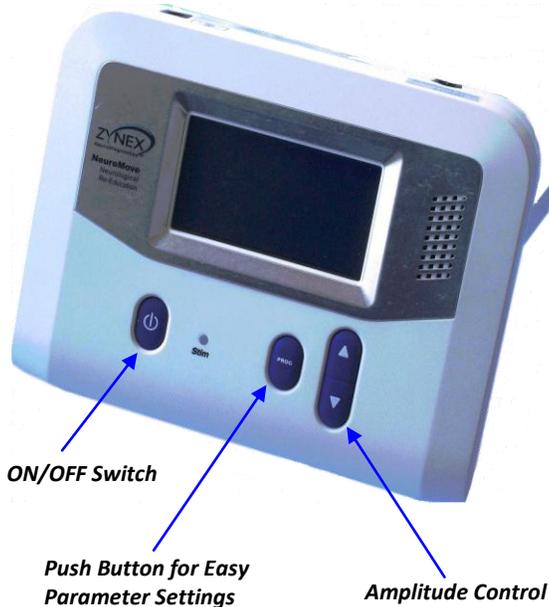


NeuroMove NM900™

Surface Electromyography - Triggered Neuromuscular Stimulator (ETMS)



Imagination is behind the NM900™. The NeuroMove uses the patient's powers of concentration and imagination to help relearn muscle movements which have been lost.

The NM900 uses three sensors. Once in place, the electrodes detect electrical signals sent from the brain to nerves inside the muscle. This electromyography (EMG) activity registers on the NeuroMove's display screen. The less activity there is in a muscle, the harder it is to move that muscle.

Increasing the electrical activity requires reteaching the brain to send messages to the affected muscle. This nerve plasticity is where imagination and concentration help out to produce the required cortical reorganization. By simply thinking about moving a muscle, a person raises the electrical activity present in that muscle.

The computer inside the NM900 evaluates the amount of activity present in the muscle, and then sets a higher standard that the patient should try to reach by concentration. Upon reaching this mark (threshold) the patient is rewarded with electrical stimulation that makes the muscle move for a few seconds. Success is measured in the actual movement of a hand, arm, etc. and gives the patient greater control over the extremity.

ETMS Therapy for Stroke and Spinal Cord Injury

NM900 PRODUCT FEATURES

Safety:

Sensor alarm, electronic timer, lock off level. All internal functions are self-tested for errors before any treatment begins.

Modes:

Stroke Rehab, Spinal Cord Injury, Manual, or Stim Only

Sensors/Stimulation:

Three reusable surface electrodes included.

Visual Display:

With instructions, 60 seconds history graph of EMG attempts as well as base EMG and threshold.

Audio Prompts:

Voice commands selectable ON/OFF.

Compliance Monitor:

Records the total usage time and number of times used.
Can be reset.

SPECIFICATIONS

EMG sensitivity:	0.25 - 1000 μ V peak
Output current:	0 - 100 mA into 1k ohm
Pulse width:	50 - 400 μ s
Frequency:	2 - 160 Hz
Time on:	0.5 - 30 s
Time off:	0.5 - 60 s
Ramp up and down:	0.1 - 6 s
Session timer:	10 - 90 minutes or continuous
Waveform:	Biphasic
Size:	17.0 x 10.4 x 6.4 cm
Weight:	480 g
Battery type:	Rechargeable Lithium-Ion with % charge status display
Battery charger:	120 VAC, or universal

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WHAT MAKES THE NEUROMOVE NM900 A UNIQUE TOOL FOR STROKE REHABILITATION?

Is this like regular muscle stimulation?

No - The stimulation is only applied **WHEN** the patient produces a real attempt to move the muscle and only then the stimulation is applied for typically five seconds. There is no muscle training involved with this short stimulation applied for 30 minutes, as it is merely a replacement for any other reward such as giving the patient a piece of candy or a sound, etc. It is found to be the most effective feedback, since the patient can see that he/she can actually make a difference and move the muscle - just by thinking about it. Some patients also benefit from the sensory feedback in addition to the visual.

Is this like regular biofeedback?

No - Regular surface EMG (electromyography) may in some cases also have a very sensitive input, but for most other applications the input signals are filtered and averaged (RMS so that the small changes do not affect a steady and clear reading for monitoring). For stroke survivors — some have nearly no EMG activity or a lot of muscle tone with high background “noise” — regular EMG/biofeedback will not easily detect the changes that indicate a real attempt from the brain.

The NeuroMove measures peak values in the EMG signal, and has a very fast input circuitry. **Instead of averaging the input, it does the opposite — looks for a pattern in the small changes that indicate a real attempt.** A very effective demonstration of this is when a non-patient actually triggers the NeuroMove just by thinking about it and imagining a movement of the limb.

Is it complicated to set up?

No - The procedure for each 30 minute session is:

- Put the three self-adhesive electrodes over the muscle (position not significant, as input is automatically adjusted continuously).
- Turn on the device and turn stimulation level up slowly for a comfortable contraction of the muscle.
- Think very hard about moving the fingers, wrist, shoulder, foot or whichever muscle is being worked on. Only when there is a real attempt, will the muscle move for 5 seconds. Then, the display prompts the patient to relax for 15 seconds (changeable). After relaxing, it returns to “Ready” and is ready for the next attempt (relaxing is just as important as concentrating). This is how the entire 30 minutes are spent!

What do the FDA and Health Canada say?

The NeuroMove was listed by the FDA in 2001 and is the only device that has “Stroke Rehabilitation” as an Indication for Use. It is listed by Health Canada and has CSA approval.

Ordering Information

NN900

NeuroMove with user’s manual, programming guide, clinical instruction supplement, instructional DVD, package of electrodes and battery charger.

200303

Electrodes, pregelled adhesive, 5 cm round, 3 per package.

The NeuroMove is shipped ready-to-use. All parameters are adjustable to suit special needs.