

**Washburn University Kinesiology Department  
Athletic Training Program  
Policy and Procedure related Therapeutic Modalities**

**Modality Policy and Procedures**

In order to protect the health and safety of Washburn University Athletic Training Students (ATS) and Clinical Preceptors (CP), the following policies and procedures are implemented in regards to the use and maintenance of therapeutic modalities in both the classroom and clinical settings.

Many clinical education sites, including Washburn University currently possesses various therapeutic modalities intended for the treatment of clients and patients, and as tools in the instruction of modality principles and practices. Any use of therapeutic modalities by ATS at any clinical education site must be done under the direct supervision of a qualified clinical preceptor and within the boundaries of the clinical preceptor's license and qualifications. In addition the following guidelines and procedures must be enforced.

**Modality Calibration**

All clinical education sites, including Washburn University, where electrical modalities are present must be calibrated annually by a certified calibration technician. For Washburn University, calibrations are typically completed in December of each year. As a condition of clinical site affiliation agreement, off-campus clinical education sites, agree to provide verification of annual modalities' calibrations. These annual checks may be coordinated through the ATP Clinical Education Coordinator or through independent contractors. Off-campus clinical sites accredited by an outside accrediting agency (JCAHO, CARF, etc.) are exempt from the verification process.

**Electrical Safety**

Ground fault circuit interrupters should be connected to all electric modality machines and whirlpools devices.

**Modality Problems and Repair**

Any problems or mechanical issues with any electrical modality identified by ATS, CP's or clinic staff should be reported immediately to the CP on site. At Washburn University, issues related to therapeutic modalities should be reported to the Head Athletic Trainer immediately. For all clinical sites, the modality unit in question should be removed from use until the problem is corrected. If the electrical modality requires further repair then what can be accomplished on site, the Clinic Director/Head Athletic Trainer will contact an appropriate technician to arrange repair or replacement. For more specific trouble shooting information please refer to the specific modality's operating manual. At Washburn University, operating manuals are located in the filing cabinet in the CEC's office.

### **General Guidelines and Procedures related to the Use of Therapeutic Modalities**

The therapeutic modalities guidelines that are listed below are taken from Therapeutic Modalities 4<sup>th</sup> edition (Starkey, 2013). This information provides general guidelines for the modalities that are commonly used in clinical experiences. Other textbooks may provide additional information and should be utilized as deemed appropriate. This policy and the listed guidelines are available for student review on the AT webpage at [http://www.washburn.edu/academics/college-schools/arts\\_sciences/departments/kinesiology/degrees/bs-at.html](http://www.washburn.edu/academics/college-schools/arts_sciences/departments/kinesiology/degrees/bs-at.html)

### **Athletic Training Student Use**

NO electrical modality may be performed on a patient/client without the direct supervision of a clinical preceptor.

Athletic training students who have documented completion of in-service training conducted by a clinical preceptor on the proper application of a specific modality unit may apply the modality to a patient/client under the direct supervision of a clinical preceptor. In-service training does not qualify the student to make decisions related to modality selection, parameter setting or treatment planning.

Upon completion (grade of C or better) of KN 355 – Therapeutic Modalities and Exercise for Sports Injury, ATS may interact with CP's in recommending the use and suggested parameters for various treatments. As students demonstrate clinical proficiency through the clinical skill module system in KN 393 – Clinical Experience in AT – Rehabilitation, they may be given additional autonomy in the selection and application of therapeutic modalities, however, NO electrical modality may be performed on a patient/client without the direct supervision of a clinical preceptor.

## **General Guidelines for Specific Therapeutic Modalities**

### **Cold Packs – Ice Bags**

The local and systemic effects of cold application are vasoconstriction, increased rate of cell metabolism resulting in a decreased need for oxygen, decreased production of cellular waste, reduced inflammation, decreased pain, decreased muscle spasm, decreased respiratory rate, decreased heart rate, increased muscle tone, and decreased temperature. Indications, contraindications, and setup are listed below.

- **Indication**
  - Acute injury or inflammation
  - Acute or chronic pain
  - Small, superficial, first degree burns
  - Post-surgical pain and edema
  - Use in conjunction with rehab exercises
  - Acute or chronic muscle spasm
  - Neuralgia
  
- **Contraindications**
  - Cardiac or respiratory involvement
  - Uncovered open wounds
  - Circulatory insufficiency
  - Cold allergy
  - Anesthetic skin
  - Advanced diabetes
  - Peripheral Vascular Disease
  - Raynaud's Phenomenon
  - Lupus
  
- **Set-up and Application**
  - Establish that there are no contraindications
  - Fill the bag with enough ice to last for the duration of the treatment, but do not overfill.
  - Remove excess air from the bag to allow the ice to conform to the body part being treated.
  - Apply ice bag over the injured area.
  - Secure it in place with an elastic wrap or flex wrap.
  - Do not leave ice pack on longer than 30 minutes.
    - Modality application is reevaluated daily to ensure it is creating the optimal healing environment.

