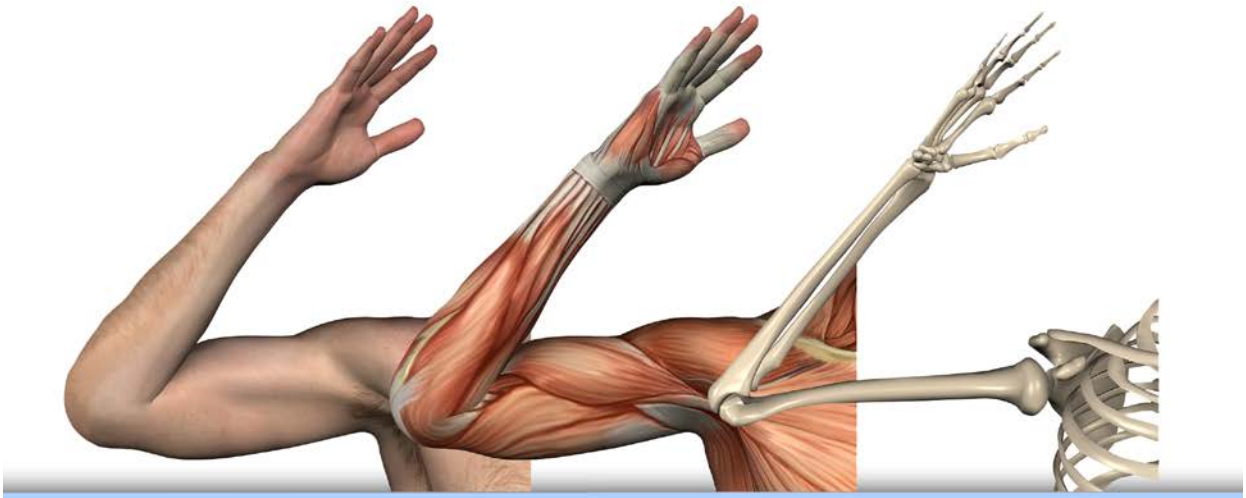
# EFFECTIVE ROTATOR CUFF EXERCISES



## THE FITNESS PROFESSIONALS GUIDE TO ROTATOR CUFF EXERCISES

Rick Kaselj of EffectiveRotatorCuffExercises.com

Table of Contents

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Effective Rotator Cuff Exercises

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# Exercise Considerations

You and your client are encouraged to consult with his or her physician before beginning the exercises in this book. Your client's physician will determine which exercises are appropriate and if there are any exercises to avoid or modify.

# Disclaimer

***Effective Rotator Cuff Exercises*** is primarily an educational resource and is not intended to take the place of the advice and recommendations of a physician or qualified health care provider. If you suspect or have identified that your client has a health problem, please have him or her seek the services of a physician or qualified healthcare provider before beginning the exercises in this book. Medical clearance is recommended before starting an exercise program for clients who have been discharged from rehabilitation of their injury.

Exercise is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in exercise and exercise prescriptions are inevitable. The author has checked with sources believed to be reliable in his effort to provide information that is complete and generally in accord with the standards accepted at the time of publication. However, in view of the possibility of human error or changes in exercise science, neither the author nor any other party who has been involved in the preparation or publication of this work warrants that the information contained herein is in every respect accurate or complete, and they are not responsible for any errors or omissions or for the results obtained from the use of such information. Readers are encouraged to confirm the information contained herein with other sources.

# Preface

Thank you for supporting one of my dreams!

I have always dreamed of being a writer. *Effective Rotator Cuff Exercises* is one of those writing dreams coming true. I hope you take from it as much as I have gotten out of researching and writing it.

### Pass this Book On

Feel free to take your personal printed copy and share it with your family and friends who suffer from rotator cuff injuries. Let your colleagues know about this manual and how it has helped your clients with rotator cuff injuries.

### Your Clients Can Read This Manual

Most of the manual is written in a wording and tone that your clients with rotator cuff injuries will understand. This is to enable you to share this manual with your clients. Feel free to make photocopies of the exercises that you prescribe to your clients. This will ensure they remember all the details of the exercises and get maximum benefit from them.

### Guarantee

My passion is to use exercise to manage rotator cuff injuries. If this manual does not help you, does not meet your expectation, or is not of value to you, I will refund your money. Please contact me via email at rick@ExercisesForInjuries.com for your refund.

### Contact Me

Please let me know what you think of this book. Visit www.ExercisesForInjuries.com or email rick@ExercisesForInjuries.com. Your feedback and ideas will improve the content of future editions and books.

# Section 1: Introduction

Shoulder pain may not be one of the most severe and life-threatening medical conditions known to man, but it is one of the most debilitating and frustrating musculoskeletal injuries. A recent survey shows that shoulder pain is the third leading cause of musculoskeletal disorders (MSD), following low back pain and neck pain. It has an annual incidence of 10 cases per 1,000 people (Malanga, Visco, Andrus & Bowen, 2009). Of those with shoulder pain, 20 to 30% suffer from a rotator cuff injury, making it the most common cause of shoulder pain in the United States and in most Western countries (Quintana & Sinert, 2009). Studies also reveal that its incidence is as high as 25 cases per 1,000 population in individuals aged 42 to 46 years.

The rotator cuff is composed of the tendons of four muscles: the infraspinatus, supraspinatus, subscapularis, and teres minor. The musculotendinous (part of the muscle where the tendon and muscle connect) attachments of these muscles fuse together and form a cuff or band surrounding the top of the humerus or upper arm bone. The tendons are tough bands of fibrous tissues that connect the muscles to bones. The job of the rotator cuff is to securely hold the humerus in place, allowing your arm to rotate through a wide range of motion without difficulty or pain, while maintaining stability of the shoulder joint.

Rotator cuff injuries involve tears or irritation of the rotator cuff muscles, or the tendons. The injury may arise either from extrinsic (outside the body) or intrinsic (inside the body) causes (Bilal, Duffy, Shafi and Hafi, 2007). Extrinsic causes include overuse of rotator cuff muscles and tendons over a period of years, and traumatic shoulder injuries resulting from a fall.

Individuals who participate in repetitive and forceful overhead or throwing motions are vulnerable to injuries of the rotator cuff. Athletes who compete in overhead sports like baseball, weight lifting, tennis, volleyball, swimming and golf are especially

susceptible to rotator cuff injuries. It is important, however, to emphasize that rotator cuff injuries are not exclusively seen in athletes. People who are in building trades, like carpenters and painters, or those who repeatedly lift heavy objects are also at risk for rotator cuff injuries.

Structural damage to the rotator cuff often causes chronic or recurrent shoulder pain, weakness in arm movement, and overall decreased range of motion of the affected shoulder joint. More often than not, rotator cuff injuries are regarded as benign musculoskeletal disorders. But when left untreated or inappropriately managed, rotator cuff injuries can result in significant decreases in shoulder range of motion, leading to an inability to complete the simplest activities of daily living without pain. For an athlete suffering from a rotator cuff injury, decreased physical performance and early retirement from sports is possible. For a working individual, a rotator cuff injury may mean missed work days, potentially a change of career, and financial hardship.

According to Vitale, Moskowitz, Pollack and Bigliani (1999), on average, the total cost of a rotator cuff repair in the United States is USD $12,464. In Canada, a rotator cuff repair may cost around USD $6,000. These figures do not include post-surgical rehabilitation program fees. In another study by Webster and Snook (1993), the mean compensation cost per case of upper extremity work-related musculoskeletal disease was estimated at USD $8,070, leading to a total cost of USD $563 million in the 1993 workforce.

In order to prevent the lifelong complications of rotator cuff injuries, including costly surgical procedures and post-surgical rehabilitation programs, regular rotator cuff exercises are recommended. For individuals diagnosed with mild or uncomplicated rotator cuff injuries, exercising the rotator cuff muscles leads to decreased shoulder pain and tightness, increases range of motion, and prevents the progression of the rotator cuff injury. For individuals who constantly use their shoulder joints for work, fun, or play, exercising the rotator cuff is important to prevent future rotator cuff injuries. For those

who have had to have a rotator cuff surgery, overall success of surgery depends on a post-surgical exercise rehabilitation program.

The Effective Rotator Cuff Exercises book will discuss specific, simple, and cost-effective exercises and other conservative measures that can be of great help in improving and preserving the functions of the rotator cuff and shoulder.

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# Section 2: Shoulder Anatomy

The basics of shoulder anatomy, specifically the rotator cuff muscles, will help you understand exactly how the shoulder works, why the rotator cuff is the site of the most common shoulder injuries, and demonstrate the importance of rotator cuff exercises for injury prevention and rehabilitation.

The shoulder is one of the most intricate structures in the human body. This is mainly because there are so many structures involved in the movement of the shoulder. If one of these structures is injured or not functioning properly, the whole shoulder may not function properly and the malfunction may put the shoulder at greater risk of injury. The following structures are involved in the movement of the shoulder joint:

- **Bones**: the humerus, clavicle, scapula, sternum, and ribcage

- **Joints:** sternoclavicular (SC joint), acromioclavicular (AC joint), glenohumeral (GH joint), and the scapulothoracic joint

- **Muscles:** infraspinatus, supraspinatus, teres minor, and subscapularis, collectively known as the rotator cuff muscles, plus scapular stabilizing and GH joint muscles

- **Ligaments:** a few examples are - capsular, conoid, coracoacromial, superior transverse, and trapezoid ligaments

- **Bursae:** subdeltoid, subacromial, subscapular, and subcoracoid bursae

- **Nerves:** brachial plexus, subscapular nerve, axillary nerve, and suprascapular nerve

- **Blood vessels:** anterior and posterior circumflex arteries

These structures work together statically and dynamically to assist in efficient and effective completion of the most common and simplest movements of the shoulder, including overhead reaching, throwing, lifting, pushing, and pulling. In this section, we will focus only on the anatomy of the structures that are most important to rotator cuff injuries, preventable exercises and rehabilitative exercises.

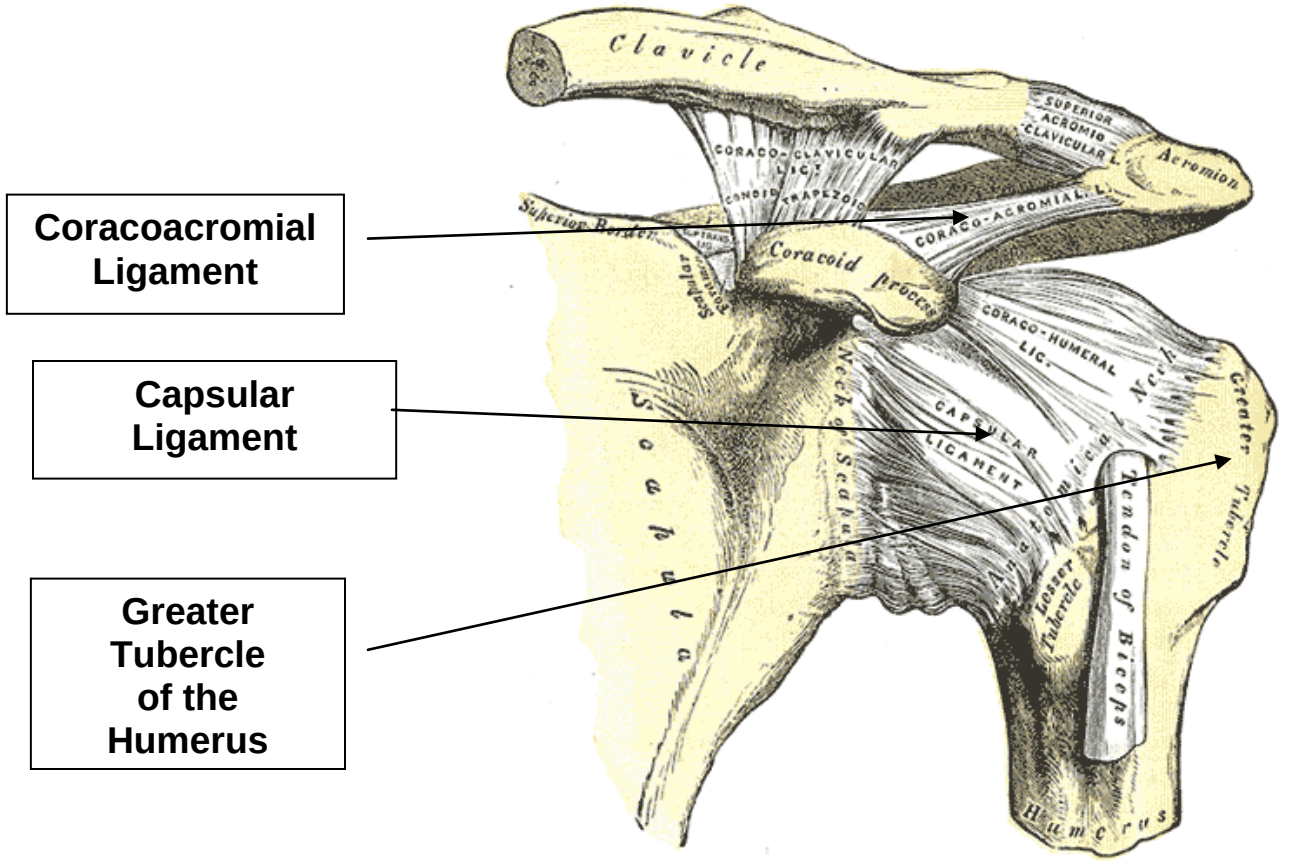
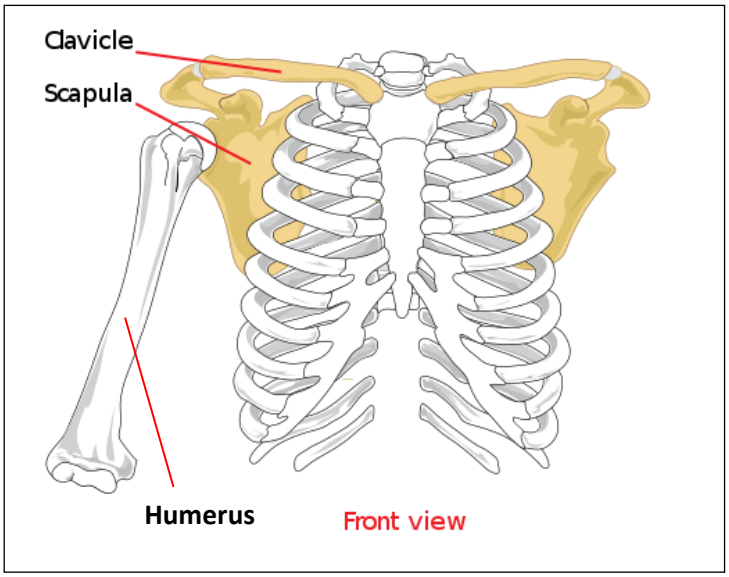



***Figure 10.*** Deep anterior view of the left shoulder highlighting the ligaments in the shoulder and greater tubercle of the humerus.

## Bones of the Shoulder




The shoulder is made up of many different bones. Each one has a significant function. Three important bones relating to the rotator cuff are the clavicle, scapula, and humerus. These three bones for the shoulder make up the four joints in the shoulder, and the scapula and clavicle make up the pectoral girdle.

***Figure 1.*** Pectoral girdle.

### Clavicle

Each clavicle is a double curved bone that attaches to the manubrium (uppermost segment of the sternum) at its medial end to form the sternoclavicular joint, linking the arms with the central axis of the body. At its lateral end, the clavicle articulates with the scapula's acromion process to form the acromioclavicular joint, which also functions as an attachment site of muscles and ligaments. Each clavicle functions as a supportive brace for elevating the arms over the head; and the clavicles increase the stability of the shoulder by helping to prevent dislocation of the shoulder.

### Scapula

The scapula, or shoulder blade, is described as a flat, triangular bone which connects the humerus, or upper arm bone, with the clavicle. The clavicle meets the scapula through the acromioclavicular joint and the scapula meets the humerus at the glenohumeral joint but the humerus does not connect to the

clavicle directly. The scapulae are commonly called *wings* because the upper back seems to spread, like wings, every time the arms move.

Each scapula is composed of two processes (bony prominences) and a flattened body. The acromion process is the enlarged tip of the spine of the scapula, which sits right over the humerus. The acromion process mainly connects the clavicle laterally at the acromioclavicular joint. The coracoid process is the small, beaklike structure on the lateral edge of the scapula, anchoring some of the most important muscles that are responsible for arm movements. Medial to the coracoid process is the suprascapular notch, which acts as a passageway for certain nerves to innervate the shoulder muscles. The scapula has three borders - the superior, medial or vertebral, and lateral or axillary borders: and three angles – the superior, inferior, and lateral angles. The lateral angle of the scapula receives the head of the humerus, as it contains a shallow, round, basin-like depression or socket called the glenoid fossa.

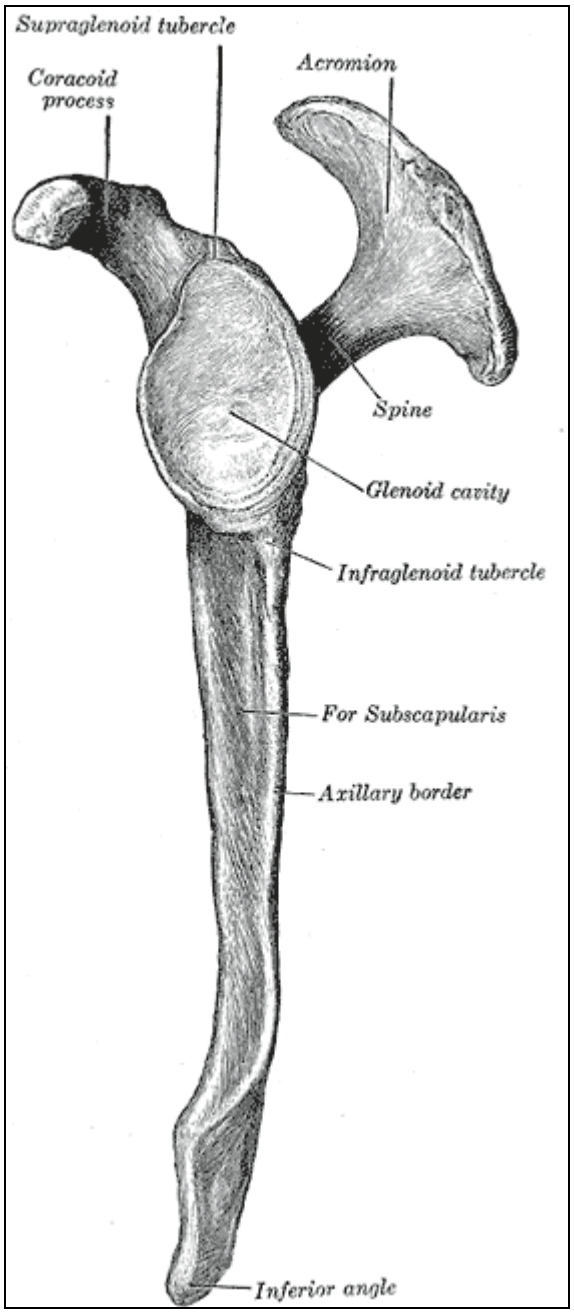



***Figure 2.*** Lateral view of left scapula.

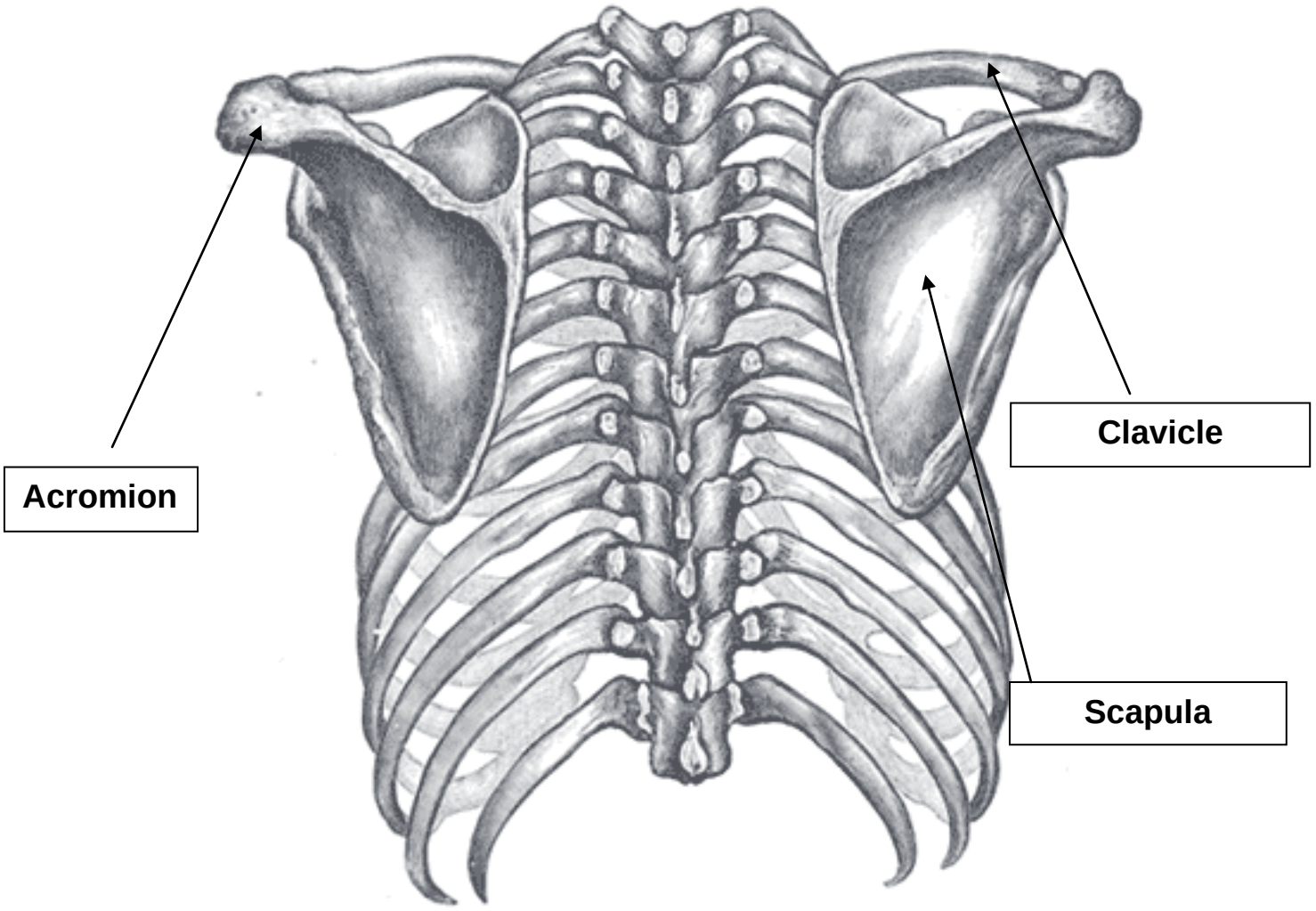



***Figure 10.*** Posterior (Back) view of the scapula

### Humerus

The upper arm is formed by a single bone called the humerus. Its proximal end is a rounded head that fits into the glenoid fossa, forming the shoulder joint. The head of the humerus is obviously larger than the glenoid fossa. Because of the difference in size, in conjunction with the shallowness of the glenoid fossa, it becomes possible for the shoulder joint to perform wider ranges of motion than most of the other joints in the human body.

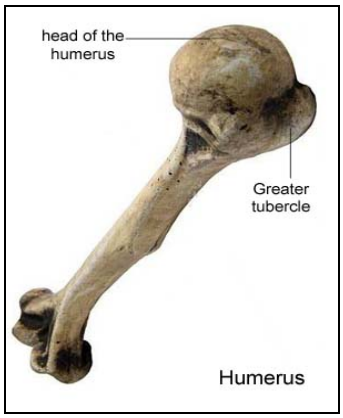



***Figure 3.*** The left humerus, anterior view.

The upper limbs have the ability to perform a wide variety of movements, mainly because of the way the shoulder girdle is designed. According to Marieb (2004), the following factors contribute to the remarkable mobility of the shoulder joints.

- **Each shoulder girdle attaches to the axial skeleton at only one site** – the sternoclavicular joint. The axial skeleton is the central axis of the body, and is composed of the skull, breastbone, and vertebral column.

- **The shoulder blade is not directly attached to the axial skeleton**; rather, it is only loosely secured in place by the muscles of the upper torso.

- **The glenoid fossa is a shallow, round depression**. The shoulder joint is also believed to be poorly reinforced by the ligaments (connective tissues that join one bone to another at a joint).


***Figure 4.*** Shoulder girdle, front (anterior) view.
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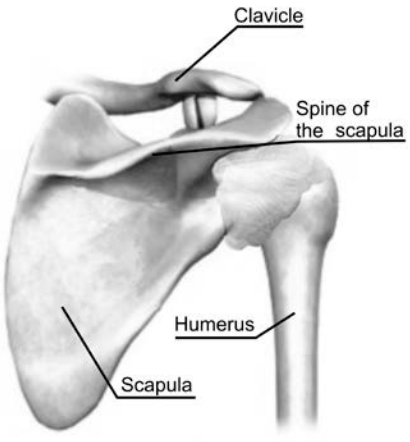


***Figure 5.*** Shoulder, back (posterior) view.
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## The Shoulder Joints

There are four essential joints that make up the shoulder: the glenohumeral joint, acromioclavicular joint, sternoclavicular joint, and scapulothoracic joint. These joints are illustrated in Figure 6. The joints are the sites of union, or articulation, between two or more bones. These junctions are designed to allow skeletal mobility within a certain range of motion. Without the joints, even the simplest and easiest body movements are not possible. The joints function differently and the range of motion or movement is determined by the shapes of the articulating bone surfaces and the structures around the joint.

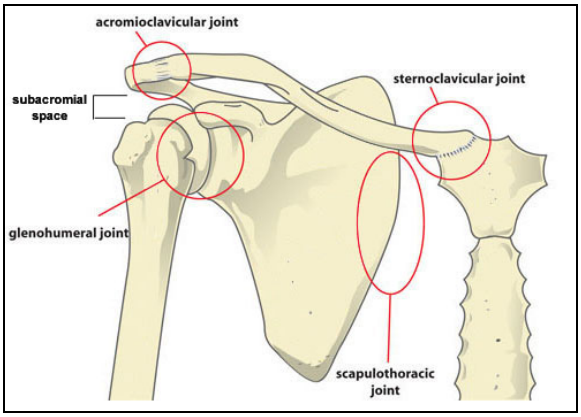


***Figure 6.*** A medical illustration of the joints of the shoulder (2008).
Note: copyright Marty Bee

### Glenohumeral Joint (GH)

The glenohumeral is where the glenoid fossa of the scapula and the head of the humerus meet. The GH joint is classified as a ball-and-socket joint, since the spherical head (ball) of the humerus fits into the socket of the scapula. Among all the different types of joints in the human body, this joint has the greatest mobility. The GH joint moves in all axes, including rotation; hence, it is termed a multi-axial joint.

Although the glenohumeral joint is structurally similar to the other multi-axial joints, it has an exceptional ability to move in wider and more extensive ranges of motion than other joints. The hip joint is a ball-and-socket joint, but its range of motion is limited compared to that of the shoulder. The head of the femur, or leg bone, meets with the pelvis at the acetabulum, which is a much deeper socket than the glenoid fossa. The glenoid fossa is shallow in depth and only covers 25 to 33% of the surface area of the humeral head. The shallow depth of the GH joint allows for greater movement, but significantly reduces the stability of the joint.

The GH joint ability to move in greater ranges of motion comes with a drawback. The glenohumeral joint is considered one of the most unstable joints in the body. Due to this decrease in stability, the GH joint is at greater risk of dislocation.

The labrum of the GH joint is a fibrocartilage (ring of fibrocartilage around the edge of the joint) that mainly functions to maintain normal glenohumeral biomechanics (Iannotti & Williams, 2007) and increase the stability of the GH joint. The labrum increases the joint's stability by deepening the concavity of the socket by 5 to 9 millimeters and by increasing the humeral head contact area to 75% vertically and 56% transversely (Dutton, 2004).

The glenohumeral joint relies heavily on shoulder muscles, rather than the bones and joints, for its stability. The joint capsule and glenohumeral ligaments are the main static stabilizers of the GH joint, while the rotator cuff provides dynamic stability.

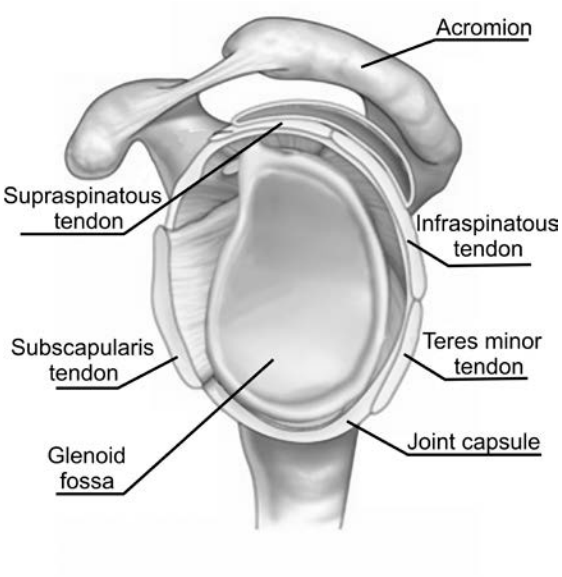


***Figure 7.*** Internal structures of the shoulder joint
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### Acromioclavicular joint (AC)

The union of the scapula's acromion process and the clavicle's lateral end forms the acromioclavicular joint (AC). The AC joint principally functions as the main articulation site for scapular movement and connection of the upper extremity with the trunk. The rotator cuff muscles are located just below (inferior to) the AC joint.

### Sternoclavicular joint (SC)

Considered one of the toughest joint capsules in the shoulder, the sternoclavicular (SC) joint is the site where the medial end of the clavicle articulates with the clavicular notch and the first rib. The SC joint is able to perform five motions: clavicular protraction, retraction, elevation, depression, and rotation.

