles should be applied to the:

- MedX Lateral Raise Machine for the medial deltoid
- MedX Arm Cross Machine for the pectoralis (chest) and front deltoid
- MedX Pullover Machine, along with the MedX Torso Arm Machine, for the latissimus dorsi on the back of the shoulder joint
- MedX Triceps Machine and MedX Biceps Curl Machine for the upper arm muscles
- Nautilus Rotary Shoulder Machine (most importantly for the rotator cuff muscle group).

All exercises must be performed slowly, with a limited range of motion, when necessary. As strength increases, the pain free range of motion will usually increase and pain will often be greatly reduced or eliminated.

Shoulder strengthening is a drug free and non-surgical approach to healing the shoulder joint. Even if surgery is eventually necessary, increased muscle strength is tremendously helpful to expedite recovery after surgery.

### **C**an neck problems cause shoulder pain?

Shoulder pain, arm pain or numbness in the hands often results from a pinched nerve in the neck

caused by a herniated (bulging) disc.

Strengthening the neck muscles with the neck machine will stabilize the neck bones (vertebrae) as it does in the lower back, often relieving the symptoms. The neck machine has the additional benefit of building and strengthening the bones in the upper spine, preventing the slow collapse of these bones from osteoporosis. *(For further information regarding osteoporosis, please see our Osteoporosis brochure.)*

### **H**ow does strengthening help with shoulder impingement?

When the arm is raised, a precise spacing is needed between the top of the upper arm bone (humerus) and part of the scapula bone above the socket.

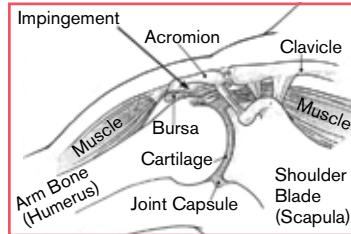


Fig #3.

An impingement may occur as the arm is raised, when a muscle imbalance pulls the upper arm bone too high in the socket causing the ligaments, tendons, and/or muscles to become pinched. (See fig #3, above.)

A shoulder strengthening program with the MedX equipment, emphasizing the pectoralis and the latissimus dorsi muscles that pull the humerus (the ball) down in the socket, will often relieve the pain of impingement.

In an article for *Physician and Sports Medicine Magazine*, Dr. Brent Kay wrote, "Shoulder impingement syndrome heals slowly, and long time consistency in strengthening is paramount."

### **W**hy are shoulder problems more common among women?

Women naturally have more flexibility and joint laxity than men. This natural laxity, coupled with the inherent instability of the shoulder joint, translates into common shoulder pain for women. Increased strength in all the muscles that support the shoulder is key to pain prevention and relief.

### **H**ow do I get started?

Please speak to one of our staff members and schedule an appointment to establish a shoulder strengthening program specific to your situation.

— Mike Arteaga Owner, founder (1973), health and fitness consultant

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# The Shoulder

**MIKE ARTEAGA'S**  
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**T**he shoulder joint's tremendous mobility makes it unique. Compare it to the hip joint, another ball and socket joint in the body. There is no way you can swing your leg around like your arm! The hip has a much deeper socket, which makes it more stable and thus more difficult to injure or dislocate, but also dramatically reduces its movement.

Recent anthropological research has indicated that man's tremendous shoulder mobility enables greater throwing velocity and force than any other of earth's creatures. This ability has contributed to his survival and amazing progression over the last 4 million years. Although a tremendous asset, shoulder mobility comes at the price of joint instability.

The shoulder's amazing mobility is only possible because of its very shallow socket, which covers only 20% of the ball on the end of the humerus. One researcher likened it to a seal balancing a ball on its nose. Due to this inherent instability, the shoulder joint is particularly dependent on the strength, balance and coordination of its muscles to prevent injury and dislocation. Strong muscles apply a constant tension called "tonus" across the joint, which serves to hold the joint snugly together, even when sleeping.

The shoulder's shallow socket on the scapulae bone and the ball on the end of the humerus (upper arm bone) pivot against one another. The areas of contact on the socket and on the ball are covered with super-smooth tissue called cartilage that provides almost frictionless movement. The joint is enclosed in a sac called the joint capsule, which contains synovial fluid that lubricates to further reduce friction.

