# Archery Muscles and Exercises from Bowfit™

*By Dave Cole*

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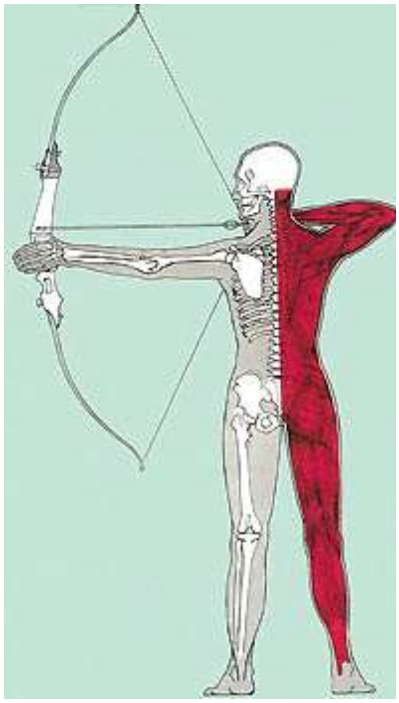
Have you ever noticed how some hunters are always lucky? They have a knack for being in the right spot at the right time, and they consistently pull off incredible shots. Experience and observation have taught me that these "lucky" hunters not only scout and do their homework before the season, but, more importantly, they constantly prepare themselves mentally and physically for "the shot."

Part of my job as a physical therapist is training high school and college athletes to prepare their bodies for the rigors of sports seasons. Coaches preach that the success of any athletic season is reflected in the preparation made before the season. Without question, the same principle applies to bowhunting. The "lucky" bowhunters are those most prepared when opening day arrives.
Successful preparation for bowhunting must include tuning up and getting the "archery muscles" in shape for the rigors of bow season. Shooting a bow, just like any other sport, is a total body activity that involves the muscles of the legs, trunk, and upper body, all working together to execute the shot. To illustrate this point, try drawing a hunting bow while sitting with your feet lifted in the air. You will notice that not only must your shoulder muscles work harder than normal to pull the bow back, but your stomach and back muscles, which are normally stabilized in part by planted feet, must kick in fiercely to stabilize your trunk. Muscle preparation for archery should involve strengthening these three levels for optimal performance (see fig. 1 – illustration of anatomical man holding a bow).

This article we will focus on the shoulder muscles. (Editor's note: The other muscle groups will be covered in upcoming articles.)

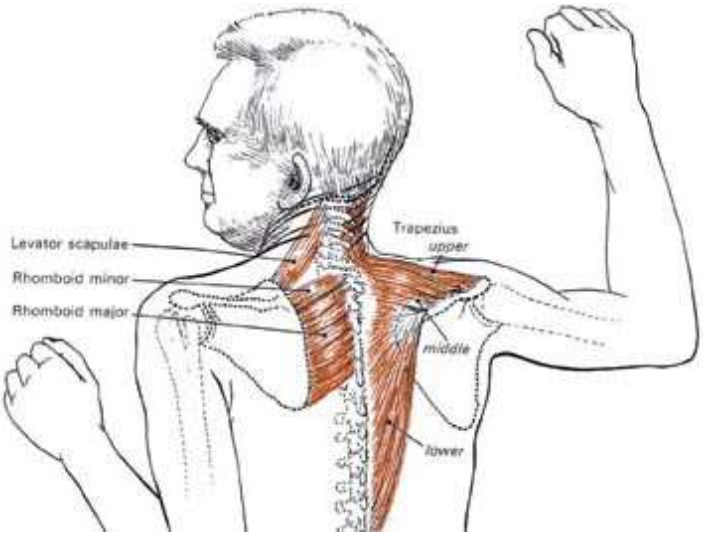


The "archery muscles" of the shoulder and upper back are the most obvious and often the most overlooked muscles. They are not necessarily the same muscles you use every day or the ones that you might work out regularly in the gym. (I have seen buff body builders struggle to pull back medium-poundage bows.) The primary archery muscles of the shoulders and upper back are the rhomboids, levator scapulae, trapezius, deltoids, latissimus dorsi, and the rotator cuff muscle group, which includes the supraspinatus, infraspinatus, and teres minor.

Before you gasp at all these $10 words, rest assured that this article is not a lengthy discourse on human anatomy. Rather, it is a basic overview of the structures involved in archery, mingled with simple exercises to highlight each muscle group. In short, its purpose is to help you condition your shoulders to shoot a bow better.

