

The Melmak LIPUS Device

The Melmak Device utilizes Low Intensity Pulsed Ultrasound (LIPUS) technology. Studies have shown that LIPUS devices can accelerate fresh fracture healing up to 38%, have an 86% healing rate for non-unions as well as reducing cast-time by 22%. This is particularly important in cases of pseudarthrosis, delayed healing, compound fractures and patients with additional health concerns such as smoking or diabetes. The Melmak bone stimulator offers a simple and painless application with or without a cast. It has over 20 years of proven results and has no known side effects. Melmak is covered under many Insurance Plans and there are options available for all patients.

Patient usage

- ◆ Specifically designed for self treatment with no supervision by a medical professional.
- ◆ Once positioned over the fracture site, operating the Melmak device is performed with a simple press of a button.
- ◆ Large transducer for easier handling when mobility is limited.
- ◆ Small transducer for smaller bones.
- ◆ Only 20 minutes of daily treatment has the potential to dramatically accelerate the healing process.

Included accessories

- ◆ Assembled Transducer Holder & Strap
- ◆ Ultrasound Gel
- ◆ Battery Charger (including Adapters)
- ◆ Patient Manual and Quick Notes

The Quality difference is in the signal!

SPECIFICATION	MELMAK	EXOGEN
Ultrasound frequency (MHz)	1.5	1.5 ± 5%
Modulating signal burst width (μs)	200 ± 10%	200 ± 10%
Repetition rate (kHz)	1.0	1.0 ± 10%
Duty factor (%)	20%	20%
Effective radiating area (cm ²)	3.88 ± 10%	3.88 ± 1%
Temporal average power (mW)	118 ± 10%	117 ± 30%
Spatial avg.-temporal avg. / SATA (mW/cm ²)	30 ± 10%	30 ± 30%



- ◆ EXOGEN – Show the correct values out of the studies – however, give themselves a comfortable performance cushion of ±30%.
- ◆ When you compare it to the BTT Melmak device you see the difference. Melmak Devices are accepting ±10%!
- ◆ As a result EVERY single BTT Melmak device needs to be calibrated!
- ◆ With ±30% tolerance the competitors do not have to calibrate every device and their production costs are far lower. This should result in a more affordable device, however, that is not the case.

Clinical Studies

STUDY	OUTCOME MEASURES	RESULTS	TECHNICAL SPECIFICATIONS OF LIPUS DEVICE
Pilla et al, Non-invasive low-intensity pulsed ultrasound accelerates bone healing in the rabbit. The Journal of Orthopaedic Trauma, Vol 4, No 3, 1990: pp 246-253	Acceleration of fracture healing	Ultrasound treated bone as strong in torsion as intact fibulae, increased periosteal reaction	<ul style="list-style-type: none"> ◆ $f = 1.5 \text{ MHz}$ ◆ $t_p = 200 \mu\text{s}$ ◆ $\text{REF} = 1 \text{ KHz}$ ◆ $I_e = 30 \text{ mW/cm}^2$
Walsh et al, Effect of Low Intensity Pulsed Ultrasound on Healing of an Ulna Defect Filled with a Bone Graft Substitute. Journal of Biomedical Materials Research Part B: Applied Biomaterials, 86B, 2008: pp 74–81	Rate of healing of bone defect	LIPUS resulted in more new bone growth at wk 4 and 12 compared to control and increased VEGF expression	<ul style="list-style-type: none"> ◆ $f = 1.5 \pm 5\% \text{ MHz}$ ◆ $t_p = 200 \pm 10\% \mu\text{s}$ ◆ $\text{REF} = 1 \pm 10\% \text{ KHz}$ ◆ $I_e = 30 \pm 30\% \text{ mW/cm}^2$
Walsh et al, Effects of low-intensity pulsed ultrasound on tendon-bone healing in an intraarticular sheep knee model. The Journal of Arthroscopic and Related Surgery, Vol 23, No 2 (February), 2007: pp 197-204	Rate of healing at tendon/bone junction	LIPUS resulted in improved ability to withstand increased load at tendon/bone junction	<ul style="list-style-type: none"> ◆ $f = 1.5 \text{ MHz}$ ◆ $t_p = 200 \mu\text{s}$ ◆ $\text{REF} = 1 \text{ KHz}$ ◆ $I_e = 30 \text{ mW/cm}^2$
Siska et al, External adjuncts to enhance fracture healing: What is the role of ultrasound? Injury Journal. 2008 Oct.39 (10): pp 1095-1105	Effect of LIPUS on rate of fracture healing	Safe, practical and effective treatment	<ul style="list-style-type: none"> ◆ $f = 1.5 \text{ MHz}$ ◆ $t_p = 200 \mu\text{s}$ ◆ $\text{REF} = 1 \text{ KHz}$ ◆ $I_e = 30 \text{ mW/cm}^2$
Busse et al, The effect of low-intensity pulsed ultrasound therapy on time to fracture healing: a meta-analysis. CMAJ. 2002 Feb 19;166(4): pp 437-441	Time to fracture healing	LIPUS may significantly reduce the time to fracture healing for fractures treated non operatively	<ul style="list-style-type: none"> ◆ $f = 1.5 \pm 5\% \text{ MHz}$ ◆ $t_p = 200 \pm 10\% \mu\text{s}$ ◆ $\text{REF} = 1 \pm 10\% \text{ KHz}$ ◆ $I_e = 30 \pm 30\% \text{ mW/cm}^2$

This Schedule lists some examples of clinical studies that have been carried out on low intensity pulsed ultrasound systems (LIPUS) such as the EXOGEN® product. (EXOGEN® is the registered trade mark of Exogen, Inc). The studies have not utilised a Melmak LIPUS device.

WHAT IS CONSIDERED A NON-UNION FRACTURE?

Approximately 10% of all fractures will develop into a delayed or non-union fracture. When a broken bone fails to heal its call a “non-union.” Typically a fracture will be considered non-union or delayed at the 6-8 week mark from the initial fracture date or if the physician is not satisfied with the amount of healing that’s occurred over a period of time. Typically a non-union fracture will not heal without some form of intervention, either surgical or with the help of a LIPUS device.



Canadian Distributor:



Procare Medical Inc.
1135A—44 Avenue SE
Calgary, AB T2G 4X4
www.procaremedical.ca

Email: orders@procaremedical.ca
Toll free: 1.866.544.0993
Local: 403.287.0993
Fax: 1.844.237.6414