



AOTA Approved Provider #4023



Course Title: Therapeutic Modalities 103

Course Subtitle: Background Biophysics and Physiology

Course Description: Therapeutic Modalities 103, Background Biophysics and Physiology, is a 3-hour course designed for the intermediate to advanced clinician using electrophysical agents as an adjunct to treatment. The main objective of this course is to provide a biophysical and physiological basis for electrophysical agents that are most commonly used in the clinic. It is important to know how the electrophysical agent will effect the targeted tissue and this course will begin with an overview of various tissue types and action potentials. Stages of healing as well as avascular tissue healing will be discussed. The clinician will then be presented with how energy is applied to the body for therapeutic purposes along with the effects of an applied electrical potential. At the end of this course, the learner will have a more comprehensive understanding of the biophysics and will be able to determine why some modalities and treatments are more useful and effective than others. It will also provide a physiological understanding or basis for use of a modality that will assist the clinician in developing an effective treatment intervention using the most appropriate and useful modality.

Upon the completion of the course and successfully answering 10 interactive multiple-choice questions, the learner will complete a satisfaction survey and receive a completion certificate for .3 AOTA eligible CEU's.

Course Length: 3 hours

Course Authors: Val Roberston, PhD, Alex Ward, PhD, John Low, BA, DipTP and Ann Reed, BA, DipTP

Course Instructor: Joanne Brown, MS, OTR/L, CHT, MLD/CDT

Course Objectives:

Upon course completion, the learner will be able to:

- Understand the biophysical and physiological basis for electrophysical agents
- Describe nerve impulses or action potentials
- List factors involved in the activation of muscle fibers
- Define and differentiate events that occur during the stages of healing
- Become familiar with the healing of avascular tissues

- Define and differentiate different forms of energy applied to the body
- Describe these forms of energy are applied to the body during therapy

Outline of Content:

Skin as a Barrier

Subcutaneous tissue

Cells

Resting membrane potential of nerves

The Nerve Impulse or Action Potential

Activation of Muscle Fibers

Electrical Potentials of Other Cells and Tissues

Tissue Potentials

Electrical charges generated by connective tissues

Electrical gradients in embryonic development

Electrical gradients in limb regeneration

The Healing Process

Initial Injury

Inflammation

Vascular Changes

Activation and Control

Pain

Cellular Response

Influence of the Nervous System

Proliferation

Remodeling

Timing of the Processes

Healing of Avascular Tissues

Articular Cartilage trauma and repair

Intervertebral disc trauma and repair

Tendon trauma and repair

The Application of Energy to the Body for Therapy

Effects of an applied electrical potential

Summary