



Athletes Rehab

Book of Therapeutic and Performance Based Exercises of the Shoulder

By Brett Holland PT, DPT, CSCS

About the author:

Brett Holland PT, DPT, CSCS graduated from Thomas Jefferson University's physical therapy program in the summer of 2013. He sat for the licensing exam in October 2013 and passed with the highest possible score (800). During his time at school he completed a clinical rotation at the esteemed Champion Sports Medicine located in Birmingham, Alabama. Since graduation, he has obtained his Certified Strength and Conditioning Specialty through the National Strength and Conditioning Association. He is also active in research where he is striving to identify potential risk factors for injuries in overhead athletes as well as ways in which to improve athletic performance.

In addition to his graduate work, Brett is a former division one baseball player at Monmouth University where he graduated with a bachelor's of science and degree in biology. He was a part of two regional appearing teams, '07 Arizona State and '09 Ole Miss, and twice batted over .300. He is the only player to consecutively win Monmouth baseballs strength and conditioning competition 3 years in a row. He is the creator of www.athletesrehab.com



Stretching/mobilization of the shoulder

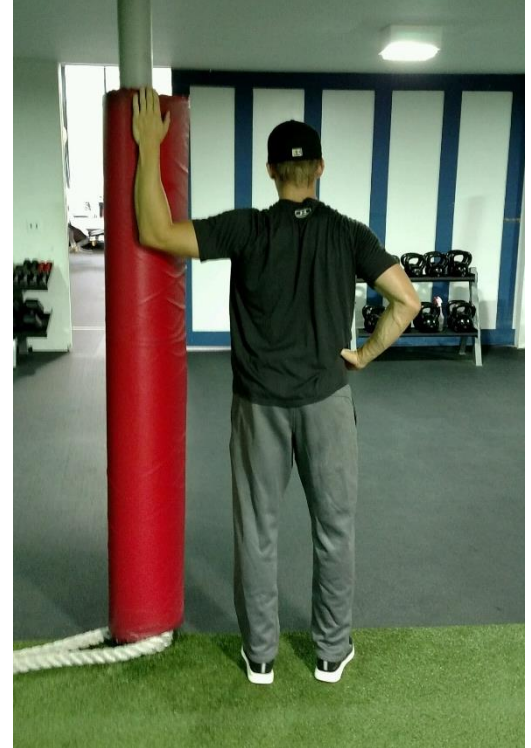
- Stretches are typically held for 30 seconds to 1 minute in duration
- Repeat 3-5 times
- These stretches are not meant to be overly aggressive. A mild stretch held for a longer duration is generally recommended over a short aggressive stretch.

Unilateral Wall Stretch

A 2006 research study identified the unilateral wall stretch as the most effective technique to stretch the pec minor [1].

Technique:

Place your arm at shoulder height and bend your elbow to form a 90 degree angle. Gently lean forward.



Cross-Body Stretch

McClure et al. demonstrated a significant improvement in internal rotation with the use of the cross-body stretch [2]. This stretch is an excellent choice if you are experiencing posterior (back of the shoulder) tightness.

Technique:

Either start on the ground or lean against the wall. This helps stabilize the shoulder blade.

Grab your elbow and pull your arm across your chest.



Triceps and Latissimus Dorsi Stretch

Technique:

Leaning against a wall or firm surface helps to stabilize the shoulder blade.

Grab your opposite elbow and gently pull the arm and lean away from the wall. The more you flex the arm, the more the stretch.

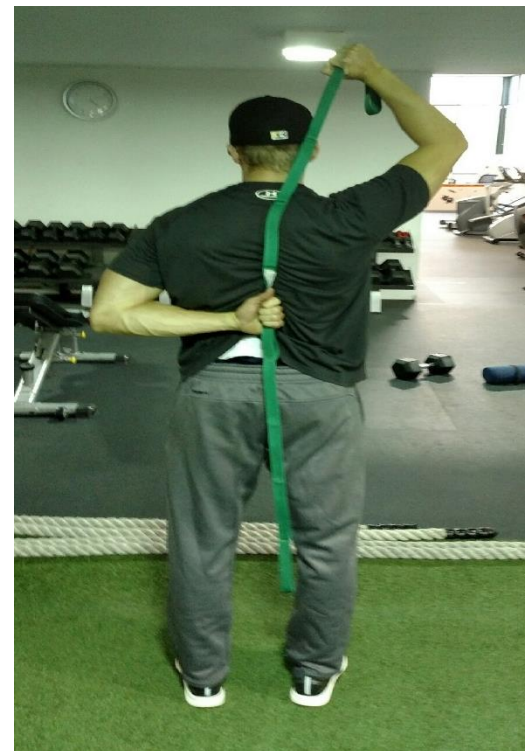
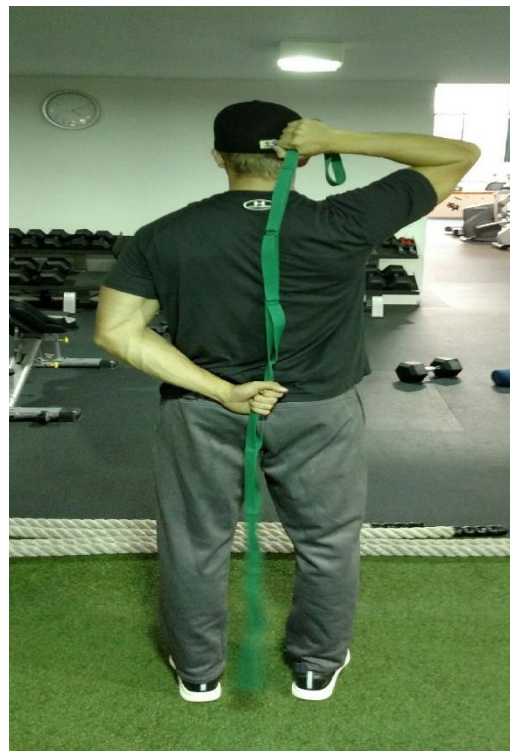


Behind the Back Stretch

Stretching behind the back is a combination of shoulder and elbow movement.

