

Four Leg News

Volume 2, Issue 1

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Research and why you care...

Happy New Year!

And just what will be in store for you in 2013?

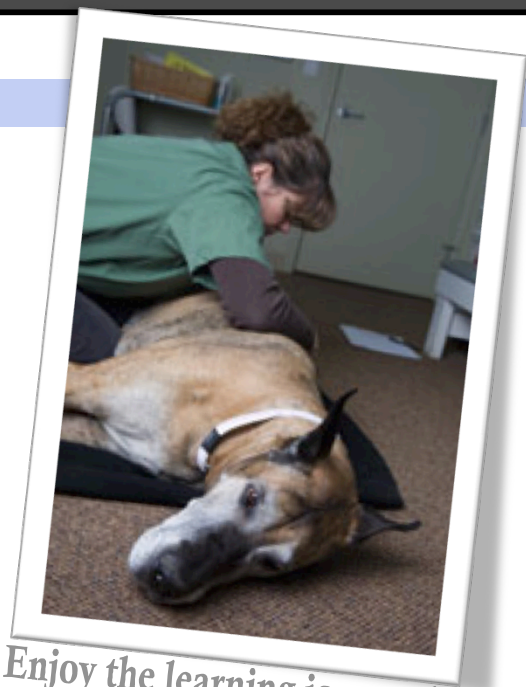
Firstly, thank you to everyone that sent me New Year's well wishes and comments on FourLeg.com over the year! Your support is so very much appreciated.

The New Year is supposed to come with great hopes, dreams, and anticipation for better things. And I really feel that this year, we will all get a 'leg up' just a little higher. Just a gut feeling... but I like it, so I'm sticking with it! One thing that will help along the way is to read this newsletter! Oh yes! I pulled out and grouped some fascinating research articles into this issue, and of course MY synopsis on their clinical relevance. I hope you enjoy the selection.

Certainly, if in the future you come across a paper that you think would be an interesting subject to dissect and review, pass it along. And, I'd also love to hear of YOUR book recommendations (see page 8).

Thank you again for helping me through 2012, and CHEERS to your success, health, and happiness in 2013!

Laurie Edge-Hughes



Enjoy the learning journey!

In this issue...

Patellar luxation (human)	2
Patellar luxation (canine)	3
Hip arthritis (canine)	4
Hip arthritis (human)	5
Nose cells & neuro	6
Laser & laminectomies	7

More inside!

Something to think about regarding Patellar Luxations

Human Research...

Fukuda TY, Melo WP, Zaffalon BM. (2012) Hip Posterolateral musculature strengthening in sedentary women with patellofemoral pain syndrome: A randomized controlled clinical trial with 1-year follow-up. J Orthop Sports Phys Ther 42 (10): 823-830.

Study: 54 sedentary women between 20 and 40 years of age with a diagnosis of patellofemoral pain syndrome were randomly assigned knee exercises only or knee and hip exercises. The knee only group performed a conventional knee stretching and strengthening program, while the other group did the same as well as strengthening exercises for the hip abductors, lateral rotators and extensors. Each group exercises over a 4-week period.

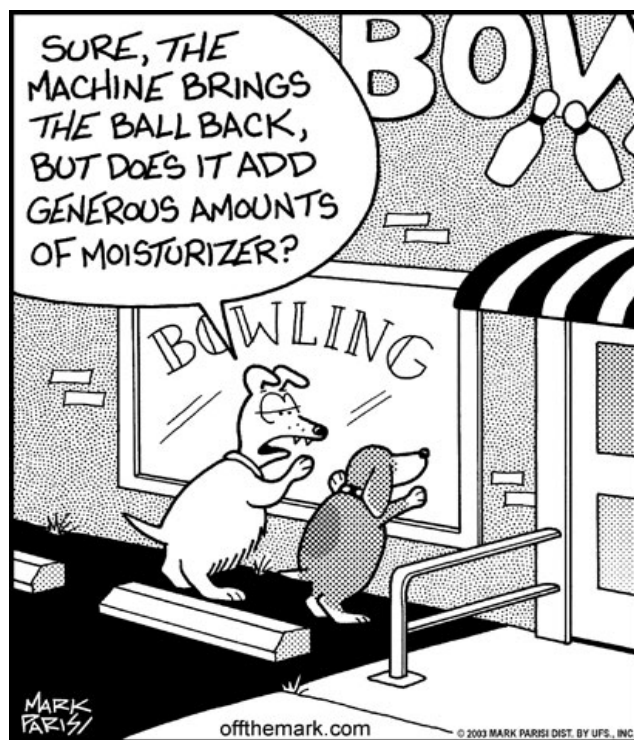
Results: The knee & hip exercise group had higher levels of function and less pain at 3, 6 and 12 months compared to baseline. The knee exercise only group had reduced pain only at the 3- and 6-month marks, but no change in function. The knee & hip exercise group outperformed the knee exercise only group on all factors at each testing interval.



