Opinion

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Traditional therapeutic ultrasound compared with sustained acoustic medicine (SAM). a comparison

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Opinion

Ultrasound is one of the most commonly used modality by physical therapists and athletic trainers. It is one of the most misunderstood and, therefore, one of the misused modalities. When placed in the hands of a competent clinician, it can provide positive outcomes; however, when used improperly, there are few benefits from this modality.[1] There are several clinical applications of therapeutic ultrasound. As with many medical devices, research on ultrasound began a decade after the end of World War II. This research has been an ongoing process since the 1960s. Although there was little research during the 1970s and 1980s, it picked up somewhat in the 1990s. This is important because ultrasound devices manufactured in the 1990s are of much higher quality than previous ones. Therapeutic ultrasound is helpful in treating the following cases:

I. Aiding the inflammatory response to injury
II. Superficial wound healing
III. Connective tissue healing
IV. Bone healing
V. Assessing stress fractures
VI. Treating pitting edema
VII. Reducing muscle spasm
VIII. Reducing pain
IX. Restoring ROM lost from scar tissue and/or joint contracture
X. Treating chronic inflammation

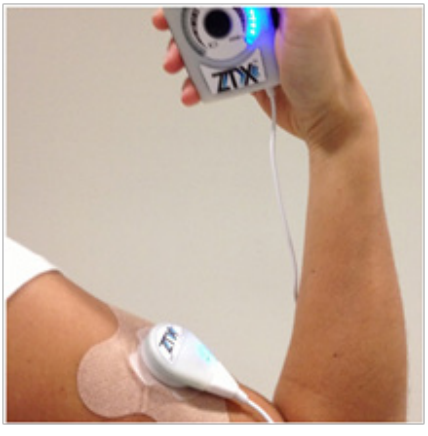
The parameters for traditional ultrasound are:

I. Mode (continuous or pulsed)
II. Frequency (use 1 MHz for structures 2.5 to 5CM depth)
III. Intensity (this should be to patient tolerance)
IV. Treatment length (about 8 minutes for 3Mhz, and 12 minutes for traditional thermal ultrasound)
V. Treatment area size (this should be 2 times the size of the ERA, or 2-3 times the size of the sound head).

Sustained acoustic medicine (SAM) has been found to be effective with knee osteoporosis, shoulder pain, low back pain, and ankle sprains (to name a few). The SAM can also be used for bone healing. The SAM (Zetrox, inc, Trumbull, CT) has been in service for about 8 years. Its parameters are:

I. Continuous mode
II. 0.43 W/cm2
III. Treatment time 1-4 hours.
IV. Treatment size 6cm (the size of the sound head)
V. Portable
VI. Wearable during work or competition.

The SAM is different from traditional ultrasound. It runs on a battery, whereas traditional ultrasound is plugged into a wall socket. The size of traditional ultrasound is the size of a 3 ring binder, whereas the SAM is about the size of a TENS unit or cell phone. Traditional ultrasound produces from 2000 to 4000 joules. The SAM can produce up to 18,000 joules when two crystals are used.[2] This added energy will speed up healing, pain relief and all the other things. There was a study performed several months ago looking at SAMs ability to decrease pain associated with tendonitis. There was a significant reduction of pain over the 6 week study. Participants started with a 5.3 on the numerical rating scale and ended with a 1.6. There was another study looking at grip strength in subjects with elbow tendinitis. At week 4 there was a significant increase in from baseline to week 2 in grip strength of the injured limb. This increased grip strength was even larger at weeks 4 and 6. A photo of the SAM and traditional ultrasound are now presented. SAM thigh:



Acknowledgments

None.

Conflicts of interest

The auhtor declares that there is no conflict of interest.

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