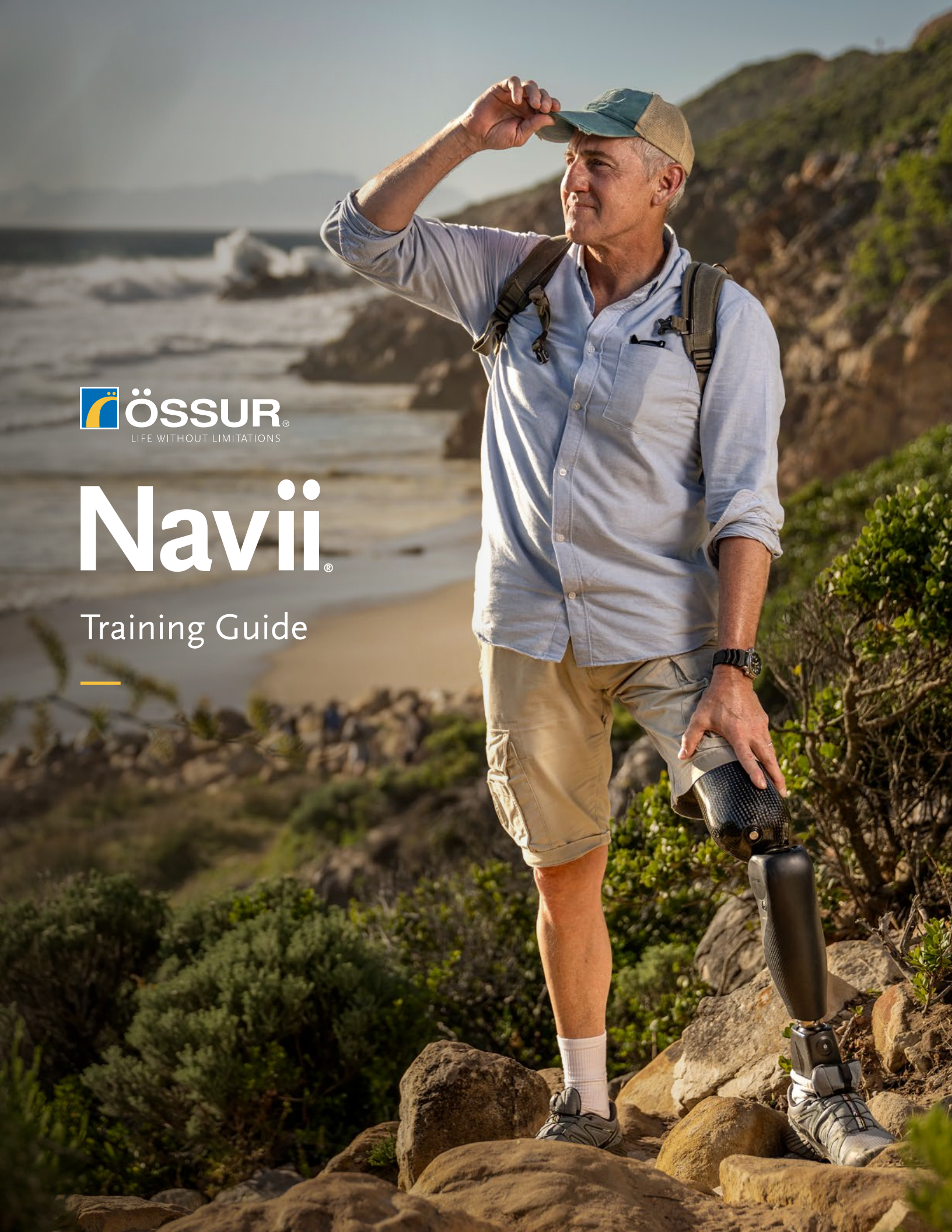

ÖSSUR®
LIFE WITHOUT LIMITATIONS
Navii®
Training Guide

Navii®

We know that you will receive a lot of information when getting a new prosthesis, so this training pack has been developed by our expert Physiotherapists to give you key training tips and information to get the best out of Navii.

How does Navii work?

Navii is a microprocessor-controlled knee. It works by using a variety of sensors that provide data for the microprocessor to control the knee settings.

The important bit for you to remember is that the Navii reacts very quickly switching between resistances as you move your weight on and off.

- The more weight you put on the knee, the more the knee will resist bending, so it remains stable and supportive.
- The less weight that is on the knee, the freer the knee becomes and the easier it will bend. This means it feels light as you lift it up and swing it forwards when you are walking. As a result, walking will be as natural as possible.

Össur Logic App

You can download our Össur Logic App*. With this app you can view the battery status of the knee, step count and use the Training section to practice key exercises with real-time feedback from the knee, to get you used to Navii.

ÖssurFit App

You can also access ÖssurFit App**. This app will provide you with a pre-determined progressive training plan over 12 weeks, including stretches, strengthening exercises and cardiovascular training. All exercises have been carefully chosen by our expert Physiotherapists to help you master the basics of Navii, as well as progress your technique on stairs and ramps, improving your overall mobility levels.

We hope that during the coming weeks you can expand your world with Navii. If you'd like to share your adventures with us, tag us on Instagram **@ossur.us**, or why not join us at one of our Mobility Clinics? Visit **www.ossur.com** to find out more about our upcoming events.

If you have any questions or if you are unsure about anything, please contact your local Physiotherapist or Prosthetist in the first instance. If further support is required, our customer service telephone number is **(800) 233-6263** or reach out to us via the website.



@ossur.us



www.ossur.com



(800) 233-6263

*iOS only
**Available on iOS and Android

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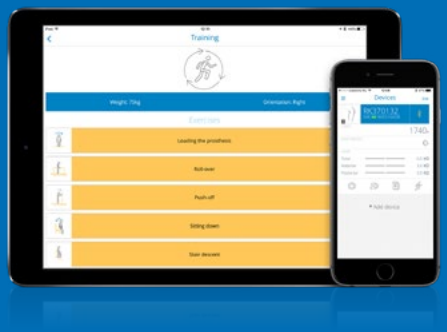
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Useful information about Navii

Össur Logic-app
In the app store, you can download Össur Logic App. With this app you can see the status of the knee and access different exercises to build confidence and trust with Navii.



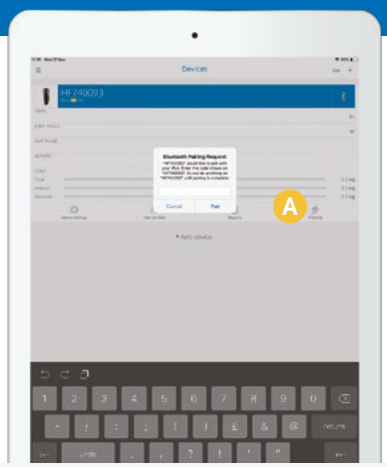


1 How to turn on and off

A How to turn the device on:
To turn the device on press the ON/OFF button for longer than 1 second. You will hear a 3 beep confirmation. When the device is on, you will see a pulsing green light in the ON/OFF button.

B How to turn the device off:
To turn the device off press the ON/OFF button for longer than 1 second. You will hear a 3 beep confirmation. When the device is off, the light indicator in the ON/OFF button will also turn off.





