



ottobock.

Therapy for Leg Amputees

Ideal preparation for the prosthetic
fitting in your Ottobock Competence Center

Quality for life

Content

We care for your mobility.....	4
Step on your way to regained mobility.....	6
Treatment circle.....	7
Therapy after amputation.....	8
1 Oedema Therapy.....	10
1.1 Positioning/Bedding	11
1.2 Correct Sitting	12
1.3 Mobilisation	12
1.4 Early Compression Therapy	13
1.5 Compression Bandage	14
1.6 Silicone Liners	16
1.7 Additional Compression Therapy	17
2 Muscular training	18
2.1 Stretching the Residual Limb Musculature	18
2.2 Muscle Strengthening on the Sound Side	19
2.3 Muscle Strengthening of Residual Limb	20
2.4 Muscle Strengthening of Torso	20
3 Skin Care and Scar Treatment.....	22
3.1 Desensitising the Skin	22
3.2 Skin Care	23
3.3 Scar Treatment	24
Your individual fitting	27



We care for your mobility

Helping people maintain or regain their freedom of movement has been our central mission at Ottobock for over 90 years now. As a manufacturer and supplier of high-quality products and services for people with limited mobility, we actively encourage an integrative approach to therapy.

Through consultation with prosthetists, doctors, therapists, universities and other research institutions, combined with the know-how derived from the development of our products and services, we have been able to develop expertise that contributes to your successful rehabilitation.

Through the continuous qualification of our Ottobock Competence Center clinical personnel, we assure the dissemination of our know-how around the world. In this way, we are able to offer you maximum possible mobility and independence through individual and innovative fitting solutions.

Step on your way to regained mobility

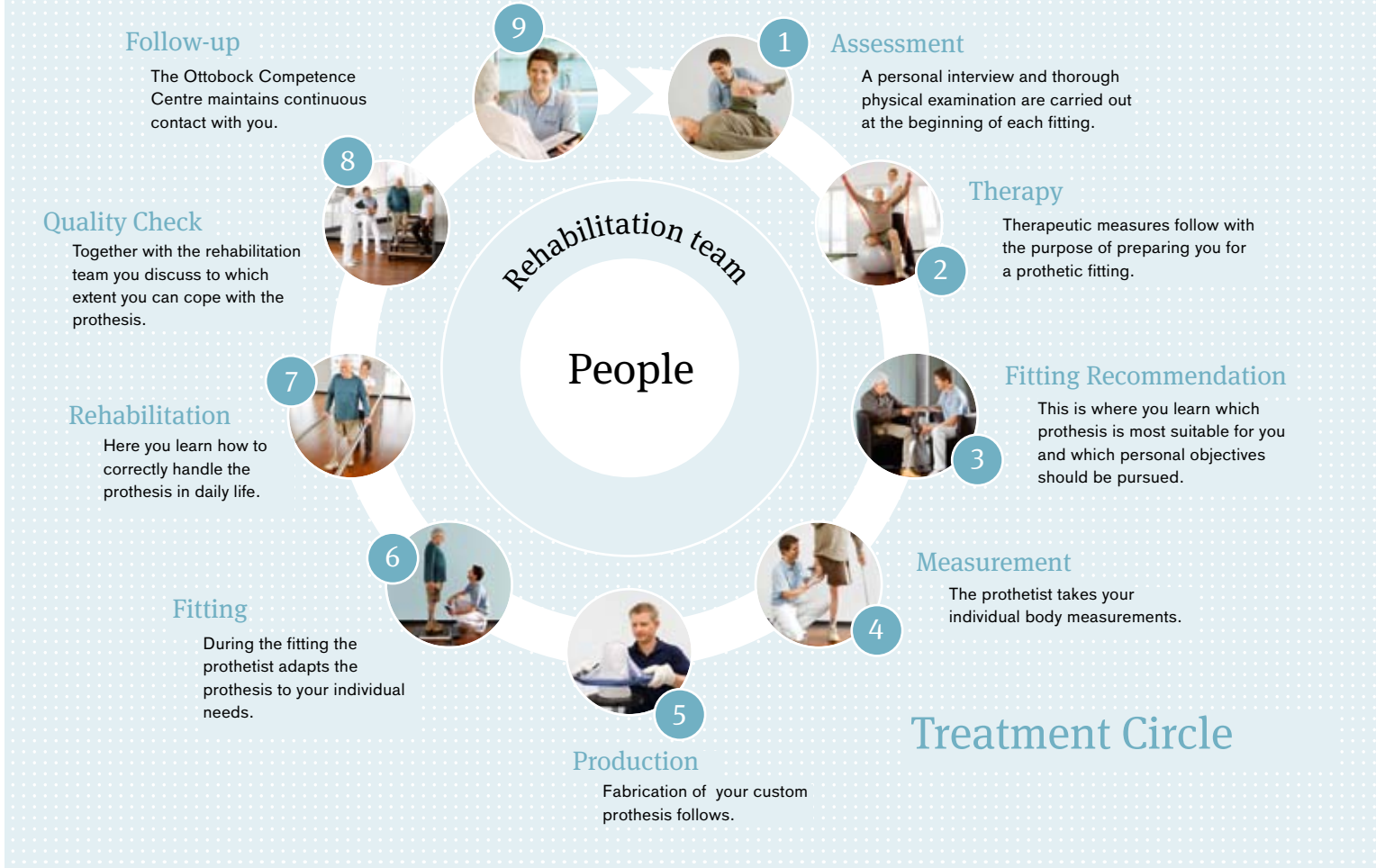
The following information is provided specifically to prepare you for the fitting with your new prosthesis. This will make it easier for you to use it optimally later on. Our joint focus is on restoring your mobility. We as an Ottobock Competence Centre want to support you on your way back into an independently lead life.

