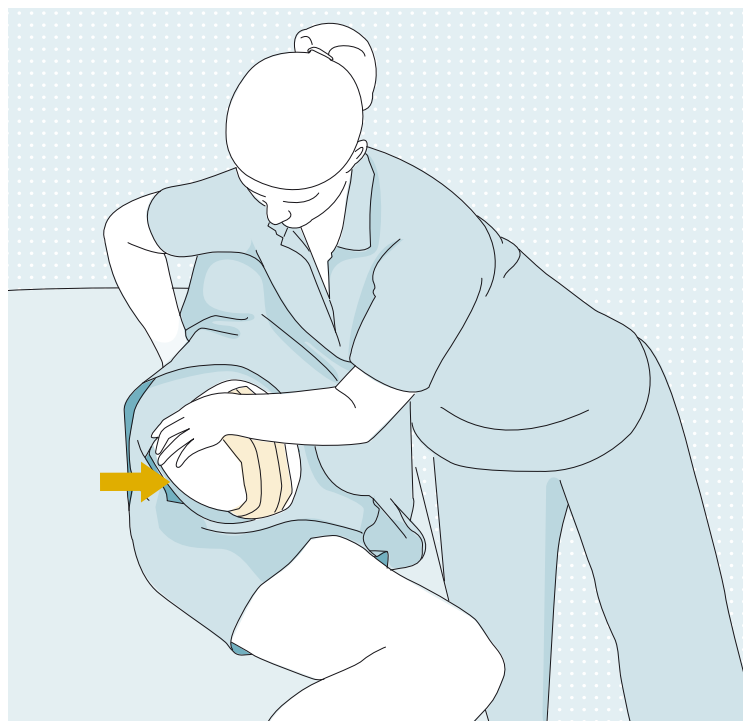
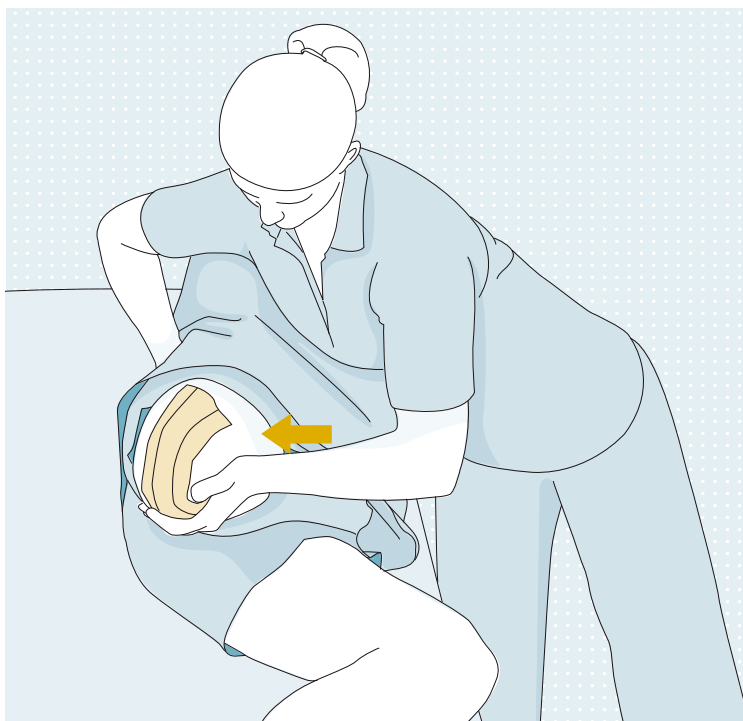


Exercises for life at home

The exercises described below are used to continuously strengthen the musculature and should be performed in preparation for the prosthesis.

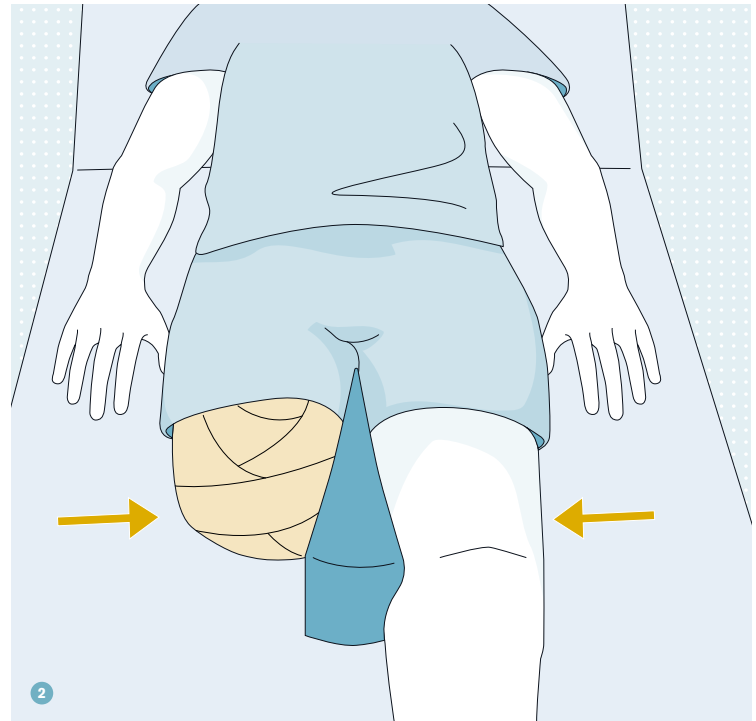
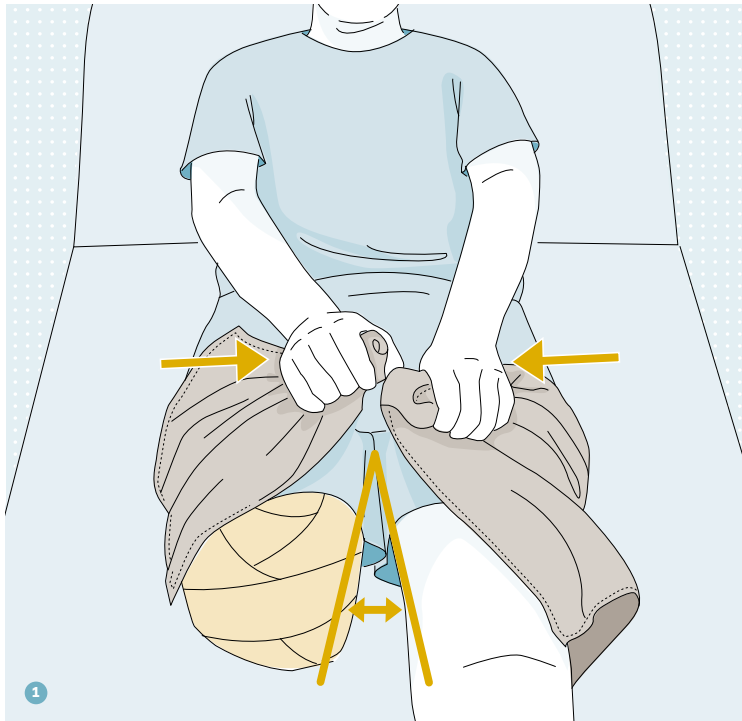
It is important that in addition to the intact side, the affected side (residual limb) and the trunk muscles are included in the exercises. The first therapeutic step of therapy is to ensure the loading capacity and mobility of the residual limb. It is useful to also ask the patient's physician about this.