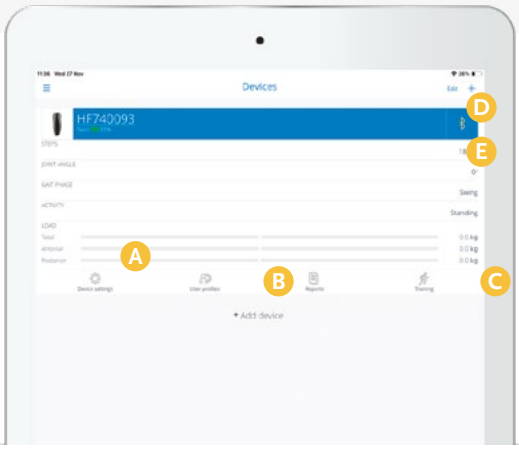
2 A Connecting to the app

Download Össur Logic App and create a user account, if you don't already have one. Sign in, and click add device. Once the correct serial number for the Navii is selected, Össur logic will ask for a PIN code, which can be found on the back of the knee. For example, the serial number is HF740093 and the pin code is 521719 so this is what is entered and click pair.



3 A Where to find serial number

You can find the serial number and PIN on the back of the knee. In this example the serial number is HF740093 and the PIN is 521719.



4 App overview

- A Battery level
- B Assign profiles here
- C Navii training exercises
- D Tap here to connect and disconnect
- E Step count

5 Charging Navii

A Charging the knee

Insert the charger cable into the charging port on the back of the knee, right above the ON/OFF button. The device can be charged regardless of whether it is turned ON or OFF. It will take approximately 1.5 hours to charge the device battery to 90%, and 3 hours to fully charge it (100%).

- The device should be charged daily for optimal performance.
- It is not possible to overcharge the device.

Fully charged battery is sufficient for about 70 hours of continuous use, depending on activity. Check the battery charge on Össur logic app, or by pressing the ON/OFF button on the back of the knee. Each light represents up to 20% of charge.



6 Warnings

Auditory/vibratory warnings

When the power reaches critical levels, auditory and/or vibratory warnings alert the user.

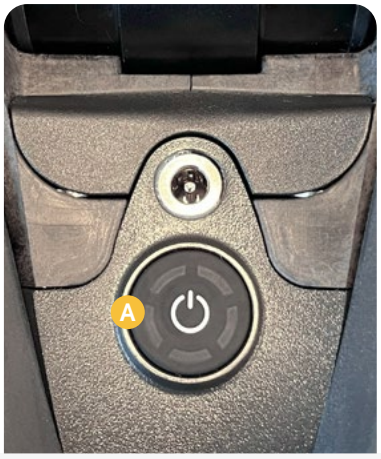
How much time is left on the battery depends on activity (approximately 30 minutes of walking on level ground or 5 minutes of stair descent).

When battery is critically low, a buzzing, vibrating and a flashing red light will signal an imminent shut down (after 5 seconds).

If the device loses power, the knee loses its ability to provide stance support. In such cases it is recommended to manually engage the integrated extension lock to lock the knee in full extension.

A Battery warnings

When battery is low a repeating warning pulse will appear: A short sound repeats every 15 seconds and orange light flashes on the interface panel. At this point the device should be recharged.



7 Waterproof

Navii is waterproof and can be submerged in up to 2m depth for 30 minutes. It can tolerate contact with fresh water, salt water, chlorinated water, perspiration, urine and mild soaps. After exposure to the above, sand or dust, rinse the knee with fresh water and dry thoroughly with a soft cloth.

8 A How to use the mechanical lock

To lock in full extension - press the mechanical lock button into the locked position and fully extend the knee.

To unlock the knee, press the button back across to the unlock position.

To lock the knee in 10 or 20 degrees of flexion, flex the knee beyond the desired lock position and press the lock button. Extend the knee to the desired angle of 20 or 10 degrees.

The lock button can be activated in sitting so that when the knee is extended past 20 degrees, it will be locked.





Scan the QR code to see how to activate 'Extension hold'.

9 Using extension hold

Gently flick the knee into extension and pull back slightly. The knee will remain in an extended position up to 3 seconds, or until you put weight onto it.



10 Caring for Navii

A Clean Navii and the protective cover regularly with a damp cloth and mild soap.

B Cleaning after exposure to sand, salt water or chlorinated water:

- Turn off the device
- Remove the protective cover
- Rinse the device and protective cover thoroughly with fresh water.
- Flex and extend the knee joint while rinsing to clean all surfaces.
- Engage and disengage the lock to remove all debris.
- Dry the device and protective cover thoroughly with a soft cloth.



Ramp training

Ramp ascent is hard work and for many amputees, ramp descent can be an intimidating task. Ramps come in all sizes and require proper training with a therapist.

A lot of people walking with a micro-processor knee or a mechanical yielding knee do not benefit from the resistance at the knee joint on a ramp. Often, they do not use the knee fully and only "survive" walking down a ramp.

This training guide will provide you with a step-by-step approach for ramp ascent and descent. By training regularly and in a safe manner, walking up and down ramps will feel more natural.

While training on ramps, be careful not to compare yourself with others, as everyone has their own pace and learning style



Always practice first with your CPO and/ or therapist in a safe familiar environment.



Ramp ascent

Navii is a default swing knee which means that the knee feels “free” when you lift your prosthesis up. If you gently swing your prosthesis forwards and backwards (hip flexion and extension movement), the knee joint will flex and extend. It reduces the likelihood of catching the toes on the ramp when lifting the prosthesis, which reduces the need to circumduct (swinging the leg round) your prosthetic leg, or vault on your sound side (rising onto the toes of the sound side during the prosthetic swing phase). Also it reduces the compensation in your lower back area, which results in less back pain and less overload on your sound side.

If you do not have a Navii ask your CPO/therapist how to ascend the ramp with your prosthetic knee.

Preparation exercises:

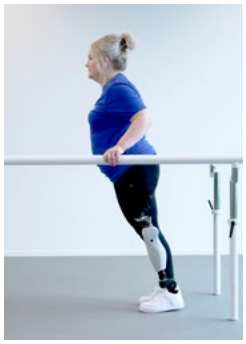
To prepare for ramp ascent, complete the following exercises. Begin all exercises using hand support and focus on gently pulling in your belly button to help you stand tall. Repeat all steps 10 times and reduce hand support when ready to advance to a higher level of difficulty. You should not feel any of the exercises pulling in your lower back; most should be felt in your gluteal muscles (buttocks). All these exercises are advised with a Navii. Check with your CPO/ therapist which exercises are possible with your prosthesis.



1 Forwards backwards shift

Stand upright, with feet comfortably apart (5-10 cm). Distribute your weight evenly between prosthetic and sound sides, using a wall, counter top or parallel bars to balance. Shift your weight slowly forward, maintaining balance and feeling your prosthetic forefoot and slowly backwards to feel your prosthetic heel. Do not stick your bottom backwards, but keep your upper body in a straight position! Next, shift your weight slowly backwards onto your heel. Try to move all the way back to the heel. Use a mirror beside you to provide visual feedback.

Repeat.



Össur Logic application users:

You will receive real-time feedback based on your load.

2 Bouncing exercise

Stand upright, feet comfortably apart (5-10 cm). Distribute your weight evenly between prosthetic and sound sides, using a wall, counter top or parallel bars to balance. Concentrate on only using the wall/counter top for assistance and not your full weight. Lean forward on to your toes and bounce 10 times. Use a mirror beside you to provide visual feedback.