www.STAARconference.com

Clinical relevance:

If adding hip strengthening exercises to a conventional knee stretching & strengthening program works in human patellar pain patients, why should we not expect similar results in canine patients with mild patellar laxity (i.e. grade 1 to 2- / 4). In fact, at the Canine Fitness Centre, we tend to treat a large number of canine athletes, and have found that those with mild patellar symptoms (i.e. just enough to cause performance problems) do well with targeted strengthening of the gluteal muscles in addition to quadriceps. So next time, try popping that e-stim on a little higher (up onto the glutes) for a few reps of 3-leg standing!

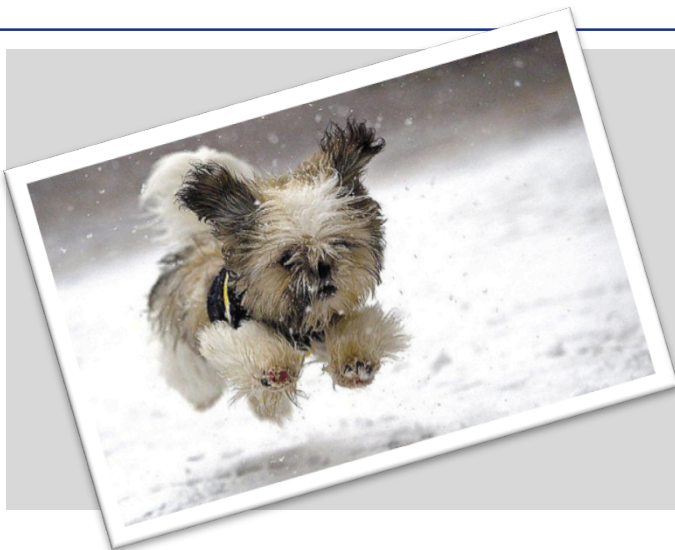


Have you been???

Have you been to the STAAR Conference? The Symposium on Therapeutic Advances in Animal Rehabilitation is a great continuing educational platform. It's very hands on. It's collaborative. It's non-denominational (i.e. nobody cares where you took your training – we're all in this together).

Yes, yes, I'll be there... but you don't have to take any lectures from me! There is SOOOO much to chose from.

Check it out – and mark your calendar for June 28 – 30, 2013!



Patellar Luxations & dogs...

Gibbons SE, Macias C, Tonzing MA, et al. (2006) Patellar luxation in 70 large breed dogs. J Small Anim Pract 47(1): 3 – 9.

Study: A retrospective analysis of 70 large breed dogs (>15kg and a mean weight of 30kg) treated surgically or non-surgically for patellar luxation. 45 males and 25 females with a mean age of two were included. Half had bilateral luxations. Luxations were medial in all but 3 stifles.

Surgery was performed in 70 dogs with excellent/good recovery in 94%, however complications occurred in 29% of stifles (increasing body weight was an associated risk factor). Thirty-five stifles were managed non-surgically with 86% having excellent/good outcomes.

Within the surgical group, 5 dogs were a grade 1, 36 dogs were a grade 2, 19 dogs had a grade 3, and 10 dogs were a grade 4. Complications were recorded in 20 surgical stifles. Seven were major complications (patellar relaxation or implant failure of the K-wires). 13 were minor complications (wound related problems, implant discomfort and seroma formations, swollen patellar tendon, hock hyperextension, proximal displacement of tibial tuberosity). Lameness had improved by three grades in 1 limb, two grades in 5 limbs, and one grade in 24 limbs (the majority of which changed from good to excellent), unchanged in 15 limbs and worsened in 5.

Useless Trivia...

