



ottobock.

Quality for life

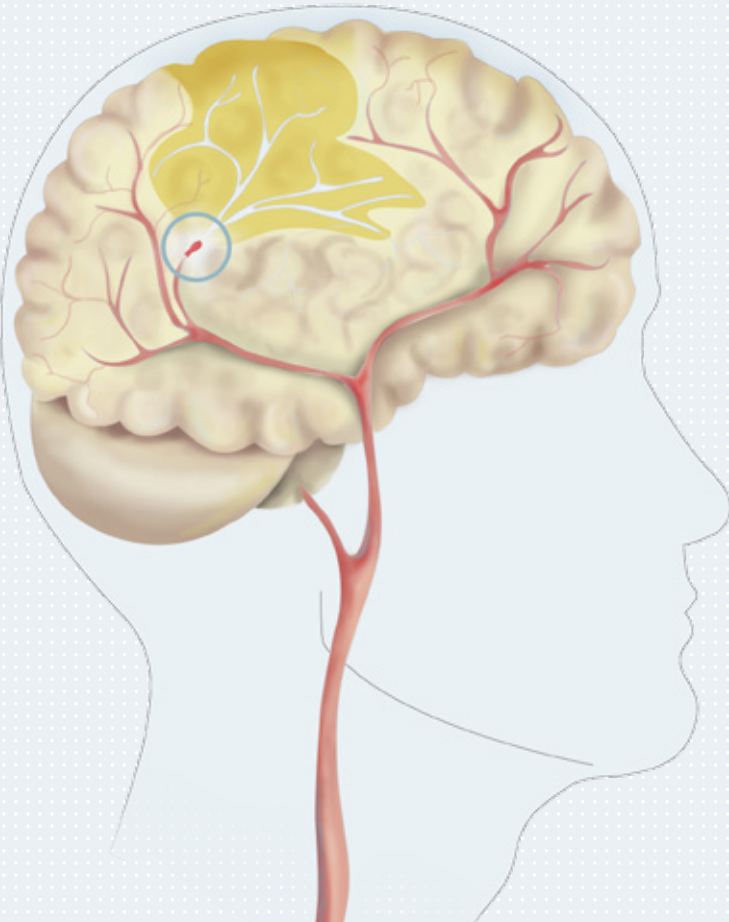
# Stepping forward

Medical devices for stroke patients

Information for end user

# What happens during a stroke?

Most stroke patients are over age 60. But younger individuals can be affected as well like Marleen.



There are two main causes of a stroke: inadequate blood supply (ischaemia) and internal bleeding (haemorrhage). With ischaemia, the brain is not supplied with sufficient blood for a short period – this is the most frequent cause of a stroke. It is caused by a blood clot or calcification that blocks a blood vessel. A haemorrhage occurs when a cerebral vessel tears and blood enters brain tissue. This puts pressure on the surrounding areas.

In both cases, the constant supply of blood to the brain is interrupted. Cells are no longer supplied with sufficient oxygen and nutrients. This causes damage to the brain, so it is vital that treatment is delivered as soon as possible.

But even if treatment is given very quickly, two thirds of patients sustain some damage. The good news is that the brain is capable of regenerating. Slightly damaged cells can be partially, or in a best-case scenario, completely restored. With specific training, other healthy nerve cells can also assume their function (neuroplasticity).

Together with a good rehabilitation team, good progress can be made. Some 70% of all patients who have survived a stroke are able to live relatively independently three months later. Every step forward is a small victory!

# What happens next?

A stroke can change your life from one moment to the next. Your everyday routine is changed and the focus is on relearning old skills.

The most common consequences of a stroke are paralysis on one side of the body and impaired sensation in the arms and legs. Then come speech, swallowing and vision problems. Perception and the sense of balance are often impaired.

If you have physical impairments, your rehabilitation team will advise you as to what medical devices are particularly suitable for you. Some devices can facilitate training in the early rehabilitation phase, while other devices help you return to your normal routine later. Take charge of your everyday life and rehabilitation and make use of help – from your rehabilitation team, family members or medical devices.

