

**Assisi**<sup>TM</sup> **Animal Health**

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**Anti-inflammatory Therapy Without Drugs for Veterinary Medicine**

*March 2010*

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# Introducing FDA Cleared PEMF for Veterinary Medicine

## Targeted Pulsed Electromagnetic Field Therapy (tPEMF™)

*Non-invasive*

*Non-pharmacological*

*No adverse effects*



# Inductive charging: moving electricity through the air

Recharging toothbrushes, razors, electric cars and even Wii remotes

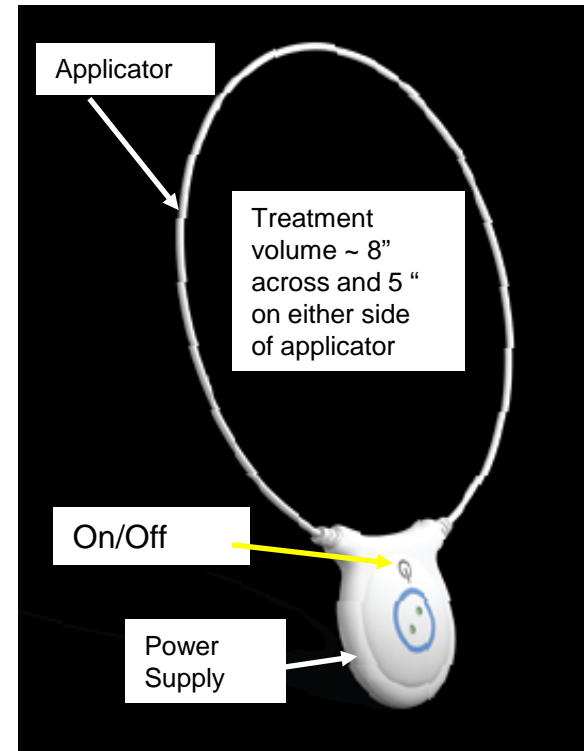


Ivivi's targeted PEMF delivers electrical energy to injured tissue the same way but at a much lower power.

# A Unique Product for the Veterinary Market

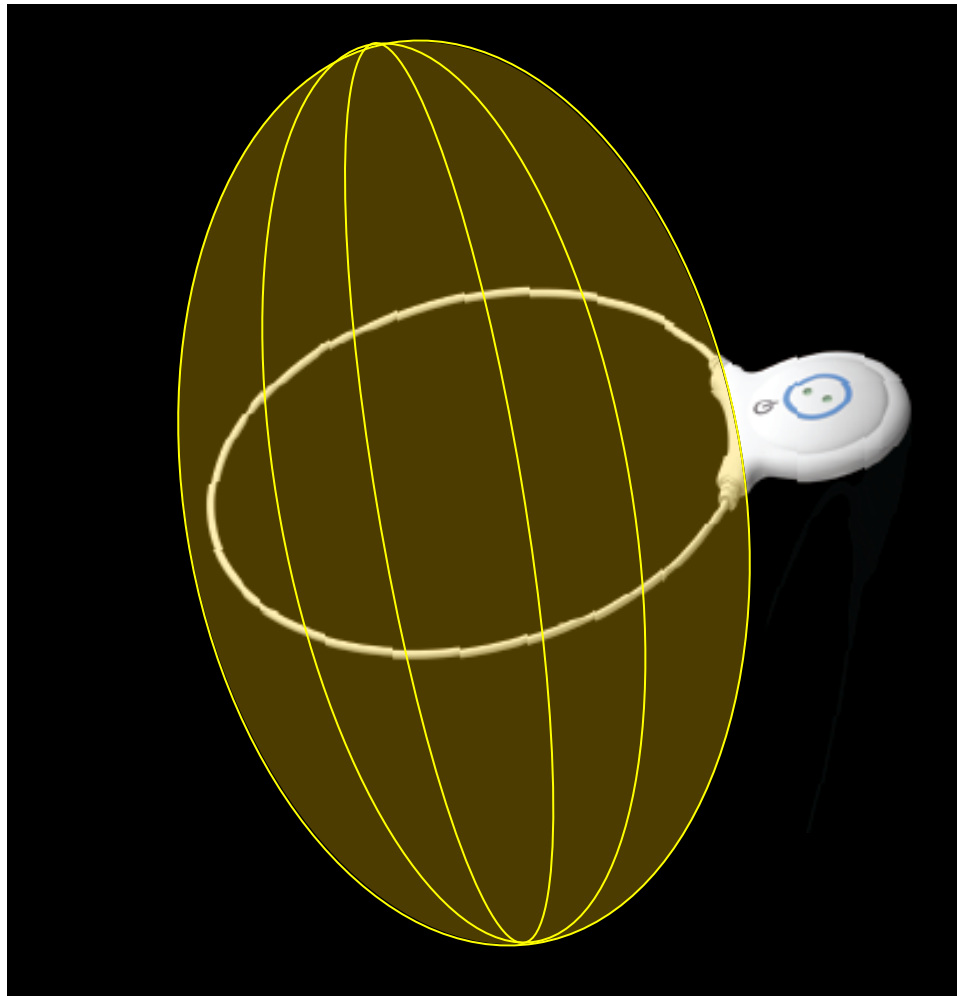
## Backed by solid science and cleared through rigorous regulatory processes

- Cleared by FDA for treatment of post-operative pain and edema:
- Medicare coverage for chronic wounds
- Approved for sale in U.S. and Canada
- CE marked for European market
- **Treatment regimens:**
  - Chronic conditions: TID/BID 15 minutes
  - Acute conditions: 15 minutes q 4-8 hours
- **Current veterinary uses:**
  - Post-operative pain
  - Wound care
  - Arthritic conditions
  - Spinal cases
  - Horse lameness
- **New income stream for practices:**
  - Clinic treatments
  - Take-home units



# Field of Therapy

Treatment effective within the enclosed area



Treatment depth is about 2/3 the diameter of the applicator, extending out on either side.