According to Takepart.com – Wed, Dec 5, 2012, millionaires prefer dogs over cats. Apparently 58% of millionaire pet-owners have a dog, whereas only 37% own a cat. Of the 'average Joe', well we sit at 39% dog-owner and 33% cat-owner. Curious indeed! The opinion of the one millionaire interviewed: Dogs aren't after your pocket book, and cats are too much like people - they aren't always there for you!

According to Reuters – Wed, Dec 19, 2012, the Westminster Dog Show is adding two new breeds to the line-up this year: The Russell Terrier & The Tree Walker Coonhound. If you are keeping count – that makes for 187 breeds recognized by the American Kennel Club. The 2-day show will take place February 11th & 12th in New York. (I have to admit that I enjoy watching the Best in Show category!)



Are you following me on Facebook?

Please do, and engage in some conversation too!

www.facebook.com/FourLegRehab



cont.

Non-surgical details: The non-surgical dogs varied from grade 1 (n=20), grade 2 (n=13), grade 3 (n=0), and grade 4 (n=2). 29 of the 35 dogs were followed long-term. Lameness improved by 3 grades in 4 limbs, 2 grades in 2 limbs, and 1 grade in 11 limbs, unchanged in 9 limbs, and worsened in 3.

The study's conclusion: "Surgically treated cases had a better outcome than those managed non-surgically. In view of the potential risk of postoperative complications, it is recommended that all cases of patellar luxation in large breed dogs should be treated with femoral trochleoplasty, tibial tuberosity transposition (stabilised with K-wires and a tension band wire) and soft tissue releasing and tightening procedures."

Clinical Relevance:

While the authors of this study concluded that surgery cases had better outcomes than non-surgical cases, I would say that this study is also a fair advocate for conservative management. The study does not discuss how the non-surgical cases were treated... so I would advocate for a study that follows patellar luxation cases that underwent rehab therapy. The rehab therapy should ideally contain general strengthening, as well as specific strengthening – targeting quadriceps, hamstrings, and (from human research) gluteals in particular.

"Cats are smarter than dogs. You can't get eight cats to pull a sled through snow."

– Jeff Valdez

"We are alone, absolutely alone on this chance planet; and amid all the forms of life that surround us, not one, excepting the dog has made an alliance with us."

– Max Depree

Bockstahler BA, Prickler B, Lewy E et al. (2012) Hind limb kinematics during therapeutic exercises in dogs with osteoarthritis of the hip joints. Am J Vet Res 73(9): 1371 – 1376.

Study: 10 dogs with osteoarthritis of the hip joints were compared to 8 non-lame dogs while walking up an incline or down a decline and over low obstacles. Putting reflective markers on the limbs of the dogs and using high-speed cameras to film each dog performing each exercise was done to collect data. Maximal flexions, extension and ROM of the hip joints were calculated.

Results: Dogs with osteoarthritis in the hips had reduced extension of both hip joints, and reduced flexion of the contralateral hip (when compared to flexion of the ipsilateral hip) during decline walking. Incline walking showed that both stifle joints were lacking in extension, and the affected hip had significantly reduced extension. With walking over low obstacles, the lame dogs showed more flexion in the contralateral stifle, and both tarsal joints.

Clinical Relevance:

Honestly, this study doesn't tell us anything we don't already know by observation alone, but does quantify those observations. The study failed to give actual ranges, but instead reported percentage differences. All in all, there is very little clinical relevance to this study. However, where it might be beneficial is as a stepping platform for further research. For example, if this research demonstrates a base line comparison between normal and hip arthritis dogs, then the same study could be reproduced but with a series of treatment interventions between data acquisition in order to show benefit of physiotherapy treatment techniques. But the question would still remain – does an increase in ROM indicate an improvement in function or a reduction in pain? In other words, would an increase in ROM actually matter?

Jigami H, Sato D, Tsubaki A et al. (2012) Effects of weekly and fortnightly therapeutic exercise on physical function and quality of life in individuals with hip osteoarthritis. J Orthop Sci 17(6): 737 – 744.