There are no fixed rules for the procedures or duration of the rehabilitation process following amputation. This process takes several months on average and is influenced by a variety of factors. Please see following pages to understand the treatment circle awaiting you.

The options offered by modern prosthetics from Ottobock meet the requirements of daily life. However, your active participation is crucial for fitting success. An individually Ottobock prosthesis

and your personal rehabilitation team will help you in this mission. This team normally includes doctors, therapists, prosthetists and nursing staff.

We invite you to learn more about our therapy recommendations in this brochure. However, the advice of your personal rehabilitation team always takes precedence because this team is in best position to assess your individual needs.



Therapy after amputation

Since we cannot examine each individual case in this brochure, the following therapy focuses on exercises for above knee amputees. Nevertheless the aims of the therapy are the same for below knee amputees. For individual exercises please check with your therapist accordingly.

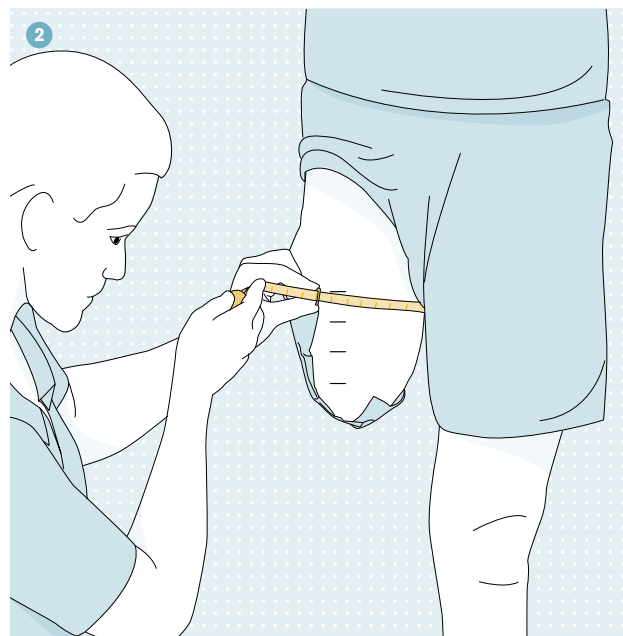
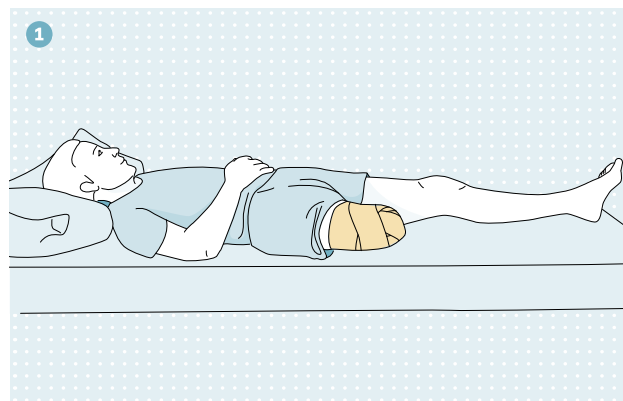
Initial therapy measures begin shortly after the amputation. The wound is dressed and prepared for wearing a prosthesis. As soon as the surgical wound has healed well, the actual prosthetic fitting and rehabilitation process begins. Your personal involvement becomes more and more important in the course of the therapy process. Your rehabilitation

team will support you during this time. Should you notice that certain measures identified in this brochure are not being carried out, please talk to your rehabilitation team. Your therapists are in the best position to evaluate if the measures in question would be suitable for you.

1. Oedema Therapy

Initial swelling (oedema) of the residual limb (amputation side) tissue after the surgery is expected. This swelling is a normal healthy reaction to the surgery. It usually subsides after some weeks. The wound is generally dressed loosely until the stitches are removed. Initially, pressure must not be applied to the residual limb. In order to ensure the swelling reduces as fast as possible, positioning the residual limb at the level of the heart in the first few days following the surgery is important (1). Your nursing staff will explain the best positioning for you.

The circumference of the residual limb should be measured regularly in order to assess whether the swelling is going down (2). Please note that the same measuring points must be used and the results should be documented on measurement forms. If this procedure is not followed, the results are not comparable and it is not possible to discern whether the swelling is reducing. If swelling of the residual limb persists, the wound cannot heal as efficiently, which consequently increases the time before a prosthesis can be fitted.

