ANIMAL REHABILITATION

SPECIAL INTEREST GROUP

LETTER FROM THE PRESIDENT

Kirk Peck, PT, PhD, CSCS, CCRT

MEET THE PRESIDENT

It is my pleasure to formally introduce myself as the newly elected President of the ARSIG. But first I would like to express gratitude to Amie Hesbach for her many years of service to the profession and especially to the ARSIG. Amie's energy and passion for improving the lives of our animal companions was evident during her 6-year tenure as ARSIG President. Amie will remain active with the SIG on many levels so I will continue to benefit from her wisdom and experience as I muddle through the murky waters of a new leadership role.

Since you might be interested in learning a little more about my background, here is a brief synopsis. In the early 1990s I initiated a new PTA program and served as Director for 8 years. For the past 12 years, I have been a full-time faculty member and clinical education coordinator in the Department of Physical Therapy at Creighton University in Omaha, Nebraska. I teach a variety of topics including political advocacy, professionalism, and clinical exercise physiology and therapeutic exercise. I provide part-time outpatient physical therapy services to a non-reservation based Native American medical clinic governed by the Ponca Indian Tribe of Nebraska. I am also currently serving my second term as President of the Nebraska Chapter Physical Therapy Association.

ANIMAL ENCOUNTERS

During my undergraduate years in the 1980s, I worked in a zoo where I glove trained "downed" birds of prey (owls, hawks, and eagles) to perform at various educational shows. While in physical therapy school I worked at an all-night emergency veterinary clinic, and also assisted a sports-medicine veterinarian conduct research on greyhound dogs. After moving to Omaha in 1991, I became a zoo docent at the Henry Doorly Zoo but it required too much personal time so I terminated the relationship. In 2011, I became certified in animal rehab through the Canine Rehabilitation Institute. Since that time I have continued to treat both humans as mentioned and dogs via consultation with a couple of veterinarians in Omaha. Oh yes, I did spend about 7 years negotiating statutory and regulatory language to legalize animal rehab by non-veterinarians in Nebraska. So that's my life in a nutshell. Oh, one more thing…I have two kids (one in college and the other is a Jr. in High School), one wife, and one dog named Bella--a Shih Tzu/Jack Russell hybrid. She is very smart but full of relentless energy.

ARSIG IN 2013

The ARSIG business meeting held at the APTA Combined Sections meeting in San Diego was very productive and exciting. Many issues were discussed including the practice analysis survey, independent study courses, SIG member involvement in the association, enhancing the SIG Web site, the need for more research in animal rehab, and strategizing new ideas to offer more educational opportunities for SIG members that may also lead to the recruitment of "new" members. Finally, one of the most important topics covered was the need to update the SIG legislative liaison list. That, I am happy to report, is being done now by 3 SIG members.

ARSIG LEGISLATIVE LIAISON CONTACTS

The SIG legislative liaisons serve as key individuals in each state who are poised to address any legislative or regulatory matter related to the practice of animal rehabilitation. There is a simple truth about clinical practice that I tell students frequently, *"PTs and PTAs practice 'by law.' We are granted that privilege by those who actively engage in the political process. Therefore, if you want the freedom to practice what you have been educated to safely do with animal care, then you need to know the laws that pertain to your state (PT and Vet), and you may need to change those laws to improve your ability to practice if they are deemed inadequate."* It is that simple…we ALL have a duty to be political advocates. That is why the SIG leaders are going to devote a great deal of time to regroup SIG members so that we know who can be contacted in each state to address issues that may be of concern to PTs and PTAs who practice on animals. Finally, being a SIG legislative liaison is a great service. Trust me, it can be very enlightening, and once you get involved, you may actually get hooked!

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ARSIG PROGRAMMING AT CSM

We had a wonderful first preconference course on "Manual Therapy for Mechanical Dysfunctions of the Canine Lumbar Spine," presented by Cindy McGregor, PT, PhD, OCS, and Laurie Edge-Hughes, BScPT, MAninmSt, CAFCI, CCRT. In attendance were both physical therapists and veterinarians, and a local therapy dog group provided "demo dogs" for all the participants to practice their palpation skills and manual techniques on. We are looking forward to this becoming an annual offering, so please support future courses!

In addition, our regular programming this year was on "Measuring Change in Canine Rehabilitation," presented by Cindy McGregor, PT, PhD, OCS, and Amie Hesbach, MSPT, CCRP, CCRT. The lecture encompassed some of the basic components of research, including validity, reliability, sensitivity and specificity, and responsiveness. Information was also given on subjective scales, such as the Visual Analog Scale and numerical rating scales; objective measurements such as goniometry, girth, algometer, force plates, and the Canine Timed Up and Go Test. The second part of the lecture focused on the clinician's "outcomes toolbox" and why it is important to gather valid objective measures at the time of the initial exam. In this way, specific and timely goals can be made, and outcomes measured. This will give validation for the treatments being provided, if positive outcomes can be shown.

Immediately following our programming, we had our annual

business meeting. Some of the major topics discussed were the practice analysis. There were problems with some of the data analysis and several sections of the analysis are now several years old and data may not still be reliable. It will probably require gathering new data from SIG members and starting over, so stay tuned for developments in this area. Other topics included the transition of presidency from Amie Hesbach to Kirk Peck, whom we welcome to his new post; the Vice President's position (currently occupied by Carrie Adrian) will be vacant next year. If anyone is interested in the position, please contact one of the Nominating Committee members. As always, we are looking for volunteers to help on many of our committees and projects, so if you have some free time, please consider assisting us!