## **Training and mastering everyday life**

Medical devices are intended to help you be more active, more independent in your daily life, and continue to develop dexterity and muscle strength. Many devices also relieve pain and protect against uncontrolled movements. “It is important that the patient be fitted with the product most suitable for him or her – orthoses, products for functional electrical stimulation, or a wheelchair,” says Dr. Thorsten Böing. He worked in rehabilitation centres for 13 years and heads the Neurorehabilitation division at Otto Bock in Germany.

*“It is important that stroke patients become active again.”*



**Dr. Thorsten Böing**  
Head of Neurorehabilitation at  
Otto Bock HealthCare Germany



*“For me, getting out and about is the best form of rehabilitation!”*

Gerhard

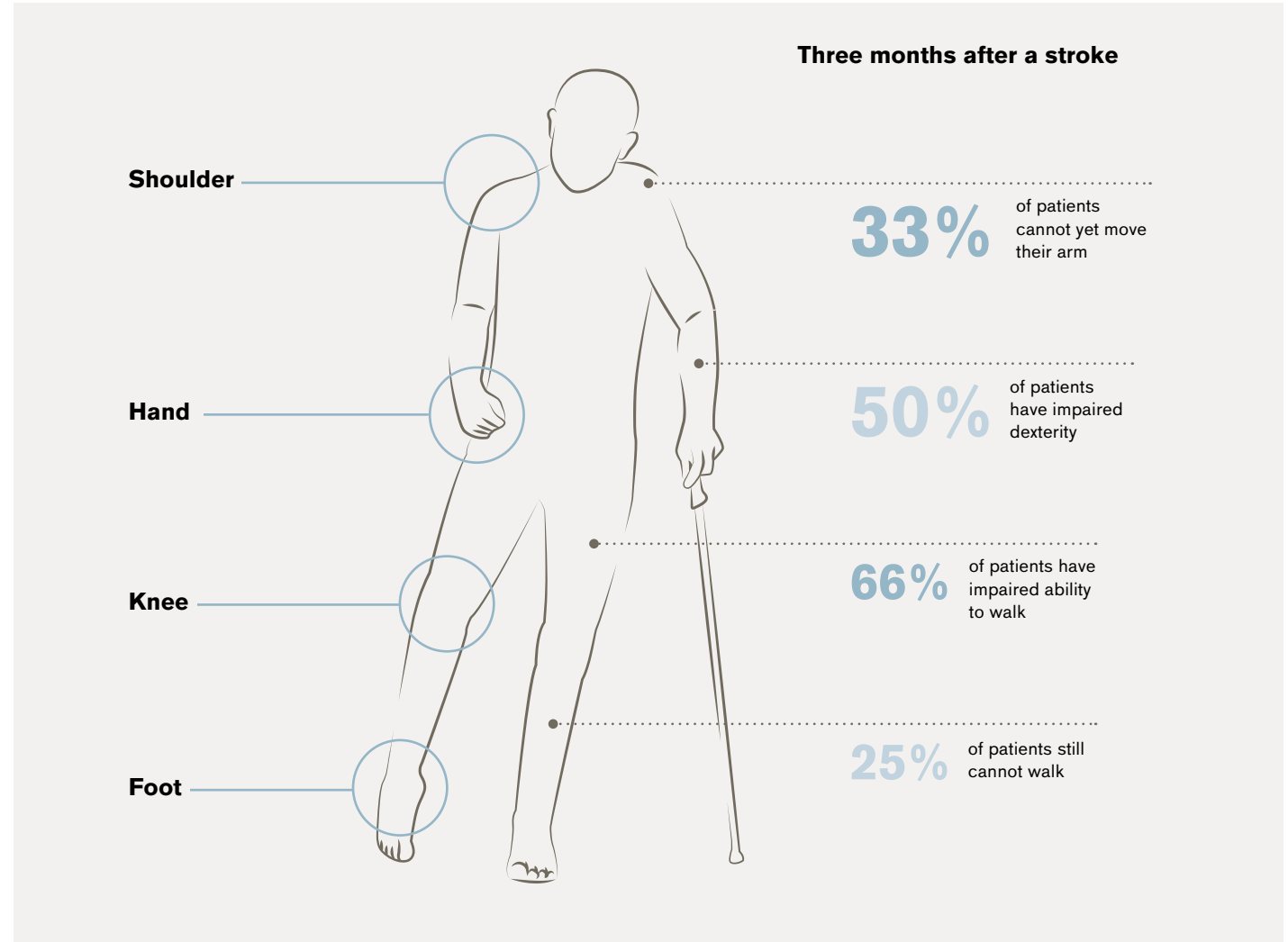
## Gerhard: Suffered a stroke at age 52

“We were skiing when the accident happened. My wife had already gone down into the valley with part of our family, whereas my sister-in-law and I were still on the slopes. All of a sudden, I fell. My sister-in-law tried to help me get up, but I couldn’t. Then everything went black. The doctors later diagnosed a brain haemorrhage. I was taken to a hospital and was in a kind of vegetative state for almost three months. When I woke up, I noticed that I was paralysed on my right side. At first, I could get around only with a wheelchair. I learned how to walk again in rehab, but I couldn’t lift the tip of my foot. The first time I wore MyGait, I was really surprised by the feeling. Suddenly, I could move my foot again.”

# Typical consequences of a stroke

Stroke patients typically experience impairment of mobility in the shoulder, hand, knee and foot.

