



# Information Booklet for New Amputees

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## About Northern Prosthetics

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Northern Prosthetics is an Australian company in the functional and cosmetic replacement of limbs, hands, fingers, feet and toes. We manufacture custom prostheses for all levels of amputees to suit a person's needs and goals. We provide service to clients from all over Australia at clinics from Coffs Harbour to the Gold Coast.

Our mission is to transform people's lives - helping them return to their life and community feeling confident and comfortable. We aim to help people walk, run, swim, hold their heads high and be free to live again.

We combine technology and innovation with anatomical design and medical science to create beautiful, functional and comfortable prostheses. We collaborate closely with each client to produce a customised, individual result.

Our technical staff are experts in the field of contemporary prosthetic manufacture and pride themselves on creating devices of the highest quality.

We create prostheses that are made to fit seamlessly with your body and integrate smoothly into your life. Our team supports all aspects of prosthetic treatment, manufacture and care



## Our Locations

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Northern Prosthetics services several locations throughout Northern New South Wales. Our headquarters is located in Ballina. This facility includes clinical space as well as our workshop for manufacture and production: The southern arm of Northern Prosthetics is located in Coffs Harbour with workshop and clinical space.

### **Northern Prosthetics - Ballina:**

**203A Southern Cross Drive,**

**Ballina, NSW, 2478**

### **Northern Prosthetics - Coffs Harbour**

**3/14 Isles Drive,**

**North Boambee, NSW, 2450**

We facilitate prosthetic clinics and can see clients at the following locations:

Ballina

Coffs Harbour

Murwillumbah

Macleay

Lismore

Grafton



## Funding Categories

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Clients of Northern Prosthetics fall under one of the following funding categories:

- National Disability Insurance Scheme (NDIS);
- EnableNSW;
- Private Insurance Company;
- Workers Compensation;
- Department of Veteran Affairs (DVA) / Australian Defence Forces (ADF)
- Self-Funded



## Stages of treatment

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The stages of treatment relate to the process that is followed through from the first appointment, to the fitting of the prosthesis, to reviewing and reassess each person's needs on a regular basis. This process may alter slightly for each individual and their needs.

### Stage 1: Assessment

This is the first stage of treatment where you will get to know your prosthetist, during this stage they will:

- Gather some personal Information to get to know you and learn about your amputation.
- Undertake a physical examination to see how your muscles and joints are moving.
- Consider all reports from your medical team.
- Provide you with all relevant information in relation to your prosthetic treatment plan.
- Consider your form of funding and organize appropriate documentation.



## Stage 2: Preparation

During this stage your prosthetist will:

- Advise you of appropriate conjunctive therapies (compression, edema management etc).
- Provide you with all relevant information in relation to your prosthetic treatment plan and future appointments.

## Stage 3: Prescription

In this stage your prosthetist will:

- Consider factors such as your activity level, limitations, home and work environment as well as your goals and expectations.
- Consider all prosthetic options and make your recommendations to maximize your functional outcomes.



## Stage 4: Measurement & Casting

Once your prescription has been approved from your funding body your prosthetist will organize a casting appointment which will consist of:

- Taking accurate measurements of your residual limb and body for any required components.
- Take a plaster cast of your stump to help create the mould for your customized socket to maximize the fit of the prosthesis.

## Stage 5: Manufacture

In this stage your prosthetist will:

- Modify the cast taken to maximize socket fit by relieving bony areas and applying pressure over areas of soft tissue.
- Make socket from this cast and assemble your prosthesis by attaching the socket to connective componentry and a prosthetic foot.



## Stage 6: Fitting

In this stage your prosthetist will:

- Fit the prosthesis and ensure that all areas of the socket are fitting comfortably and properly.
- Optimize your walking alignment to make sure that you are comfortable, stable and safe when walking.
- Once you have trialed the prosthetic limb and it is deemed suitable it is reviewed and evaluated and a definitive prosthesis will be manufactured.

## Stage 7: Rehabilitation

In this stage your prosthetist will:

- Work with your physiotherapist during your rehabilitation process. This is to help train you to wear your prosthesis and help your muscles regain their strength. This process will provide you with maximum mobility and independence and will also help to increase your safety when wearing a prosthesis.
- Help you learn to care for your prosthesis and its componentry as well as your residual limb before and after wearing the prosthesis.





