

Queensland Artificial Limb Service



Information for people living with amputation

2017 Edition



Information for Amputees

Published by the State of Queensland (Queensland Health), January, 2017



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Information for People
Living With Amputation
Part B

Acknowledgements

The Queensland Artificial Limb Service acknowledges and thanks the following people and organisations for contributing content or allowing reproduction of material.

Research, collation of information and layout by Tanya Quincey (Queensland Artificial Limb Service), Original Images created by Tanya Quincey (Queensland Artificial Limb Service)

The Amputee Coalition of America: for granting permission to the Queensland Artificial Limb Service to reproduce articles from their website <http://www.amputee-coalition.org/> for the purpose of amputee education.

The New Zealand Artificial Limb Service: for allowing reproduction of their stump bandaging instructions and photography for non profit purposes. The original articles are available at www.nzals.govt.nz

The Department of Veterans Affairs: for their “Advice for Amputees” publication upon which this handbook is conceptually based.

The health care professionals who contributed information and assisted with previous editions.

The proof-readers and specialists who provided feedback on drafts of this publication.

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Terminology used:

This book takes a common language approach, the use of “amputee” and “stump” were approved by Queensland amputee support groups.

All exercises and health advice presented in this book should be viewed as general information and not a substitute for medical advice. Individuals must seek their own medical advice before undertaking any of the exercises or health advice in this book.

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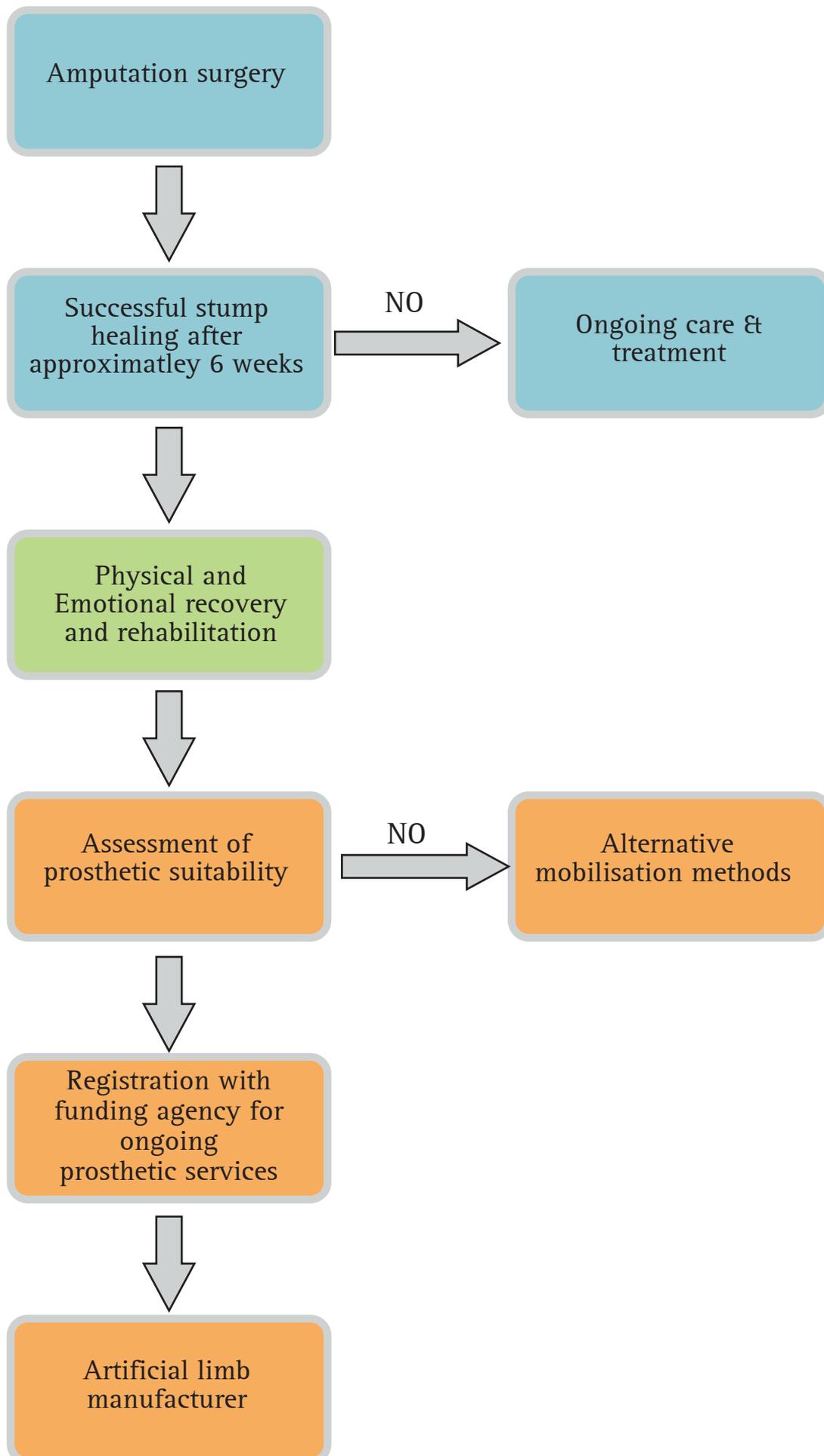
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The amputation and prosthetic pathway



Relationships, work and recreation after amputation

In this section

1. Body image and sexuality
2. Thoughts and behaviours of other people
3. Helping children to cope with your amputation
4. Returning to work and driving
5. Returning to recreation

Body image and sexuality

Following amputation, patients are often concerned about their appearance and how this will impact on family, friends and others. We all think about how we look. Starting as children and throughout life, we have thoughts and feelings about body image: our shape, size and other physical attributes (such as hair, teeth and skin). Our body image can suffer even more after an amputation.⁽¹⁾

As an amputee, you not only have to deal with changes in how your body works and feels but also in how it looks. The more you focus on what is missing, not just the limb but also the things you could do before, the more likely you will become depressed and angry. Know you are still the same person inside. It may help to think of yourself as a whole person who happens to have a missing body part. Focus on learning new ways to do things you enjoyed before. You may need to be extra clever or creative and focus on the future rather than what is gone.⁽¹⁾

If you are learning to use a prosthesis, your body image is likely to change once you feel more comfortable with it. You will know this is starting to happen when you feel naked without it.

Stay involved with people you already know and share feelings for. Join an amputee support group where you meet other amputees who live full and happy lives. Talk with important people in your life about your feelings as an amputee. This includes feelings of anger, fear and frustration. It also includes how the other person feels now that you are an amputee. Your relationship is likely to be stronger after open and honest conversations like these.⁽¹⁾

We are all sexual beings. This term refers to all the ways we express loving feelings and emotions. Our whole body responds to sexual attraction. Sexuality includes feelings of arousal (expressed by touching, kissing and caressing) as well as sex (sexual intercourse, remembering that this can refer to many different styles and techniques). It

is important that you talk together about how your changed body looks, feels and works. Talking about this now can help prevent misunderstanding or hurt feelings later on. Some things you can do are:

- Focus on your pleasure and your partner's.
- Do not keep thinking about how you want to perform.
- Give yourself permission to try new ways to be sexual. After amputation, you may want to find new positions that are more comfortable. For instance, you could add some pillows if you have problems with balance.
- Explore and enjoy finding out ways that work best for you and your partner.⁽¹⁾

Amputees all over the world have returned to loving, sexual relationships after their amputation. You can too. This will help with your body image, relationships and sexuality.⁽¹⁾

Continuing medical conditions such as diabetes and vascular problems can affect your sexual function, so speak to your doctor for advice and assistance. Anti-depression medication is a well-known cause of lowered libido and erectile difficulties. Your primary care doctor can advise you on treatments and also look at how to manage your medication if these side effects are a problem for you.

Single amputees may worry about dating post amputation. Dating is nerve racking and part of dating is rejection, for all manner of reasons. Amputees who have dated post amputation found that potential partners who are interested in you as a whole person will be comfortable with your amputation.⁽²⁾

Amputation will initially affect your self-confidence and confidence is a big factor in dating. You may find that intimacy with a new partner comes more slowly than it did before as you are still building your confidence.⁽²⁾

Thoughts and behaviours of other people

Those close to you may experience some feelings of loss similar to your own and need a little time to adjust. Generally, other people's awareness of, and reaction to your amputation is likely to be far less than you imagine.

Family and friends go through a grief and loss process similar to the person who has lost a limb. It's a major change for everyone concerned and often so much time and energy is expended on taking care of the amputee that the caregiver scarcely recognises that he or she is utterly exhausted. "Busy activity" is typical of the early adjustment period. If busy activity continues for an extended time, it can be a form of denial on the part of family/friends because the caregiver cannot face a life that has drastically changed.⁽³⁾ Advice for caregivers is included later in this book.

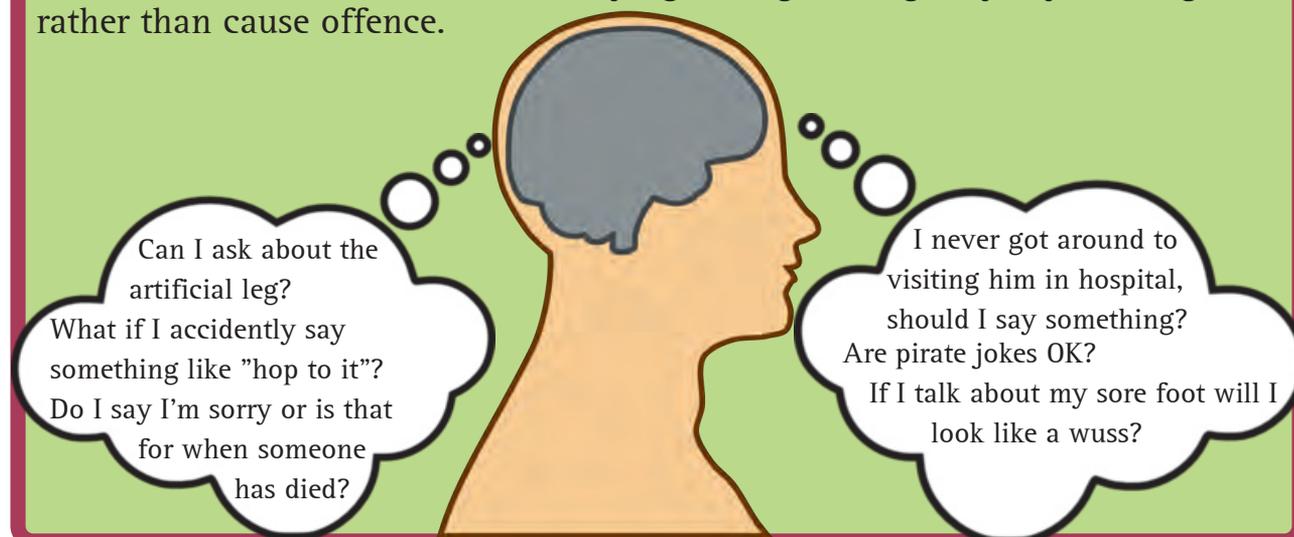
New amputees often worry about how people will perceive them or others will stare, ask inappropriate questions or treat you as a lesser person. You may also be worried that if something happens such as falling over people will not help you or people will offer unwanted help. Other adults will often seem embarrassed when socialising with you due to ignorance of amputations and what it means for the amputee: they are worried about doing and saying the 'right' thing and so sometimes they say nothing at all as they fear causing offence.

Recognising how people react is important and you may be asked questions about your experience. With those you already know telling them what you need and how they can help you is beneficial for everyone.^(4,5)

On the flip side, those who try to help too much can become frustrating as you may feel that they are treating you as someone incapable of self-care. Sometimes this can become irritating because people can be very insistent. Try not to get angry at those who are overly helpful.⁽⁴⁾ It can help you to think back to a time when you thought you were being polite to someone but it was rebuffed. Also remember that some people are naturally helpful or pushy as part of their personality and it is not due to your amputation.

If someone asks a question or makes a comment that you find inappropriate or offensive calmly point out why you were offended. Hopefully, they will understand that they were inappropriate and apologise. If someone is really rude such as yelling insults at you, it will be upsetting but that person is just plain nasty and would have done that to anyone.⁽⁶⁾

Adults are often so worried about saying the right thing they say nothing rather than cause offence.



Helping children to cope with your amputation

Like adults, children have unique personalities: some are anxious, some are fearful, others are more resilient. Children do not have the ability to apply reason and logic to situations like adults can. Many people worry about the amputation traumatising their children and while this may happen most children are very resilient if reassured that they will be safe.

Children are quite intuitive and will take on the emotions of adults around them. If adults show fear, anger or sadness relating to the amputation a child will assume they should feel the same. Demonstrate to the child how they should feel by behaving in that way yourself.⁽⁷⁾

When you discuss the issue with children their age plays a major part in what to say. A child under four will not be able to comprehend amputation so simple explanations will often work. Very young children are usually satisfied with answers such as "Granddad had a big ouchie"⁽⁸⁾

Children of preschool age have difficulty with logical thinking and separating fantasy and reality. A young child may fear the loss of their limb because "Granddad's leg fell off so mine could too" They do not have the ability to rationalise the situation. When talking to young children think about how you describe the limb loss, if you are vague such as "I was sick so the doctor cut my leg off" a young child may become fearful of doctors or minor illness.⁽⁸⁻⁹⁾

At this age explain what happened, reassure them it is not going to happen to them and give them enough details to satisfy their curiosity. You can use art and play to assess their feelings such as drawing, storytelling and role playing. You could also find books about disability to read with them.⁽⁸⁻⁹⁾

From preschool age to about seven children have 'magical thinking' where they believe that their thoughts or actions cause things to happen in the real world. If they were ever angry at you before the amputation they may blame their thoughts for your amputation. They may try to behave very

well or act as if nothing is different in the hope the amputation will go away. At this age, you can ask a child why they believe something happens and they can usually explain their thought process to you. Children often hide their magical thoughts so talk about nobody being at fault even if your child has not raised the subject.⁽⁸⁻¹⁰⁾

You cannot change these types of thinking so reassure a child that they have not done anything wrong and describe the amputation in simple clear language. Some children worry more than others so take cues from the child: if they seem worried or fearful reassure them.⁽⁷⁾

Children are distressed by a lack of stability and appear to have worries that, to an adult, seem self-centred, for example "If daddy can't walk he can't teach me to ride a bike" Children fear abandonment and loss of routine; they need to know that the adult is still the same person and they will still love and nurture the child. Children like to help, this can be used to make them feel more comfortable about the amputation. Allow them to help if they want to but do not overburden them or expect them to take on adult tasks^(9,11)

If a child wants to know about prosthetic limbs show them how yours works. You can make games out of learning new words related to prosthetics. You can take the child to meet your prosthetist and watch the casting. To desensitise the child read stories about differences or make a scrapbook of pictures of people using mobility aids. If the child is not comfortable with your prosthetic limb or stump do not push them into looking at or touching them.⁽⁹⁾

Once a child reaches about eight years of age they can have the situation explained to them in detail. From this age on a child is more likely to be upset about not being told what is happening then develop fears about losing their own limb. They still need reassurance that you will be the same person and their needs will be met.⁽¹¹⁾

Returning to work and driving

One important aspect of emotional recovery is resuming activities that you previously enjoyed such as working and driving. Both of these activities can make you feel productive and connected with other people.

Returning to work

Most people are able to resume many of the physical interests they had prior to the amputation, including sport and work. While some manual jobs may no longer be possible following an amputation, many manual tasks are still possible or can be adapted to enable an amputee to perform them. Non-manual work is usually not affected by an amputation. When you are able to return to work you may be eligible for Federal Government assistance to modify your workplace or work vehicle, contact Centrelink for more information.^(1,12)

Many amputees return to work but it may not be in the same position. Returning to work in the same capacity as before is dependent on the type of work and how supportive your employer is in adapting to your needs. Amputees report that returning to work is a valuable way to feel productive and to socialise. However many experienced issues such as being passed over for promotion. Supervisors may monitor your time off and performance more than other employees or refuse adaptations to your working arrangements.⁽¹³⁾ If you find yourself treated unfairly at work after your amputation contact the Fair Work Ombudsman, Australian Human Rights Commission or your union for advice.⁽¹⁴⁾

Some amputees decide to retrain and change career. Discuss your options with Centrelink regarding training, job placement options and vocational rehabilitation. If you decide to study, financial assistance may be available for assistive technology and course modification. Contact the Queensland Tertiary Studies Authority for more information on tertiary course entry and financial assistance.⁽¹⁴⁾

If you do not return to paid employment there are many volunteer opportunities that you could consider. Charitable organisations

require all manner of skills so there is a suitable volunteering opportunity for most people. Volunteering can be a way to try something you have always wanted to do and you may find it leads to a career change.