Össur Logic application users:

You will receive real-time feedback based on your load.

3 Step ups

Move your weight slowly forward over the prosthetic leg, then push your residual limb into the socket and in a controlled manner gently place the sound side foot on the step. Feel your full weight loaded on your prosthetic knee and concentrate on only using the sound side for balance instead of your full weight on the step. Try to control your balance on the prosthetic side using the muscles around your hip. Pay attention to the forward movement of your pelvis on the prosthetic side, keeping it in line and without twisting or rotating. Squeeze your residual limb muscles to pushing down into your prosthesis while lifting up your sound leg to return back to the starting position.

Repeat.



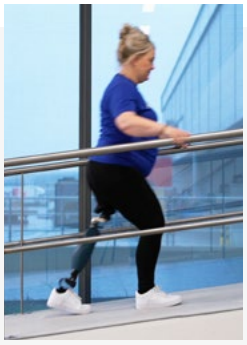
Ramp ascent

Scan the QR code for training video.

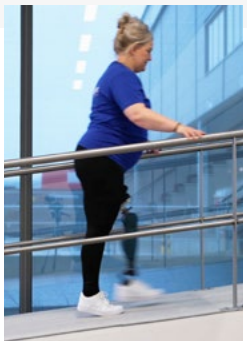
1 Begin with two hands on the handrail for symmetry. Once your technique has improved, you can practice holding on with one hand. We suggest to use the rail on your sound side if possible. If you feel unstable, insecure or if this is your first time, discuss and always practice with your CPO/therapist first!

2 Start walking by leading with either side. Begin with small forward steps, increasing them as you gain confidence.

3 Ascending the ramp is almost the same as level ground walking, except with more focus on hip movement. As you step forward with your sound side leg, load your prosthesis, squeeze your muscles around the hip and roll over your toes. You need good control to achieve a smooth roll over the whole prosthetic foot and onto the toes, to get the most energy return from the prosthetic foot. Remind yourself of the previous exercises, keeping your pelvis on the prosthetic side in line; do not twist or rotate. Before placing the prosthetic heel on the ground, try to take a shorter step to make the next step easier. Keep your trunk upright and place your prosthetic foot on the ramp.



4 Let the prosthesis swing forward like in level ground walking. Steeper ramps will require more hip flexion (“prosthetic knee in the direction of the nose”) to advance the prosthesis forward without scuffing the toe on the ground. If you don’t take this into account, your prosthetic foot can still catch the ground despite completing a perfect step forwards. Shift your weight onto your prosthetic side. Keep your trunk upright but slightly leaning forwards to keep the momentum going. Continue with Step 2.



Ramp descent

If you are using a microprocessor or a mechanical yielding knee it is possible to descend the ramp step-over-step. Despite the safety offered by these knees, many amputees still find going down a ramp to be intimidating.

With practice and guidance of your CPO/Therapist you will become more familiar with step-over-step ramp descent. Navii provides you with supportive resistance when you are on your prosthesis and riding down the ramp.

Adjusting the load on the prosthesis will affect the resistance from the knee: you can walk down the ramp faster (with less resistance) by placing less load on the prosthesis or you can walk down the ramp slower (with more resistance) by placing more load on the prosthesis. Navii will adapt to extra weight automatically by increasing the amount of resistance it provides, which is helpful while carrying a child or a heavy backpack. With a mechanical yielding knee there is no adaptive response; the resistance of the knee is set by the CPO in consultation with the patient. Always discuss the possibilities of your prosthetic knee with your CPO/therapist.

The more you train, the more familiar you will become with the "feeling" of the knee's resistance. Everyone has their own pace and speed of learning, so do not compare yourself with others.

Preparation exercises:

To prepare for ramp descent, complete the following exercises. Begin all exercises using hand support and focus on gently pulling in your belly button to help you stand tall. Repeat all steps 10 times and reduce hand support when ready to advance to a higher level of difficulty.

You should not feel any of the exercises pulling in your lower back; most should be felt in your gluteal muscles (buttocks). All these exercises are advised with a Navii. Check with your CPO/therapist which exercises are possible with your prosthesis.

1 Sitting down

Stand upright with both feet the same distance from a chair with armrests. Distribute your weight evenly between prosthetic and sound sides. Reach back for the chair armrests and sit down while loading your prosthesis, keep pushing through the foot into the ground. You will feel the knee resistance assisting you as you sit. Use a mirror for visual feedback.



Össur Logic application users:

You will receive real-time feedback based on your load.

Ramp descent

1 Master your knee control

Standing with your prosthetic foot flat on the ground and the knee fully straightened. Move the other foot slightly behind your prosthesis while keeping a gap between your feet and holding onto the parallel bars for support. Using your gluteal and residual limb muscles to control the movement, keep most of your weight over your prosthesis and try to bend the knee. The knee should feel secure with a lot of resistance in this position. It is possible to make it bend, but it requires a lot of effort.

Repeat this movement, this time with less weight on the knee. You should feel less resistance and the knee bends more easily. If you move more weight onto the knee, it increases the resistance, as in the first part of the exercise.

Repeat with the sound side forwards and your prosthesis behind.

Note: On the ramp you must be familiar with your prosthetic knee, understanding how the knee reacts depending if all or only part of your weight is on it. You can practice this in a safe environment, between the parallel bars, to feel confident knowing when the knee will bend and when it will not.

Tips

Here are some helpful tips for successfully practicing step-over-step ramp descent:

- **Use of handrails**
  When training with your therapist, usually you have two handrails to help you build confidence with the technique.
  If you want to practice holding only one handrail use your hand opposite of the prosthesis to have the optimal support.
  If there is only one handrail available on the prosthetic side, you can use a cane or a reversed elbow crutch to assist you.
  If you feel unstable or insecure and/or if this is your first time, discuss and always practice with your CPO/ therapist first!

Exercise tip: Have you mastered holding on with one handrail on the sound side? Do you feel fully in control of the movement, and want a harder challenge? Practice yourself with holding only the handrail on the prosthetic side.

- **Correct trunk position**
  Your trunk needs to be in an upright position. If you lean too far forwards, you create a lot of body weight in front of the foot and the prosthetic knee recognizes this as a normal standing position (stance phase). The knee will remain stiff.

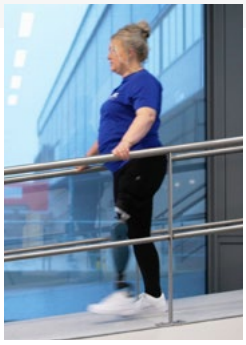
- **Alternative options**
  - If the ramp is too steep or you are not yet confident enough, you can descend by stepping sideways, leading with your prosthesis and with the sound side following.
  - Another option is to use a step-to gait pattern: Step forward with your prosthetic side first with a step length that is comfortable and safe for you, then bring your sound side even with the prosthesis. **Repeat.**

Scan the QR code for training video.

Tip for the CPO/therapist: Hold onto the prosthetic knee with one hand, use the other hand to facilitate the pelvis on the sound side. With the hand on the prosthetic knee you are able to control the knee flexion in a safe manner. On the sound side you can, by guiding the pelvis towards the prosthetic side, facilitate the loading onto the prosthesis. If there is no handrail and the user needs support, hold both hands of the user at pelvis height and facilitate them down the ramp.