Technique:

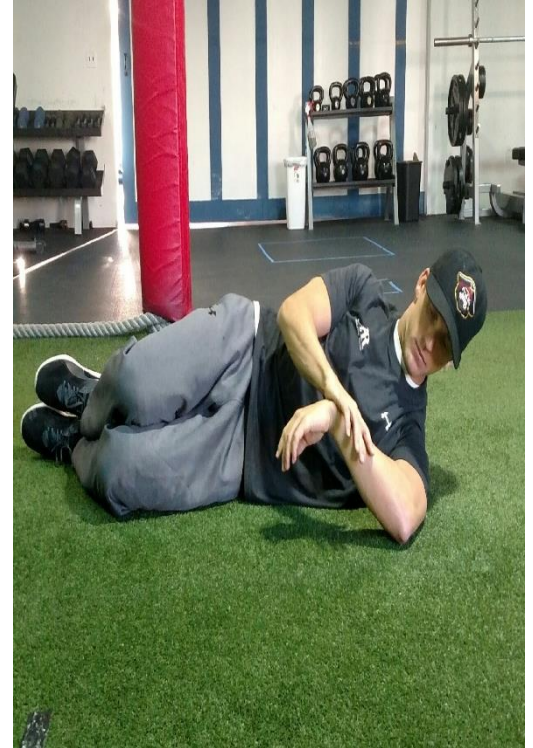
Place a strap or towel in both hands as shown in the picture. Slowly slide your arm upwards.



Modified Sleeper Stretch

Technique:

Lay on your side with your body angled away from the arm on the ground. This helps avoid impingement of rotator cuff. Place the arm on the ground as shown with the elbow bent 90 degrees. Push your wrist towards the ground. Multiple angles may be used (the first picture the elbow is below shoulder height, the second picture the elbow is aligned with the shoulder).



Exercises with Resistance Bands

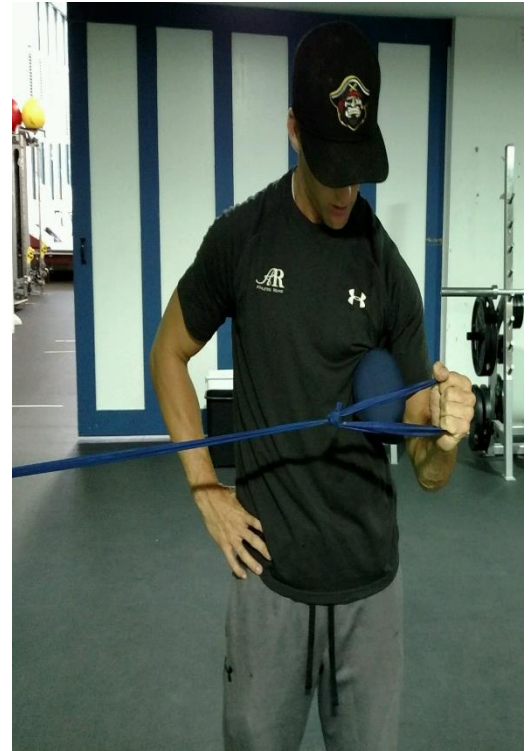
- Resistance bands offer several distinct advantages over free weights.
- Resistance bands are termed variable resistance, meaning as the band stretches to a greater length, the resistance becomes greater. The change in resistance makes the muscles contract harder towards the end of the movements, which is similar to the way in which we perform many sporting and daily activities.
- Repetitions and sets can vary depending on your goals or sport. Typically 3 sets of 10-15 repetitions are performed.

External Rotation

Notice the small bolster underneath the arm. A rolled up towel can also be used. This helps maintain form during the exercise, isolates the rotator cuff, and prevents unwanted activation of the deltoid.

Technique:

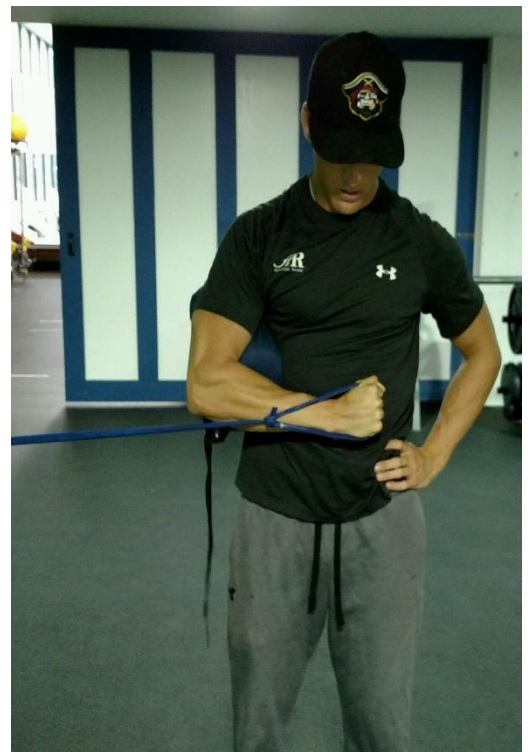
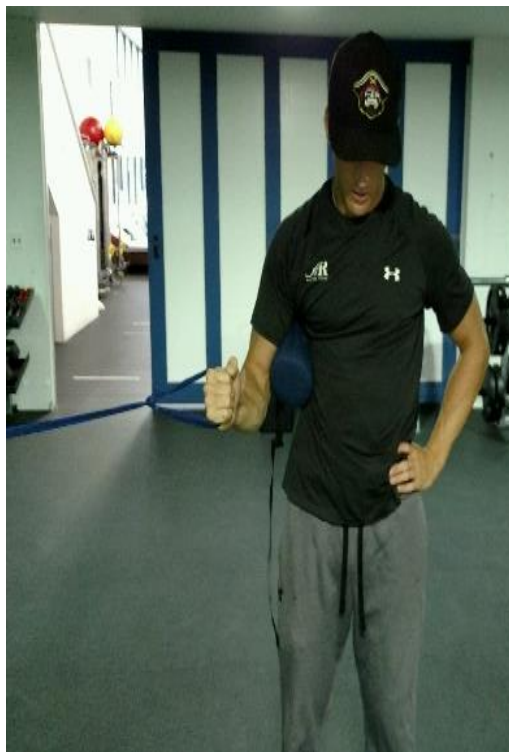
Begin with your hand near your stomach. Rotate your arm until even with the side of your body.



