

Therapeutic Ultrasound

Ultrasound is the use of various high frequency, long sound waves to treat a number of conditions. The different setting options are frequency (1 or 3.3 MHz), duty cycle (continuous or pulsed), and the intensity (W/cm²). The frequency determines how deep the waves will penetrate; the duty cycle determines if the waves are entering the body constantly or pulsed (on/off), which conversely determines if there will be a heating effect or not; and the intensity determines the strength of the pulse.

The intended outcomes of therapeutic ultrasound consist of:

1) Reduce chronic and acute pain	3) Reduce cardinal signs of inflammation	6) Increase tissue relaxation	8) Increased scar tissue breakdown
2) Reduce inflammation and chronic and acute	4) Promote bone healing	7) Reduce muscle spasm and guarding	9) Assist delivery in medication administration
5) Increase blood flow			

Ultrasound treats a variety of different condition, impairments, and functional limitations. Some include:

1) Pain	5) Tendonitis	10) Inflammation	12) Connective tissue contracture	15) Crush injuries
2) Muscle spasm	6) Bruising	11) Acute and sub-acute inflammation	13) Adhesions	16) Fibrosis
3) Muscle guarding	7) Burns	from Sprains and Strains	14) Superficial and deep skin wounds	17) Superficial and deep wounds
4) Peyronie's disease	8) Muscle tears			
9) Edema				

Ultrasound can have a different feeling according to the setting being used. If the thermal setting is used, you/the patient should expect to feel slight heat along with coolness from the gel and the movement of the ultrasound head. The only difference that will be felt with non-thermal is that there should be no heat experienced at all.

Ultrasound application may be limited or prohibited depending on your condition.

Precautions:

1) Open wounds	3) Peripheral vascular disease (PVD)	5) Previous experience with ultrasound that were non-successful	6) Pain with pressure
2) Impaired cognitive ability	4) Advanced age		7) Lack of sensation

Contraindications:

1) Pregnancy	4) Lack of sensation (thermal application)	7) Psoriasis	10) Directly over the spine after laminectomy
2) Abnormal growth (presumed malignant)	5) Thrombosis	8) Directly over the eyes	11) Over a bone fracture (high intensities)
3) Metastasis (Cancer)	6) Pacemaker	9) Directly over the gonads	

Additional information can be provided by your Physician, flyers and information sheets, web resources, and your physical therapy provider.

References:

Baker, Kerry G., et al. "A Review of Therapeutic Ultrasound: Biophysical Effects." Physical Therapy 81 (7): 1351-1358. Web. 9 Feb. 2010.

Behren, Barbara J. and Susan L. Michlovitz. Physical Agents: Theory and Practice. Philadelphia, PA: F.A. Davis Company, 1996. Pages 58-75. Print.