Stretching the muscles of the residual limb

To maintain or restore the maximum mobility of the joints and quickly get accustomed to standing and walking with the prosthesis, the muscles and joints around the residual limb must be sufficiently mobilised. Hip flexion can be minimised by adequate stretching and controlled post-isometric techniques.

A physiological range of movement of the hip joint allows the O&P professional to fabricate a prosthesis with a physiological socket position and a correct load line.



Muscle strengthening

Muscle strengthening of the residual limb

Because strong residual limb muscles allow better control of the prosthesis and thus contribute to a better gait pattern, we recommend that the respective training is started a few days after the surgery.

1. Strengthening the lateral thigh muscles

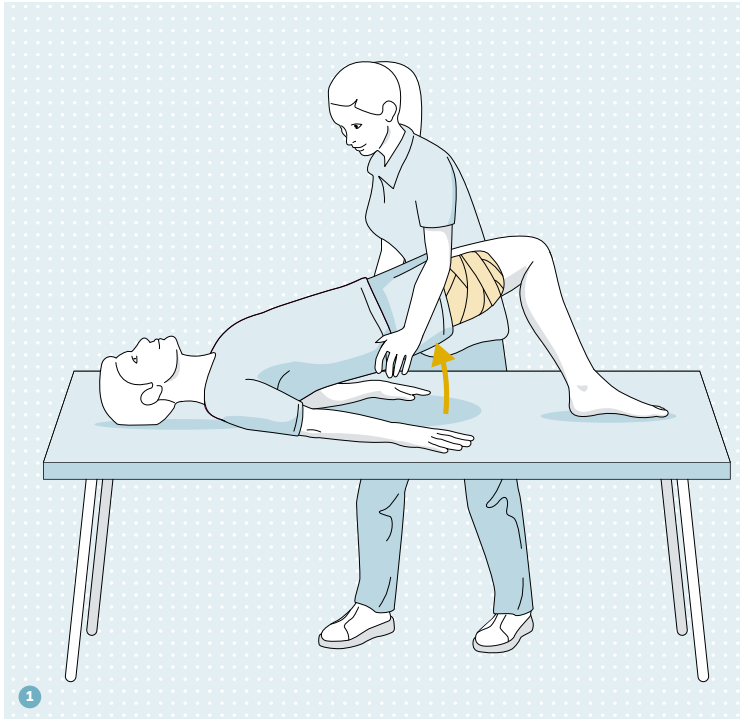
Wrap a towel around both thighs and press the thighs against the resistance.

2. Strengthening the medial thigh muscles

Put a cushion between the thighs and press the thighs against it evenly.

Muscle strengthening of the contralateral side of the body

Also the sound leg must be strengthened repeatedly throughout the entire treatment and therapy process. It is important to choose different initial positions so the leg is not only loaded in static situations. Simultaneously, the patient should be trained to have confidence in the prosthesis so the two legs are loaded evenly and imbalance is prevented. Be sure to stabilise your patient when doing exercises in a standing position.