Often one side of the body is completely or partially paralysed and has sensory deficits. The following medical devices were developed especially for stroke patients. They help you train movement patterns and make everyday life easier for you.







*“The orthosis gives me security and stability, of course, and it improves my balance and my walking as well”*

Marleen

## Marleen: Suffered a stroke at age 20

A stroke at age 20 is quite unusual. But that's what happened to Marleen, and she was in a coma for 14 days. When she woke up she could neither speak nor walk and was paralysed on one side of her body. An athlete, Marleen lost nearly everything at this point: her physical health, dancing hip hop, her boyfriend, her studies and her independence. Against the odds, she managed to regain an active lifestyle with the support of her family.

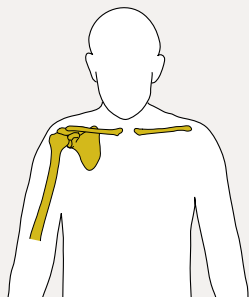
Today Marleen works as an office communication assistant at a health centre. She welcomes customers, sets up appointments and prepares documents. She also drives a specially adapted car and plays golf in her free time. Marleen relies on the Omo Neurexa Plus shoulder orthosis for her many varied activities.

Despite her stroke, Marleen has managed to remain an upbeat, active person.

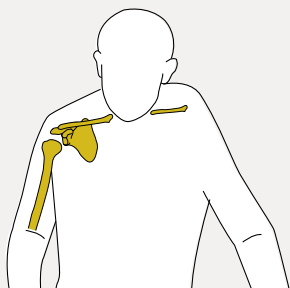
# Position the shoulder

## For a natural posture

When one shoulder is paralysed, it hangs lower than the opposite side. Often it rotates inwards and the arm is slightly flexed. The shoulder may even be partially dislocated. In this case you feel pain and your mobility is even more limited.



• Healthy shoulder



• Incompletely dislocated shoulder

### Omo Neurexa<sup>plus</sup>



Omo Neurexa stabilises and positions your shoulder in a natural position. The arm is extended and rotated slightly outwards.