The sternoclavicular joint has a strong and stable joint capsule. The articular disc, or meniscus, of the SC joint functions as an effective shock absorber, distributing the applied force between the two bones. Due to its stability, the SC joint is not easily dislocated. Usually, clavicular fractures or dislocations of the AC joint precede SC dislocation.

### Scapulothoracic joint

The scapulothoracic joint is not classified as a true joint, which usually has a synovial capsule (closed sac of synovial membrane situated between articular surfaces). The scapulothoracic joint also lacks some anatomical characteristics of a true joint, such as ligamentous support. The muscles attaching the shoulder blade to the thorax are fully responsible for scapular movement and stability.

The scapulothoracic joint plays a crucial role in ensuring proper positioning of the glenoid fossa and scapular stability for efficient arm movement. This joint is capable of six scapular motions relative to the thorax: scapular elevation, depression, adduction, abduction, and upward and downward rotation.

## Subacromial Space

The subacromial space is the area of the shoulder that is involved in impingement syndrome, one of the leading causes of shoulder pain. The subacromial space is located below the acromion process and above the humeral head (Figure 6). Within the subacromial space, the subacromial bursa and rotator cuff are located. When the arm is in a relaxed and normal position, the size of the space is fairly wide. As the arm is elevated, the greater tubercle of the humerus moves up into the subacromial space, narrowing the size of the space. When the shoulder structures are functioning optimally, the space has enough room for all the structures. If the structures of the shoulder are not in optimal position, the risk of pinching the structures in the

subacromial space increases, which can lead to shoulder impingement and rotator cuff injury.

## The Bursae

A bursa is a small synovial fluid-filled sac, lined with synovial membranes. The bursae are found in between the tendons and the bones, functioning as gliding surfaces to reduce friction, and prevent tissue damage. There are 160 known bursae throughout the body; nine are found in the shoulder area.

The subacromial or subdeltoid bursa, which is located over the greater tubercle of the humerus and the supraspinatus tendon, is the shoulder bursa that is most susceptible to injuries. It is also the largest bursa in the body. Due to the proximity of the subacromial bursa and the supraspinatus tendon, anything that scars or accumulates on the body of the tendon can also irritate and inflame the bursa, leading to bursitis. Bursitis may also be caused by infection or an underlying rheumatic condition.

## Scapular Muscles

The muscles in the shoulder are mainly divided into two major groups: the dynamic stabilizers of the scapula, and the rotator cuff muscles. The scapular muscles, also termed scapular pivoters, are mainly involved in movement and stability of the scapulothoracic joint. The following scapular muscles are vital for the normal biomechanics of the entire shoulder complex:

- **Trapezius** - The trapezius is the most superficial muscle of the neck and upper trunk. It is vital in scapular stability.
  *Origin*: Occipital bone and all cervical and thoracic vertebrae
  *Insertion*: Scapular spine and clavicle

*Action*: Neck extension plus scapular movement of elevation, upward rotation, adduction (retraction), and depression

- **Serratus anterior** – This muscle is mainly responsible for protracting and upwardly rotating the scapula.
  *Origin*: Upper component: first and second ribs; middle component: second, third and fourth ribs; and lower component: fifth through ninth ribs
  *Insertion*: Upper component: superior angle of the scapula; middle component: anterior aspect of the medial scapular border; and lower component: medial border of the scapula
  *Action*: Abduction (protraction), upward rotation

- **Levator scapulae** – This muscle's line of pull is almost vertical, as it lies beneath the upper trapezius and extends from the upper neck to the upper medial border of the scapula.
  *Origin*: Transverse processes of C1 to C4 or C5
  *Insertion*: Medial superior angle of the scapula
  *Action*: Cervical lateral flexion and rotation plus Scapular elevation, downward rotation, and abduction (protraction)

- **Rhomboids** – A muscle group consisting of the rhomboid major and rhomboid minor that works with the trapezius and controls the scapula's medial border.
  *Origin*: Major - second to fifth thoracic vertebrae and supraspinous ligament;
  Minor - seventh cervical and first thoracic vertebrae
  *Insertion*: Major and minor rhomboids - medial border of the scapula
  *Action*: Scapular adduction (retraction) and downward rotation

A note on origins and insertions: the muscles are attached to the bones at no less than two points. The origin refers to the end of the muscle attaching to an immovable or less movable bone. Insertion refers to the end of the muscle that is

attached to a freely movable joint. Whenever a muscle contracts, its insertion site moves toward the origin in open kinetic chain exercises.

## The Rotator Cuff

In discussing the rotator cuff, it is important to include the four muscles that comprise it: the supraspinatus, infraspinatus, teres minor, and subscapularis, or SITS muscles. SITS is an abbreviation that stands for supraspinatus, infraspinatus, teres minor and subscapularis. These muscles are collectively known as the rotator cuff muscles. The rotator cuff is actually composed of the tendons of the rotator cuff muscles, fusing together into the joint capsule to provide dynamic stability of the glenohumeral joint.

It was mentioned earlier that there is minimal contact between the head of the humerus and glenoid fossa. The muscles of the rotator cuff must, therefore, hold the humerus in the correct orientation to the glenoid fossa in order to stabilize the glenohumeral joint (Hendrickson, 1999). The rotator cuff creates a fixed fulcrum for the glenohumeral joint, functioning as a pivot on which a lever (the humerus) moves. This way, the deltoid, the triangular-shaped muscle that forms the rounded shape of the shoulder, can move the arm upward. Because of strong forces that are applied to it, and because it is active in nearly all shoulder movement, the rotator cuff is a common site of injury.

To further understand the pathomechanics of the most common types of rotator cuff injuries, which will be discussed in the next section, it is important to understand how each of these muscles works.

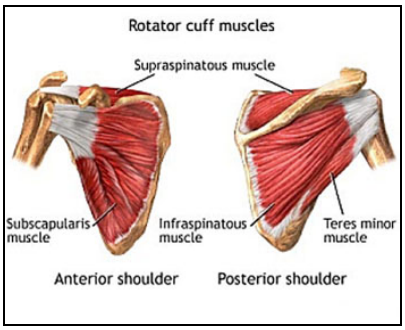


***Figure 8.*** The rotator cuff Muscles (n.d.).
Note: copyright A.D.A.M.

### Supraspinatus

Supraspinatus is located on the posterior and superior aspect of the scapula, near the tip of the shoulder (superior angle of the scapula). The muscle fibers of the supraspinatus come together to form the supraspinatus tendon that adheres to the joint capsule. The supraspinatus tendon is the most commonly injured tendon of the rotator cuff.

In spite of its small size, the supraspinatus muscle plays a key role in all shoulder movements. Its main functions are to abduct the arm to the side, pull the humerus into the glenoid cavity, and to prevent shoulder dislocation.

### Infraspinatus and Teres Minor

The infraspinatus and teres minor muscles sit right next to each other on the posterior side of the scapula. As with supraspinatus, the tendons of these muscles adhere to the shoulder capsule, preventing the dislocation of the shoulder. The infraspinatus and teres minor are both positioned at the same angle and attach to the same area, creating the same shoulder motion. These muscles are responsible for external rotation of the shoulder, and horizontal abduction. These muscles actively participate in *force couple*, which is essential

for proper shoulder mechanics. The force couple is further discussed in the next section.

### Subscapularis

The subscapularis muscle is located under the anterior surface of the scapula. It attaches on the anterior (front) part of the humerus, and thus performs inward rotation of the arm. The subscapularis also gives the glenohumeral joint some stability. Subscapularis, along with infraspinatus and teres minor, maintains a horizontal line of pull to prevent the downward dislocation of the humerus (University of Washington Medicine, 2005). Due to its location, it also assists in the prevention of anterior dislocation of the humerus.

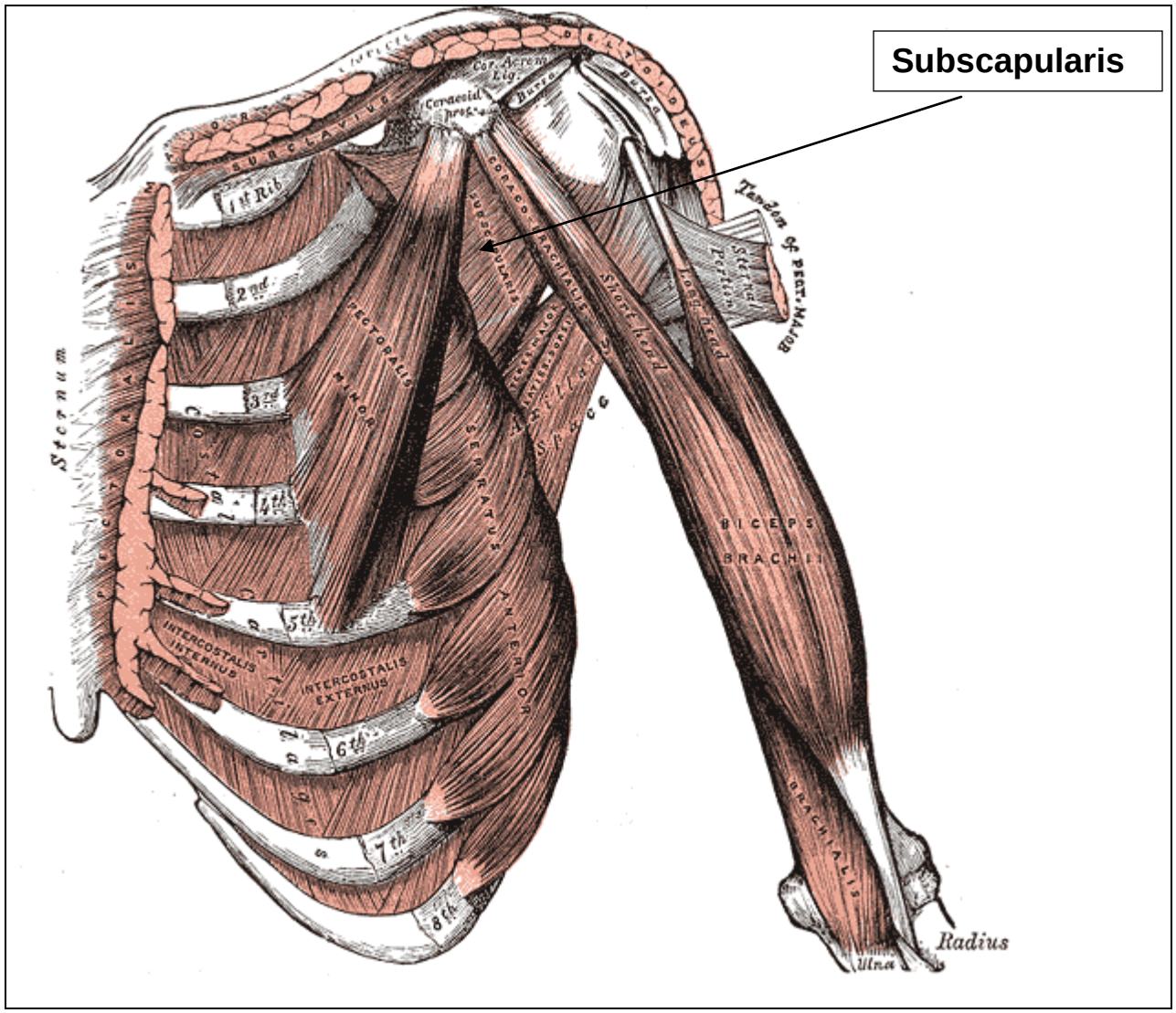


***Figure 9.*** Anterior (front) muscles of the left rotator cuff – subscapularis.

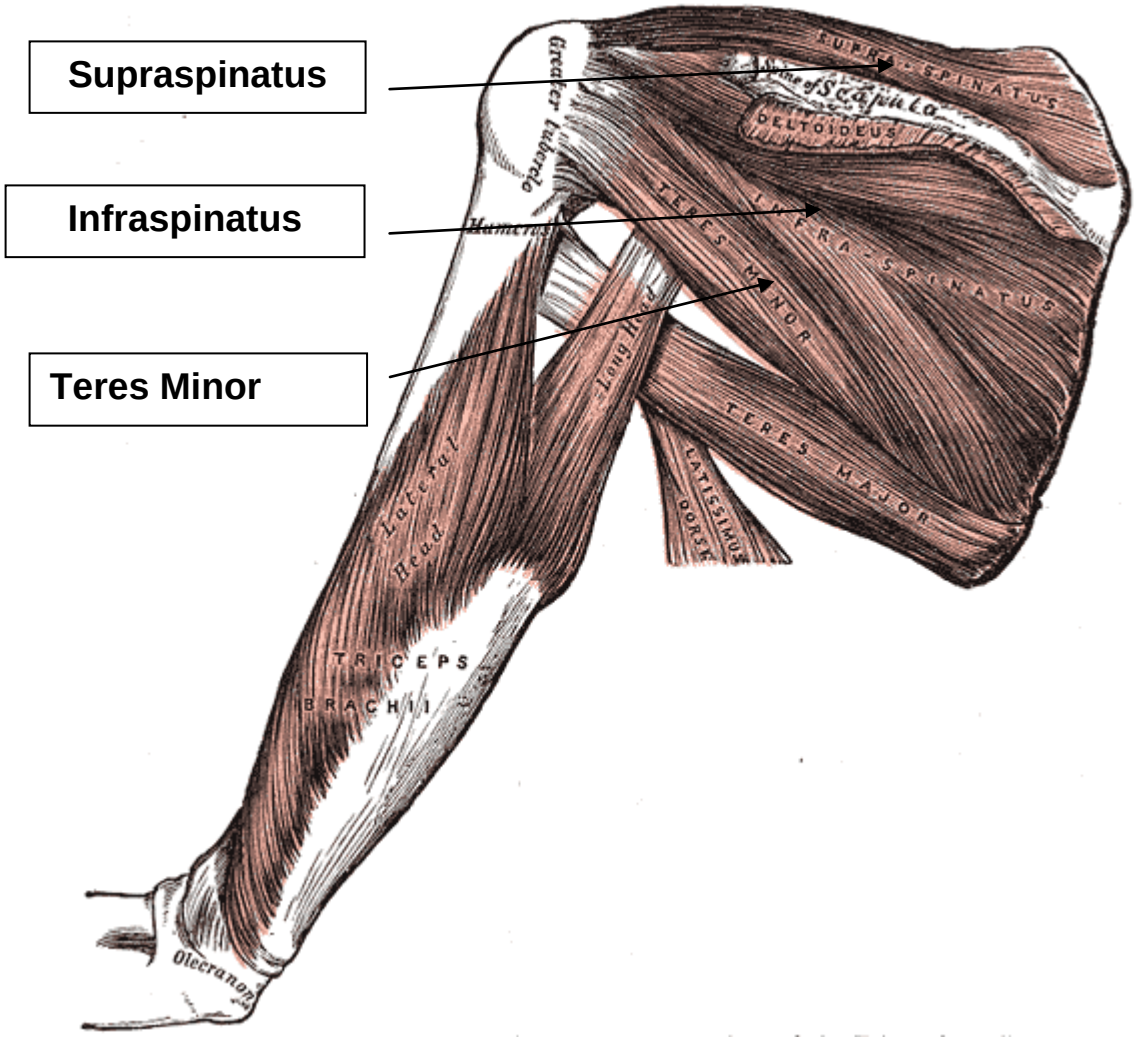


***Figure 10.*** Posterior (back) muscles of the left rotator cuff – supraspinatus, infraspinatus, teres minor.

| Rotator Cuff Muscle | Origin | *Insertion* | Main Action |
|---|---|---|---|
| **Supraspinatus** | Inner part of the supraspinous fossa of the scapula | *Top of the greater tubercle of the humerus* | Shoulder abduction<br><br>Shoulder stabilization |
| **Infraspinatus** | Medial portion of the infraspinous fossa of the scapula | *Middle of the greater tubercle of the humerus* | External rotation of the shoulder<br><br>Horizontal abduction of the shoulder<br><br>SITS force couple component<br><br>Shoulder stabilization |
| **Teres minor** | Lateral border of the scapula | *Middle of the greater tubercle of the humerus* | External rotation of the shoulder<br><br>Shoulder stabilization<br><br>SITS force couple component |
| **Subscapularis** | Subscapular fossa | *Lesser tubercle of the humerus* | Internal rotation of the shoulder<br><br>Shoulder stabilization<br><br>SITS force couple component |

***Table 1.*** The rotator cuff muscles.

The supraspinatus pulls the humerus into abduction and pulls the humeral head in the medial direction, whereas the infraspinatus and subscapularis pull the humeral head downward and in. During shoulder motion, the supraspinatus muscle controls the elevation of the arm, with the support of the deltoid. The infraspinatus and teres minor control the external rotation of the arm, whereas the subscapularis controls internal rotation.

The rotator cuff muscles' main task as a group is to stabilize the glenohumeral joint. They function like a strong ligament, securing the humeral head tightly in the glenoid fossa during arm movements. The rotator cuff muscles work in conjunction with the larger and more powerful superficial muscles of the glenohumeral joint during shoulder motion.

## Rotator Cuff Tissue Structure

The rotator cuff muscles receive their blood supply from different arteries. However, a critical zone of hypovascularity (insufficient blood flow) may be identified in the distal 1.0 to 1.5 cm of the supraspinatus tendon, close to its insertion in the greater tubercle (Carr & Havvie, 2006). A similar hypovascular region is present in the infraspinatus tendon. The hypovascularity of these areas is considered a significant predisposing factor in rotator cuff pathology (injury), especially in older clients. Studies show that the vascularity in these regions decreases with age.

The rotator cuff is classified as in good health if the tendon is predominantly made up of Type I collagen fibers, which are highly tensile. These fibers are very resistant to pulling forces and can withstand a great amount of stress without tearing. Type II collagen is the most abundant protein in cartilage, providing its tensile strength. Type II collagen fibers provide resistance to joint compressions. Repairing, aging, and degenerating tendons are mostly made up of Type III collagen fibers. Type III collagen

fibers have lower tensile strength than Type I fibers, and are smaller in size. This possibly explains why deteriorating and aging rotator cuff tendons are more susceptible to injuries.

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# Section 3: Functional Anatomy and Biomechanics

Before discussing the most common injuries involving the rotator cuff, it is vital to understand the functional anatomy and biomechanics of the shoulder. Understanding exactly how shoulder motions occur will facilitate your understanding of the causes of different types of rotator cuff injuries.

## Functional Anatomy

Normal shoulder motion is considered a complex interaction of the bony anatomy and the activity of muscles (MacFarland, 2006). The interaction of the static stabilizers (bony structures, ligaments, and joint capsules) and dynamic components (shoulder joint muscles, scapular stabilizers, and rotator cuff muscles) make it possible for the shoulder to be flexible and create a wide variety of movements.

The articulations of the shoulder complex - which includes the sternoclavicular joint, acromioclavicular joint, glenohumeral joint, and scapulothoracic joint - work together in order to perform normal shoulder motion.

Full shoulder motion depends on normal and smooth movement of the scapula. The scapula provides a contact point, the glenoid fossa, where the humeral head articulates with the shoulder complex. The scapula slides or moves smoothly along the chest wall (thoracic spine) during normal shoulder motion. The scapular motion is directly controlled by the scapular stabilizers.

A study by Peter Rundquist in 2007 revealed that increased scapular motion is one way the shoulder compensates for any loss of joint motion, making the scapula an essential structure in all shoulder movements. A common compensation strategy for an injured rotator cuff is scapular elevation in order to assist with humeral movement.

## Shoulder Stabilizers

The shoulder's glenohumeral joint is classified as a ball-and-socket joint. It is one of the most mobile joints in the human body, having the ability to move in a complex three-dimensional pattern. However, having such remarkable mobility comes at a price; this joint is also recognized as the most commonly dislocated joint in the body. Additional stability is necessary to prevent shoulder injuries which will restrict work tasks, recreational or sporting activities, and tasks around the house. This increase in stability is provided by the shoulder stabilizers, which are further categorized into two types: static and dynamic. Any breakdown in the function of the static or dynamic stabilizers can greatly reduce glenohumeral function (McCully, Kumar, Lazarus, & Kadurna, 2005).

### Static stabilizers

The static stabilizers include the bony structures, labrum, ligaments, and joint capsules. These structures are mainly responsible for providing stability at the end ranges of motion. The inferior glenohumeral ligament is considered the main static stabilizer of the shoulder joint during abduction (Brukner & Khan, 2006). This ligament rotates toward the anterior during arm abduction and external rotation, preventing partial anterior dislocation of the glenohumeral joint. Shoulder stability is also enhanced by the glenoid labrum, which surrounds the glenoid fossa. The labrum increases the joint's stability by deepening the concavity of the socket by 5 to 9 millimeters and by increasing the humeral head contact area to 75% vertically and 56% transversely (Dutton, 2004).

## Dynamic stabilizers

The dynamic stabilizers are classified into two groups: the rotator cuff and scapular stabilization muscles. These muscles cross the glenohumeral joint, producing motion and creating dynamic stability. The active contraction of the dynamic stabilizers is primarily responsible for maintaining joint stability during the mid ranges of motion (McCully, Kumar, Lazarus, & Karduna, 2005) and overhead movements.

The dynamic stability of the shoulder complex is primarily dependent on

- optimal alignment of the scapula,
- ideal glenohumeral orientation, and
- quality of length-tension relationship (the force a muscle generates while at a specific length) of the dynamic stabilizers.

*Rotator cuff muscles*

As stated, the rotator cuff muscles primarily control the position of the humeral head in the glenoid fossa, which results in increased stability of the glenohumeral joint. In order to achieve dynamic stability of the glenohumeral joint, the deltoid and the rotator cuff muscles work together to exert a *force couple*. The force couple involves the action of two equal forces moving in opposite directions to create rotation around an axis. Force couples establish dynamic stability of the glenohumeral joint regardless of the position of the humerus (Voight, Hoogenboom, & Prenctice, 2007).

During overhead activities, the deltoid muscle raises the arm, moving the humeral head superiorly toward the acromion and coracoacromial arch. The rotator cuff muscles, mainly the supraspinatus, compress the humeral head on the glenoid, counterbalancing the forces of the deltoid muscle. Disruption of the deltoid/rotator cuff balance could result in excessive superior

movement of the humeral head, leading to impingement upon the rotator cuff muscles and tendons (Brukner & Khan, 2006).

*Scapular stabilizers*

Like the rotator cuff muscles, the scapular muscles also play an important role in adding dynamic stability to glenohumeral movement. These muscles are mainly responsible for controlling scapular rotation. Weakness, poor activation, and low endurance of the scapular stabilizers commonly result in altered scapulohumeral rhythm (synchronized, smooth, and symmetrical motion between the scapula and the humerus). Normal rhythm is necessary in order to decrease the shearing effect between the humeral head and the glenoid fossa, and to resist the downward dislocation of the humerus. Normal rhythm is achieved when the angulation between the glenoid and the humeral head in motion is maintained within 30 degrees. Since the scapula is only attached to the thorax through the scapular muscles, the scapular stabilizers must have the activation, strength, and endurance to fix the position of the scapula to the thorax, so the glenoid stays centered under the humeral head. This position is essential for the rotator cuff to competently perform its function with the humerus.

Electromyography (EMG) studies reveal that during the initial 30 degrees of arm abduction, a high degree of supraspinatus activity has been demonstrated. According to Malanga (2009), increased EMG activity is an indication of increased firing requirements of the supraspinatus to stabilize the glenohumeral joint, because the deltoid is activated. Supraspinatus and deltoid form a force couple so the arm can reach overhead. If supraspinatus is weak or injured, the deltoid muscle would elevate the shoulder and it would bump against the clavicle limiting shoulder range of motion, especially overhead.

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# Section 4: Pathomechanics and Rotator Cuff Injuries

Rotator cuff tendon injuries are the most common cause of shoulder pain. It is estimated that 20 to 30% of shoulder problems are related to the development of rotator cuff injuries (Quintana, 2009).

Rotator cuff injuries are brought about by extrinsic (from the outside) or intrinsic (from within) factors. Falls on an outstretched hand, shoulder trauma, and injuries incurred through repetitive movements such as lifting, throwing, pushing, and pulling are classified as extrinsic causes. Athletes in sports which involve powerful and repetitive overhead motions of the arms and shoulders, such as tennis, volleyball, golf, football, swimming or baseball, are especially vulnerable to the development of a rotator cuff injury. In addition, poor or inadequate blood supply, tendon degeneration with aging, and calcification of the tendons are identified as intrinsic causes of rotator cuff injuries.

Neer (Neer 1983) pioneered the concept of primary compressive disease impingement as a direct result of tendon compression, leading to rotator cuff pathologies. Neer suggested that injuries to the rotator cuff are sustained when any of the rotator cuff tendons are compressed between the humeral head and the acromion during shoulder elevation. Repetitive and chronic compression results in tendon irritation and inflammation which, in time, causes scarring and deterioration of the rotator cuff tendons. Chronic degeneration of the tendon makes it susceptible to tearing or rupture.

## Injury Mechanisms of the Rotator Cuff

In general, rotator cuff injuries are caused by an underlying impingement progression or an instability progression (Manske, 2006).

### Primary compressive disease (primary shoulder impingement)

Primary compression results from direct compression of the superior aspect of the rotator cuff. Any condition or structural alteration that causes narrowing of the subacromial space can interfere with the normal gliding of the rotator cuff, resulting in tendon abrasion.

The shape of the acromion is also believed to be a significant factor in the development of impingement syndrome. Type I acromion is described as having a flat acromial undersurface and is classified as the "normal" acromion. Type II acromion has a curved and downward dipping. It is estimated that 17% and 43% of clients with impingement syndrome demonstrate Type I acromion and Type II acromion, respectively. Type III acromion is more hooked and downward dipping which obstructs the outlet of the supraspinatus tendon (Fongemie, Buss, and Rolnick 1998). An individual with Type III acromion process is highly susceptible to primary impingement. In fact, according to a study by Bigliani in 1986 (Dutton 2004), 70% of clients with rotator cuff tears have a Type III acromial shape, which is characterized by a hooked acromion process (Figure 11).

Other causative factors of primary compressive disease are congenital thickening of the coracoacromial ligament, and the presence of an os acromiale (failure of an ossification centre in the acromial process). In middle-aged individuals, narrowing of the subacromial space is also caused by degenerative spurring (bony projections) that forms underneath the acromion process.

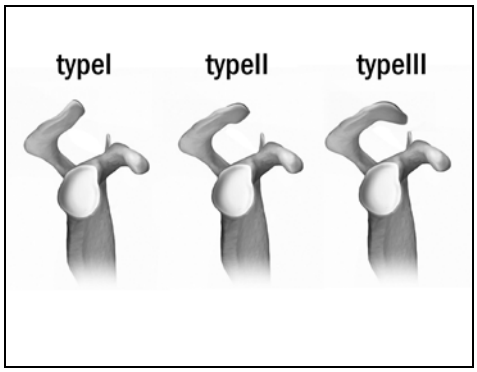


***Figure 11.*** Types of Acromion Processes (2001).
Note: copyright ExercisesForInjuries.com

## Secondary compressive disease (secondary shoulder impingement)

The secondary impingement is a direct result of glenohumeral instability caused by tensile overload and repeated overhead motion, which apply a high degree of force and compress the structures in the subacromial space, including the rotator cuff tendons.

## Primary tensile overload

Previous shoulder instability is not associated with primary tensile overload. Primary tensile overload usually affects younger individuals who engage in repetitive overhead motions where a great amount of force is placed on the rotator cuff. This condition involves impingement of the rotator cuff against the posterior glenoid labrum and humeral head during activities that require forceful elevation of the arm and internal rotation as seen during the deceleration phase of throwing. Bankart lesions, characterized by tears in the glenoid labrum and lesions in the posterior humeral head, usually occur from this primary overload.

## Secondary tensile disease

Chronic primary tension overload results in secondary tensile disease. In this condition, repetitive irritation of the rotator cuff, and subsequently its weakening,

causes subtle instability of the shoulder (Dutton, 2004). Greater amounts of stress and more distractive forces are placed on the tendons, in contrast to secondary compressive disease. Over time, the increasing tensile forces result in tendon failure.

### Macrotrauma failure

Macrotrauma failure is often a direct result of shoulder trauma, in particular from falling on an outstretched arm. This type of injury is not typically seen in clients with healthy rotator cuff tendons, suggesting that previous tendon damage or disease has already occurred before the trauma.

Based on the mechanisms involved in injuries of the rotator cuff, the pathophysiology of rotator cuff disorders can be traced back to intrinsic and extrinsic factors. To sum up, the development of rotator cuff injuries is highly influenced by the following factors:

**Acromial shape and form**. Type III acromial shape is strongly associated with rotator cuff injuries.

**Hypovascularity of the rotator cuff**. Hypovascularity, or inadequate blood flow to the rotator cuff, is influenced by arm positioning. Arm abduction to the side causes insufficient supply of blood to the supraspinatus tendon. Elevation of the arm above 30 degrees causes increased pressure on the supraspinatus muscle, subsequently impairing the normal flow of blood in this area. Additionally, studies reveal that hypovascularity of the rotator cuff increases with age beginning as early as the second decade of life (Ling, Chen & Wan, 1990; Lewis, 2008).

**Weakened dynamic stabilizers**. Weakened or injured rotator cuff and scapular muscles, the shoulder's dynamic stabilizers, result in increased

shoulder laxity. Since the muscles that secure the position of the humeral head in the glenoid fossa are not strong enough to prevent the excessive superior movement of the humerus, impingement of the tendons is likely.

**Acromioclavicular joint degeneration**. Degeneration of the acromioclavicular joint causes narrowing of the subacromial space. Formation of osteophytes (bone spurs) underneath the acromion process can also cause impingement of the rotator cuff. Bone spurs form in response to prolonged stress and manifest over time. Arthritis may also cause the formation of osteophytes.

**Increasing age**. Aging is a significant risk factor of subacromial impingement resulting from repetitive arm motions. Impingement related to aging commonly begins during the third decade of life.

**Arm position**. Frequent and repetitive arm position during normal activities can cause the impingement of the rotator cuff. The risk increases with frequent arm movements between 60 and 90 degrees of humeral head elevation.