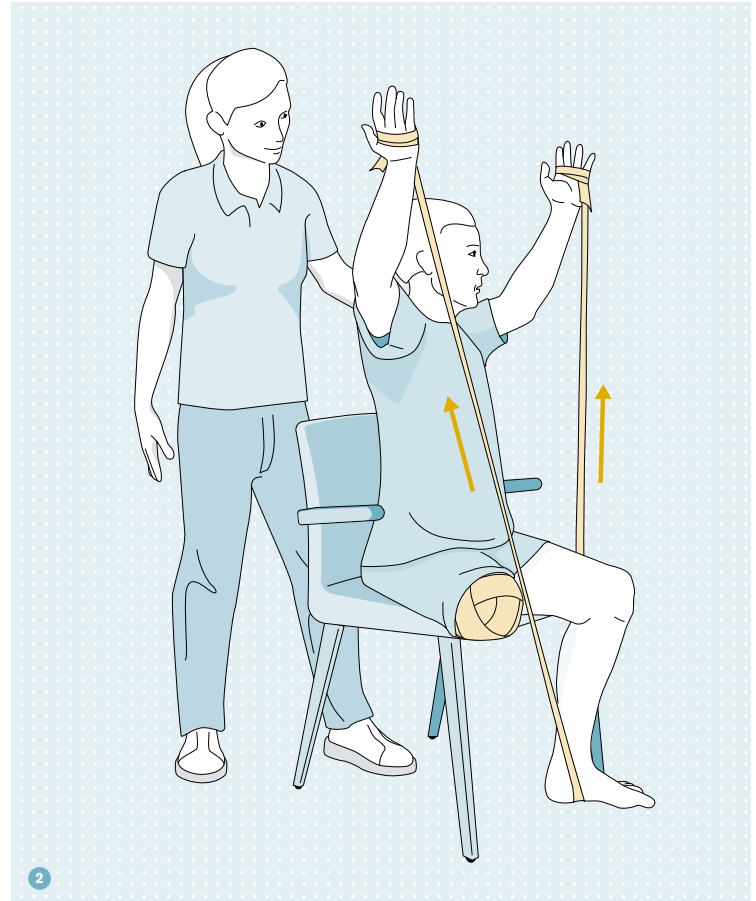


Muscle strengthening of the torso

The upper body muscles play an important role when learning to walk with a prosthesis. The goal is to achieve a posture that is as upright as possible. Patients should therefore be well prepared before being fitted with the final prosthesis.

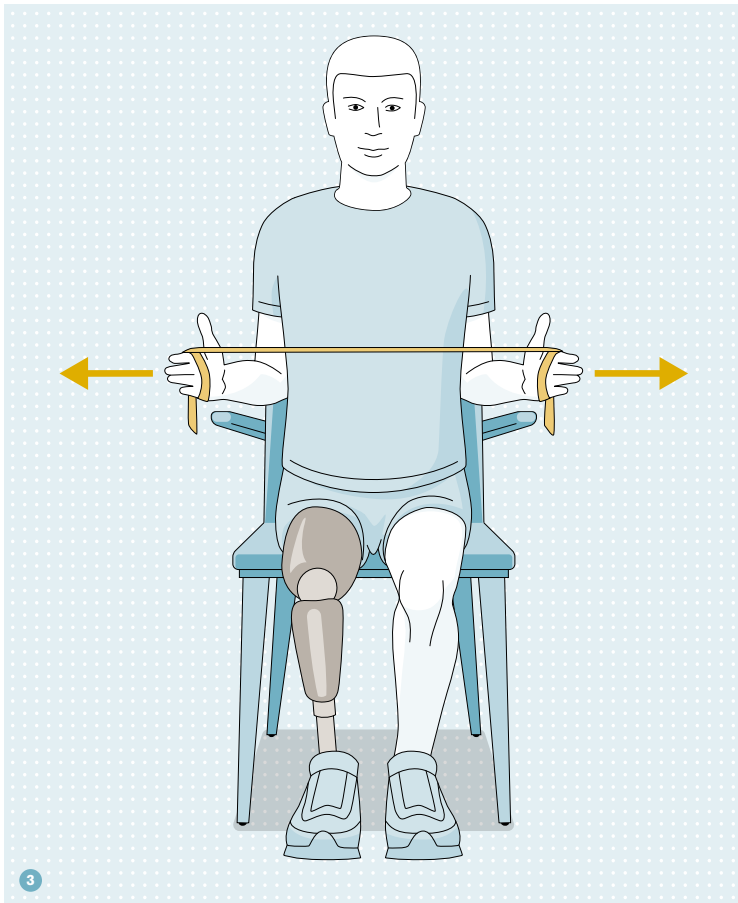
1. Strengthening in supine position

The patient lies on the back with the knee bent and the foot flat on the floor. They slowly lift their buttocks and then lower them again. Make sure that the hip joint on the affected side is not lowered/remains at the same level as the other side.



2. Strengthening in a sitting position

The patient sits on a chair. They raise their arms in flexion/abduction/external rotation and lower them again slowly. The shoulder blades should be pulled down towards the spine. If this exercise is too difficult with a resistance band, a stick can be used instead.



