## **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.

Exercise	Initial Position	Performance	Initial Position	Final Position
1) Closed Chain	Patient in standing	Shoulder circular		•
Pendulum	position supporting the	movements in scapular		
	hand on a ball	plane.		
	positioned on a			200
	treatment table with the			
	trunk inclined.		1,512	
				an.

2) Bilateral Bench Slide	Patient sitting in front of	Slide the hands over the		
<90°	the treatment table	ball, moving it forward		
	supporting the hands on	until the elbow is		
	a ball positioned on the	extended, and shoulder		
	treatment table. Initially	flexed <90°. Keep the		
	the elbow will be flexed	trunk straight.		
	and the shoulder slightly			
	flexed.			
3) Unilateral Bench	Patient sitting beside to	Slide the hand over the		
Slide <90°	the treatment table, and	ball, moving it forward		THE STATE OF THE S
	supporting the hand on	until the elbow is		
	the ball. Initially the	extended. Keep the		10
	elbow will be flexed and	trunk straight.		
	the arm at the side of			
	the trunk.			
			Mary and the second	

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

6) Inclined Bench Slide	Patient sitting beside to	Slide the hand over the		
	the treatment table, and	ball, moving hand and		
	supporting the hand on	trunk forward until elbow		
	the ball. The ball will be	is extended.	3 4	
	on an inclined surface at	*progression: yellow,		
	45°. Elbow will be flexed	red, green and blue		
	and arm at the side of	elastic band		
	the trunk.	(Theraband).		
7) \\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	D. C. 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0:1 " 1 1 "		
7) Wall Slide	Patient standing in front	Slide the hand over the		All the second s
	of a wall. Hand	ball or towel on the wall		
	positioned on a ball or	by moving it upward		
	towel against the wall.	until elbow is extended		
	Elbow will be flexed and	in scapular plane		
	the shoulder slightly	direction.		
	flexed in the scapular			
	plane.		* Constitution of the second	

8) Wall Slide +	Patient standing in front	Slide the hand on the	
Resistance	of a wall. Hand holding	wall by moving it upward	
	an elastic band and	against resistance until	
	positioned against the	elbow is extended.	
	wall. Elbow will be	*progression: yellow,	
	flexed and the shoulder	red, green and blue	
	slightly flexed.	elastic band	
		(Theraband).	
9) Wall Slide +	Patient standing in front	Sliding the hand on the	
Resistance + Open	of a wall. Hand holding	wall by moving it upward	
Chain	an elastic band and	against resistance until	
	positioned against the	elbow is extended. At	
	wall. Elbow will be	the end range move the	
	flexed and the shoulder	hand away from the wall	
	slightly flexed.	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	Patient in supine,	The unaffected arm will					
Elevation	hand of the	first assist elbow					
	unaffected arm	extension of the					
	holds the wrist of	affected arm keeping					
	affected arm. Elbow	the shoulder at 90° of					
	will be at 90° flexion	flexion. Next, the					
	and the arm at the	unaffected limb assists					
	side of the trunk.	the flexion and					
		extension of the					
		affected shoulder					
		during concentric and					
		eccentric phases.					
2) Active - Weight	Patient in supine,	The unaffected arm will					
	hand of the	first assist elbow					
	unaffected arm	extension of the					
	holds the wrist of	affected arm keeping					
	affected arm. Elbow	the shoulder at 90° of					
	will be at 90° flexion	flexion. Next, the					

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

	will be at 90° flexion	affected shoulder		
	holding a toning	perform flexion without		
	ball	assistance with toning		
		ball.* progression: 1kg		
		and 2kg toning ball.		
5) Seated -	Patient with 60° of	The unaffected arm will		
Weight	trunk inclination,	first assist elbow		
	hand of the	extension of the		
	unaffected shoulder	affected arm keeping		
	holds the affected	the shoulder at 90° of		
	arm. Initially elbow	flexion. Next, the	A	
	at 90° flexion and	affected shoulder		
	arm at the side of	perform flexion without		
	the trunk.	assistance and weight.		
6) Seated +	Patient with 60°	The unaffected arm will		44
Weight	trunk inclination,	first assist elbow		
	elbow of the affected	extension of the		
	side at 90° flexion	affected arm keeping		
	and arm at the side	the shoulder at 90° of		
	of the trunk. Hand of	flexion. Next, the		

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

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

2) Side Lying Elevation	Patient in side lying	Patient slides the hand	
	position, affected	over the flat surface	
	shoulder upwards.	raising his arm with the	
	Support the hand on a	elbow slightly bent.	
	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.		
3) Supine Band	Patient in supine,	The affected shoulder	
	holding a yellow elastic	performs flexion with	
	band with both hands.	elastic band while the	
	Unaffected shoulder	other shoulder remains	
	remains at the side of	at the side of the trunk.	
	the body and affected		
	shoulder with 90°		
	flexion.		