In this 7.5" applicator, treatment volume is ~ 8" across and 5" on either side of 7.5" applicator

# Assisi™ Animal Health Products

A flexible product design that can be used in the office, stables or at home – even over splints and bandages



**Assisi™ Clinica:** Durable A/C unit for office/stable, driving up to three treatment applicators simultaneously  
Unlimited Tx. capacity



**Assisi™ Portable,** disposable  
7.5" diameter unit  
Provides 90 15 min Tx.

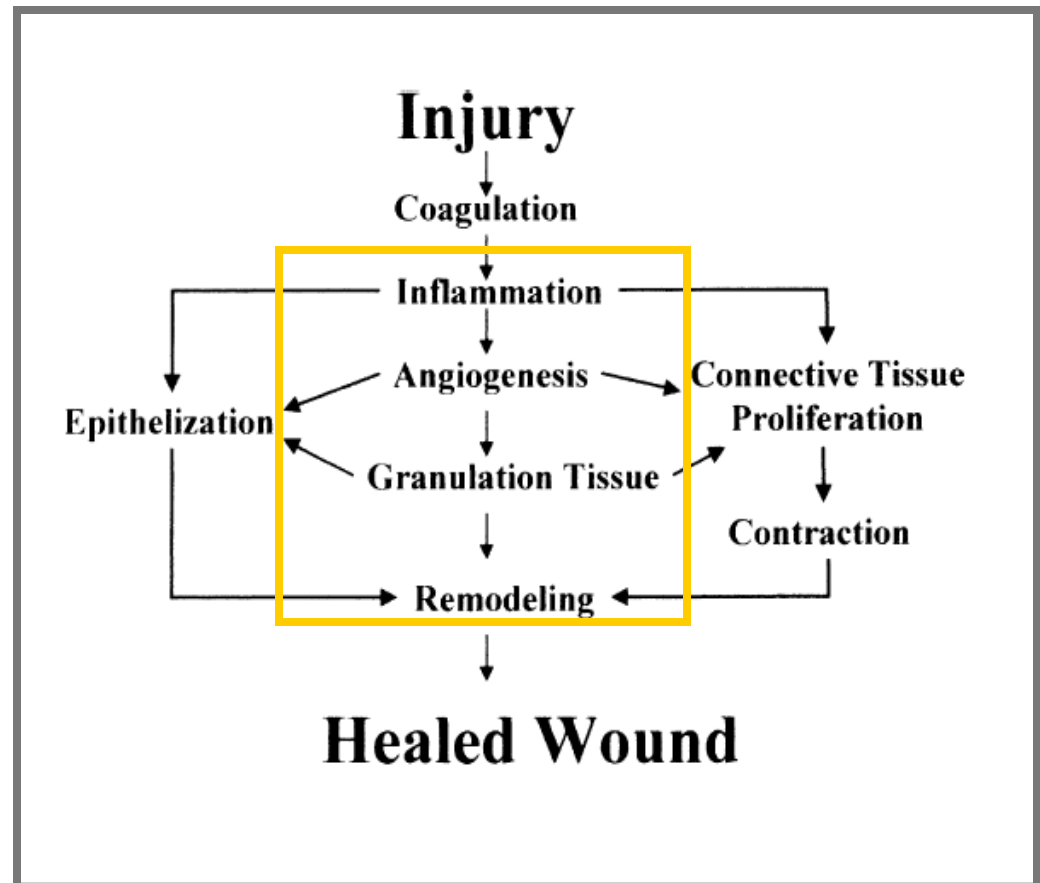


**What is Assisi™ and how does it work?**

# Assisi™ affects the healing cycle

Speeds the entire cascade through nitric oxide pathway

- Targets inflammation
- Accelerates anti-inflammatory activity by accelerating nitric oxide production



# How Assisi™ works

## Targeted signals modulate anti-inflammatory & growth factor cascades

- Mechanism of action *identified*
  - Targets Calcium/Calmodulin binding (Ca<sup>2+</sup>/CaM)
- Mechanism of action *demonstrated*
  - Lab experiments using inhibitors conclusively confirm mechanism of action of tPEMF



PEMF increases Ca<sup>2+</sup> binding to CaM in milliseconds



Ca<sup>2+</sup>CaM binds to cNOS, catalyzes NO release instantaneously increasing blood and lymph flow.

Pain and Edema decrease in seconds



**FGF-2/VEGF**      **Angiogenesis (hours/days)**

**TNF- $\alpha$**           **Collagen/Granulation (days)**

**TGF-B**            **Remodeling (days/weeks)**

<sup>1</sup> Casper et al., SfN, 2008, BEMS 2009; Pilla, BEMS, 2009

# Solid clinical evidence supports Assisi™ products

## Peer Reviewed Clinical Evidence

### ■ Human Studies

- 57% less pain, 55% less pain medication, 50% less IL-1b (*Rohde, 2009*)
- PEMF Wound Repair Review (*Strauch, et al; April 2009 Aesthetic Surgery Journal*)
- 50% reduction post-surgical pain, 50% less pain medication (*Heden, Pilla, et al; July 2008, Aesthetic Plastic Surgery*)
- 44% reduction in pain following two 15 minute treatments, 60% at 6 weeks in osteoarthritis (*Nelson, 2010 ORS*)
- 7 fold improvement in swelling following acute ankle sprain (*Pilla, et al, 1996, Journal of Athletic Trainers*)