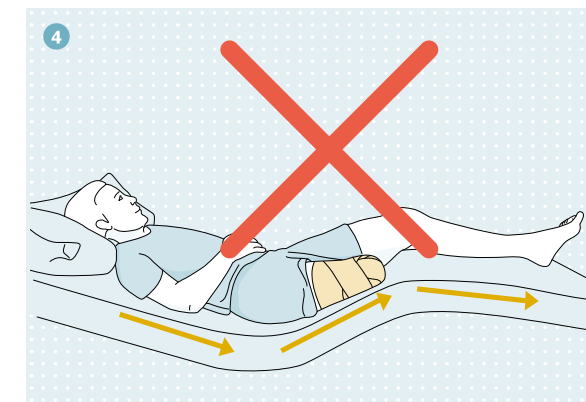
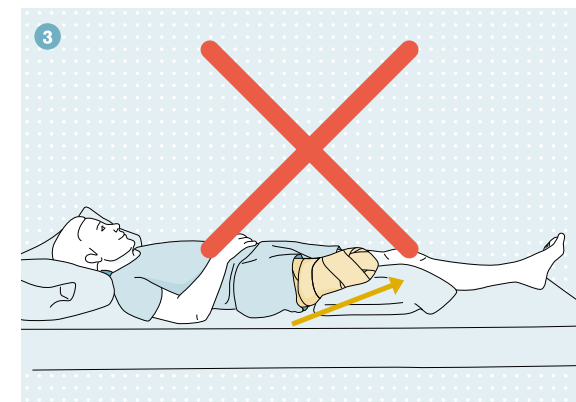


1.1. Positioning/Bedding

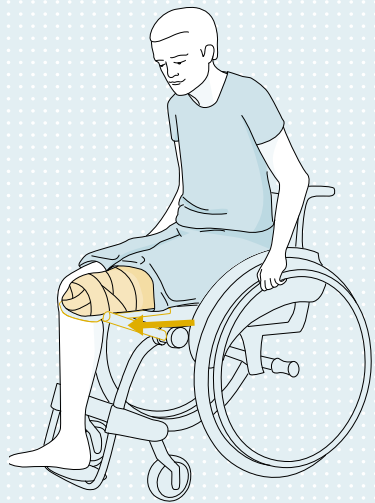
Even in the hospital bed, you should assure the correct body posture so that your muscles do not shorten nor your joints stiffen – which may eventually prevent full use of your joints. Initially most patients assume that a comfortable, pain-free position is the right position to adapt. However, experience has shown that this is not always the case! In fact, the residual limb should be extended as much as possible (1). Under no circumstances should the residual limb be positioned in a flexed position for an extended period of time – e. g. on a cushion (3) – as the muscles in the hip region will shorten, and residual limb mobility will be reduced.

A firm mattress is another preventive measure. It keeps your buttocks from sinking into the mattress as you lie on your back, which results in excessive hip flexion. (4)

Following an above-the-knee amputation, we recommend lying on your stomach for approximately 30 minutes twice a day. Turn your head to the sound side during this time. This produces a stretch on the hip flexor musculature of the residual limb. Thereby, shortening of these muscles is counteracted.



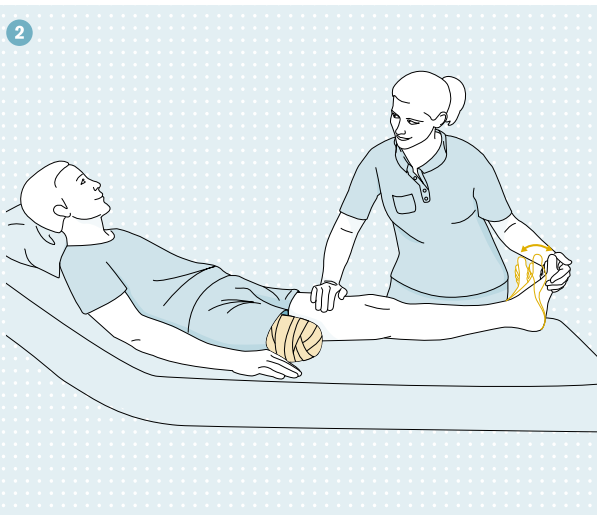
1



1.2. Correct Sitting

After the surgery, you may initially require a wheelchair. A firm seat should be used. This helps prevent spinal column changes. While in a wheelchair a below knee amputee should use a residual limb support (1) to prevent a knee contracture and residual limb swelling.

2



1.3. Mobilisation

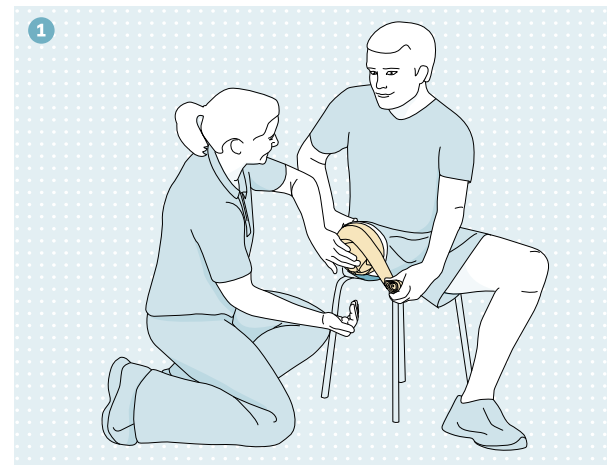
Move your residual limb several times per day. This ensures your joints do not lose mobility. Early mobilisation is important since it has a positive effect on activating circulation and will help your balance. An early exercise would for example be sitting on a chair without backrest. Ask your therapist to show you some appropriate exercises (2). A combination of correct positioning and movement is essential.