## **Moist Heat Packs**

The systemic effects of heat application are increased body temperature, increased pulse rate, increased respiratory rate, and decreased blood pressure. Indications, contraindications, and set-up are listed below.

- **Indications**
  - Sub-acute or chronic inflammatory conditions
  - Reduction of sub-acute or chronic pain
  - Sub-acute or chronic muscle spasm
  - Decreased ROM
  - Hematoma resolution
  - Reduction of joint contractures
  
- **Contraindications**
  - Acute injuries
  - Impaired circulation
  - Poor thermal regulation
  - Anesthetic areas
  - Neoplasms
  - Thrombophlebitis
  
- **Set-up and Application**
  - Make sure the patient is in a comfortable position.
  - Cover the hot pack with a terry cloth covering and place a towel between the terry cloth and patient.
  - Place the pack on the patient in a comfortable manner. If lying on the pack is unavoidable, place additional toweling between the patient and the hot pack.
  - When treating an infected area, completely cover the skin with sterile gauze. After the treatment, dispose of the gauze in a biohazard waste container and wash the hot pack covering according to the universal precautions.
  - Check the patient after the first five minutes for comfort and mottling. Recheck the patient regularly, and adjust toweling if needed.
  - Apply the hot pack for 20 to 30 minutes, but do not leave it on longer than 30 minutes.
  - After the treatment, return moist heat pack to the heating unit and allow it to reheat.
    - Modality application is reevaluated daily to ensure it is creating the optimal healing environment.

## **Hot and Cold Whirlpools**

Whirlpools are used for delivering heat or cold treatment, ROM exercises, promoting muscular relaxation, or decreasing pain and muscle spasm.

### **Temperature Range**

- **Cold Whirlpool**
  - 50°F to 65°F. Temperature is increased as the proportion of the body area treated increases.
- **Hot Whirlpool**
  - 90°F to 110°F. Temperature is decreased as the proportion of the body area treated increases.
- **Indications**
  - Decreased range of motion
  - Sub-acute or chronic inflammatory conditions
  - Peripheral vascular disease (use a neutral temperature)
  - Peripheral nerve injuries (avoid the extremes of hot and cold)
- **Contraindications**
  - Acute conditions in which water turbulence would further irritate the injured areas or in which the limb is placed in a gravity-dependent position
  - Fever (in hot whirlpool)
  - Patients requiring postural support during treatment
  - Skin conditions in spa-type tubs
  - General contraindications listed for heat and cold treatments
- **Set-up and Application**
  - Fill the whirlpool to a depth sufficient to cover the area being treated. Be sure the amount of water is enough to run the motor safely.
  - Instruct the patient not to turn the whirlpool on or off or touch any electrical connections while in the whirlpool or while the body is wet.
  - If an extremity is being treated, place the patient in a comfortable position using the whirlpool bench.
  - If the entire body is being immersed the sling seat will be used.
  - Turbine is turned on by Certified Athletic Trainer or Athletic Training Student.
    - Modality application is reevaluated daily to ensure it is creating the optimal healing environment.
- **Whirlpool Maintenance**
  - The whirlpool must be cleaned before and after treating a patient who has open wounds that will be exposed to the water. If no open wounds are permitted in the tub, the whirlpool should then be cleaned at the end of the work day.
    - Drain the whirlpool after treatment.
    - Don appropriate attire such as rubber gloves and a smock.

- Refill the tub with hot (approximately 120°F) water to a level sufficient to safely operate the turbine.
  - Add chlorine bleach to the water, using the concentration indicated on the packaging.
  - Run the turbine for at least 1 minute to allow the cleaning agent to cycle through the internal components.
  - Drain the whirlpool and scrub the interior using a towel with cleaner applied, paying close attention to the external turbine, thermometer stem, drains, welds, and other areas that could retain germs.
  - Thoroughly rinse the tub.
  - Clean the exterior surface with a stainless steel cleaner.
- Check the ground fault circuit interrupter for proper functioning monthly.

## **Ultrasound**

The therapeutic effects of ultrasound are increased cell membrane permeability, altered rates of diffusion across the cell membrane, increased vascular permeability, secretion of chemotactics, increased blood flow, increased fibroblastic activity, stimulation of phagocytosis, synthesis of collagen and protein, diffusion of ions, tissue regeneration, increased sensory nerve conduction velocity, reduction of muscle spasm, and increased motor nerve conduction velocity.