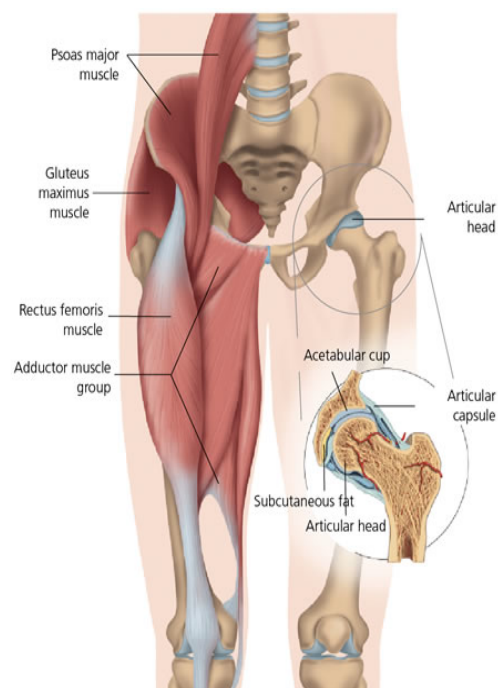
Study: 36 women with diagnosed hip osteoarthritis were divided into two groups depending upon the frequency of therapeutic exercise (weekly or fortnightly). Land based exercises and aquatic exercises were performed on the same day for 10 sessions with each group. All exercise was physical therapist supervised. Land based exercise consisted of a 5-minute warm up, 20 minutes of muscle strengthening, 5 minutes of single-leg standing, and 10 minutes of muscle stretching, followed by 30 minutes of rest and drinking water. This regimen was followed by the aquatic exercise: 5 minutes of warm up, 15 minutes of walking in the pool, 5 minutes of muscle strengthening, 5 minutes of single-leg standing, 5 minutes of whole-body coordination, and 5 minutes of muscle relaxation.

Muscle strength of the lower extremity, "timed up and go" (TUG), time of one-leg standing with open eyes (TOLS), Harris Hip Score, and scores of the Medical Outcomes Survey Short Form-36 questionnaire, were measured before and after interventions.

Results: The women who exercised weekly had significant improvement on lower-extremity muscle strength for all muscles as compared to the fortnightly exercise group, which had no significant changes. Both groups demonstrated significant improvement in the TUG and TOLS tests after interventions.

Clinical Relevance:

This study has high clinical relevance (in humans... and therefore should matter for animals too). Functional objective outcome measures were used, and an intervention strategy was employed that could directly impact clinical practice. We could all use this study to justify advocating for a weekly, targeted exercise intervention for any patient (human or animal) with hip osteoarthritis.



Human hip:

rueckentraining.kieser-training.com



Canine hip

Super-Cool Cutting-Edge Research...

Granger N, Blamires H, Franklin RJM, Jeffery ND. (2012) Autologous olfactory mucosal cell transplantation in clinical spinal cord injury: a randomized double-blinded trial in canine translational model. Brain J Neurol 135: 3227 – 3237.

This study was designed to determine whether an intervention proven effective in the laboratory to ameliorate the effects of experimental spinal cord injury (intraspinally olfactory ensheathing cell transplantation) could provide sufficient benefit to be of value to clinical cases.

The Study: 43 companion dogs were randomized in a 2:1 ratio (23 dogs received olfactory ensheathing cell (OEC) transplantation & 11 dogs received cell transport medium alone). The OEC cultures contained a mean of approximately 50% olfactory ensheathing cells. Within these groupings, 3 patients were lost in the treatment group, and 1 was lost from the control group. All subjects met the inclusion criteria: weighing less than 20kg, a lesion localized between the T10 – L4 spinal cord, had no recovery of pain perception or ability to ambulate using the hind limbs by 3 months following the original injury. Following transplantation, dogs were re-evaluated monthly for 6 months. Examiners evaluated locomotor performance on treadmill, somatosensory-evoked potentials (stimulation of the tibial nerve while evaluating contralateral sensory cortex activity), transcranial magnetic motor-evoked potentials (stimulation over the motor cortex while evaluating cranial tibial activity), and urodynamic pressure measurements.

Results: OEC recipients had a highly significant improvement in forelimb-hind limb coordination scores and hind limb activity between the baseline and 6-month time point (as compared to no change in the no-cell group). There was no difference in incidence of recovery of somatosensory-evoked potentials or transcranial magnetic motor-evoked potentials between groups (thus no impact on sensory or motor spinal cord long tract function). There was no difference in bladder activity between the two groups either.

The authors noted: “However, it is important to recognize that improvement on our primary outcome measure is a composite between increase in spinal stepping activity (as a non-stepping dog cannot coordinate forelimbs and hindlimbs) and increase in hindlimb step coordination with the forelimbs and does not necessarily imply restoration of brain control over hindlimb motion.”

