

## Pre-prosthetic exercises for upper limb amputations

Pre-prosthetic exercises aim to assist with:

1. Residual limb shrinkage and shaping
2. Residual limb desensitization
3. Maintenance of joint range of motion (where possible)
4. Increasing muscle strength
5. Instruction in proper hygiene of the limb
6. Maximizing independence
7. Myoelectric site testing (if myoelectric components are prescribed)
8. Preparation for prosthesis control mechanism
9. Exploration of patient goals regarding the future





This list forms a basic exercise program that can be built upon in collaboration with your rehabilitation team. They are designed to assist with improving range of motion, preventing contractures and working towards a strength based program to assist with activities of daily living and independence.

All of these exercises can commence with 1 set of 8-10 repetitions. They can be refined by your rehabilitation team to suit your individual needs and ability level.

If any of these exercises cause you unnecessary extreme discomfort, please stop this exercise immediately and consult your rehabilitation team.

If you don't have a rehabilitation team, please reach out to the [International Confederation of Amputee Associations \(IC2A\)](#) who can put you in touch with rehabilitation personnel in your geographical region.

These exercises should be performed on both the affected and non-affected sides to assist with a potential change in hand dominance and to assist with improving strength and stamina.

EXERCISE	DESCRIPTION	IMAGE
<b>Scapular joint (shoulder blade)</b>		
<p>Protraction / retraction (Scapular abduction/ adduction)</p>	<p>Start in a seated position.</p> <p>Slowly round your shoulders forward as you spread your shoulder blades apart. Then gently squeeze your shoulder blades together as your chest expands or opens up.</p> <p>This exercise can also be performed lying on your back for some feedback from the shoulder blades.</p>	
<p>Chest expansion (breath work)</p>	<p>Start in a seated position.</p> <p>This motion should be practiced by deeply inhaling, expanding your chest and diaphragm as much as possible without raising your shoulders, and then relaxing slowly. Allowing the shoulders to relax as well.</p> <p>This exercise can also be performed lying on your back.</p>	
<p>Shoulder depression/ elevation</p>	<p>Start in a seated position.</p> <p>Gently raise your shoulders to your ears and slowly lower them back down.</p> <p>This exercise can also be performed lying on your back.</p>	
<b>Glenohumeral joint (shoulder joint)</b>		
<p>Shoulder abduction</p>	<p>This exercise can be performed with your residual limb(s) as well as your unaffected arm.</p> <p>Start in a seated position with your limb(s) close to your body.</p> <p>Keep your shoulders away from your ears (i.e. don't shrug) and gently raise your limb(s) to shoulder height.</p> <p>Slowly lower your arm back to the start position.</p>	

## Shoulder adduction

Start in a standing position or lying on your back with your limb raised to shoulder height or just above.

Gently lower your arm down and across your body.



## Humeral flexion / extension

Start in a standing or sitting position.

Gently raise your limb up in front of you to chest height (flexion).

Slowly lower back down and past your hip to encourage extension.



## External rotation

There are 2 positions for external rotation.

1. At 90 degrees. (figure a).

Raise your shoulder and residual limb to the position of a stop sign. Gently lower down so that your arm is parallel to the floor.



2. At neutral or by your side. (figure b).

Rotate your shoulder out to be in line with your hip and then rotate towards the body.



## Elbow

### Elbow flexion / extension

***\*\*This exercise is for those that have had a below elbow amputation.***

This exercise can be performed sitting or standing.

You can raise your arm out in front (as per the picture) or start with the arm close by your side.

Bend your elbow towards your shoulder (flexion).

Then slowly straighten out until the elbow joint is almost straight.



## Forearm

### Pronation/supination

\*\*\* This exercise is for those who are below elbow amputees.

Rest your arm on a desk or bench.

Start in a neutral position with your 'thumb' facing up towards the ceiling.

Slowly rotate until your 'palm' or arm is facing down into the desk/bench.

Slowly rotate back the other way until your arm is facing up to the ceiling again.

Pronation is with 'palm down' and supination is with 'palm up'.



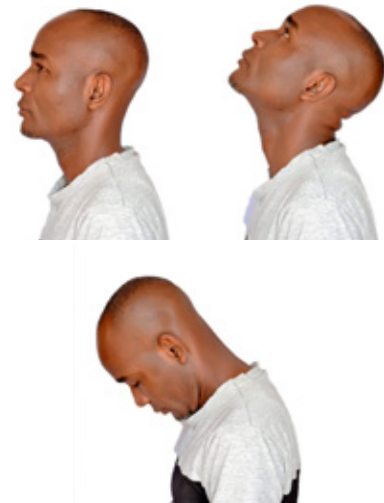
## Cervical spine

### Flexion / extension

Start in a sitting position with your head in neutral and shoulders relaxed.

Gently extend your head by looking up towards the ceiling. Slowly bring back to the start position.

Gently bend your head forward as you look towards your chest. Slowly bring back to the start position.



### Rotation

Start in a sitting position looking straight ahead with your shoulders relaxed.

Gently look over your right shoulder. Return to the start position.

Gently look over your left shoulder. Return to the start position.



## Lateral flexion

Start in a sitting position looking straight ahead with your shoulders relaxed.

Gently tilt your head to the right (without raising your shoulders). Return to the start position.

Gently tilt your head to the left (without raising your shoulders). Return to the start position.



## Trunk

### Thoracic flexion / extension

In a sitting or standing position bend forward from the chest. Come back to the start position and try to extend or lengthen through your spine.



### Lateral flexion

Start in a seated position looking straight ahead.

Gently bend to the left. Return to the start.

Gently bend to the right. Return to the start.



### Rotation

Start in a sitting position looking straight ahead.

Rotate your body to the left without letting your hips leave the chair. Return to the start.

Rotate your body to the right without letting your hips leave the chair. Return to the start.