Driving

Amputation of a limb does not necessarily prevent a person from driving. With the careful assessment of a person's driving skills, supervised practice and using modified controls, most amputees return to safe driving. People with limb loss from birth are also often able to become successful drivers. If necessary, specialised modifications can be fitted to the vehicle's controls to compensate for an upper or lower limb amputation.⁽¹⁵⁾

It is your responsibility to notify the Queensland licensing authority and your vehicle insurer when you develop a disabling condition such as an amputation. If any concerns are raised about your ability to drive safely your primary care doctor can refer you to an occupational therapist that specialises in driving.⁽¹⁵⁾

Specialised vehicle modifications are available to make driving easier for amputees. There are prosthetic components such as rotation adaptors to assist getting in and out of a car. If driving is one of your goals discuss with your prosthetist and occupational therapist how your vehicle can be modified.⁽¹⁵⁾

It is also possible to ride motorbikes, scooters and bicycles after an amputation. Like a car, there are modifications and prosthetic components designed for those who enjoy two-wheeled recreation.⁽¹⁶⁾

Amputees who require mobility aids may be eligible for a parking permit. Parking permit applications can be obtained from the Department of Transport, your occupational therapist or primary care doctor. You need to complete the form with an occupational therapist or doctor and then return it to the Transport Department with the application fee.⁽¹⁵⁾

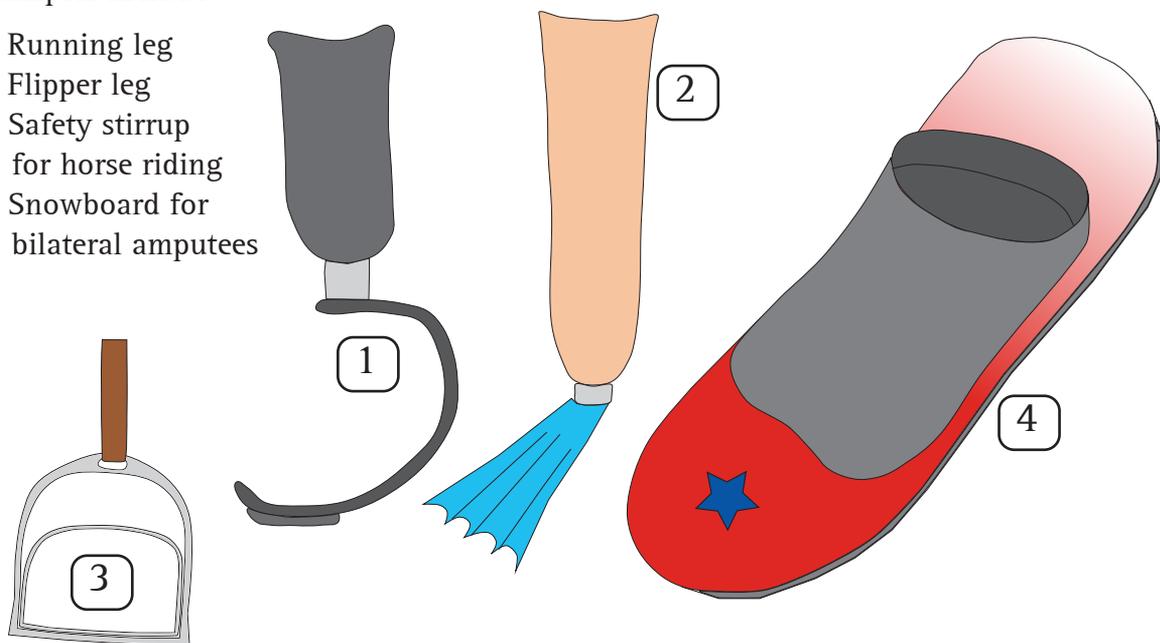
Returning to recreation after your amputation

Most amputees can return to recreational activities. There are numerous benefits from recreational activities both physical and psychological. The physical benefits include strength, fitness, weight loss, improved dexterity and managing diabetes. The psychological benefits include reduced anxiety; pleasure, stress relief, connection with others, improved self-esteem and quality of life.⁽¹⁷⁻¹⁸⁾

There are many activities that can be returned to without the need for specialised equipment such as swimming. There is a huge variety of specialised prosthetic devices that an amputee can purchase to pursue favourite activities or a skilled prosthetist can custom make devices if one is not available. The following illustrations are a sample of available devices.⁽¹⁹⁾

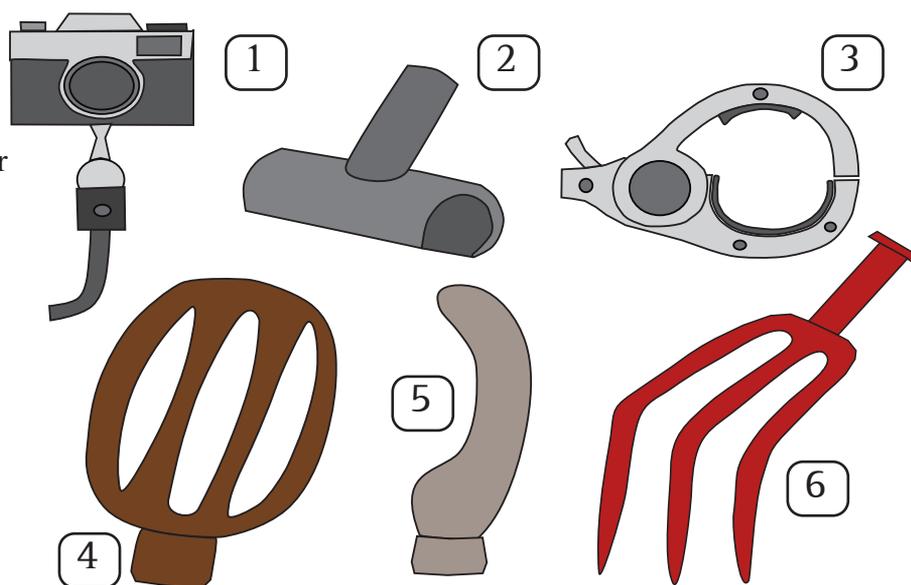
Lower limb amputees have a variety of devices for recreational activities. Some examples include:^(19,20)

1. Running leg
2. Flipper leg
3. Safety stirrup for horse riding
4. Snowboard for bilateral amputees



Upper limb amputees have a large choice of terminal devices, the following are some examples. There are holders available that hold not only everyday items such as hairbrushes and cooking utensils; they also hold tools and devices for recreation.^(19,21)

1. Camera holder
2. Bicycle handle bar holder
3. Weight lifting device
4. Basketball device
5. Ball catching and throwing hand
6. Gardening fork device



Peer Support Groups

Peer support is of great benefit as you can connect with those who understand what you are going through. The benefits of peer support are numerous including:

- Reduced feelings of isolation both emotional and physical.
- Reduction in stress and anxiety
- Provides a place to talk honestly.
- Practical information on your condition
- Being able to meet with people who have been through your situation and can provide advice.
- Learning coping skills
- Confidentiality to talk about issues that your family may be uncomfortable with
- Online support groups are good if you are in an isolated area or no suitable support groups exist in your area
- The anonymous nature of online communities relieves the embarrassment of discussing some issues
- Online groups allow participation at any time of the day.⁽²²⁻²⁵⁾

Choosing your support group

There are many choices when it comes to support groups and choosing one is really a matter of personal preference. Most support groups are based on a specific condition such as amputation or chronic pain. Some are designed for specific ages or cultural groups and some allow family members to participate. Groups may focus on education or they may be about emotions. Some support groups have membership fees to cover costs.⁽²²⁻²⁵⁾

Groups may be formally structured with guest speakers, newsletters, events, fund-raising and the like. These groups often have appointed mediators who maintain discussions. Some groups provide workbooks and self-help tasks, however, a group is not therapy: only a trained professional can provide that resource.⁽²²⁻²⁵⁾

Informal groups are often organised by members and even though the group is informal they may still have a structure with a president, treasurer etc or be a 'tea and chat' type group.⁽²²⁻²⁵⁾

Remember that medical advice from members of any support group should be discussed with your doctor as it may not be useful advice for your situation.⁽²²⁻²⁵⁾

Not all support groups are created equally or suit all people; some are disorganised, 'cliquey' or subscribe to ideologies that you may object to such as rejecting medical treatment. Groups can change over time and you could find that the group does not help you any more even though it is well organised and moderated. You may reach a point in your rehabilitation where the group no longer suits your needs.⁽²²⁻²⁵⁾

If you find that a support group is not for you the best option is to leave and find another group. A support group should be (as its name implies) supportive. If you find yourself feeling drained, deciding to not speak to avoid conflicts or dreading going to a meeting it is an indication that the group is not being organised well or poorly moderated. Differences of opinion, when treated with respect, can be beneficial by broadening your perspectives or giving you fresh insight. When different voices are squashed the group is of little use.⁽²²⁻²⁵⁾

Warning signs of a poorly run group include:

- Members complain constantly or try to one up each other
- You cannot speak your mind as different opinions are shot down
- The interests of a small number of members are served above the majority
- Individuals dominate meetings or are particularly confrontational
- Products are pushed on you
- Discussions are poorly moderated, irrelevant, meander pointlessly or turn into arguments
- Internet groups may be infiltrated by liars or con-artists
- The anonymity of the internet can make some people behave disgracefully⁽²²⁻²⁵⁾

One way to evaluate a group is to ask yourself: Do I feel better after I go to a meeting or worse? If you feel better keep going; if you feel worse find another group.

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Physical recovery after amputation

In this section

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- 2.Stump positioning
- 3.Stretching and exercising
- 4.Stump massage and desensitisation
- 5.Illustrated stretches
- 6.Illustrated desensitisation techniques
- 7.Illustrated massage techniques
8. Prosthetic limb suitability
9. Non-prosthetic mobility aids

Contractures

After amputation surgery, a condition called contractures may develop which limit your range of joint movement.

The muscles and ligaments in the limbs are usually flexible to allow a full range of motion. If the joint is kept immobile the muscles and ligaments become shrunken and tight. This tightness makes movement limited and may freeze the joint. This is a problem because using a prosthesis requires a good range of motion in the remaining joints. If contractures form in the lower limbs using a prosthesis will be

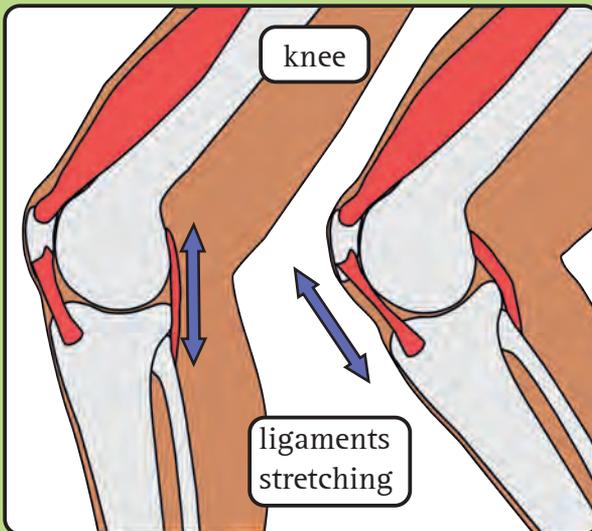
very fatiguing. Arm amputees will find it difficult to reach and raise their arm; this will interfere with daily tasks.⁽¹⁻³⁾

While you are sitting keep the stump straight. Wheelchairs designed for amputees are preferable as separate amputee boards may increase the risk of tipping over.^(1,2,4-6)

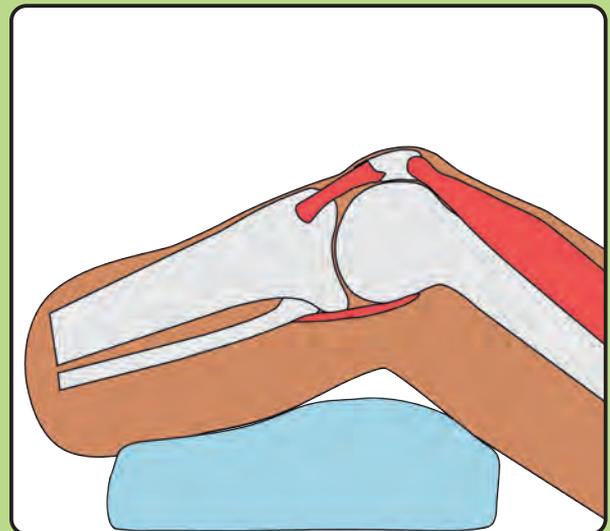


Amputee boards may cause tipping; always make sure your board is secure before use.

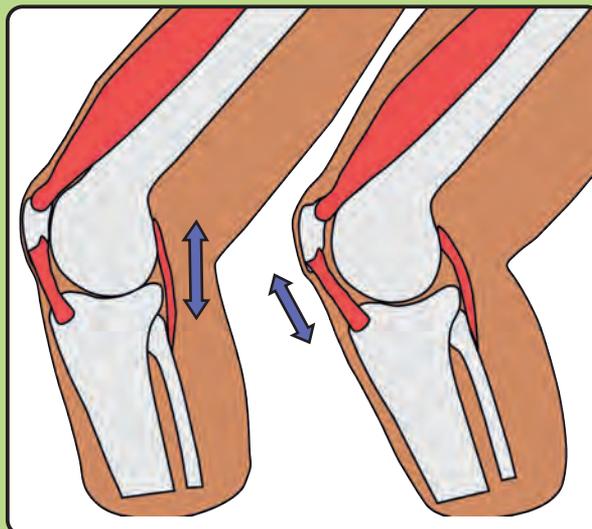
What are contractures?



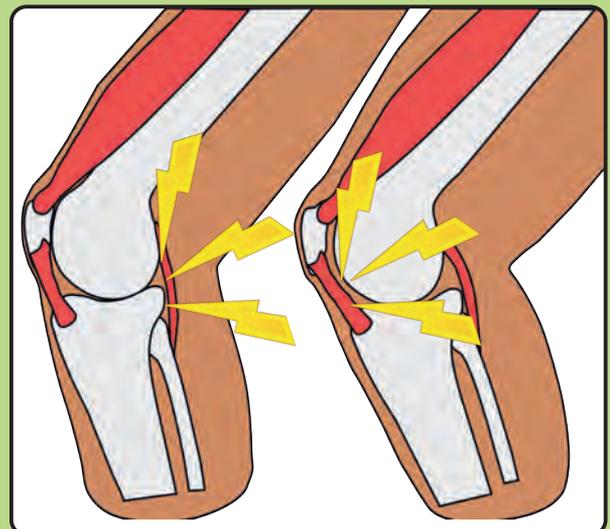
1. When a joint is moved the muscles and ligaments stay supple and stretchy.



2. If the joint is immobile the muscles and ligaments lose their stretchiness.



3. When you try to move the muscles and ligaments they can't move fully.



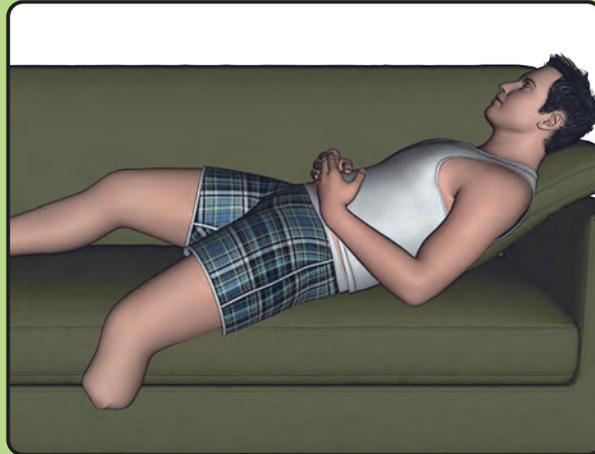
4. Moving the joint hurts and treating the contracture is difficult and painful.

Stump positioning to prevent contractures

The following tips will help to prevent contractures when resting and recovering from your amputation surgery.^(1,2,4,5)



X Do not cross your legs when sitting or lying down.