1.4. Early Compression Therapy

After the surgery, you will receive a wound dressing which will be changed regularly. This is followed by compression therapy and lymphatic drainage. The exact point in time to start with compression therapy is determined by the attending doctor.

The purpose of compression therapy and lymphatic drainage is to continue to reduce the oedema and prepare your residual limb for your first prosthesis. Residual limb compression helps optimising the adaptation to your prosthesis. In addition, compression promotes circulation in the residual limb. This reduces pain and helps improve the healing process.

1



An important part of oedema therapy is the manual lymphatic drainage. For this, your therapist stretches and gently massages your residual limb's skin in order to stimulate the lymphatic system underneath. The aim is to encourage the natural drainage and to make the liquid which is pent-up in the residual limb after amputation circulate again throughout the whole body. Regular drainage helps to reduce the swelling of your residual limb more quickly.

The drawings show various possible compression therapy techniques: Wrapping the residual limb (1 and next page) or wearing a prefabricated silicone liner. The level of the compression can be assessed based on skin colour or temperature. Importantly, the bandage / the liner must be removed from time to time in order to check the residual limb, especially in the case of circulatory and sensitivity disorders.

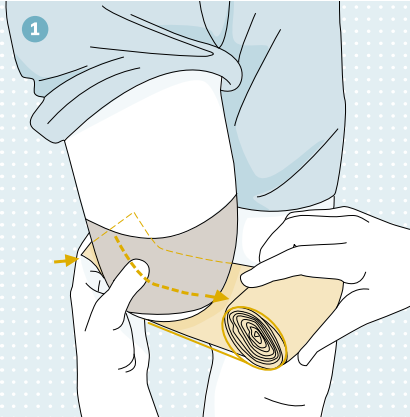
1.5. Compression Bandage

The compression bandage is used to regulate pressure from day to day, or even over the course of a day. Since this method requires a certain amount of practice and experience, the bandage should either be applied by qualified personnel or you should be instructed in the proper wrapping technique by nursing staff or therapist (Figure 1-7).

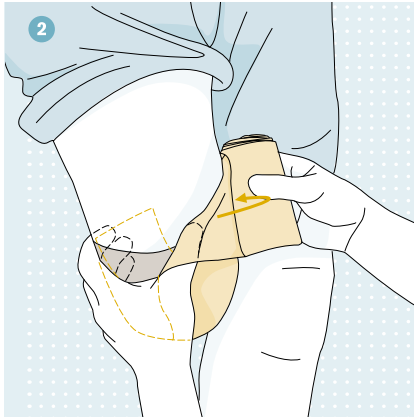
It is often necessary to use two bandages to wrap the whole residual limb and to apply appropriate compression. You can also use the wrapping technique described below for the second bandage. It is important to avoid constriction of the residual limb by the bandage; you should not experience pain.

You need:

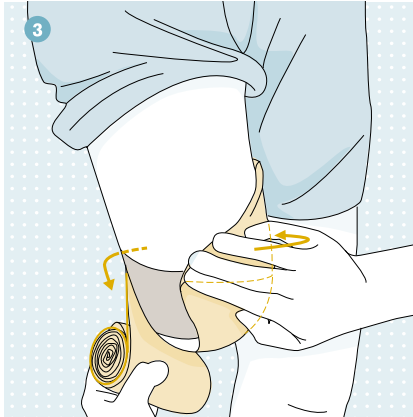
- 1. Cohesive conforming bandage
- 2. Compression bandage
- 3. Tape
- 4. Scissors



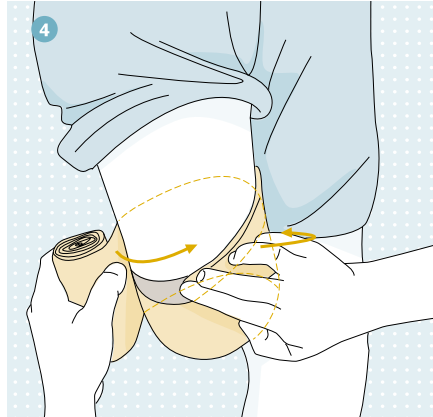
1. Begin by applying a cohesive conforming bandage to prevent the compression bandage from slipping. To do this, wrap the cohesive bandage once around the end of your residual limb. Then you pull the bandage from the back of the residual limb to the front and start to wrap it around.



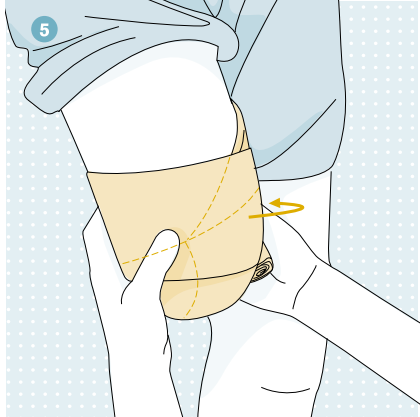
2. To fix the first layer keep a tight hold on the bandage with one hand and fold it down with the other.



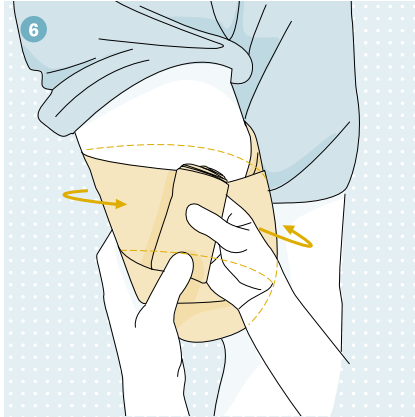
3. While applying the bandage, note that pressure should be greatest at the end of the residual limb and gradually decrease towards the body.



