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**Biomove 3000 stroke rehabilitation by EMG triggered NMES**



**Biomove 3000**

**Stroke rehabilitation at home by EMG triggered NMES**

As part of the stroke rehabilitation process electrical stimulation is commonly used to provide muscle re-education. The advanced Biomove 3000 device has been designed for treatment of paralyzed muscles, to be used by the recovering patient, at home.

The system is able to detect the extremely small electrical EMG signals still measurable in paralyzed muscles after a stroke. These tiny signals are used to initiate an electrical stimulation impulse to the same muscles, resulting in actual muscle movement!

This form of stroke rehabilitation and stroke treatment is used to re-learn and re-develop spontaneous muscle control. This stroke rehabilitation technology is known as ElectroMyoGraphic triggered NeuroMuscular Electrical Stimulation or EMG triggered NMES



## Stroke Rehabilitation—How it Works!

### Stroke rehabilitation and how it works

Muscle movement is caused by electrical impulses originating in the brain, which are transmitted via nerve cells to the muscles. When a person wishes to initiate muscle movement the brain sends electrical signals to the muscles. Upon arrival of these signals, the muscles respond by contracting. These electrical signals can be measured over muscles and they are called electromyographic signals: EMG.

### Before stroke

If due to brain damage caused by a stroke, regular electrical impulses are not generated or they can no longer reach muscles, normal contraction of these muscles becomes impossible. Although, there are always minuscule EMG signals, these are mostly extremely small and unable to control the affected muscles. This will often lead to irreversible damage and loss of muscle function thus resulting in paralysis of muscles, like "claw" hand or walking (gait) problems, "drop foot".

### After stroke



After a stroke the patient is rehabilitated by physical therapy. This is done in the hope that there will be some form of spontaneous recovery and so that the muscles should not become too stiff in the

meantime. In a large number of cases, spontaneous recovery will not happen and the patient is left with severe disuse muscle atrophy and paralyzed muscles, greatly affecting the quality of life.

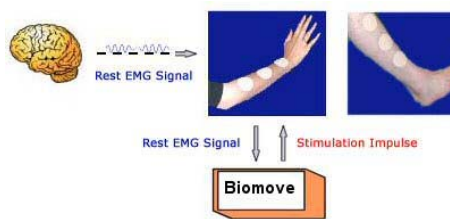
Devastating paralysis of muscles may be prevented if the patient is offered the possibility to re-learn to use the affected muscles, by improving the electrical muscle activity. One approach to attempt to re-educate muscles to achieve voluntary muscle contractions is to combine EMG measurement and NMES muscle stimulation technologies as in the Biomove 3000 system.

In almost all cases there is still a very small amount of electricity (EMG) left which reaches the muscle. These small EMG signals are picked up by the electrodes placed over the paralyzed muscles. The Biomove device then amplifies these small signals and when an internal preset "trigger" level is reached, the built-in electro stimulator returns an electrical stimulation impulse (NMES) to the same muscles. These muscles now respond as originally "instructed" by the patient's own brain signal. In this manner the patient is able to obtain direct muscle movement, assisted by the Biomove 3000 system.

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## Biomove 3000 A stroke of genius!

### After stroke with EMG triggered NMES (Biomove 3000)



The patient uses this method of cognitive re-learning to rehabilitate the muscles of the otherwise paralyzed hand or foot. Training at home with the Biomove EMG triggered NMES device, may help achieve voluntary muscle contractions of the paralyzed muscles.

The combination of ElectroMyoGraphic controlled electrical muscle stimulation enables the patient to take full advantage of even the tiniest electrical activity left after a cerebrovascular accident (CVA) or stroke, contributing significantly towards successful rehabilitation.

The Biomove 3000 is a very easy to use home training device for rehabilitation of paralyzed muscles in arm or leg.



The controls of the system are very user-friendly and simple to operate. The unit has been designed for use by the patient and without the need for complicated set up. It has only two control knobs: one to set the sensitivity for picking up the residual electrical muscle signal and one to set the level for the stimulation impulse to the muscle.

The Biomove 3000 is a small portable battery powered device, which can be placed on a table during the training session. In addition it can be worn on a belt.

The Biomove 3000 is the only economical priced EMG triggered NMES device for use at home. It takes just a couple of minutes to set up the system and to start training!

### Physical Specifications:

Length: (L x W x H) 6.7" x 3.9" x 2.4" (17 x 10 x 6 cm)

Weight: 11.2 oz. (310 g)

Power: 9V Battery (ALKALINE) -Not included

Patient Cable Length: Approx 45" (115 cm)

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