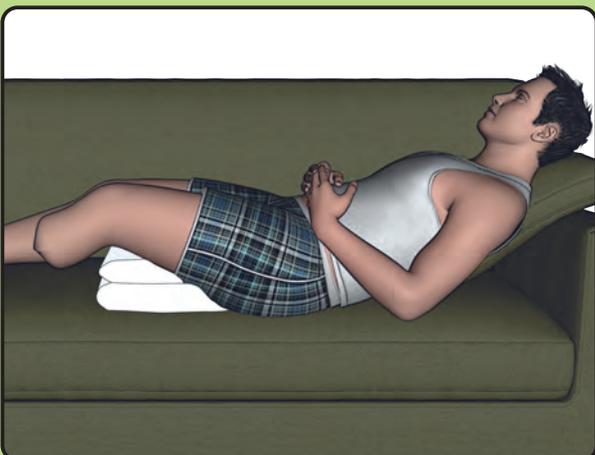
X Do not dangle the stump over the edge of a bed or chair.



X Do not sit with the stump knee bent.



X Do not put pillows under the stump.



X Do not put pillows under your thighs.



X Do not leave your stump knee bent while lying down.

Stretching and exercising

Your physiotherapist will prescribe exercises and stretches for you to do. It is important that you keep doing your exercise as prescribed as once a contracture forms it is difficult and painful to treat and muscles weaken when not used.⁽³⁾

You will be advised on repetitions by your physiotherapist. Stretch as often as you can throughout the day, remember that stretching should work the muscles but not cause pain or discomfort.⁽⁵⁾

Endurance exercise is very important after an amputation because of the extra energy needed to use a prosthesis. There are good reasons to start an exercise routine as outlined below:⁽⁷⁾

Balance: A lower limb amputation will change your centre of balance. By incorporating balance exercises into your routine you will be less likely to fall and you will be more agile in daily activities.

Heart Health: Exercise will help improve conditions such as heart disease. The improved blood flow that comes with aerobic exercise will aid healing of your limb and help prevent further complications. Good circulation will also lower the risk of amputation of your remaining leg.

Muscle Growth: When it comes to muscles the old adage "Move it or lose it" is true. When your muscles are not used they will shrink and become weak. An increase in muscle mass also burns more calories helping to stabilise your weight.

Weight Management: Keeping your weight stable is important for wearing a prosthesis and will control diabetes. Fluctuating weight makes prosthetic sockets difficult to fit and being overweight will reduce your stamina to use a prosthesis. By combining exercise with a healthy diet you can stabilise your weight.

Bone Strength: Including weight-bearing exercise in your routine increases bone strength. This is important as it will help

prevent fractures if you fall over.

Depression: Exercise can alleviate mild to moderate depression by releasing feel-good chemicals into the bloodstream. Exercise will also improve your confidence and this can make you feel better.^(8,9)

Always discuss your exercise goals with your doctor and physiotherapist. They can design a set of exercises for you and monitor your health. Motivation is often difficult so try to find an activity you really enjoy. If you are concerned about stabilising your weight then seeing a dietician is advised.

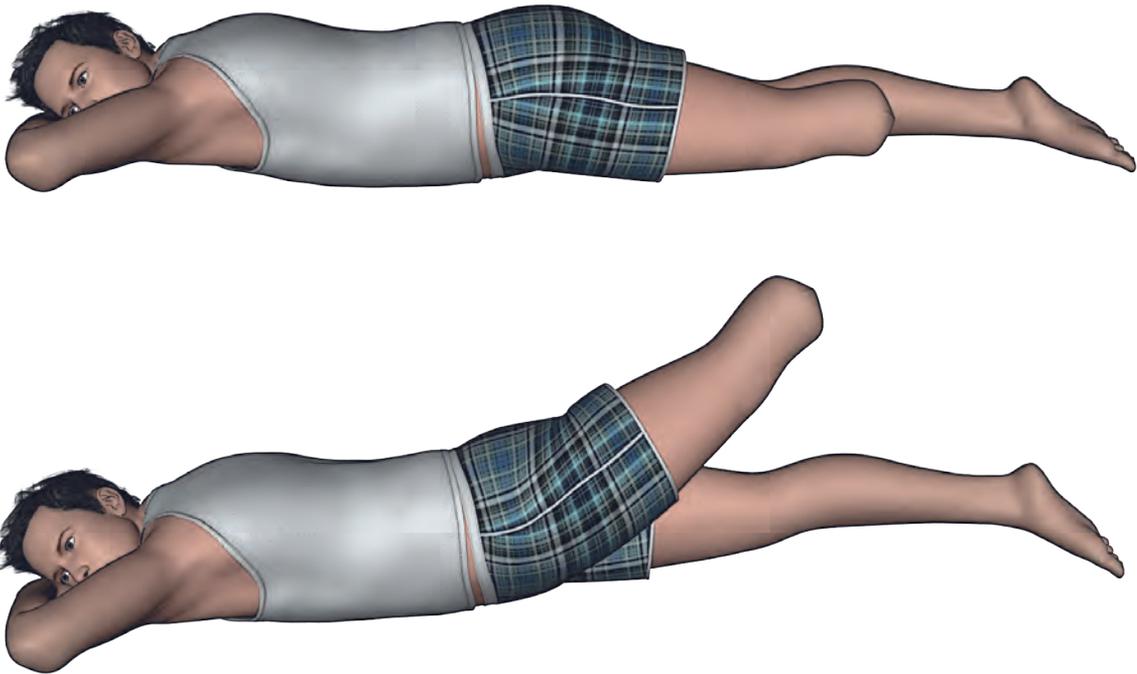
Massage & stump desensitising

Massage by a professional is very beneficial for amputees. It can be used to reduce swelling, contractures, scar tissue, sensitivity and muscle spasms, increase blood flow and aid relaxation. Amputees will often find they have pains in their other limbs because these limbs are favoured; massage can help if favouring a limb has caused pain. Some amputees benefit from self-massage to the stump to alleviate phantom pain.⁽¹⁰⁾

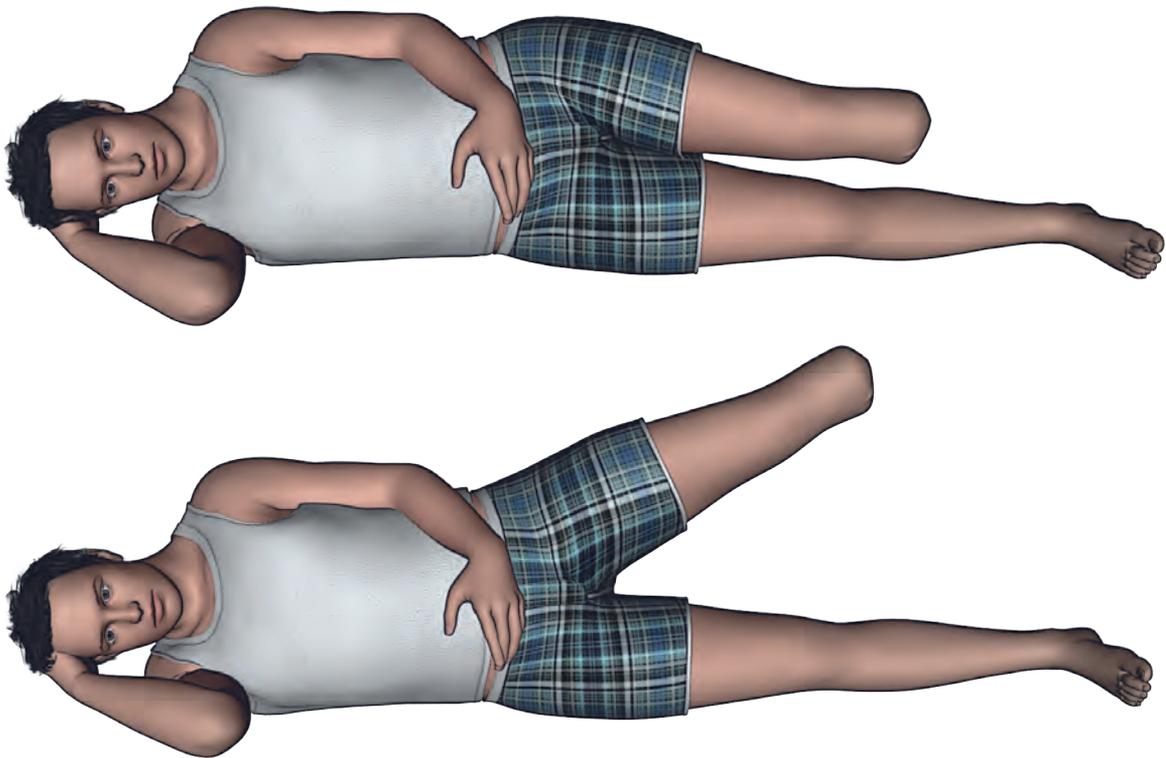
Desensitisation is needed to prepare your stump for prosthetic use. The following techniques should be done in conjunction with your rehabilitation program. Take care to not irritate the skin when desensitising the stump. You should work on the stump by starting gently and over time build up your tolerance. These exercises should not be done to the extent that they are painful however, some discomfort may be experienced if the stump is very sensitive.^(1,11)

The following pages have stretching and desensitisation exercises. As always check with your doctor or physiotherapist before you perform any exercises.

Stretches for leg amputees



1. Lie on your stomach with your head turned to the side, to maximise the stretch turn your head away from the stump.
2. Keep your hips flat on the bed.
3. Slowly raise your stump to the ceiling and hold it for a few seconds.⁽⁶⁾

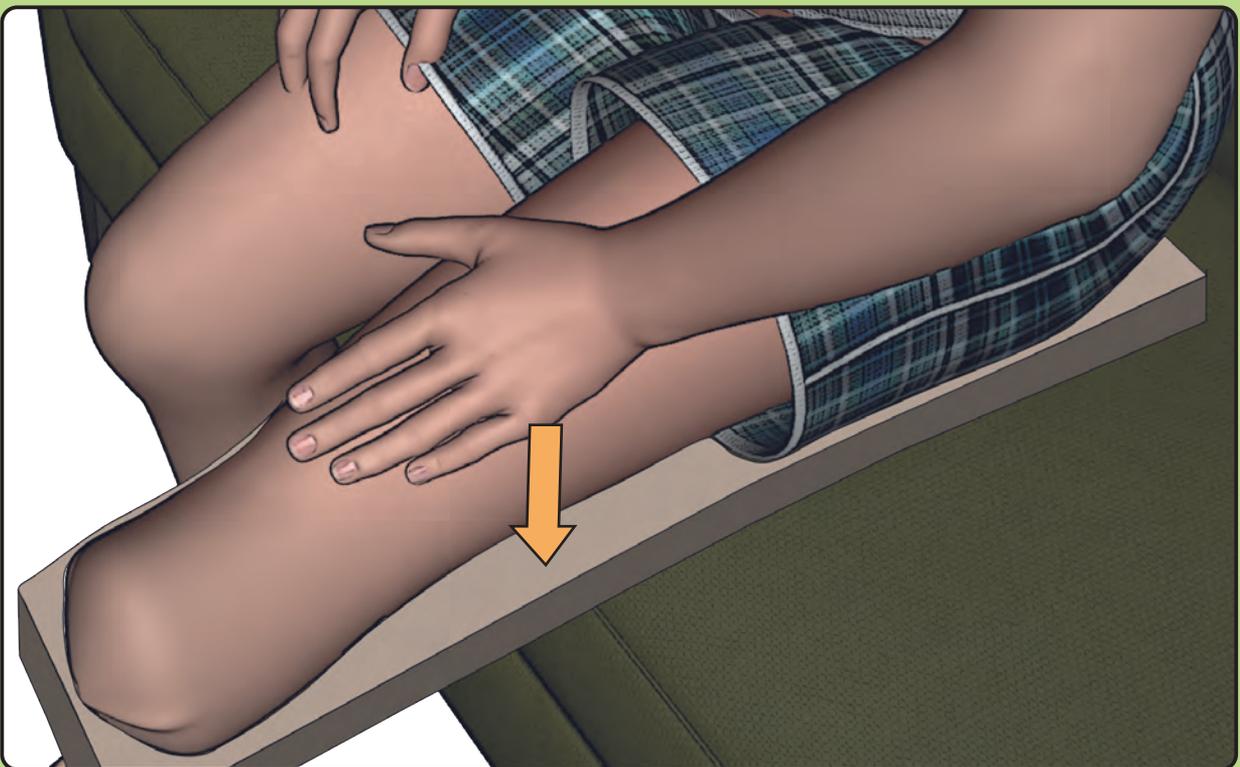


1. Lie on your side with your stump on top of your other limb.
2. Slowly raise your stump to the ceiling and hold it for a few seconds.⁽⁶⁾



Pronation:

1. Lie on your stomach with your head to one side, you can use a pillow. To maximise the stretch turn your head away from the stump.
2. Straighten your remaining limb and stump and keep your hips on the bed.
3. Breathe in and out slowly while gravity stretches the hip muscles. Continue for 30 minutes.⁽⁶⁾

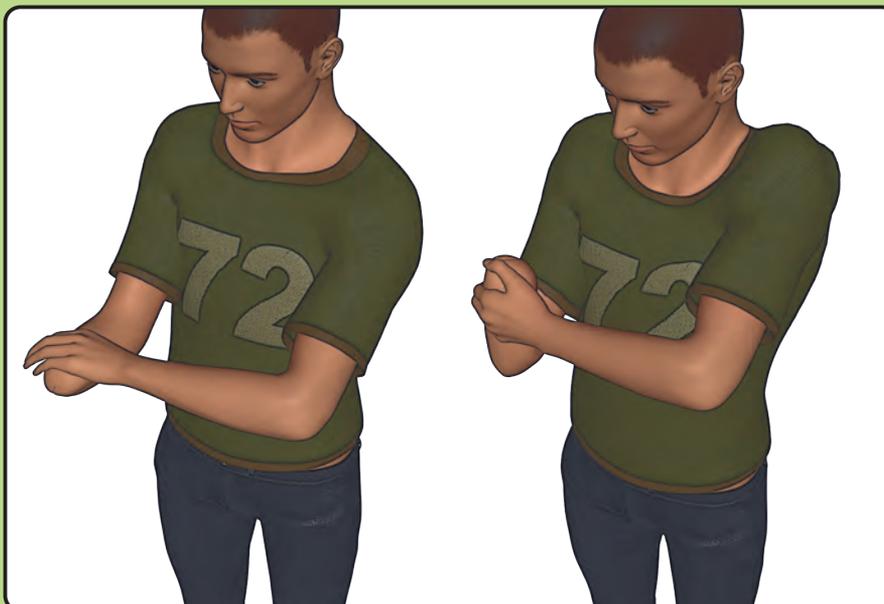


Knee stretches for below knee amputees

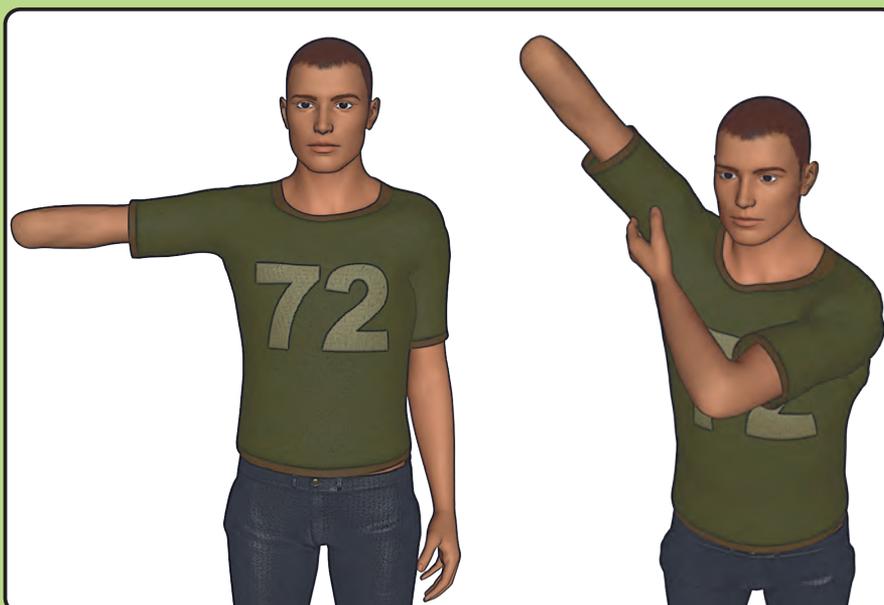
1. Sit up straight with the stump on the amputee board
2. Gently press on the thigh just above the knee.
3. You should feel a stretch in the back of your knee.⁽¹⁾

Stretches for arm amputees

1. Rest your stump on a flat surface.
2. Pull the stump towards you and feel the stretch in your elbow and arm.
3. Push the stump down until the elbow is straight. Hold the stump until you feel the stretch in the front of your arm.⁽¹⁾



1. Hold the stump out straight and to the side.
2. Slowly raise the stump and point to the ceiling.
3. Use your other arm to push up gently until you feel stretch under the armpit.⁽¹⁾



1. Hold the stump out straight and to the side.
2. Pull the stump across your chest. Hold the stump in place until you feel the stretch in your shoulders.⁽¹⁾

Desensitising the stump

Desensitising

This can be done with household items, clothing or fabric scraps.