1 Begin with two hands on the handrail for symmetry. When training with your therapist usually you have two handrails to help you build confidence with the technique. Once your technique has improved, you can practice holding on with one hand.

2 We advise to start with your prosthetic side first for a smooth transition from level ground to the ramp. Place your prosthetic side on the ramp. With a small step, your prosthetic foot will follow the decline of the ramp. This means that your prosthetic knee will bend. Keep your trunk upright and load your prosthetic side. Try to push down through your foot, in particular your heel, into the ground. Squeeze your residual limb muscles.



3 By loading the prosthetic knee like this, you will receive the resistance needed to control the movement to get you down on the ramp. Keep your trunk upright and continue to squeeze your residual limb muscles.



4 Feel the prosthetic knee continue to bend and keep squeezing your residual limb and gluteal muscles. Feel the resistance of the prosthetic knee and in the meantime, unload your sound side and swing it out in front. Aim to push through into the ground; do not lose contact with your prosthetic foot. Keep the prosthetic knee straight; do not let the knee go inwards or outwards; try to control the movement.

5 Gently place your sound side foot on the ramp in a controlled manner. Lift the prosthesis slightly up and let the knee straighten by itself.

Continue with step 1.

Learning how to use the stairs

Stairs are a hurdle for many users. This training guide will provide you with a step-by-step approach. By training regularly and in a safe manner, using the stairs will feel more natural. Everyone has their own pace and speed of learning, so do not compare yourself with others.



Always practice first with your CPO and/or therapist in a familiar environment.



Step-by-step stair ascent

In most cases a prosthetic knee joint doesn't allow you to do step-over-step stair ascent. Even if it is possible, for example, with Navii, many amputees are not capable of walking up the staircase step-over-step, they have to go step-by-step. Ascending the stairs step-by-step is not symmetrical, costs energy and takes longer than it would for an able bodied person. As some amputees have no option but to ascend stairs step-by-step, it is beneficial to learn a good technique to reduce the impact of some of these issues.

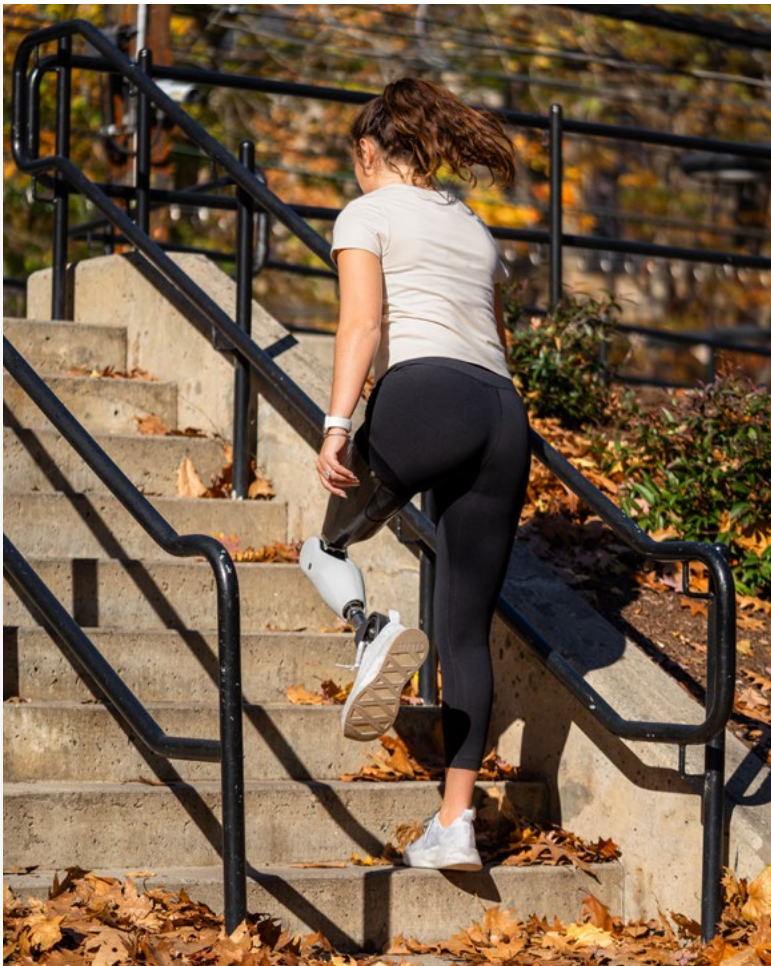
Additional information regarding Navii:
Navii is intended to improve functional outcome and increase the safety and performance of amputees. Navii is a default swing knee which means that the knee feels "free" when there is no load going through the knee. Enhancements to the design have helped deliver increased resistance in stance and improvements in balance.

Navii has additional functionality such as, automatic cycling and stair ascent capabilities. It reduces the likelihood of catching the toes on the staircase, which reduces the need to circumduct (swinging the leg around) your prosthetic leg, or vault on your sound side (rising onto the toes of the sound side during the prosthetic swing phase). Also it reduces the compensation in your lower back area, which results in less back pain and less overload on your sound side. An additional benefit of using this default swing function on the staircase, is that you must use your hip extensor muscles in your residual limb. Using your hip extensor muscles will also benefit you when walking.

If you do not have a Navii ask your CPO/therapist how to ascend the stairs with your prosthetic knee.

Preparation exercises:

To prepare for step-by-step stair ascent training, complete following exercises. Begin all exercises using hand support and focus on gently pulling in your belly button to help you stand tall. Repeat all steps 10 times and reduce hand support when ready to advance to a higher level of difficulty. You should not feel any of the exercises pulling in your lower back; most should be felt in your gluteal muscles (buttocks). All these exercises are advised with Navii. Check with your CPO/ therapist which exercises are possible with your prosthesis.







1 Pelvic Tilts in lying/sitting/standing

Put your hands on top of your pelvic bones and using your lower abdomen muscles, tilt the front of your pelvis downwards. Then squeeze your belly button in and use your gluteal muscles to tilt your pelvis backwards. Meanwhile, keep your shoulders and trunk still. The only movement should be from the pelvis.

2 Left-right shift

Stand upright with feet comfortably apart (5-10 cm). Shift your pelvis slowly from left to right and back again. Feel how your weight is shifting from one foot to the other.



Össur Logic application users:

You will receive real-time feedback based on your load.

3 Forwards backwards shift

Stand upright, with feet comfortably apart (5-10 cm). Distribute your weight evenly between prosthetic and sound sides, using a wall, counter top or parallel bars to balance. Shift your weight slowly forward, maintaining balance and feeling your prosthetic forefoot and slowly backwards to feel your prosthetic heel. Do not stick your bottom backwards, but keep your upper body in a straight position! Next, shift your weight slowly backwards onto your heel. Try to move all the way back to the heel. Use a mirror beside you to provide visual feedback. **Repeat.**

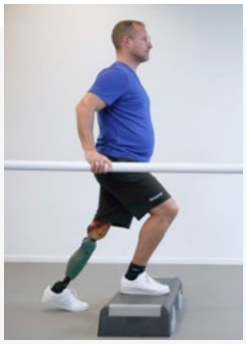


Össur Logic application users:

You will receive real-time feedback based on your load.