**Decreased endurance capacity of the scapular stabilizers**. The scapular stabilizing muscles are mainly responsible for maintaining the scapulohumeral rhythm. Easily fatigued scapular stabilizing muscles result in unsynchronized and asymmetric movement of the scapula and the humerus, increasing the shearing effect between the humeral head and the glenoid fossa.

**Capsular tightness**. Impingement may also occur from disuse of the rotator cuff. Individuals who avoid painful overhead movements could develop tightness of the joint capsule over time. During the period of avoidance, constant immobility of the joint capsule decreases the length of the

connective tissues, resulting in capsular tightness, joint stiffness, and limited range of motion of the shoulder. Capsular tightness, weakness of the rotator cuff, and decreased muscular strength of the depressors (muscles that move the scapula downwards) result in excessive humeral migration, reinforcing the impingement cycle.

**Position of the humerus at rest.** Rathburn and Macnab (1970) found that the avascularity of the cuff is dependent on the position of the humerus. With the arm in adduction, a consistent zone of poor filling was identified near the tuberosity attachment of the supraspinatus tendon. Poorly vascularized zones cause delayed healing of the microtrauma, which can further aggravate the injury (Wilson 2001).

**Scapular asymmetry**. Warner and colleagues revealed that almost 60% of individuals with impingement syndrome have static scapular postural asymmetry (resting position of the scapula is different between left and right), which usually occurs with weakness of the dynamic stabilizers and the deltoid (Dutton, 2004).

**Repetitive arm motion.** Individuals who perform repetitive arm elevation beyond 90 degrees in their daily activities are vulnerable to rotator cuff injuries due to irritation of the rotator cuff tendon.

**Postural imbalance.** Postural imbalances that involve the scapulothoracic dysfunction, for example thoracic kyphosis or cervical lordosis, can result in acromial depression and scapular abduction. This increases the risk of impingement.

## Rotator Cuff Injuries

The rotator cuff injuries are usually classified into three categories: shoulder impingement syndrome, rotator cuff tendinitis, and rotator cuff tears. In this section, details about each injury type will be briefly discussed.

### Shoulder Impingement Syndrome

The shoulder impingement syndrome occurs from direct compression of any of the structures found in the subacromial space (the space between the acromion and the humeral head). Compression of these structures increases the pressure within the limited space, giving rise to the signs and symptoms associated with impingement syndrome. The structures most commonly affected by shoulder impingement syndrome are: subacromial bursae, supraspinatus muscle, joint capsule, and long head of the biceps.

To describe and identify the progression of tendon degeneration occurring in rotator cuff injuries, Neer outlined the stages of shoulder impingement syndrome. These stages are also used to classify the three stages of tendon degeneration based on the supraspinatus outlet.

- **Stage I** – Stage I is marked by acute inflammation and edema in the rotator cuff. This stage is commonly seen in individuals younger than 25 years. Stage I is usually reversible through conservative or non-operative treatments.

- **Stage II** – Stage II results from fibrosis (formation of scar tissue) and tendinitis (inflammation of the tendon). These injuries do not respond to conservative treatment or management and usually require surgical operation. Surgery is frequently indicated to repair the damaged rotator cuff.

- **Stage III** – Stage III is characterized by bone spur formation and tendon rupture. Full thickness or partial tears of the rotator cuff tendons are associated with this stage. Bicep tendon lesions and bony alterations of the acromion and acromioclavicular joint are also linked to the third stage. Anterior acromioplasty (surgical removal of anterior hook of the acromion) and surgical repair of the rotator cuff are usually advised.

  Shoulder impingement syndrome usually occurs in individuals working in jobs that require repetitive overhead activities on a daily basis. Athletes involved in swimming, throwing sports, volleyball, and tennis are also susceptible to this condition.

  Clients with shoulder impingement initially report gradual onset of sharp pain and a tearing sensation in the affected shoulder area. Other clients describe a gradual increase of shoulder pain with overhead activities, or a feeling of catching when moving the arm, also suggesting an impingement problem. The pain is usually located in the deltoid region.

## Rotator Cuff Tendinitis

Rotator cuff tendinitis (inflammation of the rotator cuff) is often associated with shoulder impingement syndrome. The supraspinatus tendon is the most commonly affected tendon in the rotator cuff. Inflammation of the rotator cuff results from a variety of factors. Increased subacromial loading, rotator cuff overload, muscle imbalances, and repetitive overhead motions are believed to cause tendon irritation and inflammation.

Clients with rotator cuff tendinitis report dull and achy pain in the posterolateral shoulder, which radiates into the deltoid muscle area. The pain usually occurs at night and from sleeping on the affected side. Shoulder pain is elicited during arm

abduction of more than 90 degrees. Also some clients report having pain at rest and with specific movements or activities. Weakness of the affected arm during overhead activities is also commonly reported.

## Rotator Cuff Tears

A rotator cuff tear is frequently the end result of a series of events that began with an uncomplicated inflammation of the tendon. Over time, tendon injury progresses to advanced inflammation or scarring, then to tissue micro-tearing, and finally to partial or complete tearing (Whiting & Zernicke, 2008). Rotator cuff tears (RCT) mainly develop from three mechanisms: extrinsic compression of the cuff, tendon degeneration, and muscle imbalance. The tears usually occur at tendon-to-bone junctions, where circulation is poor. One of the reasons why healing is so slow in the rotator cuff is poor circulation.

The incidence of rotator cuff tears increases with age, occurring more commonly in clients aged 40 years and older. Partial tearing or total rupture of the tendons is frequently caused by chronic degeneration, although injuries may also occur from acute trauma. Rotator cuff tears usually occur in the dominant arm.

Signs and symptoms of rotator cuff tears are similar to those of rotator cuff tendinitis. The pain is usually located in the lateral area of the shoulder and upper arm. Dull and achy pain occurs with overhead activities. Severe pain in the shoulder occurring at night can be a sign of a large rotator cuff tear. Clients with rotator cuff tears demonstrate an inability to perform some simple tasks that involve raising the arm, such as combing hair, or fastening a garment at the back. The tears of the rotator cuff can be partial or full-thickness.

- **Partial thickness or incomplete tears** involve the articular side or bursal side of the affected tendon, or the intratendinous area. Bursal-sided tears occur on the superior surface of the rotator cuff, whereas articular-sided

tears occur on the undersurface of the rotator cuff. Intratendinous tears arise within the rotator cuff fibers. The tears on the superior side commonly result from subacromial impingement, while undersurface tears are associated with anterior instability and insufficiencies of the labrum and joint capsules. Using an MRI arthrography, Stetson and colleagues (2005) observed that the hypovascular zones are more prominent on the articular side of the supraspinatus tendon.

- **Full-thickness tears** involve complete disruption of the tendon, both on the bursal and articular. A tear is considered massive if it involves at least two of the tendons. The tear usually starts on the critical zone of the supraspinatus tendon and extends, causing tearing of the infraspinatus, teres minor, and subscapularis tendons. Research shows that clients with full-thickness tears have one or more coexisting intra-articular abnormalities, mostly involving labral tears and biceps tendon tears. In some cases, full thickness tears cause complete detachment of the tendon from the humeral bone, resulting in significant impairment of the shoulder. Clients with a full-thickness tear will not be able to raise their arm past 90 degrees of abduction.

  Full-thickness rotator cuff tears are also classified by their tear size. Tears measuring less than 1 cm are classified small, medium tears measure 1 to 3 cm, large tears range from 3 to 5 cm, and severe tears are greater than 5 cm. Classifying the degree of the rotator cuff tear and measuring the tear size are essential in creating the most appropriate rehabilitation program for the injured client.

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# Section 5: Diagnosing Rotator Cuff Injuries

Clients complaining of a dull ache in the upper and outer region of the arm or shoulder may have rotator cuff pathologies. Most of the clients report minimal discomfort while performing below-shoulder activities.

An accurate diagnosis of rotator cuff injury requires a detailed medical history, a thorough physical examination, and some laboratory and diagnostic imaging. These approaches are important to help the doctor or specialist rule out other health conditions that may present with the same signs and symptoms.

The purpose of this section is to give the fitness professional a better understanding of the process that a physician or specialist uses to diagnose a rotator cuff injury and the severity of the injury.

Administering these tests is outside the scope of practice for fitness professionals. They are referred to in this manual so fitness professionals have a better understanding when communicating with physicians, orthopedic surgeons, and other health care professionals about their clients.

## Client History

The importance of taking an accurate and detailed client history cannot be stressed enough. A complete and accurate medical history helps direct a correct and organized course for the physical examination, which leads to an accurate diagnosis. Keep in mind that the treatment modalities prescribed for clients largely rely on the diagnosis. In addition, timely and appropriate treatment approaches are crucial in achieving increased chance of recovery, prevention of complications, reduced health

care costs, preserved joint function, and overall improved quality of life. Client history should be viewed as one of the most important steps in diagnosing a rotator cuff injury.

A typical presentation of a rotator cuff injury due to tendon degeneration is a 40 year old individual with a progressive onset of shoulder pain. More advanced rotator cuff disease usually presents with constant shoulder pain and markedly increased pain during overhead movements and arm-length activities (reaching out front). Night pain in the shoulder area is a common complaint. Weakness during shoulder elevation commonly occurs as the rotator cuff injury progresses. Grating, crackling, and popping sounds, termed crepitus, are often experienced by clients. Over time, neck and mid-back pain may accompany the rotator cuff injury.

The fitness professional will need a complete health history on the client in order to understand more clearly how the rotator cuff injury occurred, as well as what makes the shoulder feel worse or better. This information will provide the fitness professional with a better idea of the movements and ranges of motion to focus on, and which of them to avoid.

## Physical Examination

A systematic physical examination of the shoulder includes the following parts: a careful inspection; palpation of the bones, joints, and soft tissues; assessment of passive and active ranges of motion; and strength testing and special tests. The physical assessment of the shoulder also includes examination of the neck or cervical spine, and neurovascular examinations.

## Observation

Inspection begins the moment the client enters the examination room and is performed in the following order: anterior observation, lateral observation, and posterior observation.

The symmetry of the shoulder joints and bones, movements of the upper arms, and the gait are evaluated, taking note of any sign of painful positions and any irregularity in shoulder movement. Deformities, swelling, redness, and muscle wasting (decrease in the size of the muscle compared to the non-injured side) in the shoulder area are documented.

The following observations during shoulder examination may signal common shoulder pathologies:

- Atrophy or wasting of the supraspinatus and/or infraspinatus is a hallmark of a rotator cuff tear (Dutton, 2004). This may be difficult to see.

- Flattening of the deltoid muscle indicates dislocation of the glenohumeral joint; and bulging of the anterior aspect of the deltoid indicates dislocation of the humeral head

- Deltoid atrophy, especially on the posterior side, occurs in multidirectional instability. Multidirectional instability is when the head of the humerus is able to move outside normal limits in two of the three directions: anterior, posterior, or inferior

- Scapular winging due to serratus anterior weakness is a condition where the shoulder blade sticks out at the back, especially when pushing something stationary, such as a wall

- A significant finding usually observed in rotator cuff injuries is a prominent scapular spine, indicating supraspinatus and/or infraspinatus wasting

- Biceps deformity, most especially during elbow flexion, suggests a ruptured long head of the biceps: bunching of the biceps, also known as a Popeye biceps, indicates rupture of the biceps

It is important for the fitness professional to observe the client during his or her first session. The best way for the fitness professional to inspect or observe the client is by performing a postural assessment of the shoulder area. For more information, my course on Postural Assessment and Exercise Prescription can be found here: http://exercisesforinjuries.com/postural-assessment-and-exercise-prescription-bcrpa-cec-course/

## Palpation (by health care provider)

Palpation, or feeling with the hands during physical examination, is also done in an organized and methodical manner. Tenderness localized over the greater tuberosity or subacromial bursa is a common sign of a rotator cuff injury.

## Range of motion or ROM testing

During the range of motion evaluation, both active (client's own strength) and passive (performed by the examiner) range of motion (ROM) of the shoulder are assessed. Active and passive ROM tests can give the examiner some important information regarding the overall functional capacity of the shoulder. The ROM testing usually begins with evaluation of active movements.

Initiation or ending shoulder movement with pain or hesitation is a sign of possible rotator cuff injury. Limited or restricted active ROM may be due to structural alterations of the shoulder, such as capsule or muscle tightening or formation of tissue adhesions incurred from trauma and prolonged immobilization. Decreased ROM can also be caused by pain, muscle spasms, or joint loosening resulting from trauma and overuse. The following table lists the normal ranges of shoulder movements and the possible causes of decreased ROM related to pain.

| Shoulder Movement | Normal Range of Motion in Degrees | Possible Causes of Pain |
|---|---|---|
| Flexion | 160 – 180 | • Impingement of the cuff<br>• Glenohumeral, acromiocalvicular, and sternoclavicular joints |
| Extension | 50 – 60 | • Glenohumeral joint |
| Abduction | 170 – 180 | • Impingement of the cuff<br>• Acromioclavicular arthritis |
| External rotation | 80 – 90 | • Instability of the anterior glenohumeral joint |
| Internal rotation | 60 – 100 | • Impingement of the cuff<br>• Instability of the posterior glenohumeral joint |

***Table 2***. Normal ranges of shoulder movement and possible causes of decreased range of motion related to pain.

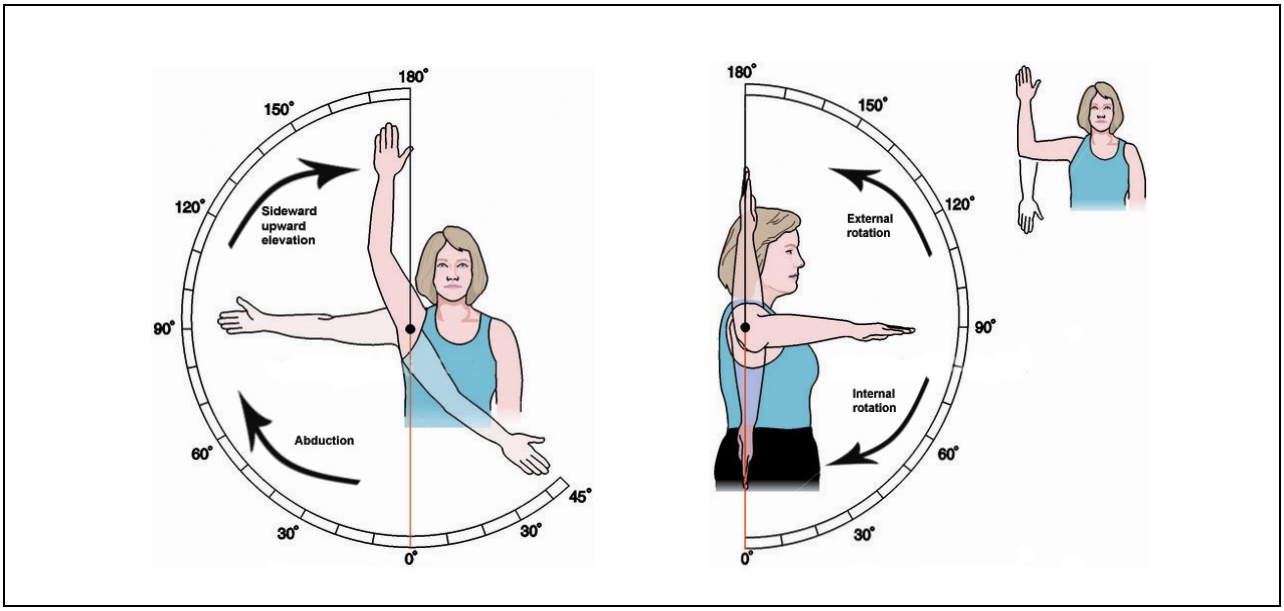


***Figure 12.*** Active range of motion of the shoulder.

Another useful technique in assessing the shoulder range of motion is the Apley scratch test. In this examination, arm abduction and external rotation are

determined by reaching behind the head and touching the upper portion of the opposite scapula. Arm adduction and internal rotation are measured by reaching behind the back and touching the lower portion of the opposite scapula.

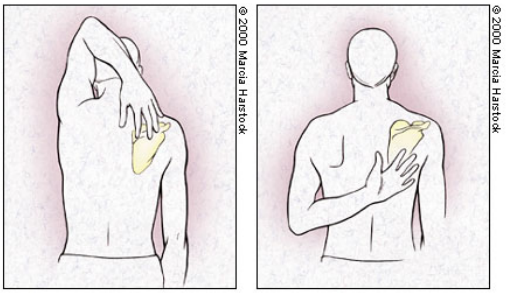


***Figure 13.*** Apley's scratch test (2000).
Note: copyright Marcia Harstock

The fitness professional observes the range of motion that a client has with their shoulder in order to get an idea of which movements cause pain and which movements are limited. This helps in selecting exercises for the client's program. The fitness professional must select exercises that are in a range of motion that the client can perform pain-free.

## Special Tests (by health care provider)

Special tests are done to identify and assess each of the individual muscles that make up the rotator cuff. These tests are done to assess the rotator cuff integrity, determine the involvement of the biceps, and determine if there are signs of impingement.

### Rotator Cuff Integrity Tests

- **Supraspinatus test.** Also known as the empty can test, the supraspinatus test is conducted by having the client abduct the shoulder to 90 degrees and horizontally adduct 30 degrees. Then the arm is internally rotated so the thumb is

pointed to the floor. The examiner provides 5 to 10 lbs of pressure. Weakness or pain would qualify as a positive test for a supraspinatus tendon tear.

- **Infraspinatus test.** With arms at the sides, the elbows are flexed to 90 degrees as the examiner applies an internal rotation force while the client resists by creating an external rotation force. Inability to maintain the position and a lag during external rotation are positive signs of infraspinatus test.

- **Subscapularis test.** This test involves internal rotation of the arm with the dorsum (back) of the hand placed against the lower back. Inability to lift the hand off the back is specific for subscapularis tendon tear.

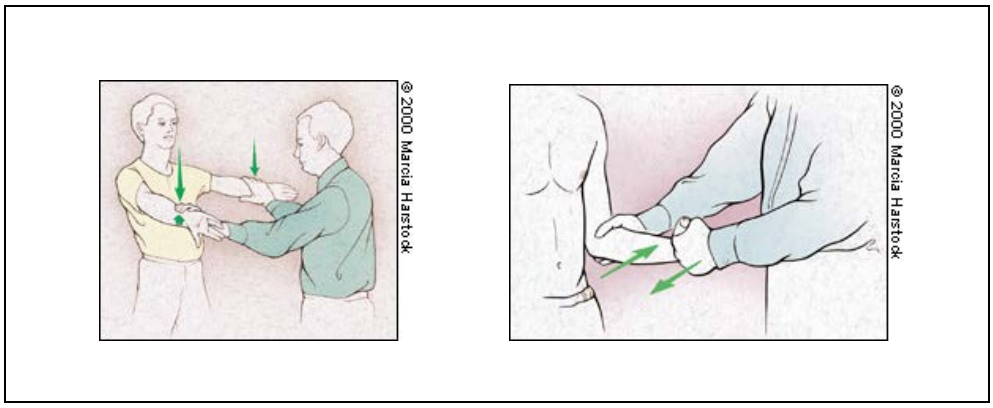


***Figure 14.*** Rotator Cuff Integrity Tests. A = Supraspinatus test; B = Infraspinatus test (2001).
Note: copyright Marcia Harstock

## Impingement Tests

- **Neer impingement sign.** This test involves forced passive forward flexion with the arm completely internally rotated. If pain is experienced beyond 120 degrees of forward flexion, the client is positive for subacromial impingement. Afterward, 5

to 10 ml of 1% lidocaine is injected into the subacromial space. Relief of pain confirms impingement.

- **Hawkins-Kennedy test.** In this test, the examiner elevates the arm forward to 90 degrees, flexes the elbow to 90 degrees and then forcibly internally rotates the arm. Pain with the maneuver indicates subacromial impingement or rotator cuff tendinitis.

- **Painful arc.** Pain with active abduction of the arm between 60 to 120 degrees in the coronal plane (frontal or side-to-side plane) indicates shoulder impingement. The painful arc test is especially useful if combined with other tests assessing the rotator cuff, like the Neer and Hawkins-Kennedy tests.

- **Drop-arm test.** A rotator cuff tear can be evaluated through the drop-arm test. This examination involves passive abduction of the shoulder to 90 degrees, and then slowly lowering it to the waist following the same arc of movement. A client with a rotator cuff tear demonstrates arm drop to the side or inability to continue the maneuver as far as the waist because of severe pain.

- **Apprehension test.** This test is done as the client lies supine (on back) or seated with the arm abducted to 90 degrees and the elbow flexed to 90 degrees. A slight posterior to anterior pressure is placed on the humerus or upper arm by the examiner and then the arm is externally rotated. Pain, apprehension about feeling shoulder dislocation, or resistance to further motion is specific for anterior glenohumeral instability.

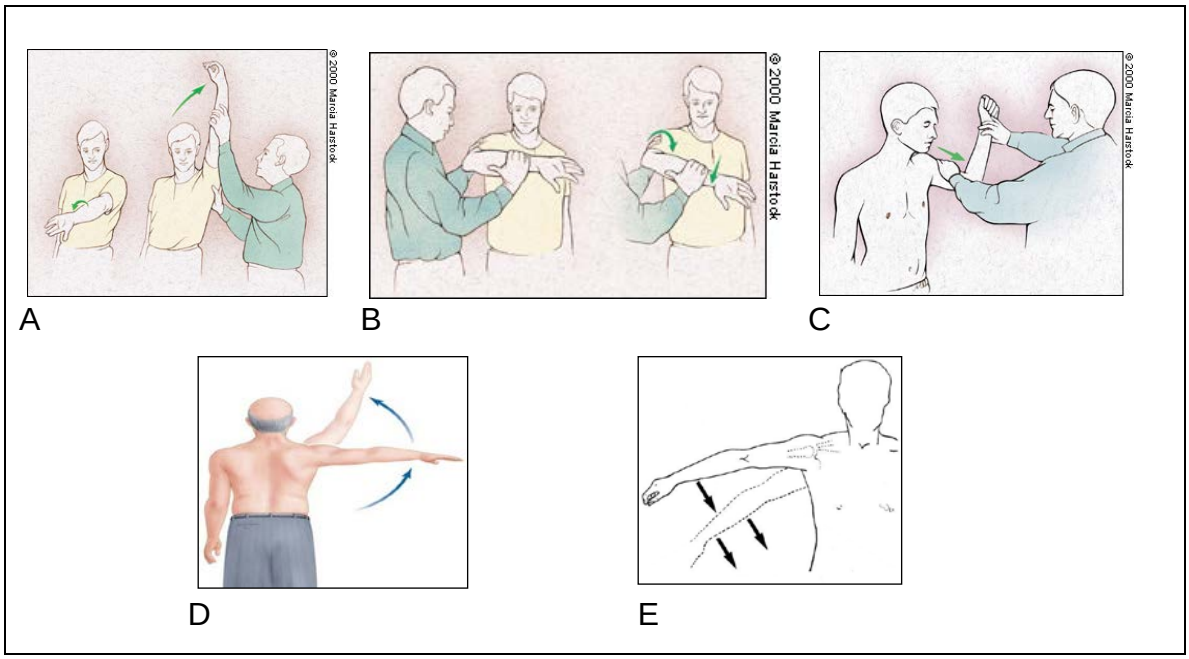


***Figure 15.*** Impingement tests. A = Neer's test; B = Hawkins-Kennedy test; C = Apprehension test; D = Painful arc test; E = Drop arm test

## Imaging Techniques

In the last several years, rapid advances in the science and technology of imaging techniques have led to more accurate diagnoses and overall improved quality of health care. Advanced and more complex diagnostic imaging techniques have enhanced physicians' skill in diagnosing, staging, and treating rotator cuff injuries. Note, however, that no imaging modality is generally accepted as the diagnostic tool of choice for diagnosing this condition. Thus, a detailed medical history and a thorough physical examination continue to be vital elements in making the diagnosis.

In this section, the most commonly used imaging techniques are briefly discussed.

### Plain Radiographs (X-Rays)

Routine radiographic imaging, one of the earliest methods used to diagnose rotator cuff disorders, continues to be one of the most important components in evaluating shoulder problems. Anteroposterior, axillary, and lateral views of the

shoulder are often taken. But plain radiographs have some limitations. During the early stages of rotator cuff injury, often no abnormalities are seen in radiographs. As the injury advances, radiographic abnormalities may be recognized. Further study and investigation are often needed to confirm the abnormalities and determine their severity.

## Conservative Arthrography

For several years, conservative arthrography (x-ray using fluorscope with contrast solution injected into the joint) was considered the gold standard imaging technique for diagnosing rotator cuff full-thickness tears. However, this diagnostic tool has demonstrated some limitations. Research shows that conservative arthrography is only accurate in identifying and predicting the size of tears in 50% of cases (Maffulli, 2005). Arthrography itself does not display partial-thickness tears in the bursal side (Tuite & Sandford, 2009). In spite of this, arthrography can accurately demonstrate partial-thickness tears on both articular and bursal sides.

## Magnetic Resonance Imaging

Magnetic resonance imaging (MRI) has replaced arthrography as the main imaging tool used to diagnose rotator cuff injuries. Research shows that aside from being a noninvasive imaging modality, MRI is extremely specific and sensitive (Malanga, 2009). In contrast to arthrography, MRI can detect the tear size and location, and characteristics of the affected structures.

## Ultrasonography

Ultrasonography is another diagnostic technique that can evaluate disorders of the rotator cuff. It is known to be highly accurate in detecting full-thickness rotator cuff tears, with the ability to characterize the extent of the damage. Dislocation of the biceps tendon is also diagnosed through ultrasonography. Compared to MRI,

this modality is less expensive and more comfortable for individuals with claustrophobia (fear of being in small and enclosed spaces). Ultrasonography tests are largely dependent on the skills of the operator, however, increasing the likelihood of inconsistencies and discrepancies in the results.

### Electrodiagnostic test

Electrodiagnostic testing like electromyography and nerve conduction tests are also helpful in assessing and evaluating rotator cuff disorders and their complications. Through this test, other causes of shoulder pain and weakness, such as cervical radiculopathy (nerve injury in the neck), can be ruled out, increasing the chances of accurate diagnosis and appropriate treatment of rotator cuff injury.

Again, these are not diagnostic tests that would be ordered by the fitness professional – nor would the results of the test be interpreted by a fitness professional. These tests are ordered by physicians, specialists, and other qualified health care professionals. A listing of the diagnostic tests and their purposes is included in this manual so that the fitness professional becomes familiar with common diagnostic tools, as many clients will have had these tests prior to starting an exercise program. The fitness professional will have a better understanding of the results of the diagnostic tests when communicating with physicians, orthopedic surgeons, and other health care professionals about client test results.

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# Section 6: Treatment and Management of Rotator Cuff Injuries

The healing capacity of the rotator cuff tendons is limited. Researchers Wolff and colleagues (2006) believe that the hypovascularity of the rotator cuff, specifically in the critical zones found in the supraspinatus and infraspinatus, often results in irreversible damage, which can significantly reduce one's physical functioning and overall quality of life. This is why it is important to apply immediate treatment and management of the injured rotator cuff, in order to prevent further damage.

During the early stages, a rotator cuff injury is managed through conservative and self-management measures. The initial phase of the treatment is guided by the principles of PRICEMEM – Protection, Rest, Ice/Cold and Heat Applications, Compression, Elevation, Manual Therapy, Early Motion, and Medication (Dutton, 2004). It is also important to include lifestyle modifications to maximize recovery and to prevent rotator cuff irritation or further injury.

## Protection and Rest

Minimizing shoulder and arm movements is strongly recommended as soon as the pain sets in. Rest prevents complications by protecting the surrounding muscles, tendons, and ligaments from irritation. This will allow the body to focus on healing of the rotator cuff injury. Repetitive, forceful lifting of weights and overhead movements must be avoided during this initial phase in order to protect the injured site from developing complications. If your client's normal routine or everyday job requires frequent overhead movements, like lifting, make sure they have plenty of rest periods between activities to reduce the risk of irritation or further injury.

There is a fine balance between decreasing movement of the shoulder and immobilizing the shoulder. Long term shoulder immobilization could lead to other complications like muscle wasting, decreased shoulder function, and decreased range of motion. Have your client rest the affected side in order to help with recovery, but move it and use it as much as he or she can in a pain-free passive range of motion (with assistance).

## Ice/Cold and Heat Applications

Application of cold and hot compresses are important during the first 24 to 72 hours after an injury. Ice bags or even bags of frozen vegetables can be used to apply cold to the affected area during the first 24 to 48 hours after an injury; heat should be applied thereafter. Cold reduces blood flow to the injured area, which limits tissue swelling and causes temporary relief of pain. Your client should not leave the cold compress on for more than 15 to 20 minutes, to prevent any damage to the skin. It is recommended to apply a cold compress for 15 to 20 minutes, and do not apply another cold compress for at least 20 minutes. After icing, heat can be applied for 15 to 20 minutes. The heat causes dilation of your blood vessels, increasing the supply of blood, which is rich in the nutrients and oxygen necessary for tissue healing.

The general theory is that ice is for inflammation, and heat is for promoting blood flow. Each client will respond differently to ice or heat. How your client reacts will determine which provides them benefit and which does not.

Clients that are performing a post injury fitness program for a rotator cuff injury will still need to continue icing in order to keep inflammation down in the shoulder joint; and they will still need heat to promote circulation to the rotator cuff and address muscular tightness.

## Massage (provided by qualified professional)

According to Pribicevic and Pollard (2005), deep tissue massage can disrupt the formation of scar tissues and adhesions on the muscles and tendons, resulting in increased muscle strength and improved joint functions. Weakness of the rotator cuff, muscle stiffness, and tightening of the joint capsule are also treated with massage therapy. Massage increases the circulation of the blood, which encourages tissue repair.

## Activity modifications

Lifestyle modifications are a must in decreasing rotator cuff irritation and further injury. Individuals who have suffered from a previous injury of the rotator cuff tendons, or who are at increased risk due to the nature of their work and activity, must be careful in performing physical activities that place stress on the rotator cuff.