Indications, contraindications, and set-up are listed below.

### ○ **Indications**

- Joint contractures
- Muscle spasm
- Neuroma
- Scar tissue
- Sympathetic nervous system disorders
- Trigger points
- Warts
- Spasticity
- Post-acute reduction of myositis ossifications
- Acute inflammatory condition (pulsed output)
- Chronic inflammatory condition

### ○ **Contraindications**

- Acute injuries (continuous output)
- Areas of deep vein thrombosis
- Areas of poor circulation
- Acute conditions
- Ischemic areas
- Tendency to hemorrhage
- Areas around eyes, heart, skull, and genitals
- Other cancerous tumors
- Spinal cord or large nerve complexes

- Areas of anesthetic
  - Stress fracture sites
  - Active infections
  - Pelvic or lumbar area in menstruating female patients
  - Exposed metal that penetrates the skin
- **Set-up and Application**
    - Determine the method and mode of ultrasound application to be used.
    - Explain the sensation of be expected during the treatment. During the application of continuous ultrasound, a sensation of mild to moderate warmth (but no pain or burning) should be expected. No subcutaneous sensations should be felt during the application of pulsed ultrasound. Tell the patient to inform you of any unexpected sensations or discomfort.
      - Modality application is reevaluated daily to ensure it is creating the optimal healing environment.
    - Clean the area to be treated to remove any body oils, dirt, or grime.
    - Determine the coupling method to be used (e.g., direct coupling, bladder, underwater).
    - If the direct coupling method is used, spread the ultrasound gel over the area to be treated. Use the ultrasound head to evenly distribute the gel.

## **Paraffin Bath**

The primary effects of paraffin heat application are increased perspiration, increased blood flow/vasodilation, and increased cell metabolism. Indications, contraindications, and set-up are listed below.

- **Indications**
  - Sub-acute and chronic inflammatory conditions
  - Limitation of motion after immobilization
  - Softening the skin
- **Contraindications**
  - Open wounds
  - Skin infections
  - Sensory loss
  - Peripheral vascular disease
- **Set-up and application**
  - Thoroughly clean and dry the body part before treatment. Chipped or flaking nail polish should be removed.
  - Instruct the patient to avoid touching the sides and bottom of the heating unit because burns may result.
  - The patient begins by dipping the body part into the paraffin and then removing it. Allow the wax to dry.
  - The patient dips the extremity into the wax 6 to 12 more times to develop the amount of insulation necessary.

- **Immersion**
  - Patient then places the body part back into the paraffin for the duration of the treatment.
  - Patient must not move joints while in the wax.
  - After the treatment, scrape off the hardened paraffin and return it to the unit for reheating.
- **Pack (Glove) Method**
  - After the final withdrawal from the wax, cover the extremity with a plastic bag.
  - Wrap a towel around the area.
  - After the treatment, scrape off the hardened paraffin and return it to the unit for reheating.
- Modality application is reevaluated daily to ensure it is creating the optimal healing environment.

### **Electrical Stimulation**

Some of the therapeutic uses of electrical current are controlling acute and chronic pain, reducing edema, reducing muscle spasm, reducing joint contractures, inhibiting muscle spasm, minimizing disuse atrophy, facilitating tissue healing, facilitating muscle reeducation, and strengthening muscle. Indications, contraindication, and basic set-up are listed below.

- **Indications**
  - Acute pain
  - Chronic pain
  - Muscle spasm
- **Contraindications**
  - Cardiac disability
  - Demand-type pacemakers
  - Pregnancy
  - Menstruation
  - Cancerous lesions
  - Sites of infections
  - Carotid sinus, esophagus, larynx, pharynx, around the eyes, upper thorax, temporal region
  - Severe obesity
- **Set-up and Application**
  - Turn on the unit by activating the POWER switch.
  - *Select application mode:* Determine the MODE of application and electrode placement, e.g., quad-polar (TENS, IFC), bipolar, or Russian stimulation.
  - *Adjust frequency:* Select the appropriate frequency based on the goals of the treatment and treatment protocol.
  - *Adjust treatment duration:* Set the duration of the treatment by adjusting the TIMER.



- *Begin treatment:* Press the START button to close the circuit between the generator and the patient's tissues.
- *Increase output intensity:* Slowly increase the INTENSITY control until the appropriate current level is obtained.
- *Adjust balance:* If necessary, adjust the BALANCE control to obtain maximal treatment comfort.
  - Modality application is reevaluated daily to ensure it is creating the optimal healing environment.

