Flashcards Amputation



- **These flashcards contain information about working with people with an amputation in low resource areas.**
- **These Flashcards are made for the use of fieldworkers.**
- **These flashcards are based on the information about amputation from the RehApp.**

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The goals of the flashcards are:

- To meet the needs of people with disabilities and their families.
- To improve knowledge and skills of fieldworkers in providing basic (functional) rehabilitation services for people with disabilities and their families.
- To enhance participation in daily, family and community life.
- To improve the quality of life of people with disabilities and their families.
- To support you (as fieldworker) in the process of guiding a family by providing you with a resource you can keep with you on your phone (offline) or in your bag.

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Amputation

What can you do with these flashcards:

- To help guide your visits to families that have a family member with amputation.
- Make an inventory of the needs of the person with an amputation and his/her family.
- Learn about the implications of a disability for the person and their family.
- Use them to do an assessment.
- Use them to set goals for a person with an amputation.
- Use them to help you discuss interventions with the family.
- Use them to help you keep client records.
- Use them to help you monitor process.

Index:

Note: These flashcards contain information about **amputation**. *The content is organised according to the ICF domains. These cards don't replace the knowledge and skills of doctors and therapists. We advice you to seek their advice first.*

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Introduction

This chapter focusses primarily on people with a lower limb amputation, above or below the knee. It includes information on:

- Unilateral amputations: one (part of the) limb is removed.
- Bilateral amputations: two limbs are (partially) removed.

The reason for amputation is usually a disease (e.g. diabetes, malignancies, leprosy) or a trauma (e.g. accidents, anti-personnel mines).

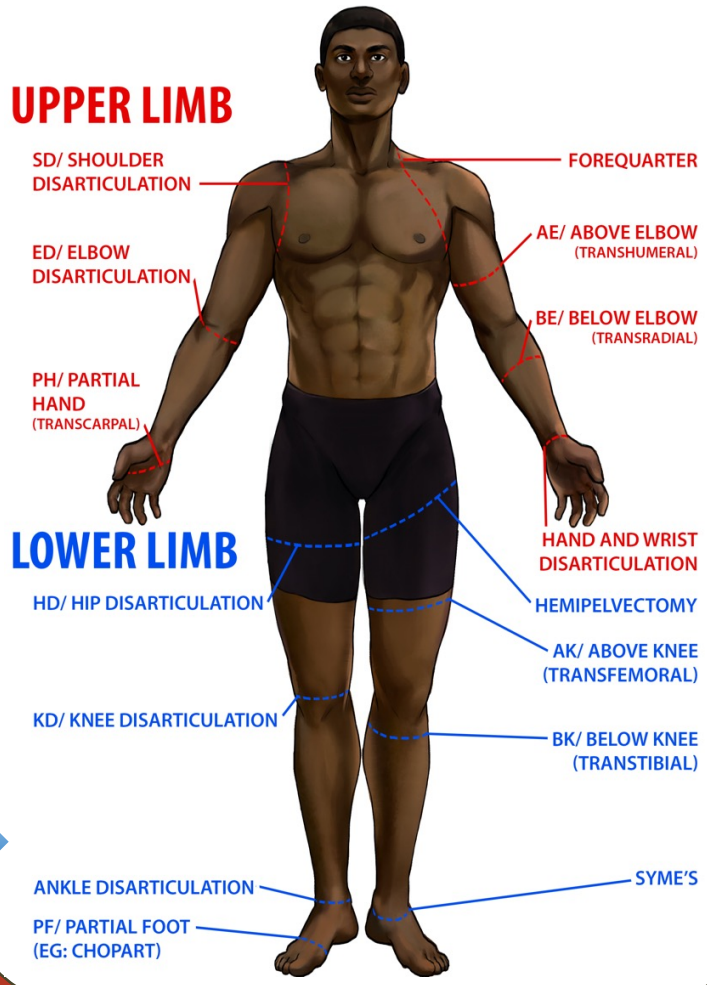
The major differences in supporting people with a lower limb amputation are:

- Persons with bilateral amputation will be less mobile and often more dependent than those with unilateral amputation.
- Persons with above knee amputation will have more mobility difficulties than those with below knee amputation.

Note: individual differences can exist depending on the physical fitness of the person, the quality of the stump and the quality of the prosthetic fitting.

People with a lower limb amputation are often able to walk again with the use of a prosthesis .

This is a device that replaces the amputated part of the limb. Weaker or elderly persons or people with bilateral lower limb amputation might continue using a wheelchair. A crucial first step to achieve this rehabilitation goal is to prepare the person and the stump (residual limb) for functioning with a prosthesis.



Card 1

Introduction

Card 2

Introduction

Rehabilitation goals

The main factors in setting rehabilitation goals are:

- the person's concerns, wishes and needs;
- the person's general condition;
- the stump condition; and
- the attitude of the person.

Young people with lower limb amputations are generally very eager to regain as much function as possible with their prosthesis. They challenge themselves by setting new goals in rehabilitation, sports, leisure and work. For elderly or weaker persons, the rehabilitation goals are in general less ambitious. However, to move freely and independently is very important and maintaining daily routine with prosthetic mobility is highly recommended to upkeep a general good condition.

Potential rehabilitation goals

Encourage and assist people with lower limb amputations to be as mobile as possible within their capacities.

- Where possible, aim at walking with a prosthesis without walking aids.
- If this is not possible, stimulate mobility with walking aids.







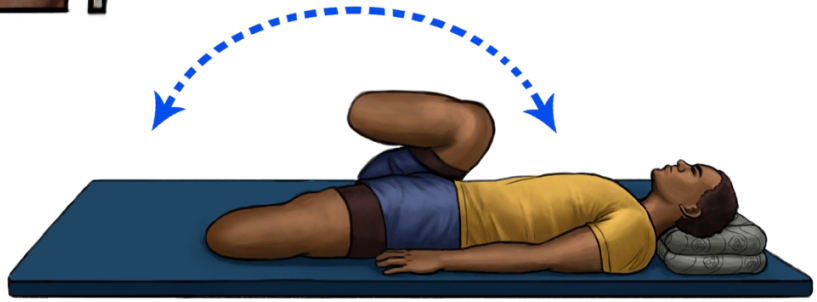


Body functions and structures:

Information and
Actions to take











Card 3

Body Functions and Structures

Stump condition

After amputation, the skin of the stump should receive daily care to prevent infection and to prepare the limb for using a prosthetic application.

Risk/ problem

A neglected stump with skin scratches may result in stump infection. Stiff scar tissue attached to closely underlying (bone) tissue may cause bleeding and pain. This hampers the use of a prosthesis.

Actions to take

The skin of the stump must be held clean and mobile by undertaking the following measures:

1) Stump hygiene

- Daily wash the stump with warm water and soft soap; rinse thoroughly with cold water and allow the skin to dry completely. Avoid oils, creams and long soaking in water.
- Use clean stump socks without wrinkles; wash/rinse socks daily.
- Frequently inspect the stump. In case of skin scratches or skin redness, avoid pressure. **Note:** the person should not walk with a prosthesis until wounds are completely healed.
- Avoid long positioning of the stump in bended position.
- Exercise the stump daily with an emphasis on stretching movements.

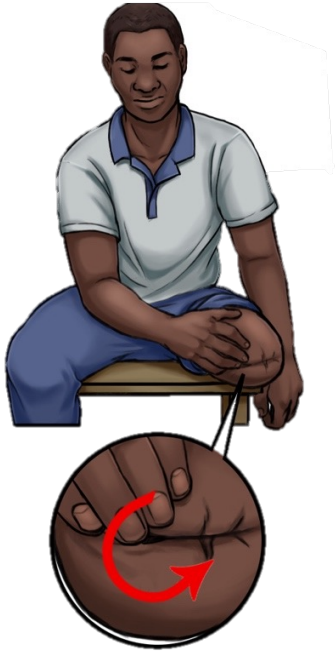


Card 4

Body Functions and Structures

2) Stump massage

- In case the skin- and scar sticks together: place fingers on the skin above bone or on healed scar and make circular movements to prevent or reduce skin adhesions to underlying tissue.
- In case of skin hypersensitivity: tap with the fingertips, massage gently or rub with fabrics of progressively increasing roughness on the affected skin.