### ■ Animal Studies

- 59% acceleration in surgical wound healing (*Strauch, Pilla et al; August 2007, Plastic and Reconstructive Surgery*)
- 69% acceleration in tendon healing (*Strauch, Pilla et al; September 2006, The Journal of Hand Surgery*)
- 100% increase in flap survival (*Weber, et al, October 2004, Plastic and Reconstructive Surgery*)
- 500% increase in new blood vessels (*Roland, et al, April 2000, Plastic and Reconstructive Surgery*)

# **Veterinary Applications**

# Post-Surgical healing

## Accelerates post-surgical healing

Ginger ACL replacement healed 50% faster

- Can be used immediately following surgery. Portable has automatic treatment regimen available.
- Turn on and secure over incision (Vetrap). Automatically treats for 30 minutes every 4 hours for the first 3 days, then every 8 hours for the next 3 days and then every 12 hours until battery dies (about 14 days)
- Can be used manually to treat PRN, at least BID



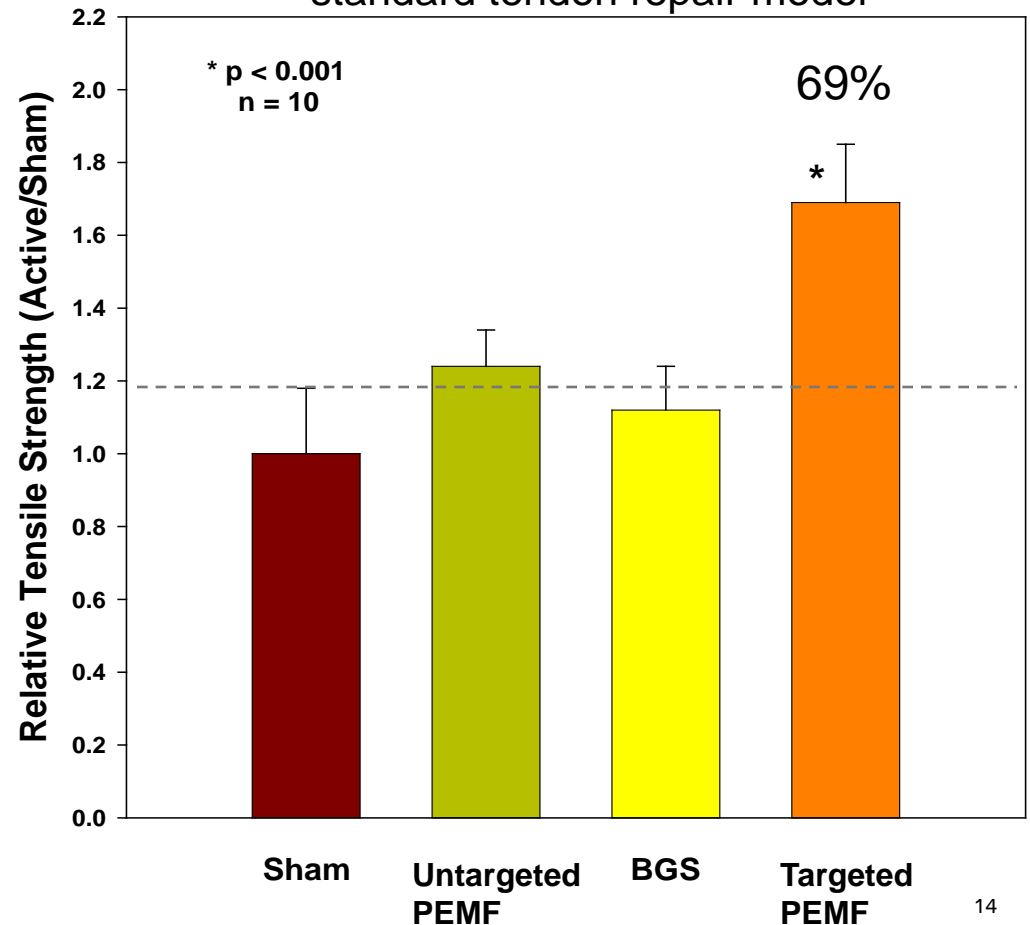
*Even a single treatment post-surgically can improve recovery*

# Stronger tendon repair in less time

Not all PEMF signals are equal;  
Assisi's targeted PEMF signals make the difference