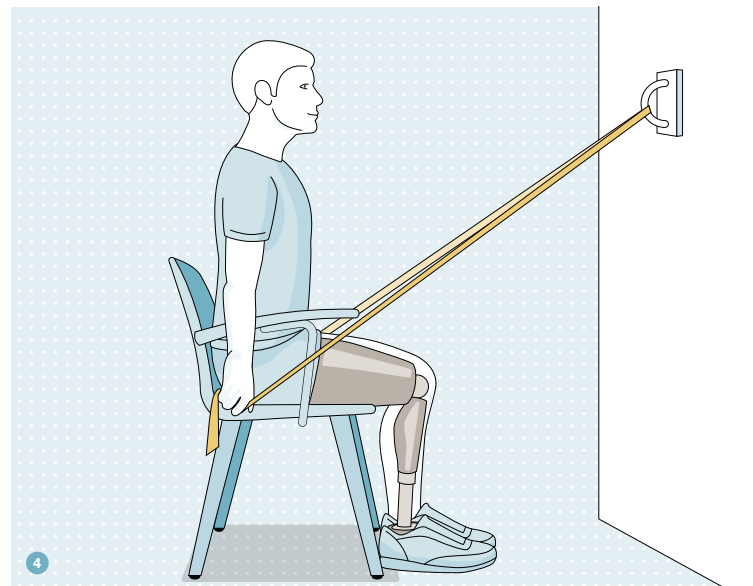
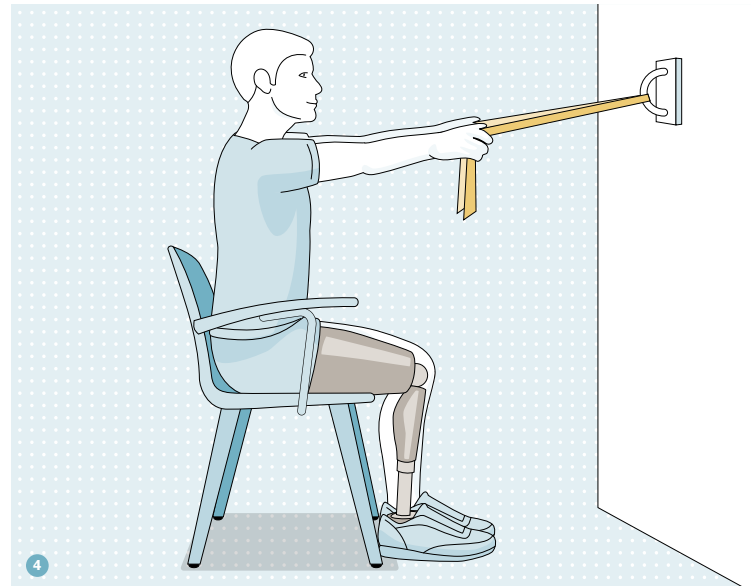
3. Strengthening the interscapular musculature and mobilising the extension capacity of the thoracic spine

The patient is sitting on a stable chair without leaning against the backrest. The resistance band is held with both hands at shoulder width with the upper arms held against the body and the elbows flexed approx. 90°. The patient should now apply symmetrical horizontal tension with the forearms in the maximum possible external rotation of the shoulder joints.

While increasing the external rotation of the arms, you instruct the patient to straighten their upper body (thoracic spine) and hold the elbows against the torso.

4. Strengthening the arms

Because less mobile amputees usually need mobility aids at least some of the time, it is important to also exercise the support function of the arms. An exercise with a resistance band at wall bars (alternatively at a door handle) can be used for this purpose: The patient should sit upright



(no spine flexion) with the resistance band above their head. The arms should be moved from above and in front down to the sides while the palms turn to face backwards. The arms should be pulled against resistance into extension/abduction/internal rotation. The exercise can be made easier by using the elbow joint.

Note: If the patient cannot bend their torso forward that far, this exercise can also be done when leaning further back.



If you ...

... want to know the specifics of walking with a certain prosthesis or how to identify the causes of gait deviation, please contact the respective O&P professional.

... want to learn more about training with amputees and the different prostheses, please attend our seminars especially for therapists.

More at:

<https://www.ottobockus.com/therapy>

Gait training

In addition to exercises for restoring stamina, coordination and strength, amputees require special gait training with their prosthesis. This training includes walking forwards, backwards and sideways, sitting down and standing up, and coping with different surfaces and obstacles (e.g. ramps, stairs and kerbs). In addition, there is general gait training for developing and improving balance.

