

Therapeutic Ultrasound, Electrical Stimulation, Hot Packs, Cold Packs

Therapeutic Ultrasound is a deep-heating agent with the purpose of elevating tissue temperatures to depths of 3 cm or more without causing excessive heating of the overlying superficial tissues. Effects of ultrasound include increased collagen tissue extensibility, alterations in blood flow, changes in nerve conduction velocity, increased pain threshold, (reduction in pain), and increased permeability of the cell membrane and vascular wall. It is used as an adjunct in the management of various soft tissue disorders including joint contracture, scar tissue, tendinitis, bursitis, skeletal muscle spasms, and pain. It also can be used in the management of ulcers, pressure sores and can be used to apply medications, (phonophoresis). Physical therapy can also combine ultrasound and electrical stimulation in a coupled treatment technique. Treatment length is usually 5-15 min. depending on the size of the treatment area. Ultrasound can be safely applied over the area of metal implants using a moving technique. Physical therapy will not utilize ultrasound in combination with cold packs.

Electrical Stimulation is a modality used by physical therapy where electrical impulses are directed into the body through pads, probes, or an ultrasound applicator. The sensation is usually tingling in nature and can be intense and produce a muscle contraction. Electrical stimulation can be used to reduce the progression of muscle atrophy, increase the strength of a muscle, reduce muscle spasms and pain, improve circulation, and has been utilized to help fractures heal. Electrical stimulation can be used to apply medications, (iontophoresis). Treatment length is usually 8 – 15 min. and can be coupled with heat or ultrasound.

Cryotherapy, (cold therapy), is performed through the use of cold packs, ice cube massage, or vapo-coolant spray. Indications for its usage are pain relief, prevention or reduction of edema of traumatic origins, injuries causing inflammation, decrease muscle guarding spasms, and temporary diminishment of symptoms before exercise. Contraindications for cryotherapy include cold sensitivity symptoms not limited to cold urticaria, Raynaud's phenomenon, Cryoglobulinemia, and paroxysmal cold hemoglobinuria. Cold should not be applied over areas of compromised circulation, (PVD's). Precautions should be utilized for cryotherapy in conditions where the individual has increased blood pressure, (hypertension), and people with hypersensitivity to cold, impaired circulation, or thermoregulatory disorders. Cryotherapy treatment is 15 – 30 min. and should not be used for longer than one-two hours.

Heat therapy is the application of a heating agent that increases the temperature of superficial and deeper tissues. This is performed through the use of hot packs, paraffin bath, infrared light, and ultraviolet light modalities. Heat therapy is used for pain relief, to promote relaxation, to increase blood flow to facilitate tissue healing, to alleviate muscle spasms, to improve range of motion, and prepare stiff joints and tight muscles for exercises. Contraindications and precautions to superficial heating include areas that lack intact thermal sensations, areas of vascular insufficiency or vascular disease, areas of recent hemorrhage or potential hemorrhage, areas of known malignancy, and areas of acute inflammation or infected areas. Please notify your physical therapist if you have used liniments or heat rubs in the area where treatment is to

be performed. This needs to be cleaned off before heat treatment can be applied. Heat therapy treatment length is 15 – 30 min.

Precautions for therapeutic ultrasound and electrical stimulation are as follows: ultrasound and electrical stimulation will not be applied over the eye, heart, pregnant uterus, testes, ovaries, mammary tissues, spinal cord, or malignant tissues. Precaution will be used when circulation is reduced or when there is impaired pain or temperature sensation. In addition, bone growth areas in children should be minimally exposed to ultrasound. Treatment over fracture sites is indicated unless sensation is impaired, it may actually accelerate healing. It is possible to get a burn with electrical stimulation, hot packs, and cold packs treatments.

Conditions treated by therapeutic ultrasound, and electrical stimulation include: When relief of pain is desired, when mobilization of the contracted joint or tissue is desired, with fractures, dislocations, joint and muscle issues, sprains, strains, bruises, and tendon, and nerve injuries. Therapeutic Ultrasound, hot packs, and cold packs are not a substitute for exercise. Electrical stimulation can be used to stimulate muscle activity and can strengthen muscles. The physical therapist will use their sound professional judgment in the use of the modality being performed.

The physical therapist anticipates beginning improvements in the respective condition in 1 to 8 treatments with the resolution usually occurring in 8 to 12 treatments. Treatments are approximately 8-15 min. for each technique, depending on the modality.

Alternatives to modalities include therapeutic exercise, manual therapy, and medications prescribed by your physician.

The patient has the right at any time during the treatment to stop treatment and question the physical therapist whether to continue treatment or ask questions about the treatment.

Contraindications for Electrical Stimulation - Pacemakers and Defibrillators.