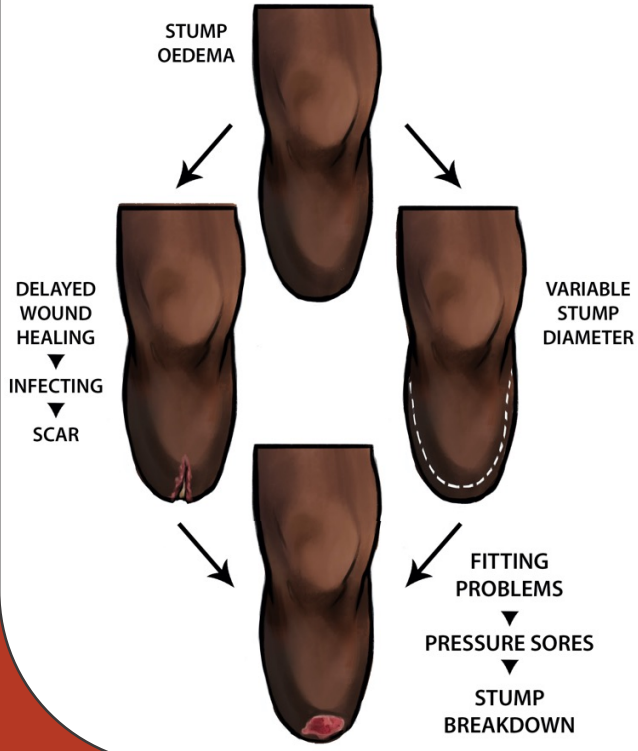


Swelling

After the amputation, the stump is swollen (oedema). Often, pressure with a finger on the prosthetic socket leaves a clear pitting mark.

Risk/problem

Stump oedema delays wound healing and can cause a variable stump shape, fitting problems and stump breakdown. Oedema as such should be avoided for a timely healing and rehabilitation process toward prosthetic application.



Actions to take

Reduce and prevent the swelling of the stump by undertaking the following measures:

- Bandaging
- Elevating
- Active movements

Card 5

Body Functions and Structures

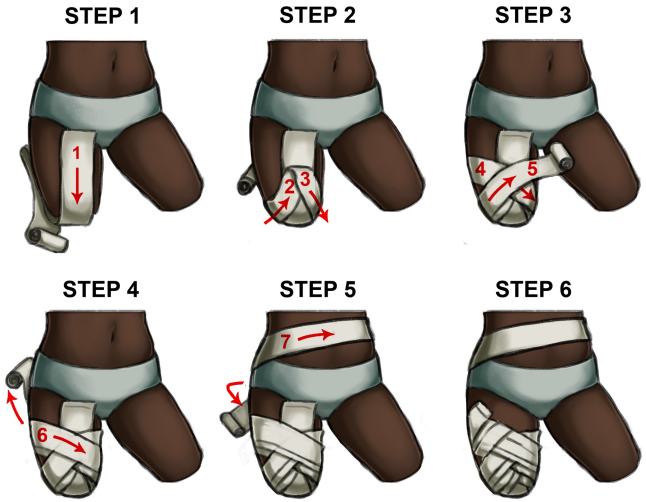
Bandaging

Stump bandaging helps to reduce the swelling, to promote healing of the wound and to realise a good fit in the prosthetic socket.

BELOW KNEE AMPUTATION



ABOVE KNEE AMPUTATION



Actions to take

Wrap the stump in a figure-of-eight pattern (diagonal) and keep the following in mind:

- Bandage tension should be roughly two-thirds of its maximum stretch (firm but comfortable).
- The bandage should be discarded when it has lost its elasticity.
- The size of the bandage should be appropriate for the stump.
  - For below knee: 8-10 cm-wide bandage.
  - For above knee: 10-15 cm-wide bandage.
- Layers overlap about half the bandage width on each turn.
- Apply bandage with more pressure at the end of the stump than at the part closer to the body.
- The bandage should go up to the knee, with a loop above the knee (for below knee); and up to the groin with a loop around the hip (for above knee).
- Ensure the bandage fully encloses the stump.
- Fasten the bandage with tape. Metal fasteners should not be used due to risk of scratching the skin.
- The bandage must remain smooth and free of wrinkles.
- The bandage could be worn if a small wound occurs.
- Change the bandage up to four times daily to adjust the pressure and to exercise the stump .
- Bandages should not cause pain as this may cause pressure areas or restricts the blood flow.

Note:

- Keep dressings clean.
- Refer to a doctor immediately if dressings are soaked!!

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Body Functions and Structures

Elevating

Elevation of the bandaged stump while sitting or lying, decreases the swelling through the effects of gravity.

Actions to take

- Use a pillow to elevate the stump. **Note:** avoid the stump from hanging down when sitting or lying.



- Maintain the elevated position as much as possible, but at least several times a day for 30 minutes. **Note:** keep the knee stretched to prevent a flexion contracture: the inability to fully straighten the knee.

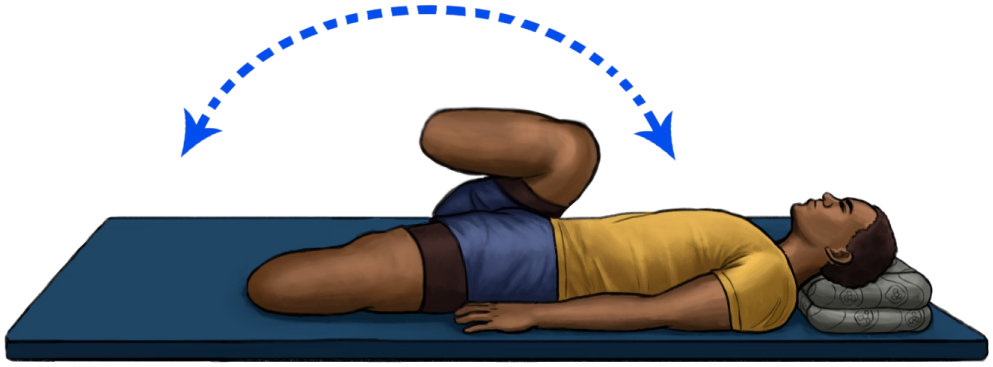


Active movements

Actively moving the stump stimulates the circulation, which helps reducing the swelling.

Actions to take

- Move the knee- and hip joint through their full range of motion for 10 minutes, at least three times a day. **Note:** avoid interference with possible scar healing.



Card 7

Body Functions and Structures

Joint stiffness

Immobilisation and/or frequently maintaining wrong positions can cause contractures (shortenings of muscles, tendons or scar tissue).

Risk/problem

As a result of joint stiffness, the joint cannot move freely. This can also hamper the use of prosthesis. After lower limb amputations, especially knee bending contractures and hip bending/ abduction (away from the centre of the body) contractures are common.

Actions to take

Contractures can be prevented or reduced by paying attention to the following:

- Positioning
- Active exercises
- Stretching exercises



Positioning

Positioning refers to how someone lies, sits or stands. Proper positioning helps in preventing contractures, while improper positioning may cause contractures. Maintain the correct position as often as possible, but for at least half an hour, three times a day.

Proper positions

A. Keep the knee stump fully stretched.



B. Maintain a prone position with the hip stump stretched.



Note: avoid standing positions with the knee or hip resting on a crutch.



Card 8

Body Functions and Structures

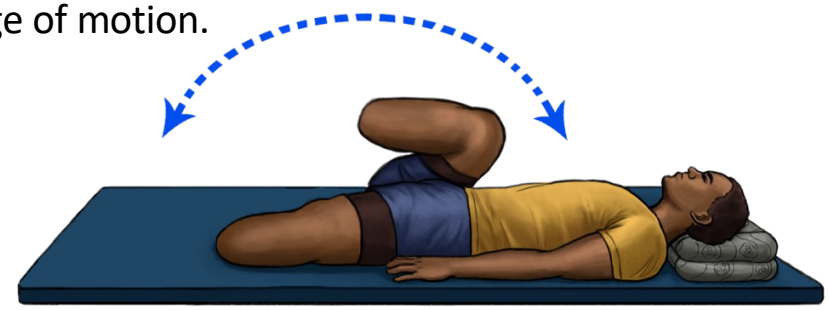
Active exercises

Prolonged immobilisation (periods of no movements) can cause joint stiffness and lead to general weakness. Active exercises by the person with an amputation help to:

- prevent contractures;
- promote the circulation and wound healing;
- contribute to improving the general condition.

Suggested exercises

A) Move the knee- and hip joint through their full range of motion.



B) Move the knee joint especially towards full stretch.



C) Move the hip joint especially in stretch.



D) Move the hip joint especially to the centre of the body.



Stretching exercises

Active exercises can be combined with stretching exercises that aim to prevent or reduce contractures.

Suggested exercise

- Maintain a stretch of the knee with the hand above the knee, giving a bit of downward pressure.
- Hold it for 30 seconds and repeat 10 times. This will cause a mild and tolerable feeling of tension in the stretched muscle. This should disappear after the stretch is released.
- Do this exercise several times daily.



Muscle weakness

Prolonged immobilisation (periods of no movements) causes muscle weakness due to lack of use. Next to active exercises , the person should do exercises to strengthen the muscle.

Risk/problem

The use of a prosthesis requires strong knee- and hip extensors (group of muscles mainly used to stretch the knee/hip) and hip adductors (group of muscles mainly used for bringing the thighs together).

Actions to take

- Stimulate the person to do strengthening exercises.

