
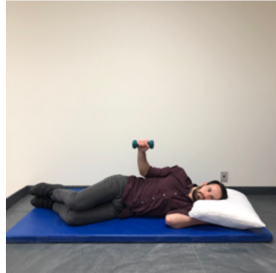



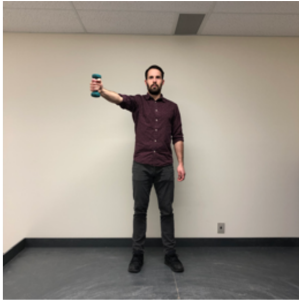
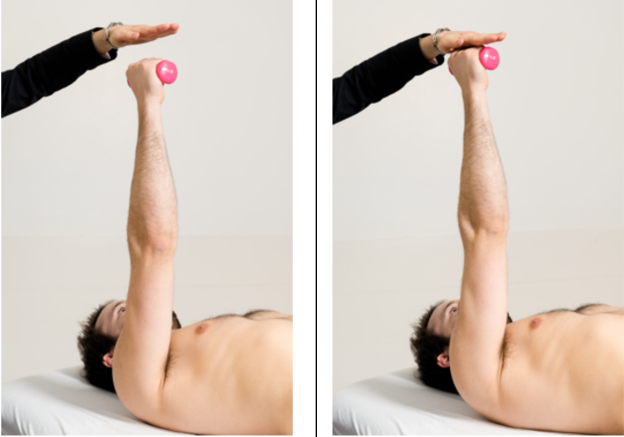
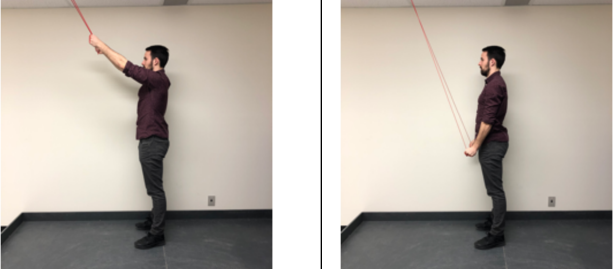




Supplementary file 1: Shoulder muscles strengthening program.

EXERCISES PROGRAM		
A) SHOULDER EXTERNAL ROTATION		
<p>1. Shoulder external rotation at 0°</p> <ul style="list-style-type: none"> • Hold a weight in your hand. • Lie on the opposite side of the hand holding the weight. • With the trunk upright, flex the elbow 90 degrees. Tighten the abs. • Lift the weight so that your hand is upward, keeping your elbow at 90 degrees. 		
<p>2. Shoulder external rotation at 45°</p> <ul style="list-style-type: none"> • Hold a weight in your hand. • With the trunk upright, flex the elbow 90 degrees. Tighten the abs. • Lift your arm to 90° of abduction while 		

<p>keeping your elbow flexed at 90°.</p> <ul style="list-style-type: none"> • Lift the weight in order to bring your hand upwards and backwards while keeping your elbow flexed at 90° and your arm abducted at 45°. 		
B) SHOULDER INTERNAL ROTATION		
<p>1. Shoulder internal rotation at 0°</p> <ul style="list-style-type: none"> • Tie an elastic band level to your hips. Turn aside. • With your trunk straight, flex the elbow 90 degrees. Tighten the abs. • Pull the elastic to bring the hand from the outside to the inside, make sure that the elbow does not take off from the body. Keep the elbow at 90°. 		
C) ARM ELEVATION (SCAPTION)		
<p>1. Scaption with weight</p> <ul style="list-style-type: none"> • Use a weight to make the scaption movement. • Raise your arm by keeping your elbow extended in a 45° motion plane. • Do not lift the shoulder up or lean the trunk to the opposite side. 		

D) SHOULDER PROTRACTION	
<p>1. Protraction with weight</p> <ul style="list-style-type: none">• Lie on your back with your knees bent and your back in a neutral position. Contract your abs.• Raise your arm up to reach 90°. When your arm is upright, push your hand toward the ceiling keeping your back flat, without lifting your shoulders.	
E) SHOULDER EXTENSION	
<p>1. Shoulder extension with an elastic band</p> <ul style="list-style-type: none">• With both hands, grasp the ends of a rubber band attached at shoulder height.• Keep your back straight and your shoulders slightly back. Tighten the abdominals, tuck in the chin.	

<ul style="list-style-type: none">• With arms outstretched, slowly pull backwards so that your hands are shifted to the outside of your hip. Keep your back straight and your shoulders slightly backwards throughout the exercise.		
F) HORIZONTAL ABDUCTION		
1. Horizontal abduction with weight <ul style="list-style-type: none">• Lying prone, with your elbow flexed 90° and a weight in each hand.• Lift your arms up 1 or 2 cm without lifting your shoulders from the table.• Extend your elbows.• Flex back your elbows to 90° and lower your arms in the starting position.		

G) ELEVATION**1. Elevation with weight**

- With arms raised about 30 ° to the side, bring both shoulders slightly back and towards the eyes.
- Tighten the abdominals, tuck in the chin.