## Stage 8: Check

In this stage your prosthetist will:

- Organise future appointments to make sure your prosthesis is safe and functional over a period of time. These appointments will incorporate the servicing and maintaining of components as well as reviewing the fit and function of the prosthesis.
- Provide you with an informational sheet for your prosthesis including all important information on how to use your prosthesis in everyday life.

## Stage 9: Re-assessment

In this stage your prosthetist will:

- Undertake another personal interview and thorough physical examination.
- Recommend you visit us for regular checkups, so we can determine if adjustments need to be made.



## Physiotherapy

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To be able to safely and efficiently use a prosthetic limb, physiotherapy is required.

It is the role of a physiotherapist to make sure you're safe when using your prosthesis. For new amputees, inpatient rehabilitation is essential in learning how to properly use and care for your prosthesis.

During rehabilitation you will work with your physiotherapist daily and complete a range of different exercises, all designed to help you become a safe and functional prosthetic user.

During this inpatient rehabilitation you will learn to:

- Learn how to safely put on and take off your prosthesis.
- Learn how to transfer with your prosthesis safely, i.e. from chair to bed.
- How to get off the ground if you have a fall.
- How to safely walk with your prosthesis.



## Amputee Care

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### **Skin Care**

- Check your stump daily for any marks or breakdowns.
- If you have trouble seeing all areas of your skin use a hand mirror or get someone to help you.
- Wash, clean and dry your stump every day.

### **Foot Care**

- Check your foot daily for any marks or changes.
- Always wear safe and comfortable footwear.
- Never go barefoot.
- Wash and dry your feet properly every day.



## **Hygiene**

- Wash your stump in soapy water, rinse and dry well.
- Wash stump socks and liners daily in pH neutral soap to reduce the risk of an infection.
- Change stump socks and liner daily.
- Don't wear damp or wet socks or liners.

## **Prosthetics**

### **Stop wearing your prosthesis:**

- If it is painful
- If it is uncomfortable
- If you don't feel safe

**Your prosthesis should never cause you pain. If your prosthesis doesn't feel right see your healthcare provider immediately.**



## Looking after your prosthesis

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It is important that you look after your prosthesis and keep it in good condition.

To keep it clean:

- Make sure you wash the inside of your liner and socket everyday by wiping it with warm water and pH neutral/chemical free soap. Leave it to dry overnight.
- Put a clean sock on everyday and wash socks daily.
- Do not sleep whilst wearing your prosthesis.
- Do not leave it in the car on hot days.
- Do not submerge your prosthesis in water if it is not a specific waterproof prosthesis. Doing this can rust and damage the components.

You should return to your prosthetist for regular 6 month or yearly appointments to get your prosthesis and componentry checked. Do not adjust your prosthesis yourself as any alteration can have an impact on your walking and safety.

## Rigid Removable Dressings (RRD)

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The purpose of your RRD is to help reduce swelling in your stump and to protect it in case of a knock or a fall.

Your RRD may also:

- Reduce pain and prevent other stump complications.
- Reduce the time between having your amputation and getting an artificial leg.

**Do not remove your cast for more than 10 minutes at a time as your stump may swell.**



(a)



(b)



## Prosthetic Sock Management

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Once you are regularly wearing your prosthesis, you may find that your residual limb will shrink throughout the day, causing your prosthesis to feel loose and uncomfortable. The best way for you to restore a comfortable fit is by adding a sock. These will be supplied to you at your first fitting appointment. Starting with a thin sock then moving to a medium, then a thick sock if there is still room inside the socket. If adding or removing socks doesn't work, call your prosthetist.

### **Try adding a sock if your socket is becoming too loose on your limb.**

Points to remember:

- Make sure there are no wrinkles or creases in the sock before putting on your prosthesis. This may cause discomfort and blistering like a creased sock inside your shoe would.
- Make sure your sock is clean and dry to reduce the risk of infection.
- If you are wearing a liner with a pin at the bottom, your sock will have a hole in the bottom of it. Make sure your pin is sticking all the way through the sock, this will make sure the sock is not covering the pin when you put your stump into the socket. You may not have a pin at the bottom of your liner, if this is the case your sock will not have a hole in it.