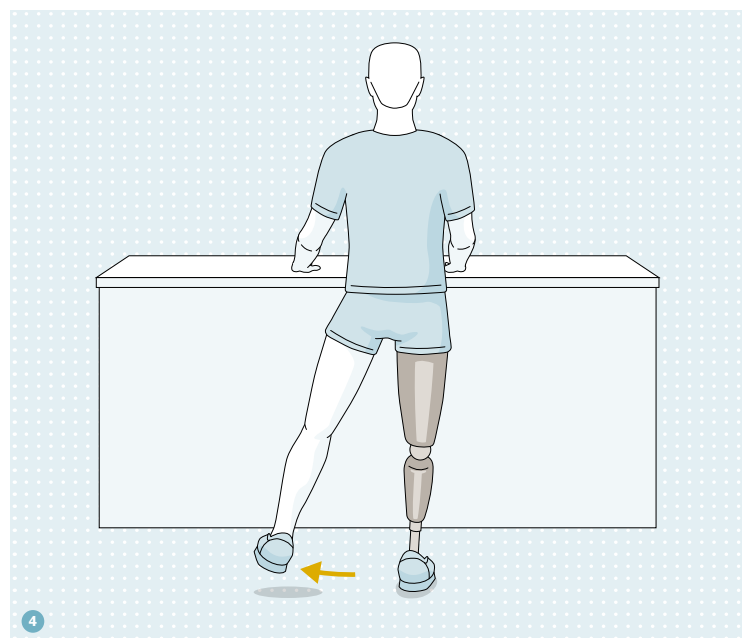
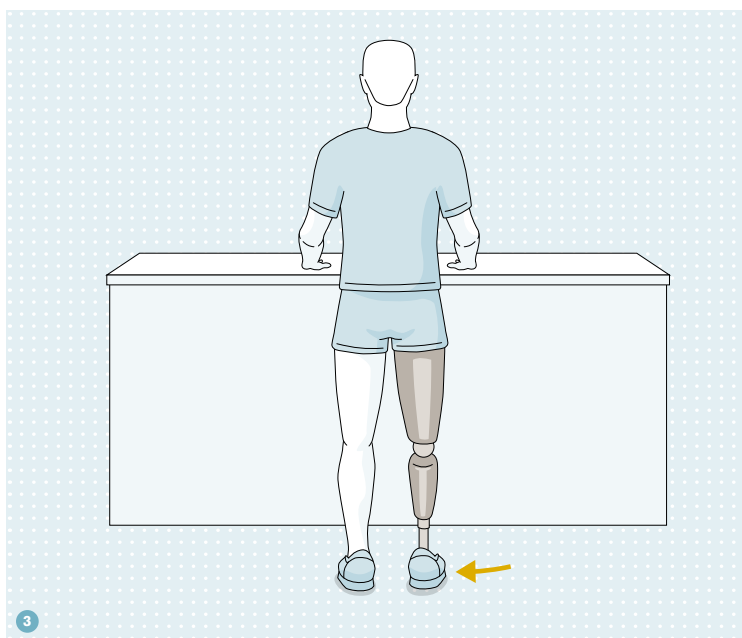
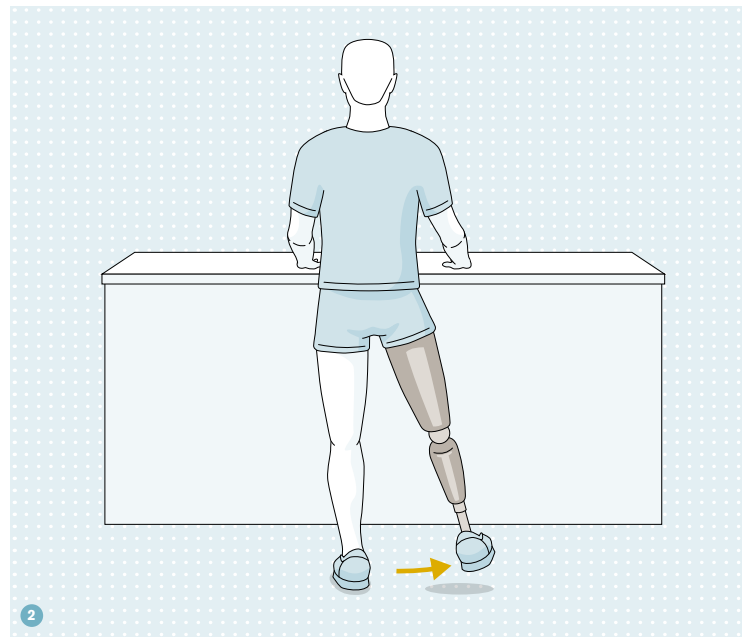
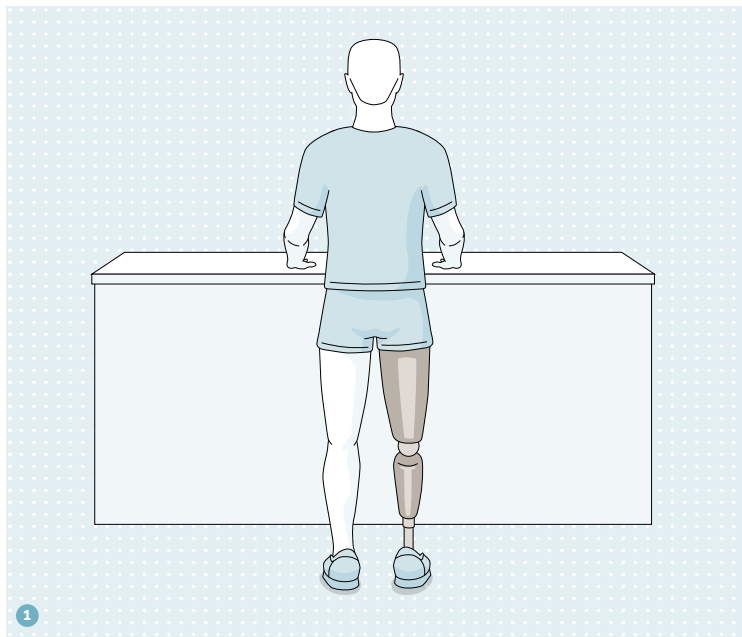
In gait training for above-knee amputees, the basic functioning of the knee joint plays a major role. To enable you to provide specific therapy to your patients, it is important for you to know the special features and differences among the many prosthetic functional solutions: Some patients, for example, only walk with a locked knee, others with a free- swinging prosthetic knee. There are also differences between mechanical and microprocessor-controlled knee joints.

It is important to obtain information from the O&P professional on the way the prosthesis functions prior to starting gait training.

Before starting ...

... the actual gait training, standing up and sitting down with the respective prosthetic component should be practiced.