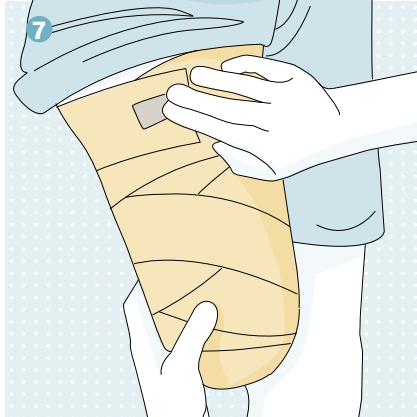
4. Pull the compression bandage tight while wrapping it behind the residual limb...



5. ... and lay it more loosely while wrapping it towards the front of the limb.



6. Continue bandaging in diagonal turns in a figure-of-eight to ensure maximum stability.

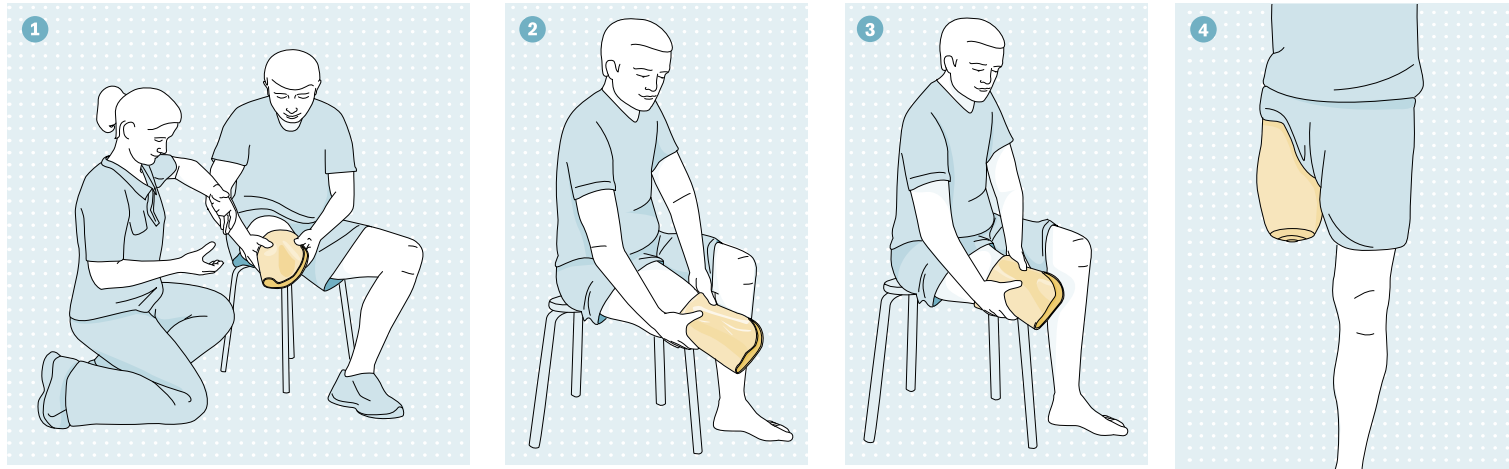


7. Please bandage as high as possible, probably you will need more than one bandage. When finished, use tape to hold the end of the elastic bandage in place.

1.6. Silicone Liners

Alternatively to bandages, silicone liners can be a quick and easy solution to use for compression therapy. Although it is not as individual as the compression with a bandage. They are available in a variety of prefabricated sizes. In order to generate a consistent and even pressure, it is important to ensure there is no air trapped between the end of the residual limb and liner (Figure 1-4)! You may

experience increased perspiration inside the liner initially. This problem will self-correct after you have worn it for some time. In order to prevent possible skin irritation, you can apply Ottobock Procomfort Gel to the skin of the residual limb near the brim of the liner. Cleaning the silicone liner after each use is also very important. For more information, please consult instructions for use on liners.



1.7. Additional Compression Therapy

As soon as the residual limb volume has stabilised over an extended period of time – that is, when the measured circumference of your residual limb is no longer decreasing – the prosthetic fitting process can begin. Compression should be continuously maintained up to this point. Your rehabilitation team will show you or your family how you can do this yourself. If you only wear your prosthesis for short periods of time at the beginning of the fitting process (e. g. for fittings in our centre), you should continue wearing your compression bandage or liner the rest of the day. Once you are wearing your prosthesis for extended periods of time, additional compression is normally no longer required.

