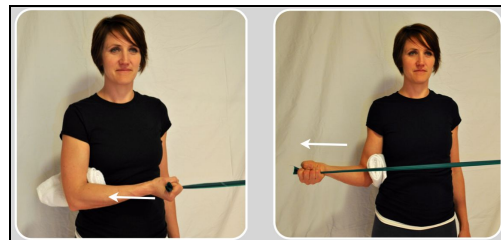


Appendix 1. Subject Exercise Handout

1. Infraspinatus and Teres Minor Muscle Strengthening

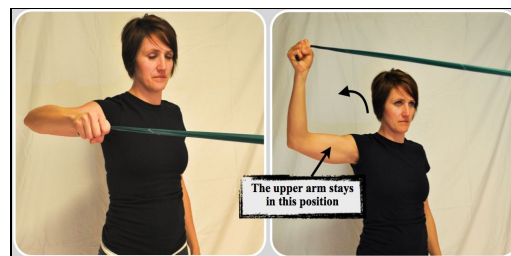
Phase I: External Rotation with the Arm at the side:

- Stand with your shoulders rolled back, arm at your side and elbow bent to 90 degrees so that your forearm rests across the front of your body.
- Place a hand towel between your elbow and thorax
- Grasping the band, pull it across and away from your body so that your forearm follows 180 degrees, from across your abdomen to where your hand is pointing away from your body.



Phase II: External Rotation with the Arm Elevated

- Secure a piece of resistance tubing to a stable structure in front of you at shoulder height
- Bring your arm directly out to your side, parallel with the ground and elbow bent to 90 degrees
- Pinch your shoulder blades together, toward your spine.
- While maintaining this shoulder position, rotate your forearm backward, trying your best to keep the upper part of your arm in the same location,
- The axis of rotation should occur along the humerus. The back of your hand should move to face behind you.



Phase III: External Rotation with Trunk Twist (Lawnmower Pull)

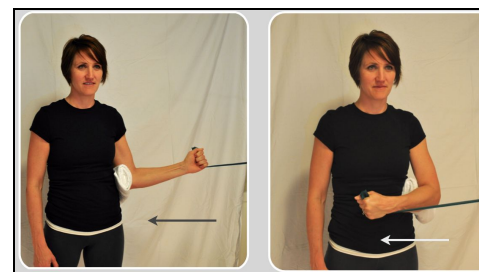
- Secure a piece of resistance tubing to a stable structure in front of you at shoulder height
- Tighten your core and grasp the band in front of your body as shown
- Keeping your core tight, pull the band diagonally across your body, while straightening your legs and trunk



2. Subscapularis Muscle Strengthening

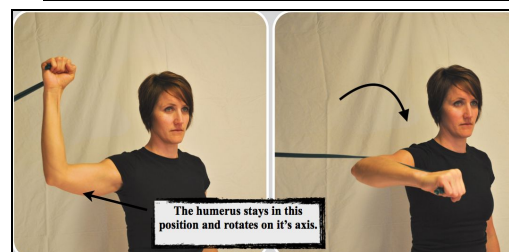
Phase I: Internal Rotation with the Arm at the side:

- Stand with your shoulders rolled back, arm at your side and elbow bent to 90 degrees so that your forearm points out away from your body.
- Place a hand towel between your elbow and thorax (this will help you keep your arm at your side in order to perform the exercise correctly).
- Grasping the band pull it across your body so that your elbow and forearm pivot 180 degrees to where your forearm is across your abdomen at the end of the repetition.
- Hold it at the end of the range of movement for the amount of time designated below.