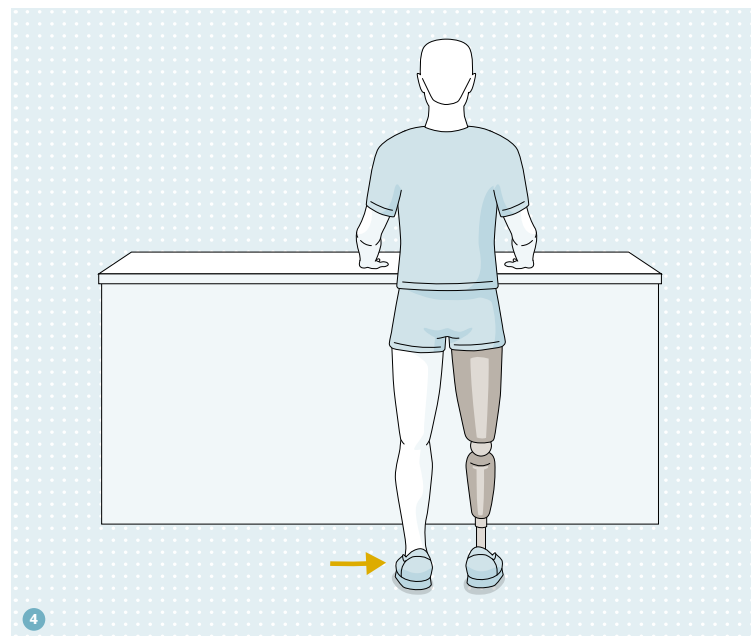
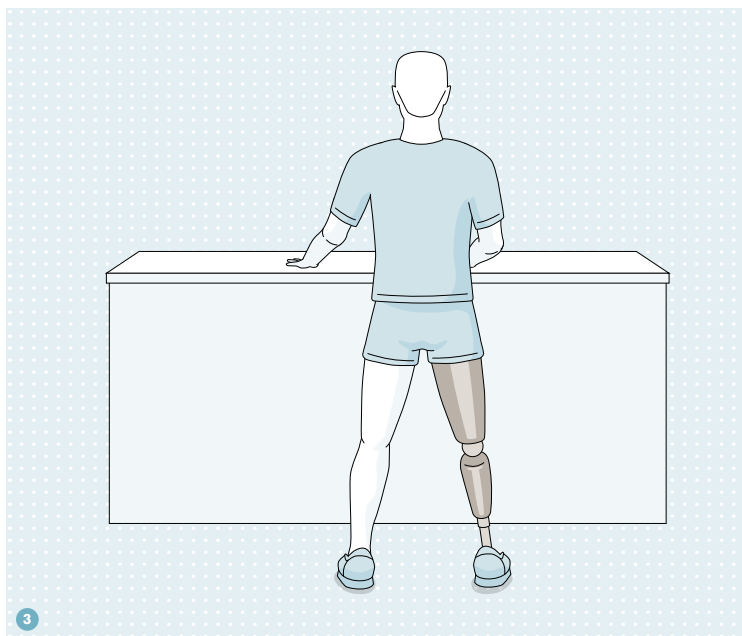
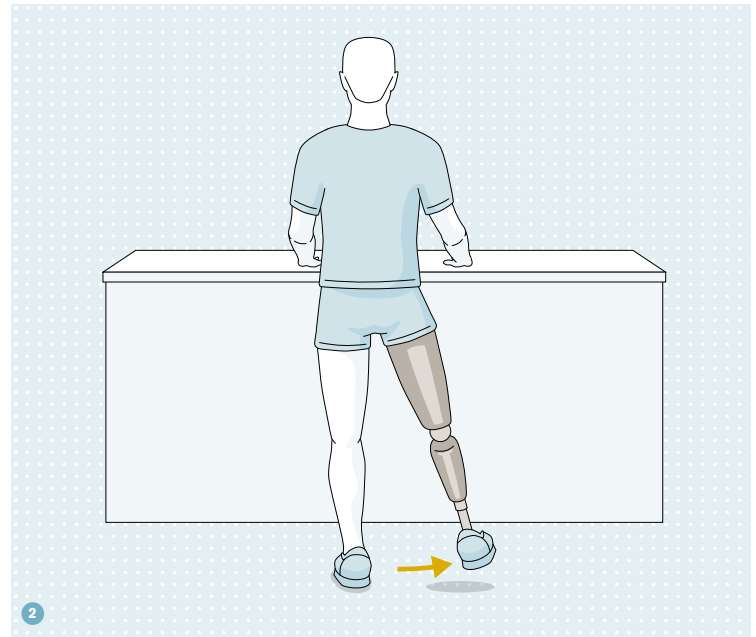
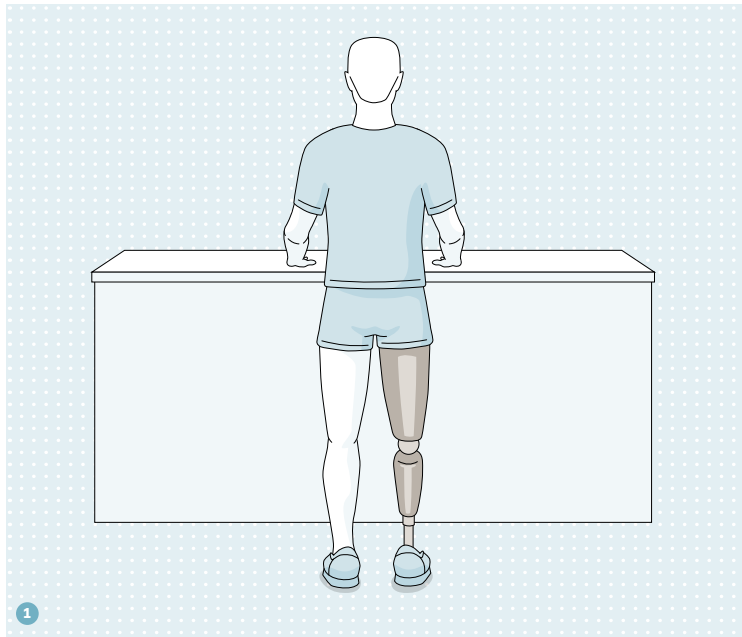
... free exercises (with and without a crutch), walking forwards, backwards and sideways should be practiced at the parallel bars.