To reduce the occurrence and recurrence of rotator cuff injuries and help speed recovery, performing certain activities that require forceful overhead movements and/or repetition must be avoided or kept at a minimum. Serving a tennis ball, javelin throwing, football throwing, and baseball pitching can develop or aggravate a rotator cuff injury. Be cautious about performing activities that are included in your everyday routine that could place unnecessary stress on your rotator cuff: placing dishes in the cupboard, combing hair, putting on or removing clothes, scrubbing the floor, reaching up to a shelf, yard work or vacuuming.

Following are also some techniques for preventing rotator cuff irritation and further injury as your clients perform their normal activities.

Tips that can significantly decrease the occurrence and recurrence of rotator cuff injuries in your clients:

- Activities that involve repetitive and/or stressful shoulder motion must be spread throughout the day.
- Rest periods between overhead activities.
- Alternate underhand activities with overhead motions.
- Warm up exercises of the upper body must be done before starting an exercise session.

## Medications (prescribed by health care professional)

Oral non-steroid anti-inflammatory drugs, or NSAIDs, like aspirin, naproxen, and ibruprofen can alleviate pain and decrease tissue swelling. If NSAIDs do not provide the desired therapeutic effects, steroid injections can be administered directly into the painful structure in the shoulder. The medication that your client has been given must be taken as directed by their physician, to prevent or minimize side effects. Keep in mind that although certain medications can relieve the pain, they do not improve shoulder functions. The way to improve the function of the rotator cuff is with exercise.

## Exercise

Maintaining an exercise program is essential during the early stages of a rotator cuff injury. Exercise improves blood flow to the rotator cuff and increases the strength of the rotator cuff. The studies of Langberg and colleagues (1999) and Smith and Rennie

(2007) revealed that exercises can assist in the synthesis and organization of collagen tissue, a type of protein that connects and supports other bodily tissues. Collagen possesses great tensile strength; it is highly resistant to tissue damage when force is placed on it.

Exercising is one of the best ways to prevent the occurrence and progression of a rotator cuff injury. During the early stages of a rotator cuff injury, exercises that strengthen the rotator cuff muscles and the scapular stabilizers can significantly aid in maintaining the stability of the shoulder joint, thereby increasing the chances of recovery. The next section focuses on the different exercises that are most beneficial in maintaining the strength, flexibility, and functions of the rotator cuff and its supporting structures.

## Surgery

Surgery is considered if conservative measures fail in relieving the pain and weakness of the injured arm and shoulder. If the injury has not improved after a 6-week assessment consisting of rigorous physical therapy, surgery most likely is indicated (Quintana, 2009). Surgical therapy is indicated in the following cases:

- Clients younger than 60 years of age with a full-thickness tear
- Clients who fail to improve after 6 weeks of rehabilitation
- Clients who regularly and repeatedly perform activities that require shoulder use and/or repeated overhead activities

Surgical treatment options vary. In some cases, debridement or removal of the frayed or partially torn tendon is all that is needed to resolve the symptoms, along with acromioplasty. Acromioplasty is an arthroscopic surgical procedure that smoothes the undersurface of the acromion. For more significant and larger tears, an open repair surgery or arthroscopy (less invasive type of surgery) may be indicated.

After the surgery is completed, the operated shoulder is supported in a sling or brace for a short period of time to facilitate protection and healing.

Exercise is a key component of recovery from shoulder surgery. It is up to the surgeon to determine when an exercise program should begin and what should be included in it. Contact the surgeon for guidelines which they would like you to follow as the client's fitness professional.

If your client was under the care of a physical therapist after surgery, then contact the physical therapist for guidance in designing an exercise program.

## Who is a Qualified Health Care Provider?

This all depends on the country, state or province you live in. Each area has guidelines on who can and cannot do what when it comes to working with people with injuries. In some provinces a massage therapist can provide medical clearance to start an exercise program while in other provinces and states they can't. Please research who can do what in your region. In the region that I work in (the province of British Columbia, Canada), surgeons, medical doctors, chiropractors, physical therapists and massage therapists can all provide medical clearance for a client with an injury to start an exercise program.

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# Section 7: Exercises for Rotator Cuff Injuries

## Types of Exercises

Exercising the shoulder region, more specifically the rotator cuff muscles and the scapular stabilizers, is a crucial component of treating and managing rotator cuff injuries. Together with other forms of conservative measures, maintaining an exercise regimen of the shoulder can significantly increase the rate of tissue healing and prevent re-injury of the rotator cuff.

There are different types of exercises recommended to resolve the symptoms associated with rotator cuff injuries. Although each group of exercises has its own specific functions, each one plays a part in regaining and maintaining the health of the rotator cuff and helping in its recovery.

### Range of Motion Exercises

Nagging shoulder pain due to a rotator cuff injury usually results in decreased range of motion. Although resting the affected shoulder joint is recommended, total and prolonged inactivity of the shoulder may result in more severe complications, like a stiff or frozen shoulder.

Performing range of motion exercises within the pain free range of motion is initially recommended to restore joint mobility and increase the joint's range of motion. Overhead exercises (greater than 90 degrees) may be limited, but can be included once the individual becomes more tolerant of flexion and abduction movements.

These exercises are done slowly and in a relaxed manner within non-painful ranges of movement.

## Strengthening Exercises

Improved shoulder strength is achieved through the use of dumbbells, tubing or bands, pulleys, and your own body weight. Equipment resists the rotator cuff muscles, leading to increased rotator cuff muscle strength in concentric and eccentric movements.

An important and often ignored strengthening exercise is isometric strengthening. Isometric strengthening exercises are a form of resistance training in which the individual uses his muscles to exert a force against a stationary object. This exercise involves holding the arm in a fixed position for a certain period of time.

Rotator cuff strengthening exercises are introduced once they are tolerated. It is important that shoulder strengthening exercises are done only in a pain-free range. Start these exercises with the introduction of isometric exercises, with the arms positioned below 90 degrees of abduction and 90 degrees of flexion (Dutton, 2004). Exercises of the scapular stabilizers – trapezius, rhomboids, levator scapulae, and serratus anterior - are also initiated, together with isometric exercises. These include scapular retraction, or movement of the scapula toward the spine, and protraction, or movement of the scapula away from the spine.

## Stretching or Flexibility Exercises

Flexibility exercises of the shoulder stretch the joint capsule and the muscles that support the shoulder girdle. These exercises are an important component of rehabilitation and recovery from rotator cuff injuries.

Stretching exercises result in more lengthening of soft tissue; such as muscles, tendons, joint capsules, and fascia. Doing these exercises improves joint range of motion, reduces risk of muscle injuries, reduces muscle stiffness, spasm, relieves rotator cuff pain, provides muscle relaxation, and improves overall shoulder function.

## Warm Up and Cool Down Exercises

Warming up the shoulder is one of the most essential, yet frequently underestimated exercises for the rotator cuff. Doing five to ten minutes of shoulder warm up exercises increases the blood flow in the shoulder region, lubricating and dynamically stretching the shoulder. Your client can do this with arm range of motion exercises or by using a cardiovascular machine like the elliptical machine, a rowing machine, or an upper body bike (ergometer).

After exercising, perform cool down exercises for five to ten minutes. Cooling down regulates your heart rate and your breathing rate, and prevents muscle injuries and lightheadedness. The exercises used to warm up are the same as the exercises used to cool down.

## Exercises after a Surgical Procedure

The rehabilitation progression after a surgical procedure largely depends on the surgical technique, tear size, and the cuff tension of the repair (American Academy of Orthopedic Surgeons, 2006). The exercises prescribed during rehabilitation are similar to those found in this book. Have your client consult with their surgeon or qualified health care provider to see which exercises from this book they should be doing.

## General Healthy Rotator Cuff Exercise Tips and Guidelines

- It is strongly recommended that your client consult their physician or qualified health care provider in order to get medical clearance before starting any exercises to manage the rotator cuff injury. It is also advised that they check with their fitness professional from time to time, to assess if they are executing the exercises correctly and to determine if they need to have their rotator cuff exercise program progressed.
- Exercises should not elicit pain. If there is any pain, exercise should be stopped.
- Begin the exercise sessions with shoulder warm up exercises for five to ten minutes.
- When performing the rotator cuff exercises in this manual, it is important to breathe normally. Ensure your clients do not hold their breath.

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# Section 8: Effective Rotator Cuff Exercises

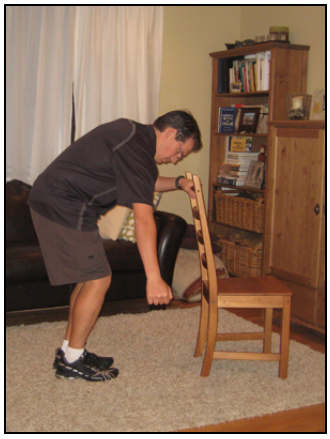
## Range of Motion Exercises

### EXERCISE 1: PENDULUM - CIRCLES

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve circumduction (circular movement) of the shoulder joint while standing, to lubricate and dynamically stretch the shoulder joint. |
| **Starting Position:** | In a standing position, abdominals braced, feet hip width apart, knees and hips bent to a 45 degree angle, non-injured arm supporting your body on a chair back, and the injured arm hanging straight down. |
| **How to Do the Exercise:** | 1. Move your arm in a small circular movement in a counter-clockwise direction. The hanging arm is relaxed and uses momentum to move the arm.<br>2. Repeat 10 times.<br>3. Perform the exercise in a clockwise direction.<br>4. This exercise can be done every day. |
| **Progressions:** | - Perform the exercise with larger circles.<br>- Do the exercise 20 times in each direction. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- The exercise should be performed using very light weights (less than five lbs.) or no weights at all.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 2: PENDULUM - HORIZONTAL ABDUCTION-ADDUCTION

| | |
|---|---|
|  **Start** |  **End** |

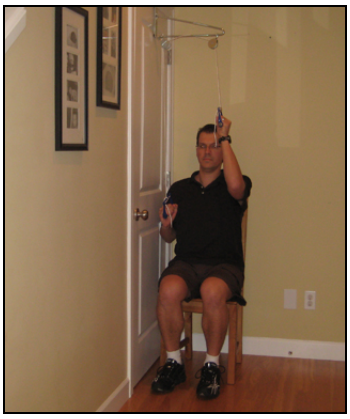
| | |
|---|---|
| **Purpose:** | To improve horizontal adduction and abduction of the shoulder joint while standing, to lubricate and dynamically stretch the shoulder joint. |
| **Starting Position:** | In a standing position, abdominals braced, feet hip width apart, knees and hips bent to a 45 degree angle, non-injured arm supporting your body on a chair back and the injured arm hanging straight down. |
| **How to Do the Exercise:** | 1. Move your arm side to side in small movements. The hanging arm is relaxed and uses momentum to move the arm.<br>2. Repeat 10 times.<br>3. This exercise can be done every day. |
| **Progressions:** | - Perform the exercise with larger side to side movements.<br>- Do the exercise 20 times in each direction. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- The exercise should be performed initially with no weight and then you can add very light weights (less than five lbs.).<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 3: PENDULUM - FLEXION-EXTENSION

| | |
|---|---|
|  <br>**Start** |  <br>**End** |

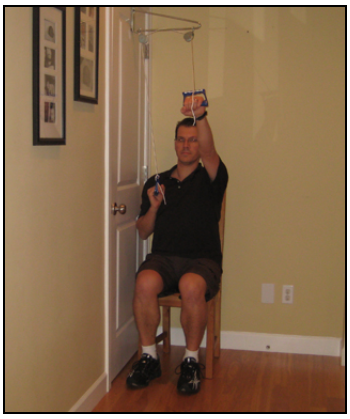
| | |
|---|---|
| **Purpose:** | To improve flexion and extension of the shoulder joint in the standing position, to lubricate and dynamically stretch the shoulder joint. |
| **Starting Position:** | In a standing position, abdominals braced, feet hip width apart, knees and hips bent to a 45 degree angle, non-injured arm supporting your body on a chair and the injured arm hanging straight down. |
| **How to Do the Exercise:** | 1. Move your arm in a small forward and back movement. The hanging arm is relaxed and uses momentum to move the arm.<br>2. Repeat 10 times.<br>3. This exercise can be done every day. |
| **Progressions:** | - Perform the exercise with larger forward to back movements.<br>- Do the exercise 20 times in each direction. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- The exercise should be performed with very light weights (less than five lbs.) or no weights at all.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 4: PULLEY – UP AND DOWN

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve flexion of the shoulder joint, lubricate the shoulder joint and improve the range of motion in the shoulder joint. |
| **Starting Position:** | Sit tall in a chair, each hand on one of the pulley handles and your injured shoulder lower than your non-injured shoulder. |
| **How to Do the Exercise:** | 1. Gently pull down on the pulley using your non-injured (right) arm to lift your injured arm (left).<br>2. Lift the injured arm as high as you can. It should take two seconds to reach this point.<br>3. Hold your arm for one second at this top position.<br>4. Now lower your arm back to the start. This should take two seconds.<br>5. Repeat this exercise 10 times.<br>6. This exercise can be done every day. |
| **Progressions:** | - Hold injured arm at the top position for two seconds and progress to five seconds.<br>- If you feel a stretch in the shoulder muscles, you can hold the position for 20 to 30 seconds in order to stretch the muscle.<br>- Do exercise 20 times. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Feeling a light stretch is normal, as long as there is no pain associated with it.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 5: PULLEY - SHOULDER FLEXION

| | |
|---|---|
|  **Start** |  **End** |

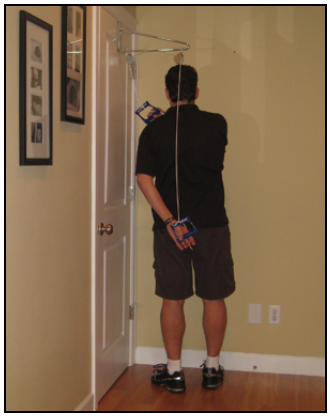
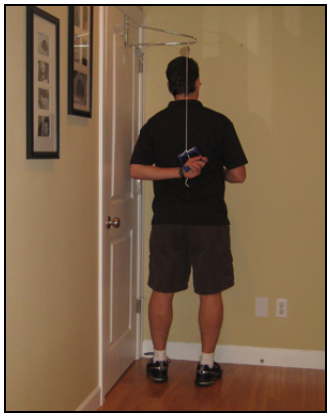
| | |
|---|---|
| **Purpose:** | To improve flexion of the shoulder joint, lubricate the shoulder joint and improve the range of motion in the shoulder joint. |
| **Starting Position:** | Sit tall in a chair, each hand on one of the pulley handles. Your non-injured shoulder is bent at the elbow with the arm of your injured shoulder straight and lower than your non-injured shoulder. |
| **How to Do the Exercise:** | 1. Gently pull down on the pulley using your non-injured arm (right) to lift your injured arm (left).<br>2. Lift the injured arm as high as you can. It should take two seconds to reach this point.<br>3. Hold your arm for one second at this top position.<br>4. Now lower your arm back to the start. This should take two seconds.<br>5. Repeat this exercise 10 times.<br>6. This exercise can be done every day. |
| **Progressions:** | - Hold your injured arm at the top position for two seconds and progress to five seconds.<br>- If you feel a stretch in the shoulder muscles, you can hold the position for 20 to 30 seconds in order to stretch the muscle.<br>- Do exercise 20 times. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Feeling a light stretch is normal, as long as there is no pain associated with it.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 6: PULLEY - SHOULDER ABDUCTION

| | |
|---|---|
|  **Start** |  **End** |

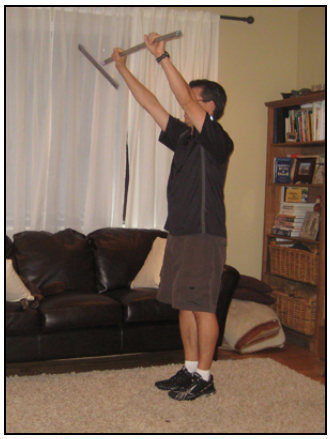
| | |
|---|---|
| **Purpose:** | To improve abduction of the shoulder joint, lubricate the shoulder joint and improve the range of motion in the shoulder joint. |
| **Starting Position:** | Sit tall in a chair, each hand on one of the pulley handles. The non-injured shoulder is bent at the elbow with the arm of your injured shoulder straight, out to the side, and lower than your non-injured shoulder. |
| **How to Do the Exercise:** | 1. The injured arm is straight and at the side of the body (left). The non-injured shoulder is positioned to pull down (right).<br>2. Gently pull down on the pulley using your non-injured arm to lift your injured arm.<br>3. Lift the injured arm as high as you can. It should take two seconds to reach this point.<br>4. Hold your arm for one second at this top position.<br>5. Now lower your arm back to the start. This should take two seconds.<br>6. Repeat this exercise 10 times.<br>7. This exercise can be done every day. |
| **Progressions:** | - Hold injured arm at the top position for two seconds and progress to five seconds.<br>- If you feel a stretch in the shoulder muscles, you can hold the position for 20 to 30 seconds in order to stretch the muscle.<br>- Do exercise 20 times. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Feeling a light stretch is normal as long as there is no pain associated with it.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 7: PULLEY - INTERNAL ROTATION

| | |
|---|---|
|  **Start** |  **End** |

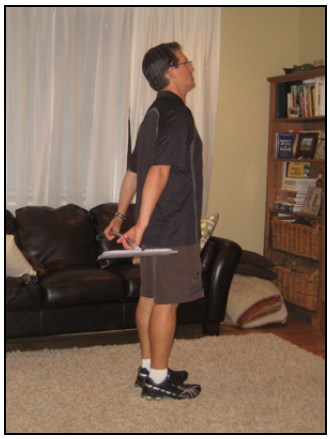
| | |
|---|---|
| **Purpose:** | To improve internal rotation of the shoulder joint, lubricate the shoulder joint and improve the range of motion in the shoulder joint. |
| **Starting Position:** | Stand in front of a door with each hand on one of the pulley handles. The non-injured arm holds the handle in front of the body, while the injured arm reaches behind your back to grasp the other handle. |
| **How to Do the Exercise:** | 1. Gently pull down on the pulley using your non-injured arm (right) to lift your injured arm (left) up your back.<br>2. Lift the injured arm as high as you can. It should take two seconds to reach this point.<br>3. Hold your arm for one second at this top position.<br>4. Now lower your arm back to the start. This should take two seconds.<br>5. Repeat this exercise 10 times.<br>6. This exercise can be done every day. |
| **Progressions:** | - Hold injured arm at the top position for two seconds and progress to five seconds.<br>- If you feel a stretch in the shoulder muscles, you can hold the position for 20 to 30 seconds in order to stretch the muscle.<br>- Do exercise 10 times. |
| **Contraindications & Common Mistakes:** | - If you are not able to get into the starting position without pain, do not do this exercise.<br>- Move your arm in a pain-free range. Do not push through the pain.<br>- Feeling a light stretch is normal as long as there is no pain associated with it.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 8: WAND - SHOULDER FLEXION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve flexion of the shoulder joint with an active range of motion exercise. |
| **Starting Position:** | Stand and hold a wand (broom, cane, stick) in your hands about shoulder width apart. |
| **How to Do the Exercise:** | 1. Use both arms to lift the cane as high up as you can. It should take two seconds to complete this movement.<br>2. Hold your arm in this position for one second.<br>3. Return your arms to the starting position. This should take two seconds.<br>4. Repeat five times.<br>5. This exercise can be done every day.<br>6. This exercise can also be done in supine (lying on your back). |
| **Progressions:** | - Increase the hold at the top to three to ten seconds.<br>- Do exercise 10 times. |
| **Contraindications & Common Mistakes:** | - Anyone with shoulder impingement should remain within a range of motion that does not lead to a pinching feeling.<br>- Avoid arching in the lower back in order to get full shoulder flexion.<br>- Move your arm in a pain-free range. Do not push through the pain. |

## EXERCISE 9: WAND - SHOULDER EXTENSION

| | |
|---|---|
|  **Start** |  **End** |

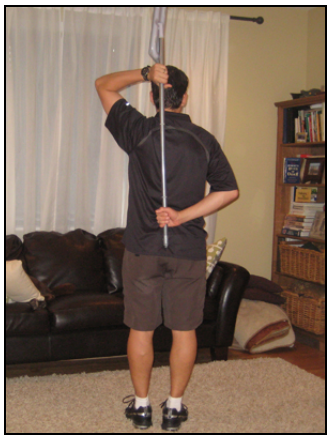
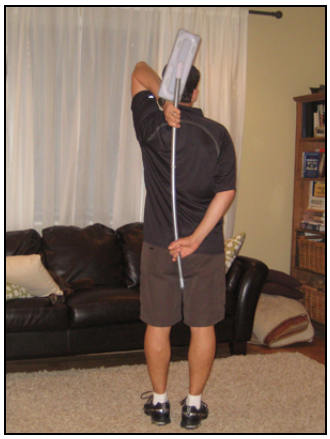
| | |
|---|---|
| **Purpose:** | To improve extension of the shoulder joint with an active range of motion exercise. |
| **Starting Position:** | Stand and hold a wand (broom, cane, stick) in your hands about shoulder width apart, behind your back with arms straight. |
| **How to Do the Exercise:** | 1. Use both arms to lift the cane away from you as far as you can. It should take one second to complete this movement.<br>2. Hold your arms in this position for one second.<br>3. Return your arms to the starting position. This should take one second.<br>4. Repeat five times.<br>5. This exercise can be done every day. |
| **Progressions:** | - Increase the hold at the end range to three seconds.<br>- Do exercise 10 times. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain. |

## EXERCISE 10: WAND - EXTERNAL & INTERNAL ROTATION

| | | |
|---|---|---|
|  |  |  |
| **Start** | **Middle** | **End** |

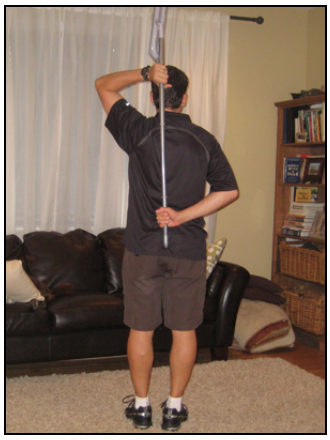
| | |
|---|---|
| **Purpose:** | To improve internal and external rotation of the shoulder joint with an active range of motion exercise. |
| **Starting Position:** | Stand and hold a wand in your hands about shoulder width apart, with elbows bent. |
| **How to Do the Exercise:** | 1. Keep elbows tight against the body and use both hands to move the wand to the right as far as you can. It should take one second to complete this movement.<br>2. Hold your arm in this position for one second.<br>3. Now move both hands to the other side (left). It should take two seconds to complete this movement.<br>4. Hold your arm in this position for one second.<br>5. Return your arms to the starting position. This should take one second.<br>6. Repeat five times on each side.<br>7. This exercise can be done every day.<br>8. This exercise can also be done in supine (lying on your back). |
| **Progressions:** | - Do exercise 10 times. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain. |

## EXERCISE 11: WAND PULL DOWN - EXTERNAL ROTATION

| | |
|---|---|
|  <br>**Start** |  <br>**End** |

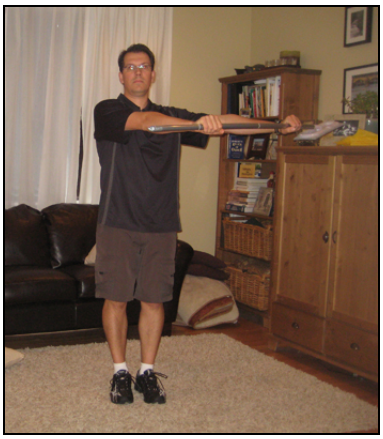
| | |
|---|---|
| **Purpose:** | To improve external rotation of the left shoulder joint and internal rotation of the right shoulder joint with an active range of motion exercise, and stretching the triceps and latissiumus dorsi. |
| **Starting Position:** | Stand and hold a wand at your back, with one hand grasping the wand behind the neck and the other hand holding it below and behind the pelvis. |
| **How to Do the Exercise:** | 1. Use the bottom hand (right) to move the wand and the top hand downwards. It should take one second to complete this movement.<br>2. Hold your arm in this position for one second.<br>3. Now move both hands to the starting position. It should take one second to complete this movement.<br>4. Hold your arms in this position for one second.<br>5. Repeat 5 times<br>6. This exercise can be done every day. |
| **Progressions:** | - Do exercise 10 times. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- Those with anterior shoulder instability should be cautious with this exercise.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 12: WAND PULL UP - INTERNAL ROTATION

| | |
|---|---|
|  **Start** |  **End** |

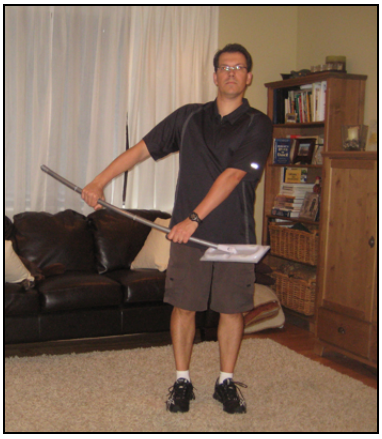
| | |
|---|---|
| **Purpose:** | To improve internal rotation of the right shoulder joint and external rotation of the left shoulder joint with an active range of motion exercise and stretching the deltoid and rotator cuff. |
| **Starting Position:** | Stand, holding a wand at your back, with one hand grasping the wand behind the neck and the other hand holding below at the lower back. |
| **How to Do the Exercise:** | 1. Use the top hand to move the wand and the bottom hand upwards. It should take one second to complete this movement.<br>2. Hold your arm in this position for one second.<br>3. Return your arms to the starting position. This should take one second.<br>4. Repeat five times.<br>5. This exercise can be done every day. |
| **Progressions:** | - Do exercise 10 times. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- Those with posterior shoulder instability should be cautious with this exercise.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 13: WAND – HORIZONTAL ABDUCTION AND ADDUCTION

| | | |
|---|---|---|
|  |  |  |
| **Start** | **Middle** | **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction and adduction of the shoulder joint with an active range of motion exercise plus stretch the triceps, posterior deltoid and rhomboids. |
| **Starting Position:** | Stand and hold a wand in your hands about shoulder width apart, with elbows straight. |
| **How to Do the Exercise:** | 1. Use both hands to move the wand to the left as far as you can. It should take one second to complete this movement.<br>2. Hold your arm in this position for one second.<br>3. Now move both hands to the other side. It should take two seconds to complete this movement.<br>4. Hold your arm in this position for one second.<br>5. Return your arms to the starting position. This should take two seconds.<br>6. Repeat five times.<br>7. This exercise can be done every day. |
| **Progressions:** | - Do exercise 10 times. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain. |

## EXERCISE 14: WAND - ABDUCTION AND ADDUCTION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve abduction and adduction of the shoulder joint with an active range of motion exercise. |
| **Starting Position:** | Stand and hold a wand in your hands about shoulder width apart, with elbows straight and in front of your body. |
| **How to Do the Exercise:** | 1. Use both hands to move the wand to the right as far as you can. It should take one second to complete this movement.<br>2. Hold your arms in this position for one second.<br>3. Return your arms to the starting position. This should take one second.<br>4. Repeat five times on each side.<br>5. This exercise can be done every day. |
| **Progressions:** | - Do exercise 10 times. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- If you feel pinching in the shoulder when doing this exercise, grab the wand with the hands turned out and the thumbs out. |

## EXERCISE 15: SHOULDER FLEXION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve flexion range of motion of the shoulder joint; to activate the deltoid, supraspinatus, and scapular stabilizing muscles. |
| **Starting Position:** | Stand with your arms to your side and legs hip width apart. |
| **How to Do the Exercise:** | 1. Raise your arm toward the ceiling as far as you can while keeping your elbow straight. It should take two seconds to reach the top of the movement.<br>2. Hold your arm at the top of the movement for one second.<br>3. Return your arm to the starting position. It should take two seconds to do this.<br>4. Repeat five times.<br>5. This exercise can be done every day. |
| **Progressions:** | - Increase the hold at the end range to three seconds.<br>- Do exercise 10 times.<br>- Add dumbbells and resistive tubing to the exercise. |
| **Contraindications & Common Mistakes:** | - Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Avoid any arching in the lower back in order to get full flexion.<br>- Move your arm in a pain-free range. Do not push through the pain.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 16: SHOULDER EXTENSION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve extension range of motion of the shoulder joint to activate latissimus dorsi and scapular stabilizing muscles. |
| **Starting Position:** | Stand with your arms to your sides and legs hip width apart. |
| **How to Do the Exercise:** | 1. Move your arm back behind you as far as you can while keeping your elbow straight. It should take two seconds to reach the top of the movement.<br>2. Hold your arm at the top of the movement for one second.<br>3. Return your arm to the starting position. It should take two seconds to do this.<br>4. Repeat five times.<br>5. This exercise can be done every day. |
| **Progressions:** | - Increase the hold at the end range to three seconds.<br>- Do exercise 10 times.<br>- Add dumbbells and resistive tubing to the exercise. |
| **Contraindications & Common Mistakes:** | - Limit shoulder extension to 45 degrees in order to decrease excessive stress on the rotator cuff.<br>- Avoid bending forward in order to get greater shoulder extension.<br>- Move your arm in a pain-free range. Do not push through the pain.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 17: SHOULDER ABDUCTION

| | | |
|---|---|---|
|  |  |  |
| **Start** | **Middle** | **End** |

| | |
|---|---|
| **Purpose:** | To improve abduction of the shoulder joint in order to activate the deltoid, supraspinatus, and scapular stabilizing muscles. |
| **Starting Position:** | Stand with your arms to your side and legs hip width apart. |
| **How to Do the Exercise:** | 1. Move your left arm out to your side while keeping your elbow straight and palm down. It should take two seconds to move your arm to shoulder height.<br>2. If you are able to move your arm further, rotate your arm so the palm is up and continue to move your arm upward. It should take two seconds to move your arm from shoulder height to the top position.<br>3. Hold your arm at the top of the movement for one second.<br>4. Return your arm to the starting position. It should take two seconds to reach shoulder height and another two seconds to reach your side.<br>5. Repeat five times.<br>6. This exercise can be done every day. |
| **Progressions:** | - Increase the hold at the top to three seconds.<br>- Do exercise 10 times.<br>- Add dumbbells and resistive tubing to the exercise. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- Anyone with shoulder impingement should remain within a range of motion that does not lead to a pinching feeling.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 18: SHOULDER ADDUCTION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve adduction of the shoulder joint in order to activate the pectoralis major and latissimus dorsi. |
| **Starting Position:** | Stand with your arms to your sides and legs hip width apart. |
| **How to Do the Exercise:** | 1. Move your left arm from your side towards the middle of your body while keeping your elbow straight. It should take two seconds to complete this movement.<br>2. Hold your arm in this position for one second.<br>3. Return your arm to the starting position. This should take two seconds.<br>4. Repeat five times.<br>5. This exercise can be done every day. |
| **Progressions:** | - Increase the hold at the end range to three seconds.<br>- Do exercise 10 times. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- Anyone with AC joint injury or pain should remain within a range of motion that is pain free.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 19: SHOULDER INTERNAL ROTATION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve internal rotation of the shoulder joint and stretch the rotator cuff. |
| **Starting Position:** | Stand with your left arm behind your back, right arm at your side and legs hip width apart. |
| **How to Do the Exercise:** | 1. Move your left arm from behind your back at your hip level towards your opposite (right) shoulder blade. It should take two seconds to complete this movement.<br>2. Hold your arm in this position for one second.<br>3. Return to your arm to the starting position. This movement should take two seconds.<br>4. Repeat five times.<br>5. This exercise can be done every day. |
| **Progressions:** | - Increase the hold at the top to three seconds.<br>- Do exercise 10 times.<br>- If you feel a stretch, you can hold the end position for 20 to 30 seconds in order to stretch the muscle. |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- Those with anterior and posterior shoulder instability should be cautious with this exercise.<br>- This exercise should be performed only by the injured shoulder as there will be little or no benefit to the non-injured shoulder. |

## EXERCISE 20: SHOULDER EXTERNAL ROTATION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve external rotation of the shoulder joint, activate the scapular stabilizing muscles, and stretch latissimus dorsi, triceps and pectoralis major |
| **Starting Position:** | Stand with your right arm behind your head and your left arm at your side, and legs hip width apart. |
| **How to Do the Exercise:** | 1. Move your right arm from behind your head towards your opposite (left) shoulder blade. It should take two seconds to complete this movement.<br>2. Hold your arm in this position for one second.<br>3. Return your arm to the starting position. This movement should take two seconds.<br>4. Repeat five times.<br>5. This exercise can be done every day. |
| **Progressions:** | - Increase the hold at the top to three seconds.<br>- Do exercise 10 times.<br>- If you feel a stretch, you can hold the end position for 20 to 30 seconds in order stretch the muscle |
| **Contraindications & Common Mistakes:** | - Move your arm in a pain-free range. Do not push through the pain.<br>- Those with anterior shoulder instability should be cautious with this exercise.<br>- Any one with shoulder impingement should remain within a range of motion that does not lead to a pinching feeling. |

## Notes on Range of Motion Exercises

**Your client may have other range of motion exercises that their doctor, physical therapist, or health care providers have recommended.**

Your client may be given other range of motion exercises prior to seeing you. Often, these are passive range of motion exercises, i.e., exercises where the client uses the non-injured arm to take the injured arm through shoulder ranges of motion. Passive range of motion exercises are not included in this manual. The next step for your client is to work towards active range of motion exercises, i.e., using the shoulder muscles to move the injured shoulder. This manual includes active range of motion exercises.