**It is common to need frequent adjustments to your socket within the first year as your stump is stabilising.**

**Keep your body weight in mind. An increase or decrease in your weight can change the way your prosthesis fits. Let your prosthetist know if your weight has changed so adjustments can be made.**



## Changing Shoes

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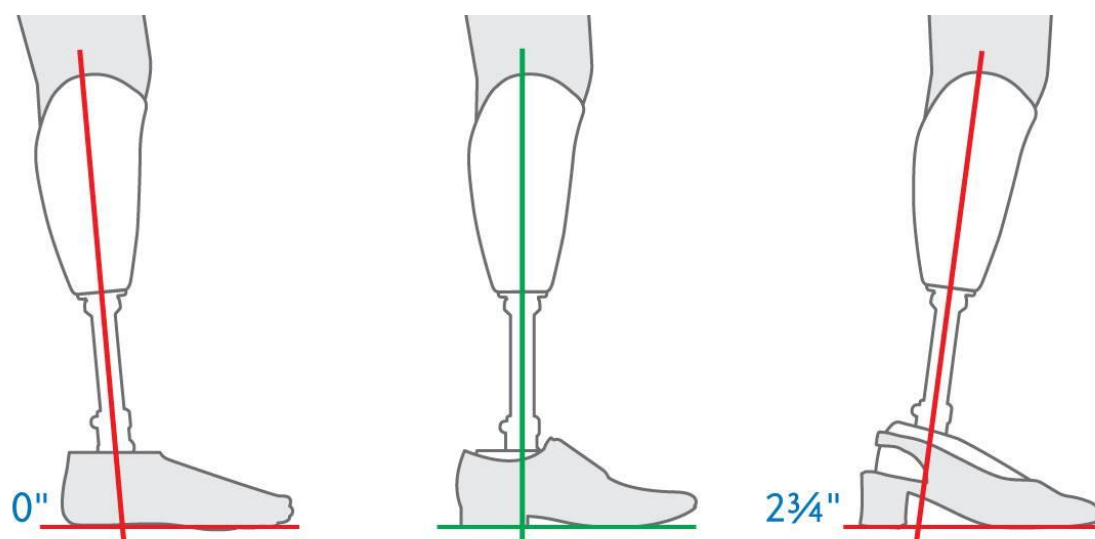
When your prosthesis is fitted it is adjusted to your footwear.

Changing your shoes that have a different heel height can affect the way your prosthesis works.

If you change to a lower heeled shoe, your prosthesis will lean backwards, and it will feel like you are walking up a hill.

If you change to a shoe with a higher heel your prosthesis will tip forward and it will feel like you are walking down a hill.

**If you change shoes, try to make sure they have a similar heel pitch to minimise the change in alignment.**



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HEEL HEIGHT MALALIGNMENT



## Stump pain and phantom pain

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### **Phantom Pain**

Pain felt in the absent part of your limb which can feel like cramping, burning, voltage or tightness.

Phantom pain can lessen over time as you wear your prosthesis. This pain can be helped with gentle massage or by wearing a stump shrinker when not wearing the prosthesis.

### **Stump Pain**

Stump pain is pain that is felt in the residual limb and can be caused due to damaged nerves near the site of amputation. A rehabilitation specialist can diagnose stump pain and prescribe medications to help ease it.



## Helpful Contacts

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- **Limbs4Life** – 1300 782 231 or [info@limbs4life.org.au](mailto:info@limbs4life.org.au)
- **Amputee Association NSW** – 1800 810 969 or [amputees@amputeesnsw.org.au](mailto:amputees@amputeesnsw.org.au)
- **Diabetes Australia** – 1300 136 588 or <https://www.diabetesaustralia.com.au/>
- **Beyond Blue** - <https://www.beyondblue.org.au/>