Supporting leg exercise

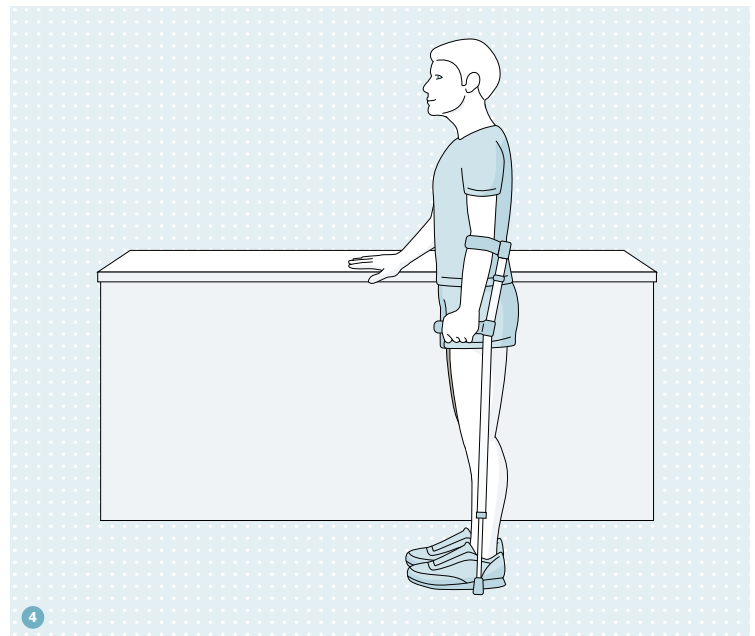
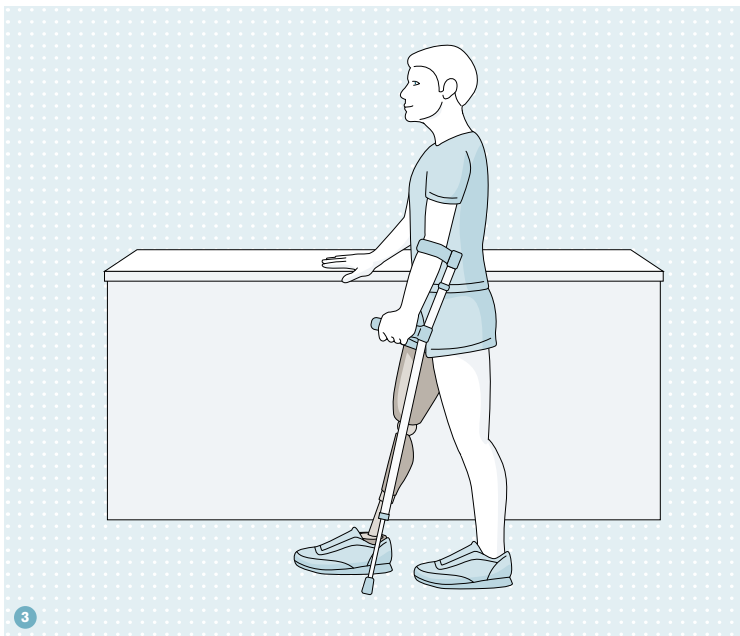
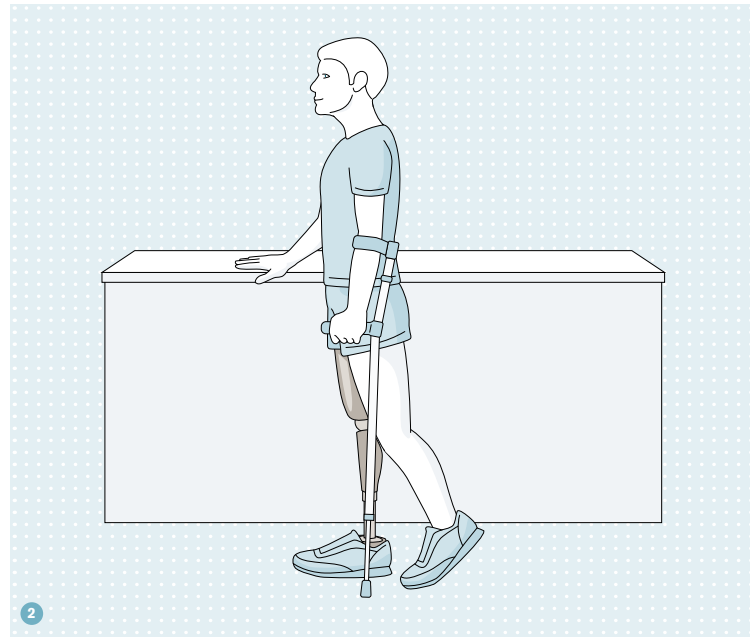
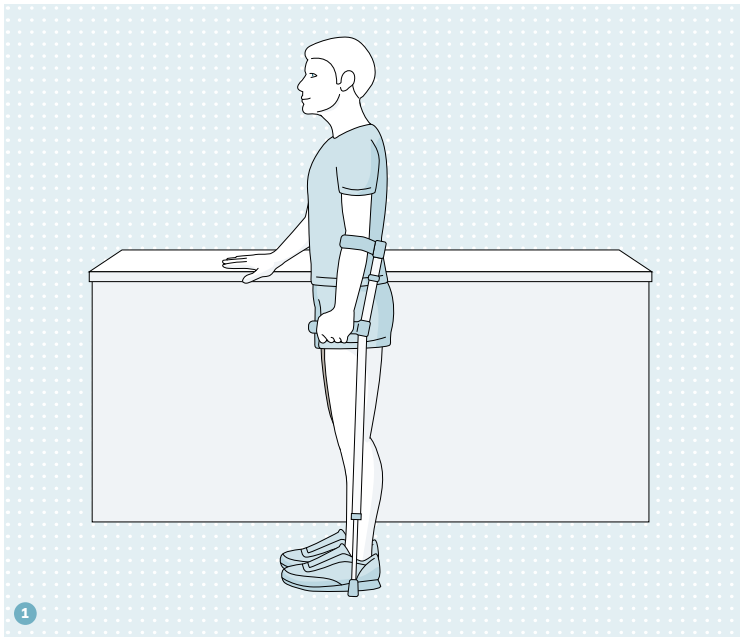
The goal of this exercise is to stabilise the supporting leg on the amputated side and strengthen the sound leg. The patient stands upright in a firm stance and supports their hands on an elevated surface – e.g. a chest of drawers.