Internal Rotation

Technique:

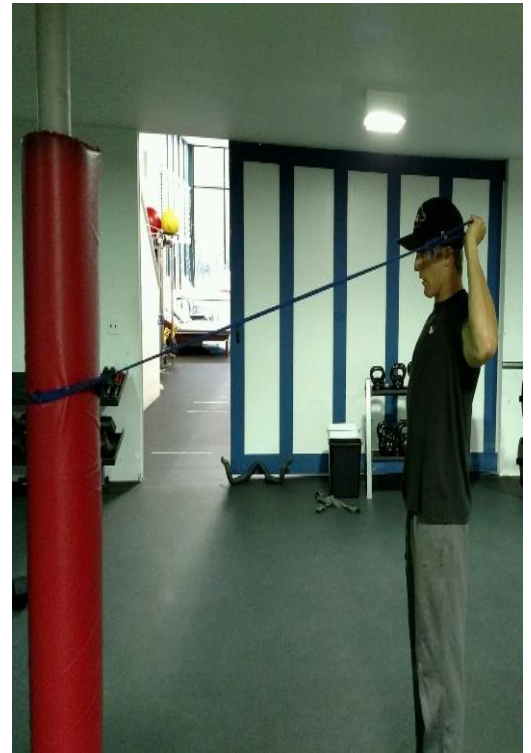
Begin with your arm by your side. Rotate your arm towards your body.



**External Rotation @ 90
(Advanced)**

This exercise is especially beneficial to people participating in overhead sports.

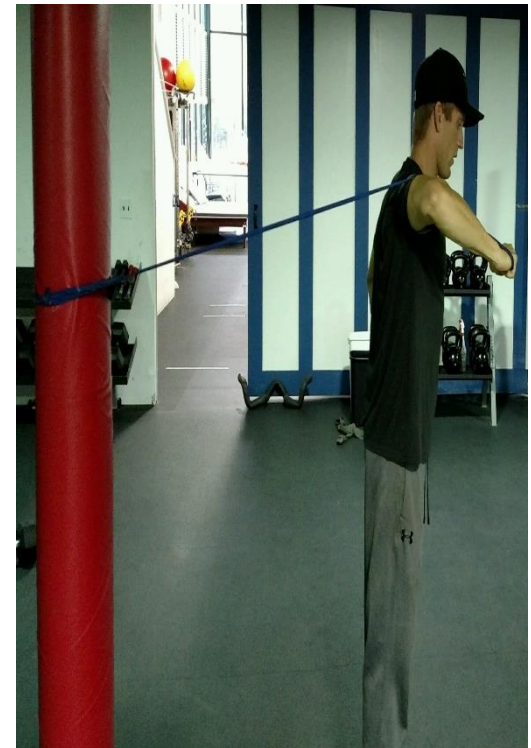
Technique:
Start with your elbow at shoulder height. Rotate your shoulder backwards until your hand is even with your ear.



**Internal Rotation @ 90
(Advanced)**

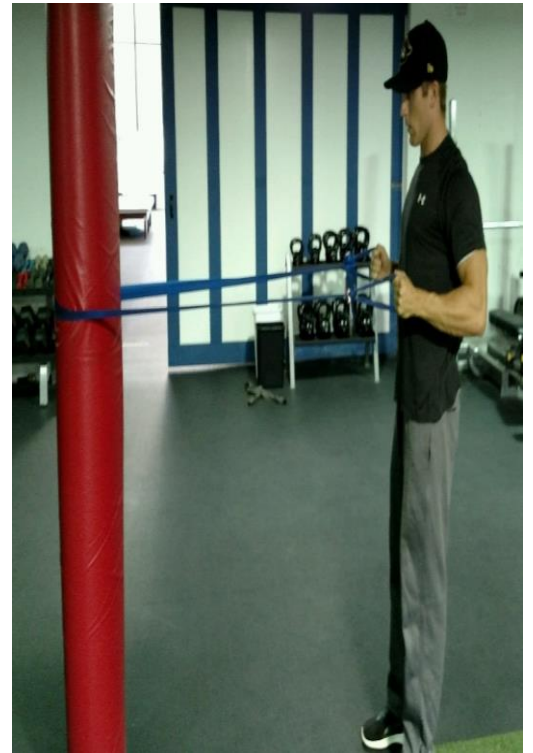
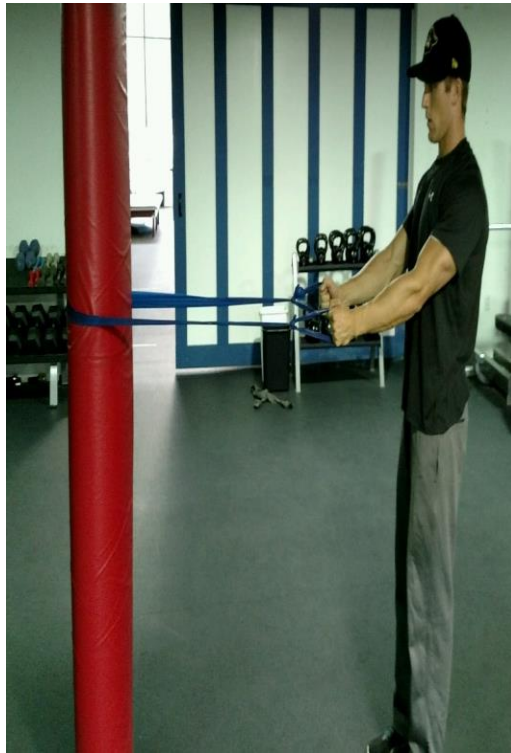
Internal rotation at 90 degrees helps train the muscles responsible for force generation during overhead movements such as throwing or serving. Be careful to not start too far behind your head as it will place too much stress on the biceps-labral complex.