CASE STUDY: THE USE OF PULSED ELECTROMAGNETIC FIELD THERAPY IN SMALL ANIMAL REHABILITATION

Tanya Doman Yousry, PT, DPT, CSCS, CCRP

The use of pulsed electromagnetic field therapy (PEMF) started decades ago in human practice as a modality to aid in fracture healing. Many of these dinosaur-like contraptions featured exposed coils attached to a main, and rather large, control box. The coils were wrapped around the dysfunctional limb (ie, non-union fractures) and set for hours a day. Like most modalities, this method of treatment has been modernized and subsequently researched for the benefit of all.

While the modality has changed, the principles have stayed the same. In 1979, the FDA approved the use of PEMF devices to stimulate bone growth in non-union (delayed healing) fractures. The FDA subsequently expanded its use for the treatment of pain and edema in soft tissues in 1982.

First off, these are not the 'magnets' we perhaps played with as kids. Many veterinarians have reservations regarding the use of magnets in the industry; these are the same providers that refer for magnetic resonance imaging (MRI), however. Pulsed electromagnetic field therapy is more appropriately compared to MRI than to static magnets.

The body's cells contain electrically charged ions. When the properties of the cells are activated or changed, a pump action can be simulated that improves the cells' metabolism by moving nutrients and metabolite end-products. Alternating frequency also reduces accommodation by the body.

"It has been shown that this coherent vibration of electric charge is able to irregularly gate electrosensitive channels on the plasma membrane and thus cause disruption of the cell's electrochemical balance and function."[1]

Pulsed electromagnetic field therapy is not to be equaled to the static magnets that are sometimes placed inside leg wraps for equines; this resulting magnetic field is one-way, or one-dimensional, and the area affected is small. A thorough description of the electrical engineering is beyond the scope of this report. However, those who wish to read further about the low frequency, non-thermal actions stimulated by PEMF may read further in Markov[1] and Liboff.[2]

Many authors have highlighted the effects of PEMF on tissue repair.[3] Pulsed electromagnetic field therapy stimulates osteogenesis and increased bone mineral density leading to increased bone strength. The anabolic effects on osteoblasts and other cellular growth factors are combined with modulated effects on cytokines. Anti-inflammatory benefits occur to the treatment's effect on adenosine receptors of cells.[3] To date, the treatment has not been associated with any negative side effects.[3]

SUGGESTED USES

Ideally, this is a great adjunct for our small animal clients with fractures or degenerative joint disease. This modality can be also used in the early postoperative period in the absence of UWTM use or other 'high activity' rehabilitation techniques.

Besides facilitating bone and tissue healing as described in the literature for both humans and animals, there is a pain management application for our animals with arthritic degenerative conditions.[4,5] Authors of PEMF-related studies have described faster recovery from exertion (or physiological "fatigue").[6] For our neurological cases (eg, Degenerative Myelopathies and similar), this author (TDY) points to the human studies on multiple sclerosis as well as immune- deficiency diseases and arthritis such as SLE and fibromyalgia.[6,7] Preliminary research exists to suggest a decrease in spasticity following PEMF use.[8]

In a double-blind study by Dallari et al,[9] human patients with prostheses experienced decreased pain and significant increases in hip motion that correlated to better function. Several studies have been published in which authors describe chondrocyte proliferation in humans and animals with PEMF stimulation.[10] In a study described in Zhong et al on the effects of PEMF on osteochondral autografts in the knees of sheep:[3]

"Significantly lower levels of interleukin-1 and tumor necrosis factor-a or alpha were observed in PEMF-treated knees while levels of tumor growth factor-beta1 were higher."

The authors of a recent 2012 study described the beneficial use of PEMF on human plantar fasciitis. In addition, the authors preferred the use of electromagnetic energy in this format to extracorporeal shockwave therapy (EST) due to "conflicting results" from the latter.[11] Extracorporeal shockwave therapy is also used in veterinary rehabilitation but can be extremely uncomfortable and require anesthesia during the session.

HOW TO USE PEMF

The preferred method of application is having the animal rest or lay on the towel-covered mat for 20 to 30 minutes at the conclusion of their rehabilitation session. (See Figures 1 & 2) The position of the animal does not affect dosage or effectiveness. The pet should be under supervision by trained rehabilitation staff to prevent damage to the bed and materials. Staff or owners attending rehabilitation sessions may sit in proximity of the mat as long as there are no pacemakers or other contraindications.

CONCLUSION

The majority of research available for PEMF has been done in vivo on humans, which may be considered as a limitation for its validity in direct applications to veterinary rehabilitation. Also, the treatment parameters vary wildly from session durations of 16 minutes to a few hours and use frequency from a few times a week to daily use.

Figure 1. 12-year-old Border Collie mix with arthritis.

Figure 2. 11-month-old Golden Retriever post-op.

Dr. Oz featured PEMF as a helpful pain management tool in a television episode in November 2011. The headlining of the modality by a celebrity physician should not translate directly to its application in clinical practice, but it represents the dissemination of information to a public that will, in turn, find useful. If nothing else, we have a duty to explore the techniques that are being discussed to the public—our clients.

Pulsed electromagnetic field therapy is a useful, noninvasive, nonpharmacologic, low-unit cost device for veterinary rehabilitation use.

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