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. (PTA 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 Heating & 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