Technique:
Begin with your elbow at shoulder height and arm in line with the body. Rotate your shoulder downwards.



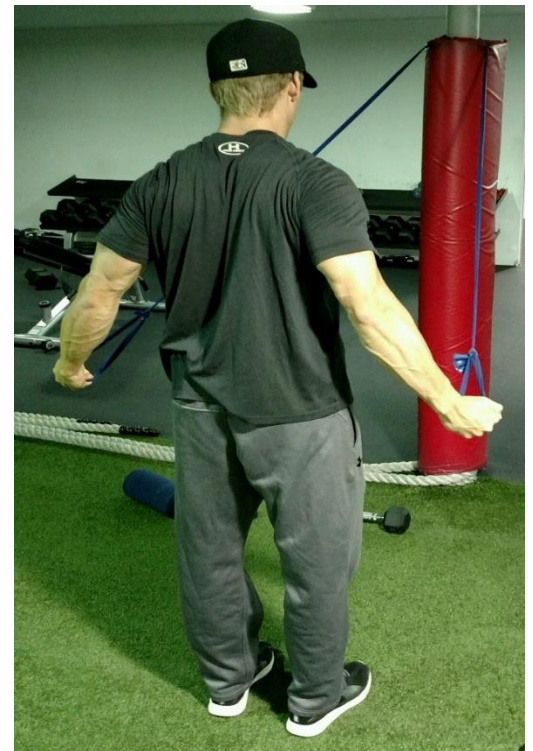
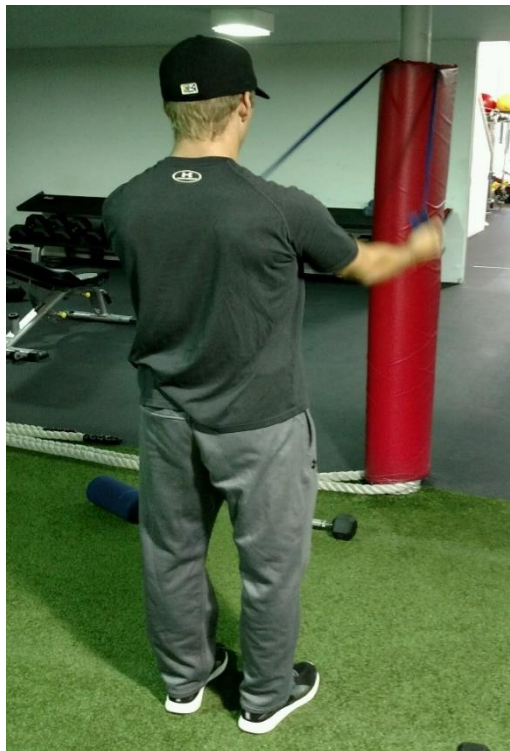
Rows

Technique:
Begin with your arms nearly straight. Pull your arms back towards your sternum and squeeze your shoulder blades.



Extension

Technique:
Begin with your arms straight and your palms facing upwards. Pull your arms straight back and squeeze your shoulder blades together.

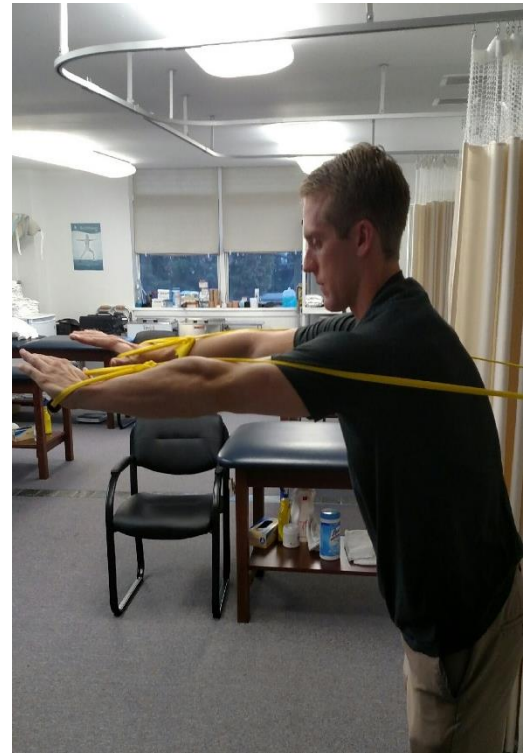


Dynamic Hug

The dynamic hug activates the serratus anterior. The serratus anterior helps rotate the shoulder blade upward preventing shoulder impingement [3].

Technique:

Begin with your arms out to your side as shown. Press your arms away from you. Focus on reaching outwards, this ensures your shoulder blades protract (move away from your midline).

