

NON-OPERATIVE SHOULDER REHABILITATION PROTOCOL

UNIVERSITY OF CALGARY SPORT MEDICINE CENTRE

NON-OPERATIVE SHOULDER REHABILITATION PROGRAM

PATIENTS

The following exercise guidelines were created to improve the quality of life for people who have shoulder pain, weakness and stiffness. If you have shoulder pain that makes it difficult to do daily activities, sleep comfortably, reach overhead and take part in regular work or recreation activities, an exercise program is the best place to start for recovery.

It is common for people with shoulder pain to use their arm less because of pain or the fear of doing more damage, however for the health of your shoulder, it is important to start reestablishing movement. Research demonstrates the majority of people who follow a program such as this can have success without waiting for tests, medications or even surgery. If surgery is required, often surgeons will recommend their patients begin with a shoulder rehabilitation program to improve shoulder function for a speedier recovery.

IF YOU HAVE SHOULDER PAIN FROM A TRAUMATIC INJURY SUCH AS A VEHICLE ACCIDENT OR A BAD FALL FROM AN ACTIVITY SUCH AS SKIING, PLEASE CONSULT A PHYSICIAN.

OVERVIEW OF THE PROGRAM STAGES

The program proceeds through three stages of exercises. You can proceed through each stage at your own pace, as your body allows.

STAGE 1

The first stage focuses on three steps beginning with pain control and increasing the range of motion until establishing safe movement patterns for the shoulder. You can begin with basic exercises and work through intermediate and into the advanced levels. When you reach 75 per cent of your normal range of motion (ROM), feel free to begin stage 2.

STAGE 2

The second stage builds on the principles from stage 1 by increasing the load on the shoulder joint by increasing the use of the surrounding muscles. Gently loading muscles and tendons can help improve the ability to use the arm and reduce pain levels. When you can perform these exercises easily and without pain, you may begin stage 3.

STAGE 3

The third stage focuses on improving overall upper body strength to support the long-term health of the shoulder joint.

OVERVIEW OF EXERCISE PROGRESSIONS

This table provides an overview of the exercise progressions. The timelines for each stage are a general guideline and it is important to adapt the progression based on each individual's presentation. Criteria for progression are presented at the end of each stage and it may be beneficial to continue with exercises from previous stages.

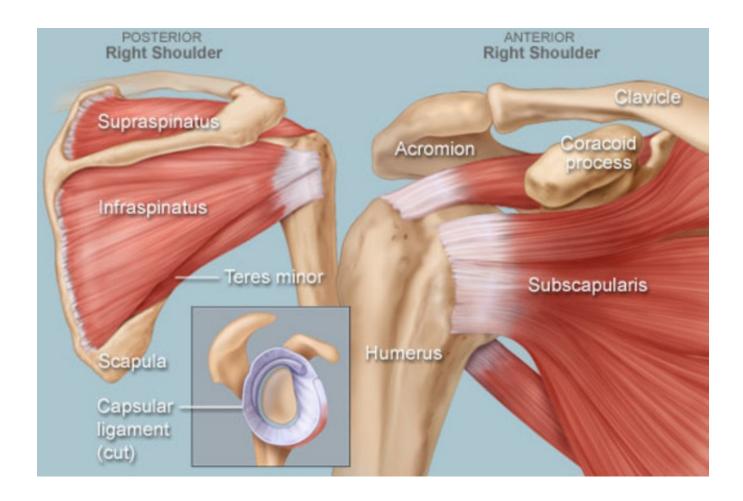
STAGE 1	STAGE 2	STAGE 3
PAIN CONTROL & RANGE OF MOTION	RANGE OF MOTION & STRENGTHENING	STRENGTHENING