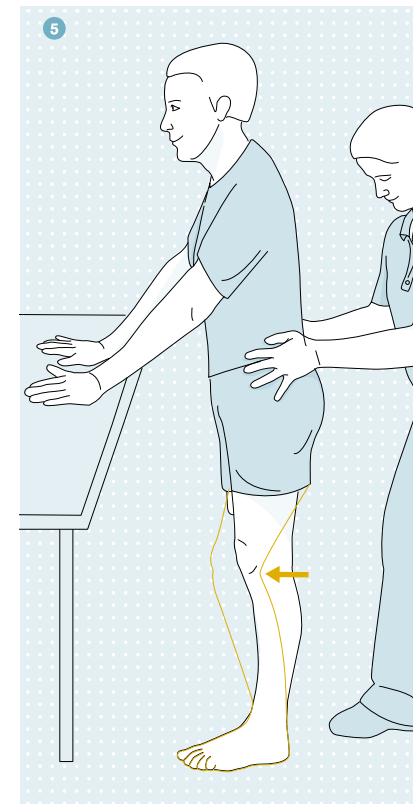
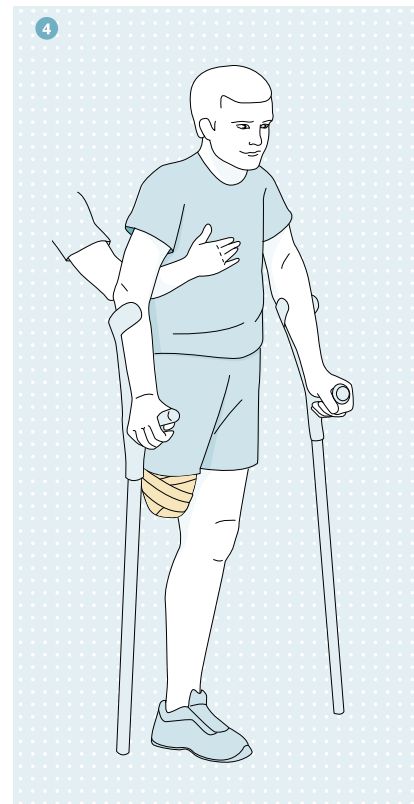
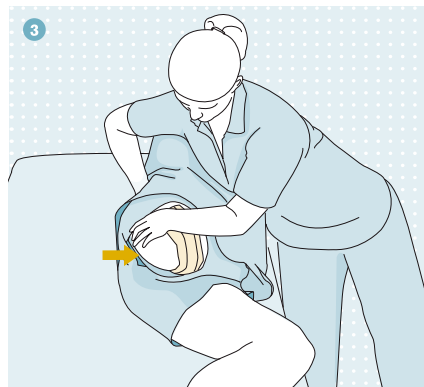
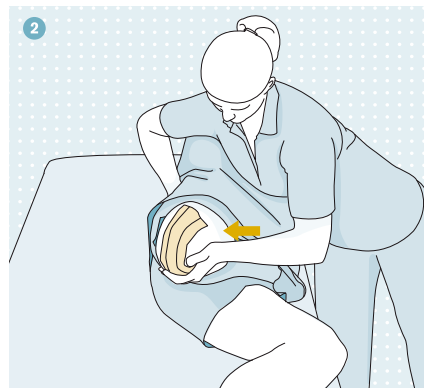
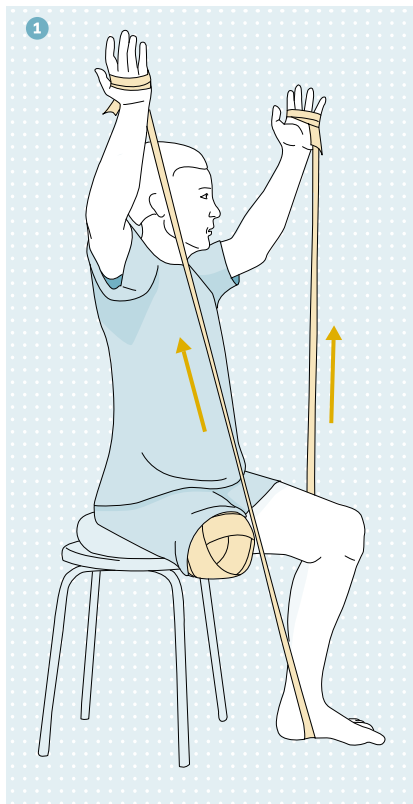
2. Muscular training

This preparatory training strengthens the torso musculature including the abdominals and the back, as well as the sound leg and the arms.

Strengthening exercises can be completed with light weights or rubber bands from a lying, sitting or standing position (1). The residual limb (amputation side) should also be included in the exercises (2, 3).

2.1. Stretching the Residual Limb Musculature

The muscles and joints around your residual limb need stretching (2, 3). Maintaining or regaining maximum joint mobility in all directions of movement is very important, in order to ensure that you will be standing and walking with the prosthesis in a very short time (4, 5).



2.2. Muscle Strengthening on the Sound Side

It is recommended to start working with the muscles on your sound side the day after the surgery in order to maintain and / or slowly rebuild the strength. You should also focus on stretching your muscles in order to avoid any contractures either around the knee region or of the Achilles tendon. To further optimise this, your therapist may assist you in providing further resistance to counteract the forces.

2.3. Muscle Strengthening of Residual Limb

You should start training your residual limb musculature a few days after the surgery. For example, you can wrap both thighs in a towel and spread your legs against the resistance of the towel (1). This exercises the outside of the thighs.

