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Technical Information About the Electro-Acuscope/Myopulse Therapy System

The Electro-Acuscope/Myopulse Therapy System

The Electro-Acuscope and Electro-Myopulse are unique, sophisticated, FDA-approved instruments that interface micro-current with living bio-electricity. The technology incorporates biofeedback monitoring and computer-chip circuitry programming. Reading impedance and resistance (the capacity of tissue to conduct signals) and its ability to “hold a charge”, the biofeedback enables the computer program to calculate the corrective output (waveforms and frequencies). It can locate areas where the electrical patterns are abnormal (too high with acute inflammation, or too low where there is a depletion of energy) and introduces the appropriate amount of low-level electrical current into the cells. Treatment continues until a state of normal, healthy, undisrupted conductivity is restored. When this happens the healing process is accelerated, pain disappears, and normal range of motion returns. This technology offers the opportunity to assist the body in its innate ability to self-repair.

Electro-Acuscope

The Electro-Acuscope is an electrotherapeutic micro-current instrument which acts upon subcutaneous tissues to help reduce pain and inflammation. It may also improve blood flow in circulatory-impaired tissues.

Many types of tissue cells have membranes with ion channels that are voltage-sensitive. Electrotherapeutic currents can increase the entrance of substances such as calcium ions which turn on repair mechanisms within those cells. Sensory nerve endings, for instance, release vasoactive peptides in response to the entrance of calcium. The Electro-Acuscope monitors the electrical conductivity and impedance of the tissue, and also can compute important electrical characteristics of the tissue from the current and voltage pulses themselves. Using this information, it adjusts the shape of those current and voltage pulses in order to optimize the effectiveness of the treatment. The output pulses of the Electro-Acuscope are neither constant-current nor constant-voltage during their duration, but are between the two modality limits.

Electro-Myopulse

The Myopulse is the companion micro-current instrument to the Acuscope and is designed to treat connective tissue associated primarily with muscle. The amplitudes of the current and voltage pulses continuously vary within a “sinusoidal modulation envelope”. It is well established that the membrane of each muscle fiber contains voltage-controlled calcium ion channels.

Much of the effectiveness of the Myopulse instrument appears to be due to the modest increases in internal calcium which, though inadequate to cause muscle contraction, could still result in increased ATP production and protein synthesis in order to prevent atrophy, accelerate tissue repair, and alleviate pain. (It would not be desirable to induce muscle contraction in the manner of conventional muscle stimulators because this would use up ATP which could be put to better use as an energy source for synthesizing new cellular repair molecules). Since the current and voltage pulses have constantly varying amplitudes over the four-second period of each modulation envelope cycle, some impulses will be optimal for each portion of the three-dimensional current field (even to considerable depth into the tissue). Some of the current pulses will have an initial current overshoot portion that can open higher threshold ion channels especially in regions of the current field that are closer to the electrodes. In addition to monitoring the current waveform of each pulse, the Myopulse instrument also has special current and voltage monitoring impulses to provide tissue impedance information.