

MODALITIES

Definition - Any therapeutic agents used to enhance healing.

Electrical Stimulation

Purpose: stimulation of muscle fibers for muscle re-education, retardation of atrophy, decreasing edema, and pain control.

Use: Positive and negative pads are moistened and placed on either side of affected area, while a dispersive pad is placed from the site.

Effects: Muscle contraction is produced through electrical current, which produces the same contraction as a natural stimulus.

Effects :

- a. Muscle re-education – used post surgically to reinforce muscle firing.
- b. Muscle pump contraction – electrically induced muscle contraction used to duplicate regular muscle contraction that helps stimulate circulation.
- c. Retardation of atrophy – the maintenance of muscle tissue, after injury that prevents normal muscle exercise.
- d. Pain control – stimulation of nerve fibers to change to patient's perception of pain.

Contraindications:

- a. Pacemaker

Ultrasound

Purpose: treatment of soft tissue injuries with deep heat.

How it works: the transducer changes electrical energy to acoustic energy, this passes through a crystal in a mechanical vibratory motion, which is passed through to the various tissues being treated.

Use coupling agents such as a gel or water as the sound waves rely on molecular collision for transmission.

Effects:

- a. Increases extensibility of collagen tissue
- b. Decreases joint stiffness
- c. Increases pain threshold
- d. Reduces muscle spasm
- e. Assists in mobilizing inflammatory infiltrates, edema, or exudates
- f. Increases blood flow
- g. Increases local metabolism
- h. Increases nerve conduction velocities

Treatment time: 5 – 10 minutes

Thermophore

Purpose: superficial heating modality

Use:

- a. Place patient in a comfortable position
- b. Place thermophore on patient
- c. Treatment time: 15 – 20 minutes

Physiologic responses:

- a. Increased circulation
- b. Increased muscle temperature
- c. Increase in tissue temperature
- d. Decrease in muscle spasm

Hot Whirlpool

Use: Temperature 90 – 110 degrees

Advantages:

- a. Provides hydromassage effect
- b. Receive thermal effect
- c. Able to have the patient perform AROM in water

Indications:

- a. Soft tissue trauma
- b. Post-immobilization conditions for AROM

Contraindications:

- a. Acute hemorrhaging or swelling
- b. Heat Stress
- c. Acute Injury
- d. Fever

Physiologic effects:

- a. Increases superficial tissue temperature
- b. Decreases muscle spasm
- c. Produces Relaxation
- d. Stimulates Circulation

Treatment

- a. Place patient in a comfortable position
- b. Athletes should never be allowed to turn the unit off or on while in the water, due to chance of electrical shock
- c. Athletes should never be left unsupervised (heat from the water may make some patients feel lightheaded, dizzy, or faint)
- d. Water Temperature: 100 – 110 degrees F.
- e. Treatment time: 10 – 20 minutes

Contract Bath

Purpose: alternates hot and cold modalities

Advantages:

- a. Assists in reducing pitted edema
- b. Encourages motion

Indications:

- a. If the injury is not acutely painful
- b. If the swelling is stabilized
- c. If the application of ice is no longer effective

Contraindications:

- a. Acute Injuries
- b. If there is a lesion with active hemorrhaging

Technique:

- a. One whirlpool or bucket filled with cold water – 55 – 65 degrees F
- b. One whirlpool filled with hot water – 100 – 110 degrees F
- c. Alternating cycle from cold to hot. Opinions on length of time in each and which pool to begin in vary. Please consult your ATC/LAT.
- d. Usually end in cold water to control and prevent any reactive swelling.
- e. Never allow an athlete to turn the unit off or on.

Cryotherapy (Ice pack, Ice Bath, Ice Cup & Cryocuff - Game Ready)

Purpose: Treatment of inflammation and edema

Use: Treatment time 15 – 20 minutes – Not to exceed 30 minutes

Effects:

- a. Cold progression proceeds through four stages: cold, stinging, burning, and numbness
- b. Decreases tissue temperature
- c. Vasoconstriction
- d. Decrease discomfort
- e. Decrease muscle spasms

Contraindications:

- a. Cold Allergies
- b. Raynaud's phenomenon
- c. Rheumatoid conditions

SASTM – Soft Tissue Mobilization

It is usually performed on the back, neck, shoulders, buttocks, and limbs, and less commonly over the chest and abdomen. For the purposes of eliminating muscle adhesions, it is applied over areas of achiness or tenderness in the muscles, especially when there is associated tension or knotty muscles. It is also used over areas of restricted motion. Each of your muscles is wrapped in a connective tissue sheath called fascia. If you have ever prepared a chicken to cook, it is that white tissue that wraps the muscles. In our bodies, each layer is supposed to glide smoothly over the others, but sometimes scar tissue builds up in the fascia and the layers bind to each other, restricting motion. This can restore that motion.

The introduction of controlled microtrauma to affected soft tissue structure causes the stimulation of a local inflammatory response. Microtrauma initiates reabsorption of inappropriate fibrosis or excessive scar tissue and facilitates a cascade of healing activities resulting in remodeling of affected soft tissue structures. Adhesions within the soft tissue which may have developed as a result of surgery, immobilization, repeated strain or other mechanisms, are broken down allowing full functional restoration to occur.

Similarly based on Gua Sha. Gua – means to scrape & Sha means ‘Sha-syndrome, or ‘reddish, elevated, millet-like skin rashes’ The technique of Gua Sha intentionally brings the Sha rash to the surface. – *Athletes that receive this treatment may have a reddish, elevated, millet-like skin rash or bruising. This is normal for this technique and Athletes/Parents shouldn’t be alarmed.* -

Technique:

- a. Warm up tissue to treat: Moist heat, Stretch, Ultrasound, Cardio
- b. Treat
- c. Mobe/Adjust
- d. Exercise/Stretch
- e. Can include any other modalities at this point – these won’t break up fibrosis however – laser, etc.
- f. Ice to areas of treatment

Contraindications:

- a. Bleeding disorders such as thrombocytopenia, leukemia, or severe anemia
- b. Severe acute cardiovascular or cerebrovascular disease, or insufficiency of liver & kidney
- c. New bone fractures
- d. Local scarring in areas where malignant tumors were operated on, areas around malignant tumors or unidentified masses.
- e. On the lower abdomen and lumbosacral region in women during pregnancy or menstruation
- f. Near infectious skin diseases, skin lesions in diabetic patients, and severe varicosities on the legs