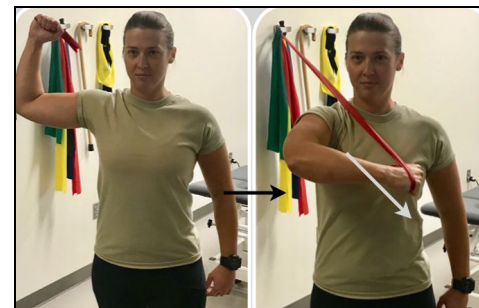
Phase II: Internal Rotation with the Arm Elevated:

- Secure a piece of resistance tubing to a stable structure behind you at shoulder height
- Bring your upper arm directly out to your side, parallel with the ground and elbow bent to 90 degrees and your palm facing forward as shown
- Pinch your shoulder blades together, toward your spine.
- While maintaining this shoulder position, rotate your forearm forward, trying your best to keep the upper part of your arm in the same location, so it's primarily your forearm that is moving.



Phase III: Diagonal Exercise

- Secure a piece of resistance tubing to a stable structure behind you at shoulder height
- Bring your upper arm directly out to your side, parallel with the ground and elbow bent to 90 degrees and your palm facing forward as shown
- Pinch your shoulder blades together, toward your spine and assume a staggered stance as shown
- While maintaining this shoulder position, rotate your forearm forward, while bringing your arm across your body as shown.



Appendix 1. Subject Exercise Handout

3. Middle Trapezius Muscle Strengthening

Phase I: Standing Shoulder Retraction with Arms Straight:

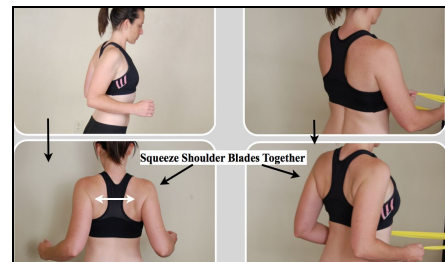
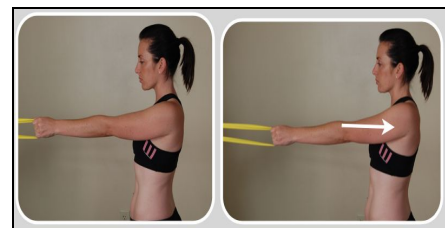
- Secure a piece of tubing to a stable structure
- Grasp the tubing and step back so there is a moderate amount of tension in the tubing
- Maintain your shoulder position and keep your elbow straight throughout the exercise
- Use the muscles in your mid to upper back to pull your shoulder blade toward your spine and your opposite back pants pocket.

Phase II: Standing Shoulder Rows

- Secure a piece of resistance tubing to a stable structure below shoulder height
- Grasp the tubing and step back so there is a moderate amount of tension in the tubing
- Pull your arms and elbows in a rearward direction
- Squeeze your shoulder blades together in the back and hold for the specified duration
- Slowly return to the starting position and repeat as instructed

Phase III: Bent Over Shoulder Rows with Weight

- Stand with one knee and one hand resting on a stable structure as shown
- Position your trunk roughly parallel to the floor
- Let the weight pull your arm toward the floor and relax your shoulder muscles
- Pull the weight toward you and "pinch" your shoulder blade toward your spine
- Hold for the specified duration and slowly return to the starting position



4. Serratus Anterior Muscle Strengthening

Phase I: Shoulder Protraction in Standing

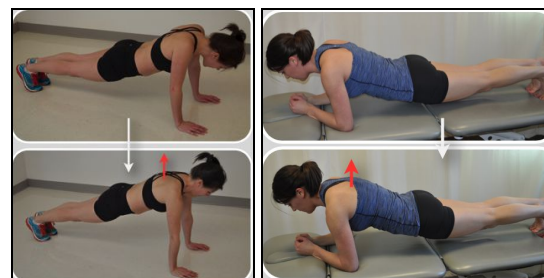
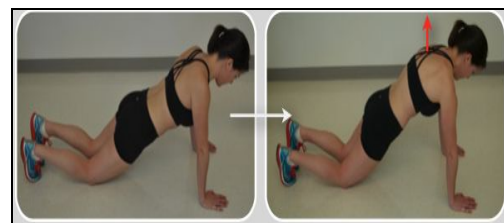
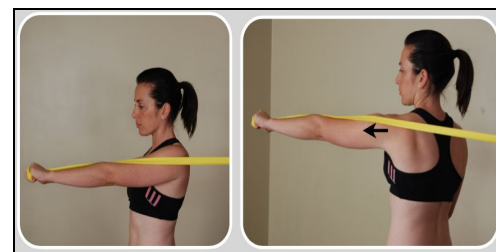
- Secure a piece of resistance tubing to a stable structure behind you at shoulder height
- Extend your arm out in front of you as shown
- Without rotating the trunk of your body push your shoulder forward from your chest.
- You should feel your shoulder blade roll forward on your ribcage
- Hold at end range for the specified duration and return to the starting position