#### Benefits at a glance

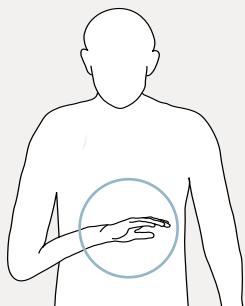
- Relieves pain
- Stabilises the arm against the spastic pattern
- Improves body posture
- Has a positive effect on balance and gait
- Facilitates gait training
- Does not restrict arm movements
- Soft, temperature-regulating material is pleasant to wear
- Slim design for wearing under clothing
- The orthosis can be put on independently (depending on the severity of your disability)



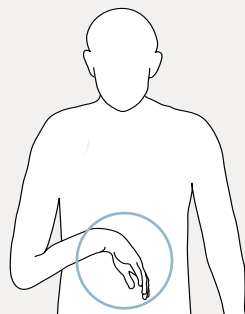
# Support the hand

## For better grip and to relieve the joint

When forearm function is impaired, the hand is also affected. The wrist joint and fingers may face down. These wrist supports secure your hand either in a certain position or hold it so that it is easier to use the fingers and grasp things.

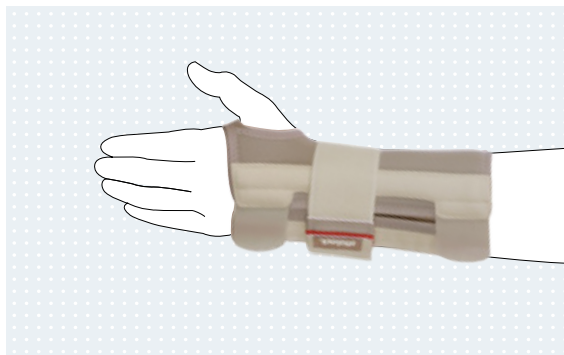


• Neutral position of the hand



• Drop hand

### Manu Neurexa

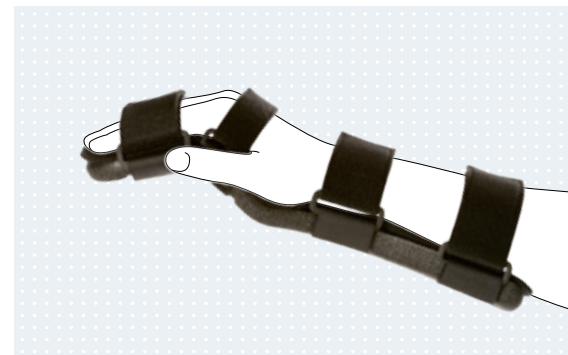


Manu Neurexa is a wrist support that enables you to grasp better. This helps you in occupational therapy. Better positioning and posture of the hand can optimise use of existing grip strength.

#### Benefits at a glance

- Ensures a natural hand position
- Promotes activity and restores awareness of your hand
- Relieves pain
- Soft, temperature-regulating material is pleasant to wear
- Facilitates training of the hand and fingers in occupational therapy

### Manu Immobil Long



Manu Immobil Long ensures that your wrist and finger joints are immobilised. The orthosis is particularly useful at night when you wish to position your hand as painlessly as possible.

#### Benefits at a glance

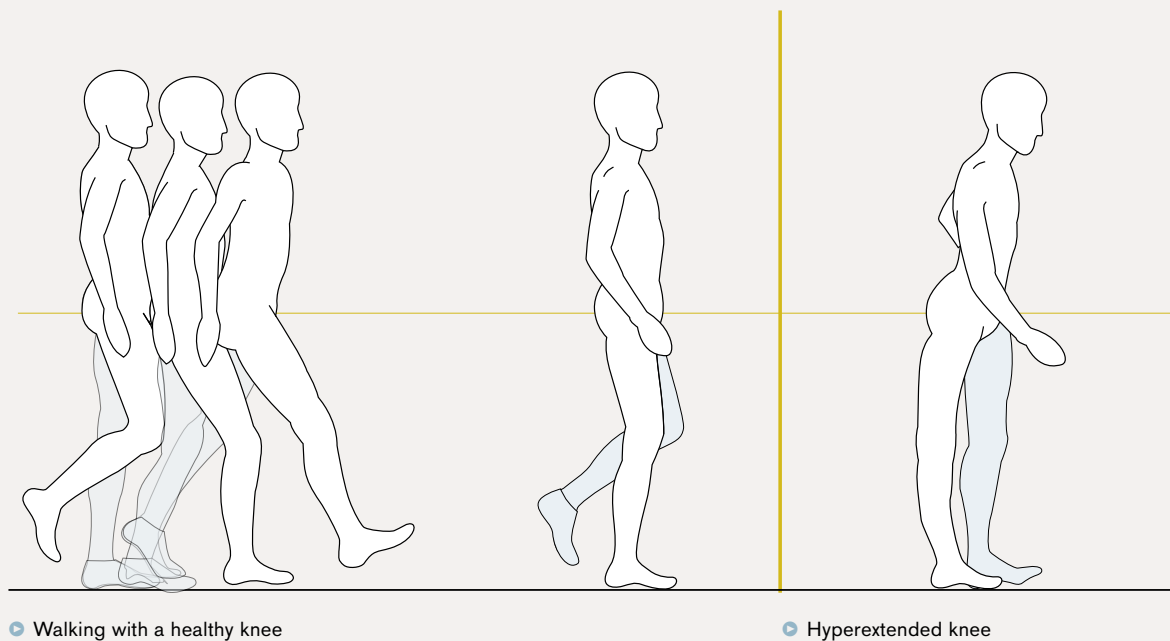
- Immobilises hand and fingers
- Breathable padding for better wearer comfort
- Prevents pressure points and overlapping fingers
- Easy to apply with the other hand
- Individual adaptation is possible