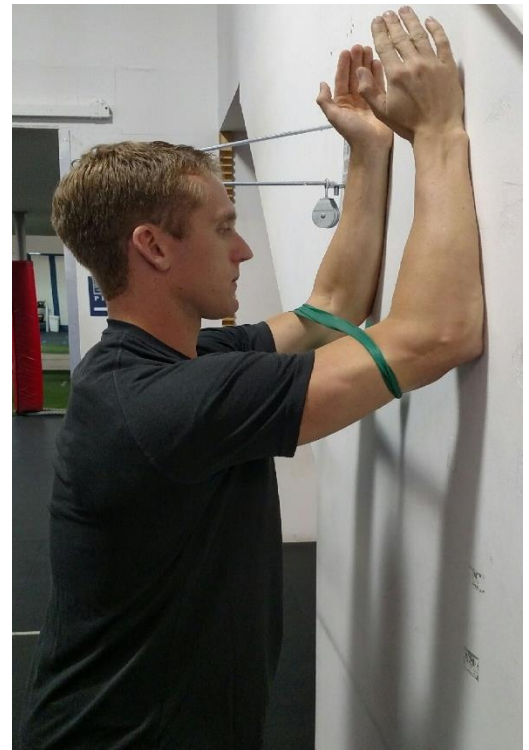


Serratus Wall Slide

The wall slide is an exercise that is used to promote upward rotation of the shoulder blade which helps avoid impingement.

Technique:

Place resistance bands around your forearm. Slide your forearms up the wall while focusing on rotating your shoulder blades upwards and outwards.



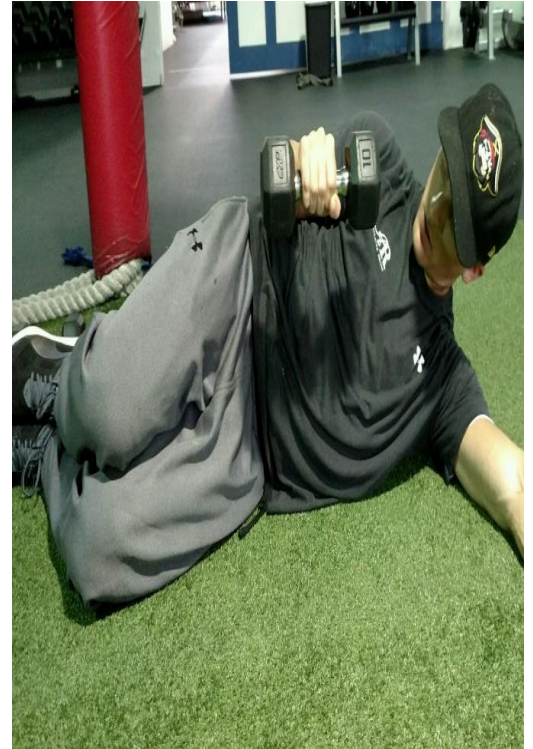
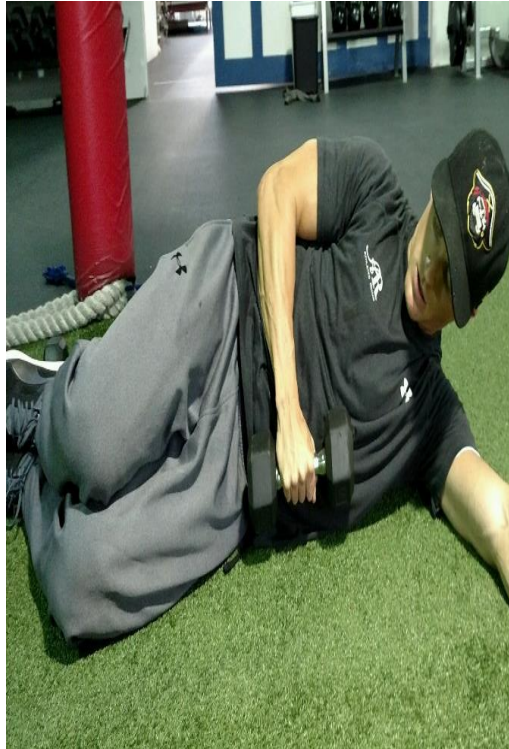
Exercises with Weights

- Free weights provide you with the exact amount of weight you are using during an exercise, which is difficult to ascertain with resistance bands.
- In general, free weights also provide easier set up and more numerous exercise selection.

Side-lying External Rotation

This exercise shows the highest amount of activation of the infraspinatus and teres minor muscles (2 of the 4 rotator cuff muscles) [4].

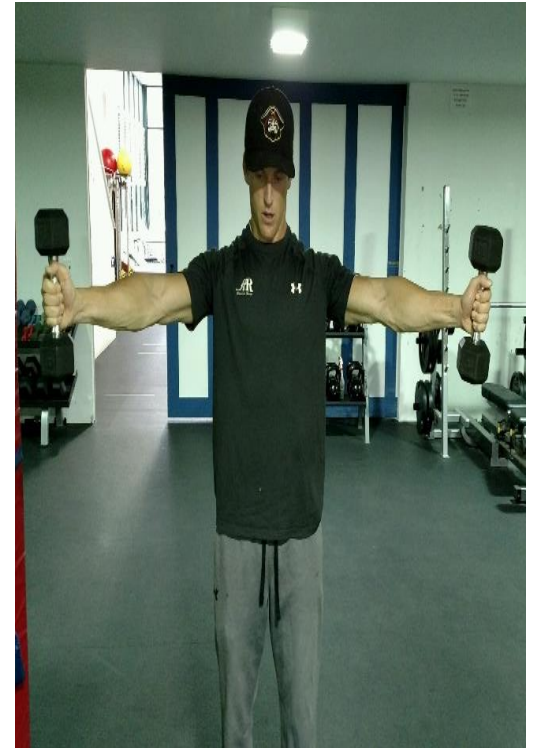
Technique:
Begin in a side-lying position with your arm near your stomach. Rotate your shoulder upwards.



Full Can

The full can is a great exercise to work the supraspinatus (part of rotator cuff) muscle while minimizing activity of the deltoid muscle [5].

Technique:
Begin with your hands at your sides. Lift your arms to shoulder height while keeping your thumbs facing up.