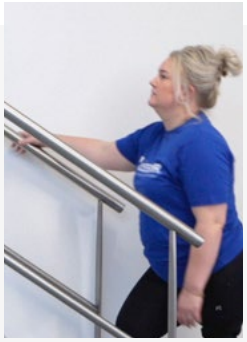
4 Step ups

Move your weight slowly forward over the prosthetic leg, then push your residual limb into the socket and in a controlled manner gently place the sound side foot on the step. Feel your full weight loaded on your prosthetic knee and concentrate on only using the sound side for balance instead of your full weight on the step. Try to control your balance on the prosthetic side using the muscles around your hip. Pay attention to the forward movement of your pelvis on the prosthetic side, keeping it in line and without twisting or rotating. Squeeze your residual limb muscles to pushing down into your prosthesis while lifting up your sound leg to return back to the starting position. **Repeat.**

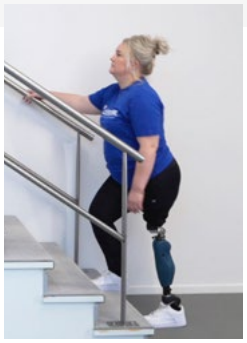


Step-by-step stair ascent

Scan the QR code for training video.

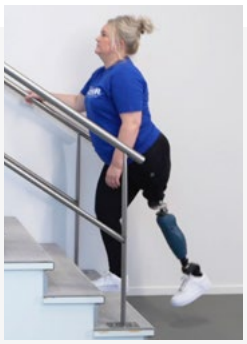


1 Begin with two hands on the handrails for symmetry. Once your technique has improved, you can practice holding on with one hand; we suggest to use the rail on your sound side if possible. If you feel unstable, insecure or if this is your first time, discuss and always practice with your CPO/therapist first!



2 Move your weight over the prosthetic leg, then push your residual limb into the socket and in a controlled manner, gently place the sound side foot on the first step. Try to control your balance on the prosthetic side using the muscles around your hip. Pay attention to the forward movement of your pelvis to stay in line without twisting or rotating. Keep your trunk upright by gently pulling in your belly button. Use the handrail to control your movement; it is not to lean on.

It may help to place your hands with your fingers wrapped around the bottom of the rail and pull yourself up with the rail.



3 While placing your sound foot on the step, roll over your prosthetic foot (heel to toe) or do a slight extension movement with your hip on the prosthetic side. During this movement lift the prosthesis gently upwards and place the prosthetic foot on to the same step as the sound side foot.

Continue with step 2.

Progressing stair climbing

Step-over-step stair descent
Progressing stair descent to step-over-step requires familiarity and trust with Navii. There are some handy top tips for developing the correct technique that saves you time and energy!

Step-over-step stair ascent
Progressing to step-over-step stair ascent requires practice, as well as adequate strength, flexibility and technique. It is key that your prosthetic socket fits well and doesn't impede your range of motion at the hip joint. This guide has broken down the technique into manageable steps and preparation exercises to help you progress your stair climbing.



It is a good idea to first practice in the parallel bars with a single step with your CPO/therapist.



Step-over-step stair descent

If you use a microprocessor knee or a mechanical yielding knee, it is possible to walk down the staircase step-over-step. For step-over-step stair descent, you need optimal suspension and socket fit, motivation, trust in your prosthetic knee, availability of handrails, good gluteal control and ultimately some practice! With practice and guidance of your CPO/Therapist, you will become more familiar with step-over-step stair descent.

Navii provides you with adaptable/supportive resistance while descending the stairs on your prosthesis. Navii allows you to control how much resistance you feel from it. Place more load on the prosthesis to descend the staircase slower and with more resistance. Place less load on the prosthesis to descend the staircase faster and with less resistance. Navii will adapt to extra weight automatically by increasing the amount of resistance it provides, which is helpful while carrying a child or a heavy backpack.

With a mechanical yielding knee there is no adaptive response; the resistance of the knee is set by the CPO in consultation with the patient. Always discuss in advance the function of your prosthetic knee with your CPO/therapist.

The more you train, the more familiar you will become with the "feeling" of the knee's resistance. Everyone has their own pace and speed of learning, so do not compare yourself with others.

Preparation exercises:

To prepare for step-by-step stair ascent training, complete the following exercises. Begin all exercises using hand support and focus on gently pulling in your belly button to help you stand tall. Repeat all steps 10 times and reduce hand support when ready to advance to a higher level of difficulty. You should not feel any of the exercises pulling in your lower back; most should be felt in your gluteal muscles (buttocks). All these exercises are advised with Navii. Check with your CPO/therapist which exercises are possible with your prosthesis.

1 Sitting down

Stand upright with both feet the same distance from a chair with armrests. Distribute your weight evenly between prosthetic and sound sides. Reach back for the chair armrests and sit down while loading your prosthesis, keep pushing through the foot into the ground. You will feel the knee resistance assisting you as you sit. Use a mirror for visual feedback.



Össur Logic application users:

You will receive real-time feedback based on your load.

2 Master your knee control

Standing with your prosthetic foot flat on the ground and the knee fully straightened. Move the other foot slightly behind your prosthesis while keeping a gap between your feet and holding onto the parallel bars for support. Using your gluteal and residual limb muscles to control the movement, keep most of your weight over your prosthesis and try to bend the knee. The knee should feel secure with a lot of resistance in this position. It is possible to make it bend, but it requires a lot of effort.

Repeat this movement, this time with less weight on the knee. You should feel less resistance and the knee bends more easily. If you move more weight onto the knee, it increases the resistance, as in the first part of the exercise.

Repeat with the sound side forwards and your prosthesis behind.

Note: On the ramp you must be familiar with your prosthetic knee, understanding how the knee reacts depending if all or only part of your weight is on it. You can practice this in a safe environment, between the parallel bars, to feel confident knowing when the knee will bend and when it will not.

3 Spot target exercise (For correct foot placement on the staircase)

Mark 3 to 4 different spots on the ground in front of you around 10 cm apart. Reach for each spot with your prosthetic heel; ensure it is within reach.

Stand up tall with feet slightly apart and gently pull your belly button in. Take a step forward with your prosthesis and make sure your prosthetic heel lands on one of the spots. Focus on your balance and timing over the prosthesis. As soon as your prosthesis hits the spot, load your prosthetic side and try to push down through your foot, in particular your heel, into the ground. Squeeze your residual limb muscles and return back to the starting position. Repeat this process with a different spot.





Note: Always practice in a controlled and slowly manner, focusing first on technique and control, speed will follow.

Tips

Here are some helpful tips for successfully practicing step-over-step stair descent:

- **First step**
  Start at the bottom of the stairs when first practicing step-over-step stair descent. Never start practicing from the top of the stairs!

  Once comfortable with the step-over-step technique on the bottom step, you can step up one higher and continue to practice.

  If there is a situation when you need to go down the stairs from the top and you don't feel comfortable, use the step-by-step technique.

  First, take a step down with your prosthesis and then bring your sound side down next to it. Repeat this for the other steps.

Exercise tip: If you don't feel confident on the staircase, practice with your CPO/therapist between the parallel bars and use an exercise step instead of a staircase.

- **Foot placement**
  1. When first practicing, place the rear half of the prosthetic foot on the step, which is the position of optimal support. Once you feel comfortable with this, you can practice different foot placements.

  2. Placing the foot further back on the step, with more foot in contact with the step, provides more resistance and results in slower bending of Navii.