# Guide the knee

## Smoother movement

When leg muscles are paralysed, patients often perceive instability in the leg and knee. They unknowingly overextend their knee as soon as they put weight on it. Hyperextension is intended to compensate for lost muscle functionality and to secure the knee. However, this compensating movement interferes with learning how to walk naturally again.



### Genu Neurexa



The Genu Neurexa knee orthosis prevents hyperextension of the knee joint. It supports your knee while allowing flexion when walking

#### Benefits at a glance

- Stabilises the knee and prevents hyperextension
- Easily integrated into gait training
- Promotes activity
- Increases awareness of the leg
- Positions the patella and thus prevents pain
- Prevents involuntary movements
- Soft, climate-regulating material is pleasant to wear

# Lift the foot

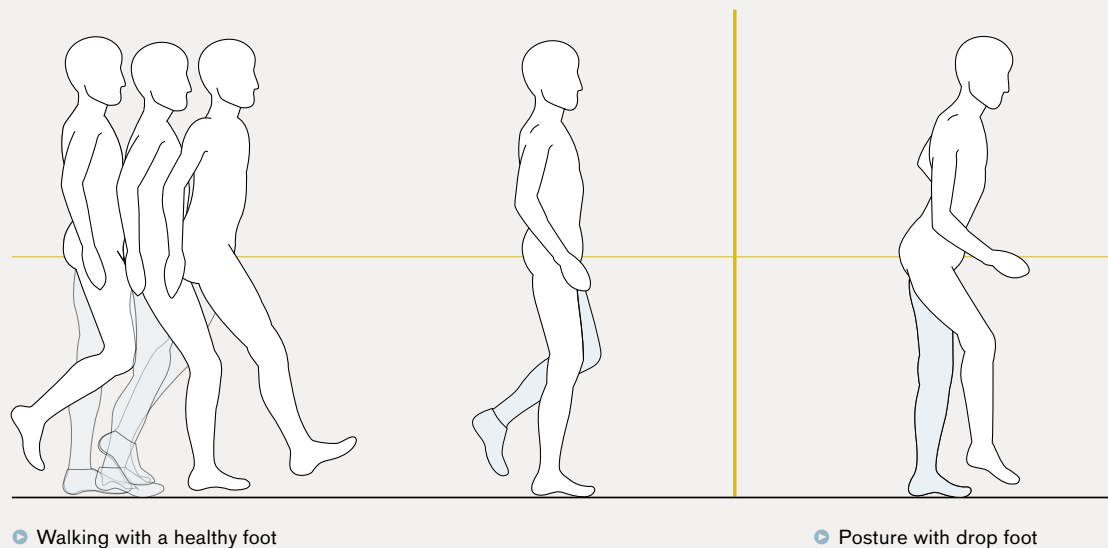
## Look straight ahead



For more information see:  
[www.dropfoot.co.uk](http://www.dropfoot.co.uk)

Do you find it difficult to point your toes upwards, or to keep the sole of your foot parallel to the floor? Then you probably suffer from drop foot, which is commonly accompanies hemiplegia – paralysis of one side of the body – following a stroke. Drop foot prevents a safe normal gait. When the leg is swung through, the foot is too close to the ground and you can easily trip. Stroke patients with drop foot often hike up their hip on that side to lift the foot off the floor. But this compensatory movement leads to new malposture that can cause back pain.