Serratus Punch

The serratus punch exercise elicits high serratus anterior activity [3].

Technique:

Begin with your arm held straight outward. Punch forward, avoid bending the arm.



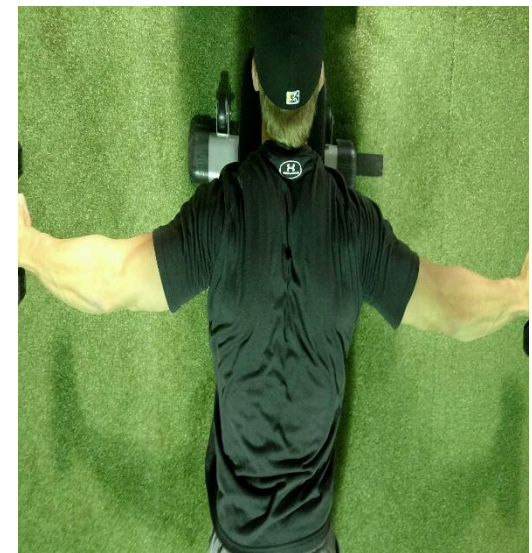
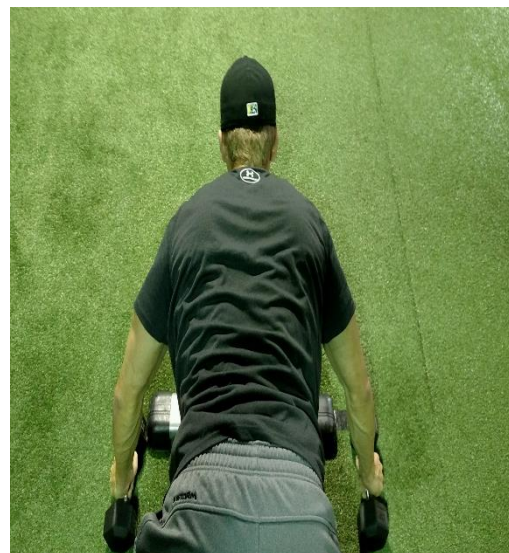
T's

T's are an excellent exercise to develop the muscles which support the shoulder blade (scapula).

Technique:

Begin lying on your stomach. Raise your arms directly backwards to form a T.

These exercises may also be performed unilaterally on a table (T's, Y's, I's).

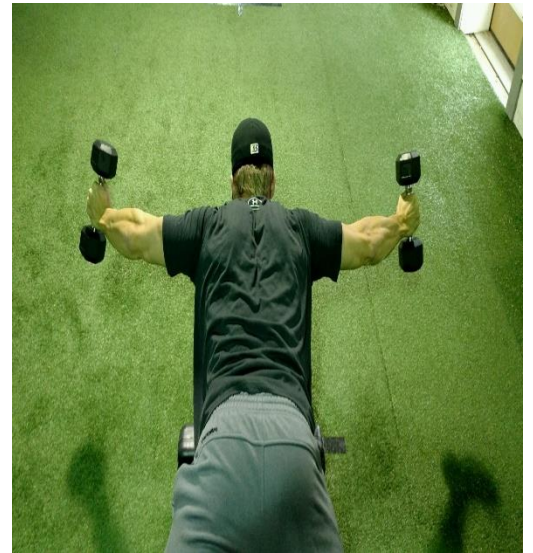
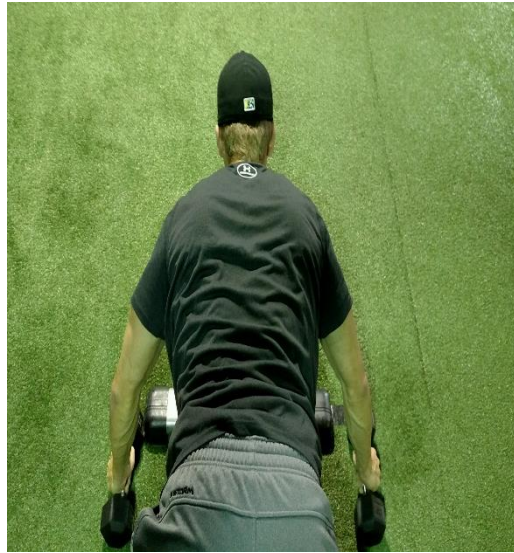


Y's

A 2015 study found that prone horizontal abduction with the thumbs upward, effectively induced high activity of the lower trapezius muscle [6].

Technique:

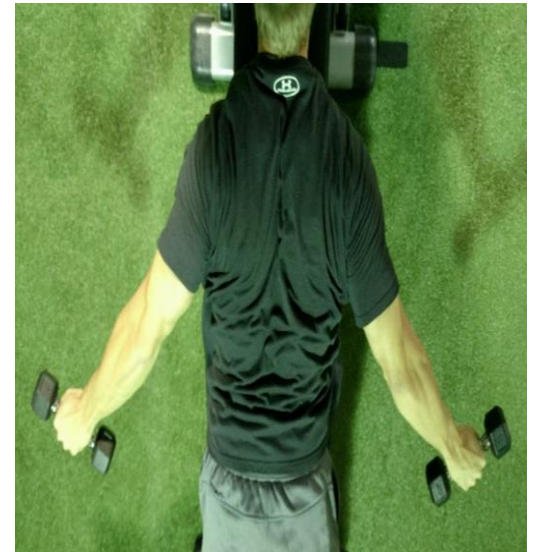
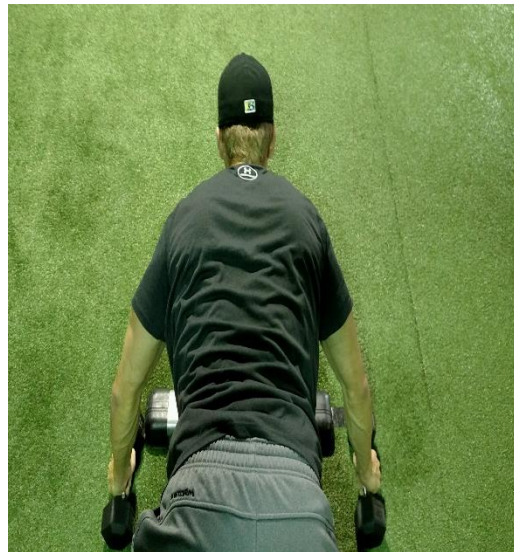
Begin with your arms hanging downward. Elevate your arms at about 120 degrees with your thumbs facing upwards.



