Amputation of a limb is performed largely as a result of vascular disease, trauma or tumour. Amputation of the lower limb can either be above or below the knee:

- Above Knee Amputation (AKA)- transfemoral (surgery to thigh bone)
- Below Knee Amputation (BKA)- transtibial (surgery to shin bone)

**Role of physiotherapy in Amputee Care**

Physiotherapy is part of the multidisciplinary team. Its role post amputation include, respiratory care, contracture prevention, muscle strengthening, transfer practice and gait re-education. This leaflet will provide information on these areas to best assist you through your rehabilitation process.

**Pain management of the residual limb (stump)**

Pain is a common occurrence following any surgical procedure. It can be well managed with medication, special pain management devices and ice. The pain will naturally reduce as your wound heals and with regular use of analgesics (pain killers). It is imperative to keep your pain well controlled so you can mobilise comfortably, perform your physiotherapy exercises and resume normal activities after your surgery.

You will be asked to rate or score your pain regularly after your surgery. The score will depend on how your pain feels to you.

0= No Pain, 10= worst pain imaginable

(Please point to the number that best describes your pain)

![Pain Scale]

Assign the number you feel best describes your pain. The nurses will administer appropriate treatments/ medications depending on your pain score. The nurse will reassess your pain score after the treatment to make sure it has worked to reduce your pain.
Phantom pain

Phantom pain and sensations may be experienced in the “missing limb”, symptoms may include itch, pins and needles, buring or cramping. Like pain in your stump, these symptoms need to be addressed to optimise your comfort, please tell your nurse, surgeon or physiotherapist if you experience any pain or altered sensations to the “missing limb”.

Respiratory Care

After an anaesthetic, you may find it difficult to take deep breaths and to cough up secretions. It is therefore important to do regular breathing exercises to ensure you are expanding all parts of the lungs and to clear any build up of secretions, decreasing the risk of infection. Your physiotherapist will instruct you in these exercises, which are explained below:

Breathing Exercises – Active Cycle of Breathing Technique
Sit in a comfortable position – ideally high up in bed with your head and shoulders well supported by pillows or sitting over the edge of the bed or sitting out in a chair.
Take a long, slow, deep breath in to fully expand the lungs. **Hold for 3 seconds**, and then breathe out slowly. Repeat this 4 to 5 times.
Then take a rest, breathing at a relaxed level for approx 10sec.
Continue this “cycle” three times.
The aim of the deep breaths is to loosen any secretions which you may feel have moved into throat and upper airways.
If you feel these secretions moving, performing a **huff** will often help to move these sections to the back of throat, and from there, you should be able to clear them with a less vigorous **cough**.
When huffing, it is important that you tilt your chin up, and keep your mouth open. Take a medium sized breath in and a short, sharp breath out, as if fogging up a mirror. Repeat this step two to three times.
You may wish to bend your knees up towards your chest also to support coughing. Remember fewer strong coughs have more effect than a lot of weak ones.
**Incentive Spirometry**

Incentive spirometry is designed to mimic natural sighing or yawning, therefore, encouraging **maximum inflation** of your lungs and preventing the build up of secretions. You will be provided with an incentive spirometry device by your physiotherapist. It provides visual feedback on how deep a breath you are taking.

Place the mouth piece in your mouth and secure a firm seal with your lips.

Take a slow deep breath in through the tube, trying to keep your shoulders relaxed

The aim is to try and raise two of the balls and try to **hold them up** for three seconds. It will get easier the more often you do it.

**Swelling Management**

To minimise swelling that may occur in the stump, a compression sock may be used. This will be measured for, by either your nurse or physiotherapist. Control of swelling results in quicker progression to prosthetic rehabilitation. Elevating the stump will also assist in swelling management.

**Contracture Prevention**

After amputation, depending on level, remaining joints i.e. knee or hip are at risk of developing contractures. Post amputation, contractures are the shortening of the tendons and muscles due to holding the stump in a position for prolonged periods.

- AKA are at risk of developing contractures of the hip in a flexed position.
- BKA are at risk of developing contractures of the hip and knee in flexed positions.

It is imperative to follow your physiotherapists instruction regarding a stretching programme and comply with different resting positions, such as:

- Knee straight when seated/lying
- Prone (on your stomach) for periods 5-10 mins, 3-4 times daily.
**Muscle Strengthening**

To improve your over all fitness, optimise your balance and best prepare you for prosthetic management, your physiotherapist will advise you on appropriate exercises for both the upper and lower limbs. Below are early rehabilitation exercises:

**Hip Abduction (side-lying)**
- Position yourself on your side with your stump on top
- Raise your stump into the air
- Ensure you do not rotate back your pelvis
- Repeat 10 times

**Static Quads**
- Tighten your thigh muscle (quad), the back of your knee should press onto the bed.
- Hold for 5 sec
- Repeat 10 times

**Straight leg raise**
- Tighten your thigh muscle, keep the knee straight and raise your stump into the air (approx 30cm)
- Hold for 5 sec
- Repeat 10 times

**Trans Abs Activation**
- Tighten the muscle that lies below your belly button and extends to your pubic bone- “draw it in towards your spine”
- Hold for 5 sec
- Repeat 10 times
**Bridging**
- Tighten your trans abs, as in the exercise above and your bottom- raise your bottom off the bed.
- Hold for 5sec
- Repeat 10 times

**Prone Row**
- Raise your arms so that your elbows are shoulder height, as in the picture.
- Repeat 10 times
- (Appropriate dumbbells will be provided by your physiotherapist).

**Biceps Curl**
- Bend your elbow (bring palm towards your shoulder)
- Repeat 10 times on each arm
- (Appropriate dumbbells will be provided by your physiotherapist).
Transfer practice and Gait Re-education

One medically appropriate, from day one post op your physiotherapist will assist in practice to transfer you from bed to chair. Aids such as ‘sliding boards’ may be used. Mobilisation with aids such as rollator zimmer frame or elbow crutches will be taught and progressed as appropriate. The goal of the physiotherapy team will be that you can independently transfer from bed to chair and mobilise with appropriate mobility aid short distances to allow for safe discharge home.

A Guide to Fall Prevention

After amputation, you are at greater risk of a fall. Physiotherapy will assist in regaining the ability to mobilise and strengthen your balance. It is important to adhere to your physiotherapists advice to prevent a fall and potential injury. Below are some helpful hints to ensure safety on the ward.

- Use your call bell to ask for assistance with transfers and mobility
- Adhere to instruction from your physiotherapist regarding the level assistance and the mobility aid you should use for all transfers and mobility.
- Ensure you have appropriate footwear on your non-operated side.

Elbow extension/ Triceps
- Support the arm to be exercised by the other (below the elbow)
- Straighten your elbow (overhead), avoid allowing the elbow to dip forward
- Repeat 10 times on each arm
- (Appropriate dumbbells will be provided by your physiotherapist).

Shoulder press
- Raise your arms in the air, as in the picture
- Repeat 10 times on each arm
- (Appropriate dumbbells will be provided by your physiotherapist).
**Prosthetic Management**

The multidisciplinary team, led by your consultant, will refer you on to appropriate services for prosthetic fitting and long-term amputee management.

**References:**