	STAGE 1	STAGE 2	STAGE 3
SCAPULAR CONTROL			
Scapular Retraction	✓		
Scapular Clock	✓		
FLEXION			
BASIC Shoulder Pendulum Forward/Backward	✓		
BASIC Shoulder Flexion PROM (Pulley)	✓		
INTERMEDIATE Forward Arm Reach AAROM (Table)	✓		
INTERMEDIATE Shoulder Flexion AAROM Full Range (Stick)	✓		
ADVANCED Shoulder Flexion AROM Full Range	✓		
Row Bilateral + Neutral (Band)		✓	
Shoulder Flexion Isometric Elbow Bent		✓	
Shoulder Extension Isometric Elbow Bent		✓	
ABDUCTION			
BASIC Shoulder Abduction PROM (Pulley)	✓		
INTERMEDIATE Shoulder Abduction AAROM (Stick)	✓		
ADVANCED Shoulder Abduction AROM Full Range	✓		
Shoulder Abduction Isometric Elbow Bent		✓	
Shoulder Abduction Concentric Early Range (Band)			✓
EXTERNAL ROTATION			
BASIC Shoulder External Rotation PROM (Stick)	✓		
INTERMEDIATE Shoulder External Rotation AAROM (Stick)	✓		
ADVANCED Shoulder External Rotation AROM	✓		
Shoulder External Rotation Isometric		✓	
Shoulder External Rotation Concentric Neutral (Band)		✓	
Shoulder External Rotation Concentric 90° Flexion (Band)			
Shoulder External Rotation Concentric 45° Abduction (Band)			✓
Shoulder External Rotation Concentric 90° Abduction (Band)			✓
INTERNAL ROTATION			
BASIC Shoulder Pendulum Circles	✓		
INTERMEDIATE Shoulder Internal Rotation AAROM Behind Back (Stick)	✓		
ADVANCED Shoulder IR + ER AROM Neutral Abduction	✓		
Shoulder Internal Rotation Isometric		✓	
Shoulder Internal Rotation Concentric Neutral (Band)		✓	
Shoulder Internal Rotation Concentric I 90° Flexion (Band)			
Shoulder Internal Rotation Concentric 45° Abduction (Band)			✓
Shoulder Internal Rotation Concentric 90° Abduction (Band)			✓

OVERVIEW OF EXERCISE PROGRESSIONS (Cont'd)

	STAGE 1	STAGE 2	STAGE 3
STRETCHING			
BASIC Shoulder Posterior Capsule Stretch 90° Abduction			
BASIC Posterior Shoulder Stretch	✓		
BASIC Shoulder Internal Rotation Stretch (Towel)	✓		
BASIC Shoulder Chest Stretch (Door Frame)	✓		
STRENGTHENING			
Y Row			✓
T Row		✓	
W Row		✓	
BASIC Push-up Wall		✓	
INTERMEDIATE Push-up Knees		✓	
ADVANCED Push-up Toes			✓

OVERVIEW OF ANATOMY



WHAT IS INVOLVED IN THE SHOULDER JOINT?

The shoulder is one of the largest and most complex joints in the body. It is a ball and socket joint formed by upper arm (humerus) and the shoulder blade (scapula).

The shoulder has a number of important structures including rotator cuff muscles and tendons, a bursa and cartilage. There are many reasons why a shoulder may become painful, weak, unstable, stiff and have a loss of function.

STAGE 1 PAIN CONTROL & RANGE OF MOTION

During stage I, it is important to keep pain under control while improving the available range of motion at the shoulder. You will begin with the basic level which is a passive range of motion (PROM), then proceed to intermediate which is the active assisted range of motion (AROM), and then move to the advanced active range of motion (AROM) as comfort dictates.

STAGE 1 GOALS

- Reduce pain
- Relearn to move your shoulder blades
- Have 75% pain-free range of motion

STAGE 1 PATIENT EDUCATION

LEVELS

BASIC - Passive range of motion means you move the joint without the muscles contracting. To do this you will need assistance in one of the following ways:

- Using your unaffected arm
- Using an external device (Stick, table, pulley)

INTERMEDIATE - After passive range of motion, you will progress to active assisted range of motion (AAROM). AAROM means your affected arm will now be doing some of the work. The unaffected arm will continue to assist with the motion.

ADVANCED - Lastly, you will try to use only the affected arm to complete the motion. This is called active range of motion (AROM).

Flexibility and stretching exercises can be done throughout.

Once you can comfortably move your shoulder through 75% of the range of motion, you can move onto phase 2 of the program.

PAIN MANAGEMENT

Consider heat or ice to manage your symptoms When deciding between heat or ice it is important to use whatever feels best for you.