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Body Functions and Structures

Card 10

Body Functions and Structures

Strengthening exercises

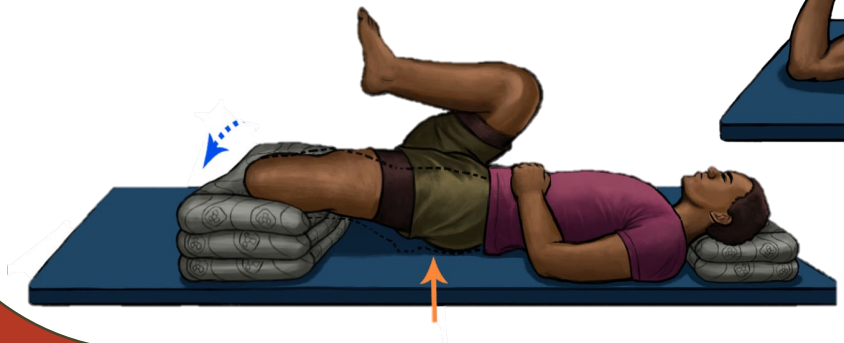
Muscles get stronger after repeated movements against resistance (gravity/ weight, manually applied). Muscle tiredness should be felt. Two to three series of 10 movements are sufficient, especially when done a few times daily.

Suggested exercises

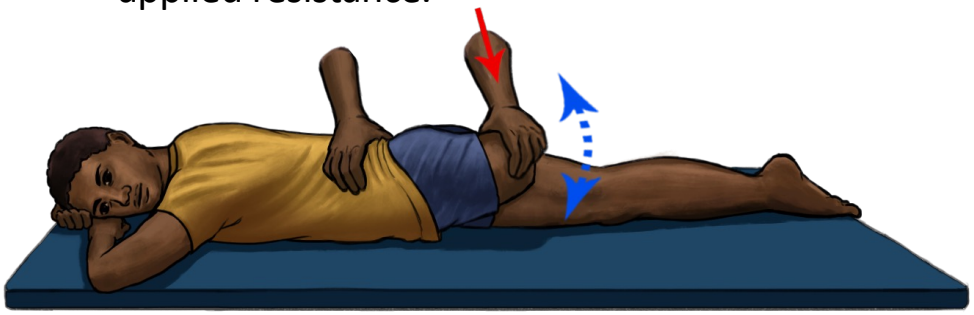
A) Stretch the knee joint against manually applied resistance.



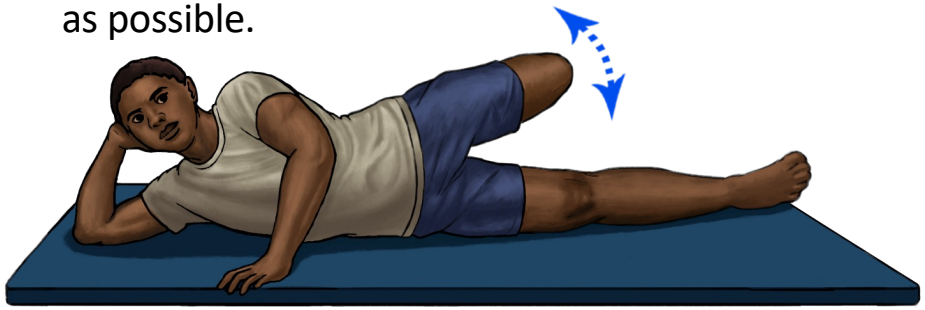
B) Stretch the hip joint against gravity while lifting the buttocks.



C) Stretch the hip joint against manually applied resistance.



D) Lift the leg sideways against gravity, as high as possible.



General condition

Prolonged immobilisation (periods of no activity) causes general weakness of the muscles and of the heart/lung mechanism, which is important to circulate the blood and oxygen throughout the body.

Risk/problem

A good general condition is important for a rapid and successful rehabilitation with a prosthesis. One should also bear in mind that a person with an amputation will use up to twice more energy (oxygen) as before the amputation during walking.

Actions to take

- If possible, the person should move around with a walker or crutches and ultimately with only a prosthesis.
- When bedridden, performing exercises can contribute to a good general condition. Movements that cause a mild and a temporary feeling of tiredness are effective, e.g. bending and stretching the extremities repeatedly.

Pain

Pain or discomfort after an amputation can have different causes.

Risk/problem

The person experiencing pain risks:

- further harming the stump;
- walking less and with gait defects; and
- not using the prosthesis at all.

Actions to take

- When people have pain or discomfort in the stump it is important to assess the type of pain a person is experiencing.

Post-surgical stump pain

A sharp localised pain in the stump is normal during the first weeks after the amputation.

Actions to take

- Reduce the swelling by elevation of the stump.
- If tolerable, use compression bandages .
- Give over the counter medicines, such as paracetamol or ibuprofen, to reduce the pain.

Card 11

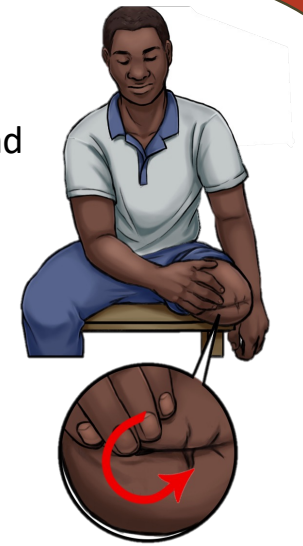
Body Functions and Structures

Card 12

Body Functions and Structures

Post-healing pain

Continued or intermittent stump pain after healing of the scar is less common and can have a variety of causes, including bony outgrowth just under the skin, infections, scar adhesions or a compressed nerve.

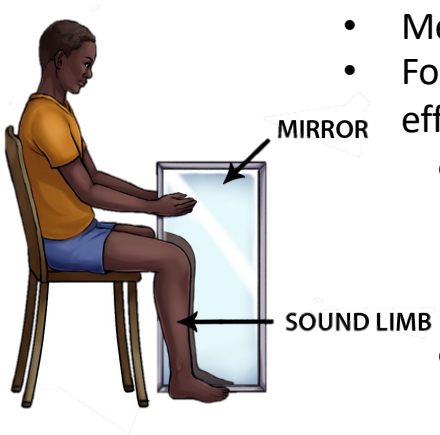


Actions to take

- Refer to a medical specialist to identify and treat the cause.
- In case of local skin sensitivity, massaging of the stump may give relief.

Pain in phantom limb

When the missing limb causes pain, this is called phantom pain. Early on, some people have the feeling that all or part of the amputated limb (a so-called phantom limb) is still present. This is called phantom limb sensation, which usually diminishes over time and requires no further treatment. However, persisting phantom limb pain can be frustrating and is difficult to treat.



Actions to take

- Phantom limb pain may react on massaging of the stump area.
- Medicines sometimes help. If necessary, refer to a specialist.
- For some, brain imagery using a mirror is known to be quite effective.
  - Place a mirror between the legs so that the person cannot see the amputated leg; instead he/she looks at the mirror image of the sound leg giving the illusion of the missing limb.
  - The person slowly moves the sound knee or foot, imagining with much concentration that he/she moves both limbs simultaneously.
  - To be done 10-30 minutes at least once daily for 1-2 months.



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Body Functions and Structures

Post-fitting pain



Pain caused by the prosthesis is more frequent and usually caused by pressure, friction or traction of the skin. This can be experienced in the beginning, after excess weight-bearing /walking or in case of an ill-fitting prosthesis. Moreover, the stump may shrink over time, affecting a good fit.

Note: children outgrow the prosthesis relatively quickly. In some cases, there is a risk of bony overgrowth with the end of the bone starting to push out through the end of the stump (exostosis). This might hurt the end of the stump.



Actions to take

- In case of swelling, apply elevation of the residual limb and compression bandages.
- Avoid wearing the prosthesis by using crutches or a walker until skin breakdown has fully healed.
- If pain remains, refer to prosthetic specialist to identify and treat the cause: usually the socket or its position need some modifications.
- Children need frequent and regular check-ups and replacements of the prosthesis by a specialist. In case of exostosis, refer to specialist.

Diseases

In most countries, diseases are the main cause of amputation. For people with diabetes, diseases of the blood vessels, or leprosy, amputation occurs because of foot ulcers that will not heal. Of all the consequences of these diseases, loss of sensation is the greatest risk factor for developing a foot ulcer. It is important to conserve one's limbs as best as possible.

Actions to take

- Inspect the feet daily for wounds or blisters.
- Take good hygienic care for the feet.
- Always wear protective footwear.
- Ensure the disease causing the amputation receives the right treatment; consult a medical specialist.

Note: take a look at the Leprosy chapter of the RehApp for more information on wound treatment.