Start with something soft like a cotton bud or piece of satin. Rub the item in a circular or up and down motion over your stump and residual limb.

Once you are used to the soft item progress to coarser items such as paper towels or tweed fabric. Aim to do this daily until you can tolerate the coarseness of a bath towel.^(1,11)



Tapping and slapping

Use 1 or 2 fingers to gently tap on your stump. Tap over the suture line even if your stitches are still in.

Over time increase the taps to quick slaps (like playing a bongo drum) don't slap too hard.

Aim for 2 minutes of tapping/slapping 4 times a day.⁽¹¹⁾



Massaging the stump

Kneading

Use one or both hands to knead all over the stump and residual limb. To knead imagine your stump is made of bread dough: press and push forward with the palm of your hand.

Start with gentle kneading and build up to harder kneading when you find it tolerable^(11,12)

Aim for 5 minutes of kneading 4 times a day



Scar Mobilisation

When your scar is healed take two fingers and gently press on the scar. Without lifting your fingers make a circular pattern for 1 minute. Keep moving along the scar until you have gone over all of it.

Use this technique on the bony end of your stump to keep the skin supple.

Aim to do this daily when you bathe.⁽¹¹⁾



Prosthetic limb suitability

While the stump is healing all lower limb amputees need a mobility aid and often a wheelchair is used. Once the stump is healed an amputee needs to consider their long term mobility options. Not all amputees use a prosthetic limb for mobility. You will be assessed by amputee rehabilitation specialists regarding your suitability to use a prosthetic limb. Amputees need to be physically fit enough to use a prosthetic limb and they also need to be emotionally prepared for the rehabilitation process. Amputees who are obese but otherwise healthy may find that they need to lose weight first as a prosthetic limb would not take their body weight.⁽¹³⁾

Those who are not suitable for prosthetic limbs include amputees with poor physical health, an unsuitable residual limb, dementia and those not emotionally prepared for a prosthetic limb. Some amputees only need a limb for transferring from a wheelchair. A transfer limb allows the amputee and carers to transfer with greater safety and lowers the risk of back and shoulder injuries.⁽¹³⁾

Sticks are often used with a prosthetic limb and assist with balance and stability. Sticks are inexpensive and readily available from pharmacies.

Non-prosthetic mobility options

Amputees have a range of non-prosthetic mobility options. These are necessary for when a prosthetic limb cannot be worn, for example, it is being repaired and for amputees who are not deemed suitable for prosthetic limb use. Many amputees use mobility aids regularly for times when putting on a prosthetic limb is inconvenient such as waiting for skin lotions to dry on the stump.^(14,15)

When determining a suitable mobility aid consider your fitness level, lifestyle and home. Your physiotherapist or occupational therapist can advise you on what equipment is suitable for you, advise on home modifications and organise government funding if you are eligible. The following are aids that amputees can use:

Crutches: Suitable for those who have the endurance to use them. Improperly sized crutches can injure the back, shoulders and hands so it is important to get a good fit. Advantages: Inexpensive, can be used on stairs, little home modification required. Disadvantages: Difficult to carry items, tiring to use and may encourage a stooped posture.^(14,16)

Walking frames/walkers: Walkers can come with or without wheels and offer more stability than crutches.

Advantages: Easy to transport, inexpensive. Disadvantages: difficult to carry items, cannot be used on stairs and wheeled walkers require a prosthesis to be used.^(14,16)

Wheelchairs: Wheelchairs work well for amputees who have problems with their balance or endurance. A folding wheelchair is useful to take with you when you have to do a lot of walking such as sightseeing while on holiday.

Advantages: manual models are easy to transport, can be used in place of a static chair e.g. in a restaurant

Disadvantages: major home modifications often required, powered chairs need modified vehicles, lack of public accessibility^(15,16)

Scooters: There is a wide range of scooters available to suit a variety of lifestyles.

Advantages: Can be used on the road and footpaths, can go for a long distance before recharging, good on uneven terrains.

Disadvantages: Often too large for in home use, difficult to transport, most public places not designed for them, can cost as much as a small car.^(16,17)

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Falls

In this section

1. Amputees and falls
2. Preventing falls in the home
3. How we fall
4. How to get up from a fall
5. Illustrated getting up from a fall on your own
6. Illustrated getting up from a fall with help

Falls

Falls can cause serious injury, limit your mobility and damage a prosthesis. To limit your injury risk you should keep working on your exercise program. If falls are a concern discuss balance, strength and agility training with your physiotherapist. You can practise falling techniques with your physiotherapist to lower your injury risk.⁽¹⁾

How you injure yourself during a fall depends on how you land. The body has natural reflexes that occur when you fall. The arms will try to break the fall to protect the head and neck. The body would prefer a broken wrist rather than a head injury so it is essentially sacrificing the arms to protect the brain. Injuries can also occur due to hitting objects while falling and the hardness of the ground you land on.⁽²⁾

In amputees, there is a loss of sensory input because our feet can detect slippery or unstable surfaces and will instinctively spring back to stop a fall. A prosthetic foot does not know it has stepped onto a slippery or unstable surface and will not spring back, increasing the risk of a fall. You will find that you have to watch the ground more often to see hazards before you step on them.⁽¹⁾

Preventing Falls in the Home

While you may feel safe in your home you are more likely to fall at home than anywhere else. Falls are a serious issue: on average ten Queenslanders fall and break their hips every day and sadly close to 500 Queenslanders die every year of injuries caused by a fall. The following tips will assist you in lowering your fall risk at home.⁽³⁾

- Remove throw rugs and secure large area rugs with carpet tape or tacks.
- Rearrange your furniture so that there is something to grab if you begin to fall.
- Leave a light on at night.
- Wipe up spills immediately.
- Reduce clutter.
- If thresholds cause problems, have them lowered or removed.
- Move any furniture that has sharp edges away from main pathways.

- Use a shower chair with arms.
- Have handrails and grab bars installed in bathrooms and toilets.
- Adjust doors with automatic closures so they do not bump you from behind.
- Move telephone and extension cords from traffic areas.
- Avoid 'scuff' slippers and walking with only your socks on.⁽⁴⁾

Other things you can do to prevent falls include:

- Exercise regularly to increase your strength and improve your balance.
- Review your medications with your doctor or pharmacist; some medication can make you dizzy or sleepy or affect your balance.
- Have your vision checked every year.
- Rise slowly after sitting or lying down.⁽⁴⁾

If you live alone, consider a monitored personal alarm or carry a mobile phone with you as you may be immobile for some time if you are injured. Make sure your alarm batteries are changed regularly.⁽⁵⁾

How to get up from a fall

The following guide will assist you to get up from a fall. There are several methods for getting up after a fall; your physiotherapist can show you techniques. The two methods shown can be done with or without a prosthesis.

Keep track of how often you fall and what caused it. If it was due to your physical environment, for example, tripping over a rug, make changes to lower the risk. If it was medically related such as a dizzy spell, see your doctor to check your health.⁽⁶⁾

If you fall in public bystanders may try to help you up. It is important to assess if you have any injuries before you let others lift you. Ask someone to check you for visible injuries. If anything feels extremely painful, broken, numb, dislocated, bleeding or you hit your head; have a bystander call an ambulance and remain on the ground until help arrives.⁽⁶⁾

How we fall

There are four basic ways we can fall while close to the ground: slips, trips, tumbles and crumples (not including stumbling which may cause a fall). How you fall will affect the type of injuries received.⁽²⁾



1. Slipping: losing friction between your feet and the floor. You will usually fall backwards.⁽²⁾



2. Tripping: the surface level changes or something obstructs your foot. You usually fall forwards.⁽²⁾



3. Tumbling: falling from a higher object or down stairs, sometimes resulting in somersaults or barrel rolls.⁽²⁾



4. Crumpling: losing the ability to hold yourself up and collapsing to the ground e.g fainting or a knee giving way.⁽²⁾

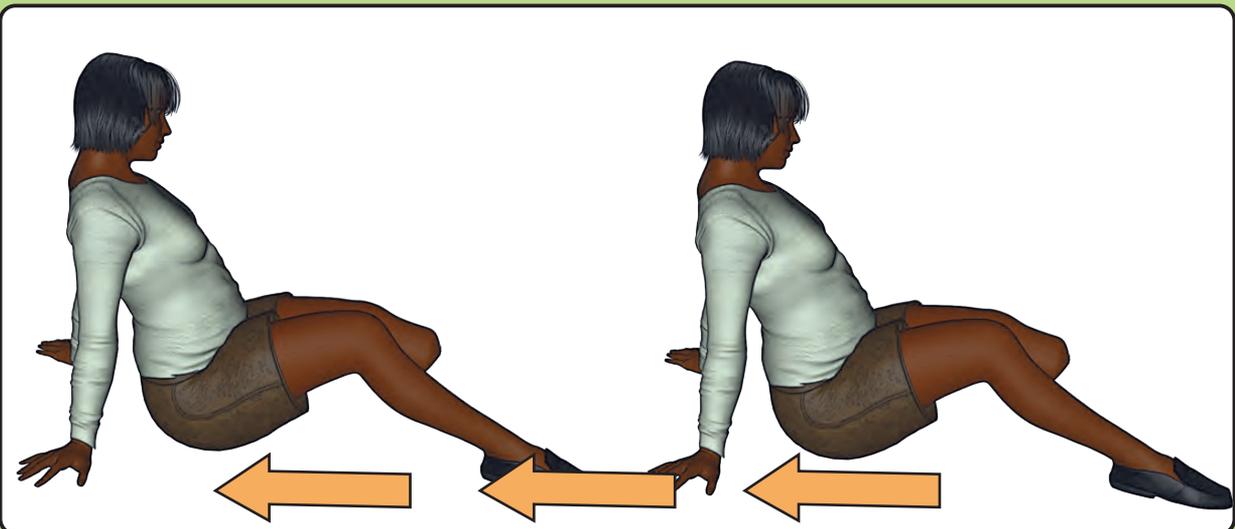
How to get up from a fall on your own



1. Lay for a moment and make sure you are not hurt. Roll over onto your side.⁽⁷⁾



2. Use both hands to push yourself up into a sitting position.⁽⁷⁾

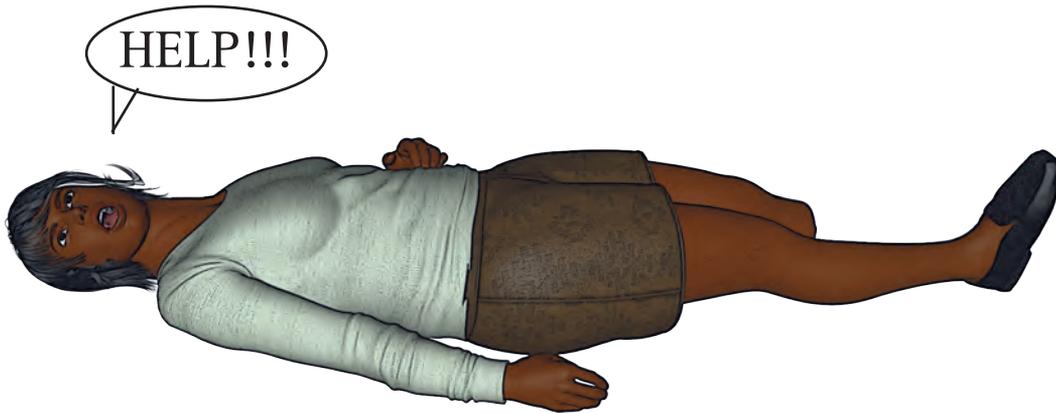


3. Use your hands to scoot along the floor until you reach a low & flat surface.⁽⁷⁾



4. Use your hands and leg to push yourself up so that you are sitting on the surface.⁽⁷⁾

What to do if you can't get up while alone



1: Attract attention, call out and make lots of noise.

2: In cold weather stay warm by using items around you such as rugs or towels.^(5,7)



3: Move to avoid pressure sores by gently rocking or raising your arms and legs if you can. 4: Try to crawl or shuffle your way to a telephone.^(5,7)

How to get up from a fall with help from bystanders



1: Don't let anyone help you up until you are sure you are not injured. Ask a bystander to check you for injuries. If you are hurt stay on the ground and call an ambulance.⁽⁶⁾



2: Roll onto your stomach then pull your knee/s up under your torso and get onto your hands and knees. Someone can help you if you find this difficult.⁽⁶⁾



3: Allow someone to help you up from your knee/s into a standing position.⁽⁶⁾

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Your prosthetist and prosthetic limb fitting

In this section

1. Your prosthetist
2. Choosing your prosthetist
3. Fitting a prosthetic limb
4. Socks and liners
5. Prosthetic limbs for upper limbs
6. Prosthetic limbs for lower limbs

Your prosthetist

If you have been assessed as suitable for prosthetic limb use you will consult with a prosthetist regarding the making of a prosthetic limb. The prosthetist designs, produces, fits and maintains prosthetic limbs. Prosthetists work in the public health system and in private practice. Depending on where you live you may start with a prosthetist based in your hospital while you are having rehabilitation.

Your prosthetist will provide you with education in regard to stump and prosthetic hygiene, correct application of the prosthetic limb and works with your physiotherapist to achieve the best outcome for you. They will also advise you on the limitations of your prosthesis, funding bodies and specialised components for recreational activities and work. Your prosthetist is the person to contact if you have any questions or needs relating to the fit, function or repairs to your prosthetic limb.⁽¹⁾

Choosing your prosthetist

In Queensland, amputees can choose their own prosthetist after rehabilitation. Those who start with a hospital made prosthetic limb choose their prosthetist for continuing services. The most successful prosthetist and client relationships are built over time, so your prosthetist can become familiar with your unique needs. While recommendations from other amputees are valuable you may prefer a different personality and skill set in your prosthetist than another amputee. The following list contains questions to think about when choosing a prosthetist.

Convenience: You will need to visit the premises quite often so location is important. Also look for conveniences such as parking, building access and appointment availability. Keep in mind how you could get to appointments without a car^(2,3)

Rapport: Talk to different prosthetists to see who you feel most comfortable with. Does your prosthetist listen to you and address your concerns? Are you treated respectfully by all the staff? Do you feel comfortable

discussing problems with your prosthesis or does the prosthetist become dismissive or defensive?

Decision making: Do you like to be a partner in the decision making process? Look for a prosthetist that uses their knowledge to inform and guide you to make appropriate choices. Do you feel pushed towards components or given a 'hard sell' on items you do not need?^(2,3)

Experience and knowledge: Ask about the experience of the staff and if they specialise in your type of prosthesis. Can they answer questions and address concerns to your satisfaction? If they cannot answer a question do they source information and provide it to you at a later date?

Expectations: Does the prosthetist provide you with realistic expectations of your prosthesis? Are you provided with material outlining components and appropriate usage? Does the prosthetist tell you when your expectations are unreasonable and guide you to more suitable solutions?