ICE:

- · Use a towel or pillowcase to protect area being treated
- · Place ice or cold pack on sore area

HEAT:

- Use a towel or pillowcase to protect area being treated
- · Place hot pack on sore area

SCAPULAR CONTROL

SCAPULAR RETRACTION

Preparation:

· Stand tall, shoulders relaxed

Execution:

- · Pull shoulder blades back and down
- Don't hunch your shoulders

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Shoulders Relaxed



Pull shoulder blades back and down

SCAPULAR CLOCK

Preparation:

• Sit or stand with good posture

Execution:

 Keeping your arms relaxed, move your shoulder blades to different hours on the clock

Sets: 3 | Reps: 10 | Frequency: 2-4x/day



Start position



Move shoulder blades to 1 o'clock



Move shoulder blades to 3 o'clock



Move shoulder blades to 9 o'clock



Move shoulder blades to 12 o'clock etc...

FLEXION

BASIC Shoulder Pendulum | Forward/Backward

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day

Preparation:

- Stand next to a counter or chair, using your strong arm to balance yourself
- Lean slightly forwards and let your weak arm dangle towards the floor

Execution:

Sway your hips to get you arm moving forward and backward



Arms swings forward and backward



Hips do the work

BASIC Shoulder Flexion PROM (Pulley)

Preparation:

- · Stand with good posture in front of a pulley and rope
- Hold the ends of the rope and let your affected arm dangle at your side

Execution:

- Use your strong arm to pull your affected arm to shoulder height
- Gradually relax your strong arm, letting graviity pull your weak arm back to the start position

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Grab rope in both hands



Strong arm pulls affected arm straight overhead - keep weaker arm relaxed!

INTERMEDIATE FORWARD ARM REACH AAROM (TABLE)

Preparation:

• Sit "tall" with one arm on table top

Execution:

 Use one arm to help slide your hand forward along the table top

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



One arm helps the other



Arm moves forward

INTERMEDIATE SHOULDER FLEXION AAROM | FULL RANGE (STICK)

Preparation:

- · Stand with good posture
- Hold the stick/cane in front of your hips as shown

Execution:

- Use your strong arm to help raise your affected arm forward and up all the way over your head
- Return in a controlled manner to the original position

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Hold stick



Use strong arm to raise affected arm



Raise affected arm all the way up

ADVANCED SHOULDER FLEXION AROM | FULL RANGE

Preparation:

· Sit or stand with good posture

- Raise your arm forward and up all the way above your head
- Move in pain free range of motion
- Slowly return to the start position

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Shoulders relaxed



Raise arm forward



Continue all the way overhead

ABDUCTION

BASIC SHOULDER ABDUCTION PROM (PULLEY)

Preparation:

- Stand with good posture next to a pulley and rope as shown
- Hold the ends of the rope and let your weak arm dangle at your side

Execution:

- Use your strong arm to pull your weak arm out to the side as high as you can
- Gradually relax your strong arm, letting gravity pull your weak arm back to the start position

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Grab ends of rope



Strong arm pulls affected arm straight out to side - keep the weaker arm relaxed!

INTERMEDIATE SHOULDER ABDUCTION AAROM (STICK)

Preparation:

- · Stand with good posture
- Hold a stick or a cane, hands shoulder width apart

Execution:

• Pretend the stick is a paddle and your are paddling a canoe. Paddle as wide as you can.

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Start position



Paddle

ADVANCED SHOULDER ABDUCTION AROM | FULL RANGE

Preparation:

• Stand with good posture

- Raise arm up and out to the side.
- Raise all the way up overhead in pain free range of motion
- · Return to the start position with control

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Shoulder relaxed



Raise arm out to side



Raise all the way overhead

EXTERNAL ROTATION (ER)

BASIC SHOULDER EXTERNAL ROTATION PROM (STICK)

Preparation:

- · Lie on your back with your arm by your side
- Wrap a belt around you arm and body to hold your arm firmly to your side
- Hold a stick in both hands in front of you as shown

Execution:

Use the unaffected arm and stick to rotate your arm outwards

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Start position



Rotate arm outward

INTERMEDIATE SHOULDER EXTERNAL ROTATION AAROM (STICK)

Preparation:

- · Lie on your back, sit or stand
- Hold a stick/cane as shown with elbows bent at 90 degrees

Execution:

- Use your strong arm to help rotate your weak arm away from your body
- Keep your elbows bent and close against your sides at all times
- · Return to the start position in a controlled manner