Phase II: Shoulder Protraction in Kneeling

- Start in a push-up position on your knees.
- Your hands should be directly under your shoulders and your abdominal and buttock muscles tight
- Keeping your elbows locked, 'push' your hands into the floor and raise your mid back toward the ceiling.
- You should feel your shoulder blades roll forward on your rib cage

Phase III: Shoulder Protraction in Push-up or Plank Position

- Start in a push-up or plank position as shown.
- Your hands or elbows should be directly under your shoulders and your abdominal and buttock muscles tight
- Push your hands / elbows into the floor and raise your mid back toward the ceiling.
- Slowly lower and repeat as instructed
- *To progress this exercise, try placing your feet on an elevated surface



Appendix 1. Subject Exercise Handout

5. Lower Trapezius Muscle Strengthening

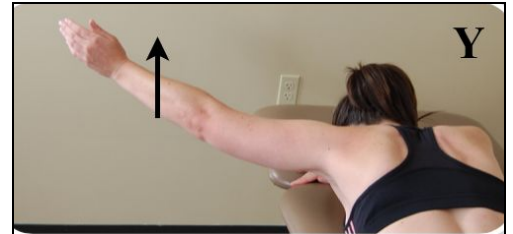
Phase I: Arm Wings

- Stand or sit with your elbows bent and your arms straight out in front of you with your palms facing up
- Bring your shoulders back and rotate your arms backwards, until your thumbs are pointing behind you
- When you get to the end of your range, pinch your shoulder blades together and down, as if to bring them toward your back pockets
- Return to the starting position and repeat as instructed



Phase II: Prone Arm Lift ("Y-exercise")

- Lie face down with your arm at your side
- Bring your involved arm from your side to hanging down in front of your face and eyes
- Using the muscles of your shoulder blade, lift your arm up at an angle to your body to make one side of a letter Y.
- When you reach the top of the movement, squeeze your shoulder blade toward your spine and down (toward your back pocket)



Phase III: Standing Arm Lift ("Y-exercise")

- Secure a piece of tubing to a stable structure in front of you, approximately waist high, as shown
- Stand in a staggered stance, with the leg opposite the shoulder to be exercised positioned forward
- Begin with your arm extended out in front of you at waist height with your thumb pointing up
- Tighten your abdominal muscles and lift your arm up over your head and to the side, as if to make one side of a "Y"
- Squeeze the muscles of your shoulder blade and attempt to pinch your shoulder blade down toward your back pocket



6. Supraspinatus Muscle Strengthening

Phase I: Shoulder Scaption with No Resistance

- Stand with your arm by your side and your thumb up
- Place your opposite hand over your shoulder as shown
- Tighten the muscles around your shoulder blade to pinch your shoulder blade toward your spine and your opposite back pocket
- While maintaining this position of your shoulder blade, lift your arm away from your side at an angle until your arm is parallel with the ground
- Use the arm covering your shoulder to ensure your shoulder blade does not lift up during the exercise



