The theoretical background of magnetic stimulation on peripheral nerve fibers

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Abstract

The rehabilitation of active mobility represents a major objective of recovery programs in different pathologies: neuromuscular and post-traumatic diseases, sport medicine. The peripheral magnetic stimulation occupies a special place in recovery. In this article we present the theoretical bases of this method and the action manner of magnetic stimulation on peripheral nerve fibers. The magnetic stimulation of peripheral nerves is based on the principle of electromagnetic induction. A circular coil crossed by an electric current variable in time and placed upon a part of the human body, will induce in the anatomical tissues of the respective body part an electric current. This electric current can produce a depolarization of the excitable cells and generate an action potential, with the emergence of a muscular contraction.

The peripheral magnetic stimulation methods are: stimulation with a circular coil, with a figure-of eight coil and multichannel magnetic stimulation. As it is a non-invasive procedure, being well tolerated by the patient, it can be considered an alternative method in the treatment of neuromuscular diseases, in post-traumatic and sport injury recovery.

Keywords: electromagnetic induction, peripheral magnetic stimulation, cable model, anodal block.