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Start position



Rotate arm - keep elbow tucked

ADVANCED SHOULDER EXTERNAL ROTATION AROM

Preparation:

- · Lie on side
- · Hand on stomach

Execution:

· Rotate hand up toward the ceiling

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Lie on side - hand on stomach



Rotate hand up toward the ceiling



Pause at top. Return to start

INTERNAL ROTATION (IR)

BASIC: SHOULDER PENDULUM | CIRCLES

Preparation:

- Stand next to a counter or chair, using your strong arm to balance yourself
- Lean slightly forwards and let your weak arm dangle towards the floor

Execution:

Sway your hips to get your arm moving in small circles

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Arms swing in circles - hips do the work

INTERMEDIATE: SHOULDER INTERNAL ROTATION AAROM | BEHIND BACK (STICK)

Preparation:

- Stand with good posture
- Hold a stick/cane behind back as shown

Execution:

- Use strong arm to draw affected arm across back
- Return in a controlled fashion to the start position

IMPORTANT:

• Do not lift stick off low back

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day

Sets: 3 | Reps: 10-15 | Frequency: 2-4x/day



Hold stick behind back



Use strong arm to pull affected arm across back

ADVANCED: SHOULDER IR + ER AROM | NEUTRAL ABDUCTION

Preparation:

• Lie on back

- · Rotate hand away from body
- Keep elbow tucked



Lie on back



Rotate hand away from body



Keep elbow tucked



Bring hand back to body



Rotate out, elbow stays at your side

STRETCHING

BASIC SHOULDER POSTERIOR CAPSULE STRETCH | 90° ABDUCTION

Preparation:

- · Lie on affected side, but not directly on shoulder
- Bring your arm away from your body to shoulder height, elbow at 90 degrees

Execution:

- · Grasp your forearm with the opposite hand
- Turn your arm down toward the bed

Sets: 4 | Hold: 30 sec | Frequency: 2-4x/day





Start position

Push arm toward bed

BASIC POSTERIOR SHOULDER STRETCH

Preparation:

· Sit or stand with good posture

Execution:

- · Reach across your chest
- Use your other arm to pull a bit further

Sets: 4 | Hold: 30 sec | Frequency: 2-4x/day



Head and eyes forward, belly button pulled in



Reach arm across body



Place opposite hand at elbow, gradually pull to stretch the back of your shoulder

BASIC SHOULDER INTERNAL ROTATION STRETCH (TOWEL)

Preparation:

- · Sit or stand with good posture
- Hold a towel behind back with the arm to be stretched on the bottom

Execution:

• Use strong arm to pull bottom hand up back

Sets: 4 | Hold: 30 sec | Frequency: 2-4x/day



Start position



Pull arm up back with strong arm

BASIC SHOULDER CHEST STRETCH (DOOR FRAME)

Preparation:

Place arms at shoulder level on ither side of a doorframe

Execution:

• Step forward. You should feel aa stretch across the front of your chest

IMPORTANT:

• Do not support your weight with your arms

Sets: 4 | Hold: 30 sec | Frequency: 2-4x/day



Arms against doorframe - lean forward

CRITERIA FOR PROGRESSION TO STAGE 2

75% of available and pain-free active range of motion as compared to the unaffected side

STAGE 2 RANGE OF MOTION & STRENGTHENING

Stage 2 builds on the first stage by increasing the load on the shoulder joint and using the surrounding muscles. Perform all exercises in a pain-free range.

STAGE 2 GOALS

- To activate shoulder stabilizers and create a postural platform for the exercises that follow.
- To initiate pain-free muscular contractions around the shoulder joint.