**Should your client do each exercise with each arm?**

With range of motion exercises, your client does not need to perform every exercise with each shoulder. If the non-injured shoulder has full range of motion, it is not necessary. Your client may perform the exercise on both sides if doing it on the non-injured side gives the injured side a rest, so it can recover from the exercise performed. A second reason for exercising both sides is that there is bilateral learning between the two sides of the body. The body feels and sees how the non-injured side does the movement, and it works to transfer that movement pattern to the injured side.

**Where can your client get a pulley that attaches to the door?**

Any medical supply store and some larger pharmacies will have them.

## Stretching and Flexibility Exercises

### EXERCISE 1: POSTERIOR STRETCH

| | |
|---|---|
|  **Start** |  **End** |

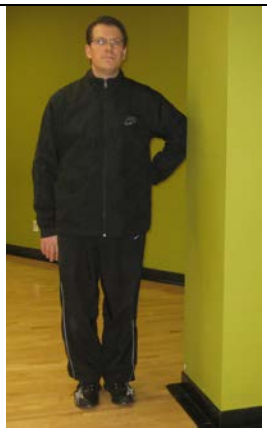
| | |
|---|---|
| **Purpose:** | To improve horizontal adduction of the shoulder joint and to stretch deltoid, rhomboids, middle trapezius, and posterior capsule. |
| **Starting Position:** | Stand with your arms to your side and legs hip width apart. |
| **How to Do the Exercise:** | 1. Move your right arm across your chest at a height just below the shoulder.<br>2. Move your left arm across your body to your right elbow and lightly pull your right arm to intensify the stretch.<br>3. You should feel a light stretch in the back of your shoulder.<br>4. Hold the stretch in your left arm for 30 seconds.<br>5. Return your arm to the starting position.<br>6. Perform the exercise on the left arm.<br>7. Repeat two times on each side. |
| **Progressions:** | - If you are not feeling a stretch, you can move the arm up and down until you feel a light stretch in the back of your shoulder. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- Anyone with AC joint injury or pain should remain within a range of motion that is pain free. |

## EXERCISE 2: POSTERIOR SHOULDER II STRETCH

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve internal rotation of the shoulder joint and stretch supraspinatus, infraspinatus, teres minor, deltoid, and the posterior capsule. |
| **Starting Position:** | Stand with your left arm behind your back, left elbow against the corner of a wall and legs hip width apart. |
| **How to Do the Exercise:** | 1. Step back with your left leg and let the wall lightly push the left elbow forward.<br>2. You should feel a light stretch in the back of your left shoulder blade.<br>3. Hold the stretch for 30 seconds.<br>4. Return your arm to the starting position.<br>5. Perform the exercise on the other arm.<br>6. Repeat two times on each side. |
| **Progressions:** | - If you are not feeling the stretch, move the hand behind your back towards the opposite shoulder blade. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- Those with anterior and posterior shoulder instability should be cautious with this exercise.<br>- The stretch should be light. If you have to force the elbow forward to feel the stretch, skip this exercise. |

## EXERCISE 3: ANTERIOR SHOULDER STRETCH

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve internal rotation of the shoulder joint, and to stretch supraspinatus, anterior deltoid and pectoralis major. |
| **Starting Position:** | Stand with your left arm behind your back, left elbow against the corner of a wall and legs hip width apart. |
| **How to Do the Exercise:** | 1. Step forward with your left leg and let the wall lightly push the left elbow back.<br>2. You should feel a light stretch in the front of your left shoulder.<br>3. Hold the stretch for 30 seconds.<br>4. Return your arm to the starting position.<br>5. Perform the exercise on the other arm.<br>6. Repeat two times on each side. |
| **Progressions:** | - If you are not feeling the stretch, move the hand behind your back towards the opposite shoulder blade. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- Those with anterior shoulder instability should be cautious with this exercise.<br>- The stretch should be light. If you have to force the elbow back to begin to feel the stretch, skip this exercise. |

## EXERCISE 4: SUPRASPINATUS STRETCH

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve internal rotation of the shoulder joint and stretch supraspinatus. |
| **Starting Position:** | Stand and place both of your hands on your hips. |
| **How to Do the Exercise:** | 1. Move both of your elbows forward.<br>2. You should feel a light stretch around the top of your shoulders.<br>3. Hold the stretch for 30 seconds.<br>4. Return your arms to the starting position.<br>5. Repeat 2 times. |
| **Progressions:** | - If you are not feeling the stretch, make sure you stand up tall and with good posture. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- Those with posterior shoulder instability should be cautious with this exercise.<br>- The stretch should be light. If you have to force the elbows forward to begin to feel the stretch, skip this exercise. |

## EXERCISE 5: DOORWAY STRETCH - ANTERIOR CAPSULE STRETCH

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve external rotation and horizontal extension of the shoulder joint by stretching pectoralis major, pectoralis minor, and the rotator cuff. |
| **Starting Position:** | Stand in a doorway or at the end of a wall, with your right forearm on the wall, elbow bent to 90 degrees, and elbow below shoulder height. |
| **How to Do the Exercise:** | 1. From the starting position, step through the doorway with your right leg.<br>2. You should feel a light stretch around the front of your shoulder.<br>3. Hold the stretch for 30 seconds.<br>4. Return to the starting position.<br>5. Repeat two times and switch sides. |
| **Progressions:** | - If you are not feeling the stretch, make sure you stand up tall and that your forearm is against the door frame. |
| **Contraindications & Common Mistakes:** | - Move to a point that is pain free. Do not push through the pain.<br>- Those with anterior shoulder instability should be cautious with this exercise.<br>- Do not arch your lower back. |

## EXERCISE 6: SUPERIOR CAPSULE STRETCH

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve adduction of the shoulder joint and stretch supraspinatus. |
| **Starting Position:** | Stand, bend the left elbow, and place a rolled up towel between your elbow and torso. |
| **How to Do the Exercise:** | 1. Reach with your right hand and grab your left elbow and use the right arm to pull the left elbow towards the body.<br>2. You should feel a light stretch around the top of your shoulder.<br>3. Hold the stretch for 30 seconds.<br>4. Return your right arm to the starting position.<br>5. Repeat two times. |
| **Progressions:** | - If you are not feeling the stretch, make sure you stand up tall and with good posture. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- The stretch should be light. If you have to force the elbow towards your body to feel the stretch, skip this exercise. |

## EXERCISE 7: TRICEPS STRETCH - INFERIOR CAPSULE STRETCH

| | | |
|---|---|---|
|  |  |  |
| **Start** | **End Anterior** | **End Posterior** |

| | |
|---|---|
| **Purpose:** | To improve flexion of the shoulder joint by stretching triceps. |
| **Starting Position:** | Stand and take your left hand and reach over your shoulder to touch your back. |
| **How to Do the Exercise:** | 1. Reach with your right hand and push your left elbow back.<br>2. You should feel a light stretch in the back of your left arm.<br>3. Hold the stretch for 30 seconds.<br>4. Return your arms to the starting position.<br>5. Repeat two times on each side. |
| **Progressions:** | - If you are not feeling the stretch, make sure you stand up tall and with good posture. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- Avoid any arching in the lower back or upper back (keep rib cage down) when attempting to move your elbow further back. |

## EXERCISE 8: WALL SHOULDER STRETCH

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction of the shoulder joint by stretching the anterior deltoid and pectoralis major. |
| **Starting Position:** | Place your right arm against the wall just below shoulder height. |
| **How to Do the Exercise:** | 1. Keep your right arm where it is and rotate your body further away from your right arm.<br>2. You should feel a light stretch in the front of your chest.<br>3. Hold the stretch for 30 seconds.<br>4. Return your arm to the starting position.<br>5. Repeat two times on each side. |
| **Progressions:** | - None. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- Those with anterior shoulder instability should be cautious with this exercise. |

## Notes on Stretching

### At what intensity should the shoulder stretches be performed?

The stretch should be light. Your client will get the greatest benefit from the stretch if it is light. Pain or discomfort should not be felt during the stretch. If the stretch is too strong, the muscle may not relax and allow the muscle to lengthen.

## Strengthening Exercises - Isometrics

### EXERCISE 1: SHOULDER FLEXION

**End**

| | |
|---|---|
| **Purpose:** | To improve shoulder flexion strength of the shoulder joint in a standing position by isometrically activating the deltoid and scapular stabilizing muscles. |
| **Starting Position:** | Stand with your right arm in 30 degrees of flexion in front of your body against a wall or another immovable object. |
| **How to Do the Exercise:** | 1. Press your right arm into the wall at 10% of your maximum strength for six seconds.<br>2. After the first repetition, keep the arm where it is but rest for one second.<br>3. Repeat six times.<br>4. Perform the exercise on the other arm. |
| **Progressions:** | - Progress to maximum flexion isometric exercise. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- Don't push at more than 10% of your maximum strength. You should be pushing lightly so the lower intensity muscle fibers are activated. |

## EXERCISE 2: SHOULDER EXTENSION

**End**

| | |
|---|---|
| **Purpose:** | To improve shoulder extension strength of the shoulder joint in a standing position by isometrically activating the latissimus dorsi muscle, long head of the triceps and scapular stabilizing muscles. |
| **Starting Position:** | Stand with your left arm in 30 degrees extension behind your body, elbow bent to 90 degrees and pushing against a wall or another immovable object. |
| **How to Do the Exercise:** | 1. Press your left arm into the wall at 10% of your maximum strength for six seconds.<br>2. After the first repetition of six seconds, keep the arm where it is but rest for one second.<br>3. Repeat six times.<br>4. Perform the exercise on the other arm. |
| **Progressions:** | - None |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- Don't push at more than 10% of your maximum strength. You should be pushing lightly so the lower intensity muscle fibers are activated. |

## EXERCISE 3: SHOULDER ABDUCTION

**End**

| | |
|---|---|
| **Purpose:** | To improve shoulder abduction strength of the shoulder joint in a standing position by isometrically activating the deltoid, supraspinatus, and scapular stabilizing muscles. |
| **Starting Position:** | Stand with your right arm in 30 degrees abduction to the side of your body against a wall or another immovable object. |
| **How to Do the Exercise:** | 1. Press the back of your left hand into the wall at 10% of your maximum strength for six seconds.<br>2. After the first repetition of six seconds, keep the arm where it is but rest for one second.<br>3. Repeat six times.<br>4. Perform the exercise on the other arm. |
| **Progressions:** | - Progress to maximum abduction isometric exercise. |
| **Contraindications & Common Mistakes:** | - Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Don't push at more than 10% of your maximum strength to begin. You should be pushing lightly so the lower intensity muscle fibers are activated. |

## EXERCISE 4: SHOULDER ADDUCTION

**End**

| | |
|---|---|
| **Purpose:** | To improve adduction strength of the shoulder joint in a standing position by isometrically activating the pectoralis major, and scapular stabilizing muscles. |
| **Starting Position:** | Stand with your right arm in 30 degrees flexion against a wall or another immovable object. |
| **How to Do the Exercise:** | 1. Press the palm of your right hand into the wall at 10% of your maximum strength for six seconds.<br>2. After the first repetition of six seconds, keep the arm where it is but rest for one second.<br>3. Repeat six times.<br>4. Perform the exercise on the other arm. |
| **Progressions:** | - None |
| **Contraindications & Common Mistakes:** | - Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Don't push at more than 10% of your maximum strength. You should be pushing lightly so the lower intensity muscle fibers are activated. |

## EXERCISE 5: INTERNAL ROTATION

**End**

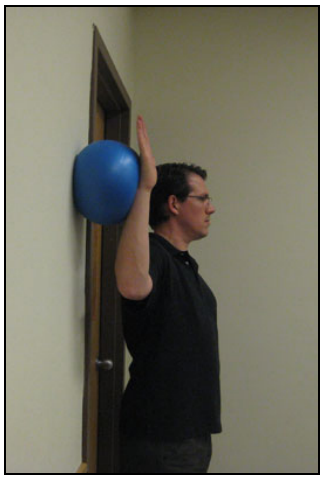
| | |
|---|---|
| **Purpose:** | To improve shoulder internal rotation strength of the shoulder joint in a standing position by isometrically activating the subscapularis, latissimus dorsi muscle, and scapular stabilizing muscles. |
| **Starting Position:** | Stand with your left elbow at your side and place the palm of your left hand against a wall or another immovable object. |
| **How to Do the Exercise:** | 1. Press the inside of your left wrist into the wall focusing on rotating in at your shoulder. Press 10% of your maximum strength for six seconds.<br>2. After the first repetition of six seconds, keep the arm where it is but rest for one second.<br>3. Repeat six times.<br>4. Perform the exercise on the other arm. |
| **Progressions:** | - None |
| **Contraindications & Common Mistakes:** | - Don't push at more than 10% of your maximum strength. You should be pushing lightly so the lower intensity muscle fibers are activated. |

## EXERCISE 6: EXTERNAL ROTATION

**End**

| | |
|---|---|
| **Purpose:** | To improve shoulder external rotation strength of the shoulder joint in a standing position by isometrically activating the infraspinatus, teres minor muscle, and scapular stabilizing muscles. |
| **Starting Position:** | Stand with your right arm at your side and the back of your right hand and forearm against a wall or another immovable object. |
| **How to Do the Exercise:** | 1. Press your right wrist against the wall while rotating out at your shoulder, using 10% of your maximum strength for six seconds.<br>2. After the first repetition of six seconds, keep the arm where it is but rest for one second.<br>3. Repeat six times.<br>4. Perform the exercise on the other arm. |
| **Progressions:** | - Progress to maximum external rotation isometric exercise. |
| **Contraindications & Common Mistakes:** | - Don't push at more than 10% of your maximum strength. You should be pushing lightly so the lower intensity muscle fibers are activated.<br>- Focus on moving the whole arm out to the side compared to rotating the shoulder out. |

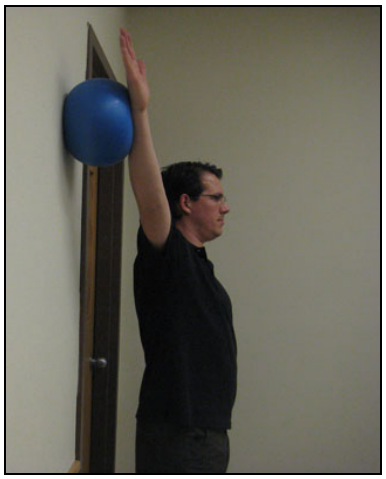
## EXERCISE 7: Elbow Below Shoulder Into Wall



**End**

| | |
|---|---|
| **Purpose:** | To improve the isometric activation and endurance of the scapular stabilizing muscles with an emphasis on middle trapezius. |
| **Starting Position:** | In a standing position about 1 foot from the wall, move your arm to the side until it is below shoulder height and bend the elbow to 90 degrees. Now place a soft plastic Pilates or toy ball between your forearm and the wall. |
| **How to Do the Exercise:** | 1. Move your arm back, pressing into the ball at 10 percent of your maximum strength for 6 seconds, focusing on the muscle around your shoulder blade to perform the movement.<br>2. Relax for 1 second and then move into the next repetition.<br>3. Perform 6 repetitions. |
| **Progressions:** | - None |
| **Contraindications & Common Mistakes:** | - Pressing too hard into the ball leads to activating the wrong muscles. It is important to only press 10% of your maximal strength into the ball.<br>- Focus on moving the whole arm out to the side compared to rotating the shoulder out. |

## EXERCISE 8: Y into Ball



**End**

| | |
|---|---|
| **Purpose:** | To improve the isometric activation and endurance of the scapular stabilizing muscles and external rotators of the shoulder with an emphasis on lower trapezius. |
| **Starting Position:** | In a standing position about 1 foot from the wall, move your arm to the side until it is 120 degrees out to the side (abduction). Now place a soft plastic Pilates or toy ball between your forearm and the wall. |
| **How to Do the Exercise:** | 1. Move your arm back, pressing into the ball at 10 percent of your maximum strength for 6 seconds, focusing on the muscle around your shoulder blade to perform the movement.<br>2. Relax for 1 second and then move into the next repetition.<br>3. Perform 6 repetitions. |
| **Progressions:** | - None |
| **Contraindications & Common Mistakes:** | - Pressing too hard into the ball leads to activating the wrong muscles. It is important to only press 10% of your maximal strength into the ball. |

## Notes on Strengthening Exercises – Isometrics

### What is a maximum isometric exercise?

Some of the isometric exercises progress from using 10% of maximum strength to maximum strength. Maximum strength is when the client performs the exercise applying 100% maximal force with their arm with pain-free range of motion. The maximum isometric exercises are performed to activate the scapular stabilizing muscles at a higher level.

### What are lower intensity muscle fibers?

Performing a muscle contraction at a lower muscle contraction level (10% of maximum) targets the slow twitch muscles. Slow twitch muscles are important for stabilizing and protecting a joint.

### What if I perform the exercises at a level greater than 10% of maximal strength?

If you perform the exercise at a level of greater than 10% of maximal strength, you end up focusing on the fast twitch muscles. In most cases with a shoulder injury, the muscles that need to be worked on are slow twitch muscles, like the rotator cuff and scapular stabilization muscles.

### How important is breathing when doing isometrics?

It is important to breathe normally when performing isometric exercises. If you hold your breath, it increases your blood pressure which can be an issue for some people. Holding your breath is not the way we move our bodies throughout the day. If you take too deep of a breath, your chest position changes, which then changes the position of your shoulder and affects the muscles targeted during the exercise.

## Strengthening Exercises – Body weight

### EXERCISE 1: Four Point Arm To Side Leading with Pinkie

**Start**

**End**

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in four point position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the rhomboids while the opposite shoulder has its scapular stabilizers activated and the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a four point position (hands under shoulder and knees under hips). Make sure to tuck chin, set your body in perfect alignment, set your shoulder blades and brace your abdominals. |
| **How to Do the Exercise:** | 1. Separate your hands and move your right arm out to the side while keeping it below shoulder height. The movement is led by the pinkie of your hand.<br>2. It should take two seconds to reach the end position. Hold the end position for a second and then take two seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise and then switch to the left. |
| **Progressions:** | - Add resistive tubing or dumbbells.<br>- Progress to two sets and then three sets. |
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people. |

## EXERCISE 2: Four Point Arm To Side Leading with Thumb

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in a four point position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the middle trapezius and posterior rotator cuff muscles, while the opposite shoulder has its scapular stabilizers activated and the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a four point position (hands under shoulder and knees under hips). Make sure to tuck chin, set your body in perfect alignment, set your shoulder blades and brace your abdominals. |
| **How to Do the Exercise:** | 1. Separate your hands and move your right arm out to the side while keeping it below shoulder height. The movement is led by your thumb.<br>2. It should take two seconds to reach the end position. Hold the end position for a second and then take two seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise and then switch to the left. |
| **Progressions:** | - Add resistive tubing or dumbbells.<br>- Progress to two sets and then three sets. |
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Arching at the lower back to get more range of motion. The back is upright and not moving during the exercise. |

## EXERCISE 3: Four Point with ½ Y

**Start**

**End**

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in a four point position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and trapezius muscles. This exercise emphasizes the lower trapezius, while the opposite shoulder has its scapular stabilizers activated and the core is active and working to prevent trunk rotation. |
| **Starting Position:** | In a four point position (hands under shoulder and knees under hips). Make sure to tuck chin, set your body in perfect alignment, set your shoulder blades and brace your abdominals. |
| **How to Do the Exercise:** | 1. The right arm is straight and rotator out (externally rotated). Your hand is in a fist and your arm is at a 120 degree angle from your body.<br>2. In a controlled and slow manner, move your right arm to about a 45 degree angle (120 degrees of abduction) until it is slightly behind the right shoulder. In the end position, the elbow will be just below the shoulder and the hand above the shoulder.<br>3. It should take two seconds to reach the end position. Hold the end position for a second and then take two seconds to return back to the start position.<br>4. Rest for 1 second and move into the second repetition.<br>5. Perform 12 repetitions of the exercise and then switch to the left hand. |
| **Progressions:** | - Add resistive tubing or dumbbells.<br>- Progress to two sets and then three sets. |
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people. |

## EXERCISE 4: Four Point with ½ W

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in a four point position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the middle trapezius, while the opposite shoulder has its scapular stabilizers activated and the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a four point position (hands under shoulders and knees under hips) with the elbow bent to 25 degrees. Make sure to tuck chin, set your body in perfect alignment, set your shoulder blades and brace your abdominals. |
| **How to Do the Exercise:** | 1. In a controlled and slow manner, move your right arm out to the side in a horizontal abduction (extension) movement until it is slightly behind the right shoulder. In the end position the elbow will be just below the shoulder and the hand above the shoulder.<br>2. It should take two seconds to reach the end position. Hold the end position for a second and then take two seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise and then switch to the left hand. |
| **Progressions:** | - Add resistive tubing or dumbbells.<br>- Progress to two sets and then three sets. |
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people. |

## Notes on Strengthening Exercises – Body weight

### What is a concentric contraction?

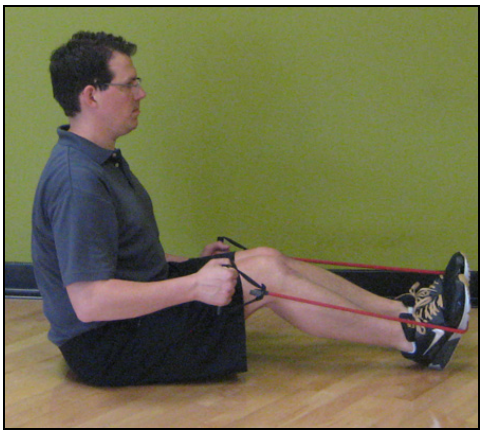
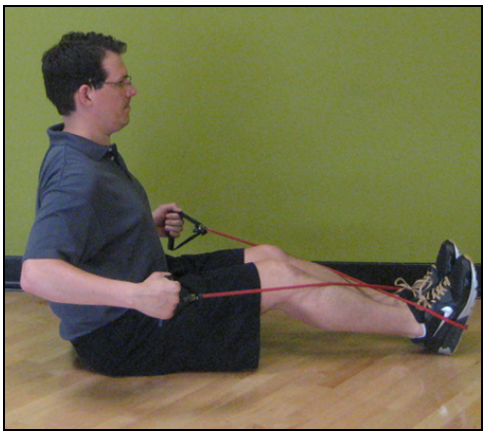
This is when the muscle shortens during a muscle contraction.

### What is an eccentric contraction?

This is when the muscle is trying to shorten but the resistance to the muscle is causing the muscle to lengthen.

