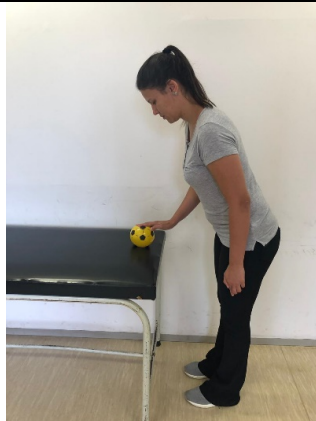











APPENDIX





Rotator Cuff Unloading Exercise Program





Patients in this group will perform 1 exercise from each group of exercises: semi-closed kinetic chain elevation, deltoid reeducation, assisted arm elevation, and an exercise for scapular control. Exercises are grouped and described according to the level of difficulty and muscle activation. All exercises will be performed in 3 sets of 10 repetitions with a 1-minute interval between repetitions. The exercises are progressed based on the experienced pain during the program. Only in the presence of symptoms < 3 points on the 11-point numeric pain rating scale, a progression towards the next exercise or load is allowed.





Semi-Closed Kinetic Chain Exercises and progressions				
Exercise	Initial Position	Performance	Initial Position	Final Position
1) Closed Chain Pendulum	Patient in standing position supporting the hand on a ball positioned on a treatment table with the trunk inclined.	Shoulder circular movements in scapular plane.		





<p>2) Bilateral Bench Slide <math><90^\circ</math></p>	<p>Patient sitting in front of the treatment table supporting the hands on a ball positioned on the treatment table. Initially the elbow will be flexed and the shoulder slightly flexed.</p>	<p>Slide the hands over the ball, moving it forward until the elbow is extended, and shoulder flexed <math><90^\circ</math>. Keep the trunk straight.</p>		
<p>3) Unilateral Bench Slide <math><90^\circ</math></p>	<p>Patient sitting beside to the treatment table, and supporting the hand on the ball. Initially the elbow will be flexed and the arm at the side of the trunk.</p>	<p>Slide the hand over the ball, moving it forward until the elbow is extended. Keep the trunk straight.</p>		





<p>4) Unilateral Bench Slide >90°</p>	<p>Patient sitting beside to the treatment table, and supporting the hand on the ball. Initially the elbow will be flexed and the arm at the side of the trunk.</p>	<p>Slide the hand over the ball and incline the trunk forward until the elbow is extended.</p>		
<p>5) Unilateral Bench Slide > 90° + Resistance</p>	<p>Patient sitting beside to the treatment table, and supporting the hand on the ball while holding an elastic band. Initially the elbow will be flexed and the arm at the side of the trunk.</p>	<p>Slide the hand over the ball against resistance and incline the trunk forward until the elbow is extended. *progression: yellow, red, green and blue elastic band (Theraband).</p>		

6) Inclined Bench Slide	Patient sitting beside to the treatment table, and supporting the hand on the ball. The ball will be on an inclined surface at 45°. Elbow will be flexed and arm at the side of the trunk.	Slide the hand over the ball, moving hand and trunk forward until elbow is extended. *progression: yellow, red, green and blue elastic band (Theraband).		
7) Wall Slide	Patient standing in front of a wall. Hand positioned on a ball or towel against the wall. Elbow will be flexed and the shoulder slightly flexed in the scapular plane.	Slide the hand over the ball or towel on the wall by moving it upward until elbow is extended in scapular plane direction.		



8) Wall Slide + Resistance	Patient standing in front of a wall. Hand holding an elastic band and positioned against the wall. Elbow will be flexed and the shoulder slightly flexed.	Slide the hand on the wall by moving it upward against resistance until elbow is extended. *progression: yellow, red, green and blue elastic band (Theraband).		
9) Wall Slide + Resistance + Open Chain	Patient standing in front of a wall. Hand holding an elastic band and positioned against the wall. Elbow will be flexed and the shoulder slightly flexed.	Sliding the hand on the wall by moving it upward against resistance until elbow is extended. At the end range move the hand away from the wall increasing the flexion. *progression: yellow, red, green and blue elastic band (Theraband).		





