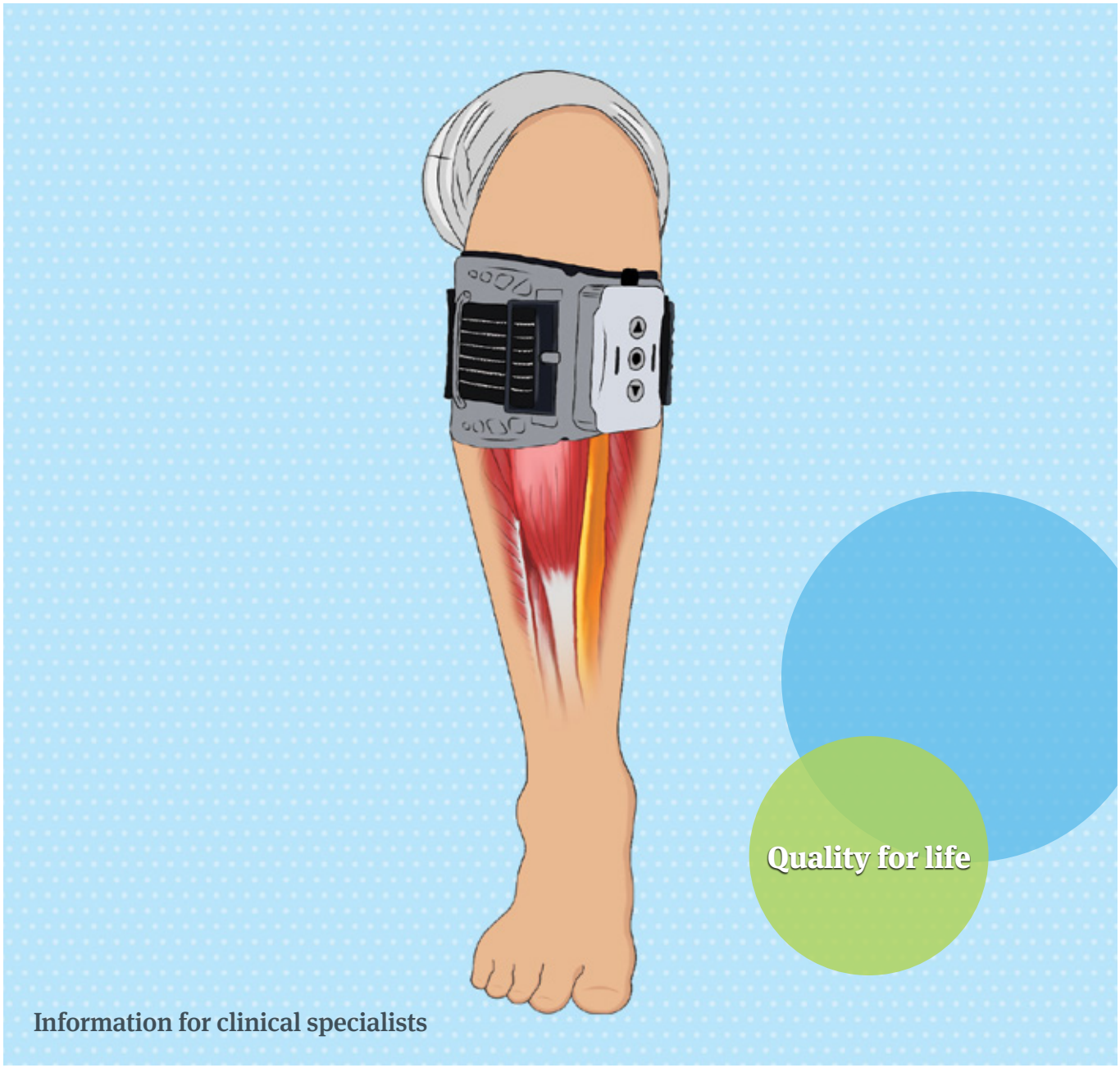
Tiwan Technology
Development Co.