Aftercare: Does the prosthetist provide information on prosthesis care and maintenance? If you have concerns about fit and function are they addressed quickly or was the process drawn out? Are you contacted for regular maintenance visits?^(2,3)

When you consult with a prosthetist they will usually examine your stump and take details of your medical history. They should discuss your goals, suitable components and lifestyle factors that will affect your choice of components. They will need to record the size of your remaining foot and the type of shoes you wear, your stump circumference and where a prosthetic knee will be placed. The prosthetist will also decide at this stage how the limb will be held on, this will be determined by issues such as the level of amputation and the length of your stump. At this point you should discuss component choice and which components best suit your needs and your budget^(2,4)

Fitting a prosthetic limb

Once you have decided with your prosthetist on what type of prosthetic limb and components you need the building and fitting can begin. The first stage is to cast a realistic model of your stump. If you are happy to proceed a cast can usually be made during your first appointment.⁽⁴⁾

Casting is done in two ways. The first method uses plaster of paris on bandages. The bandages are wrapped around the stump and then removed when the plaster has set. The prosthetist then fills the mould with plaster creating an exact replica of your stump. The second method uses a special camera which scans the stump and transfers the images to a computer operated carving machine to carve a replica of the stump out of solid material.⁽⁴⁾

The stump replica is used to make a socket. Most sockets are resin however other materials such as carbon fibre are available. Resin is a two-part liquid that hardens into a strong plastic when mixed together (resin cannot be poured straight onto a stump as it heats to over 180 degrees when hardening) You may have a 'check socket' cast. This is a temporary socket made of clear acrylic plastic. The prosthetist will use it to look for pressure spots or areas where the stump does not make contact with the socket before the final socket is made.⁽⁴⁾

When the prosthetic limb is completed you will return for a fitting and trial. The prosthetist will watch how you walk to look for any problems and make necessary adjustments. They will then show you how to 'don' (put on) and 'doff' (take off) the prosthesis and liner. They should also give you instructions on how to maintain the limb and the limitations of the prosthesis.^(1,4)

Your first prosthetic limb will not have a cosmetic cover so that adjustments can be made frequently. As you become more active your stump will likely change in shape requiring several sockets in a relatively short space of time. Once the stump has stabilised your prosthetic limb should last for several years provided you maintain it as directed.^(1,4)

Most modern prosthetic limbs are designed to be "endoskeletal" this means they are like a human limb with a sturdy skeleton for support and a soft outer layer. (When your stump has stabilised a cosmetic cover (cosmesis) can be fitted to the prosthetic limb. The cosmetic cover is made to match as close as possible to the shape and colour of your natural leg.^(1,5)

Depending on your lifestyle, work and recreational activities, three basic types of cosmetic covers are available: hard plastic, foam with removable stockings for colour, or foam with a silicone/vinyl 'skin' for colour.⁽¹⁾ Some people prefer the appearance of the componentry and choose to not have a cosmetic cover, this has become quite popular as it is the preferred appearance for amputee athletes. For others realism is very important: cosmetic covers that are very realistic including skin colour matching are available.⁽⁶⁾

For those amputees whose activities could damage a foam cover; a prosthetic limb with a hard fibreglass exterior may be recommended. This is called an 'exoskeletal' prosthesis and is strengthened by its hard cover (like a crab hence the name) Some examples of activities that need an exoskeletal prosthetic limb include regular exposure to salt water, welding or other types of "dirty" work, as well as weight considerations.⁽⁴⁾ Exoskeletal limbs also work well for active children as the cover is very durable.^(1,5)

The most appropriate cosmetic cover for your prosthetic limb will be decided by you in consultation with your prosthetist.

Avoid wearing your prosthesis if you develop pain or the prosthesis is damaged. Continual prosthetic use can make the pain worse or cause a serious injury.



Socks and Liners

Socks and liners are an important part of wearing a prosthetic limb. A socket on its own is too hard to be worn comfortably without some kind of soft interface between it and the stump skin. In below knee amputees a stump in a hard socket is likely to form painful pressure points, sweat excessively and create friction rubbing on the skin. Socks and liners allow normal changes in stump size without the socket falling off or becoming too tight. Socks also allow perspiration to be absorbed rather than causing the socket to slip.⁽⁷⁾

Socks and sheaths

Socks are used to protect the stump from friction and to help keep the socket fitting snugly. Socks can be cotton, wool or synthetic. The advantage of natural material socks are that sweat is taken away from the skin, however, modern synthetics and blends are catching up with natural fibres in terms of moisture absorption. Socks come in a variety of thicknesses (ply). This allows an amputee to mix and match plys to make a good socket fit and accommodate minor stump changes.⁽⁷⁾

Nylon sheaths are an optional supply used as a moisture and friction barrier between the skin and other socks. Sheaths are similar in appearance to traditional hosiery but are specially made for prosthetic use.⁽⁷⁾

Gel socks are a layered sock with an outside fabric layer and a layer of silicone or similar material in the middle. The advantage of these types of socks is that the silicon can mould to the stump's surface and relieve pressure points.

Multiple socks can be worn at once to account for stump volume changes but see your prosthetist if you find yourself needing many socks at once, as a change in socket may be needed.⁽⁷⁾

Liners

Two common liner materials available for amputees are silicone and pelite. These liners both achieve the same outcome: flexible cushioning that adjusts to the shape

of the stump and muscle movement. Your choice of liner will be made in conjunction with your prosthetist as the design of your prosthetic limb will influence the type of liner that can be used.

Liners made from silicone are an alternative to socks or they can be used in conjunction with socks to provide a good socket fit. The material used to make the liner is soft and can conform to the stump relieving pressure and rubbing.^(7,8)

Many prosthetic limb styles use the vacuum created by a silicone liner to hold the stump in the socket. This is achieved by the addition of a lock and pin. The pin attaches to the liner and the lock is built into the socket. The wearer can then use the pin to lock the liner to the socket creating a firm hold. The stump is held in by the suction created by the silicone. Liners can be implanted with skin treatments to reduce skin irritation.^(7,8)

The other common type of liner is a pelite liner. Pelite is a kind of foam that can be heat moulded to the replica of the stump made in casting. These liners are soft but hold their shape. There are pelite alternatives on the market that use plastics; sometimes called a "flex socket" these are made in the same way as a pelite liner by heating and moulding over a cast of the stump.⁽⁶⁾

The choice of liner will alter how the socket is made. If you do not like the type of liner you have it is usually necessary to remake the socket to accommodate a different type. Changing liner types is not a decision to be taken lightly as the stump becomes accustomed to a liner. Changing liner type does not appear to have any added benefits for many amputees (unless they have an allergy to the liner material) and some amputees find the change intolerable.

Always investigate the cause of pain or discomfort in your stump with your prosthetist and primary care doctor rather than assuming the type of liner is the problem or the solution to pain.⁽⁹⁻¹⁰⁾

Prosthetics for lower limbs

While prosthetic limbs do not function as well as natural limbs, they can be very effective. Most people are able to resume much of the physical activity they had prior to the amputation.⁽¹⁾ With the appropriate selection of prosthetic components and physical rehabilitation, many amputees return to independent mobility and become confident prosthetic limb users.

After amputation surgery, you will want to get back to daily living as soon as possible however you must wait until the stump is healing well and the swelling has stabilised. Your readiness for a prosthetic limb is decided on a case by case basis in consultation with your rehabilitation team but it typically takes six to eight weeks for the stump to be ready. You will use your first prosthetic limb to undertake walking practice and work with your physiotherapist to strengthen your residual limb. Arm amputees will use their first prosthetic limb to develop hand skills whilst the stump undergoes change.^(1,11)

Your first prosthetic limb is often provided by the prosthetic service in your nearest public hospital. This prosthetic limb will not have a cosmetic cover due to the amount of adjustments needed in the early stages of rehabilitation. Walking will cause significant stump changes for a period of four to six months, therefore, your first prosthetic limb will need multiple adjustments while the stump stabilises and your walking improves.

At the beginning of your prosthetic limb training, you will need to use a walking aid. As your walking with a prosthetic limb improves you may be able to walk without any walking aids.^(1,11)

During prosthetic limb training, you will be shown how to care for your stump and you may require assistance with pain management or experience phantom pain sensations. The length of a prosthetic limb training program varies depending on the individual for most amputees it will take several months for the stump to stabilise and mobility to improve.^(1,11)

Components of a leg prosthesis

The components chosen for your prosthesis will be based on a range of needs such as your weight, activity level, the level of amputation, work, where you live (for maintenance) and your other leg and knee/s. Your prosthetist will guide you through the components on offer and assist you with choosing components. High-end components may not be best for you: you may find you prefer the durability and easy maintenance of lower tech options.^(1,12,13) The following is a basic description of common lower limb components.

Socket: The socket holds the stump and distributes weight. Most modern sockets are made from urethane resin. To determine the correct shape the socket will be cast either by putting plaster on the stump or by scanning the stump into a computer by using a camera-like device.^(1,11)

Suspension: The suspension holds the socket onto the stump. There are multiple kinds of suspension including cuffs, leather belts, corsets, vacuum suction, liner with pin, and elastic sleeves.^(1,11)

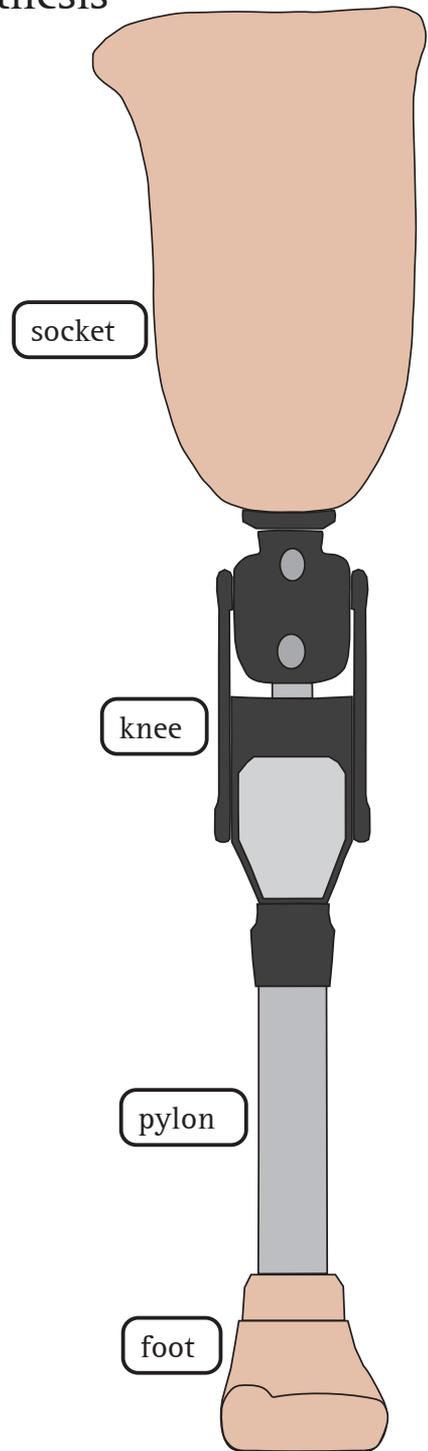
Knee: Mechanical knees have hinges that swing when you walk to create a more natural gait. Knees with multiple axes are more stable and allow faster walking than those with only one axis. If you have difficulty with stability, safety knees are available.^(12,13) Hydraulic knees have fluid filled cylinders and pistons to allow different walking speeds.⁽¹¹⁻¹³⁾ Hybrid knees that combine mechanical hinges with pneumatic cylinders are available.

Foot and ankle: There are numerous feet available from wood to titanium. Ankles are not always needed however they are an option for those who want an adjustable heel height.⁽¹¹⁾

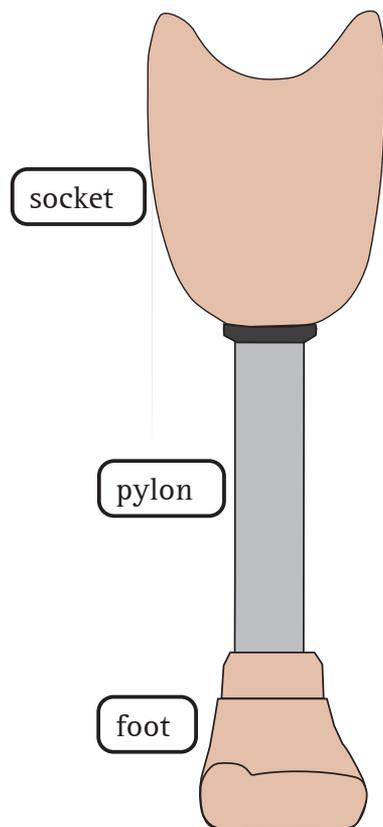
Pylon: Pylons create the length required for your limb and depending on their type can absorb shock and torque as you walk.⁽¹¹⁾

Components such as rotators are available and may suit your needs, your prosthetist can advise you on additional components.

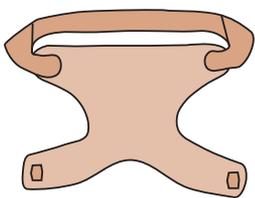
An above knee prosthesis



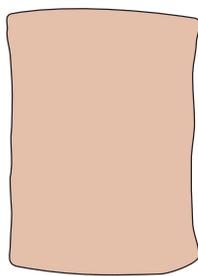
A below knee prosthesis



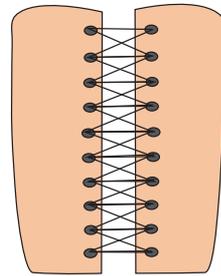
Suspension types



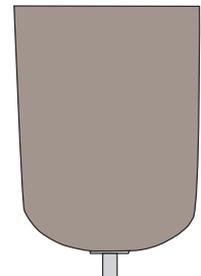
patella tendon cuff



sleeve



thigh lacer



liner and pin

Prosthetics for upper limbs

The hand is a very complicated thing, far more so than a foot or knee, as a result, upper prosthetic limbs can only duplicate a limited range of movements of the hand. Even if you choose to not use a prosthetic limb you will still need training in one armed techniques to maximise your independence.

You need to undergo careful assessment and be involved in discussions with your rehabilitation specialist, physiotherapist, occupational therapist and prosthetist if you wish to use a prosthetic limb. Aspects such as medical fitness, physical potential, current functional abilities and the tasks you wish to accomplish using the prosthetic limb need to be fully reviewed. Discussions will also cover the types of components and terminal devices that will best meet your needs, the limitations of a prosthetic upper limb, as well as its benefits and your level of commitment to an intensive training program.⁽¹⁾

If a prosthesis is not appropriate, you may still require training in one-handed techniques, strength and exercise programs to maintain a good posture and referrals to agencies who assist with driving retraining, work rehabilitation and support and peer groups.

Once you decide to proceed with a prosthesis, a training prosthesis will be custom made for you. When completed, an intensive training program will be coordinated for you by your occupational therapist and physiotherapist so that you are able to maximise the usefulness of your prosthetic limb. The details of the program depend on the level of the amputation, your general fitness and need for adapted skill training. During this time referrals to specialised agencies for driving and so on will be organised if required.⁽¹⁾

Components of an arm prosthesis

There are three types of arm prosthesis: body powered, electric (myoelectric) and cosmetic/passive. Body powered and electric arm prostheses produce the same outcomes of basic arm/hand functions. Cosmetic arms

are designed for a realistic appearance but cannot move or grip objects.