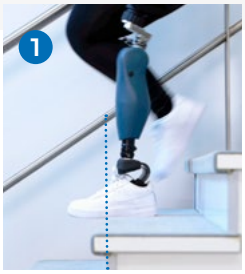
  3. Moving the foot further forwards off the step, with less foot contact with the step, provides less resistance and results in quicker bending of Navii.

The above foot placement guidance is recommended for Navii users. For most mechanical yielding knees picture 3 is realistic to start with. Always practice the first time together with your CPO and/or therapist.

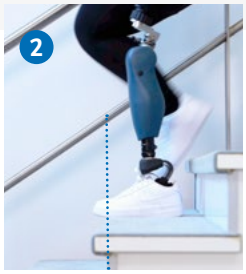
- **Use of handrails**
  Use both handrails when possible while training with your therapist to help build confidence with the technique. If you want to practice with holding only one handrail, start with it on the sound side leg to have the optimal support. If there is only one handrail available on the prosthetic side, you can use a cane or a reversed elbow crutch to assist you.

Exercise tip: Have you mastered holding on with one handrail on the sound side? Do you feel fully in control of the movement and want a harder challenge? Practice holding only the handrail on the prosthetic side.

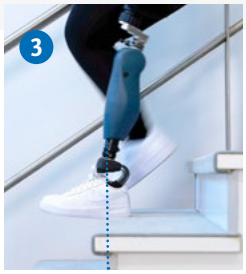
- **Correct trunk position**
  Your trunk needs to be in an upright position. If you lean too far forwards, your body weight is forwards over the prosthesis and will cause the prosthetic knee to remain in stance phase, making it difficult to bend.



Half foot placement



Full foot placement

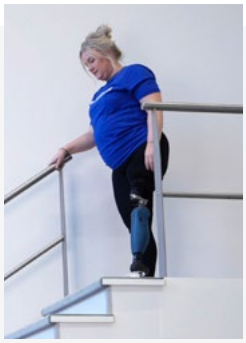


Heel placement

Step-over-step stair descent

Scan the QR code for training video.

Before you continue, ensure you have practiced for the first time with your CPO/therapist, and you are aware of the possibilities of your prosthetic knee.



1 Stand on the staircase with both feet comfortably apart (5-10 cm). While holding the handrail(s) and keeping your upper body upright, place the rear half of the prosthetic foot on the step below. Remember the “spot target” exercise to control your foot placement.



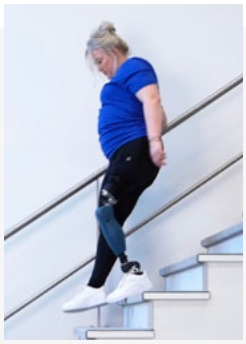
2 Hold on with two hands on the handrail, not too far in front of you to prevent a flexed posture and always keep your trunk upright. Load your prosthetic side; squeeze your residual limb muscles and push down through your foot, in particular your heel, onto the step. Tip for the CPO/therapist: Hold onto the prosthetic knee with one hand, use the other hand to facilitate the pelvis on the sound side. With the hand on the prosthetic knee you are able to control the knee flexion in a safe manner. On the sound side you can, by guiding the pelvis towards the prosthetic side, facilitate the loading onto the prosthesis.



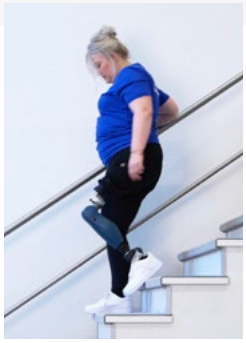
3 By loading the prosthetic knee like this, you will receive the resistance needed to lower you down to the next step smoothly. Keep your upper body upright and continue squeezing your residual limb muscles, push down through your foot and gradually move your pelvis forward to initiate knee flexion. By doing this you create a stable resistance.

Step-over-step stair descent

4 Feel the prosthetic knee bending and continue to squeeze your residual limb and gluteal muscles. Feel the resistance of the prosthetic knee and in the meantime, unload your sound side and swing it out in front. Maintain a controlled squeeze of your residual limb muscles and keep a slight push through the ground; do not lose contact with your prosthetic foot. Do not let the prosthetic knee move inwards or outwards, try to control the movement.



5 Place your sound side on the next step, gently, not with a thud! Lift the prosthesis slightly up and let the knee extend by itself. Continue with step 1 placing the half rear of the foot onto the staircase.



Össur Logic application users:
You will receive real-time feedback based on your load.

Step-over-step stair ascent

Preparation exercises:

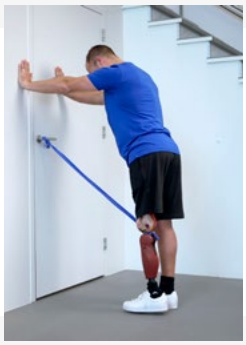
Begin all exercises using hand support and focus on gently pulling in your belly button to help you stay up tall. Repeat all x10, make them harder by adding a theraband around your feet or reducing hand support. Ask your physiotherapist to show you how to use the theraband. You should not feel any of the exercises pulling in your lower back, most should be felt in your gluteals (bottom muscles).

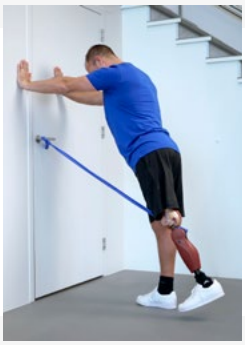
1 Pelvic Tilts in lying/sitting/standing

Put your hands on top of your pelvic bones, and using your lower abdomen muscles, tilt the front of your pelvis downwards. Then squeeze your belly button in and bottom muscles to tilt your pelvis backwards. Meanwhile, keep your shoulders and upper body still. The only movement should be from the pelvis.







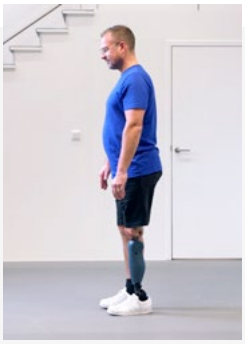


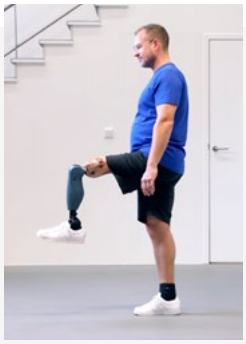
2 Hip extension in standing

Squeeze your gluteal muscles and lift your prosthetic foot off the floor behind you. Return to the floor. This could also be done kneeling on hands and knees, with a flat back and the prosthetic knee extended out behind in the starting position.

3 Hip flexion in standing

Lift your residual limb up as high as you can. Remember to bring your knee to your nose.



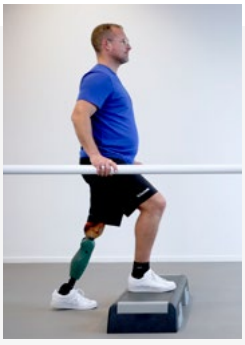


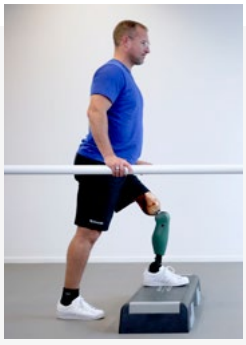
4 Acceleration from hip extension into hip flexion

As exercise 1 but instead of returning the foot to the floor, quickly move it into hip flexion, ensuring that you don't bend your upper body during the change of movement. Start slow.