I's

Technique:

Begin with your arms hanging downward. Raise your arms by your waist as shown in the picture.



Advanced Stabilization

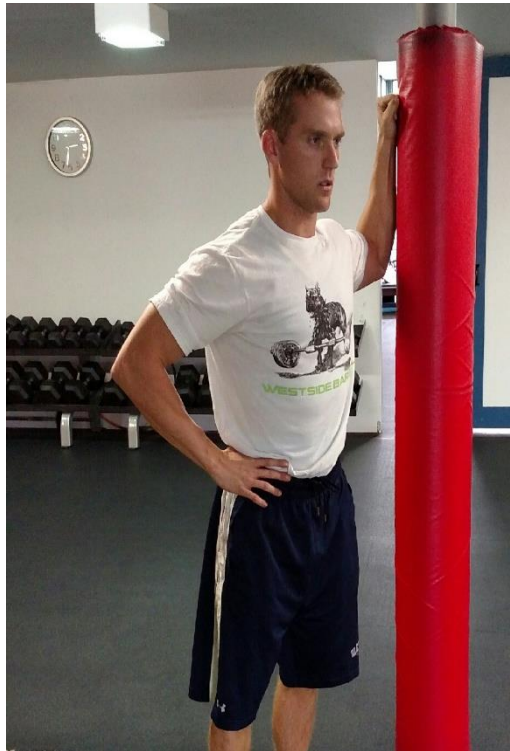
- These exercises are designed for the more advanced stages of rehabilitation and should be done with guidance from an appropriate professional.
- Plyometrics are high velocity exercises designed to mimic sporting actions. It is generally recommended to perform these towards the beginning of a given session to avoid the degradation of exercise technique caused by fatigue.
- Near maximal isometrics are used to increase shoulder stability. They are useful to train the shoulder without having to use heavy weights. Do not take these lightly, they are extremely difficult and are useful for individuals whom require increased shoulder stiffness (individuals with certain types of instability).

Maximal Isometrics

Isometric training is unique in its ability to improve the passive stiffness of joints. Compromises in static stability may cause excessive strain on the shoulder joint.

Technique:

Push into a static surface at near maximum and hold for 6 seconds. Perform 3 sets. Multiple angles may be performed. (Note the arm slightly away from the side, this helps activate the external rotators).

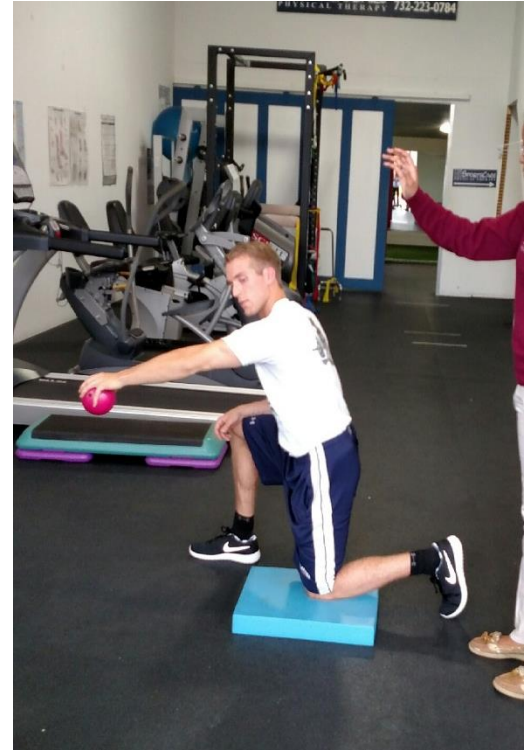
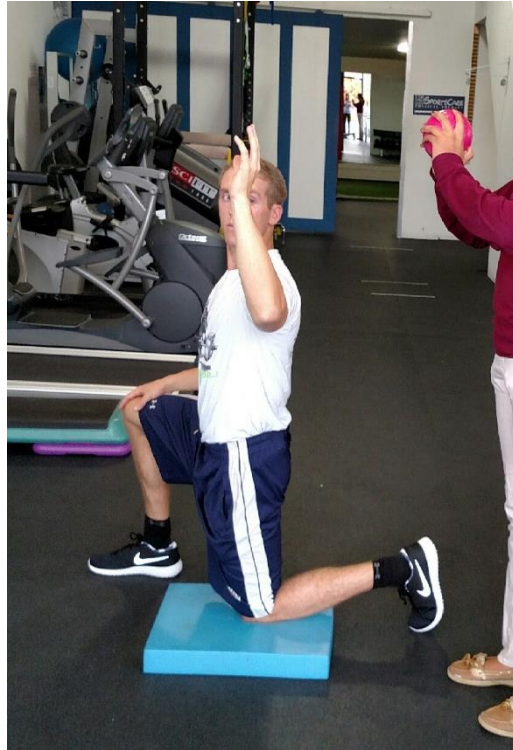


Deceleration Toss

The deceleration drill trains the muscles responsible for slowing the arm down after throwing or serving. Weakness in these muscles has been linked to injury in weight-lifters and overhead athletes.