Various medical devices can prevent the toes from pointing downwards, while at the same time preventing the foot from twisting. Selecting one depends on what product your physical condition allows you to use. Please talk to your doctor, therapist and orthopaedic technician. It is also important to feel comfortable with the device. The goal is to move more smoothly. By avoiding compensatory movements such as hip hiking, you put less strain on your body. You will notice that walking is less tiring because it requires less concentration.



# Support the foot with orthoses

Dorsiflexion-assist orthoses support the leg muscles. They position the foot so that it can be lifted when walking.

## GoOn

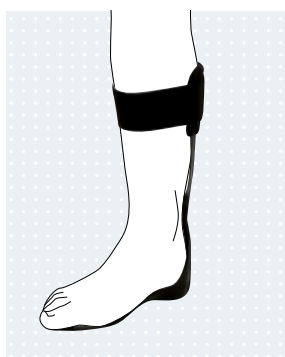


In case of minor problems with the dorsiflexion musculature, the GoOn helps the user to hold their foot in a neutral position, walk more safely and prevent stumbling.

### Benefits at a glance

- Easy to apply and made in a soft material
- The GoOn can be worn in almost all lace-up shoes, including those with higher heel heights

## Ankle-foot orthosis made of plastic



The plastic ankle-foot orthosis is particularly lightweight. It was developed for temporary use in the first phase of rehabilitation.

### Benefits at a glance

- Suited for temporary use or for shorter distances

## Malleo Neurexa<sup>pro</sup>



The Malleo Neurexa<sup>pro</sup> has been developed to treat acute supination, where the foot rolls outwards, caused by developing spasticity or stiffness.

### Benefits at a glance

- For the treatment of supination of the foot caused by developing spasticity

## WalkOn Flex

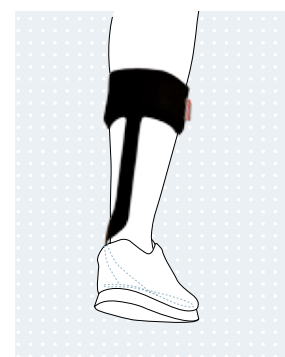


WalkOn orthoses are suitable for patients who want to be active. They facilitate walking on uneven ground and support climbing stairs and ramps. Carbon fibre makes the orthosis extremely durable yet lightweight. The padding is soft and regulates skin temperature.

### Benefits at a glance

- Allows flexibility in the ankle and knee while also lifting the foot
- More pliable material than in the other orthoses of the product family
- Low dynamic energy when walking

## WalkOn and WalkOn Trimable



### Benefits at a glance

- Lifts the foot and stabilises the ankle joint
- Moderate dynamic energy when walking

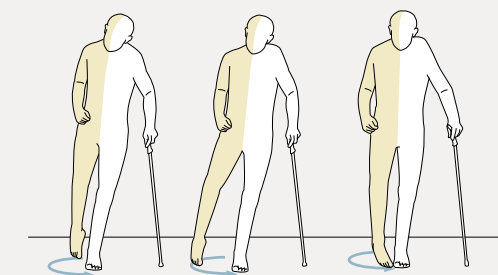
## WalkOn Reaction and WalkOn Reaction<sup>plus</sup>



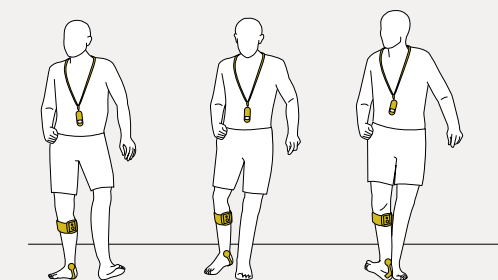
### Benefits at a glance

- In addition to lifting the foot, it also supports the knee
- High dynamic energy when walking