5 Step ups

Place your sound limb onto the bottom step. As you step up, squeeze your bottom muscles (gluteals) and drive your hip forwards over your foot and knee so that your knee straightens. Repeat this exercise on your prosthesis too. If this is too difficult initially, practice on flat ground in the parallel bars with an exercise step.

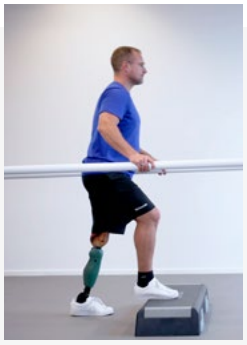


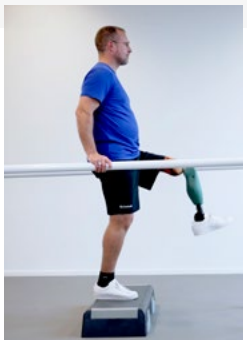


Sound side first on step

Practice this first in the parallel bars before moving to a staircase, where it is best to have a dynamic start (walking up to the step and continue with out stopping). This allows initiation of hip extension so it is easier to accelerate into hip flexion.

Össur Logic application users:
You will receive real-time feedback based on your load.





1 Step the sound side on the step (or if using a staircase, you can place it onto the second step - you have more space to accelerate into hip flexion). Move your weight along to the front of your prosthetic foot.

2 Quickly flex your hip forwards on your prosthetic limb side, this should be a smooth movement.

3 You can return the prosthetic foot back down to the floor behind you, or if you have another step above to place it on, position the prosthetic foot flat on the step (the knee will not fully extend). Continue with the same instructions as in the prosthetic side first.

Scan the QR code for the Step Over Step Stair Ascent training video and more exercises on the Össur Academy YouTube Channel.

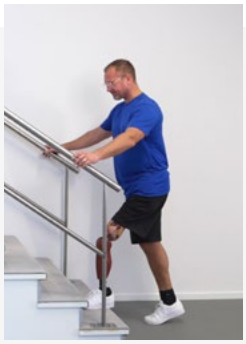
Look out for any compensations as a result of muscle weakness or reduced joint range of motion. These include:

- Flexing the trunk when lifting the prosthetic limb off the floor
- Vaulting on the sound foot
- Hyperextending the sound knee
- Not using gluteals and residual limb muscles to extend the prosthetic knee

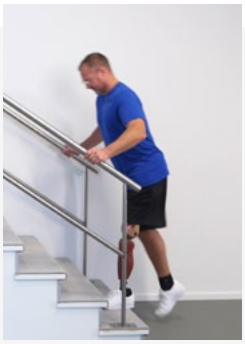
Prosthetic limb first on step

Practice this first in the parallel bars with an exercise step, before moving to a staircase, where you should begin from static (standing still).

Össur Logic application users:
You will receive real-time feedback based on your load.

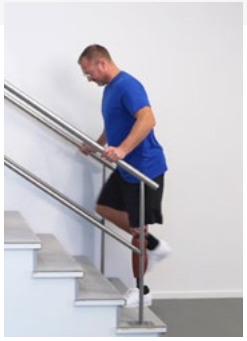


1 Using your residual limb muscles, raise your prosthetic limb up and position the foot flat on the step - Control is more important than speed, repeat with precision placement.

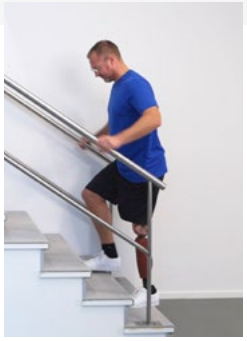


2 Shift your weight forwards to load your prosthesis, keeping your trunk upright. The knee needs: Min. 25 degrees of knee flexion (picture 1), prosthetic load (picture 2) and knee-extension (picture 3+4)

3 Squeeze your gluteal and residual limb muscles, to drive your hip up and over your foot and knee. This is an important step for stair recognition. Focus on making it a smooth movement forwards.

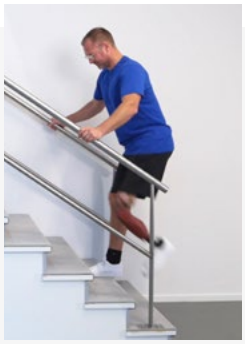


4 Meanwhile, keep your upper body tall and use the hand rail to assist the upwards movement. Place your sound side foot onto the next step.



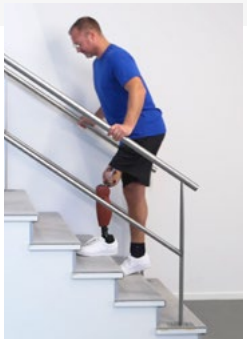


5 Drive your sound hip up and over your knee on the step, keep your upper body tall.



6 Meanwhile, keeping your trunk tall, use your residual limb muscles to raise your prosthesis upwards quickly. 'Bring your knee to your nose.' If correctly triggered in previous steps, the knee will not extend at the end of swing before foot placement.

7 Place the prosthetic foot flat onto the next step. If knee remains extended you have not provided the correct movements to trigger Automatic Stair Recognition. Continue climbing - it is easier to stay in a rhythm.



8 Last step to level ground:

- If you land with the Prosthetic foot first. Continue walking.
- If you land with the Sound side foot first, wait a split second or don't drive your residual limb upwards like on the other steps. Gently flick the prosthesis backwards to clear the step lip and then continue to step forwards onto your prosthesis.

Cycling with Navii

This guide provides you with some key points that are important to remember when riding a bicycle with a prosthesis, such as getting on and off a bicycle, important considerations about bicycle components, training advice, and add-ins for the more experienced user. Involve your CPO and/or Therapist in the selection of bicycles and your first practice rides. They can give you valuable tips regarding the proper set up and riding of a bicycle.


TAURUS UB10.5 PRO

Cycling with Navii

Whether you choose an everyday bicycle, mountain bike, recumbent bicycle or racing bicycle, choose a bicycle which fits your needs. An E-Bike can offer you additional assistance to make cycling easier.

For the first few meters, someone should walk beside you and support you if necessary. If you are unsure or have never ridden a bicycle before, do the first exercises on a stationary bicycle, roller trainer or spinning bicycle. See training tips on the last page of this training guide.

Do not forget your helmet and the bicycle should comply with your local road and traffic regulations.

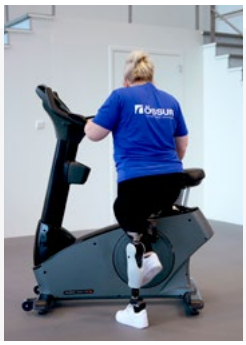
Getting on and off a bicycle can initially also be practiced on a stationary bicycle.

Caution:
Practice getting on and off a bicycle on a flat surface with the assistance of your CPO or therapist.



Getting on a bicycle

Scan the QR code for training video.



1 Start

Stand to the side of the bicycle and position the pedals level. Hold the handlebars with both hands and apply the brakes to prevent the bike from rolling while getting on the bicycle.