To make this arrangement work without constant dislocation, the shoulder has a number of structures that provide additional support. The Labrum is a "ring" of wedge-shaped flexible cartilage that forms a rim around the edge of the socket, adding depth. The labrum also serves as a site of attachment for some of the ligaments and muscle tendons responsible for moving the upper arm and holding the joint together.

The shoulder joint also has an "extra layer" of muscles called the rotator cuff. The four rotator cuff muscles are under the deltoid muscle and surround the joint. Their primary purpose is to hold the joint

together; they also aid in lifting and rotating the upper arm

The four rotator cuff muscles are the teres minor, supraspinatus, subscapularis, and the infraspinatus (see fig. #2). Each of these muscles cross the shoulder joint, with one end attached to the scapula bone (the socket side) and the other to the upper arm bone (the ball side). They cross the joint at different points: on the front, back and top of the joint, surrounding the joint to provide additional symmetrical tension needed to hold the joint together.

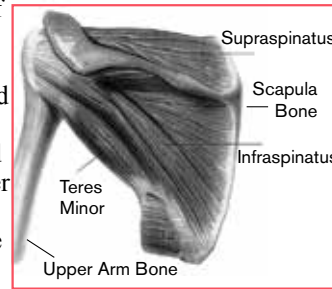


Fig #2. Rear view of the shoulder with three of four rotator cuff muscles

The rotator cuff muscles function in precise coordination with the biceps and triceps muscles of the upper arm and the deltoid, pectoralis and latissimus muscles of the upper torso, holding the shoulder joint together, despite its underlying fragile structure.

### **W**hy is muscle strength so important?

The stronger the muscles are, the greater the stability of the joint they cross. A critical and often neglected fact is that care must be taken to develop balanced strength on all sides of a joint. When the muscles become stronger on one side of the joint, they tend to destabilize the joint rather than support it. The muscles on opposite sides of a joint (antagonist muscles) must always be strengthened for joint stability, particularly with the shoulder joint.

Muscle imbalance is a major cause of joint problems, especially with athletes. Sporting activities, as well as the activities of daily life, tend to utilize the muscles more on one side of each joint. Very few people, including athletes, are aware of the need to include strengthening for the antagonistic muscles when they perform supplemental off field workouts. This creates muscle imbalances which eventually destabilize the joints.

With the shoulder, all the muscles that cross the joint must coordinate with exacting precision to prevent injury. For example, when the arm is thrust forward with any throwing movement, the muscles on the front of the shoulder contract explosively. Simultaneously the muscles on the back of the

shoulder must lengthen at the exact same speed. While they lengthen in perfect synchrony, they must simultaneously resist very slightly, maintaining a precise amount of pressure in the joint which prevents the "ball" end of the upper arm from popping out of the socket.

This amazingly precise muscle coordination becomes very difficult to maintain when the muscles are weak or when the muscles on one side of the joint become substantially stronger than the muscles on the other side.

A balanced strengthening program, such as the MedX circuit, is essential to maintain this coordination. When all the muscles surrounding the joint are strengthened, it is often possible to compensate for even severe injuries.

John Chickery, a long standing member, had his severely torn rotator cuff surgically repaired at the Hospital for Special Surgery in NYC. He was given strict instructions to be very careful and let it heal.

Unbelievably, while relaxing on his back porch a few days after surgery, a bird landed on his shoulder; he jumped and tore much of the repaired area again! After examining him, his surgeon told him it would be difficult, if not impossible, to reattach the now shredded tissue.

He suggested pessimistically that John try strengthening exercise and hopefully he could "get by." With the help of our trainers, John started the MedX circuit along with the Nautilus rotator cuff machine. Beginning with a very limited range pain free range of motion, he slowly began to restrengthen the area.

On his next visit, his surgeon was surprised at his improvement and encouraged him to keep it up. Months later, the pain is nearly gone and John's other shoulder that was also in need of surgery "no longer needs surgery" according to his amazed surgeon.

### **H**ow can I strengthen my shoulder after injury?

After a joint injury, damaged cartilage or ligaments will often never heal to their original tightness or strength, even with surgery. The muscles are the only joint support structure that can actually be brought back to a pre-injury and higher strength level. When muscles are strengthened to a higher than pre-injury level, they can compensate for stretched ligaments or damaged cartilage.