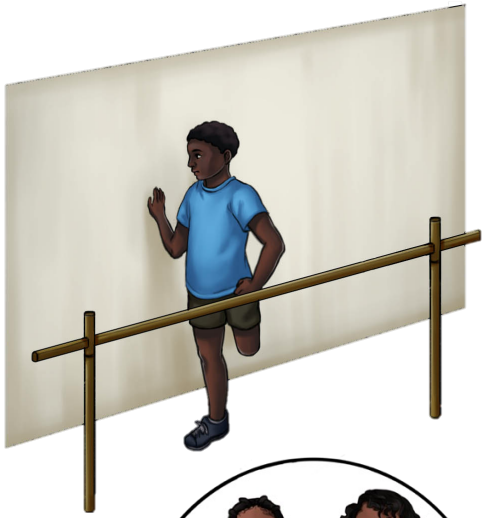






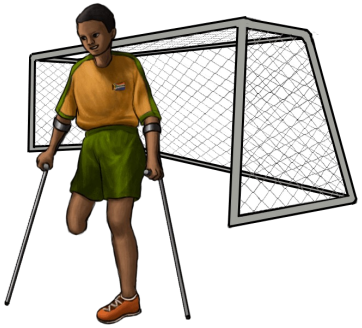
Activities and Participation:

Information and Actions to take













Card 14

Activities and Participation

A main goal for people with lower limb amputations is to be mobile and to walk again with a prosthesis, ideally without crutches.

- Persons with unilateral limb amputation can in principle use the prosthesis the whole day without complications.
- Persons with bilateral amputations, elderly and weak persons should always also have a wheelchair as additional standard equipment.

In any case, it is essential to preserve a good stump condition and ensure a correct fit of the stump within the socket for walking with a prosthesis.

Self-care

Besides labour and leisure activities, self-care forms an important area of activities for the person with an amputation. As one can imagine, independency in activities like washing, bathing and toileting could be goals with top priority. These activities will have to take place in a safe environment and performed in a safe way with or without assistive devices. A safe environment includes:

- Enough space to move around with a prosthesis.
- No obstacles on the floor preventing a person to fall.
- No slippery surfaces or floor due to water or other moistures.

All seemingly easy activities in the past must be relearned in another way, challenging the person with an amputation. Sometimes assistive devices are necessary to enable abovementioned activities. The following self-care activities will be explained:

- Bathing
- Taking a shower
- Personal hygiene and stump hygiene

Bathing

Suggested steps for bathing

Depending on the bathtub, tub size and position, one can follow the following steps for bathing:

1. Sit on the ledge before taking off the clothes, rather than removing the prosthesis and clothes in another place. **Note:** only sit on the ledge when this is safe to do so!
2. Raise the legs up and move them into the tub.
3. Put both hands on the ledge as support when lowering into the water.

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Activities and Participation

Taking a shower

The person cannot take the prosthesis when taking a shower. Standing may put too much strain on one leg and can also be dangerous because the person might easily slip and fall. The best way to take a shower is to bring a sturdy (plastic) chair into the shower area.

Suggested steps for showering

1. Use crutches or a wheelchair or other necessary personal walking aids to get to the shower area.
2. Get seated on the chair, with transfer if necessary.
3. Remove the prosthesis and clothes and put aside.
4. Wash the body under the shower and dry.
5. Put on your clothes and prosthesis (see dressing for sequence)

Personal hygiene and stump hygiene

The skin on a residual limb needs to be healthy to enable the person to be as active as possible without experiencing pain or discomfort. Persons with an amputation often need to gradually increase the time that they are wearing their artificial limb to let their residual limb adjust to being in a socket. During this time, and once wearing the artificial limb regularly, proper residual limb hygiene is essential to prevent skin disorders.



Risk/ Problem

Sweat is one of the common irritants affecting the skin. The skin helps regulate body temperature by producing sweat, which evaporates and cools the body. Especially while being in hot temperatures, activities make people sweat more, which can become a concern because of the following issues:

- Sweat in the socket of an artificial limb and on the residual limb can cause moistened and smelly solids. These solids within the socket make an ideal breeding ground for bacteria.
- In addition, as sweat builds up it can also lead to “pistoning” (moving around within the socket), which in turn can chafe the skin and cause wounds.

Actions to take

- Personal hygiene and stump hygiene are very important factors enabling prosthetic use.

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Activities and Participation

Dressing

Although many people with an amputation find their own way to dress, the ability to dress differs per person and the types of clothes (e.g. trousers, shorts or a skirt).

Actions to take

- It might be easier to first dress the artificial leg in underpants, trousers and shoe, before inserting the stump, and then dress the good leg.
- Some people with an amputation have a zipper inserted in the inside seam of their trousers on their artificial leg – this makes dressing much easier.
- When buying socks, buy two or three identical pairs. Put one sock on the artificial foot; it doesn't need to be changed very often because the artificial foot does not sweat.



Toileting

Getting to the toilet can be performed either by wheelchair, crutches or walking just with a prosthetic device . Be careful at all times to prevent tripping and falling. In case of wheelchair users, one should be able to make a transfer from wheelchair to toilet. Persons with a below-knee amputation can keep their prosthesis on, while persons with an above-knee prosthesis will have to take it off to use the toilet.

Actions to take

- At all times, check the safety of the self-care activity.
- Add support, such as grab rails, to enable safe transfers.
- Make sure the floor of the shower area is not slippery in combination with water.

Appropriate socket

A correct fit of the stump within the socket is essential for comfortable and optimal walking with the prosthesis. This means that:

- the socket is painless, comfortable and tight;
- the socket does not cause blisters or wounds;
- the stump does not slide up and down in the socket while walking;
- the stump ideally is in total contact with the socket, also at the sides which causes a circumferential pressure. Avoid too much pressure at the bottom.

Risk/problem

The stump frequently varies in circumference and shape. This depends on the phase in the healing process, the temperature and the demands made on the stump. As a result, the stump may be too thick or too thin and therefore not fit correctly in the socket. The stump socks may also be at fault.

Actions to take

Ensure a correct fit of the stump and an appropriate prosthetic sock(s):

- Stump
- Prosthetic sock

Stump

The stump fits optimally into the socket if the following criteria are respected:

A) Below knee

Added pressure should be felt on soft tissues, usually between the kneecap and top of the shin bone. Look at pressure marks on skin.

INCORRECT



PROBLEM:
Red mark is on the knee cap and/or there is pain at the end of the shin bone.

REASON:
Not enough sock thickness.

SOLUTION:
Add sock(s)

CORRECT



NO PROBLEM:
This is the desirable situation. The red mark is on the tendon between the bottom of the knee cap and the top of the shin bone.

REASON:
The amount of socks is correct.

INCORRECT



PROBLEM:
Red mark is on shin bone or there is pain on the top of the shin bone.

REASON:
Too much sock thickness.

SOLUTION:
Take off sock(s).

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Activities and Participation

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Activities and Participation

B) Above knee

Whilst standing on both legs, the buttock bone should sit on the narrow horizontal top rim at the back or within the back wall of the socket. When the person is fitting well in a correct prosthesis, the hips are at equal height or close.

Note: in case of continued problems, refer the person to a prosthetic specialist.

INCORRECT



PROBLEM:
The stump is not well descended inside the socket when one or more fingers can be placed between the buttock bone and the posterior horizontal rim of the socket.

REASON:
Too many socks.

SOLUTION:
Reduce sock thickness.

CORRECT



NO PROBLEM:
The stump is well inside the socket when the buttock bone rests exactly on the posterior horizontal rim of the socket.

REASON:
Correct amount.

INCORRECT



PROBLEM:
The stump is descended too far within the socket when the buttock bone has slipped inside the socket. Consequently, pain may be felt in the groin or at the end of the stump bone.

REASON:
Not enough socks.

SOLUTION:
Add sock thickness.

Prosthetic sock

Prosthetic socks made from wool, cotton or nylon form the interface between the stump and the socket and are essential for a comfortable use of the prosthesis. Prosthetic liners, available in silicone, urethane or a mineral-oil derivative, fulfil the same function. They provide cushioning and a means to adjust the volume of the socket.

By varying the sock thickness and/or the number of socks worn, a person with an amputation can adjust for changes in the size of their residual limb.

Note: if too many socks are used, the socket will not fit properly and may cause discomfort and skin breakdown.





Actions to take

Adapting the sock thickness or the number of socks may help in the following cases:

- The prosthesis feels too loose or too tight when standing.
- Unusual pain when wearing the prosthesis.
- Skin blisters, bruises or stump discoloration lasting longer than 30 minutes after removing the prosthesis.
- Below knee: pain at the knee cap or top shin bone or end shin bone.
- Above knee: pain in the groin, buttocks or end of thighbone.

Walking

Being able to walk freely (without walking aids) with a prosthesis is very important; walking correctly minimises the energy consumption and walking without crutches liberates the hands for other tasks. However, a person with an amputation must often re-learn basic skills first, such as keeping a balance.
Note: be sure to wear a shoe on the prosthesis while walking or doing exercises. This is important for the stability and gait.