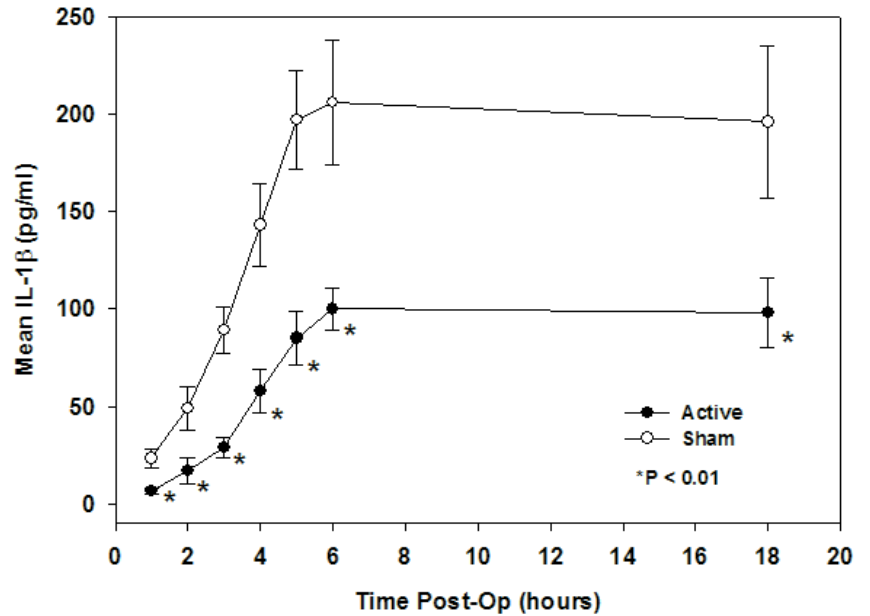
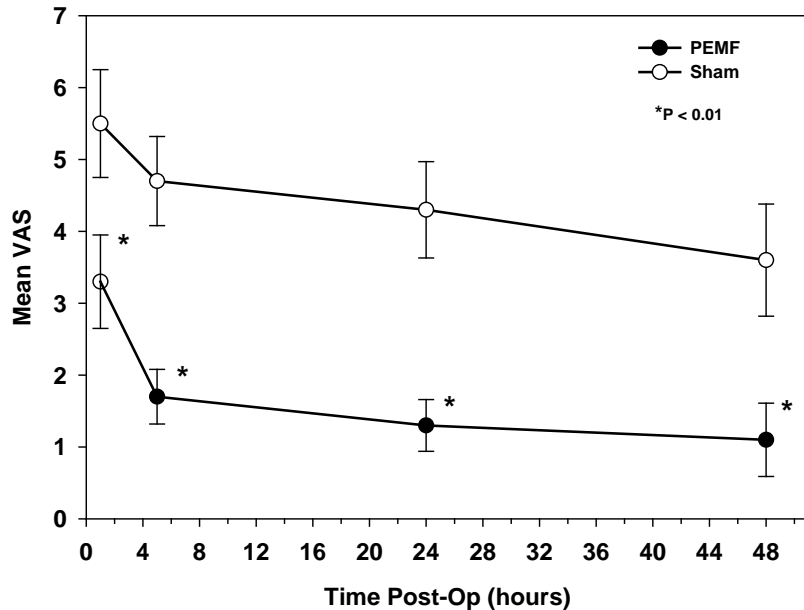
- Targeted signals produce 69% stronger tendon repair (faster healing)
- Other PEMF signals are NOT AS EFFECTIVE

Comparison of PEMF signals in a standard tendon repair model



# tPEMF in Post-Surgical Pain (Rohde)

Randomized, controlled trial, post primary breast reduction



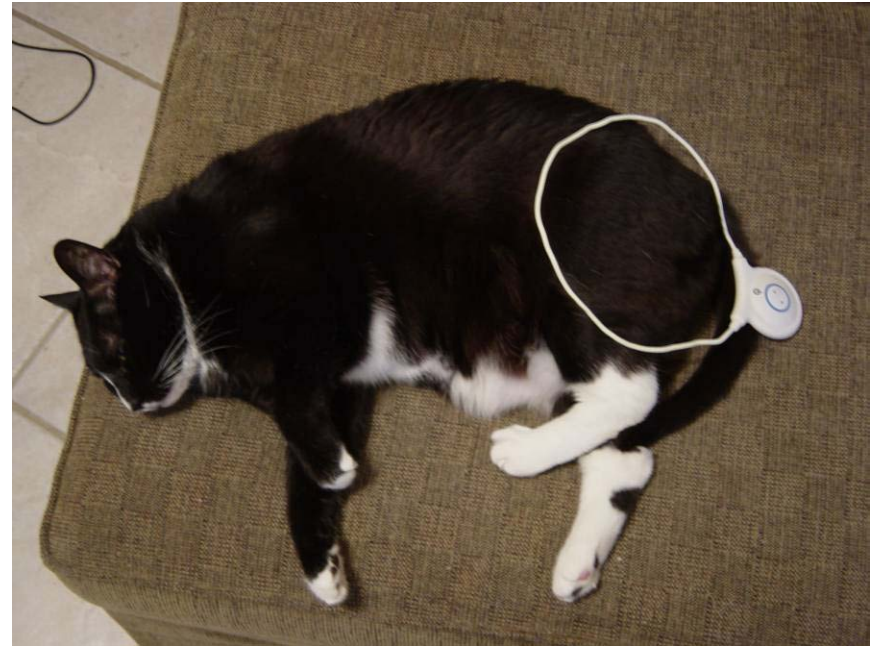
57% reduction in pain at 1 hour post op, 55% less pain medication, 50% less inflammation

# Osteoarthritis

## Significant and rapid relief from pain due to OA

- Use Portable in manual mode
- Initial treatment course for the treatment of OA related pain is BID 15 minutes for 45 days, then single daily 15 minute treatments.
- Can be used PRN, if pet appears in pain.
- Pretreatment, such as one 15 minute treatment before exercise or rehab can improve endurance and post-exercise recovery.