Socket: The socket holds the prosthesis onto the stump. Most modern sockets are made from resins. To determine the correct shape the socket will be cast either by putting plaster on your stump or by scanning your stump into a computer using a camera-like device.^(1,14)

Harness and Control Cables: The harness and cables control the movement of the prosthetic. The harness transfers movement of the muscles to the cables which in turn control the prosthetic resulting in quite complicated systems. Electric arms (myoelectric) do not use harnesses and cables; instead sensors inside the socket pick up muscle movements which are transferred to small motors in the prosthesis.⁽¹⁵⁾

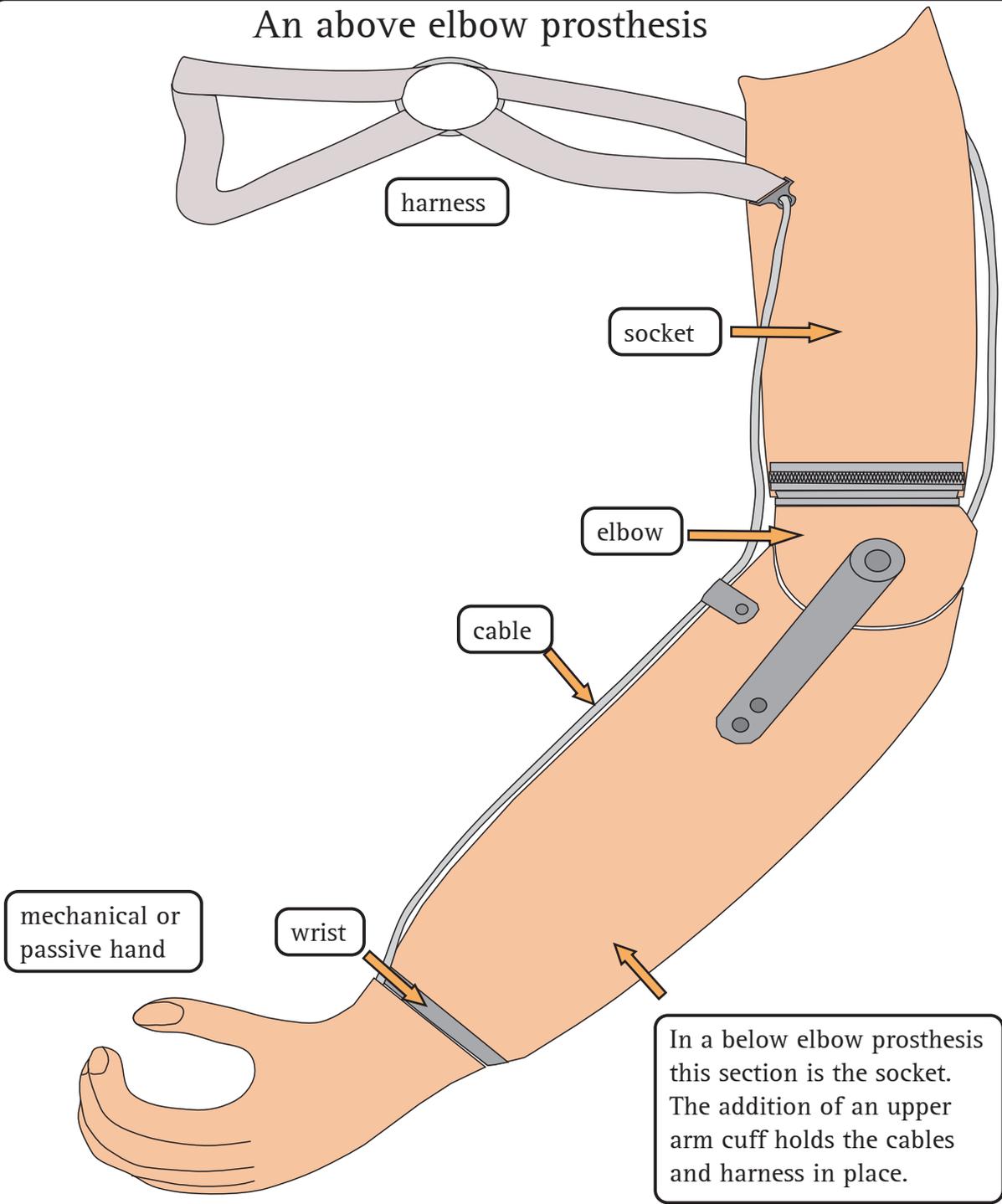
Elbow: Elbows use hinges to flex and depending on the level of amputation may be body/electric controlled or manually positioned with the other hand.⁽¹⁵⁾

Wrist: The use of wrists allow the changing of terminal devices and also lets the user position a terminal device before use.⁽¹⁵⁾

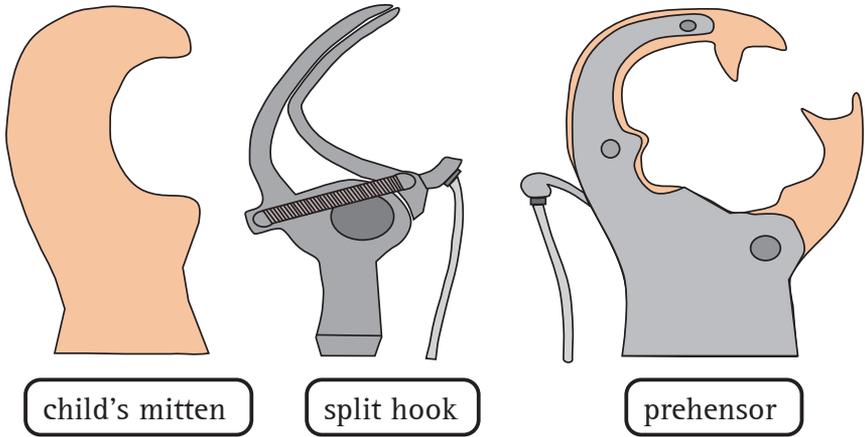
Terminal Device: The terminal device comes in three basic forms a mechanical hook, mechanical hand, and cosmetic hand. Mechanical hands can open and close providing basic grip. Non-mechanical cosmetic hands look very realistic but remain in a fixed position.⁽¹⁾ Hooks can open and close like a pincer allowing gripping and the ability to lift objects. Manual workers often prefer hooks because they can be used in conditions that would stain or damage the cover on a prosthetic hand.⁽¹⁵⁾

All terminal devices are interchangeable, for example, if you use a mechanical hook, you can replace it with a cosmetic hand. The choice of a terminal device and wick type meets your needs will be discussed with you at the time of your definitive prosthetic prescription.⁽¹⁾

An above elbow prosthesis



Terminal devices



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Prosthetic limb care and socket fit

In this section

1. Care of your prosthesis
2. Cleaning a prosthetic limb
3. Keeping your prosthetic limb in good shape
4. Component maintenance
5. Silicone care
6. Socket fit
7. Never pad the socket
8. Fit issues caused by shoes

Care of your prosthesis

A prosthetic limb is custom made for each person. A small amount of daily maintenance and care will extend the life and comfort of your prosthetic limb and reduce the chance of problems occurring. Your prosthetic limb is an important part of your life so look after it and it will serve you well.⁽¹⁾

Think of your prosthetic limb as a car and treat it accordingly. A responsible driver will keep their car maintained and serviced so that it does not break down. They will also follow the limitations of the vehicle to avoid an accident or damage. Finally, they will maintain the car according to the manual and if a problem arises the car is taken to a trained mechanic. Treat your prosthetic limb in the same way by having it serviced, performing routine maintenance and using it within its limitations.

Special tools, equipment, and skills are required for work on a prosthetic limb. If a problem occurs, you should contact your prosthetist immediately. Do not try to fix it yourself as you may ruin the prosthesis completely risking serious injury if the prosthetic limb or a component fails. If you adjust the components it may affect your gait and cause pain. You will also void the warranties on any components that you have damaged.⁽¹⁾

Do not use your prosthetic limb in a manner it was not designed for and do not abuse it, for example by trying to use it as a lever or a hammer. It will not last very long if it is treated in this manner.⁽¹⁾

Cleaning a prosthetic limb

A prosthetic limb that is clean will give fewer problems than one that is neglected. A socket that is not clean will accumulate sweat resulting in strong odour and increased risks of skin problems. Each day when you remove your prosthesis clean the socket, liner and socks. Wipe out the socket and liner with a cloth and warm soapy water. Use a soap that will not irritate your skin. Do not immerse the prosthesis in water, as this can cause damage to the components. A soft toothbrush can be used

to gently clean in difficult to reach areas. If you are not sure how to clean a certain part ask your prosthetist for instructions.⁽¹⁻³⁾

After wiping out, ensure you dry all parts thoroughly. If you perspire a lot, you may need to clean your prosthesis more than once a day. Some knee components cannot be inverted so if you have a knee unit do not place the prosthetic limb upside down to dry.⁽¹⁻³⁾

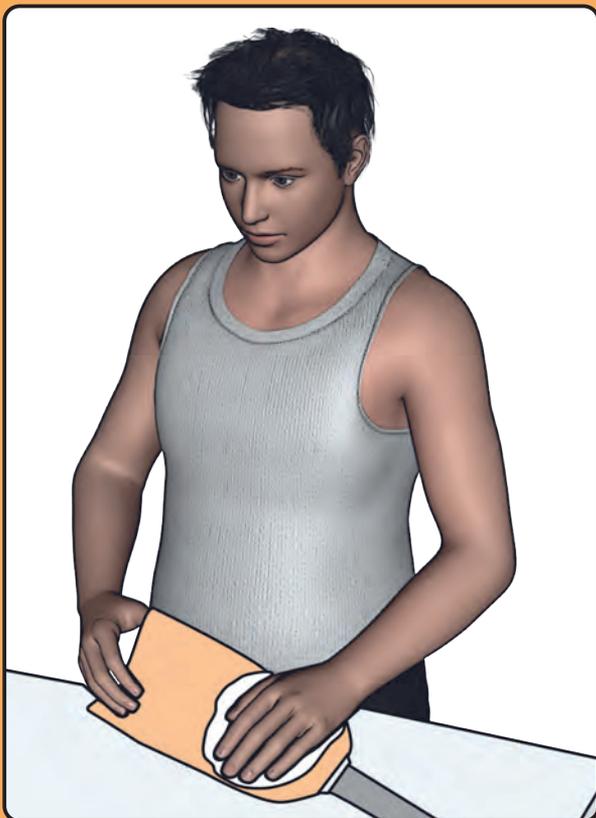
If your prosthesis has leather on it, avoid getting this wet and use a leather soap for cleaning. Use a leather conditioner to prevent the leather from splitting and wipe leather parts daily to avoid a build up of sweat. If your prosthesis has cosmetic stockings, these should be removed and washed to protect the foam cover.^(1,3)

Woollen socks, cotton socks, and prosthetic sheaths can all be hand washed in warm water with a gentle detergent or soap. Socks can be hung out to dry but it is best if strong sunlight is avoided. Care instructions are provided with each packet of socks or ask your prosthetist. Gel socks are best sponged with a damp washer and a mild soap and dried indoors. All socks should be left to dry in a way that does not let them become misshapen or creased.^(1,4)

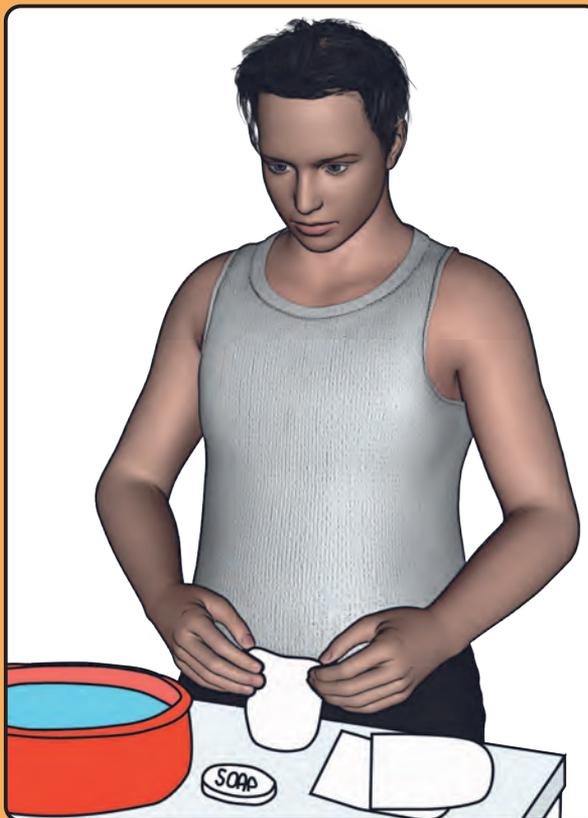
To clean your liners follow the instructions of the manufacturer. Suitable products for cleaning depend on what the liner is made from and the wrong product can cause damage. Liners made from silicone are easily stained by inks and dyes so never sit one on newspapers to dry.⁽⁶⁾ Gel liners must be dried right side out. Liners can be wiped with warm water and mild soap and then left to dry. Do not use a hair dryer or any other direct heat on your liner.⁽⁷⁾

It is advisable to carry a prosthetic limb kit with you. This kit should contain some clean stump socks, a packet of suitable wipes for cleaning your skin and socket; antiperspirant and a shrinker to wear if you must remove your prosthetic limb. Keep the kit in a handy location such as your car.⁽⁶⁾

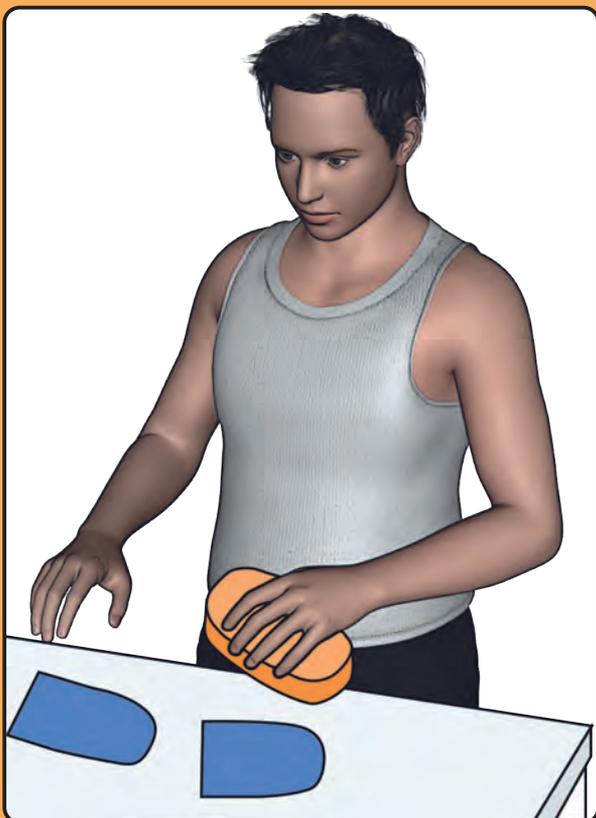
Cleaning your prosthetic limb



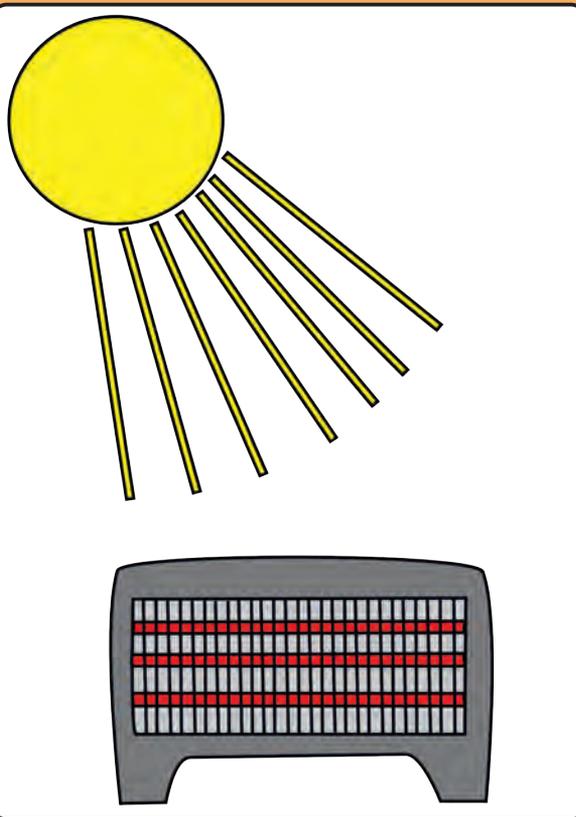
1. Wipe the prosthetic limb with a damp cloth and gentle soap.



