

Section on Clinical Electrophysiology

Curriculum Content Guidelines for Physical Agents and Electrotherapy

This curriculum guideline on Physical Agents/Electrotherapy represents curricular content recommendations based upon feedback from physical therapy educators via a survey conducted by the Section on Clinical Electrophysiology and recommendations from the Electrotherapy/physical Agents Practice Committee of the Section. New topics will be added when evidenced-based, clinical research provides documented support from controlled or randomized trials published in peer-reviewed journals.

Individual practice setting, Practice Acts, Rules and Regulations regarding physical therapy practice may determine practice limitations and role delineation.

Terminal Behavioral Objectives

After didactic and clinical education, given the results of a client's evaluation and history, the graduate physical therapist will:

Given the results of a patient/client's evaluation and history, and the plan of care established by a PT, the PTA student will be expected to:

IDENTIFY, DESCRIBE AND EXPLAIN indications for interventions utilizing physical agents and electrotherapeutic modalities.

IDENTIFY contraindications & precautions to the application of therapeutic modalities.

SELECT the appropriate modality (PTA Students, within the established plan of care)

APPLY the modality in a safe & effective manner.

EXPLAIN normal and abnormal physiologic responses and psychologic reactions to treatment-

MODIFY modality application as indicated by the patient/client's response. (PT A students, through consultation with the PT)

ASSESS treatment outcome in response to the application of a physical agent or electrotherapeutic modality.

INTERPRET patient/client's response to treatment and make clinical decisions regarding treatment plan. (PTA students, through consultation with the PT)

DOCUMENT specific treatment parameters, application techniques, and treatment outcome.

Physical Agents & Electrotherapeutic Modalities Content Outline

I. Prerequisite and/or Concurrent Information

Basic Clinical tests and measurements

Neuromuscular

Muscle Strength and Endurance

Sensory Perception Testing

cutaneous pain, temperature, touch, pressure
cognitive awareness

Reflex Testing

Basic gait analysis

Neuroanatomy and Basic Neurophysiology

Cardiovascular System

Peripheral Circulatory System

Edema

Heart Rate, Blood Pressure (Vital signs)

Musculoskeletal System

Active & Passive Motion

Basic Postural Assessment

Human Systems and Cellular Physiology

Human Anatomy: neural, muscular, skeletal

Clinical Histology and Pathology including but not limited to:

Inflammation, wounds (burns, ulcers, tissue trauma) & tissue healing
(skin, nerve, tendon, muscle, joint structures)

Pain and Pain Control

Circulatory Disorders

Fundamentals of physics, biology, chemistry

Clinical Pharmacology:

Basic concepts related to potential interactions of drugs with
clinically administered physical agents as appropriate. (e.g. sensitivity to UV, wound care,
inflammatory conditions, clotting factors)

Clinical Neurology, Myology

II. Physical Therapy Clinical Knowledge and Skills

Thermotherapy

Conductive Heating Agents:

Hot Packs

Paraffin

Hydrotherapy

Fluidotherapy

Deep Heating Agents:

Thermal Diathermy, Short-wave diathermy

Ultrasound

Cryotherapy:

Cold packs, Ice packs, Cold Compresses

Ice Massage

Contrast Immersion baths

Cold Compression Devices

"vapocoolant sprays"

Actinotherapy:

Ultraviolet

Low Power laser

Physical Therapy Clinical Knowledge and Skills continued

Mechanotherapy:

- Mechanical Traction
- Intermittent Pneumatic Compression Devices

Electrotherapy: contemporary electrical stimulation programs and required characteristics of stimulators utilized for:

Pain control

Neuromuscular Electrical Stimulation for:

- Muscle Strengthening
- Restricted Joint Motion
- Hypertonic/Hypotonic Muscle (e.g. spasticity)
- Activation of Muscle for Joint Positioning, Postural Control or Enhancement of Functional Movement or Motor Control

Tissue Healing and Tissue Repair

- Enhancement of Wound Healing & Circulation
- Osteogenesis, Edema Control

Medication Delivery: Iontophoresis of Analgesics & Anti-inflammatory Agents, etc.

Electrical Stimulation of Denervated Muscle

Other Topics for Inclusion:

- Topical Hyperbaric Oxygen Therapy
- Pulsed Ultrasound (Non-thermal US)
- Pulsed Radio Frequency Radiation (non-thermal)
- Phonophoresis
- Biofeedback: electromyographic & temperature

III. Common Features of Physical Agents & Therapeutic Modalities Topics

Physics of Heat, Light, Electricity, Mechanical Principles

Fundamental Concepts & Terminology

- Electrotherapy: Describe, Differentiate and Recognize Types of Electrical Current, Common Amplitude and Time Dependent Characteristics of Electrical Stimuli

Physiologic Effects of Heat, Electromagnetic Radiation, Electricity, Mechanical Forces {Normal, Desired effects vs. abnormal or adverse effects}

Instrumentation:

- Calibration and Maintenance
- Safety Considerations
- Principles of Operation

Indications for Clinical Application

Clinical Application Principles and Procedures

Clinical Problem Solving Skills (case study examples)

Supervised laboratory Experiences (Academic and Clinical)

Contraindications/ precautions and potential adverse reactions to the application of each physical agent