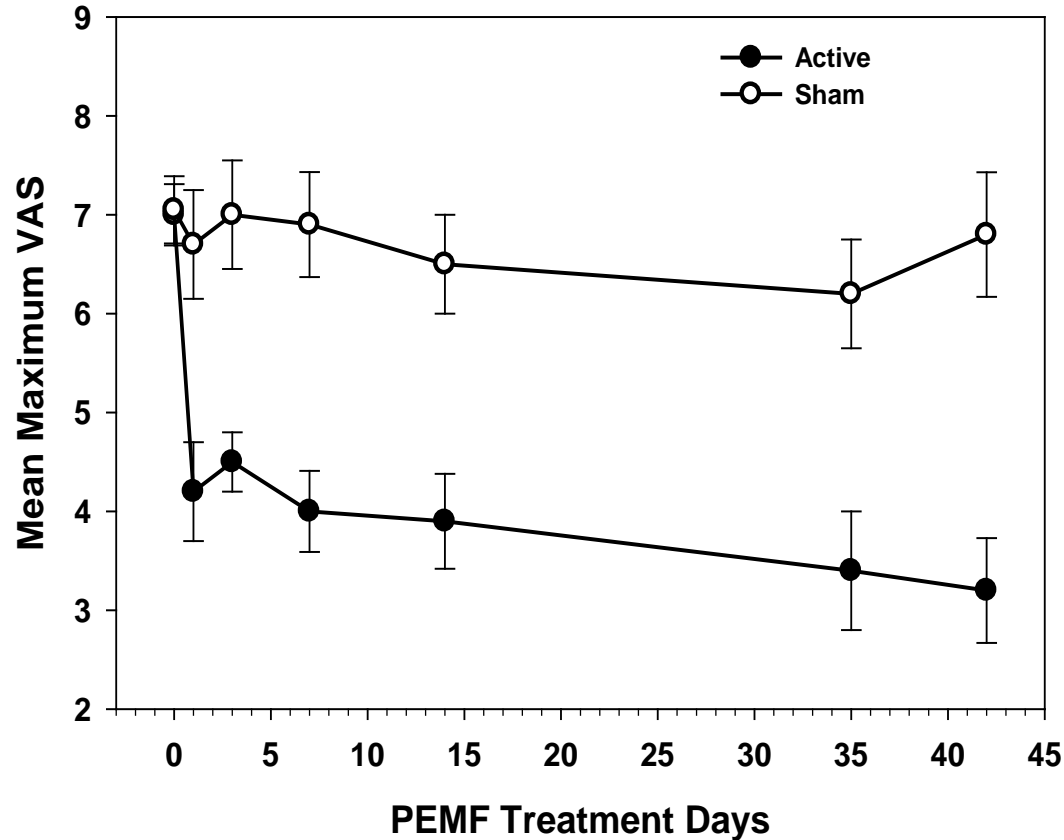
Buddha being treated for OA of the hips



*Ongoing research on the treatment of OA directly to slow or eliminate progression*

# Osteoarthritis Study Results

## Substantial immediate, pain relief (human)

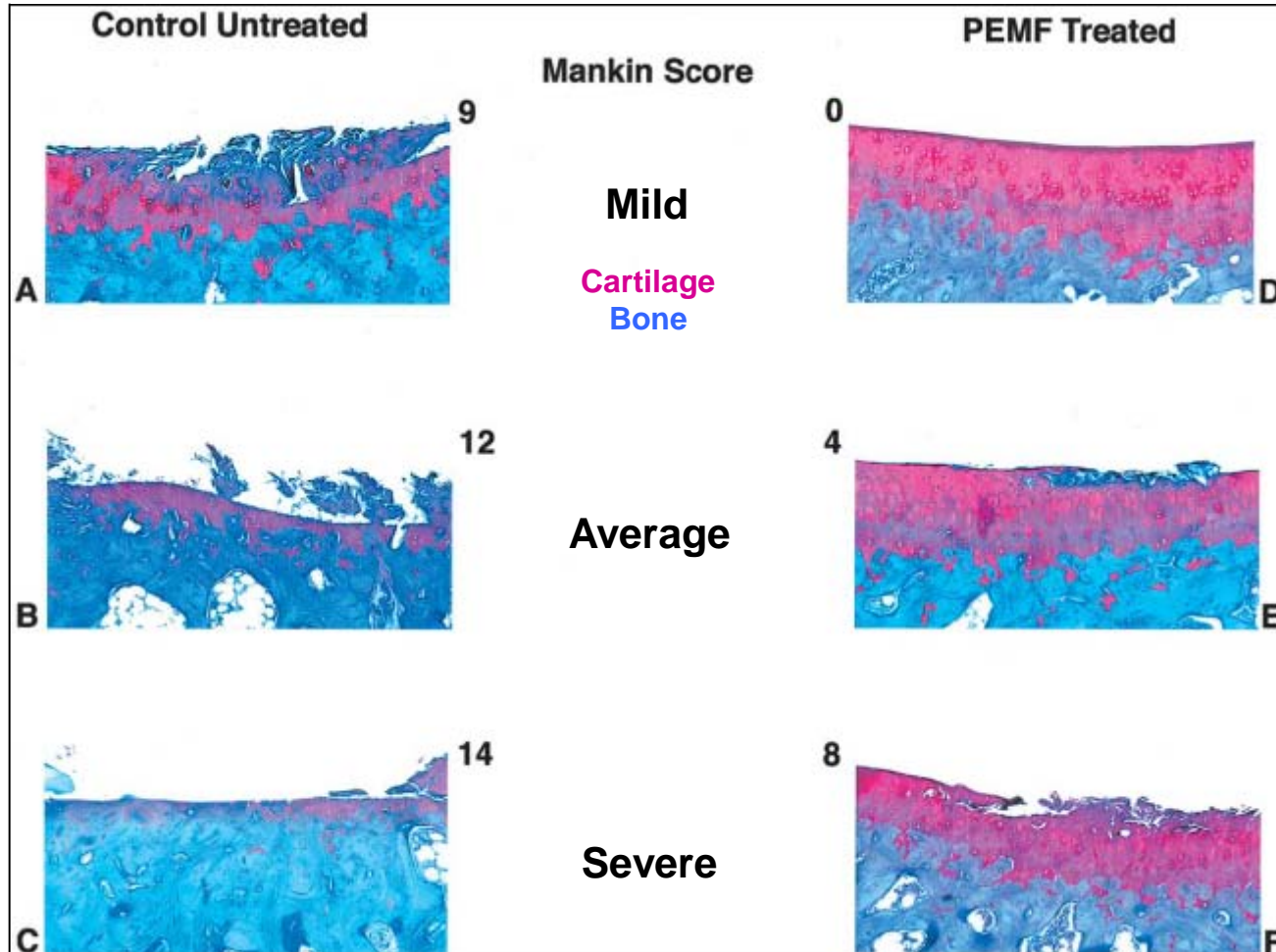


Active group showed an immediate (within 24 hours) 44% decrease in pain and by the end of the 6 week trial showed a 60% decrease in pain. Tx: BID 15 minutes.