2. Hand wash your cotton/wool socks in warm soapy water. Rinse well.

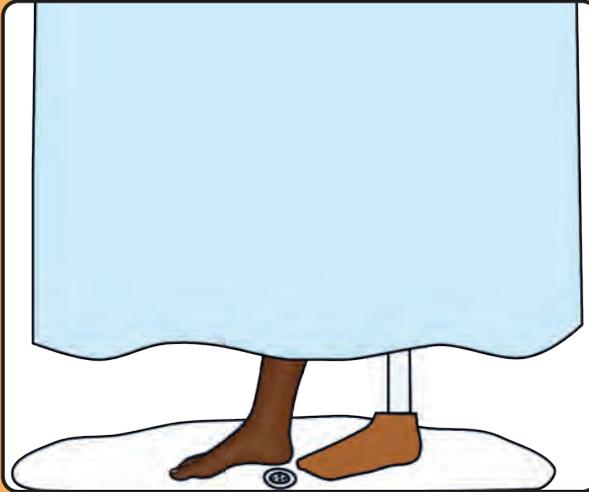


3. Clean your liner and gel socks with a damp sponge. Turn right side out to dry.



4. Dry the socks and liner away from direct heat and sunlight.

Keeping your prosthesis in good shape



X Don't swim or shower in the prosthesis without a xerosock⁽³⁾



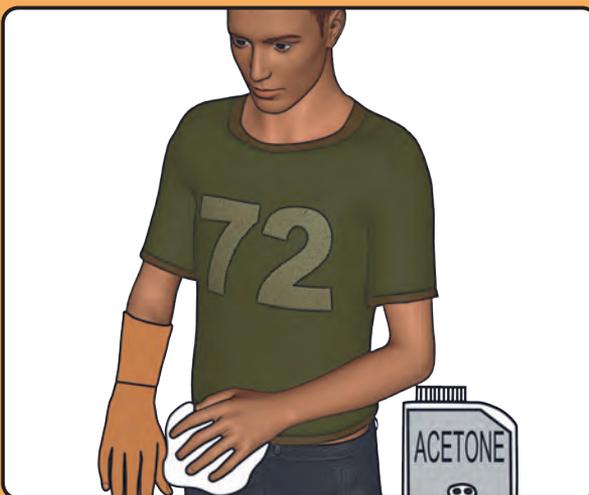
X Don't carry heavy loads above the prosthesis' weight limit.⁽³⁾



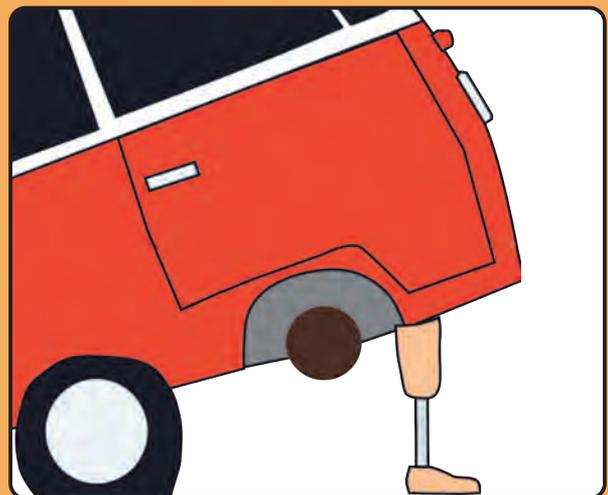
X Don't repair the limb or pack the socket yourself.^(1,3)



X Don't engage in high impact activities with your prosthesis.⁽³⁾



X Don't expose the prosthesis to solvents and chemicals.⁽⁵⁾



X Don't use the prosthesis for anything it was not made for.⁽¹⁾

Component maintenance

A prosthetic limb needs to be maintained to function well. Your prosthetist will service your limb regularly and you can perform some basic maintenance and inspection to detect problems before they become serious.

Sockets

As well as cleaning the socket daily inspect it for cracks. A small crack can expand causing the whole socket to fail. Cracks should always be repaired as soon as possible.⁽²⁾

If you have a pin lock suspension and it is not making a good connection the lock may need cleaning or replacement. The pin should attach to the lock with a 'click' sound. If the pin continues to click as you walk the pin or lock are most likely worn. If you cannot remove the pin from the lock easily there is probably rust or dirt in the lock.⁽⁷⁾

Suspension

If your suspension or socket does not fit properly the stump may move up and down in the socket: this is called pistoning. You may also feel like the prosthetic limb is slipping on the stump causing it to lag behind your body making walking laborious.^(7,8)

Knees

Knees are quite complex and are not designed for home repair. If your knee requires oiling or cleaning your prosthetist will show you how to do it correctly.

Your knee should move smoothly if you find it is jamming or floppy it needs adjustments or replacement. If your knee is hydraulic it should work silently, if it is making noises such as gurgling it is in need of repair.⁽⁷⁾

Feet

Feet are made to be somewhat water resistant but should not be submerged in water or worn in the shower. SACH type feet will deteriorate if exposed to water and not dried thoroughly. Feet need to be protected by always wearing shoes. The rubber bumpers in some feet need regular

replacement. To care for silicone feet see the section on silicone care.⁽⁷⁾

Upper limb harnesses and wires

Harnesses need to be cleaned frequently to avoid sweat staining. Wires can wear and fray so inspect them regularly for damage.⁽⁹⁾

Terminal devices

Terminal devices should not be immersed into dish washing water as the detergent will dissolve the device's lubricant. Replace the rubber bands on hooks regularly. To care for silicone covers and hands read the following section on silicone care.⁽⁹⁾

Silicone care

Silicone is a common material in prosthetic limbs. It can be found in liners, socks, cosmeses, hands and feet. Silicone requires special care to keep it in good shape and avoid stains.

Silicone is very absorbent; avoid contact with perfumes and strong soaps as they may be absorbed and released onto the stump skin. Silicone liners can absorb sweat and body odours. If you smoke the silicone will absorb the smoke odour. Always wash silicone liners daily and practice good stump hygiene. If you put lotion on your stump wait at least 30 minutes before donning a silicone liner or prosthesis.^(5,10)

Silicone should be cleaned with warm water and mild soap. If it is not dried properly mould can grow and destroy it. To avoid mould after washing spray silicone with medical alcohol to displace excess water.^(5,10)

Inks and dyes must be avoided as they stain silicone. Take care if using items like markers, food dyes, hair dye, printer inks, copier toners and wood stains near silicone. Wash new clothes, especially denim, before wearing to remove excess dye.^(5,10)

Silicone must never touch solvents or oils such as nail polish remover and Vaseline as both damage silicone. If you accidentally cut into silicone your prosthetist can use a special glue to repair it; do not glue it yourself as many glues contain solvents.^(5,10)

Socket fit

Sockets are designed to distribute weight over the entire stump, taking pressure off of the distal end. The socket should be a snug fit and not require too many socks. A socket does not last forever and stumps change shape so it is important to watch for signs of a socket fitting poorly.

Signs a socket is too loose:

- The leg moves up and down in the socket: This is called pistoning and may be caused by a loose socket.
- Air 'burps' out of the top of the socket.
- The prosthesis is slipping on the stump causing it to lag behind your body and it feels heavy.
- You feel comfortable except for pressure around the knee because you have too many socks on.
- The prosthetic limb turns on your stump making the foot protrude to the side.
- There is pressure from the socket on the groin area and your 'sit bones' (ischial bones)
- The limb feels too short.^(7,8)

Signs a socket is too tight

- Ulcers and pressure points are often caused by a socket that is too tight.
- Throbbing pains and redness: These are caused by a tight socket or wearing too many socks.
- The bottom of the stump is hard and swollen. This is caused by the stump end not making contact with the base of the socket because the socket is too small. Fluid accumulates in the distal end of the stump due to the vacuum created.
- The limb feels too tall.
- Painful pressure on the back of the knee.^(7,8)

Never pad the socket

If part of the socket is causing pressure or pain it may be tempting to pad the area with items such as gauze, foam rubber or cotton wool while you wait to see your prosthetist. It is very important that you do not pad pressure points yourself because:

- The item used to pad can move up and down in the socket and cause skin abrasions or affect the suction fit.

- Padding areas of a socket will make that part of the socket even tighter and create greater pressure on the stump area. This can limit blood supply to the area and make the wound worse.
- Making a doughnut shaped pad to protect a wound or ulcer can cause tissue swelling inside the 'hole' of the doughnut.⁽¹¹⁾

If you are experiencing pain see your prosthetist as soon as possible and do not wear the prosthesis: use a backup mobility device. If you have a 'boney' stump special pads are available from your prosthetist.

Fit issues caused by shoes

A prosthetic leg is designed for a flat soled shoe with a low heel. Shoes need to be replaced and most of us have shoes for different occasions and activities e.g dress shoes, work shoes, gum boots, sneakers, and summer sandals. When new shoes are worn there may be issues caused by a change in heel height.⁽⁷⁾

If your heel is too high you will feel as if you were leaning forward or walking downhill. There can be excess pressure on the shin area and kneecap. If you use a prosthetic knee it may flex differently to what you are used to and buckle when moved forward.⁽⁷⁾

Your heel height is too low if you feel like you are leaning backward or walking uphill. You may feel pressure on the back of the knee and the tendons on the kneecap. If you use a prosthetic knee it may flex differently to what you are used to.⁽⁷⁾

When having your prosthetic limb fitted bring the pair of shoes that you wear most often as the prosthetic limb will be adjusted to the heel height. As this is difficult to change you will need to have shoes for other occasions with the same heel height. If you are not sure what type of shoes to choose sneakers are the preferred choice as they are light, comfortable and have good grip. If you would like to wear a variety of heel heights there are adjustable prosthetic ankles and feet for this purpose.^(7,12)

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Exercises for prosthetic limb users

In this section

1. Exercising to make the most of your lower limb prosthesis
2. Exercises for lower limbs
3. Exercising to make the most of your upper limb prosthesis
4. Exercises for upper limbs

Exercising to make the most of your lower limb prosthesis.

The better your balance and ability to bear weight the more you will get out of your prosthetic limb. Exercise is important regardless of the type of components you have selected for your prosthetic limb as even high tech components need the user to be confident in their movement.^(1,2)

The following exercises are to help improve your balance and weight bearing abilities. This is a small selection of exercises; a more comprehensive resource is "The Amputee Coach" by Cathy Howells and Sandra McFaul. The authors are Australian and are aware of how amputation and rehabilitation happens in Australia and the type of prosthetic limb you will have.

It may take some time to improve your balance and strength but the result will be full use of your prosthesis. While you exercise focus on controlling the muscles in your stump; try not to use your remaining

limb to overcompensate.^(1,2) Exercises for the upper body are also helpful for lower limb amputees who use crutches or a wheelchair.

The following is a set of basic exercises that require minimal equipment. A kitchen bench is a good option for balance. Two sturdy dining chairs are also acceptable.

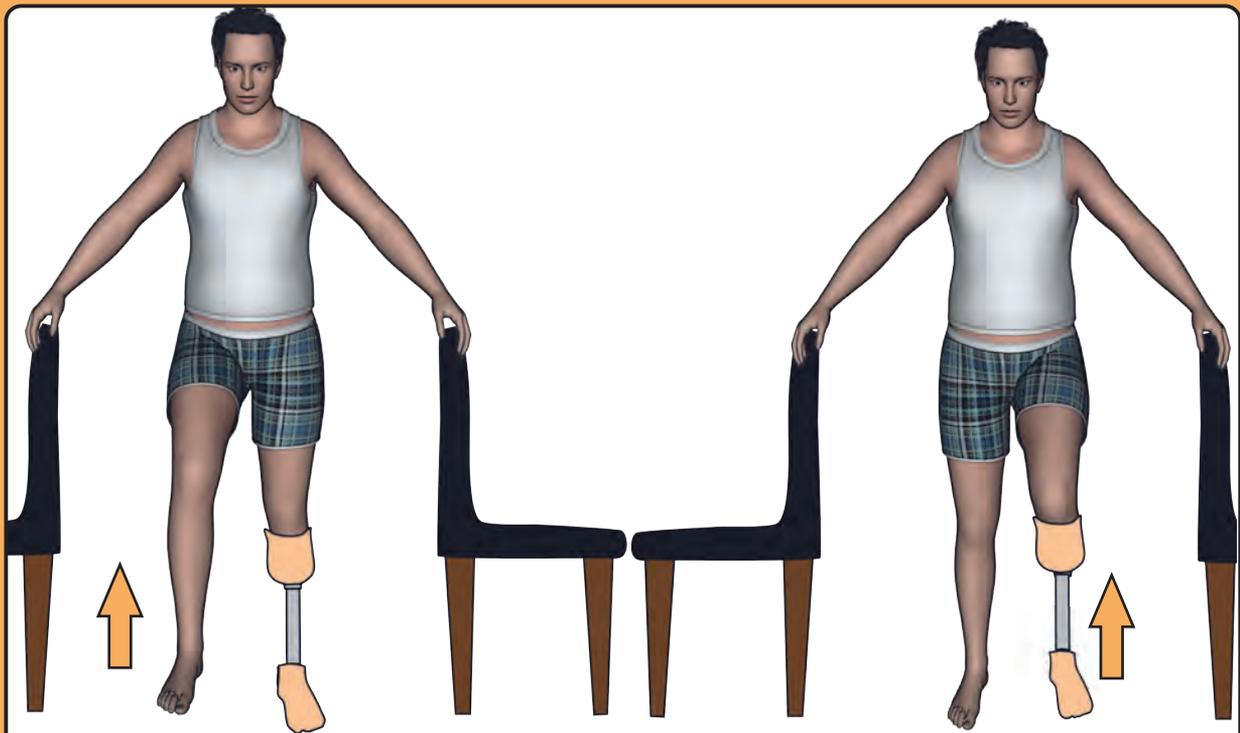
Most of these exercises involved balance training. If you are worried about losing your balance or have dizzy spells, another person can assist you by staying nearby to steady you if you begin to fall over. If you feel too unsteady do not continue.

If you are not sure how to perform these exercises correctly have a physiotherapist go through them with you. They can advise you on additional exercises and design a personalised program.

Exercises for lower limbs

Balancing

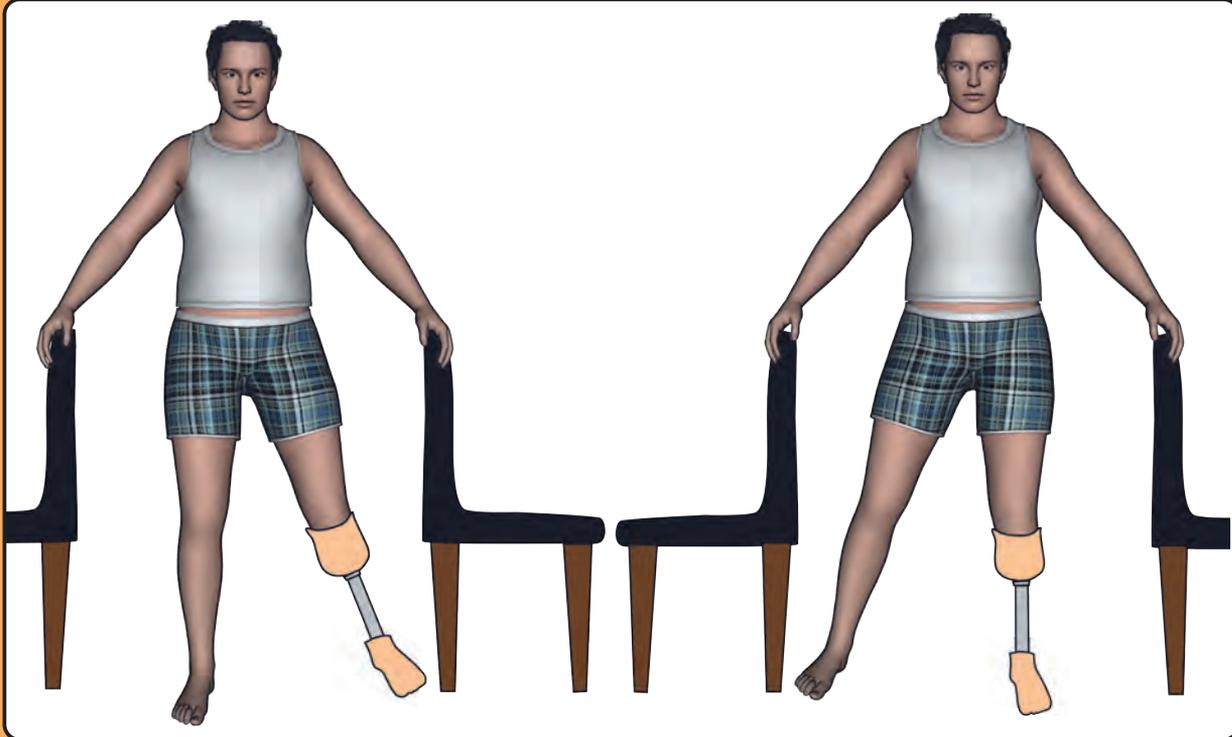
1. Raise your leg placing your weight on your prosthesis.
2. Put your leg down and switch to raising your prosthesis.⁽²⁾



Side stepping

1. Stand between two chairs and place your hands on the back of your chair for support. Stand with your feet about 10cm apart.