Technique:

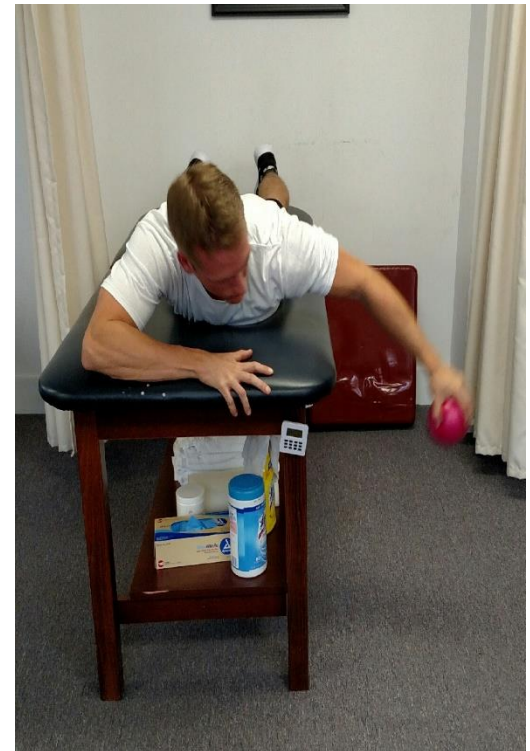
Begin with your arm at shoulder height. Your partner tosses a weighted ball over your shoulder, catch the ball and toss it back to your partner.



Quick Drops

Technique:

Hold your arm out the side. Drop the weighted ball from your hand and quickly catch during its descent. Repeat these repetitions rapidly.



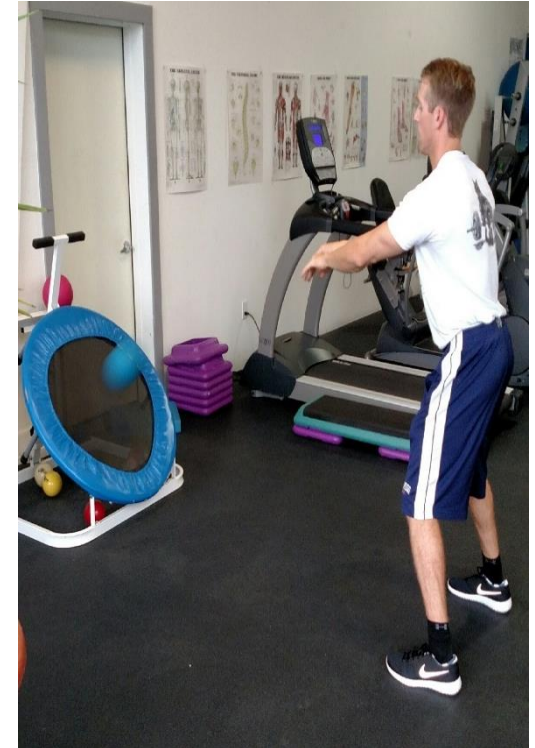
Overhand Rebound Throws

Technique:
Perform an overhead throw similar to throwing a baseball into a rebounder. Catch the rebound and repeat rapidly.



Chest Pass

Technique:
Perform a 2 handed chest pass into a rebounder. Catch and repeat the repetitions rapidly.



Internal Rotation Toss

Technique:
Stand with your arm near your side. Throw the weighted ball into the rebounder, catch and repeat rapidly.



External Rotation Toss

Technique:
Begin with your arm at your side and your hand near your opposite hip. Rotate your arm and toss into the rebounder, catch and repeat rapidly.



Plank on Unstable Surface

Planks on unstable surfaces are a great way to combine both core and shoulder stabilization into a single exercise.

Technique:

Place your forearms onto an unstable surface (exercise ball shown). Hold for 30 seconds to 1 minute.



Push-Up Hold Unstable Surface

Push-Up holds on an unstable surface are a good exercise for individuals returning to contact sports where the arm is often hit or bumped when extended.

Technique:

Begin in a push-up position and hold for 30 seconds to 1 minute.



References

1. Borstad, John D., and Paula M. Ludewig. "Comparison of Three Stretches for the Pectoralis Minor Muscle." *Journal of Shoulder and Elbow Surgery* 15.3 (2006): 324-30. *Pubmed*
2. McClure, Philip, Jenna Balaicuis, David Heiland, Mary Ellen Broersma, Cheryl K. Thorndike, and April Wood. "A Randomized Controlled Comparison of Stretching Procedures for Posterior Shoulder Tightness." *J Orthop Sports Phys Ther Journal of Orthopaedic & Sports Physical Therapy* 37.3 (2007): 108-14. *Pubmed*
3. Decker, M. J., R. A. Hintermeister, K. Faber, and R. J. Hawkins. "Serratus Anterior Activity During Selected Rehabilitation Exercises 237." *Medicine & Science in Sports & Exercise* 29.Supplement (1997): 41. *Pubmed*
4. Reinold, Michael M. "Electromyographic Analysis of the Rotator Cuff and Deltoid Musculature During Common Shoulder External Rotation Exercises." *Journal of Orthopaedic and Sports Physical Therapy J Orthop Sports Phys Ther* (2004): n. pag. *Research Gate*
5. Reinold, MM, LC Macrina, KE Wilk, GS Fleisig, S. Dun, SW Barrentine, MT Ellerbusch, and JR Andrews. "Electromyographic Analysis of the Supraspinatus and Deltoid Muscles during 3 Common Rehabilitation Exercises." *J Athl Train.* (2007): n. pag. *Pubmed*
6. Lim, Jin Yong, Jung Seok Lee, Byeong Mu Mun, and Tae Ho Kim. "A Comparison of Trapezius Muscle Activities of Different Shoulder Abduction Angles and Rotation Conditions during Prone Horizontal Abduction." *J Phys Ther Sci Journal of Physical Therapy Science* 27.1 (2015): 97-100. *Pubmed*