*Immediate decrease in pain with only two 15 minute treatments*

# Degenerative OA model

PEMF significantly preserves tibial cartilage in progressive OA



Lower Mankin score indicates greater preservation of cartilage

# Inflammation

## Assisi™ accelerates natural anti-inflammatory process without drugs

- Pain and edema are two of the principal signs of inflammation.
- Conditions are identified by the suffix “itis.”
- Accelerates the natural anti-inflammatory response.
- For acute inflammatory conditions, treatment may be 15 minutes every 4 hours for the peak inflammatory phase, about 3 days after injury. Treatment can then be done less frequently.
- For chronic inflammatory diseases, treatment is 15 minutes 2-3 times a day until pain subsides, then once daily.
- Data is as good or better than NSAIDs.

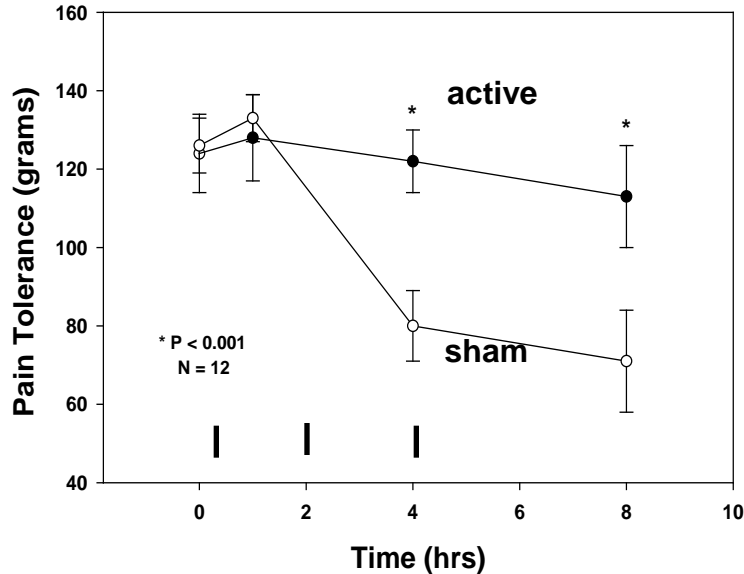
Panda Tx for cerebral edema



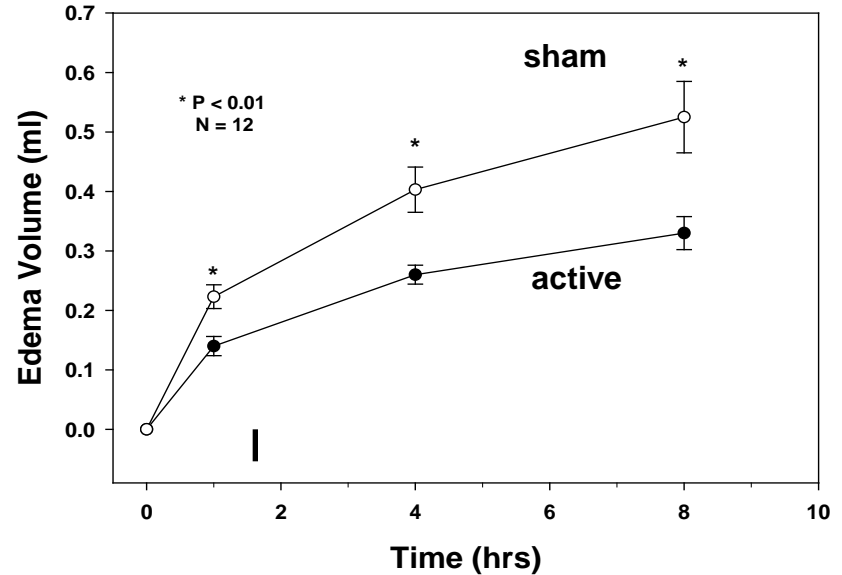
Paso Fino Tx for laminitis

# Superior treatment of inflammation

Inhibits pain and reduces edema non-invasively, without drugs, with results comparable to NSAIDs



Pain 100% inhibited in active group; Pain tolerance decreased by 59% ( $P < 0.001$ ) at 8 hours in sham group



Significantly greater edema in sham group 61% ( $P = 0.003$ ) vs. active group at 8 hours

# Wound Healing

## Promotes tissue regeneration

- Assisi has demonstrated significant improvements in wound healing. Medicare reimburses the use of FDA cleared PEMF devices for treating chronic wounds in humans.
- Can be used for acute or chronic wounds.



Marie Tx for “summer sore”

- In chronic wounds, there may be a slower response time.