Archery coaches teach that the most important movement in archery is "back tension." The rhomboids (major and minor) are two deep muscles of the back that are used primarily to create back tension. Their movement is to retract or pull the shoulder blades toward the spine. The rhomboids are aided by another deep muscle called the levator scapulae, which pulls the shoulder blade inward and also upward toward the base of the neck. The trapezius muscle is a broad superficial muscle group consisting of three parts: the upper, middle, and lower sections.

The muscle fibers of these sections act as ropes that pull the shoulder blade upward, inward, or downward depending on the angle of pull on the fibers. The rhomboids, levator scapulae, and trapezius are the major muscle groups used for back tension and, when used correctly, are responsible for holding the bow back at full draw (see fig. 2).

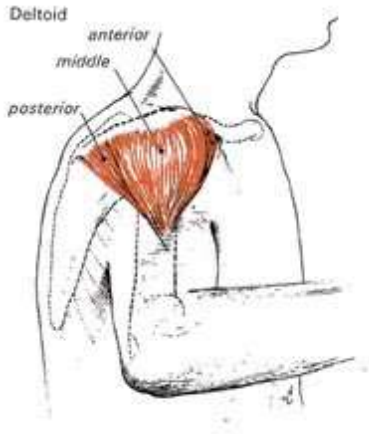



George Chapman and Alexander Kirillov, master coaches of the respected PSE Shooter School, go to

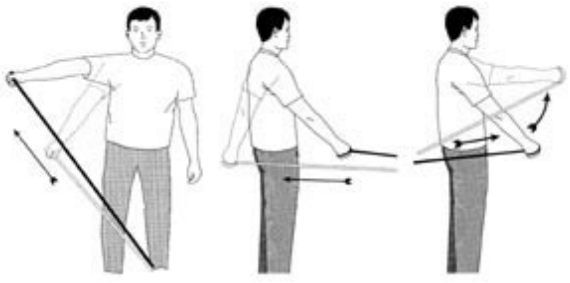
great lengths to teach archers the techniques of proper back tension. One simple exercise is to place a tennis ball between a shooter's shoulder blades and then have him "squeeze" the tennis ball between the shoulder blades and try to hold it there without dropping the ball. Another technique is to have a shooter draw back on a piece of rubber sport tubing such as the Bowfit Archery Exerciser, and then have someone else grip the tubing halfway between the shooter's hands and pull the tubing perpendicular away from the shooter. This causes the shooter to "hold" at full draw using only the back tension muscles.

A simple gym exercise to strengthen the back tension group is called the row, either the seated or upward row. You can use hand weights, a rowing machine, or exercise sport tubing (see fig. 3 – lawn mower pull exercise in Bowfit brochure).

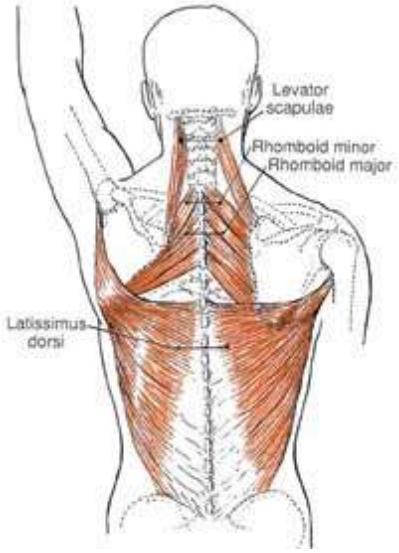
The deltoid is a thick superficial muscle covering the top of the shoulder. It is divided into the anterior, middle, and posterior deltoids (see fig. 4).




The posterior deltoid is used in extending the arm backward and is one of the most important muscles used in pulling the bow back to full draw. The middle deltoid, on the other hand, lifts the arm out to the side. It is the primary muscle that holds the bow arm straight and steady during full draw. The anterior deltoid helps to raise the arm forward and is used in the initial phase of lifting the bow arm. Common deltoid exercises are the lateral shoulder lift or abduction for the middle deltoid, the backward shoulder pull for the posterior deltoid, and the forward shoulder lift for the anterior deltoid. Again, you can use hand weights, sport tubing, or exercise machines (see fig. 5 – illustrations in Bowfit brochure for these 3 exercises).



The latissimus dorsi is the largest muscle of the back. It extends from the pelvis to the mid-back and attaches on the arm. The main function is to pull the arm to the side, extend the arm backward, and also rotate the arm inward (see fig. 6).