Anterior Deltoid Reeducation and progressions				
Exercise	Position	Performance	Initial Position	Final Position
1) Passive Elevation	Patient in supine, hand of the unaffected arm holds the wrist of affected arm. Elbow will be at 90° flexion and the arm at the side of the trunk.	The unaffected arm will first assist elbow extension of the affected arm keeping the shoulder at 90° of flexion. Next, the unaffected limb assists the flexion and extension of the affected shoulder during concentric and eccentric phases.		
2) Active - Weight	Patient in supine, hand of the unaffected arm holds the wrist of affected arm. Elbow will be at 90° flexion	The unaffected arm will first assist elbow extension of the affected arm keeping the shoulder at 90° of flexion. Next, the		



	and the arm at the side of the trunk.	affected shoulder perform flexion without assistance.		
3) Active + Weight	Patient in supine, hand of the unaffected arm holds the wrist of affected arm. Elbow will be at 90° flexion holding a toning ball.	The unaffected arm will first assist elbow extension of the affected arm keeping the shoulder at 90° of flexion. Next, the affected shoulder perform flexion without assistance with toning ball. * progression: 1kg and 2kg toning ball.		
4) Increased Trunk Inclination Angle	Patient in supine, slightly inclined trunk, hand of the unaffected arm holds the wrist of affected arm. Elbow	The unaffected arm will first assist elbow extension of the affected arm keeping the shoulder at 90° of flexion. Next, the		


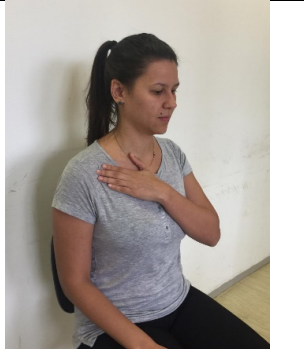
	will be at 90° flexion holding a toning ball..	affected shoulder perform flexion without assistance with toning ball.* progression: 1kg and 2kg toning ball.		
5) Seated - Weight	Patient with 60° of trunk inclination, hand of the unaffected shoulder holds the affected arm. Initially elbow at 90° flexion and arm at the side of the trunk.	The unaffected arm will first assist elbow extension of the affected arm keeping the shoulder at 90° of flexion. Next, the affected shoulder perform flexion without assistance and weight.		
6) Seated + Weight	Patient with 60° trunk inclination, elbow of the affected side at 90° flexion and arm at the side of the trunk. Hand of	The unaffected arm will first assist elbow extension of the affected arm keeping the shoulder at 90° of flexion. Next, the		





the affected arm holds a toning ball. affected shoulder perform flexion without assistance with toning ball.* progression: 1kg and 2kg toning ball.

Assisted Elevation and progressions				
Exercise	Initial Position	Performance	Initial Position	Final Position
1) Therapist Assisted Elevation	<p>Patient in supine with elbow at 90° flexion and shoulder at the side of the trunk. Therapist holds the forearm on the affected side of the patient.</p>	<p>Therapist assists shoulder flexion during the concentric and eccentric phases.</p>		

2) Side Lying Elevation	<p>Patient in side lying position, affected shoulder upwards. Support the hand on a flat surface in front of the treatment table at the same level as the height of the affected shoulder. The elbow and shoulder will be slightly flexed.</p>	<p>Patient slides the hand over the flat surface raising his arm with the elbow slightly bent.</p>		
3) Supine Band	<p>Patient in supine, holding a yellow elastic band with both hands. Unaffected shoulder remains at the side of the body and affected shoulder with 90° flexion.</p>	<p>The affected shoulder performs flexion with elastic band while the other shoulder remains at the side of the trunk.</p>		

<p>4) Bar Assisted Standing</p>	<p>Patient standing holding a bar</p>	<p>Unaffected shoulder assists the arm elevation using a bar.</p>		
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<p>Exercises for Scapular Control and progressions</p>				
<p>Exercise</p>	<p>Initial Position</p>	<p>Performance</p>	<p>Initial Position</p>	<p>Final Position</p>
<p>1) Scapular Orientation Exercise</p>	<p>Patient sitting, places index finger on the coracoid process of the affected shoulder.</p>	<p>The patient will be instructed to move the scapula in external rotation and posterior tilt, moving the coracoid process away from the index finger or pretending to put the</p>		

		scapula into a little hook behind.		
2) Inferior Glide	Patient sitting beside the treatment table, with affected shoulder in abduction close to 90°. A ball will be on the treatment table and the fist.	Patient will perform a pressure with the fist in the direction of arm adduction and instructed to inferiorly depress their scapula.		
3)) Low Row Static	Patient standing in front of an immovable surface and placed their hand on the anterior edge of the surface with palm facing posteriorly.	Patient will perform a shoulder extension movement against the immovable surface doing retraction and depression of the scapula.		

4) Low Row Dynamic



Patient seating holding an elastic band with shoulder flexion.





The patient will perform the movement towards shoulder extension and scapular retraction.
* progression: yellow, red, green and blue elastic band (Theraband).