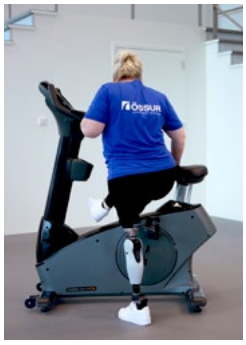
Important: Do not release the brakes until you are ready to start pedaling.

2 Lift the leg over the bicycle

In this step there are two options to consider:

Option A: Stand on your sound side and activate the extension hold in Navii and lift the prosthesis over the saddle to the other side of the bicycle.
Extension Hold: Gently flick the knee into extension, the knee will remain in an extended position up to 3 seconds.

Extension hold



Option B: Fully load the prosthesis with your body weight and lift your sound side over the saddle to the other side of the bicycle.

Navii needs 2 pedal turns with only light loading the knee for automatic cycling recognition. This will provide free movement of the knee for easier and more comfortable cycling.



3 Start Pedaling

In this step there three options to consider, depending on your experience level:

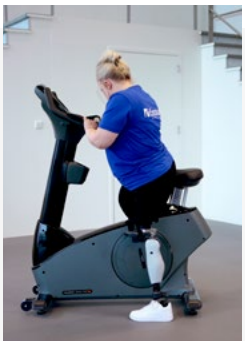
Option A: To begin with, sit down on the saddle placing your prosthetic foot on the pedal first. Push yourself off with the sound side and release the brakes at the same time. Placing your sound side on the pedal and start pedaling

Option B: For the more experienced user; place your sound side immediately on the pedal. Shift your body weight to the sound side leg and start pedaling with the sound side and release the brakes at the same time. Once bicycle is rolling steadily, position your prosthetic foot comfortably on the pedal.

Option C: For the experienced cyclist; position the foot of your sound side with the pedal in a forward position. Balance body on pedal while extending the sound leg. Simultaneously release the brake (to allow the bike to start rolling) and lift the prosthesis over the saddle.

Getting off a bicycle

1 Start
Slowly activate the brakes and place your sound leg on the ground first.
Once you come to a complete stop, take the prosthetic foot off the pedal.



Once Navii extends past 15 degrees the knee will automatically go out of the cycling recognition, and is ready for normal walking.

2 Standing on both legs
While keeping the brakes applied to keep the bicycle from rolling, shift weight evenly to both legs.

3 Lift the leg over the bicycle
In this step there are two options to consider:

Option A: Stand on your sound side and lift the prosthesis over the saddle to the other side of the bicycle.

Option B: Fully load the prosthesis with your body weight and lift your sound side over the saddle to the other side of the bicycle.



For the more experienced user

When riding “downhill” with Navii, you can stand up and remain in a standing position. Once Navii extends past 15 degrees the knee will automatically go out of the cycling recognition. To sit down again, the knee will give you support as you lower yourself back to the saddle. Simply continue pedaling to reactivate cycling recognition.



Bicycle parts and accessories



1 Saddle

Keep the saddle as low as possible at the beginning so you can place one leg on the ground to maintain stability.

When choosing saddle height and cycling with Navii: make sure the knee will not fully extend during cycling as this will prevent the knee from recognizing cycling function.

Overall, ensure the saddle is comfortable.

Tip: Try out various saddles. Your CPO may even be able to adapt the saddle to your needs.

A good option to consider is a pneumatic height adjustable seat post (called a dropper) with a release lever on the handlebar, it may offer you easier getting on and off the bike.

2 Pedals and footwear

There are various pedal options on the market. Which one you choose may depend on personal preference and/or your cycling ability.



Flat (platform) pedals

This style of pedal is a flat surface that sometimes have roughness or spikes for better grip. Chose shoes with a non-slip sole or a rough profile.



Magnetic lock pedals

A magnet in the sole of your shoe and on your pedal will securely hold your foot to the pedals while pedaling and allow a safe and quick release of the shoe when getting off the bike.

A: Magnetic adapter integrated in the pedals.
B: Counterpart (metal plate) screwed to sole of shoe

Clipless pedals

Clipless pedals work by mounting a small plastic or metal cleat on the sole of your shoe that typically snaps into a set of spring-loaded “clips” on the face of the pedal. These offer a more secure connection between the shoe and the pedal, but it is important, when choosing this option, to be able to release the prosthetic foot easily from the pedals.



Danger of falling and injury

Click systems are only suitable for experienced cyclists. The trigger point of the click system must be set very low. Otherwise, there is danger of falling and injury!

Hook and loop fastener

A piece of hook and loop fastener attached in/at the sole of your shoe and on your pedal will securely hold your foot to the pedals while pedaling and allow a safe and quick release of the shoe when getting off the bike.



Note:

Keep in mind that shortening the crank arm may offer you more comfort while pedaling with the prosthesis. A Shorter crank will reduce the range of motion of the rotation and will offer you more comfort in your knee and/or hip.

Foot positioning

Experiment with different foot positions to keep the heel of the prosthetic foot away from the frame. This is important to prevent the heel sticking/catching in the frame when pedaling, as this increases the risk of falling.





Training plan

Accompanied by your physiotherapist

This training plan is for users who have never ridden a bicycle before or who are still a little uncertain about how to begin to ride or begin to train on a bicycle. This plan can help build up your fitness and increase your safety on the bicycle. If you have not ridden a bicycle/exercise bicycle since your amputation, it is a good starting point to begin with 5 minutes training, and aim to remain within the yellow section of the BORG scale (see below). The BORG scale is a measure of perceived exertion. It can help modify your training depending on your existing fitness level and co-morbidities.

As soon as you manage to **pedal for a full 15 minutes,** it's time to swap your stationary bicycle for a bicycle!

Note for stationary bicycle exercise:

1. Be aware of the heel placement to avoid catching the frame.
2. If the foot isn't comfortable in the strap or on the pedal, fix your prosthetic foot with a theraband, hook and loop fastener strap or other strap on to the pedal for easy cycling.

	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK 5	WEEK 6
MONDAY	5 min	10 min	15 min	20 min	25 min	30 min
TUESDAY						
WEDNESDAY	5 min	10 min	15 min	20 min	25 min	30 min
THURSDAY						
FRIDAY	5 min	10 min	15 min	20 min	25 min	30 min
SATURDAY			Trip on Sat. or Sun.	Trip on Sat. or Sun.	Trip on Sat. or Sun.	Trip on Sat. or Sun.
SUNDAY			Trip on Sat. or Sun.	Trip on Sat. or Sun.	Trip on Sat. or Sun.	Trip on Sat. or Sun.

The BORG scale*

COLOR	BORG	EXPLANATION/PERCEIVED EXERTION
Green	6	Zero exertion
	7	Very easy
	8	Minimal recognition of effort
Yellow	9	Very light (Comfortable walking pace)
	10	Can just start to hear your breathing
	11	Conversation is easy and you feel you could run for a while at this pace
	12	Light exertion - This is where you are developing your aerobic system
Orange	13	Somewhat Hard
	14	You can hear your breathing but you're not struggling
	15	You can talk but not in full sentences - You are still developing the aerobic system here but getting towards it's top end
	16	Hard work - This is probably just below your anaerobic threshold
Red	17	Very hard - Starting to get uncomfortable and you're getting tired - This probably represents your anaerobic threshold
	18	You can no longer talk because your breathing is heavy
	19	Extremely hard. Your body is screaming at you to stop
	20	Max exertion

*Borg scale 6- 20 © Gunnar Borg 1970, 1985,1998

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