## Activate the foot with electrical stimulation



• Gait without FES



• Gait with MyGait®

Functional electrical stimulation (FES) allows those nerves that the central nervous system no longer controls, to be activated once again. The intensity of the electrical impulse is precisely adjusted for the patient, and is delivered externally (MyGait). The system activates the peroneal nerve, which is responsible for dorsiflexion, or lifting of the foot.

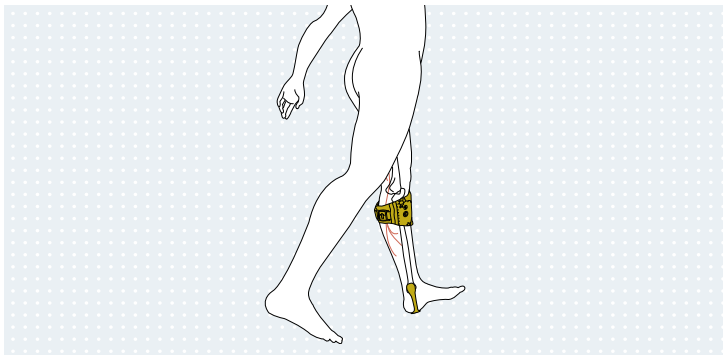
The nerve sends the signal to the muscles in the lower leg, which then lifts the foot. A positive effect is that you thus exercise your muscles. Certain conditions must be present for FES to be used, which must be determined by a specialist for each patient.

### **FES can offer a range of benefits:**

- Lifts the foot at just the right time
- Improves walking speed, pattern and confidence
- Makes it possible to walk greater distances
- Walking becomes less strenuous
- Requires less concentration on gait
- Boosts self-confidence and a sense of security
- Increases mobility
- Provides greater independence in everyday life

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## MyGait®



MyGait® is a surface stimulator that is fastened externally around the calf. A heel switch is worn on the foot in a special sock, which sends a wireless signal to the stimulator every time the user takes a step. The stimulator then sends stimuli to the nerve and the foot is lifted at just the right time – in the swing-through phase of the gait cycle. The MyGait® can even stimulate an additional muscle group, for example in the thigh. This provides additional support when walking.

### Benefits at a glance

- Choice of two different cuffs
  - Using the sock and heel switch, FES-supported walking is also possible without footwear
  - Can be applied by the end-user using only one hand
  - Easy-to-use, with a remote control
  - If necessary, an additional stimulation channel can be used to activate a second muscle group
  - Easy to clean, as many parts are washable
  - Self-adhesive, hypoallergenic electrodes
  - Features a range of different adjustment options
- 





# Other mobility aids

## Make everyday life easier

After a stroke or severe hemiplegia, other mobility aids can provide additional support, particularly in the early phases of rehabilitation. The lightweight Start M3 Hemi has special features that make the daily lives of stroke patients easier.

### Start M3 Hemi



#### Benefits at a glance

- Low seat to floor height facilitates propulsion with one foot
- Wider foot room available for more freedom of movement
- Easy to operate with one-hand control and one-hand activated wheel lock (optional)
- Foldable to a convenient size
- Multiple combination and equipment options

### Options



- Channel forearm support



- One-hand operation



- Anti-tipper



**Please contact us if you have any further questions or would like more information.**



**Safety instructions:**

The MyGait® bears the CE marking as medical products in accordance with the directives 93/42/EEC and 1999/5/EC.

This brochure has been provided to you by your specialist for general information purposes and cannot replace medical care. Not all patients with dorsiflexor weakness are suitable for functional electrical stimulation (FES). Have your physician or therapist explain the treatment, contraindications and potential risks or side effects to you in detail.

Please familiarise yourself with the product information and read the instructions for use, which contain information regarding possible applications, special precautions and potential adverse events.

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