Phase II: Shoulder Scaption with Tubing

- Stand with one foot on one end of the resistance band and the arm holding the other end of the band resting at your side.
- Place your opposite hand over your shoulder
- Tighten the muscles around your shoulder blade to pinch your shoulder blade toward your spine and your opposite back pocket
- While maintaining this position of your shoulder blade, lift your arm away from your side at an angle until your arm is parallel with the ground
- Slowly lower and repeat as instructed



Phase III: Shoulder Scaption with Dumbbell

- Stand with your arm by your side, holding the dumbbell
- Place your opposite hand over your shoulder as shown
- Tighten the muscles around your shoulder blade to pinch your shoulder blade toward your spine and your opposite back pocket
- While maintaining this position of your shoulder blade, lift your arm away from your side at an angle until your arm is parallel with the ground

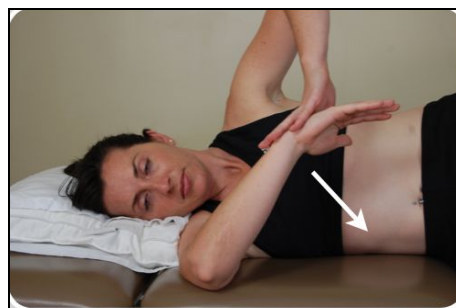


Appendix 1. Subject Exercise Handout

Stretching / Mobility Exercises

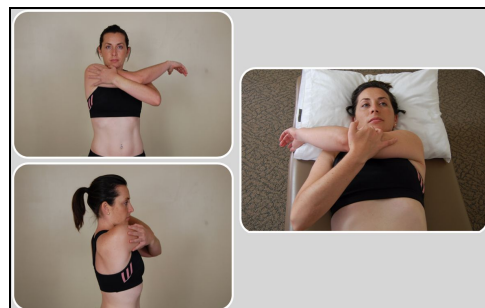
❑ Posterior Capsule or “Sleeper Stretch”

- Lay on the involved shoulder, with the shoulder straight out to your side and your elbow bent to 90 degrees.
- Roll forward, more onto your side if necessary, so that the weight of your body stabilizes the shoulder.
- Use your opposite arm to gently push your involved arm down towards the table or mat.
- You should feel the muscles stretching in the back of your shoulder.
- Hold for the specified duration



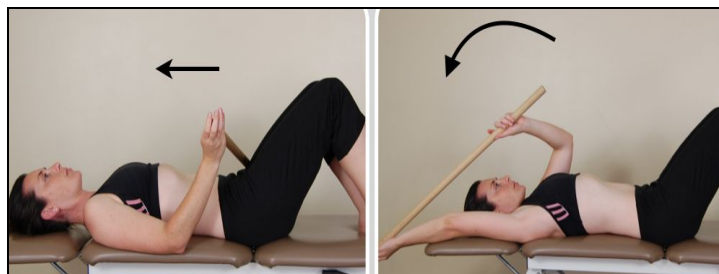
❑ Cross-body Posterior Capsule Stretch

- Bring your arm across your body so that your hand is pointing in the opposite direction of your shoulder.
- Use your opposite arm to help facilitate a further stretch in the same direction.
- Try to keep your trunk straight, facing forward, so that your body does not turn.
- You should feel the muscles stretching in the back of your shoulder.
- You may also perform the stretch while laying on your back.



❑ Overhead Wand Stretch

- Lie on a flat surface with one end of the wand/rod in each hand
- Keep the shoulder to be stretched relaxed and use your opposite arm to bring the wand overhead to impart a stretch in your shoulder
- There should be minimal pain with this exercise. If you experience pain, reduce how far you are stretching



❑ Chest Stretch (Pectoralis Major and Minor)

- Stand at a door jam or corner in a staggered stance. The leg opposite the side to be stretched is forward
- Place your forearm along the border of the corner / door jam and position your elbow at eye level
- Place the opposite hand over your chest muscles and gently pull away from the shoulder to be stretched
- Gently lean forward and rotate your trunk toward the opposite side until you feel a stretch in your chest muscles