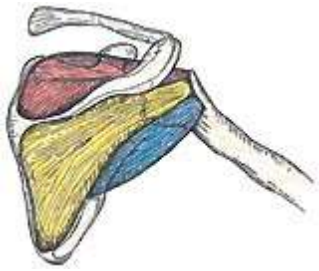



During the drawing motion, the “lats” aid the posterior deltoid in extending the drawing arm backward and also rotating the arm inward. On the side of the bow arm, the lats help the middle deltoid stabilize the bow arm into the shoulder joint for increased stability. The “lat pull down” is a popular exercise to strengthen the latissimus dorsi.

A study entitled, “Shoulder Injuries in Archery,” states:

“The second route of prevention is muscular training. Very few archers in this study had a regular weight-training program that specifically dealt with the rotator cuff muscles identified to be at risk for injury. It is strongly recommended that archers incorporate exercises specifically designed to strengthen the supraspinatus, infraspinatus and teres minor muscle. Such programs have been useful in professional baseball.”

These muscles are part of the rotator cuff and each performs a specific action (see fig. 7).
The infraspinatus and teres minor are external or outward rotators of the arm and aid the drawing arm in rotating slightly outward during the draw phase. The supraspinatus, along with the middle deltoid, lift the arm out to the side of the body. It also pulls the head of the humerus or ball of the arm into the shoulder socket. This motion allows the bow arm to “lock” into the shoulder joint for increased stability while holding the bow at full draw.



Many archers with shoulder pain report problems in their bow arm, particularly at full draw. General strengthening of the supraspinatus muscle may help minimize potential shoulder problems and can be best accomplished with an exercise called scaption (see fig. 8).

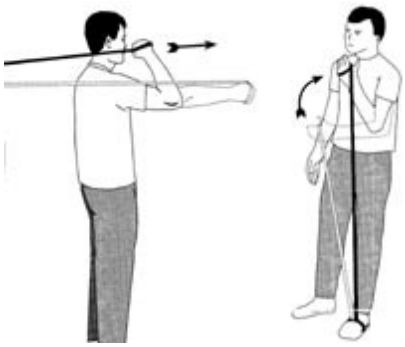
To do this, hold your arm out to the side of the body with the arm slightly forward at approximately 30 degrees. Turn the thumb downward. Lift the arm up to eye level and back down slowly.
The infraspinatus and teres minor muscles can be strengthened with

outward rotation exercises (see fig. 9 – shoulder outward rotation in Bowfit brochure).

Accessory archery muscles of the shoulder and upper body are the biceps and triceps (see figs. 10 & 11).

The biceps group is responsible for flexing or bending the elbow as well as helping to lift the arm forward. They assist the posterior deltoid in pulling the drawing arm backward during the draw phase.


The triceps muscles extend the elbow and shoulder and are used mainly on the bow arm to push the bow to full extension during the draw phase.

The triceps also keep the elbow of the bow arm straight during the holding phase.

Biceps curls and the triceps press or extension are well known exercises for strengthening these two muscle groups (see fig. 12 – bicep curl and elbow extension in Bowfit brochure).

The exercises mentioned are for general archery strengthening. As you can imagine, there are many variations of each exercise, which is beyond the scope of this article. A new video, Archery Fit: Strengthening Tips From the Pros is a great resource for viewing the various archery muscle and specific training techniques from professional archers and bowhunters. For our purposes, general strengthening should include:

- Always warm up and stretch prior to exercise or shooting.
- Perform 1-3 sets of 10 repetitions of each exercise.
- Keep movements Slow, Steady, and Sustained.
- Exercise every other day to avoid over-training and injury.
- Exercise both arms for balanced strength.
- Consult a physician before undertaking any exercise program.

Training all of these archery muscles to work together to produce a smooth clean shot is the goal of practice. In addition to strength training, we teach athletes to perform activities that are specific to their sport. This is called sport-specific training. For bowhunting, what better way to train your muscles for archery than shooting your bow! You should shoot often but never over-shoot to the point that you become fatigued and susceptible to injury.

You also should practice shooting from the many different positions and angles encountered in real hunting scenarios. It is surprising how shooting from different positions will recruit different muscles! If it is difficult to get out and shoot often, then I recommend using the Bowfit Archery Exerciser to keep your muscles tuned up. This portable trainer works well for adjusting the resistance from a light warm up to heavy strengthening draw weights. It is also convenient to switch hands to exercise both arms, and you can practice drawing from awkward shooting positions in the comfort of your recliner. (see fig. 13 – photo of Bowfit Archery Exerciser).

Archery is clearly an athletic event that, like any other sport, requires coordinated muscle power for optimum performance. Preseason training and diligent practice will help you become one of the “lucky” bowhunters. As Thomas Jefferson so aptly said, “I find that the harder I work, the more luck I seem to have.”