



Stimel-03 & SSMD: BioRhythmIQ™ Technology



What is BioRhythmIQ™ Technology?

BioRhythmIQ™ Technology is the core innovation behind the Stimel product range. It integrates electromyographic biofeedback with electrostimulation to deliver a highly personalized rehabilitation experience, one that listens to the body's own signals and responds in real time.

How It Works

After a stroke, the neurons that govern movement are damaged or destroyed. A thin layer of surviving neurons continues to send signals to the limbs, but those signals are extremely weak, often just a few nanovolts. They are easily overwhelmed by everyday electromagnetic interference.

BioRhythmIQ™ is engineered to capture these faint signals, filter out the noise, and amplify them into a stimulus strong enough to trigger real muscle movement. In doing so it creates a closed loop between the patient's nervous system and the device, making therapy responsive to the patient rather than applying a fixed one-size-fits-all stimulation.

The Role of the Patient

During a session the patient focuses on a moving bar displayed on the device screen which represents their own muscle effort. They try to bring this mobile bar up to meet a static threshold line. When they succeed the device responds by enhancing the processed signal and sending it back through the nervous system, establishing a biofeedback loop that trains new neurons to take over the motor function.

This visual feedback engages the brain's mirror neuron system which recognizes the reflected movement signals as familiar and adapts more quickly than it would to entirely new input.

The Two Principles Behind the Technology

- **Neuroplasticity:** the brain's ability to reorganize itself by forming new neural connections, allowing damaged areas to be compensated for by neurons that are retrained to take over.
- **Mirror Neurons:** specialized cells in the brain that activate both when performing and when observing an action. The BioRhythmIQ™ system leverages this mechanism to accelerate motor relearning.

Why It Is Different

Unlike conventional neuromuscular electrical stimulation which delivers a fixed predetermined pulse regardless of the patient's state, BioRhythmIQ™ uses the patient's own electromyographic signal to drive stimulation. This means every session is automatically calibrated to where the patient is that day making each treatment more accurate and therapeutically relevant.

For More Information

For clinical guidance on BioRhythmIQ™ Technology and its applications across the Stimel product range:

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