4) Bar Assisted	Patient standing	Unaffected shoulder	*
Standing	holding a bar	assists the arm	
		elevation using a bar.	

Exercises for Scapular Control and progressions					
Exercise	Initial Position	Performance	Initial Position	Final Position	
1) Scapular Orientation	Patient sitting, places	The patient will be			
Exercise	index finger on the	instructed to move the			
	coracoid process of the	scapula in external	83		
	affected shoulder.	rotation and posterior			
		tilt, moving the coracoid			
		process away from the			
		index finger or			
		pretending to put the	74	74	

		scapula into a little hook		
		behind.		
2) Inferior Glide	Patient sitting beside the	Patient will perform a		
	treatment table, with	pressure with the fist in		
	affected shoulder in	the direction of arm		
	abduction close to 90°.	adduction and instructed		
	A ball will be on the	to inferiorly depress	-	
	treatment table and the	their scapula.		
	fist.			
3) ) Low Row Static	Patient standing in front	Patient will perform a		
	of an immovable surface	shoulder extension		
	and placed their hand	movement against the		
	on the anterior edge of	immovable surface		
	the surface with palm	doing retraction and	No. of the last of	List, a
	facing posteriorly.	depression of the		
		scapula.		

4) Low Row Dynamic	Patient seating holding	The patient will perform		
	an elastic band with	the movement towards		
	shoulder flexion.	shoulder extension and		
		scapular retraction.	1	
		* 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	Patient in side lying	Patient will perform			
Rotation	position with the	external rotation of the		(a) a -	
	affected arm upwards.	shoulder and return to		(a)	
	Arm at the side of the	the initial position.			
	trunk and elbow flexed	* progression: 1kg, 2kg	1	A	
	at 90° with a dumbbell in	and 3kg dumbbell.			
	hand.				

2) Standing External	Patient standing with	Patient will perform		
Rotation	affected shoulder at the	external rotation of the		
	side of the trunk, elbow	shoulder and return to	25	
	flexed at 90° and	the initial position.		
	holding an elastic band	* progression: yellow,		
	by hand.	red and green elastic		
		band (Theraband).		
3) External Rotation	Patient standing with	The patient will perform		
Diagonal Standing	affected shoulder in	external rotation and		
	internal rotation, elbow	abduction of the		
	flexed at 90° and	shoulder, thus		
	holding an elastic band	performing a external		
	by hand.	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	Patient standing with	Patient will perform			
Rotation	affected shoulder at the	internal rotation of the			
	side of the trunk, elbow	shoulder and return to			
	flexed at 90° and	the initial position.		1	
	holding an elastic band.	*progression: yellow,	1200		
		red and green elastic			
		band (Theraband).			
2) Sitting Internal	Patient in supine with	Patient will perform			
Rotation	affected shoulder in 90°	internal rotation of the			
	abduction and elbow in	shoulder and return to			
	90° flexion holding a	the initial position.			
	dumbbell in hand.	* progression: 1kg, 2kg		1	
		and 3kg dumbbell.			

3) Internal Rotation	Patient standing with	Patient will perform		
Diagonal Standing	affected shoulder in 45°	internal rotation of the		
	abduction, elbow in 90°	shoulder and return to	The same of the sa	
	flexion, holding an	the initial position.		
	elastic band by hand.	* progression: yellow,		The same of the sa
		red and green elastic		
		band (Theraband).		

	Ass	isted Elevation and prog	ression	
Exercise	Initial Position	Performance	Initial Position	Final Position
1) Therapist Assisted	Patient in supine with	Therapist assists		
Elevation	elbow at 90° flexion and	shoulder flexion during		
	shoulder at the side of	the concentric and		
	the trunk. Therapist	eccentric phases.		
	holds the forearm on			
	the affected side of the			
	patient.			100

2) Side Lying Elevation	Patient in side lying	Patient slides the hand		
	position, affected	over the flat surface		
	shoulder upwards.	raising the arm with the		
	Support the hand on a	elbow slightly bent.		
	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.			
3) Supine Band	Patient in supine,	The affected shoulder		
	holding a yellow elastic	performs flexion with	1	
	band with both hands.	elastic band while the		
	Unaffected shoulder	other shoulder remains		
	remains at the side of	at the side of the trunk.		
	the body and affected			
	shoulder with 90°			
	flexion.			

4) Bar Assisted Standing	Patient standing holding a bar.	Unaffected shoulder assists the arm elevation using a bar.	

	Focus on Elevation and progressions					
Exercise	Initial Position	Performance	Initial Position	Final Position		
1) Full can	Patient standing with arms	Patient will perform				
	at the side of the trunk.	shoulder abduction in the	<b>@</b>			
		scapular plane without				
		resistance and will return				
		to the initial position.	and the same	and the same		
		*progression: yellow, red				
		and green elastic band				
		(Theraband).	All the second			

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