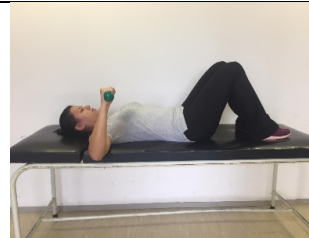




Rotator Cuff Loading Exercise Program



Patients in this group will perform 1 exercise from each group of exercises: focus on external rotation, focus on internal rotation, assisted arm elevation, and focus on active arm elevation. Exercises are grouped and described according to the level of difficulty and muscle activation. All exercises will be performed in 3 sets of 10 repetitions with a 1-minute interval between repetitions. The exercises are progressed based on the experienced pain during the program. Only in the presence of symptoms < 3 points on the 11-point numeric pain rating scale, a progression towards the next exercise or load is allowed.





Focus on External Rotation and progressions				
Exercise	Initial Position	Performance	Initial Position	Final Position
1) Side Lying External Rotation	Patient in side lying position with the affected arm upwards. Arm at the side of the trunk and elbow flexed at 90° with a dumbbell in hand.	Patient will perform external rotation of the shoulder and return to the initial position. * progression: 1kg, 2kg and 3kg dumbbell.		



2) Standing External Rotation	Patient standing with affected shoulder at the side of the trunk, elbow flexed at 90° and holding an elastic band by hand.	Patient will perform external rotation of the shoulder and return to the initial position. * progression: yellow, red and green elastic band (Theraband).		
3) External Rotation Diagonal Standing	Patient standing with affected shoulder in internal rotation, elbow flexed at 90° and holding an elastic band by hand.	The patient will perform external rotation and abduction of the shoulder, thus performing a external rotation in the diagonal direction. * progression: yellow, red and green elastic band (Theraband).		



Focus on Internal Rotation and progressions				
Exercise	Initial Position	Performance	Initial Position	Final Position
1) Standing Internal Rotation	Patient standing with affected shoulder at the side of the trunk, elbow flexed at 90° and holding an elastic band.	Patient will perform internal rotation of the shoulder and return to the initial position. *progression: yellow, red and green elastic band (Theraband).		
2) Sitting Internal Rotation	Patient in supine with affected shoulder in 90° abduction and elbow in 90° flexion holding a dumbbell in hand.	Patient will perform internal rotation of the shoulder and return to the initial position. * progression: 1kg, 2kg and 3kg dumbbell.		



<p>3) Internal Rotation Diagonal Standing</p>	<p>Patient standing with affected shoulder in 45° abduction, elbow in 90° flexion, holding an elastic band by hand.</p>	<p>Patient will perform internal rotation of the shoulder and return to the initial position. * progression: yellow, red and green elastic band (Theraband).</p>		
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Assisted Elevation and progression				
Exercise	Initial Position	Performance	Initial Position	Final Position
<p>1) Therapist Assisted Elevation</p>	<p>Patient in supine with elbow at 90° flexion and shoulder at the side of the trunk. Therapist holds the forearm on the affected side of the patient.</p>	<p>Therapist assists shoulder flexion during the concentric and eccentric phases.</p>		

2) Side Lying Elevation	<p>Patient in side lying position, affected shoulder upwards. Support the hand on a flat surface in front of the treatment table at the same level as the height of the affected shoulder. The elbow and shoulder will be slightly flexed.</p>	<p>Patient slides the hand over the flat surface raising the arm with the elbow slightly bent.</p>		
3) Supine Band	<p>Patient in supine, holding a yellow elastic band with both hands. Unaffected shoulder remains at the side of the body and affected shoulder with 90° flexion.</p>	<p>The affected shoulder performs flexion with elastic band while the other shoulder remains at the side of the trunk.</p>		

<p>4) Bar Assisted Standing</p>	<p>Patient standing holding a bar.</p>	<p>Unaffected shoulder assists the arm elevation using a bar.</p>		
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Focus on Elevation and progressions				
Exercise	Initial Position	Performance	Initial Position	Final Position
<p>1) Full can</p>	<p>Patient standing with arms at the side of the trunk.</p>	<p>Patient will perform shoulder abduction in the scapular plane without resistance and will return to the initial position. *progression: yellow, red and green elastic band (Theraband).</p>		

2) Prone elevation (Blackburn exercise)	Patient in prone, shoulder off the treatment table and positioned perpendicular to the ground, with a shoulder at 90° flexion and elbow extended.	The patient will raise the arm in scapular plane and return to the initial position. * progression: 1kg, 2kg and 3kg dumbbell.		
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