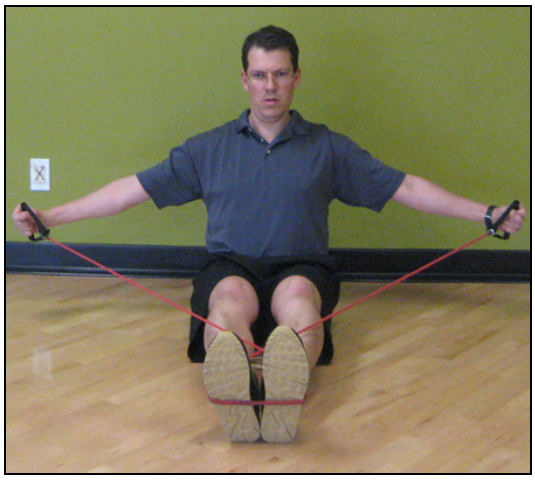
## Strengthening Exercises - Tubing

### EXERCISE 1: Tubing Row

| | |
|---|---|
|  **Start** |  **End** |

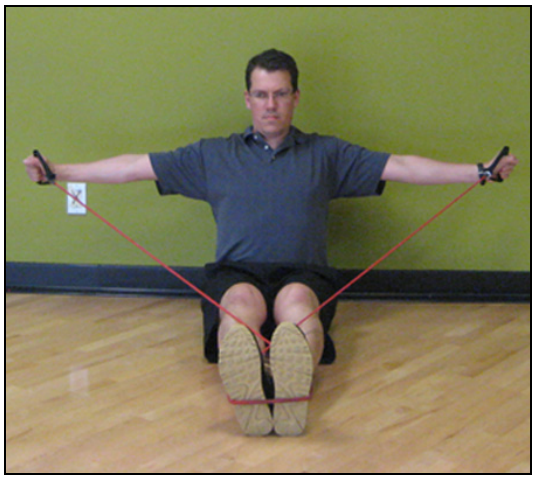
| | |
|---|---|
| **Purpose:** | To improve shoulder extension strength of the shoulder joint and scapular retraction in a sitting position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, latissimus dorsi, rotator cuff and middle trapezius muscles. |
| **Starting Position:** | In a sitting position with tubing looped around your feet and tubing handles in your hands. |
| **How to Do the Exercise:** | 1. Pull back on the tubing and move the elbows just past the shoulders, squeezing the shoulder blades together.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise. |
| **Progressions:** | - Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Shrugging up in the shoulder focuses on the upper trapezius which is overactive in most people. Relax your shoulders and focus on the muscle in the back of the shoulder blades.<br>- The elbows are slightly bent and lead the movement, not the hands. It is like your elbows are pulling your shoulders back.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 2: Low Tubing "T" Row

| | |
|---|---|
|  **Start** |  **End** |

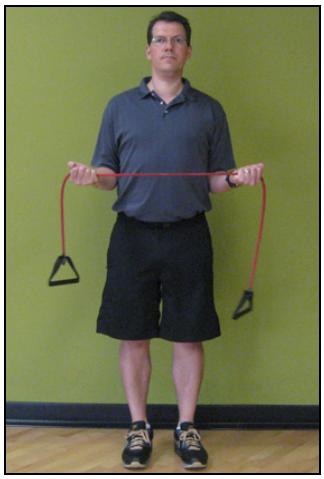
| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in sitting position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, rotator cuff and middle trapezius muscles. With the arms further away from the body, there is an increase in the emphasis on the rotator cuff. |
| **Starting Position:** | In a sitting position with tubing looped around your feet and tubing handles in your hands. |
| **How to Do the Exercise:** | 1. Separate your hands by squeezing your shoulder blades towards your spine and moving your arms out to the side while still keeping your arms well below shoulder height.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise. |
| **Progressions:** | - Increase the resistive tubing resistance.<br>- Progress to two sets and then three sets. |
| **Contraindications & Common Mistakes:** | - Shrugging up in the shoulder. Relax your shoulders and focus on the muscle in the back of the shoulder blades.<br>- The elbows are slightly bent and lead the movement, not the hands. It is like your elbows are pulling your shoulders back.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 3: High Tubing "T" Row

| | |
|---|---|
|  |  |
| **Start** | **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in sitting position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, rotator cuff and middle trapezius muscles. This exercise puts greater emphasis on the rhomboids. With the arms further away from the body, there is greater emphasis on the rotator cuff. |
| **Starting Position:** | In a sitting position with tubing looped around your feet and tubing handles in your hands. |
| **How to Do the Exercise:** | 1. Separate your hands and move your arms out to the side while keeping your arms below shoulder height.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise. |
| **Progressions:** | - Increase the resistive tubing resistance.<br>- Progress to two sets and then three sets. |
| **Contraindications & Common Mistakes:** | - Shrugging up in the shoulder puts emphasis on the upper trapezius which is overactive in most people. Relax your shoulders and focus on the muscles in the back of the shoulder blades.<br>- Let the elbows lead the movement and not the hands. It is like your elbows are pulling your shoulders back.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 4: Standing Thumbs Out to the Side

| | |
|---|---|
|  **Start** |  **End** |

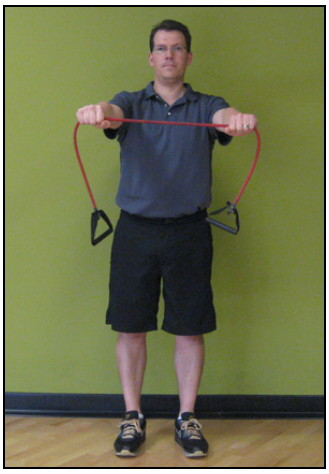
| | |
|---|---|
| **Purpose:** | To improve external rotation strength of the shoulder joint in standing position by concentrically and eccentrically strengthening the rotator cuff muscles. |
| **Starting Position:** | In a standing position with tubing in your hands, palms facing up, elbows bent and at your side. |
| **How to Do the Exercise:** | 1. Separate your hands focusing on rotating out with your shoulders.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to two sets and then three sets. |
| **Contraindications & Common Mistakes:** | - Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Do not straighten the elbows, as this leads to the triceps compensating.<br>- Ensure your elbows are tight against your body. |

## EXERCISE 5: Standing Pinkie Out to the Side

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve external rotation strength of the shoulder joint in standing position by concentrically and eccentrically strengthening the rotator cuff muscles. With the palms down, support from the wrist is decreased and the rotator cuff is more challenged. |
| **Starting Position:** | In a standing position with tubing in your hands, palms facing down, elbows bent and at your side. |
| **How to Do the Exercise:** | 1. Separate your hands focusing on rotating out with your shoulders.<br>2. It should take two seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to two sets and then three sets. |
| **Contraindications & Common Mistakes:** | - Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Do not straighten the elbows, as this leads to the triceps compensating.<br>- Ensure your elbows are tight against your body |

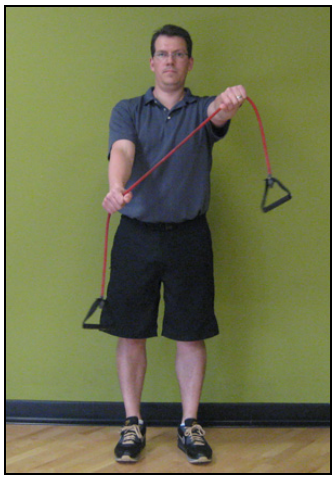
## EXERCISE 6: Open Up with Palms Down

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in standing position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, rotator cuff and middle trapezius muscles. This exercise emphasizes the rhomboids. |
| **Starting Position:** | In a standing position with tubing in your hands, arms just below shoulder height and palms down. |
| **How to Do the Exercise:** | 1. Separate your hands and move your arms out to the side while still keeping your arms below shoulder height.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

## EXERCISE 7: Low Diagonal Tubing with Palms Down



**Start**

**End**

| | |
|---|---|
| **Purpose:** | To improve shoulder extension strength of the shoulder joint at varying degrees of shoulder flexion in standing position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, latissimus dorsi, rotator cuff and scapular stabilizers. When the arm is overhead the emphasis is the scapular stabilizers while when the arm is below shoulder height the focus is rhomboids and latissimus dorsi. |
| **Starting Position:** | In a standing position with tubing in your hands, one arm just below shoulder height, the other arm below shoulder height and palms down. |
| **How to Do the Exercise:** | 1. Separate your hands and move your arms out to the side while still keeping one arm just below shoulder height and the other arm just above shoulder height.<br>2. It should take two seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise.<br>5. Then switch sides. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

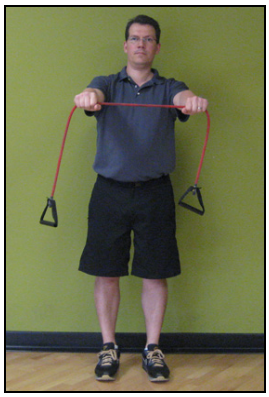
## EXERCISE 8: High Diagonal Tubing with Palms Down

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder extension strength of the shoulder joint at varying degrees of shoulder flexion in standing position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, latissimus dorsi, rotator cuff and scapular stabilizers. When the arm is overhead the emphasis is the scapular stabilizers while when the arm is below shoulder height the focus is rhomboids and latissimus dorsi. |
| **Starting Position:** | In a standing position with tubing in your hands, one arm just below shoulder height, the other arm below shoulder height and palms down. |
| **How to Do the Exercise:** | 1. Separate your hands, moving your arms across your body at a 45 degree angle so one arm is well above the shoulder while the other is below.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise.<br>5. Switch sides. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is over active in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

## EXERCISE 9: Three Way

| | | |
|---|---|---|
|  **Start 1** |  **End 1** |  **Start 2** |
|  **End 2** |  **Start 3** |  **End 3** |

| | |
|---|---|
| **Purpose:** | To improve shoulder extension strength of the shoulder joint at varying degrees of shoulder flexion in standing position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, latissimus dorsi and scapular stabilizers. When the arm is overhead the emphasis is the scapular stabilizers while when the arm is below shoulder height the focus is rhomboids and latissimus dorsi. |
| **Starting Position:** | In a standing position with tubing in your hands, arms just below shoulder height and palms down. |

| | |
|---|---|
| **How to Do the Exercise:** | 1. Separate your hands and move your arms out to the sides while keeping your arms below shoulder height.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second.<br>4. Move your hands so one arm is just above the shoulder and the other just below. Separate your hands and move them back so your arms move at a 45 degree angle. Stop moving your hands when they become in line with your shoulders.<br>5. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>6. Switch which arm is above and below the shoulder. Perform the movement again.<br>7. Perform 12 repetitions of the exercise. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance<br>- Perform the exercise with the palms up.<br>- Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Arching at the lower back to get more range of motion. The back should be upright and not moving during the exercise.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

## EXERCISE 10: Open Up with Palms Up

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in standing position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the middle trapezius. |
| **Starting Position:** | In a standing position with tubing in your hands, arms just below shoulder height and your arms rotated out (90 degrees external rotation) so thumbs are pointing away from each other. |
| **How to Do the Exercise:** | 1. Separate your hands and move your arms out to the sides while keeping your arms below shoulder height.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

## EXERCISE 11: Low Diagonal with Palms Up

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in standing position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the middle trapezius. |
| **Starting Position:** | In a standing position with tubing in your hands, arms just below shoulder height and your arms rotated out (90 degrees external rotation) so thumbs are pointing away from each other. |
| **How to Do the Exercise:** | 1. Separate your hands and move your arms out to the sides while keeping your arms below shoulder height.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise.<br>5. Switch sides. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

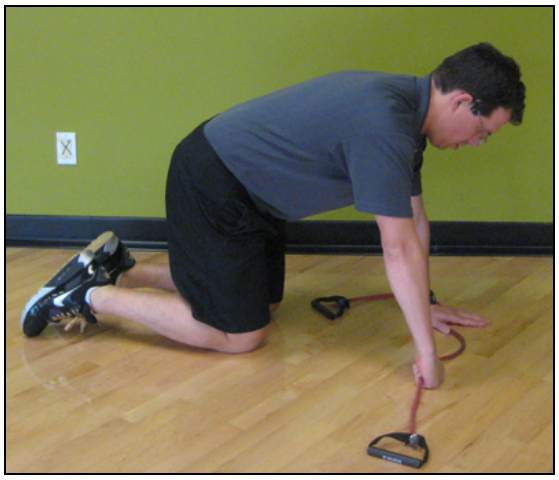
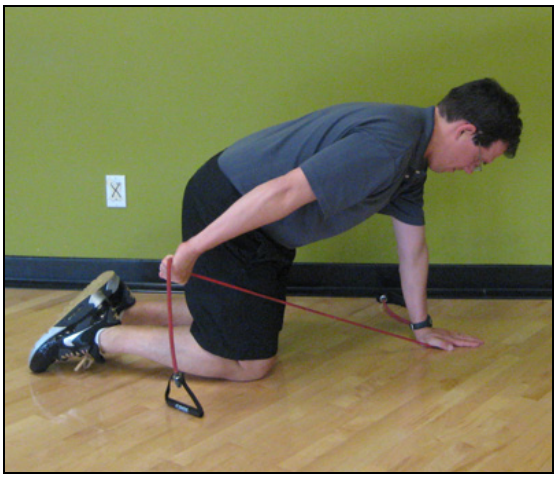
## EXERCISE 12: High Diagonal Tubing with Palms Up

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in standing position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the middle trapezius. |
| **Starting Position:** | In a standing position with tubing in your hands, arms just below shoulder height and your arms rotated out (90 degrees external rotation) so thumbs are pointing away from each other. |
| **How to Do the Exercise:** | 1. Separate your hands and move your arms out to the sides.<br>2. It should take two seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise.<br>5. Switch sides. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

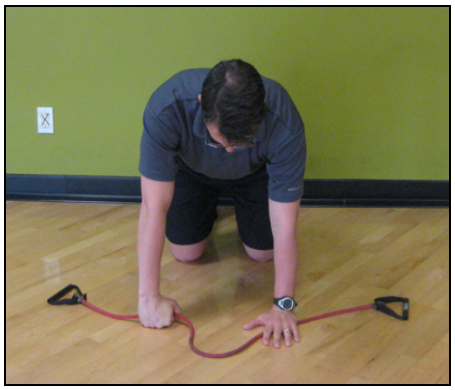
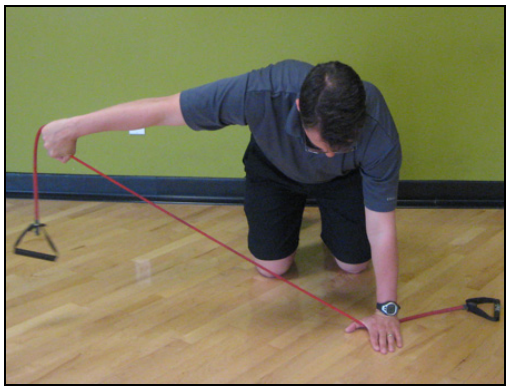
## EXERCISE 13: Four Point Arm Back

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve extension strength of the shoulder joint in four point position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, latissimus dorsi and middle trapezius muscles. This exercise emphasizes the latissimus dorsi, while the opposite shoulder has its scapular stabilizers activated and the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a four point position (hands under shoulders and knees under hips), abdominals are active, one hand is pressing on the tubing and the other hand gripping the tubing. One can kneel on a mat for comfort. |
| **How to Do the Exercise:** | 1. Move the arm back so it is in line with your body.<br>2. It should take two seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise on each side. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

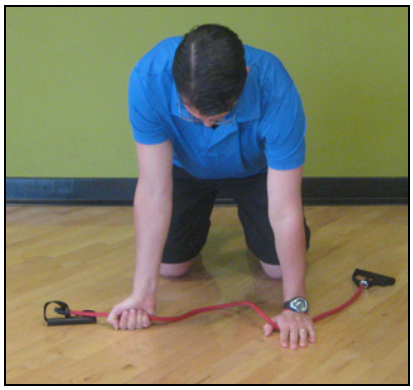
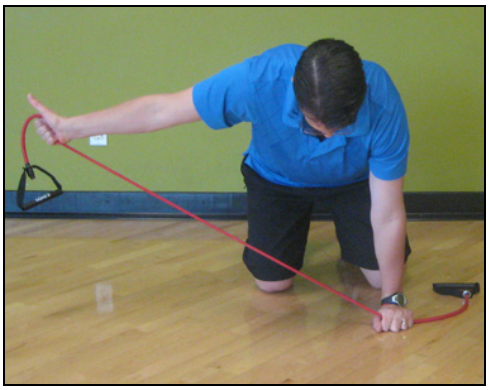
## EXERCISE 14: Four Point Arm To Side Leading with Pinkie and Tubing

| | |
|---|---|
|  <br>**Start** |  <br>**End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in four point position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the rhomboids while the opposite shoulder has its scapular stabilizers activated and the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a four point position (hands under shoulder and knees under hips), abdominals are active, one hand is pressing on the tubing and the other hand gripping the tubing. Make sure to tuck chin, set your body in perfect alignment, set your shoulder blades and brace your abdominals. One can kneel on a mat for comfort. |
| **How to Do the Exercise:** | 1. Separate your hands and move your arms out to the sides while still keeping your arms below shoulder height. The arm movement is led by your pinkie.<br>2. It should take two seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition<br>4. Perform 12 repetitions of the exercise on each side. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

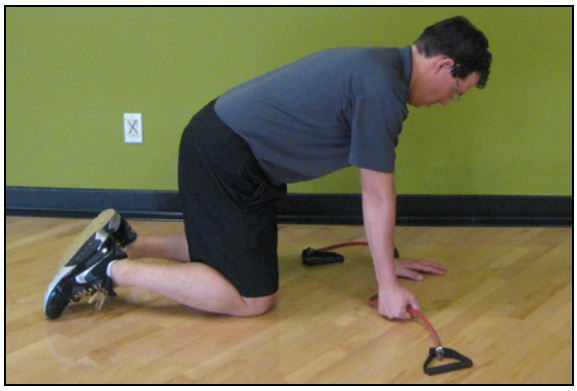
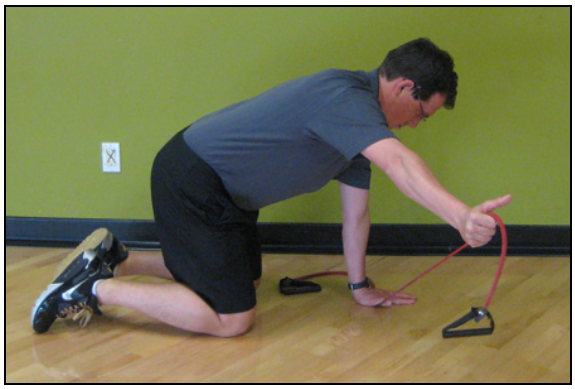
## EXERCISE 15: Four Point Arm To Side Leading with Thumb and Tubing

| | |
|---|---|
|  <br>**Start** |  <br>**End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in a four point position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the middle trapezius, while the opposite shoulder has its scapular stabilizers activated and the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a four point position (hands under shoulders and knees under hips), abdominals are active, one hand is pressing on the tubing and the other hand gripping the tubing. |
| **How to Do the Exercise:** | 1. Separate your hands and move your arms out to the sides while still keeping your arms below shoulder height. The arm movement is led by the thumb.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise on each side. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Arching at the lower back or upper thoracic to get more range of motion. The back is upright and not moving during the exercise.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

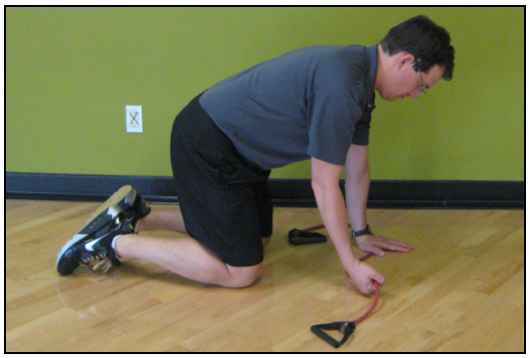
## EXERCISE 16: Four Point with ½ Y with Tubing

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) and flexion strength of the shoulder joint in a four point position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and lower trapezius muscles. This exercise emphasizes the lower trapezius. While the opposite shoulder has its scapular stabilizers activated and the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a four point position (hands under shoulders and knees under hips). Resistive tubing is in your hands with one hand performing the movement in a fist. Make sure to tuck chin, set your body in perfect alignment, set your shoulder blades and brace your abdominals. The right arm is straight, turned out to the side (externally rotated) 45 degrees with the hand in a fist. |
| **How to Do the Exercise:** | 1. In a controlled and slow manner, move your right arm to about a 45 degree angle (120 degrees of abduction) until it is slightly behind the right shoulder. In the end position the elbow will be just below the shoulder and the hand above the shoulder.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise and then switch to the left hand. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Try to keep your arms straight as bending them will change the muscles used. |

## EXERCISE 17: Four Point with ½ W with Tubing

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in a four point position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the middle trapezius, while the opposite shoulder has its scapular stabilizers activated and the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a four point position (hands under shoulders and knees under hips). Resistive tubing is in your hands with the hand of the arm performing the movement in a fist and the elbow bent to 45 degrees. Make sure to tuck chin, set your body in perfect alignment, set your shoulder blades and brace your abdominals. |
| **How to Do the Exercise:** | 1. In a controlled and slow manner, move your right arm out to the side in a horizontal abduction (extension) movement until it is slightly behind the right shoulder. In the end position the elbow will be just below the shoulder and the hand above the shoulder.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise and then switch to the left hand. |
| **Progressions:** | - Decrease the amount of tubing between your hands.<br>- Increase the resistive tubing resistance.<br>- Progress to 2 sets and then 3 sets. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 18: Bow and Arrow

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in sitting position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the middle trapezius while the core is active in order to prevent trunk rotation of the right side. |
| **Starting Position:** | In a sitting position on a stability ball with tubing in your hands. Your left arm is straight and gripping the tubing while the right arm is gripping the tubing with the right elbow bent to 90 degrees. |
| **How to Do the Exercise:** | 1. The right elbow pulls back at a height just below the shoulder. Focus on the muscles around the scapula performing the movement.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise on each side. |
| **Progressions:** | - Increase the resistive tubing resistance.<br>- Decrease the amount of tubing between your hands<br>- Progress to 2 sets and then 3 sets on each side. |

| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 19: Rotator Cuff Pull

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve external rotation strength of the shoulder joint in sitting position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, rotator cuff and middle trapezius muscles. This exercise emphasizes the rotator cuff of the right arm while the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a sitting position on a stability ball with tubing in your hands and arms straight just below your shoulders. |
| **How to Do the Exercise:** | 1. The right shoulder pulls back and externally rotates until the elbow is bent to 90 degrees and the right elbow is in line with the right shoulder.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise on each side. |
| **Progressions:** | - Increase the resistive tubing resistance.<br>- Decrease the amount of tubing between your hands<br>- Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 20: One Palm Down Arm Retraction

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in sitting position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the right rhomboid while the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a sitting position on a stability ball with tubing in your hands and arms straight just below your shoulders. |
| **How to Do the Exercise:** | 1. Keeping the left shoulder where it is, move the right arm straight out to the side until it is in line with the right shoulder.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise on each side. |
| **Progressions:** | - Increase the resistive tubing resistance.<br>- Decrease the amount of tubing between your hands<br>- Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 21: One Palm Up Arm Retraction

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in sitting position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. This exercise emphasizes the middle trapezius while the core is active in order to prevent trunk rotation. |
| **Starting Position:** | In a sitting position on a stability ball with tubing in your hands, arms are straight, right palm is down and left palm is up. |
| **How to Do the Exercise:** | 1. Keeping the left shoulder where it is, move the right arm straight out to the side until it is in line with the right shoulder.<br>2. It should take 2 seconds to reach the end position. Hold the end position for a second and then take 2 seconds to return back to the start position.<br>3. Rest for 1 second and move into the second repetition.<br>4. Perform 12 repetitions of the exercise on each side. |
| **Progressions:** | - Increase the resistive tubing resistance.<br>- Decrease the amount of tubing between your hands<br>- Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Dropping your head. This will take away from the work being done by the rhomboids and emphasize the upper trapezius.<br>- Shrugging your shoulder shifts the emphasis on the upper trapezius which is overactive in most people.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## Notes on Strengthening Exercises – Tubing

### What speed should I do the exercise with tubing?

You should perform the exercise in a slow and controlled manner. There should be tension on the tubing during the whole movement.

## Strengthening Exercises - Dumbbell

### EXERCISE 1: DUMBBELL - EXTERNAL ROTATION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve external rotation strength in the shoulder joint while lying down, by concentrically and eccentrically strengthening the infraspinatus and teres minor muscles. |
| **Starting Position:** | Lie on your side with your right arm bent at the elbow to 90 degrees, your shoulder rotated in, and elbow at your side. Make sure your body is in a straight line and your head is supported. |
| **How to Do the Exercise:** | 1. Move your right wrist away from the floor as far as you can, rotating at your shoulder. It should take two seconds to reach the end of the movement.<br>2. Hold your arm for one second at this position.<br>3. Now return your arm back to the start. It should take 2 seconds to return to the start.<br>4. Switch arms and perform this exercise with the left arm.<br>5. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase weight of the dumbbell. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- If it is painful to lie on your side, do not do this exercise on the side that is painful.<br>- The action is from the shoulder. Your body should remain stationary and your elbow tucked into your side.<br>- If you feel a stretch on the top of your shoulder with your arm at your side, you can put a rolled up towel under your elbow against your body.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 2: DUMBBELL - INTERNAL ROTATION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve internal rotation strength of the shoulder joint while lying down, by concentrically and eccentrically strengthening the subscapularis and latissimus dorsi muscle. |
| **Starting Position:** | Lie on your side with your left arm bent at the elbow to 90 degrees, your shoulder at 0 degrees of rotation, and elbow at your side. Make sure your body is in a straight line and your head is supported. |
| **How to Do the Exercise:** | 1. Move your left wrist away from the floor and towards your abdomen, rotating at your shoulder. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for one second at this position.<br>3. Now return your arm back to the start. It should take 2 seconds to return to the start.<br>4. Switch arms and perform this exercise with the right arm.<br>5. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to full internal rotation. Start with your left arm fully rotated away from your abdomen.<br>- Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- If it is painful to lie on your side, do not do this exercise on the side that is painful.<br>- The action is from the shoulder. Your body should remain stationary and your elbow tucked into your side.<br>- If you feel a stretch on the top of your shoulder with your arm at your side, you can put a rolled up towel under your elbow against your body.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 3: DUMBBELL - EMPTY CAN

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve scaption (plane of movement of the scapula) strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the supraspinatus muscle. |
| **Starting Position:** | Stand and internally rotate your shoulders so your thumbs are pointing towards the floor as you hold the dumbbells at thigh height. |
| **How to Do the Exercise:** | 1. Lift both arms from your thighs forward at 30 degrees off center. Lift your arms as high as you can just below your shoulders. It should take two seconds to reach the end of the movement.<br>2. Hold your arm for one second at this position.<br>3. Now return your arms back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase the weight of the dumbbells. |
| **Contraindications & Common Mistakes:** | - Move your arms to a point that is pain free. Do not push through the pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Perform this exercise with a light weight. Do not exceed 10 lbs. per hand.<br>- The full can exercise is more effective than the empty can exercise and presents less risk of injury.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 4: DUMBBELL - FULL CAN

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve scaption (plane of movement of the scapula) strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the supraspinatus muscle. |
| **Starting Position:** | Stand with your thumbs pointing upwards as you hold the dumbbells at thigh height. |
| **How to Do the Exercise:** | 1. Lift both arms from your thighs forward at 30 degrees off center. Lift your arms as high as you can to just below your shoulders. It should take two seconds to reach the end of the movement.<br>2. Hold your arm for one second at this position.<br>3. Now return your arms back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase weight of dumbbells. |
| **Contraindications & Common Mistakes:** | - Move your arms to a point that is pain free. Do not push through the pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Perform this exercise with a light weight. Do not exceed 10 lb. dumbbells.<br>- The full can exercise is more effective than the empty can exercise and presents less risk of injury |

## EXERCISE 5: DUMBBELL - PRONE SHOULDER EXTENSION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve extension strength of the shoulder joint in a lying position by concentrically and eccentrically a strengthening the latissimus dorsi, teres major, and scapular stabilizing muscles. |
| **Starting Position:** | In a prone lying position on a bench, let your right arm hang straight down as you hold a dumbbell in your hand on the floor. |
| **How to Do the Exercise:** | 1. Move your right arm from just above the floor to your side. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for one second at this position.<br>3. Now return your arm to the floor but do not touch. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set.<br>5. Switch arms and perform this exercise with the left arm. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase weight of the dumbbells. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- Keep your body in a straight line by looking straight down and placing a towel under your face or forehead.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 6: DUMBBELL - PRONE HORIZONTAL ABDUCTION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal abduction (extension) strength of the shoulder joint in a lying position by concentrically and eccentrically strengthening the posterior deltoid, rhomboids, and middle trapezius muscles. |
| **Starting Position:** | In a prone lying position on a bench, extend your right arm straight at 85 degrees of abduction with a dumbbell in your hand on the floor. |
| **How to Do the Exercise:** | 1. Lift the dumbbell off the floor and move it straight back so it is in line with your body. It should take two seconds to reach the end of the movement.<br>2. Hold your arm for one second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set.<br>5. Switch arms and perform this exercise with the left arm. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase the weight of the dumbbell. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- If starting at 85 degrees of abduction is too difficult begin at 45 degrees of abduction.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling or try the thumb turned up.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 7: DUMBBELL - 90/90 EXTERNAL ROTATION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve external rotation strength of the shoulder joint in a lying position by concentrically and eccentrically strengthening the infraspinatus and teres minor muscles while stabilizing the scapula with the scapular stabilizing muscles. |
| **Starting Position:** | Lie prone on a bench with your right arm abducted to 85 degrees, elbow bent to 90 degrees and dumbbell in your hand just above the floor. |
| **How to Do the Exercise:** | 1. Rotate your right arm moving the dumbbell to just below your shoulder so it is in line with your body. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for one second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set.<br>5. Switch arms and perform this exercise with the left arm. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase weight of dumbbell. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- If starting at 85 degrees of abduction is too difficult begin at 45 degrees of abduction.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 8: DUMBBELL SHOULDER SHRUG

| | |
|---|---|
|  |  |
| **Start** | **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder elevation strength of the scapularthoracic joint in a standing position by concentrically and eccentrically strengthening the upper trapezius muscle. |
| **Starting Position:** | Stand with arms at your sides and dumbbells in your hands. |
| **How to Do the Exercise:** | 1. Lift both shoulders towards your ears. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arms for one second at this position.<br>3. Now return your arms back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase weight of dumbbells. |
| **Contraindications & Common Mistakes:** | - Move your arms to a point that is pain free. Do not push through the pain.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 9: DUMBBELL FRONT RAISES

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder flexion strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the deltoid and supraspinatus muscles. |
| **Starting Position:** | Stand with your arms at your sides and dumbbells in your hands. |
| **How to Do the Exercise:** | 1. Lift arms in front of the body as far as you can or to a height just below your shoulders. It should take two seconds to reach the end of the movement.<br>2. Hold your arms for one second at this position.<br>3. Now return your arms back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase the weight of the dumbbell. |
| **Contraindications & Common Mistakes:** | - Move your arms to a point that is pain free. Do not push through the pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- If moving to 85 degrees of flexion is too difficult move only as far as you can without pain.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 10: DUMBBELL LATERAL RAISE

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder abduction strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the deltoid and supraspinatus muscles. |
| **Starting Position:** | Stand with your arms at your sides and dumbbells in your hands. |
| **How to Do the Exercise:** | 1. Lift arms out to the sides as high as you can, focusing on lifting from the shoulders and not the wrists until you reach a height just below your shoulders. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arms for one second at this position.<br>3. Now return your arms back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase the weight of the dumbbells. |
| **Contraindications & Common Mistakes:** | - Move your arms to a point that is pain free. Do not push through the pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- If moving to 85 degrees of abduction is too difficult move only as far as you can without pain.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 11: DUMBBELL MILITARY PRESS

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder abduction strength of the shoulder joint above shoulder height in a sitting position by concentrically and eccentrically strengthening the deltoid, trapezius, triceps and supraspinatus muscles while activating the scapular stabilizing muscles. |
| **Starting Position:** | In a sitting position, hold your arms at shoulder height, with dumbbells in your hands. |
| **How to Do the Exercise:** | 1. Push the dumbbells over your head. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arms for one second at this position.<br>3. Now return your arms back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase weight of the dumbbells. |
| **Contraindications & Common Mistakes:** | - Move your arms to a point that is pain free. Do not push through the pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 12: DUMBBELL BENT OVER ROW

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder extension strength of the shoulder joint in a four-point position by concentrically and eccentrically strengthening the deltoid, latissimus dorsi, trapezius and rhomboid muscles and activating the scapular stabilizing muscles in the opposite arm. |
| **Starting Position:** | Place your left hand and left knee on a bench, right foot on the floor, and right arm hanging straight down, holding a dumbbell. |
| **How to Do the Exercise:** | 1. Lift the dumbbell up by focusing on pulling your right elbow up until your elbow just passes your right shoulder. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for one second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set.<br>5. Switch arms and perform this exercise with the left arm. |
| **Progressions:** | - Progress to 2 sets and then 3 sets.<br>- Increase the weight of the dumbbell. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- Make sure to keep your shoulder in line with the other shoulder and don't let the shoulder of the working arm drop or sag towards the floor.<br>- Keep the elbow and arm close to the body when doing the movement. |

## EXERCISE 13: DUMBBELL BENCH PRESS

| | |
|---|---|
|  |  |
| **Start** | **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal flexion strength of the shoulder joint in a supine position by concentrically and eccentrically strengthening the pectoralis major muscle. |
| **Starting Position:** | In a supine position on a bench, place your elbows just below your shoulders, rib cage in neutral and hands holding dumbbells in front of your shoulders. |
| **How to Do the Exercise:** | 1. Push the dumbbells up until your arms are straight. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arms for one second at this position.<br>3. Now return your arms back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arms to a point that is pain free. Do not push through the pain. Move the arms to a point just below feeling any pain.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists.<br>- You can place your feet on the bench in order to decrease the stress and arch on your lower back. |

## EXERCISE 14: DUMBBELL REVERSE FLY

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder horizontal extension strength of the shoulder joint in a seated position by concentrically and eccentrically strengthening the posterior deltoid and rhomboids muscle. |
| **Starting Position:** | In a seated position on a bench, activate the core (abdominals), bend forward at your waist with dumbbells in your hands below your thighs. |
| **How to Do the Exercise:** | 1. With a slight bend in your elbows, lift your elbows back, focusing on the contraction of the middle back muscles. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arms for one second at this position.<br>3. Now return your arms back to the start. This should take 2 seconds.<br>4. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arms to a point that is pain free. Do not push through the pain. Move the arms to a point just below feeling any pain.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 15: CHAIR PRESS UP

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve scapular depression strength in the scapulothoracic joint in a sitting position by activating the lower trapezius and serratus anterior muscle. |
| **Starting Position:** | Sit with both your hands beside your thighs and fingers wrapped over the edge of the chair, table or bench. |
| **How to Do the Exercise:** | 1. Straighten your arms and lift your buttock off the bench. It should take 2 seconds to complete this movement.<br>2. Hold position for one second.<br>3. Return your seat to the starting position. It should take 2 seconds to return to the start.<br>4. Repeat 5 times. |
| **Progressions:** | - Increase the hold at the top to 3 seconds.<br>- Do exercise 10 times. |
| **Contraindications & Common Mistakes:** | - Move your arms to a point that is pain free. Do not push through the pain. Move the arms to a point just below feeling any pain.<br>- Make sure you have good upright posture and are not dropping your head forward or rounding your mid-back.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## Notes on Strengthening Exercises – Dumbbell

### What is scaption?

It is the plane of movement that is in line with the scapula. To reach scaption, you abduct (move are out to the side) your arm to 90 degrees, then move your arm 30 degrees into horizontal flexion (out front, horizontal adduction or transverse flexion). If you keep your shoulder in this position and move your arm in flexion and extension, you are now moving the scaption plane, or scaption.