Precise Pulses – Optimized Support

The Functional Electrical Stimulation (FES)

Gaamyar®; for gait rehabilitation, spasticity, and Foot Drop



Acts at just the right time

Functional Electrical Stimulation (FES) with Gaamyar®

Drop foot can be associated with neurological disorders such as stroke (CVA) [21-27], multiple sclerosis (MS) [12-16], acquired and traumatic brain injury (TBA), cerebral palsy (CP) [1-3] and incomplete spinal cord injury (SCI). This may lead to compensatory gait patterns that can lead to secondary complications.
Gaamyar®, a Functional Electrical Stimulation (FES) system from Tiwan Technology Development Co., is a cuff-based surface stimulator. It provides both clinician and user with sophisticated, customizable, and versatile stimulation profiles with the option of additional support via a second channel or device.
Gaamyar® offers an advanced, patient-focused solution for gait rehabilitation and treatment of spasticity and foot drop. Studies have demonstrated that early treatment intervention can lead to improved outcomes in functional mobility and improved quality of life for users.
The following pages provide an overview of the system to allow you to evaluate its benefits for your patients.

"It feels great to go walking with my children, like a «normal person». Gaamyar® increased my walking speed enormously. Helping my children crossing the road is no problem. I feel confident that we can safely reach the other side."

Maryam, 43 years (multiple sclerosis at the age of 29)

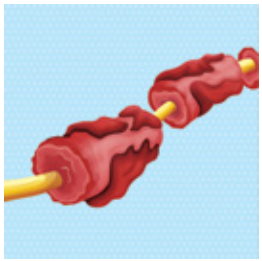
Use Gaamyar® early
Indications and contraindications

The Gaamyar® electrical stimulator device is applied to the lower leg. It can be used in the earliest phases of rehabilitation. The sooner Gaamyar® is used after a stroke or brain trauma, the better the chances of regaining body functions.

Indications

The Gaamyar® stimulation system is suitable for patients with dorsiflexor weakness and spasticity due to disease or injury of the upper motor neurone.
The following diagnoses that affect the central nervous system may cause dorsiflexor weakness:

- **Stroke (CVA)**



- **Multiple sclerosis (MS)**

- **Cerebral Palsy (CP)**

- **Spinal Cord Injury (SCI)**

- **Traumatic brain injury**

Contraindications

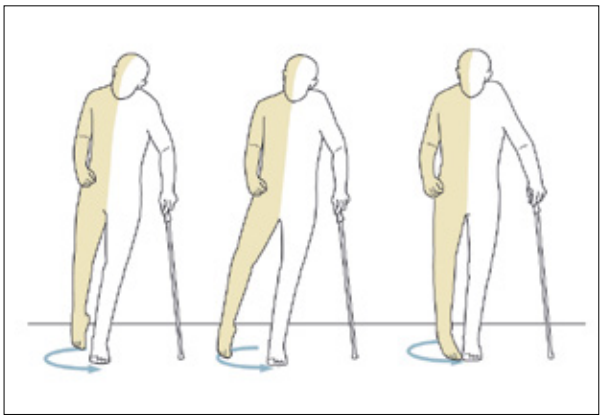
Gaamyar® may not be used in the following circumstances:

- by patients with a pacemaker, defibrillator, or other electronic pulse generators
- in case of inflammation or tumors in or near the area to be stimulated
- in areas with a localized disorder such as a fracture or dislocation that would be adversely affected by stimulated movement.

What's behind it
Gaamyar® technology

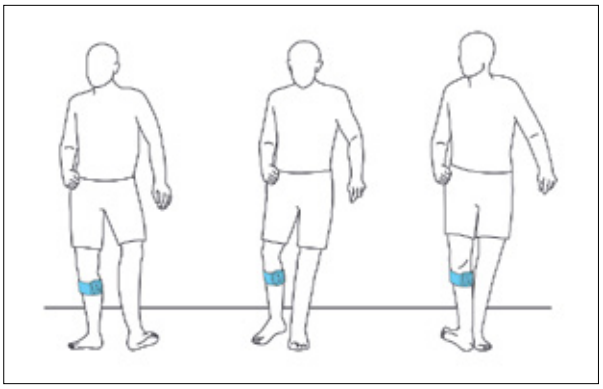
The product name Gaamyar®, which means walking aide in Persian, emphasizes the personal nature of the device. The surface stimulator can be customized in a variety of ways to suit individual needs. If required, a second stimulation channel or device can be integrated to stimulate additional muscle groups.

