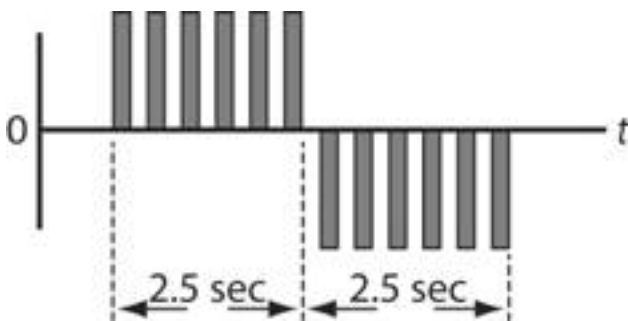


Microcurrent Electrical Stimulators (MES) (also called Subliminal Stimulation)

Microcurrent stimulators (MES) are the most recent class of electrotherapy devices. MES was designed to mimic the electrical the weak currents produced by tissue healing. These systems produce very low amplitude currents of less than 1 mA of total current. Either short pulse durations or a constant current is used.



Example of Microcurrent Stimulation Pattern

Due to the low amplitude of these systems, there is no activation of nerve and muscle tissue. The amplitude is so low that cutaneous sensory nerve fibers are not activated, therefore the patient feels no tingling sensation. These devices deliver a level of stimulation below the threshold of peripheral nerve excitation. Only one present study (Zizic TM, et al, 1995) has found a benefit from this type of device. Some stimulators are designated as microstimulators but produce amplitudes of over 1 mA.

Waveforms

- Generally rectangular, monophasic that periodically reverse polarity
- Adjustments can change the delivery of the pulse patterns, e.g. from negative to positive or simultaneous

Amplitude

- Peak amplitudes can be adjusted from 0 to 600 microA
- Some systems provide for an automatic ramping of amplitude

Pulse Frequency

- Pulses can be set from 0.1 pps to 10,000 pps

Clinical Considerations

- Polarity should be switched to avoid any ionic accumulation