Risk/ problem
Improper or no training on walking, may result in the person using the prosthesis less or less well. Unnecessary walking defects result in a cosmetically more obtrusive walking with increased energy consumption. Once walking defects are acquired, it is more difficult to correct them.

Actions to take

- Stimulate the person with an amputation to perform exercises, considering the following:
- Surroundings must be solid to reduce chance of balance loss.
- A second person must be close at all times to avoid accidental falls and to ensure correct carrying out of the exercises.
- Perform the exercises a few times a day for 20-30 minutes.
- Use a full-length mirror for viewing the position and movements to minimise walking defects.
- When using parallel bars for the exercise, make sure it fits the person well.
    - The bars should be about hip height, so that the elbows are slightly bent.
    - A person with weak upper arms can rest their forearms on the bars. The bar needs to be at elbow height.
    - Ensure the bars are close enough to leave only little room on either side of the body.

Note: before starting walking exercises, ensure that the prosthesis has a proper and comfortable fitting. Many people get wounds from the prosthesis that keep them from walking. Stop the exercises when redness, abrasions or wounds are observed, until the stump is completely healed again.

Card 19

Activities and Participation

Card 20

Activities and Participation

The following exercises are recommended:

Exercise 1

In preparation for walking without prosthesis, the person can start general balancing exercises while standing on the sound limb between the parallel bars or between a wall and a chair. This can be followed by walking without a prosthesis between the parallel bars.



Reason

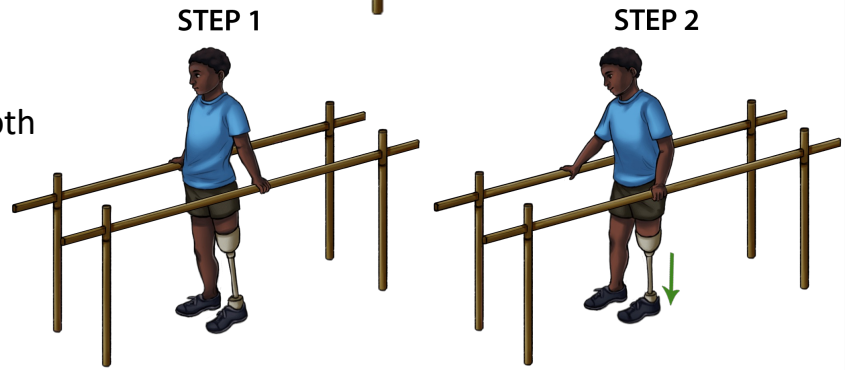
- To train the balance, reaction capacity and general condition in case of weakness.

Exercise 2

Weight bearing exercise on prosthesis with support from both hands.

Reason

- To train the stump for weight bearing and to train the sense of the position of one's own body part.



Stand between the parallel bars using both hands to support yourself.

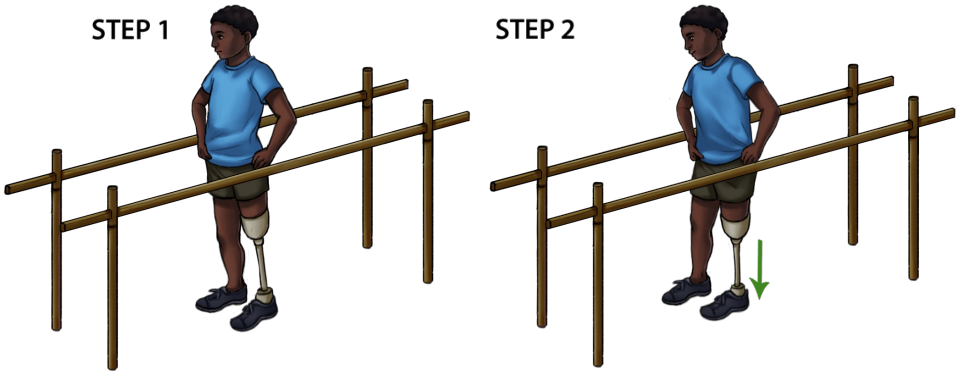
Shift the body weight from the sound leg to the prosthesis (a pair of scales may be useful to measure the weight shifted).

Exercise 3

Weight bearing exercise on prosthesis with support from one hand, followed by weight bearing without support from any hand.

Reason

- To train the stump for weight bearing and to train the person's balance.



Stand between the parallel bars without support.

Shift the body weight from the sound leg slowly to the prosthesis and back.

Card 21

Activities and Participation

Exercise 4

Weight bearing exercise on prosthesis with support from one hand, followed by weight bearing without support from any hand.

Reason

- To train the stump for weight bearing and to train the person's sense of position and balance.

STEP 1



Stand between the parallel bars with one leg in front of the other using both hands to support yourself.

STEP 2



Shift the body weight from one leg to the other by moving the pelvis and trunk from front to back, with or without the support of your arms.

STEP 3



Repeat the exercise, changing the initial position of your legs.

Exercise 5

Start walking between parallel bars, first with support of both hands, then with support from only one hand and finally without hands. Avoid gait defects: maintain an equal step length and do not bend the trunk sideways. Walking with crutches can also be exercised between the parallel bars, especially when the balance is poor.

Reason

- To prepare for walking outside the parallel bars.

STEP 1



Stand between the parallel bars with one leg in front of the other. (without support of arms)

STEP 2



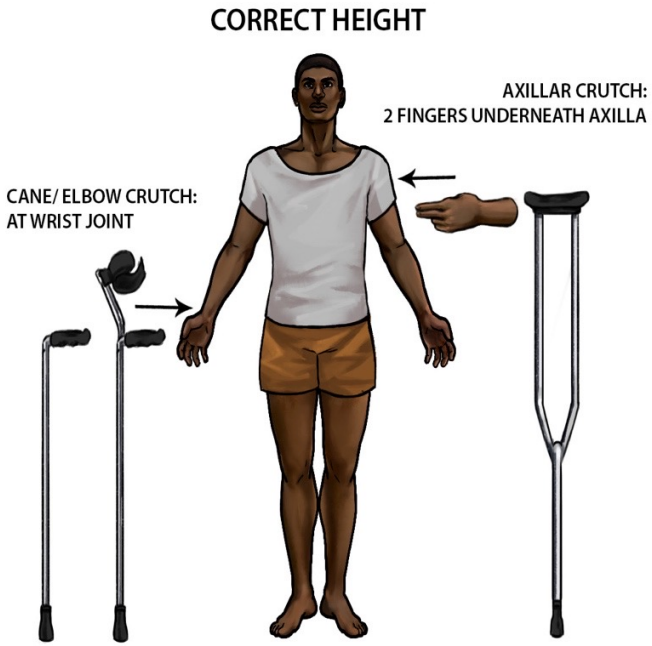
Shift the body weight to the front leg while moving the other leg forward. (without support of arms)

Card 22

Activities and Participation

Walking aids

Walking aids enable the person to move around with or without a prosthesis. When wearing a prosthesis, they can provide additional stability when necessary, e.g., on uneven ground. There are various types of walking aids, including walking frames, axilla (armpit) crutches, elbow crutches and canes, offering stability in decreasing order.



Risk/problem

When a walking aid is not appropriate, too high or too low, this reduces its effectiveness and may cause other problems for the person, such as:

- bad posture;
- pressure points; and
- accidental falling.

Actions to take

- Check for the correct height of the walking aid.
    - For elbow crutches: when the person stands straight with arms parallel to the body, the handgrip of the walker, crutch or cane should be level with the wrist.
    - In case of axilla (armpit) crutches: there must be a space of two fingers between the top of the crutch and the armpit. **Note:** standing/ walking with excessive pressure in the armpit region must be avoided as this can harm the nerves, causing tingling sensation/ numbness in arm/hand.
- When using only one crutch, the crutch/cane should be held on the side of the sound leg.
- Make sure that the person is in full control and autonomous, to avoid accidental falls. Start walking with crutches between the parallel bars if necessary, this may give more security to people.