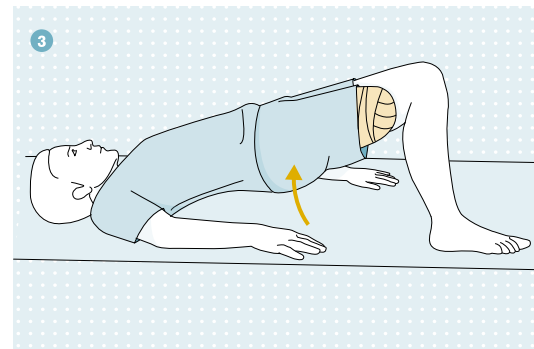
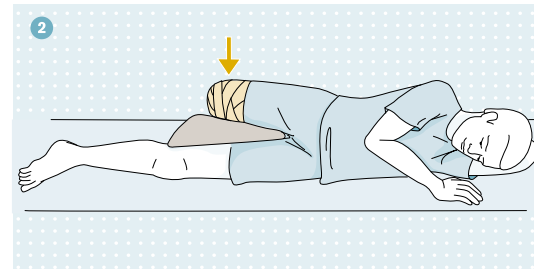
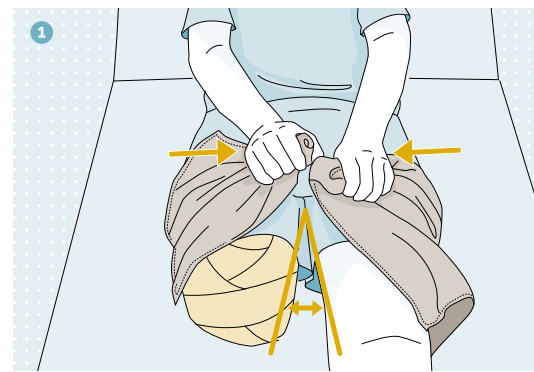
You can strengthen the inside of the thighs with the help of a cushion. Hold the cushion between your thighs and apply even pressure to the inside with both legs (2).

2.4. Muscle Strengthening of Torso

The torso musculature plays a crucial role as you learn to walk with your prosthesis. You should prepare for this important premise even before you receive your prosthesis.

For the first exercise, sit upright in a chair without using the back rest, alternating your arms in an upward and downward motion while breathing deeply. This expands your lung capacity and improves your circulatory system.

Another exercise is the “bridge”. Lie on your back, bend your sound leg and extend your arms down either side of your upper body. Now raise your buttocks to form a line from the shoulder to the hips to the knee (3).



“Arriving at one goal is the starting point to another.”

John Dewey

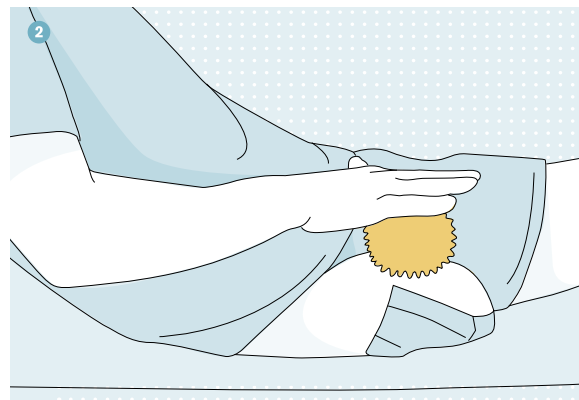
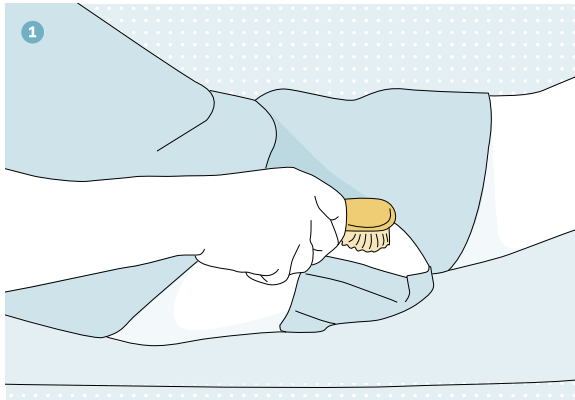
– Keep on going!

3. Skin Care and Scar Treatment

3.1. Desensitising the Skin

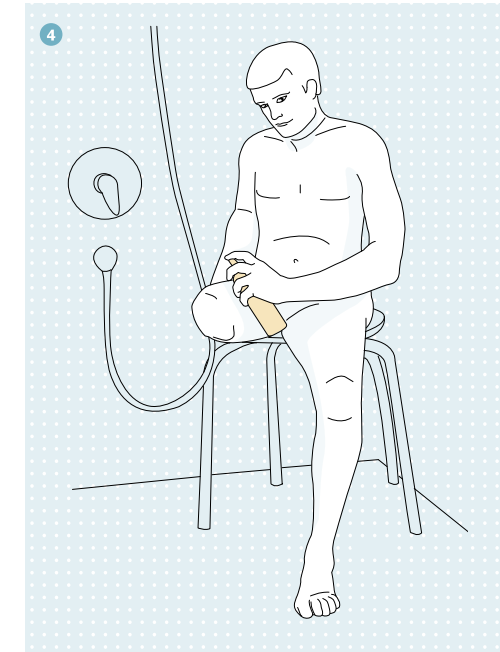
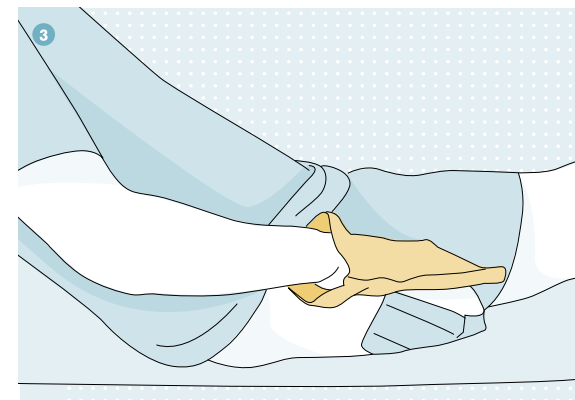
The skin on the residual limb is often very sensitive following the surgery. There are ways to reduce these sensations: Take a soft brush or spikey massage ball and use it to brush or tap the sensitive area (1, 2). This decreases hyper sensitivity. You can also rub