First they load their sound leg by moving the prosthetic leg to the side and back. After reaching the initial position again, they repeat the exercise in the other direction by standing on the prosthesis and moving the contralateral leg to the side.



Side steps

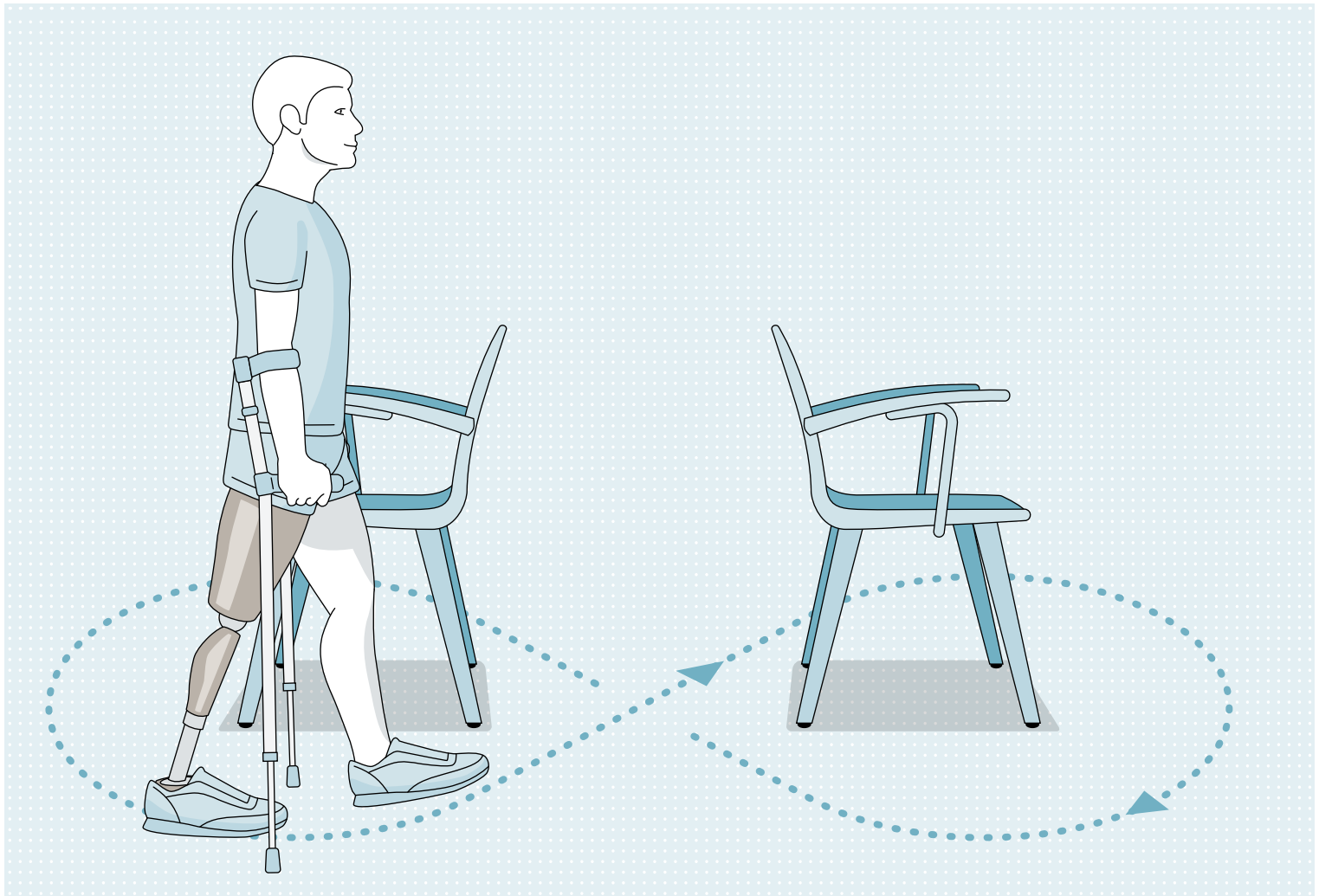
This exercise increases the patient's safety when using the prosthesis to walk sideways. They hold onto e.g. a kitchen counter and move the prosthesis to the side, put it down, and then close in with the other leg. After several steps, they should change directions. The patient should start with small steps and always hold on firmly.



Walking forwards and backwards

To practice walking forwards and backwards, the patient holds onto e.g. a kitchen counter firmly with one hand and supports the other on a forearm crutch. They take a small step forward/backward with the healthy leg and close the prosthesis to the healthy foot. The patient should start with small steps, closing to the other foot. Depending on their muscle condition and the functionality of the prosthetic knee joint, patients may be able to increase the level of difficulty up to passing the other foot.

Important: Be sure to obtain information from the O&P professional in advance on how the prosthetic knee joint functions and reacts to walking.



Walking a figure-eight

Using a suitable device (walker or forearm crutches), the patient walks a figure-eight around two firmly placed chairs using small steps. To practice using the prosthesis in different load situations, they continually change direction so the prosthesis is sometimes on the inside of the circle and sometimes on the outside. Make sure that the prosthesis is also well loaded when turning. Turning on the contralateral foot (ballerina) should be avoided – it is preferable to change the direction with small steps in place.

Important: Giving correct instructions for walking forward on even ground requires explicit knowledge of the functioning of the prosthetic knee joint. Be sure to talk to the O&P professional in advance.