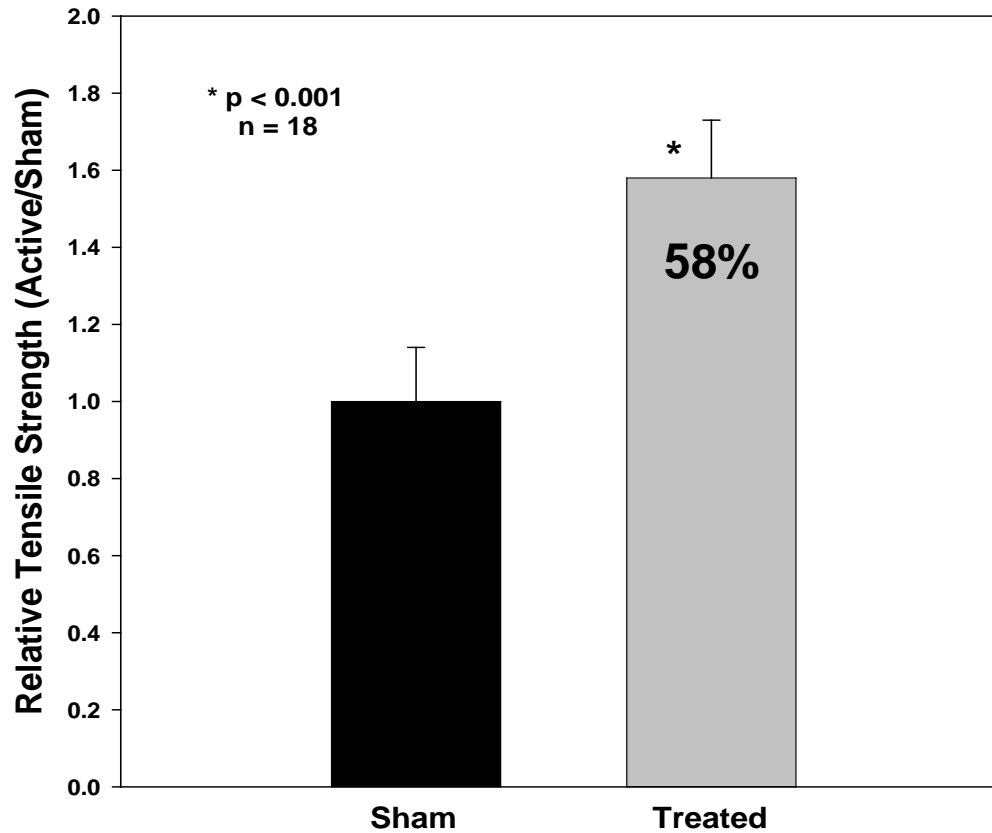
- Protocols for acute wound healing are every 4 hours and can be treated using the automatic protocol. Chronic wounds are treated for 15 minutes, 2-3 times daily.
- Improvements in wound may be seen within 72 hours.

Ginger Tx ACL repair



# Accelerates Wound Healing

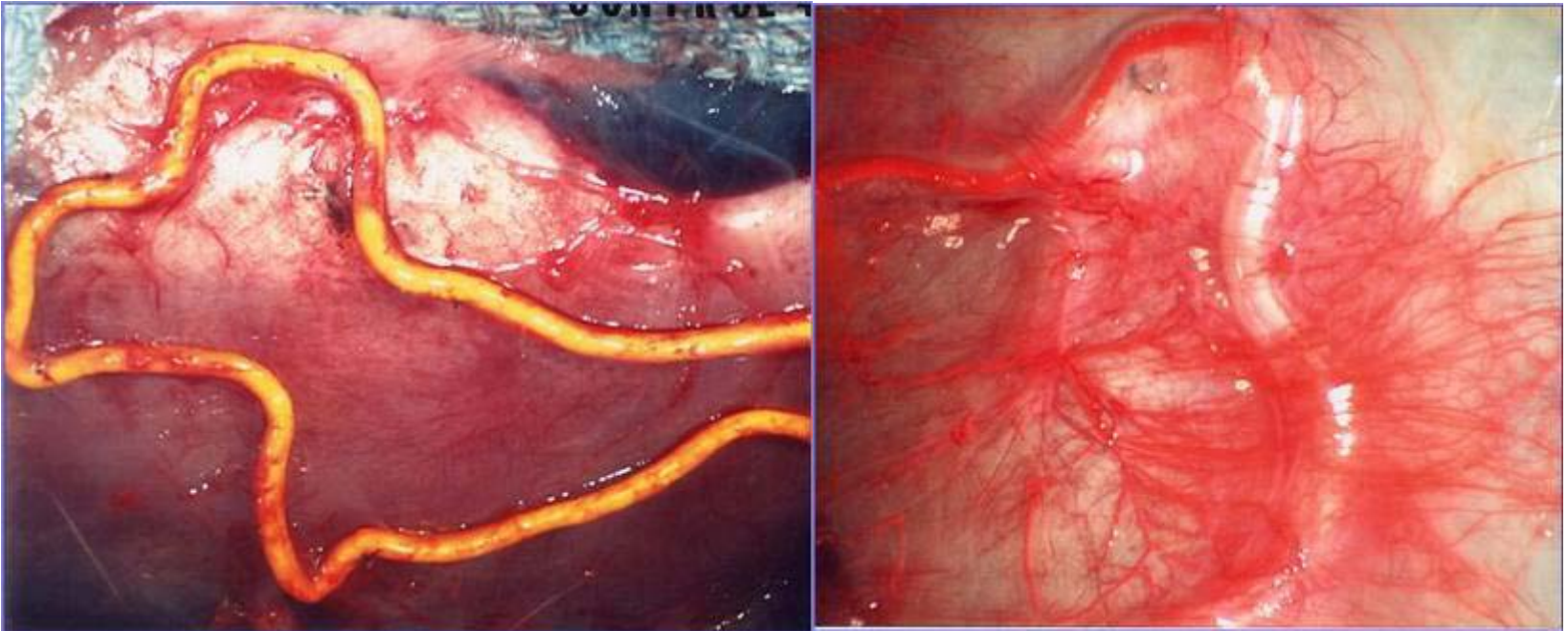
## Animal model for assessing incisional wound healing



*Treated wounds heal faster; 58% stronger at 21 days*

# Peripheral Angiogenesis

Angiogenesis: standard peripheral model in rats at 8 weeks



Sham-treated arterial loop

PEMF treated arterial loop

*500% increase in neovascularization  
Second phase loops support flaps:  
treated flaps survived, untreated died*

# Pain Management

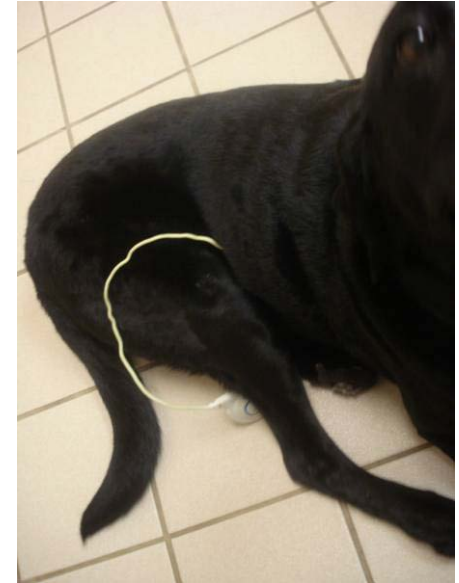
## Simple, effective pain management without side-effects

- Data on pain has demonstrated, in both animals and humans, significant improvements in pain and reductions in the use of narcotic pain medications.
- Acute pain can be treated like post-surgical sites, every 4 hours or with the automatic setting.
- Chronic pain can be treated 2-3 times daily for 15 minutes. After initial course of treatment, animal may only require maintenance therapy, one 15 minute treatment daily.