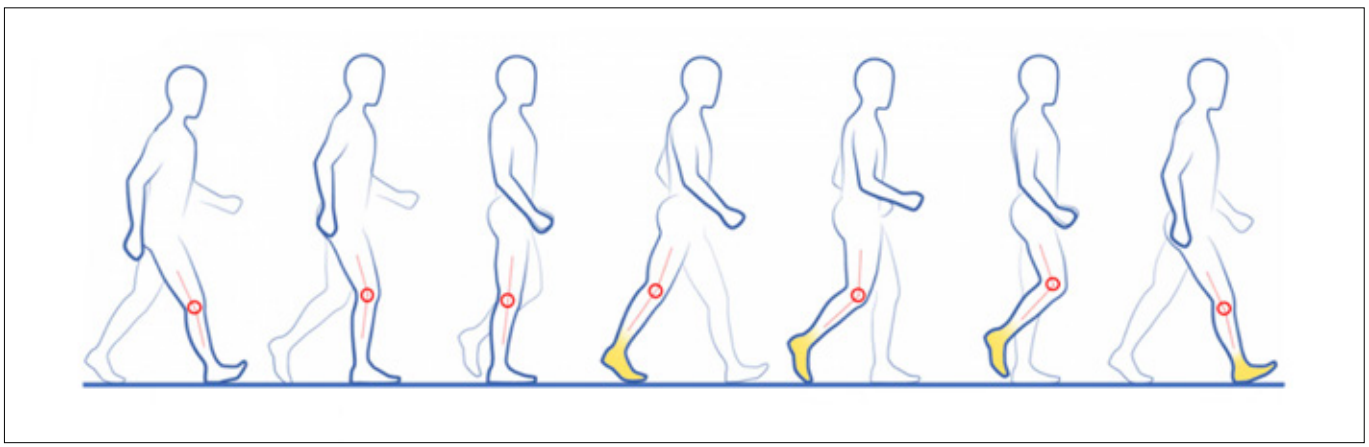
The Gaamyar® stimulation system makes dorsiflexion of the ankle possible. During the swing phase of the gait cycle, it assumes the function of the motor-impaired central nervous system and gives the intact peripheral common peroneal nerve the signal to lift the foot. The signal is transmitted to the muscles responsible for foot lift. A whole series of technological steps that happen so fast that the user doesn't even notice them, delivering a physiological gait.



This is how the foot is lifted

1. Internal sensors of the Gaamyar® measure all gait parameters and transmit them to the control unit
2. The control unit simulates the body motion and determines the gait cycle
3. The stimulator sends precise electrical signals to the nerves via electrodes
4. The foot is lifted at appropriate time





The Gaamyar® system
At a glance

1 The stimulator is fixed on a cuff that holds the elec¬trodes in position. The correct placement of the electrodes is achieved by the cuff, which the user can easily don and doff with just one hand. The cuff can be applied to one leg, which was set initially. The stimulator delivers the electrical stimulation to the common peroneal nerve. The nerve stimulates the muscles for controlled dorsiflexion of the foot during the swing phase. The stimulator can use a second channel or device, which offers additional control of joints for gait correction and rehabilitation.

2 High-end sensors of the Gaamyar® simulate body movements and gate cycle, so there is no need for heel switch and the patient is able to walk without shoes or any special socks.

3 The Gaamyar® mobile application enables patients or qualified personnel to adjust the stimulation parameters to the user's individual needs. The application also allows the user to access certain functions and advanced settings, e. g. gait analysis, auto-tuning mode, signal parameters adjustment, alarm and feedback settings, battery and electrode status etc.

Benefits

• **Ergonomic cuff**
The ergonomic cuff is designed to be don and doff by one hand. The inner surface of the cuff is anti-irritation and has soft edges to maximize patient comfort.

• **New technology – no heel switch**
The user's gait can be analyzed without heel switch, shoes, or any other additional equipment.

• **Test stimulation**
The user is encouraged to test the system, and in doing so ensures that the Gaamyar® fits well and works perfectly from the very first step.

Ergonomic Cuff

- **Can be applied easily**

Ideal for the assessment of new users (for clinic, rental, and other testing purposes), therefore a flexible and cost-effective system.

- **Robust and compact design**

Easy to use for users with severe functional deficits in their upper limbs.