## Definitions

### Definitions for Lower Limb Amputees

Term	Meaning
<b>Adapter</b>	Adapters are prosthetic components used as connections between various functional components such as the connection between the socket and the knee or parts that connect the prosthetic knee to the prosthetic foot.
<b>Amputation</b>	An amputation is the severing of a bone in healthy tissue or the severing of a body through a joint (disarticulation). There are various amputation levels. Remaining anatomy is known as the stump, residual limb or residuum.
<b>Amputation level</b>	The amputation level is the level (height) at which a body part is severed. Basic amputation levels in lower limb prosthetics are: <ul style="list-style-type: none"> <li>• Partial foot amputation</li> <li>• Ankle disarticulation</li> <li>• Trans-tibial or Below- knee amputation</li> <li>• Knee disarticulation or Through-knee amputation</li> <li>• Trans-femoral or Above-knee amputation</li> <li>• Hip disarticulation</li> </ul>
<b>Bilateral</b>	On both sides, i.e. both legs are affected.
<b>Carbon prosthetic foot</b>	Carbon is a very lightweight and robust material. It is also highly flexible and has a resilient spring effect. A prosthetic foot that is made primarily from carbon fibre is therefore very lightweight. Users benefit from the high energy return while walking.
<b>Contralateral side</b>	The side that is opposite the amputated side.
<b>Check socket/Prosthesis</b>	A prosthetic socket intended to test the socket shape, volume, function and design of the final prosthesis. Usually made of a clear thermoplastic material that is heat moldable to allow for socket shape adjustments.
<b>Cosmetic Cover</b>	The outer covering of the prosthesis that makes it look realistic or natural, as closely looking to the sound limb as possible.
<b>Definitive Prosthesis/Socket</b>	Permanent prosthesis or socket that is fitted when the residual limb has stabilized in shape and volume. This socket will not last forever and will still require replacement.
<b>Flexion Contracture</b>	Muscle tightness at the hip, knee or ankle that stops you from straightening your leg. Can happen if always sitting in a chair or laying in bed with leg bent. Can increase rehabilitation time as limb needs to be stretched out. Reduces ability to wear prosthesis until limb is straightened.
<b>Gait</b>	Walking pattern.
<b>Gait Deviation</b>	A walking pattern that is different to 'normal'.



Term	Meaning
<b>Liner</b>	The liner is a sock-like cover for the residual limb and acts as a "buffer" between the soft tissue of the residual limb and the hard shell of the socket. It protects and cushions delicate and pressure-sensitive areas of the residual limb and connects the residual limb to the prosthesis.
<b>Mobility grade</b>	<p>Your level of activity plays an important role for the prosthetic fitting. Therefore, the following mobility grades have been developed in the prosthetic industry :</p> <ul style="list-style-type: none"> <li>• Low mobility grade Indoor walkers have a low mobility grade. They can cover short distances on an even surface and at low speed.</li> <li>• Moderate mobility grade Restricted outdoor walkers have a moderate mobility grade. They are also able to walk on uneven surfaces and navigate low obstacles such as curbs and steps.</li> <li>• High mobility grade Unrestricted outdoor walkers have a high mobility grade. They can walk on almost any surface and at various speeds and cover longer distances. Able to cross most obstacles, they can work as well as participate in therapeutic and other activities.</li> <li>• Especially high mobility grade Unrestricted outdoor walkers with especially high requirements are able to master even more difficult challenges in sports, a work environment or during leisure activities with their prosthesis.</li> </ul>
<b>Multidisciplinary Team</b>	The amputee rehabilitation team consisting of members from the medical and allied health disciplines. i.e. prosthetist, physiotherapist, rehabilitation specialist, occupational therapist.
<b>Phantom Pain/Sensation</b>	Pain or sensation in the residual limb that feels like the entire limb is still there.
<b>Prosthetic knee joint</b>	A prosthetic knee joint is an artificial knee that serves as a functional replacement for the physiological knee. The various knee joints support the individual requirements according to the mobility of the amputee.
<b>Residual Limb</b>	The section of the limb remaining after the amputation 'stump'.
<b>Rigid Removable dressing</b>	A removable rigid dressing that is applied within hours or days after amputation surgery to control swelling, help healing and provide protection.
<b>Socket</b>	The prosthetic socket joins your stump to the prosthesis and fulfills an important function: it ensures optimum suspension and the proper fit of your prosthesis – which makes it crucial for acceptance and the wellbeing of the user. As every stump is unique, each socket is custom made to suit the individual.