**Start of Scaption**

**End of Scaption**

## STRENGTHENING EXERCISES - PULLEYS

### EXERCISE 1: PULLEY EXTERNAL ROTATION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder external rotation strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the infraspinatus and teres minor muscle. |
| **Starting Position:** | Stand with your left arm bent at the elbow to 90 degrees, your shoulder at 0 degrees of rotation, keeping elbow at your side. Adjust the pulley arm so when you perform the exercise the pulley cable is parallel to the floor. |
| **How to Do the Exercise:** | 1. Move your left hand away from the pulley machine as far as you can while keeping the wrist in alignment and rotating at your shoulder. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for 1 second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Switch arms and perform this exercise with the right arm.<br>5. Repeat this exercise 12 times for one set. |
| **Progressions:** | - Progress to full external rotation. Start with your right arm fully rotated in with your forearm against your abdomen.<br>- Progress to 2 sets and then 3 sets. |

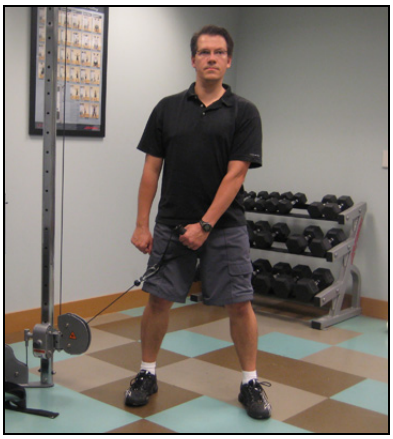
| | |
|---|---|
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- This action is from the shoulder. Your body remains stationary keeping the elbow at your side.<br>- If you feel a stretch on the top of your shoulder with your arm at your side, put a rolled up towel under your elbow, against your body.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 2: PULLEY INTERNAL ROTATION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder internal rotation strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the subscapularis and latissimus dorsi muscle. |
| **Starting Position:** | Stand with your right arm bent at the elbow to 90 degrees, your shoulder at 0 degrees of rotation and elbow at your side. Adjust the pulley arm so when you perform the exercise the pulley cable is parallel to the floor. |
| **How to Do the Exercise:** | 1. Move your right wrist toward your abdomen by rotating at your shoulder. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for 1 second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Switch arms and perform this exercise with the right arm.<br>5. Repeat this exercise 12 times for 1 set. |
| **Progressions:** | - Progress to full internal rotation. Start with your left arm fully rotated away from your abdomen.<br>- Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- This action is from the shoulder. Your body remains stationary keeping the elbow at your side.<br>- If you feel a stretch on the top of your shoulder with your arm at your side, put a rolled up towel under your elbow, against your body.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 3: PULLEY SHOULDER ABDUCTION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder abduction strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the deltoid and supraspinatus muscle. |
| **Starting Position:** | Stand with your left arm at your side. Adjust the pulley arm to its lowest setting. |
| **How to Do the Exercise:** | 1. Hold the pulley handle and move your left arm away from your side as far as you can or to a height of just below shoulder height. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for 1 second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Switch arms and perform this exercise with the right arm.<br>5. Repeat this exercise 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 4: PULLEY SHOULDER ADDUCTION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve adduction strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the latissimus dorsi and pectoralis muscles. |
| **Starting Position:** | Stand with your right arm extended out to your side, at a level just below your shoulder. Adjust the pulley arm so that in the starting position your arm is below your shoulder. |
| **How to Do the Exercise:** | 1. Hold the pulley handle and move your right arm down to your side. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for 1 second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Switch arms and perform this exercise with the right arm.<br>5. Repeat this exercise 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- If starting at 90 degrees of abduction is too difficult begin at 45 degrees of abduction.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 5: PULLEY SHOULDER EXTENSION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve extension strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the latissimus dorsi muscle. |
| **Starting Position:** | Stand, facing the pulley, with your left arm out front just below your shoulder. Adjust the pulley arm so that in the starting position the cable is parallel to the floor. |
| **How to Do the Exercise:** | 1. Hold the pulley handle and move your left arm down to your side. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for one second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Switch arms and perform this exercise with the right arm.<br>5. Repeat this exercise 12 times for 1 set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- If moving to 85 degrees of flexion is too difficult move as far as you can without pain.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 6: PULLEY FLEXION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder flexion strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the deltoid and supraspinatus muscles. |
| **Starting Position:** | Stand, facing the away from the pulley, with your right arm at your side. Adjust the pulley arm to its lowest position. |
| **How to Do the Exercise:** | 1. Hold the pulley handle and move your right arm from your side forward as far as you can or to a height of just below your shoulder. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for 1 second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Switch arms and perform this exercise with the left arm.<br>5. Repeat this exercise, 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- If moving to 85 degrees of flexion is too difficult for you, move as far as you can without pain.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 7: PULLEY HORIZONTAL ABDUCTION

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve shoulder horizontal extension strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening the rhomboid muscle and activate the scapular stabilizing muscles. |
| **Starting Position:** | Reach with your arm across your body and grab the pulley handle. Adjust the pulley arm so that in the starting position the cable is parallel to the floor. |
| **How to Do the Exercise:** | 1. Hold the pulley handle and move it from your right side to your left. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for 1 second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Switch arms and perform this exercise with the right arm.<br>5. Repeat this exercise 12 times for 1 set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- If moving to 85 degrees of flexion is too difficult move as far as you can without pain.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 8: STANDING BILATERAL PULLEY ROWS

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve extension strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening latissimus dorsi and rhomboids. |
| **Starting Position:** | Stand with both arms out front, just below shoulder level. Adjust the pulley arm so that in the starting position the cable is parallel to the floor. |
| **How to Do the Exercise:** | 1. Holding the pulley handles, pull your elbows back and to a position below and just past your shoulders. It should take two seconds to reach the end of the movement.<br>2. Hold your arms for 1 second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Repeat this exercise 12 times for 1 set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 9: STANDING UNILATERAL PULLEY ROWS

| | |
|---|---|
|  **Start** |  **End** |

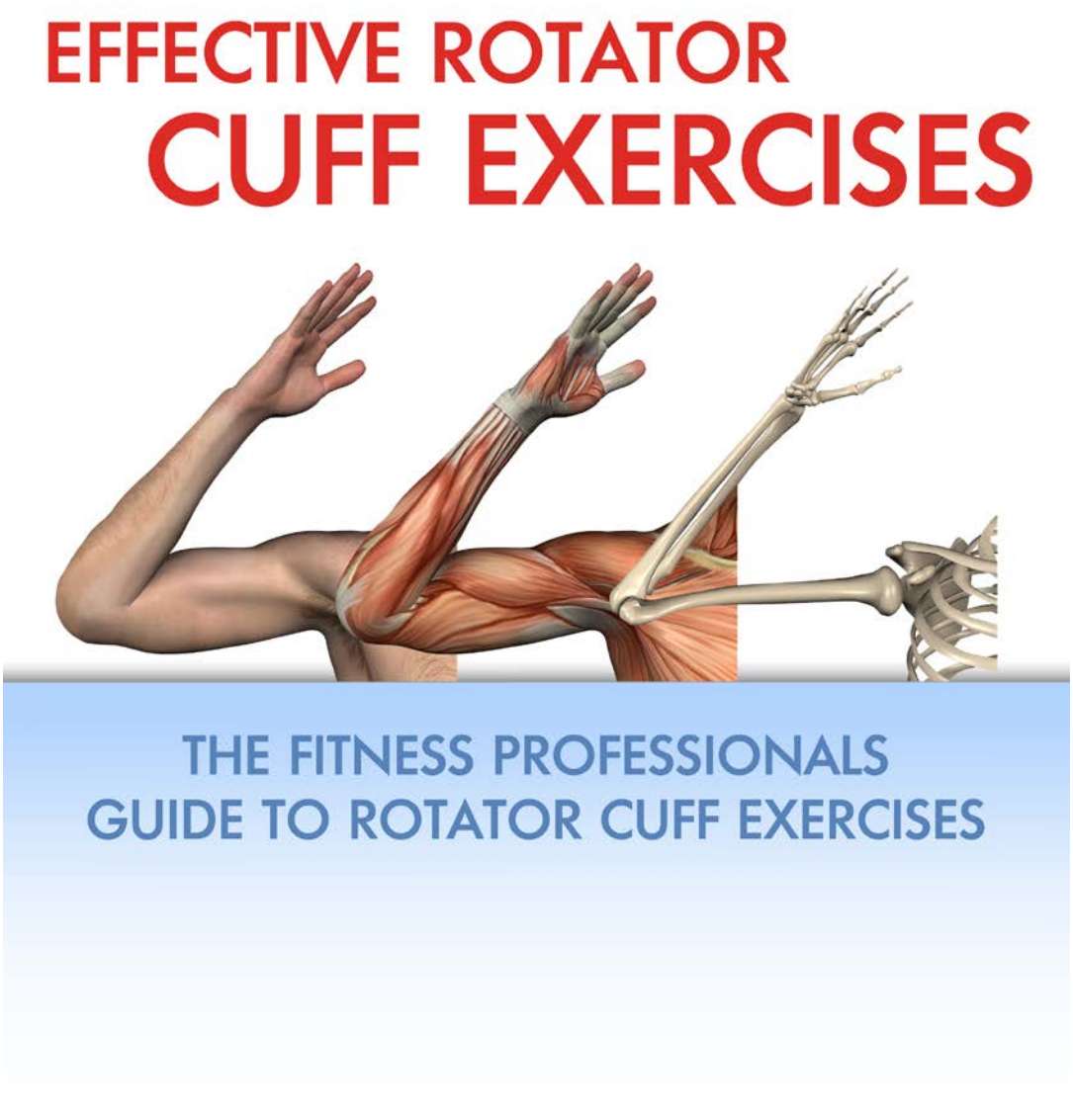
| | |
|---|---|
| **Purpose:** | To improve extension strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening latissimus dorsi and rhomboids. |
| **Starting Position:** | Stand with your left arm extended out front just below shoulder level. Adjust the pulley arm so that in the starting position the cable is parallel to the floor. |
| **How to Do the Exercise:** | 1. Hold the pulley handle and pull your left elbow back to a position just past your left shoulder. It should take 2 seconds to reach the end of the movement.<br>2. Hold your arm for 1 second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. Switch arms and perform this exercise with the right arm.<br>5. Repeat this exercise 12 times for 1 set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arm to a point that is pain free. Do not push through the pain. Move the arm to a point just below feeling any pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

## EXERCISE 10: SUBSCAPULARIS DYNAMIC HUG

| | |
|---|---|
|  **Start** |  **End** |

| | |
|---|---|
| **Purpose:** | To improve horizontal adduction strength of the shoulder joint in a standing position by concentrically and eccentrically strengthening subscapularis. |
| **Starting Position:** | Tubing is securely fixed. Stand with your arms in an open hug position holding handles of the tubing. |
| **How to Do the Exercise:** | 1. Move your arms in a hug movement forward while rotating your shoulders in. It should take two seconds to reach the end of the movement.<br>2. Hold your arms for one second at this position.<br>3. Now return your arm back to the start. This should take 2 seconds.<br>4. This exercise is performed with both arms at the same time.<br>5. Repeat this exercise 12 times for one set. |
| **Progressions:** | - Progress to 2 sets and then 3 sets. |
| **Contraindications & Common Mistakes:** | - Move your arms to a point that is pain free. Do not push through the pain. Move the arms to a point just below feeling any pain.<br>- Anyone with shoulder impingement should remain at a range of motion that does not lead to a pinching feeling.<br>- Make sure your wrists are neutral (straight) in order to decrease the stress on your wrists. |

# 3 Month Rotator Cuff Exercise Program



## Notes on the 3 Month Rotator Cuff Exercise Program

This is a 3 month rotator cuff exercise program that you can use with your clients.

It brings together the exercises from the Effective Rotator Cuff Exercises Manual and put them in program that you can use with your rotator cuff clients.

If you would like to receive a digital copy of the exercises in the Effective Rotator Cuff Exercises Manual, feel free to email me at support@ExercisesForInjuries.com . I will gladly send you a digital copy that you can print and give out to your clients.

What takes priority over the exercise program that follows are the guidelines given by the medical physician and health care providers.

Note that not all of the exercises from the Effective Rotator Cuff manual are in the 3 month program. I have selected the ones that I have gotten the best results with.

***Rick Kaselj***

## Rotator Cuff Exercise Program - Month 1 - Movement

**Goal:** To get the shoulder moving and improve range of motion
**Frequency:** Every day
**Equipment Needed:** Over the door pulley
**Estimated Time to Complete**: 10 minutes

| Range of Motion | Sets & Reps |
|---|---|
| PENDULUM - CIRCLES | 1 set of 10 repetitions |
| PENDULUM - HORIZONTAL ABDUCTION-ADDUCTION | 1 set of 10 repetitions |
| PENDULUM - FLEXION-EXTENSION | 1 set of 10 repetitions |
| PULLEY – UP AND DOWN | 1 set of 10 repetitions |
| PULLEY - SHOULDER FLEXION | 1 set of 10 repetitions |
| PULLEY - SHOULDER ADDUCTION | 1 set of 10 repetitions |
| PULLEY - INTERNAL ROTATION | 1 set of 10 repetitions |

*Note – The pulley used is an over the door pulley that helps with passive range of motion.

## Rotator Cuff Exercise Program - Month 1 - ROM

**Goal:** To increase range of motion
**Frequency:** Every day
**Equipment Needed:** Wand
**Estimated Time to Complete**: 20 minutes

| Range of Motion | Sets & Reps |
|---|---|
| WAND - SHOULDER FLEXION | 1 set of 5 Repetitions |
| WAND - SHOULDER EXTENSION | 1 set of 5 Repetitions |
| WAND - EXTERNAL ROTATION | 1 set of 5 Repetitions |
| WAND PULL DOWN - EXTERNAL ROTATION | 1 set of 5 Repetitions |
| WAND PULL UP - INTERNAL ROTATION | 1 set of 5 Repetitions |
| WAND - ABDUCTION AND ADDUCTION | 1 set of 5 Repetitions |

| Strength | Sets & Reps |
|---|---|
| ISOMETRIC - SHOULDER FLEXION | 1 set of 6 Repetitions |
| ISOMETRIC - SHOULDER EXTENSION | 1 set of 6 Repetitions |
| ISOMETRIC - SHOULDER ABDUCTION | 1 set of 6 Repetitions |
| ISOMETRIC - SHOULDER ADDUCTION | 1 set of 6 Repetitions |
| ISOMETRIC - INTERNAL ROTATION | 1 set of 6 Repetitions |
| ISOMETRIC - EXTERNAL ROTATION | 1 set of 6 Repetitions |

## Rotator Cuff Exercise Program - Month 2

**Goal:** To improve smoothness of range of motion, address tight muscles and work on strength
**Frequency:** Range of motion and stretching can be done every day and strengthening can be done every other day.
**Equipment Needed:** Dumbbells, bench
**Estimated Time to Complete**: 25 minutes

| Range of Motion | Sets & Reps |
|---|---|
| SHOULDER FLEXION – ACTIVE RANGE OF MOTION | 1 Set of 5 Repetitions |
| SHOULDER EXTENSION – ACTIVE RANGE OF MOTION | 1 Set of 5 Repetitions |
| SHOULDER ABDUCTION – ACTIVE RANGE OF MOTION | 1 Set of 5 Repetitions |
| SHOULDER ADDUCTION – ACTIVE RANGE OF MOTION | 1 Set of 5 Repetitions |
| SHOULDER INTERNAL ROTATION – ACTIVE RANGE OF MOTION | 1 Set of 5 Repetitions |
| SHOULDER EXTERNAL ROTATION – ACTIVE RANGE OF MOTION | 1 Set of 5 Repetitions |

| Stretching | Sets & Reps |
|---|---|
| POSTERIOR STRETCH | 2 times for 30 seconds |
| ANTERIOR SHOULDER STRETCH | 2 times for 30 seconds |
| SUPRASPINATUS STRETCH | 2 times for 30 seconds |
| DOORWAY STRETCH - ANTERIOR CAPSULE STRETCH | 2 times for 30 seconds |
| TRICEPS STRETCH - INFERIOR CAPSULE STRETCH | 2 times for 30 seconds |

| Strength | Sets & Repetitions |
|---|---|
| DUMBBELL - EXTERNAL ROTATION | 1 set of 12 repetitions |
| DUMBBELL - PRONE SHOULDER EXTENSION | 1 set of 12 repetitions |
| DUMBBELL - PRONE HORIZONTAL ABDUCTION | 1 set of 12 repetitions |
| DUMBBELL - FULL CAN | 1 set of 12 repetitions |
| DUMBBELL SHOULDER SHRUG | 1 set of 12 repetitions |
| DUMBBELL LATERAL RAISES | 1 set of 12 repetitions |
| DUMBBELL MILITARY PRESS | 1 set of 12 repetitions |
| DUMBBELL BENT OVER ROW | 1 set of 12 repetitions |
| CHAIR PRESS UP | 1 set of 12 repetitions |

## Rotator Cuff Exercise Program - Month 3

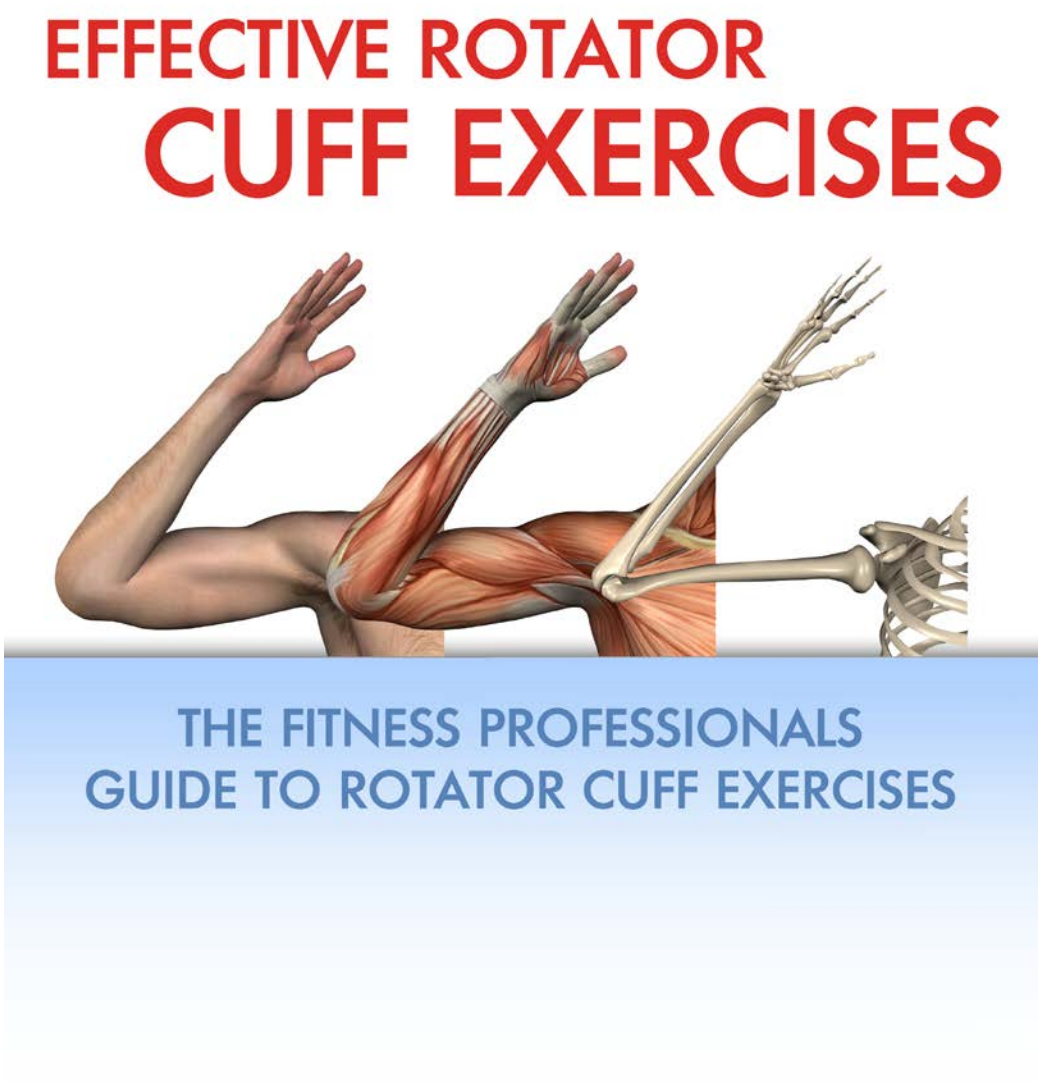
**Goal:** To address tight muscles and work on strength
**Frequency:** Stretching can be done every day and strengthening can be done every other day.
**Equipment Needed:** Pulleys
**Estimated Time to Complete**: 25 minutes

| Stretching | Sets & Reps |
|---|---|
| POSTERIOR STRETCH | 2 times for 30 seconds |
| POSTERIOR SHOULDER II STRETCH | 2 times for 30 seconds |
| SUPRASPINATUS STRETCH | 2 times for 30 seconds |
| DOORWAY STRETCH - ANTERIOR CAPSULE STRETCH | 2 times for 30 seconds |
| TRICEPS STRETCH - INFERIOR CAPSULE STRETCH | 2 times for 30 seconds |

| Strength | Sets & Reps |
|---|---|
| PULLEY EXTERNAL ROTATION | 1 set of 12 repetitions |
| PULLEY INTERNAL ROTATION | 1 set of 12 repetitions |
| STANDING UNILATERAL PULLEY ROWS | 1 set of 12 repetitions |
| PULLEY SHOULDER ABDUCTION | 1 set of 12 repetitions |
| PULLEY SHOULDER ADDUCTION | 1 set of 12 repetitions |
| PULLEY SHOULDER EXTENSION | 1 set of 12 repetitions |
| PULLEY FLEXION | 1 set of 12 repetitions |
| PULLEY HORIZONTAL ABDUCTION | 1 set of 12 repetitions |
| STANDING BILATERAL PULLEY ROWS | 1 set of 12 repetitions |

# 3 Months Rotator Cuff Exercise Program

**- Client Handouts -**



## Notes on the 3 Month Rotator Cuff Exercise Program – Client Handouts

These are the client handouts for 3 month rotator cuff exercise program that you can give to your clients.

It brings together the exercises from the Effective Rotator Cuff Exercises Manual and puts them in handouts that you can use with your rotator cuff clients.

Feel free to copy them and give them out to your clients.  If you would like receive a digital copy of the handouts, feel free to email me at support@ExercisesForInjuries.com .  I will gladly send you a digital copy that you can print out and give out to your clients.

***Rick Kaselj***

## Rotator Cuff Exercise Program - Month 1 – Movement

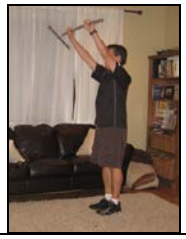
| Exercise | Day | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PENDULUM - CIRCLES**  | 1 set of 10 reps | | | | | | | | | | | | |
| **PENDULUM - HORIZONTAL ABDUCTION-ADDUCTION**  | 1 set of 10 reps | | | | | | | | | | | | |
| **PENDULUM - FLEXION-EXTENSION**  | 1 set of 10 reps | | | | | | | | | | | | |
| **PULLEY – UP AND DOWN**  | 1 set of 10 reps | | | | | | | | | | | | |

**Notes:**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PULLEY - SHOULDER FLEXION**  | 1 set of 10 reps | | | | | | | | | | | | |
| **PULLEY - SHOULDER ADDUCTION**  | 1 set of 10 reps | | | | | | | | | | | | |
| **PULLEY - INTERNAL ROTATION**  | 1 set of 10 reps | | | | | | | | | | | | |

**Notes:**

## Rotator Cuff Exercise Program - Month 1 – ROM

| Exercise | Day | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WAND - SHOULDER FLEXION**  | 1 set of 5 reps | | | | | | | | | | | | |
| **WAND - SHOULDER EXTENSION**  | 1 set of 5 reps | | | | | | | | | | | | |
| **WAND - EXTERNAL ROTATION**  | 1 set of 5 reps | | | | | | | | | | | | |
| **WAND PULL DOWN - EXTERNAL ROTATION**  | 1 set of 5 reps | | | | | | | | | | | | |
| **WAND PULL UP - INTERNAL ROTATION**  | 1 set of 5 reps | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WAND - ABDUCTION AND ADDUCTION**  | 1 set of 5 reps | | | | | | | | | | | | |
| **ISOMETRIC - SHOULDER FLEXION**  | 1 set of 6 reps | | | | | | | | | | | | |
| **ISOMETRIC - SHOULDER EXTENSION**  | 1 set of 6 reps | | | | | | | | | | | | |
| **ISOMETRIC - SHOULDER ABDUCTION**  | 1 set of 6 reps | | | | | | | | | | | | |
| **ISOMETRIC - SHOULDER ADDUCTION**  | 1 set of 6 reps | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **ISOMETRIC - INTERNAL ROTATION**  | 1 set of 6 reps | | | | | | | | | | | | |
| **ISOMETRIC - EXTERNAL ROTATION**  | 1 set of 6 reps | | | | | | | | | | | | |

**Notes:**

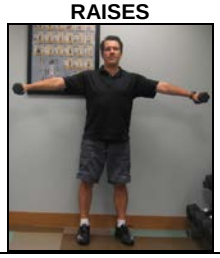
## Rotator Cuff Exercise Program - Month 2

| Exercise | Day | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SHOULDER FLEXION – ACTIVE RANGE OF MOTION**  | 1 set of 5 reps | | | | | | | | | | | | |
| **SHOULDER EXTENSION – ACTIVE RANGE OF MOTION**  | 1 set of 5 reps | | | | | | | | | | | | |
| **SHOULDER ABDUCTION – ACTIVE RANGE OF MOTION**  | 1 set of 5 reps | | | | | | | | | | | | |
| **SHOULDER ADDUCTION – ACTIVE RANGE OF MOTION**  | 1 set of 5 reps | | | | | | | | | | | | |

**Notes:**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **SHOULDER INTERNAL ROTATION – ACTIVE RANGE OF MOTION**  | 1 set of 5 reps | | | | | | | | | | | | |
| **SHOULDER EXTERNAL ROTATION – ACTIVE RANGE OF MOTION**  | 1 set of 5 reps | | | | | | | | | | | | |
| **POSTERIOR STRETCH**  | 2 times for 30 seconds | | | | | | | | | | | | |
| **ANTERIOR SHOULDER STRETCH**  | 2 times for 30 seconds | | | | | | | | | | | | |
| **SUPRASPINATUS STRETCH**  | 2 times for 30 seconds | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DOORWAY STRETCH - ANTERIOR CAPSULE STRETCH**  | 2 times for 30 seconds | | | | | | | | | | | | |
| **TRICEPS STRETCH - INFERIOR CAPSULE STRETCH**  | 2 times for 30 seconds | | | | | | | | | | | | |
| **DUMBBELL - EXTERNAL ROTATION**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **DUMBBELL - PRONE SHOULDER EXTENSION**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **DUMBBELL - PRONE HORIZONTAL ABDUCTION**  | 1 set of 12 repetitions | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DUMBBELL - FULL CAN**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **DUMBBELL SHOULDER SHRUG**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **DUMBBELL LATERAL RAISES**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **DUMBBELL MILITARY PRESS**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **DUMBBELL BENT OVER ROW ROTATION**  | 1 set of 12 repetitions | | | | | | | | | | | | |

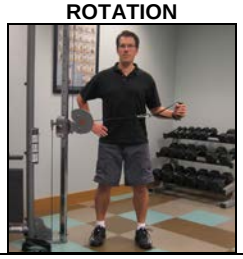
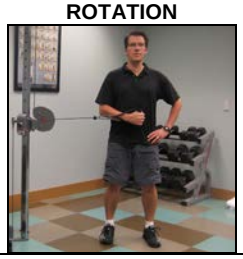
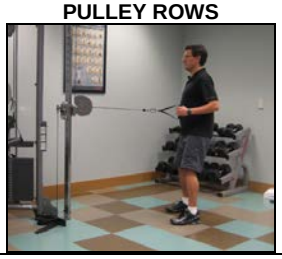
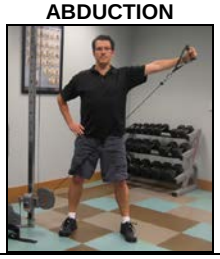
| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **CHAIR PRESS UP**  | 1 set of 12 repetitions | | | | | | | | | | | | |

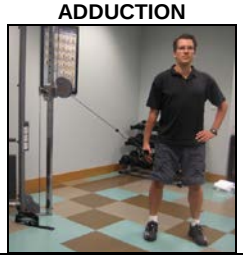
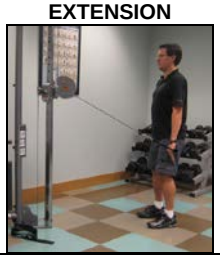
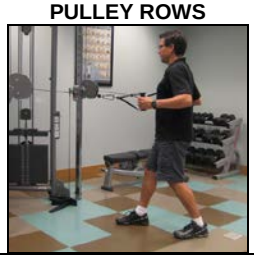
**Notes:**

## Rotator Cuff Exercise Program - Month 3

| Exercise | Day | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **POSTERIOR STRETCH**  | 2 times for 30 seconds | | | | | | | | | | | | |
| **POSTERIOR SHOULDER II STRETCH**  | 2 times for 30 seconds | | | | | | | | | | | | |
| **SUPRASPINATUS STRETCH**  | 2 times for 30 seconds | | | | | | | | | | | | |
| **DOORWAY STRETCH - ANTERIOR CAPSULE STRETCH**  | 2 times for 30 seconds | | | | | | | | | | | | |

**Notes:**

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **TRICEPS STRETCH - INFERIOR CAPSULE STRETCH**  | 2 times for 30 seconds | | | | | | | | | | | | |
| **PULLEY EXTERNAL ROTATION**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **PULLEY INTERNAL ROTATION**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **STANDING UNILATERAL PULLEY ROWS**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **PULLEY SHOULDER ABDUCTION**  | 1 set of 12 repetitions | | | | | | | | | | | | |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **PULLEY SHOULDER ADDUCTION**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **PULLEY SHOULDER EXTENSION**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **PULLEY FLEXION**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **PULLEY HORIZONTAL ABDUCTION**  | 1 set of 12 repetitions | | | | | | | | | | | | |
| **STANDING BILATERAL PULLEY ROWS**  | 1 set of 12 repetitions | | | | | | | | | | | | |

# About Rick Kaselj

**Rick Kaselj**, M.S. (Exercise Science), B.Sc. (Kinesiology), PK, CPT, CEP, CES

Rick Kaselj specializes in exercise rehabilitation and fitness. He works in one-on-one and group rehabilitation settings, educating and training people who have been injured at work, in car accidents, and during sport activities.