Card 23

Activities and Participation

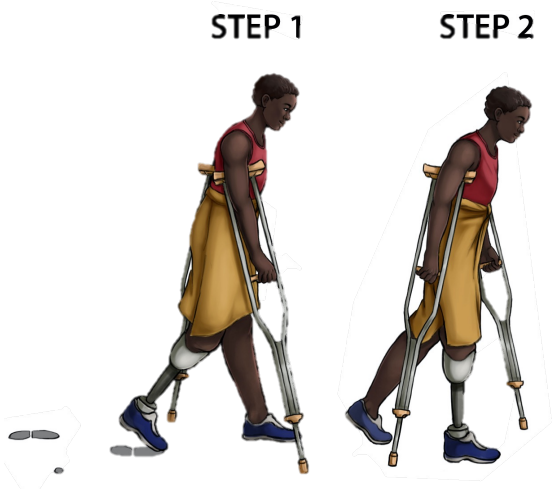
Walking with crutches

There are different methods to walk with crutches. The correct method depends on:

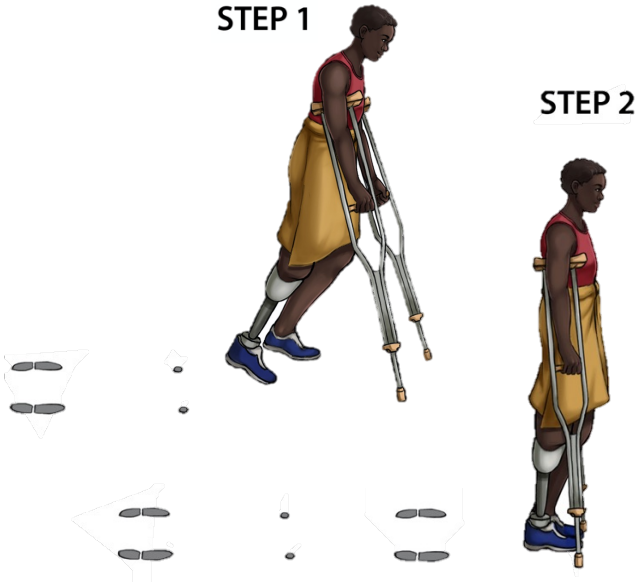
- the balance capacity of the person; and
- the ability of weight bearing on the affected limb.

A field worker can assist a person with an amputation to practice walking with crutches by choosing from the following walking methods:

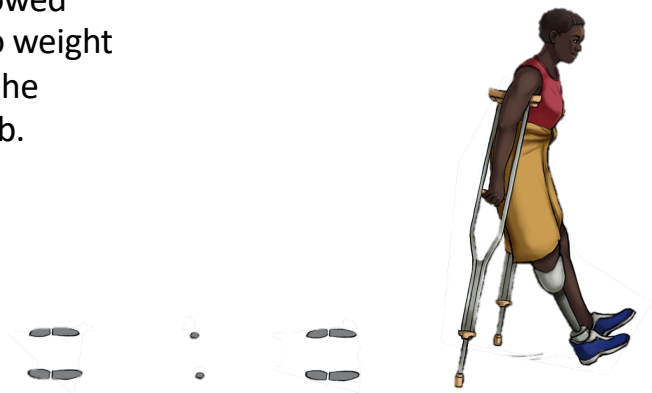
A) Taking steps: move the right crutch forward together with the left leg and then the left crutch together with the right leg. This is a method for people who have poor balance, but with a prosthetic leg.



B) Swing to walking: place both crutches in front of the body and pull or swing first the affected limb, then the other limb forward to the level of the crutch tips. Position the crutches right again and repeat the movement. This method is for people who are allowed partial or no weight bearing on the affected limb.



C) Swing through walking: place both crutches in front of the body and 'swing both legs through' between the crutches. Position the crutches right again and repeat the movement. **Note:** this is a fast way of 'walking' but requires increased balance capacity.



Card 24

Activities and Participation

Transfers and functional movements

The level of autonomy in making transfers and other functional movements, depends among others on the type of amputation.

- Below knee amputation: people will usually be quite independent.
- Above knee amputation: people generally face more difficulties when moving around.
- Bilateral amputations: people face significantly more challenges and generally use a wheelchair for most of the time.

Actions to take

In all cases, transfers and other functional movements can be practiced increasing mobility.

- Transfer from chair to bed
- Transfer from bed/chair to the floor
- Standing up/sitting down
- Getting down and up from the floor
- Climbing/descending stairs
- Carrying something

Note: be sure to wear a shoe on the prosthesis while walking or doing exercises. This is important for the stability and gait.

Transfer from chair to bed

Bilateral amputation

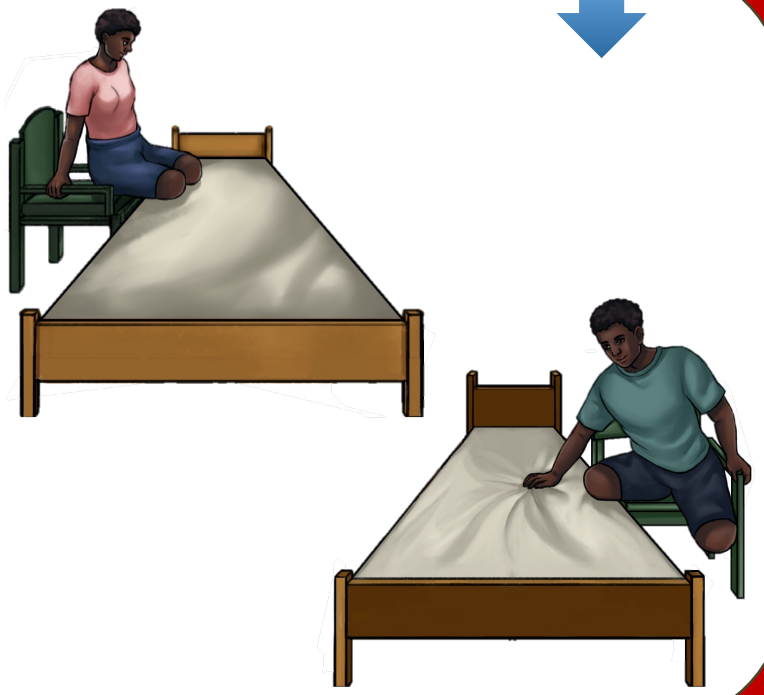
Transfers from chair to bed can be done from the front or from the side. From the side is more suitable in case of height difference.

A) Getting from chair to bed

1. Place the chair as close as possible to the side of the bed; try not to leave any gap between the chair and the bed.
2. Put both hands on the wheelchair's arm rest to support some of the body weight.
3. "Walk" the legs forwards by shifting the body weight from side-to-side. Continue this movement until you are on the bed.

B) Getting from bed to chair

1. Ensure the chair is facing the bed, with little or no gap between the chair and the bed.
2. Sit on the edge of the bed, with the back towards the chair.
3. Reach backwards for the arms of the chair. Use the arms to support the body weight as you lift yourself up and back into the chair.



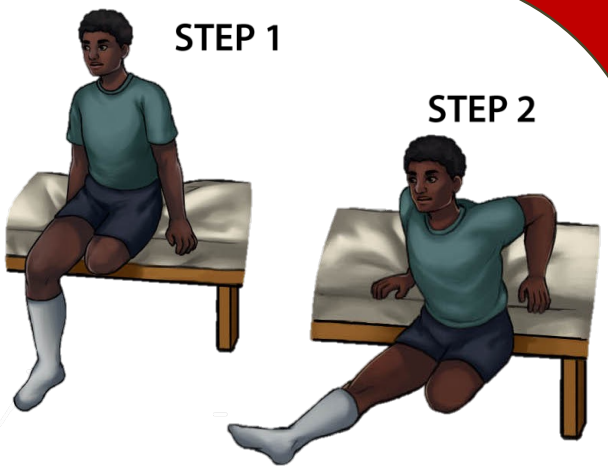
Card 25

Activities and Participation

Transfer from bed/chair to the floor

Unilateral amputation

1. Put both hands on the edge of the bed or chair to support some of the body weight.
2. Place the sound leg in bent position in front of body, with the food on the floor.
3. Lower or raise the body using the sound leg and both arms.



Standing up/sitting down

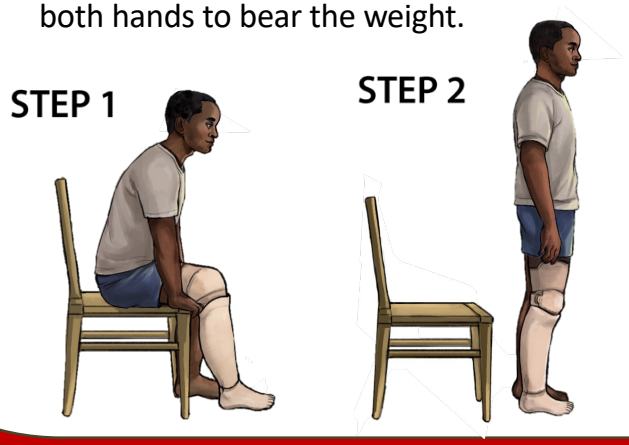
Unilateral amputation

A) Standing up from a chair

1. Shift the body towards the edge of the chair.
2. Put the hands on the frontal edge of the chair and the sound foot under the body to support some of the body weight.
3. Bend the trunk forward and get up, using mainly the sound leg to bear the weight.

B) Sitting down on a chair

1. Place the sound leg as close to the chair as possible.
2. Bend slightly forwards while bending the sound leg and putting both hands on the edge of the chair.
3. Sit down on the chair, using the sound leg and both hands to bear the weight.