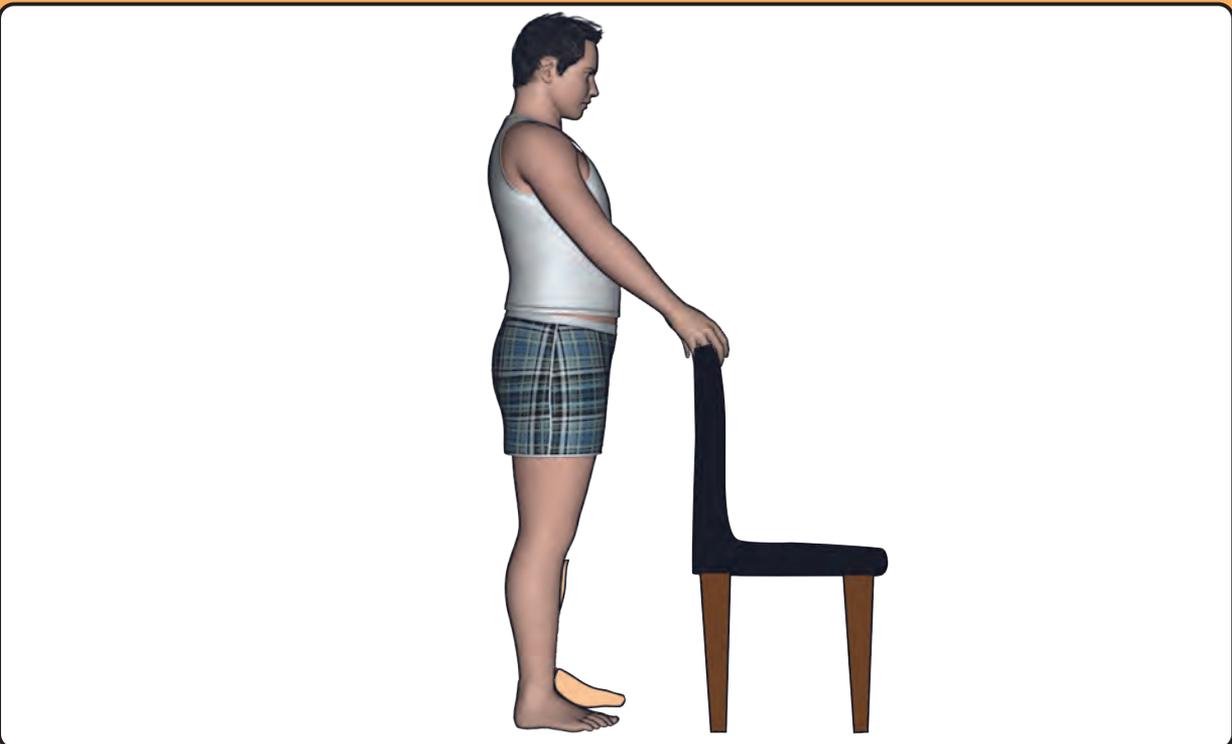
2. Shift your weight slowly from one side to the other.^(1,2)



Rocking

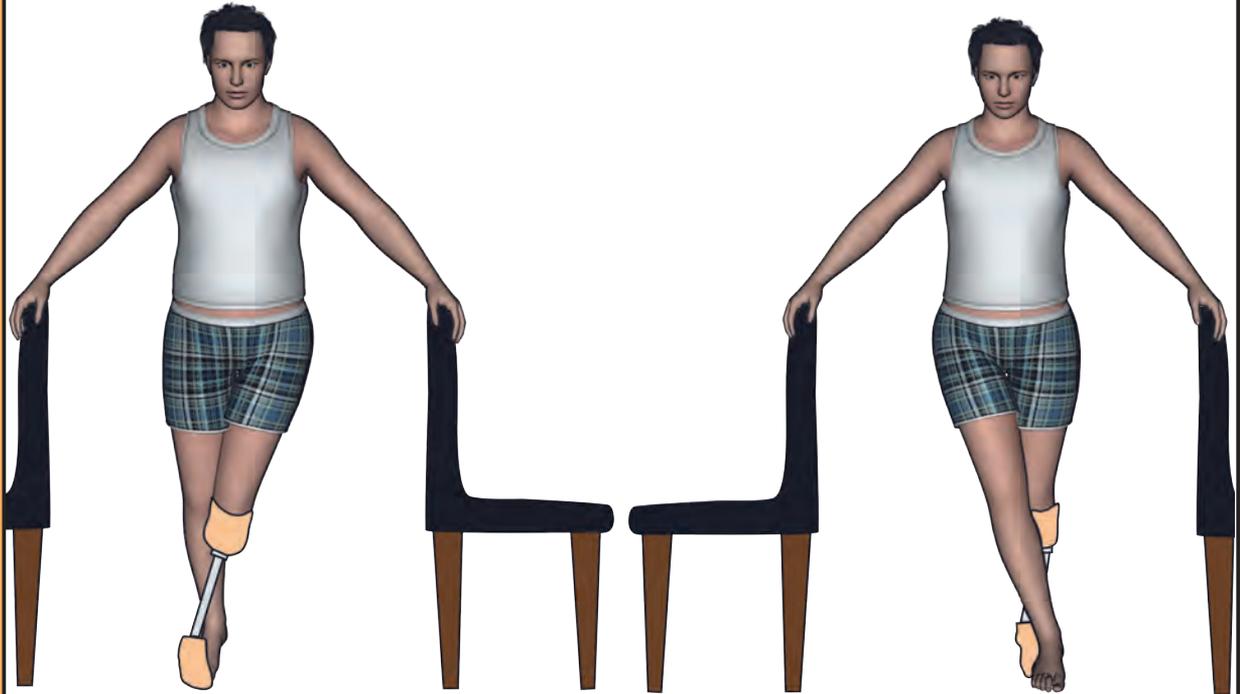
1. Stand behind a chair for support with your legs 10cm apart. Shift your weight to your heels.

2. Shift your weight to your toes.^(1,2) You do not need to lift your feet for these exercises.



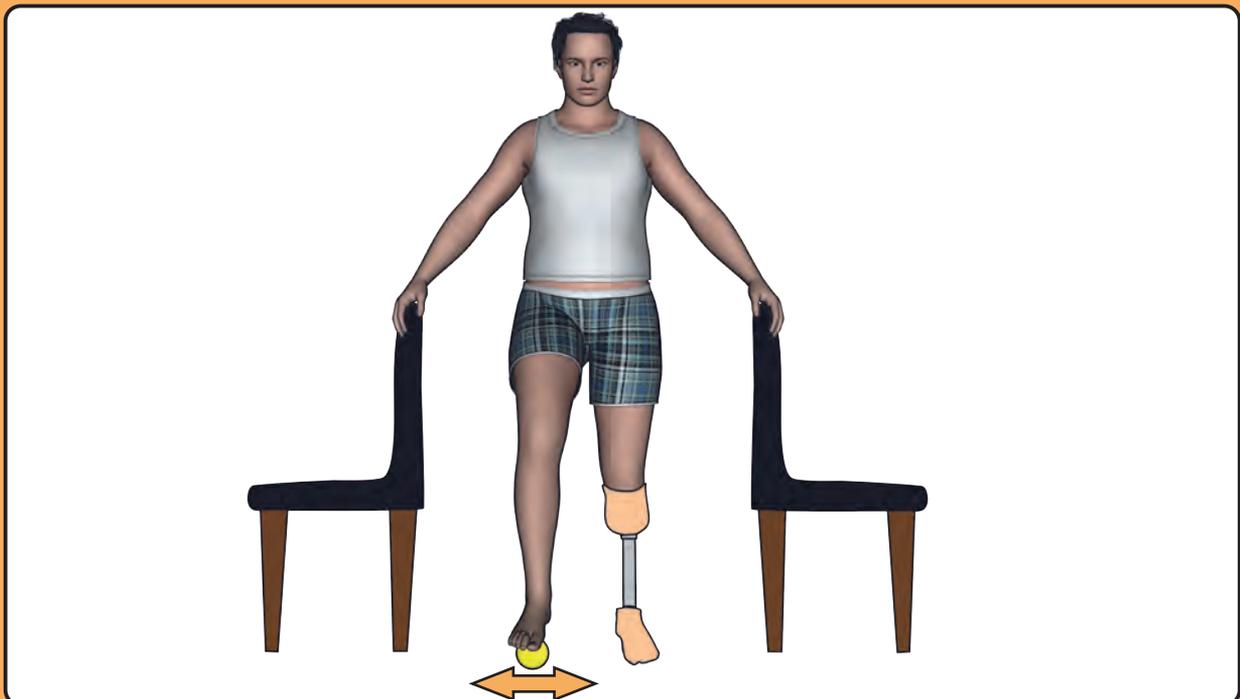
Leg crosses

1. Stand with your feet 10cm apart, put the prosthesis across the front of your other leg.
2. Return to your standing position and then switch legs. Use your arms for balance or hold a chair.⁽¹⁾



Advanced exercise: Rolling a ball (do not attempt until confident with exercising)

1. Place a tennis ball next to your leg.
2. Place your foot on the ball and roll the ball front and back and side to side or in a circle. Feel the muscles in the prosthesis as your weight shifts.^(1,2)



Exercising to make the most of your upper limb prosthesis or crutches.

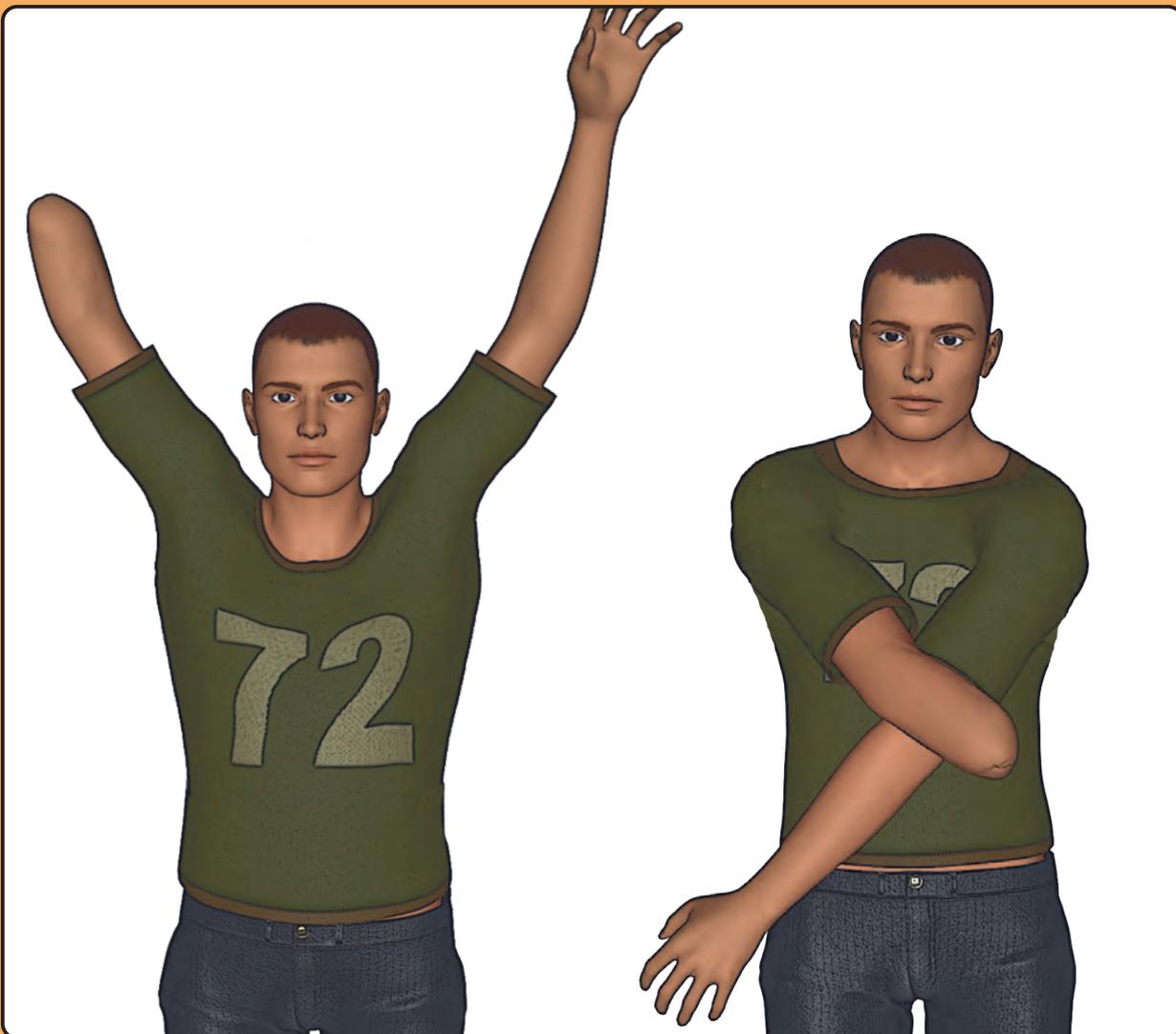
Upper limb amputees will need good strength and movement in their upper body so that they can control their prosthetic limb.⁽³⁾ Lower limb amputees can also benefit from upper body strengthening for using crutches and wheelchairs. Check with your doctor or physiotherapist before commencing an exercise program.

The following is a set of exercises that require no equipment. As you become stronger you can add weights or a resistance band. If you are not sure how to perform these exercises correctly have a physiotherapist go through them with you, your physiotherapist can advise you on additional exercises and design a personalised program for you.⁽³⁾

Exercises for upper limbs

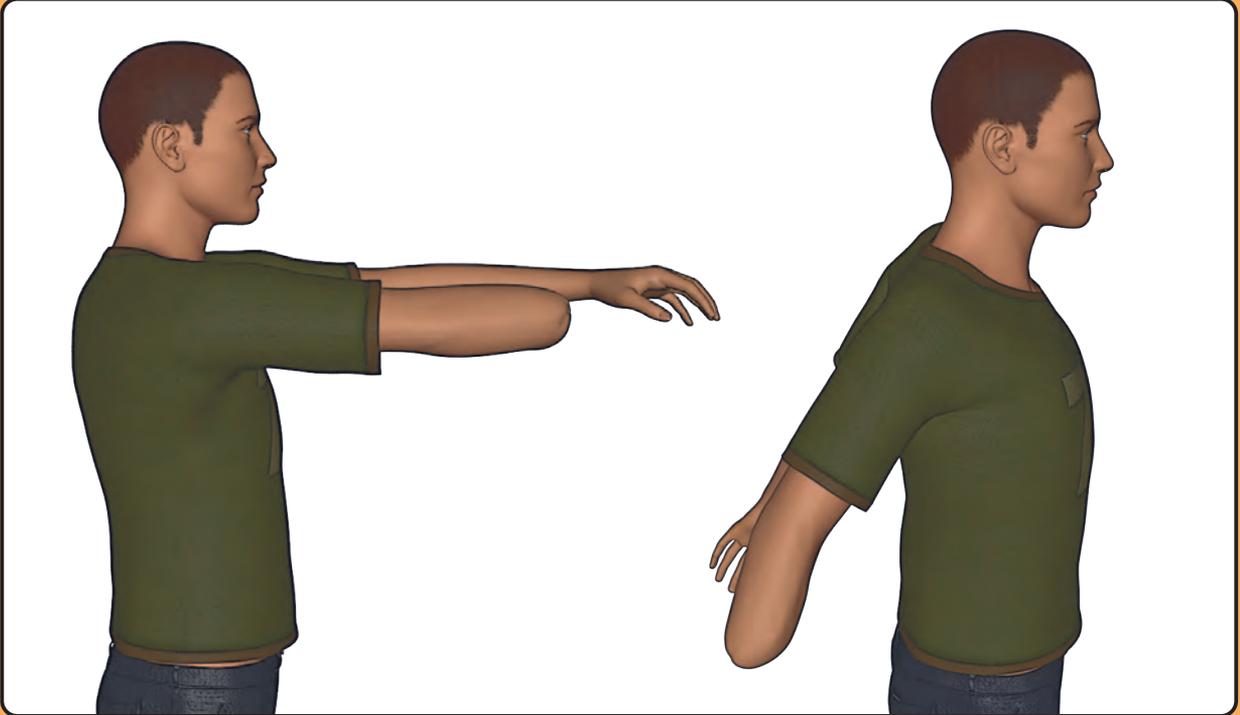
Shoulder abduction and adduction

1. Stand with your arms by your side.
2. Raise your arms as high as possible.
3. Swing your arms downwards and cross your arms in front of you.
4. Raise your arms back up to their starting position.⁽⁴⁾



Shoulder flexion and extension

1. Raise both arms to shoulder height pointing forward
2. Swing your arms backwards as far as you can.⁽⁴⁾



Elbow flexion and extension

1. Hold your arms out horizontal to your body and bend your elbows (imagine you are a muscle man)
2. Straighten your elbows keeping the arms horizontal.⁽⁴⁾



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