SHOULDER EXTERNAL ROTATION ISOMETRIC

Preparation:

- · Stand with good posture facing a wall or doorframe
- Hold your arm by your side, elbow at 90 degrees, palm facing away from wall or doorframe

Execution:

- Rotate your hand outwards into the wall or doorframe
- · Keep your elbow at your side

Sets: 3 | Reps: 10 | Hold: 5-10 sec | Intensity: ease into muscle contraction | Frequency: 1x/day



Rotate hand outward into doorframe

SHOULDER INTERNAL ROTATION ISOMETRIC

Preparation:

- · Stand with good posture facing a wall or doorframe
- Hold your arm by your side, elbow at 90 degrees, palm facing wall or doorframe

Execution:

- Rotate your hand inwards into the wall or doorframe
- · Keep your elbow at your side

Sets: 3 | Reps: 10 | Hold: 5-10 sec | Intensity: ease into muscle contraction | Frequency: 1x/day



Rotate hand into doorframe

SHOULDER FLEXION ISOMETRIC | ELBOW BENT

Preparation:

• Stand in front of a wall or doorframe, elboow bent as shown

Execution:

· Push your fist against the wall

TIP:

· Use a pillow to avoid hurting your hand

Sets: 3 | Reps: 10 | Hold: 5-10 sec | Intensity: ease into muscle contraction | Frequency: 1x/day



Push fist against wall

SHOULDER EXTENSION ISOMETRIC | ELBOW BENT

Preparation:

Stand in front of a wall or doorframe, elboow bent as shown

Execution:

• Push elbow backward, against the wall

TIP:

· Use a pillow to avoid hurting your elbow

Sets: 3 | Reps: 10 | Hold: 5-10 sec | Intensity: ease into muscle contraction | Frequency: 1x/day



Push elbow backward against wall

SHOULDER ABDUCTION ISOMETRIC | ELBOW BENT

Preparation:

Stand beside a wall or doorframe, elbow bent as shown

Execution:

• Push elbow outward, against the wall

TIP:

• Use a pillow to avoid hurting your elbow

Sets: 3 | Reps: 10 | Hold: 5-10 sec | Intensity: ease into muscle contraction | Frequency: 1x/day



Push elbow outward, against wall

SHOULDER EXTERNAL ROTATION CONCENTRIC | NEUTRAL (BAND)

Preparation:

- Standing, elbow at 90 degrees
- Tuck a folded towel between your body and your elbow

Execution:

- · Gently pull shoulder blades togehter
- Keeping elbow close to body, slowly rotate hand outward
- · Return to start position

Sets: 3 | Reps: 10 | Frequency: every 2nd day







Rotate hand outward

SHOULDER INTERNAL ROTATION CONCENTRIC | NEUTRAL (BAND)

Preparation:

- Stand with good posture
- Tuck a folded towel between your body and your elbow as shown

Execution:

- Keeping elbow close to body, rotate hand inward, toward your stomach
- · Return to start position

Sets: 3 | Reps: 10 | Frequency: every 2nd day



Start position



Rotate hand inward

ROW | BILATERAL + NEUTRAL (BAND)

Preparation:

 Stand with good posture, feet shoulder-width apart, one foot slightly in front

Execution:

- Using the muscles between your shoulder blades, pull your shoulder blades back and down
- At the same time perform a rowing motion keeping your elbows close to your body
- Return to the start position in a slow and controlled fashion

Sets: 3 | Reps: 10 | Frequency: every 2nd day



T ROW (BAND)

Preparation:

• Stand with hands in front of shoulders as shown

Execution:

- Pull band towards collarbone with control
- Bring shoulder blades together
- · Keep elbows straight

Sets: 3 | Reps: 10 | Frequency: every 2nd day





make a 'T'

W ROW (BAND)

Preparation:

· Stand tall, holding band

- Row arms to the sides to make a 'W'
- Squeeze shoulder blades
- · Do not lean backward

Sets: 3 | Reps: 10 | Frequency: every 2nd day







Row arms to the side make a 'W'

BASIC: PUSH-UP WALL

Preparation:

- Stand arm-length in front of a wall
- · Palms on the wall at shoulder level
- Engage core, squeeze buttocks

Execution:

- · Imagine your body is a solid plank of wood
- Lean forward toward the wall, using your arms to control the movement.
- Touch nose to wall. Slowly return to the start position.

Important:

• Keep hips and back straight

Sets: 3 | Reps: 10 | Frequency: every 2nd day



Start position



Lean forward toward the wall. Maintain a plank position.