- **Straightforward**

Special hook easily secures the cuff.

- **Small size and Light weight**

Slimline design and profile avoid adding bulk.

- **Comfortable**

The cuff is designed for one leg in a breathable, soft material.

Easily customizable
For your patients

Setting the device

Individual adjustments can be applied and updated by a trained qualified clinician or patient via the Gaamyar® mobile application. All stimulation parameters can be adjusted like pulse width and shape, frequency and stimulation timing during sub-phases of gait etc.

Second stimulation channel

Gaamyar® offers both single and two-channel capability for additional control. A second device can also be integrated with this device for better rehabilitation and performance.
By stimulating additional muscle groups, gait performance can be further improved. It can be employed to support during the swing as well as during the stance phase. The outcome will depend on the positioning: support in flexion or extension of the knee, improved triggering of the swing phase and minimized compen¬satory movements.
Stimulation can be applied to the knee flexors/extensors, plantar and dorsiflexors.

"Some of the benefits of the Gaamyar® are that there are no wires to bother the user and that it is possible for them to climb stairs and walk on uneven ground. It also allows leg movement in the stance phase and the ankle is not restricted.

«H.Ebrahimi, physiotherapist and trainer for neurostimulation at the Tiwan technology development Co., Tehran – IRAN

Walking faster, longer distances
Experiencing more!

Several studies have shown that FES can improve dorsiflexor weakness: [4-11]

- Lifting the foot at just the right moment
- Improving gait pattern and speed
- Making it possible to walk longer distances
- Walking requires less effort and concentration
- Mobility is increased
- Promotes confidence and security
- Maintaining or increasing ROM
- Decreasing spasticity / normalizing tone [17-20]
- Increasing muscle strength and endurance
- Promoting motor learning
- Facilitating neuroplastic change

User benefits:

- Walking without shoes is possible, thanks to the high-end sensors
- Easy, single-handed application
- Wireless adjustment using mobile application
- Can be integrated with external devices
- Easy to clean - many parts are replaceable
- Innovative hypoallergenic electrodes
- Can be customized in a variety of ways to suit individual needs
- Uncertainty in walking is reduced

«I noticed significant improvement of leg muscles strength and ankle range of motion in patients who use training mode regularly. Using NMES mode regularly also decreased leg muscles spasticity of my patients. In general, Gaamyar® enabled my patients to achievea much improved walking pattern –as with Nassim.»

Mobilizing your patients
What the research says

The aim of rehabilitation is to restore the greatest possible degree of independence to the user›s daily life. The earlier and more intensively mobilization is introduced following stroke or other traumatic events, the better the results.

In addition, many studies demonstrate that FES combined with conventional therapy leads to further improved results, compared to conventional therapy alone [12-10 ,3]. Walking ability significantly increases as a result of FES support, as do other parameters such as motor function, knee flexion and spasticity.

Clinical specialists appreciate the many benefits of Gaamyar®:

- Provides clinicians with detailed daily activities and progress of their patients
- Can be customized in a variety of ways to suit individual needs
- Duration, type and all parameters of training and massage programs can be set.
- Dedicated mobile application helps to optimize the stimulation at the right time
- AI-Based auto tuning mode optimizes the Gaamyar® for each step to maximize the walking performance
- Heel switch is not needed
- Positive impact on joints, blood flow and muscle (counteracts atrophy from inactivity)
- Even benefits bedridden patients
- Highly compatible with neurophysiological treatment techniques
- Independent application by the patient

We would be happy to provide more information

Fitting with Gaamyar® and training

Would you like to fit your patients with Gaamyar®?

Get Gaamyar® certification from Tiwan Co.

If you have any questions, please contact us at Tel. +98 21 9100 40 70 - info@tiwan.ir

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Safety information:
Gaamyar® is a medical device provided with FDA(Iran) Approval.
Functional Electrical Stimulation is not suitable for all patients with drop foot.
Please familiarize yourself with the product manuals and instructions, which contain information about treatment, contraindications, possible risks, side effects, special precautions and possible adverse events which.

Manufacturer
Tiwan Technology Development Co. Pvt. Ltd.
16 khoshtinat St. – Ashrafie esfehani exp. way
Tehran - IRAN
Tel. +98 21 9100 40 70
info.tiwan.ir

www.tiwan.ir/en