the residual limb with a rough towel or a dry washcloth (3). Only use objects and materials that you are comfortable with, and work from the end of the residual limb towards the body.



3.2. Skin Care

Residual limb hygiene is also very important following wound healing. The residual limb must be washed daily using water and unscented skin friendly soap (4). Ottobock care products are designed to make residual limb care and cleaning easier.



3.3 . Scar Treatment

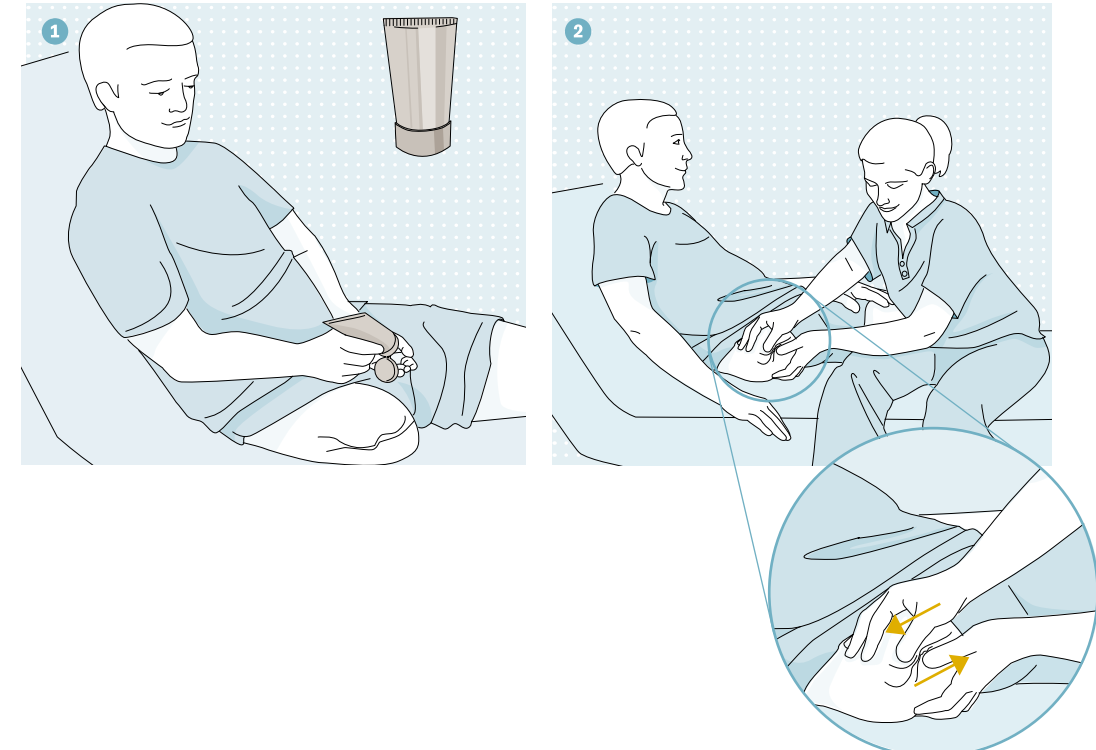
In most cases, the surgical wound closes within the first three to four weeks and a scar is formed. Even if the scar appears to have healed well from the outside and the appearance of the scar tissue appears to remain constant, the overall scar healing process can take much longer. It can take up to 18 months for the scar to reach a final status.

We recommend you to moisturise your scar regularly from soon after the surgery (1) as scar tissue lacks the ability to produce its own oils. Unscented creams are highly recommended.

Additionally your scar should be massaged by your therapist (2) to keep the scar tissue flexible. It is an important step in preparation for your fitting. The more flexible and soft your scar is, the better it is prepared for the fitting.

Such intensive care is important in order to ensure that the scar tissue remains soft and elastic while simultaneously becoming resilient. This is essential for a comfortable wearing of your prosthesis.

Early compression therapy is also important to affect scar formation. Full-coverage compression of the whole residual limb either with bandages or with silicone liners is the best way to prevent the development of excessive scar tissue. If the bandaging method is used, we recommend to put an adhesive silicone tape directly on the scar and then to wrap the compression bandage on top of that. If using the silicone liners, no extra adhesive tape is necessary.





Your individual fitting

Having gone through all this therapeutic measures, you are now ready for your prosthesis!

Prosthetic fittings are highly individual. We at the Ottobock Competence Centre are happy to provide you with advice on your very personal case, and stand by your side with our experience, our product expertise and our worldwide service.

Please contact us for an individual consultation

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