Rick has combined his rehabilitation experience and passion for research to develop a variety of courses and presentations for fitness professionals, Kinesiologists, and healthcare providers. Rick has given over 302 presentations to 5897 fitness professionals across Canada and USA. These courses include:

- Core stability of the shoulder
- Exercise rehabilitation for the shoulder, lower back, hip, or knee
- Foam roller essentials
- Intro and advanced core stability
- Intro and advanced stability ball exercises
- Postural assessment and exercise prescription
- Injury-free running
- Save your shoulders
- Training for better golf

Rick strives to balance his work life with his personal fitness endeavours and travel. He has trained for and competed in the Manitoba Marathon, the 225 km Ironman Canada Triathlon, and the 160 km Sea2Summit Adventure Race in Whistler, BC.

He has hiked 4,300 km along the *Pacific Crest Trail* from Mexico to Canada and mountain biked the 5,000 km *Great Divide Mountain Bike Route* over the Rocky Mountains from Mexico to Canada. An avid traveler, Rick has toured three continents and visited 17 countries.

In 1997 he graduated with his Bachelor of Science degree in Kinesiology from Simon Fraser University. Rick recently completed his Masters of Science degree focusing on corrective exercise and therapeutic exercise for the rotator cuff. Rick currently works as a lecturer, Kinesiologist, personal trainer, writer of exercise rehabilitation and exercise rehabilitation specialist in and around Vancouver, British Columbia, Canada.

To learn more about Rick Kaselj, please visit http://www.**Exercises***For***Injuries**.com

# About Healing Through Movement

Healing Through Movement
Fitness • Rehabilitation • Presentations • Publications

Healing Through Movement has been helping people reach their health, fitness, rehabilitation and sport goals since 1999.

**How Healing Through Movement can help you:**

**Active Rehabilitation** – This individualized program is designed to help you overcome injury by using flexibility, endurance, strength and cardiovascular exercises.

**Adaptive Fitness** – A personalized exercise program designed for youth and adults with special needs. The types of special needs may include cerebral palsy, multiple sclerosis, brain injury and/or developmental disability.

**Adventure Travel Presentations** – A full sensory experience including music, images, and storytelling on the experience and adventure of hiking the 4,300 km Pacific Crest Trail, cycling Cuba, and cycling the Rockies from Mexico to Canada.

**Corrective Exercise** – An exercise program designed to address your muscle imbalances and areas of tightness and pain.

**Endurance Training** – An individualized training program created to help you complete your desired running, cycling, duathlon, triathlon, or adventure race.

**Exercise Rehabilitation** – An exercise program designed to help you recover from your injury or medical condition in a safe and effective manner.

**Exercise Rehabilitation Courses** – Education and training for registered Kinesiologists, exercise therapists, and personal trainers on the use of exercise as a safe and effective tool to recover from back, shoulder, knee, hip, ankle, elbow and wrist injuries.

**Expedition Training** – Forming a complete plan including gear selection, route preparation, nutrition guidelines and a training program to help accomplish your hiking, biking or kayaking dream.

**Personal Training** – An exercise program to help you reach your weight loss, strength gain, and body shape improvement goals.

**Pool Therapy** – Use the pool environment to decrease stress on joints and to help your body recover from injury by improving range of motion, strength, endurance and balance.

**Post Rehabilitation** – After you have completed physical therapy, chiropractic or massage therapy treatment, this is an exercise program designed to help you recover from your injury and return your body back to where it was before your injury.

**Where can Healing Through Movement meet me:**

**In Person** – Healing Through Movement can meet you at your home, local community centre or fitness centre to help you achieve your health, fitness, training, sport, travel or rehabilitation goals.

**Phone/Online Training** – More clients are meeting with Healing Through Movement over the phone or through email to reach their health, fitness, training, sport, travel or rehabilitation goals.

**Founder of Healing Through Movement - Rick Kaselj**

**Rick Kaselj** is a Registered Kinesiologist and Personal Trainer with a passion for exercise rehabilitation. Rick designs effective exercise programs that safely and rapidly help his clients recover from an injury, medical condition, and/or musculoskeletal pain, and reach their health, rehabilitation, and sport goals. Rick presents courses on exercise rehabilitation and adventure travel across Canada and USA. To reach Rick, call (888) 291-2430 or visit http://www.HealingThroughMovement.com .

Healing Through Movement
Fitness • Rehabilitation • Presentations • Publications

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# Other Products from Rick Kaselj

To order these books, visit http://ExercisesForInjuries.com


**Muscle Imbalances Revealed – Lower Body** (Earn 6 CECs)

As fitness professionals we often just focus on strength, flexibility and cardiovascular techniques with our clients in order to help them reach their goals. By just focusing on these three exercise techniques you hamper your client's ability to overcome injuries, bust through fitness plateaus and stay injury-free. To get past this what you need in your toolbox is a full understanding of muscle imbalances.

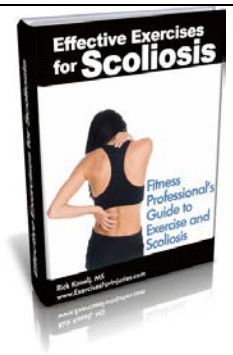
Muscle Imbalances Revealed goes beyond stretching what is tight, strengthening what is weak or just performing corrective exercises. It assists the fitness professional in understanding the synergies that exist within the body and walks you through the intricacies of muscle imbalances. In Muscle Imbalances Revealed, the fitness professional will be guided by 6 experts from various professions on how to identify, address and perform the most effective exercises to address muscle imbalances and increase the speed of injury recovery, bust through fitness plateaus and prevent injuries.

For more information visit - http://MuscleImbalancesRevealedLowerBody.com

**Muscle Imbalances Revealed – Upper Body** (Earn 7 CECs)

In the Upper Body Edition of Muscle Imbalances Revealed, you will be guided by four experts from various health professions on how to identify and address muscle imbalances and perform the most effective exercises to improve performance, bust through fitness plateaus, increase the speed of injury recovery and prevent future injuries in the upper body.

For more information visit - http://MuscleImbalancesRevealedUpperBody.com




**The Most Effective Exercises For Scoliosis** (Earn 6 CECs)
- Fitness Professional's Guide to Exercise and Scoliosis -

Exercise is recommended by physicians for people with scoliosis. With more people with scoliosis leaning towards exercise to help improve their condition, it is vital for the fitness professional to be educated and prepared to work with these clients. Exercise can help safely alleviate pain, stiffness, de-conditioning, and muscular weakness associated with scoliosis. Gain a comprehensive understanding of scoliosis, how to design an appropriate exercise program for your clients with scoliosis and discover the most effective exercises for scoliosis. If you are ready to increase your confidence working with clients with scoliosis, would like to understand how to safely train clients with scoliosis and empower yourself with the exercises to help your clients with scoliosis, then Effective Exercises for Scoliosis is a must for you.

For more details visit - http://EffectiveExercisesForScoliosis.com


**Effective Rotator Cuff Exercises** (Earn 6 CECs)
- Fitness Professional's Guide to Rotator Cuff Exercises -

Rotator cuff injuries are the most common shoulder injuries fitness professionals will face. Exercise is recommended by physicians for people with rotator cuff injuries and therefore, it is vital for the fitness professional to be educated and prepared to work with these clients. Exercise can help safely alleviate pain, decrease stiffness, increase range of motion, and improve rotator cuff strength. This course will help you gain a comprehensive understanding of rotator cuff injuries, how to design an appropriate exercise program for your clients with a rotator cuff injury, and discover the most effective exercises for the rotator cuff. If you are ready to increase your confidence working with clients with rotator cuff injuries, would like to understand how to safely train clients with rotator cuff injuries and empower yourself with the best exercises to help your clients with rotator cuff injuries, then *Effective Exercises Rotator Cuff Exercises* is a "must take" course for you.

For more details visit - http://EffectiveRotatorCuffExercises.com

## Interested in a Shoulder Injury Guide?

**Visit http://ExercisesForInjuries.com**

To order these manuals, visit http://ExercisesForInjuries.com

# Ready-to-Download Video Presentation from Rick Kaselj


## Scapular Stabilization Exercise Program

Shoulder injuries lead to pain, prevent people from doing the things they love and make the simplest tasks challenging. Many will learn strength exercises to help them recover from their shoulder injury, but too often these strength exercises will lead to slower recovery from a shoulder injury. What needs to be done before strengthening the shoulder is activating, building endurance and strengthening the scapular stabilization muscles. Adding this one step will speed up the recovery from a shoulder injury and prevent re-injury of the shoulder.

For more details visit - http://ScapularStabilizationExercises.com/


## Sacroiliac Pain Solution

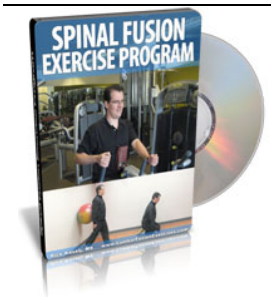
The most common and most ignored injury in females is the sacroiliac joint. Most times the exercise program that is given is what one would give for someone with a lumbar spine lower back injury,. The SI joint exercise program design is very different than that of a regular lower back injury program. In this practical and hands on presentation you will learn the 5 step exercise process to overcome your client's or your sacroiliac joint (SI joint) injury.

For more details visit - http://SacroiliacPainSolution.com/

## Shoulder Pain Solved

Shoulder pain is one of the most common injuries people will face. Many times people will just stop using their arm in order to avoid the pain. The odd time they use their arm, they will be reminded of their shoulder pain. Don't just ignore your shoulder pain, do something about it. Shoulder Pain Solved is a step-by-step program that requires minimal equipment and only a few minutes a day in order to get you on the road to a pain free shoulder.

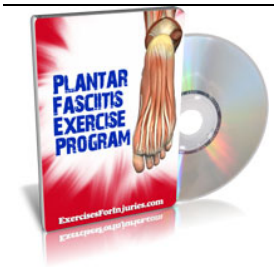
For more details visit - http://www.shoulderpainsolved.com/shoulder-pain-solved/




## Lower Back Spinal Fusion & Exercise

In many situations, a lower back condition can lead to lower back spinal fusion surgery. It is estimated 126,000 spinal fusion surgeries occur a year in the USA and since 1996 the number of surgeries has increased by 116%. The group that has had the greatest increase in lower back spinal fusion is adults over 60. Lumbar compression fractures, spinal deformities, spondylolisthesis, lumbar instability, disc herniation and degenerative disc disease are common conditions that can lead to lower back spinal fusion. A key component in the recovery from lower back spinal fusion surgery is exercise. The role of exercise after spinal fusion is important in speeding up recovery, strengthening the muscles supporting the vertebrae and improving the endurance of core stability muscles. The focus of the spinal fusion and exercise webinar will be exercise program design and exercises for a client who has had a lower back spinal fusion.

For more details visit - http://exercisesforinjuries.com/lumbar_fusion_exercises/




## Exercise and Plantar Fasciitis

The role of exercise for plantar fasciitis is vital in helping with a speedy recovery, decreasing pain, decreasing the risk of reoccurrence and in creating an action plan on what to do if symptoms return. The focus of the plantar fasciitis and exercise video presentation is an exercise program and exercises for a client that has plantar fasciitis.

For more details visit - http://BestPlantarFasciitisExercises.com


## Knee Injury Solution

I often get asked, “How do I strengthen my knees?”, or “I have injured my knee, what exercises can I do to fix it?” Knee Injury Solution answers these questions. It give you videos and an exercise manual with a variety of exercises that you can do with minimal or no equipment to strengthen your knees, rehabilitate or prevent a knee injury.

For more details visit - http://KneeInjuryExercises.com

# Effective Rotator Cuff Exercises

Fourth Edition

Exam Packet

A special thanks to our course reviewers.

Mary Sanders
University professor
Reno, NV

Erin Hughes
Physical therapist
San Antonio, TX

Christy Rusdal
Physical therapist
Clancy, MT

Jacqueline Kodas
Certified personal trainer
Peculiar, MO

Susan P. Backus
Lifeguard and Wellness professional
Dandridge, TN

**Unconditional Guarantee**
If you are not completely satisfied with the Healing Through Movement correspondence course *Effective Rotator Cuff Exercises*, you may exchange your course or receive a full refund, less shipping and handling charges. Materials must be returned unmarked and intact to our office within 30 days of receiving them. All refunds will be made in the same payment method as received.



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# Course Syllabus

Welcome to the Healing Through Movement correspondence course *Effective Rotator Cuff Exercises*. This course is designed to present an overview of the rotator cuff, explain the role of exercise in the management of the rotator cuff injuries, and outline specific guidelines for safe and effective exercise programming for clients with rotator cuff injury.

## *Course Materials*

*Effective Rotator Cuff Exercises* course materials are as follows:

- *Effective Rotator Cuff Exercises* workbook
- Exam Packet

## *Course Instructions*

This course is self-directed, which enables you to work at your own pace without the help of an instructor. We recommend that you complete the course and take the exam within the year you purchased the course. The following sequence is an effective way to complete the course.

1. **Learn** — Read the *Effective Rotator Cuff Exercises* workbook.

2. **Practice** — Perform each of the exercises before teaching them to your clients.

3. **Test** — Complete the exam, course evaluation, and certificate information. For successful completion, a minimum of 40 out of 50 points (80%) must be achieved on the exam. Instructions for taking the exam are on page 6.

# Effective Rotator Cuff Exercises

## *Course Description*

Rotator cuff injuries are the most common shoulder injuries fitness professionals will face. Exercise is recommended by physicians for people with rotator cuff injuries and therefore, it is vital for the fitness professional to be educated and prepared to work with these clients. Exercise can help safely alleviate pain, decrease stiffness, increase range of motion, and improve rotator cuff strength. This course will help you gain a comprehensive understanding of rotator cuff injuries, how to design an appropriate exercise program for your clients with a rotator cuff injury, and discover the most effective exercises for the rotator cuff. If you are ready to increase your confidence working with clients with rotator cuff injuries, would like to understand how to safely train clients with rotator cuff injuries and empower yourself with the best exercises to help your clients with rotator cuff injuries, then *Effective Exercises Rotator Cuff Exercises* is a "must take" course for you.

## *Learning Objectives*

<u>At the completion of this course you will be able to:</u>

- List effective strengthening and stretching exercises for the rotator cuff
- Demonstrate a knowledge range of motion exercises for the rotator cuff
- Apply a "ready to use" 12 week rotator cuff exercise program
- Identify 4 pulley exercises for the rotator cuff
- Define the 7 structures that make up the shoulder joint
- Apply and identify the structures that stabilize the shoulder joint
- Discuss the 5 most common causes of rotator cuff injuries
- Examine the 12 factors that influence the risk of a rotator cuff injury
- Explain the 3 most common injuries of the rotator cuff
- Understand the common assessment and use diagnostic tools for evaluating rotator cuff injuries
- List the 6 treatment options for rotator cuff injuries
- Perform & guide clients through 87 exercises for rotator cuff health and post rehab

## Take Your Exam

## *Instructions*

- Only one person may receive continuing education credits for this exam.
- This is an open book exam.
- Select the best possible answer for each test question.
- Score your answers on the Exam Answer Sheet.
- Keep a copy of your exam for your records.

# Taking Your Exam

Complete the below exam form.

After completing the exam from, please e-mail or fax the course evaluation, certificate information and completed answer sheet to Exercises For Injuries.

**BEST OPTION =>** E-mail: support@ExercisesForInjuries.com

Fax: (604) 677-5425

**Note: To receive CECs/CEUs for this course, complete the exam and submit it for scoring within the year you purchased the course.**

Please also complete the Course Evaluation and Certificate Information and send them in with your completed answer sheet.

# Questions?

Email support@ExercisesForInjuries.com

**Note: To receive CECs/CEUs for this course, complete the exam and submit it for scoring within the year you purchased the course.**

# Effective Rotator Cuff Exercises

## *Exam Answer Sheet - 4th Edition -*

Name _____ Date _____

Phone _____ Score (50 possible) _____

Email _____

Please circle your answers (no Xs or blackouts)

1. A B C D
2. A B C D
3. A B C D
4. A B C D
5. A B C D
6. A B C D
7. A B C D
8. A B C D
9. A B C D
10. A B C D
11. A B C D
12. A B C D
13. A B C D
14. A B C D
15. A B C D
16. A B C D
17. A B C D
18. A B C D
19. A B C D
20. A B C D
21. A B C D
22. A B C D
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32. A B C D
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36. A B C D
37. A B C D
38. A B C D
39. A B C D
40. A B C D
41. A B C D
42. A B C D
43. A B C D
44. A B C D
45. A B C D
46. A B C D
47. A B C D
48. A B C D
49. A B C D
50. A B C D

# *Effective Rotator Cuff Exercises Exam*

**1. The rotator cuff is composed of the tendons of these four muscles.**

a. Supraspinatus, infraspinatus, subscapularis, teres major.
b. Supraspinatus, infraspinatus, pectoralis minor, teres minor.
c. Supraspinatus, infraspinatus, subscapularis, teres minor.
d. Supraspinatus, infraspinatus, pectoralis major, teres minor.

**2. The main function of the rotator cuff is to hold this long bone in place.**

a. Ulna
b. Humerus
c. Femur
d. Tibia

**3. Which among athletes tend to be at increased risk of rotator cuff injuries?**

1 Soccer player
2 Baseball player
3 Swimmer
4 Golfer

a. 1,2,3
b. 1,2,4
c. 2,3,4
d. 2,4

**4. Which of the following are intrinsic factors that contribute to rotator cuff injuries?**

1 Falls
2 Repetitive overhead or throwing motions
3 Aging tendons
4 Tendon calcification

a. 1,2,3,4
b. 2,3,4
c. 3,4
d. 4 only

5. **Which of the following are considered extrinsic factors that contribute to injuries of the rotator cuff?**
   1 Falls
   2 Repetitive overhead or throwing motions
   3 Aging tendons
   4 Tendon calcification

   a. 1,2,3,4
   b. 1,2,3
   c. 1,2,4
   d. 1,2

6. **This double curved bone attaches to the manubrium at its medial end to form the sternoclavicular joint.**

   a. Clavicle
   b. Scapula
   c. Humerus
   d. Acromion

7. **The clavicle attaches to the acromion at its lateral end to form this joint.**

   a. Acromioclavicular joint
   b. Glenohumeral joint
   c. Scapulothoracic joint
   d. Sternoclavicular joint

8. **This bone connects with the humerus and with the clavicle.**
   a. Manubrium
   b. Glenoid labrum
   c. Scapula
   d. Ribcage

9. **The enlarged bony area found at the tip of the spine of the scapula that connects with the clavicle is the**
   a. Coracoid process
   b. Acromion process
   c. Suprasternal notch
   d. Superior angle of the scapula

**10. A shallow and round basin-like socket that receives the head of the humerus is the**

a. Glenoid fossa
b. Supraglenoid fossa
c. Acetabulum
d. Supraclavicular fossa

**11. The type of connective tissue that forms the rotator cuff are the**

a. Ligaments
b. Bursae
c. Tendons
d. Fascia

**12. The four essential joints that make up the shoulder are**

a. Glenohumeral joint, acromioclavicular joint, scapulothoracic joint, sternoclavicular joint
b. Glenohumeral joint, acromioclavicular joint, temporomandibular joint, sternoclavicular joint
c. Glenohumeral joint, acromioclavicular joint, scapulothoracic joint, sternocostal joint
d. Glenohumeral joint, acromioclavicular joint, temporomandibular joint, sternocostal joint

**13. This joint is considered the most unstable shoulder joint in the human body.**

a. Glenohumeral joint
b. Acromioclavicular joint
c. Temporomandibular joint
d. Sternoclavicular joint

**14. What type of joint is the glenohumeral joint?**

a. Hinge joint
b. Saddle joint
c. Ball-and-socket joint
d. Condyloid joint

**15. Which is an example of an activity modification that will decrease the risk of rotator cuff injury recurrence?**

a. Keep doing what you are doing on a daily basis.
b. Take frequent rest periods when performing overhead activities.
c. Perform all your overhead activities at one time during the day.
d. Do all your activities with dominant arm.

**16. A site below the acromion process and above the humeral head that is commonly involved in impingement syndrome is the**

a. Greater tubercle
b. Coracoid process
c. Subacromial space
d. Glenoid fossa

**17. What is the recommended set, repetition and intensity to perform rotator cuff isometric exercises?**

a. 1 set of 6 repetitions at an intensity of 10 % of maximal strength
b. 3 set of 10 repetitions at an intensity of 70% 1Reptition Maximum
c. 3 set of 6 repetitions at an intensity of 90% 1Reptition Maximum
d. 3 set of 12 repetitions at an intensity of 60% 1Reptition Maximum

**18. Which joint in the shoulder is not classified as a true joint?**

a. Acromioclavicular joint
b. Glenohumeral joint
c. Scapulothoracic joint
d. Sternoclavicular joint

**19. The scapular muscles or pivoters include which of the following**

a. Trapezius, deltoid, serratus anterior, levator scapulae
b. Trapezius, rhomboids, serratus anterior, levator scapulae
c. Trapezius, rhomboids, deltoid, serratus anterior
d. Trapezius, serratus anterior, rhomboids

**20. Which of the following types of exercises is not a component of an effective rotator cuff exercise program?**

a. Range of motion
b. Strengthening
c. Stretching
d. Olympic lifts

**21. How many repetitions should initially be performed with pendulum exercises?**

a. 12
b. 10
c. 20
d. 25

**22. Which of the following is the most appropriate guideline when prescribing rotator cuff exercises?**

a. Perform the exercise in your pain free range of motion.
b. If you feel pain, just push through it.
c. Do all exercises in full range of motion no mater what you feel.
d. You must do all the exercises through full range of motion.

**23. The rotator cuff tendon that is most susceptible to injuries and tear is the**

a. Supraspinatus
b. Infraspinatus
c. Teres minor
d. Subscapularis

**24. Which of the rotator cuff muscles plays a major function in shoulder abduction?**

a. Supraspinatus
b. Infraspinatus
c. Teres minor
d. Subscapularis

**25. Which structure increases the depth of the glenoid fossa in order to increase the stability of the shoulder?**

a. Subacromial space
b. Glenoid labrum
c. Acetabulum labrum
d. Glenoid fossa

**26. These structures provide stability at the end ranges of motion of the shoulder joint.**

a. Scapular stabilizers
b. Rotator cuff stabilizers
c. Static stabilizers
d. Dynamic stabilizers

**27. Which stage of tendon degeneration is characterized by formation of scar tissue and inflammation of the impinged tendon?**

a. Stage I
b. Stage II
c. Stage III
d. Stage IV

**28. According to Neer, which is NOT one of the Stage 1 tendon degeneration characteristics:**

a. Marked by edema and hemorrhage
b. Tendon damages are irreversible
c. It is usually seen in individuals younger than 25 years
d. A tendon injury that responds to conservative management

**29. A hallmark sign of a rotator cuff tear is**

a. A flattening of the deltoid muscle
b. Deltoid atrophy
c. Supraspinatus atrophy
d. Scapular winging

**30. Dynamic stabilizers consists of**

a. Scapular muscles
b. Rotator cuff muscles
c. A and B
d. Bony ligaments

**31. A shoulder examination that assesses arm abduction and external rotation is the**

a. Neer's impingement sign
b. Apley scratch test
c. Empty can test
d. Hawkins-Kennedy test

**32. The main imaging technique used to diagnose and study rotator cuff injuries is**

a. Plain radiography
b. Ultrasonography
c. Electrodiagnostic test
d. Magnetic resonance imaging

**33. The initial phase of managing a rotator cuff injuries involves**

a. Rest, ice, compression, elevation
b. Protection, rest, ice/hot applications, conservation, elevation, massage, early motion and medication
c. Protection, rest, ice/hot applications, compression, elevation, manual therapy, early motion and medication
d. Protection, rest, ice/hot applications, compression, elevation, massage, early motion and medication

**34. What is the recommended number of repetitions and length of time to hold a stretch to improve their rotator cuff range of motion?**

a. 2 repetitions held for 30 seconds
b. 2 repetitions held for 60 seconds
c. 2 repetitions held for 45 seconds
d. 1 repetition held for 30 seconds

**35. What is the initial recommended number of repetitions and sets to strengthen the rotator cuff initially using a dynamic contraction?**

a. 2 set of 12 repetitions
b. 1 set of 15 repetitions
c. 3 set of 12 repetitions
d. 1 set of 12 repetitions

**36. Which rotator cuff muscle does the dynamic hug exercise focus on?**

a. Infraspinatus
b. Teres minor
c. Supraspinatus
d. Subscapularis

**37. What is a maximum isometric exercise?**

a. Performing 100% of maximum contraction
b. Performing 100% of maximum contraction with pain-free range of motion
c. Performing 85% of maximum contraction with pain-free range of motion
d. Performing 10% of maximum contraction with pain-free range of motion

**38. Which among these patients are indicated to have surgery to treat and manage a rotator cuff injury?**

1 Patients younger than 60 years of age with full-thickness tears.
2 Patients who fail to demonstrate improvement after 4 weeks of therapy.
3 Patients who regularly perform repeated overhead activities.
4 Patients who fail to improve 6 weeks after the initiation of therapy.

a. 1,2,3,4
b. 1,2,3
c. 1,3,4
d. 3,4

**39. Which muscle is primarily responsible for scapular retraction (adduction)?**

a. Rhomboids
b. Levator scapulae
c. Serratus Anterior
d. Latissimus Dorsi

**40. Scapular protraction refers to scapular**

a. Motion toward the spine
b. Motion away from the spine
c. Elevation
d. Depression

**41. Which piece of equipment would best provide a warm up for the shoulder?**

a. Upper body bike
b. Elliptical machine with no arms
c. Recumbent bike
d. Treadmill

**42. Which is not a stretching benefit to the shoulder ?**

a. Reduces muscle stiffness
b. Relieves rotator cuff pain
c. Tightens up the shoulder muscles
d. Improves overall shoulder function

**43. Which of the following exercises activates the scapular stabilization muscles?**

a. Pulley flexion
b. Pulley horizontal abduction
c. Standing bilateral pulley rows
d. Standing unilateral pulley rows

**44. Which of the following types of exercises mainly intend to restore joint mobility and increase the shoulder joint range of motion?**

a. Range of motion exercises
b. Strengthening exercises
c. Stretching exercises
d. Resistance exercises

**45. A type of resistance training where the individual uses their own muscles to exert a force against a stationary object is called**

a. Isotonic exercise
b. Isometric exercise
c. Stretching
d. Range of motion exercise

**46. Rotator cuff tears measuring 3 to 5 cm are classified as**

a. Small
b Medium
c. Large
d. Massive

**47. Which of the rotator cuff muscles assists with internal rotation?**

a. Supraspinatus
b. Infraspinatus
c. Teres minor
d. Subscapularis

**48. Improved strength of the rotator cuff muscles can be achieved through the use of which equipment:**

1 Dumbbells
2 Elastic tubing
3 Pulleys
4 Body weight

a.1,2,3,4
b.1,2,3
c.1,2
d. 1 only

**49. Which of the following should be performed by a qualified health care provider?**

1 Palpation
2 Special tests
3 Imaging techniques
4 Surgery

a.1
b.1,2
c.1,2, 3
d. 1, 2, 3, 4

**50. Range of motion exercises where the patient uses his own strength to perform the exercises is called**

a. Active ROM
b. Passive ROM
c. Passive-assistive ROM
d. B and C

Effective Rotator Cuff Exercises

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