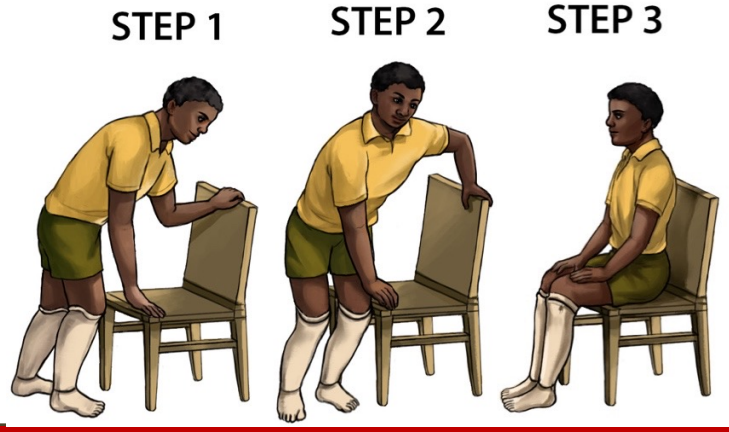
Bilateral amputation

A) Standing up from a chair

1. Turn the upper body slightly.
2. Put one hand on the seat and the other on the back of the chair.
3. Stretch the knees and push off with the hands while standing.

B) Sitting down on a chair

1. Stand in front of the chair, facing the seat.
2. Put one hand on the seat and the other on the back of the chair.
3. Turn the body while sitting down by bending the knees.



Card 26

Activities and Participation

Getting down/up from the floor.

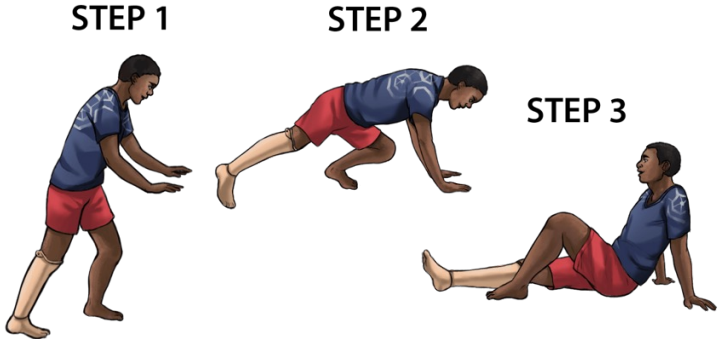
Unilateral amputation

Getting up from the floor

1. While sitting, turn the body and place both hands and the knee of the sound leg on the floor.
2. Get up by moving backwards on the sound foot while stretching the knee.

Getting down on the floor

1. While standing, place the prosthesis backwards and turn it outside.
2. Bend the trunk and sound leg and support yourself on both hands and one knee.
3. Turn the body and sit down.



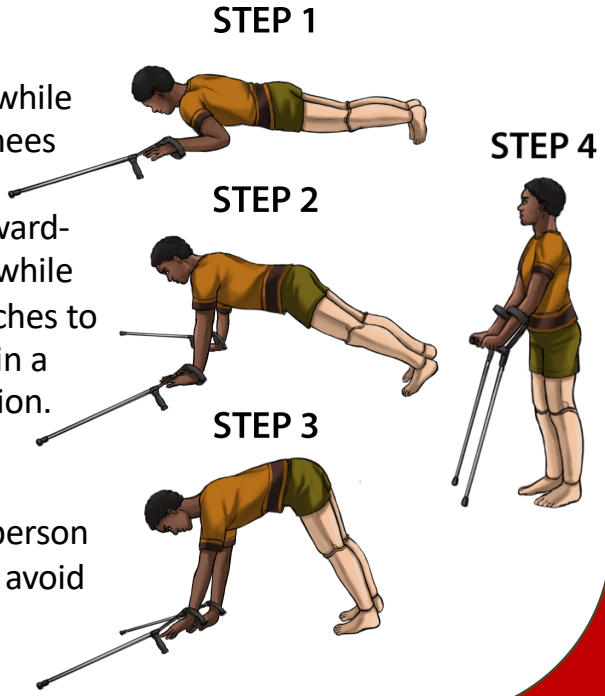
Carrying something

Carrying something with one hand is easier on the prosthetic side.

Bilateral amputation

People with a bilateral amputation can use crutches to get up from the floor.

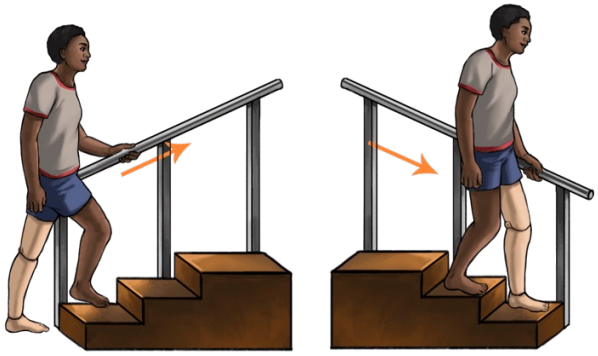
1. Push the hips upwards while keeping the knees straight.
2. Stand in a forward-bent position while using the crutches to push yourself in a standing position.



Note: this exercise requires a second person in the beginning to avoid accidental falls.

Climbing/descending stairs

A) Going up the stairs: start with the sound leg.
B) Going down the stairs: start with the prosthesis.



Card 27

Activities and Participation

Family and community life

People with an amputation have the same right to participate in society as others, as stated by the UN Convention on the Rights of Persons with Disabilities (UNCRPD). The degree of participation in family and community life however, depends among others on the level and type of amputation.
Unilateral below-knee amputation and well-fitted prosthesis: this person would be able to regain full capacities and return to previous activities.
Bilateral above-knee amputation or persons with a prosthesis that doesn't fit well: this person may need special adaptations to allow full participation.

Actions to take

To foster the participation of people with an amputation in the family and community life, the following efforts can be undertaken:

- Ensure that the prosthesis is fitting well in consultation with a prosthetic specialist.
- Assess possibilities for the use of suitable assistive devices to increase mobility.
- Ensure the environment is accessible to people with an amputation.
- Motivate the person with an amputation to participate by providing personal counselling.
- Advocate for equal jobs and labour rights in case of negative attitudes of e.g. employers.
- Identify local organisations of persons with disabilities (DPO) who can provide more information and support to the person with an amputation and her family.
- Change negative attitudes of the family and/or community through awareness raising activities, such as organising a community play. Do this in collaboration with the local Disabled People Organisation (DPO).



Participation of children

For children with an amputation the ability to participate in family and community life depends on, among others the following aspects:

- The willingness and potential of the child to participate.
- The emotional challenges the child faces in accepting their amputation.
- The support they receive from their family and/or community members.

Note: if the family does not see the amputation as a main limitation, the child often reacts in a similar manner.

For actions to take, see the next card.

Card 28

Activities and Participation

Actions to take

A) In collaboration with the family.

- Stimulate the family to include the child in household activities in correspondence to their abilities, e.g. look for appropriate home modifications such as installation of grab rails in the bathroom.
- Instruct the family on how to assist their child performing stretching , strengthening and walking exercises . Ensure to make these exercises fun by using e.g. toys.
- Look for ways to make the community playground suitable for the child, in collaboration with e.g. local DPOs.

B) In collaboration with the child.

- Encourage the child to participate in sports and other community activities within her possibilities.
- Encourage the child to share her story at school, in the classroom with the teachers and pupils (show and tell).
- Facilitate the exchange of experiences between and among children having an amputation (peer support) and those not having an amputation by e.g. joining a local child club.





Labour and leisure activities

Labour and leisure (e.g. sports) activities generally contribute greatly to a person's well-being and happiness. They serve as a powerful driver for societal awareness of the capabilities of people with disabilities and for their inclusion in society.

People with an amputation using a prosthesis are able to fully participate in a wide range of labour and leisure activities. For example, they can work in the field or play football with and often without a prosthesis. Based on the type of activity, the prosthesis may need special characteristics in terms of function or cosmetics.

Actions to take

Try to identify and overcome obstacles preventing a person from taking part in labour or leisure activities. These can be found on different levels, for example:

- Personal level: limited self-esteem and/or motivation → provide personal counselling.
- Interpersonal level: negative attitudes → provide family counselling and/or sensitise the community.
- Physical level: mobility limitations → ensure physical access and/or adapt the activity. Where possible and needed do this in consultation with an occupational therapist.







Personal factors:

Information and

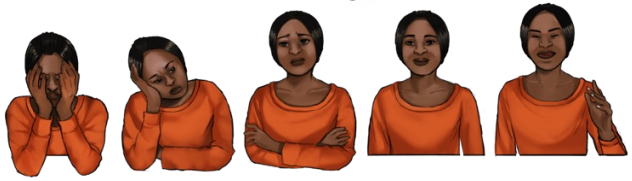
Actions to take











Card 29

Personal Factors

Personal feelings

The loss of a limb is per definition a traumatic experience, for the person and often for the family and friends as well. The person with an amputation often has strong feelings of loss of control and autonomy.