Mutzie Tx for dog bite to ear

Bess Tx partial ACL tear



- Unlike virtually any drug intervention, tPEMF will not produce unwanted or dangerous side effects. There is no potential for overdose or misuse.

# Using Assisi™

Short course on what and what not to do in  
treating animals

# Treatment regimens

## Portable

### Automatic

1. Affix the unit over the area to be treated (Vetrap, tape, brace, etc).
2. Press the “on” button.
  - The unit will treat automatically:
    - every 4 hours for the first 72 hours
    - every 8 hours for the next 72 hours
    - then every 12 hours until the battery runs down, about 14 days total.

### Note:

For acute wounds and/or pain, a week of therapy may be sufficient.

Consult with veterinary professional to determine ongoing regimen.

## Portable and Clinica

### Manual

1. Position the applicator over the treatment area.
2. Press “on” button.
  - With the Assisi Clinica™, treatment will automatically stop at 30 minutes.
  - With Assisi Portable™, stop the treatment manually, by pressing the “on” switch after 15 minutes (lights will stop blinking).

### Note:

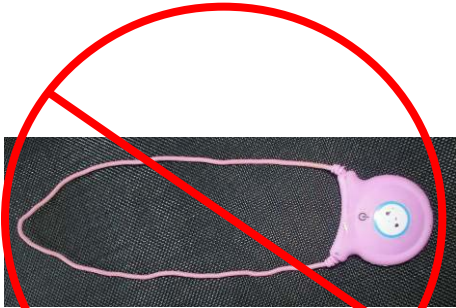
If Portable is used for more than 30 minutes and the blinking lights go off, the unit is now in automatic mode.

To return to manual mode, press “on” button for 5 seconds, lights will wake up and then immediately push button again. Unit is then off and returned to manual mode.

# Applicator Etiquette

## For all applicators

Keeping the applicator as circular as possible provides the best field of treatment



Bending or elongation the applicator too much will hinder effectiveness



To make the unit smaller, you can create a "Figure 8" by folding the unit in half – this will not affect effectiveness



# IMPORTANT!

- **Do not use on with pacemakers.**
  - This is a **CONTRAINDICATION**, as is using the technology on patients with implanted metallic leads.
- **Metal will block the signal or draw it away reducing efficacy.**
  - Remember this when treating patients in metal cages.
  - Keep the applicator at least 6” away from the metal surface to insure optimal treatment conditions.

# **Veterinary Cases**

# Pepe: Post-traumatic head injury



- Post-traumatic head injury (closed)
- Significant improvement in 7 days

In overall evaluation of pain in 60 cases, pain improved by a factor of 3.5 in treated animals (Crowe and McCauley, submitted for publication)

# Panda: Cerebral Edema

## Initial veterinary experiences: Panda



Panda being treated for cerebral edema following severe seizures secondary to metaldehyde poisoning.

*Assisi™ effective at managing edema and Panda recovered.*

Courtesy of Dr. T. Crowe, 2009

# Emma: Massive Trauma

## Initial veterinary experiences: Emma



Emma: treated for massive trauma secondary to dog attack.

*Effective at controlling edema and pain and limiting damage from ischemia by improving blood flow*

Courtesy of Dr. T. Crowe, 2009

# Positioning Assisi™

# Assisi™ Opportunity

- **Pet owners are interested in alternatives to drugs**
  - Dangers of long-term drug use
  - “Natural” movement extends to pets and veterinarians
- **Growth of awareness of chronic pain conditions**
  - As baby boomers age, arthritis awareness grows
  - The Arthritis Foundation has a section on dogs
  - Negative press on drug treatment instills concern
- **Assisi offers an FDA-cleared, research supported therapy with no side-effects to worry pet owners**

# The Time Could Not Be Better!

- **Favorable market factors:**
  - DVM article to be published by Fall, 2010
    - “Non-invasive anti-inflammatory technology in veterinary medicine”
  - Growing number of Key Opinion Leaders (KOLs)
    - Tim Crowe: Emergency Medicine
    - Jamie Gaynor: Pain Specialist
    - Laurie McCauley: Rehabilitation
    - Hank Gendron: Equine
  - Major buzz on the IVAPM website
  - Market interest in natural, non-drug therapies for animals

# Summary

## Assisi™ is:

- ***An income growth opportunity for you!***
- A significant opportunity for veterinarians to add additional income
- FDA-cleared, Medicare approved in humans; supported by strong scientific and clinical support
- Effective in treating inflammation and pain
- Non-drug, non-invasive, no side-effects or adverse events known
- Simple to use, easily incorporated into any treatment protocol
- For use in the clinic and a model to take home

# Contact Assisi™ for innovative and effective therapies

**On the Internet:**

**[www.mtavet.com](http://www.mtavet.com)**

**By e-mail:**

**[joe@mtavet.com](mailto:joe@mtavet.com)**

**By phone:**

**866.646-8684**

**By Fax:**

**262-364-2270**