The RehaBike

Tricycling for paraplegic People by means of Functional Electrical Stimulation

The RehaBike enables people affected by paralysis to **ride a tricycle using the muscular power of their own legs.** By means of **Functional Electrical Stimulation (FES)**, muscles in the thigh are activated in such a way that coordinated movement is possible and sufficient power is generated.
This enables paralysed people to actively use their lower limbs again. The exercise **boosts the metabolism and the cardiovascular system** with many positive effects.
RehaBike offers people affected by paralysis a higher quality of life through physical exercise during an activity which is fun!

Innovation Award of the REHACARE INTERNATIONAL 2005 exhibition

"The Functional Electrical Stimulation products from Hasomed GmbH stand out particularly with their innovative character concerning ideas and technical implementation, as well as user friendliness und improvement in the quality of life of disabled people."


INNOVATIONSWETTBEWERB

REHACARE INTERNATIONAL

Düsseldorf, 12. – 15. Okt. 2005

ZERTIFIKAT

Für die Teilnahme am Innovationswettbewerb bedankt sich die Messe Düsseldorf und das Forschungsinstitut Technologie-Behindertenhilfe (FTB) der Evangelischen Stiftung Volmarstein herzlich.

Das Produkt Systeme für die funktionelle Elektrostimulation

der Firma Hasomed GmbH

zeichnet sich durch seinen innovativen Charakter hinsichtlich Idee und technischer Umsetzung sowie Nutzerfreundlichkeit und Verbesserung der Lebensqualität für Menschen mit Behinderungen besonders aus.

HASOMED®

Hard- und Software für die Medizin

The RehaBike

Tricycling for paraplegic People

Developed in international Cooperation

For many years scientists and engineers from the University of Glasgow, the Max Planck Institute in Magdeburg and the company HASOMED GmbH have been investigating the use of Functional Electrical Stimulation for neurological rehabilitation purposes. Frequently, an accident or disease leads to the loss of a person's ability to move their muscles. However, paralysed muscles can be made to contract by electrical impulses. For applications of this kind, the RehaStim stimulator was developed which allows controlled movement of the legs or arms using Functional Electrical Stimulation (FES) technology.

Orthoses provide a safe foothold. The speed is regulated using a "throttle".

Easy to use

The RehaBike consists of a specially equipped recumbent tricycle and the RehaStim stimulator.
The user sitting on the tricycle is protected by seat-belts. Purpose-built orthoses support the paralysed person's legs. Self-adhesive electrodes are fixed to the skin of the thighs and connected to the stimulator. The stimulator has a special program for cycling. The necessary parameters such as stimulation frequency and strength are **easily adjusted**. The individual parameters for each user can be saved.
At the push of a button cycling starts. The cyclist uses a "throttle" to control the stimulation intensity and thus the speed of the RehaBike. A sensor in the cranks continuously informs micro computers in the stimulator about the position of the cyclist's legs. The micro computers calculate at what time each muscle needs to be stimulated and send the stimulation impulses to the electrodes on the legs. Thus they create a **fluent pedalling** movement.
Regular exercise of this kind improves the cyclist's strength and endurance. RehaStim contains rechargeable batteries which allow independent cycling for several hours.

Sensors in the cranks detect the position of the legs.

RehaStim controls the electrical stimulation of the muscles in the RehaBike.

Reactivated and healthier

Medical research shows that the activation of paralysed legs through Functional Electrical Stimulation **boosts the metabolism and the cardiovascular system**. Risks such as arteriosclerosis, coronary heart disease and pressure sores can be reduced. The musculature rebuilds and the bone structure improves. The person affected by paralysis takes a more active part in life and gains new mobility.

Contact us:

HASOMED GmbH
Entwicklung von Hard- und Software für die Medizin
Paul-Ecke-Straße 1, 39114 Magdeburg
Telefon: +49 3 91.62 30 112
Telefax: +49 3 91.62 30 113
E-Mail: info@hasomed.de