Actions to take

- Create a supportive environment where the person can discuss the feelings of loss and fears for the future. People will need social support systems provided by family and friends.
- Facilitate peer support by other persons with disabilities/ amputations. This has proven to be of great (emotional) support, especially during the acute phase. Also, referral to a psychological specialist can be indicated.

Coping strategies

Each individual has unique coping strategies or reactions during the grieving process. These may well change over the course of the rehabilitation period. In the long run, most people with amputations adjust well to life.

Actions to take

- Provide information about the rehabilitation process and prospects. This usually reduces people's anxiety. It also facilitates cooperation during the rehabilitation program and helps the person to adjust to the new situation.
- Stimulate the person to get involved in taking good care of their stump by appropriate hygiene and stump massaging.
- Whenever possible, the person with an amputation should be encouraged to return to work/ school and continue taking on previous roles in life.





Card 30

Personal Factors

Acceptance phases

The person with an amputation usually passes through different acceptance phases. It is important for the fieldworker as well as the caregiver to be aware of them.

1. **Denial phase:** denial of the situation characterised by refusing to face the reality of the accident or the effects of a certain disease. Give room to the person to express their feelings.
2. **Negotiation phase:** during this phase people hope that a miracle will occur. It is important not to comfort the person too much because it will result in the person staying longer in denial or negotiation phase.
3. **Anger phase:** once people realise that it is impossible to change the condition, they usually blame it on unfairness of life. They get angry at people around them; people who take care of them, doctors and health staff, even at themselves. Be aware that this is a necessary phase, try to keep calm and highlight the future opportunities.
4. **Acceptance phase:** it can take up to one or two years after the amputation to reach this phase. However, some people do not reach this phase and cannot accept their new life situation after amputation.



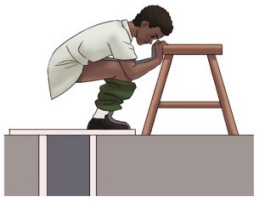








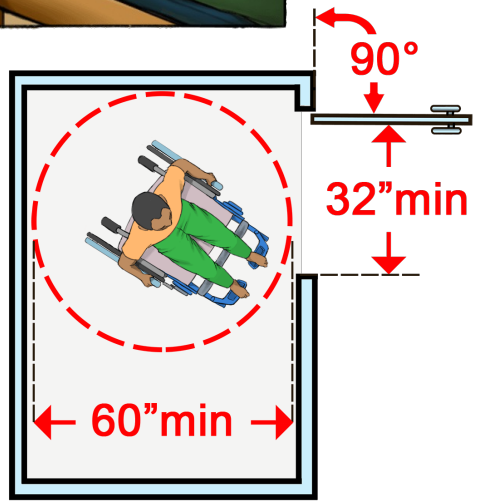






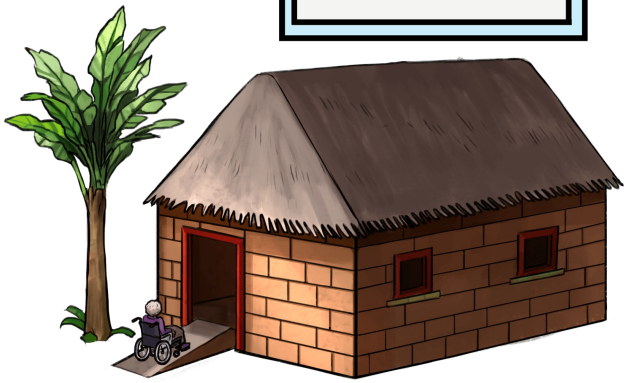
Environmental factors:

Information and
Actions to take









Caregiver support

The role of the caregiver (who is often the husband or wife of the person with an amputation or a close family member) is crucial at all stages of the rehabilitation process. First, the caregiver will have to support the person to pass through the different acceptance phases. However, at the same time, the caregiver has to pass through those phases as well. In fact, the caregiver of a person with a recent amputation also experiences a series of losses and adjustment phases.

1. Often, the caregiver initially fears that the individual will die.
2. This is followed by a fear of living with a person with a serious condition and a concern about accepting a person with a changed body. The caregiver may experience the need for escape, loss of sexual arousal, revulsion, and fear of ongoing economic dependency.

Actions to take

- Encouraging the caregiver to participate in group support or peer to peer activities to have the opportunity to discuss their feelings.
- Provide realistic information on the rehabilitation process and prospects.
- Stimulate a positive approach to the future.
- Assist the caregiver to take up appropriate caregiver roles.



Caregiver roles

To support the rehabilitation process, the potential role of the caregiver can be to encourage a person with an amputation to:

- discuss their feelings openly;
- participate in a peer support group;
- be part of labour and leisure activities ;
- advocate for their rights;
- identify and assess the need for home modifications;
- take good care of the stump;
- perform exercises to stretch and strengthen the muscles;
- do walking exercises with support of the caregiver.

Card 31

Environmental Factors

Card 32

Environmental Factors

Prosthetic technology

When choosing the right technology for assembling and providing prosthesis, one should keep in mind the:

- national standards;
- availability of preferably local and affordable materials;
- access to maintenance and repair services.



Criteria for appropriate technology

The main criteria for choosing appropriate technology are:

- Its appropriateness to the needs of the person.
- Available local equipment and know-how.
- Available financial means.

Whatever technology, any prosthesis should be made and fitted by a qualified specialist, who can also provide long term follow-up for repairs and replacements.
Note: one should bear in mind that the rehabilitation process is more important than the technology; ultimately the user does the walking, not the prosthesis.

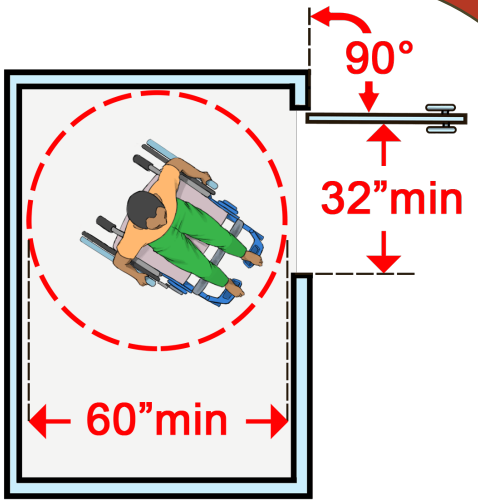
Home modifications

It is possible to modify the household environment, temporary or permanent, to enable people with an amputation to live in their homes. Various modifications are possible, that need to be tailored to the wishes and needs of the person.
When being completely and permanently dependent on a wheelchair, e.g. in the case of bilateral lower limb amputations, the following modifications can be considered:

- Establish ramps where there are steps. The international standard for slopes is 1:14. This means that for every 14-centimetre travelled horizontally, the ramp rises 1 centimetre.
- Ensure sufficient turning space (minimum of 60 inches/ 152 centimetres) for the wheelchair user to rotate on the spot.

Home modifications (cont'd)

- Ensure sufficient turning space (minimum of 60 inches/ 152 centimetres) for the wheelchair user to rotate on the spot.
- Doorways should be wide enough (minimum of 32 inches/ 82 centimetres with the door open to 90 degrees) to pass with the wheelchair and doors light enough to open and close from within the wheelchair.
- Tables and kitchen sinks should preferably be wheelchair accessible and cupboards within reach for the wheelchair user. This can be done by lowering the table, sink and cupboards and/or install pull-down shelves.
- To ease the transfers into bed, a transfer board or lift pole can be installed. Make sure to keep the wheelchair or crutches within reach at night.





Bathroom modifications

Several bathroom modifications can be made, to make bathing and toilet use easier and safer for a person with an amputation.

- **Bathing :** the prosthesis needs to be removed when bathing. Use a bath-chair or bench to support the balance. A simple chair that is not slippery can be used. Also add an anti-slip mat on the floor to reduce the chance of slipping.
- **Toileting:** install grab rails alongside and behind the toilet for extra support when using the toilet.



Note: always ensure that when the person's abilities for self-care increases, the bathroom and/or toilet are adapted to enable independent functioning. In all cases, maintain optimal hygiene of the bathroom or toilet as this prevents infections.

Card 33

Environmental Factors

Card 34

Colophon

For the development of the Amputation chapter of the RehApp, we particularly want to express our gratitude for the valuable contributions of Theo Verhoeff, Graziella Lippolis (Humanity&Inclusion), Anthony Rombach (Edorso) and Sandra Titulaer (Rijndam Revalidatie). Photo credits go to Art Kuiper and Theo Verhoeff (courtesy taken at ICRC).

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