Term	Meaning
<b>Sound side</b>	This refers to the in-tact limb in comparison to the amputated limb. E.G. left side transtibial amputation, right leg is the sound side
<b>Stance phase</b>	The time from where the heel contacts the ground at initial stance until the moment of toe off, when the foot leaves the ground.
<b>Swing phase</b>	The swing phase is the moment when the foot leaves the ground (toe off) swings freely in forward progression to advance the next step.
<b>Torsion adapter</b>	A torsion adapter permits a rotation movement of the prosthesis without having to move the foot. It aims to reduce the shear forces being transferred between the ground and the stump.
<b>Transfemoral</b>	Amputation of the lower limb between the hip and the knee, through the femur. Also known as above knee.
<b>Transtibial</b>	Amputation of the lower limb between the knee joint and ankle joint, through the tibia and fibula. Also known as below the knee.
<b>TSB (total surface bearing)</b>	Total surface bearing. An even spread of load over the residual limb within the socket. A common type of socket that is paired with a silicone liner.

#### Definitions for Upper Limb Amputees

Term	Meaning
<b>Abduction</b>	This generally refers to a movement away from the centre of the body. In relation to the hand, it describes moving the fingers apart (opening the hand) or spreading or separating the fingers.
<b>Adduction</b>	A movement towards the centre of the body. In relation to the hand, it describes moving the fingers together (closing the hand).
<b>ADL</b>	Activities of daily living (ADL) such as getting dressed, eating, sleeping, going to the toilet.
<b>Amputation</b>	An amputation is the severing of a bone in healthy tissue or the severing of a body part in a joint (disarticulation). There are various amputation levels.
<b>Amputation level</b>	The amputation level is the level (height) at which a body part is severed. Amputation levels in upper limb prosthetics are: <ul style="list-style-type: none"> <li>• Finger/thumb amputation</li> <li>• Partial hand amputation</li> <li>• Transcarpal/carpal amputation – through hand or wrist</li> <li>• Transradial amputation (below-elbow amputation)</li> <li>• Elbow disarticulation</li> <li>• Transhumeral amputation (above-elbow amputation)</li> </ul>



Term	Meaning
<b>Bilateral</b>	On both sides, i.e. both arms for example are affected.
<b>Body powered prosthesis</b>	Cable-controlled arm prosthesis. They are controlled by the patient's own body power, e.g. the residual limb and/or the shoulder girdle. Movements are triggered via a body harness on the prosthesis.
<b>Contralateral side</b>	The side that is opposite the affected side.
<b>Hybrid prostheses</b>	Hybrid prostheses always use two different technologies together at the same time. For example, an externally powered prosthesis (MyoHand) can be combined with a body-powered prosthesis (elbow joint) in an upper arm fitting. Opening and closing the hand is externally powered by electricity (myosignals), while flexing and extending the forearm in this case is performed using a body-powered harness.
<b>Lock system</b>	The locking pin and adapter for locking the liner and prosthesis together.
<b>Liner</b>	The liner is a sock-like cover for the residual limb and acts as a "buffer" between the soft tissue of the residual limb and the hard shell of the socket. It protects and cushions delicate and pressure-sensitive areas of the residual limb and connects the residual limb to the prosthesis. Liners are pliable and skin-friendly, yet firm enough to prevent unwanted elongation. Arm liners provide wearer comfort and safety.
<b>Myoelectric arm prosthesis</b>	Myoelectric prostheses are externally powered prostheses. Every muscle contraction generates electrical voltage on the skin, which is used to control the electrically driven prosthesis.
<b>Passive arm prostheses</b>	Passive arm prostheses are worn to restore the outward appearance and are preferred by users to whom their external image is particularly important. However, the functional possibilities are limited to simple counter-support when grasping objects.
<b>Proportional</b>	The gripping force and gripping speed can be controlled by muscle signals of various strength.
<b>Proprioception</b>	Feedback from receptors in the tissue (skin, muscle, capsule, tendon).
<b>Diagnostic socket / check socket</b>	A prosthesis intended to test the socket shape, volume, function and design of the final prosthesis. Usually made of a thermoplastic material that is heat moldable to allow for socket shape adjustments
<b>Quick Disconnect Wrist</b>	A type of wrist unit used for upper limb prostheses to allow for changing of hand components.