INTERMEDIATE: PUSH-UP KNEES

Preparation:

- Lie on stomach
- Hands beside shoulders
- Engage core, squeeze buttocks

Execution:

- Imagine your body is a solid plank of wood
- Push-up onto knees without sagging
- Pause at the top of each push-up to push your shoulders slightly forward
- On the way back down, touch your nose to the floor

Important:

- Keep hips and back straight
- · Keep chin tucked

Sets: 3 | Reps: 10 | Frequency: every 2nd day



Start position



Push body away from floor while on knees

STAGE 2 MOVING ON TO STAGE 3

CRITERIA FOR PROGRESSION TO STAGE 3

- 1. No pain during the exercises
- 2. Full range of motion with appropriate control

STAGE 3 STRENGTHENING

This phase focuses on improving upper body strength to support shoulder health. Perform all exercises in a pain-free range.

SHOULDER INTERNAL ROTATION CONCENTRIC | 45° ABDUCTION (BAND)

Preparation:

- · Stand with good posture
- Arm at 45 degrees, elbow bent
- · Hold cable/tubing as shown

Execution:

- Keeping elbow stationary, slowly rotate arm against resistance, towards body
- · Return to start

Sets: 3 | Reps: 10 | Rest: 30-60 sec | Tempo: Slow

Frequency: every 2nd day



Start position



Rotate arm inward

SHOULDER EXTERNAL ROTATION CONCENTRIC | 45° ABDUCTION (BAND)

Preparation:

- · Stand with good posture
- Arm at 45 degrees, elbow bent
- Hold cable/tubing as shown

Execution:

- Keeping elbow stationary, slowly rotate arm against resistance, away from body
- · Return to start position

Sets: 3 | Reps: 10 | Rest: 30-60 sec | Tempo: Slow

Frequency: every 2nd day



Arm out to the side at a 45 degree angle, elbow bent to 90 degrees



Rotate arm downwards

STAGE 3 STRENGTHENING

SHOULDER INTERNAL ROTATION CONCENTRIC | 90° ABDUCTION (BAND)

Preparation:

- · Stand with good posture
- Raise arm up and out to the side at shoulder height, elbow at 90 degrees

Execution:

- Keeping your elbow stationary in the air, rotate your arm downward
- Raise your arm to the start position

Sets: 3 | Reps: 10 | Rest: 30-60 sec | Tempo: Slow Frequency: every 2nd day







Rotate arm downwards

SHOULDER EXTERNAL ROTATION CONCENTRIC | 90° ABDUCTION (BAND)

Preparation:

- · Stand with good posture
- Raise arm out to the side at shoulder height, elbow bent to 90 degrees

Execution:

- Keeping your elbow stationary in the air, rotate your arm upward
- · Return to start position

Sets: 3 | Reps: 10 | Rest: 30-60 sec | Tempo: Slow Frequency: every 2nd day



Rotate arm upwards



Slowly lower down

SHOULDER ABDUCTION CONCENTRIC | EARLY RANGE (BAND)

Preparation:

• Stand holding band in hand across your body

- Keep elbow straight and shoulders relaxed
- Raise arm out to the side to 45 degrees

Sets: 3 | Reps: 10 | Rest: 30-60 sec | Tempo: Slow Frequency: every 2nd day



Arm across body



Raise arm slightly out to side

STAGE 3 STRENGTHENING

Y ROW (BAND)

Preparation:

• Stand tall, holding band

Execution:

- Row arms to the sides to make a 'Y'
- Squeeze shoulder blades
- Do not lean backward

Sets: 3 | Reps: 10 | Frequency: every 2nd day







Row arms to the side make a 'Y'

ADVANCED: PUSH-UP TOES

Preparation:

- · Lie on stomach
- Hands beside shoulders
- Engage core, squeeze buttocks

Execution:

- Press body away from floor
- Lower body down with control

Sets: 3 | Reps: 10 | Frequency: every 2nd day



Start position. Hands by shoulders



Push body away from floor.

STAGE 3 RETURN TO ACTIVITY OR SPORT

When you are ready to start to return to an activity or sport, it is advised that you discuss your return with your healthcare provider to review guiding principles and create a sport specific rehabilitation plan.

Guiding principles for return to activity or sport will include having full, pain-free range of motion and pain-free strength that is at least 90% of the health side.

CRITERIA FOR PROGRESSION BACK TO ACTIVITY OR SPORT

- 1. Full pain-free range of motion
- 2. Pain-free strength that is equivalent to at least 90% of the unaffected side



NON-OPERATIVE SHOULDER REHABILITATION PROTOCOL

provided by the

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