Rat research background: “In experimental studies on focal lesions in rodents, there is strong evidence that olfactory ensheathing cells can promote regeneration of long tract (e.g. pyramidal tract) axons (Li et al., 1998), and olfactory ensheathing cell-mediated functional improvement in complete transection models has been thought to result from serotonergic fibre regeneration (Ramon-Cueto et al., 2000).”

Thoughts on how olfactory ensheathing cells may help: local axon sprouting, modulation of immune responses, neurotrophic factors, remyelination of demyelinated axons or modulation of glia and neuronal function.

Clinical Relevance:

While this study did not show an improvement in what would be termed volitional movement, it did improve what could be deemed functional movement. The study was done, geared towards human relevance (helping chronic spinal cord patient) but a replication of this study in acute patients would be equally interesting. Either way it is a hopeful study that shows that improvements (in function) may be made in later stages of recovery for severe cases of spinal cord injury (secondary to intervertebral disc disease).

Draper WE, Schubert TA, Clemmons RM, Miles SA. (2012) Low-level laser therapy reduces time to ambulation in dogs after hemilaminectomy: a preliminary study. J Sm Anim Pract 43: 465 – 469.

Study: 36 dogs with acute paraparesis / paraplegia due to acute intervertebral disk herniation were evaluated and assigned to the control group or the laser treatment group based on alternating order of presentation. All dogs were assessed and given a modified Frankel score (MFS). To be included in the study the dogs had to meet the following criteria: clinical signs for less than five days, neurological exam findings consistent with a T3-L3 myelopathy (confirmed by advanced imaging), an MFS of 0 to 3 and a complete diagnostic regimen with appropriate treatment approved by the owner. Surgical decompression was accomplished via hemilaminectomy ± pediculectomy.

Laser Specifications: LLLT was performed using a laser array with five 200-mW 810-nm-wavelength lasers [LX2 Control Unit+Laser Cluster Probe, wavelength=810 nm, power=1 W (5Å~200 mW), THOR Photomedicine Ltd, London, UK]. The laser was applied transcutaneously over the spinal segment associated with the hemilaminectomy and the two adjacent ones (one cranial and one caudal). The laser array was applied to each area for 1 minute, delivering 25,000 mW/cm² to the overlying skin per day for

five days. (Note: the authors reported that this dosaging delivered an approximate energy density (2 to 8 J/cm²) to the spinal cord. Using the calculation that 1J = 1Watt x 1 second – the surface dosaging would be 12J per diode-point.)

The Modified Frankel Score: The MFS is defined as spinal hyperaesthesia only (grade 5), ambulatory with paraparesis and/or ataxia (grade 4), non-ambulatory paraparesis (grade 3), paraplegia with entire superficial nociception in the pelvic limbs (grade 2), paraplegia with entire deep nociception in the pelvic limbs (grade 1) and paraplegia with absent nociception in pelvic limbs (grade 0).

Results: The time to achieve a modified Frankel score of 4 was significantly lower (P=0.0016) in the low-level laser therapy group (median 3.5 days) than the control group (median 14 days). 34 of the 35 dogs in the study achieved a MFS of 4 (only one dog in the non-treatment group did not attain a MFS of 4).

Clinical Relevance:

This study is very promising! The way I see it, not only has laser been shown to be of benefit post-operatively following an acute intervertebral disc herniation, but it may have the potential to benefit non-operative dogs as well. Bottom line: Laser those disc dogs, and show your local neurologist or surgeons this research!

Thank you for your comments!

Laurie, I just wanted to say thank you for so many things. I received the Dermatome sheet and it is wonderful! I look forward to your emails and blogs. As a newbie, the information that you are providing is so helpful. And the ability to go back and review things repeatedly ('cause that's the way my brain works...) is really appreciated. Thank you for what you are doing for the veterinary community.
RM

Hi Laurie

I don't comment often on your blog and website and tools etc, but I have found it to be great stuff. I know what it takes to write a blog and I appreciate your energy and what you are doing for our profession.

Hope this is a successful venture for you and I love the dermatome chart--already laminated on my wall--clients love to look at especially because I do acupuncture.

JH

What are you reading?

I brought up in a recent blog posting that my New Year's resolution was to read more. And to that end, I wanted to recommend a couple of non-traditional books that I found interesting. (P.S. I don't read much in the way of traditional fiction – so don't bother sharing these with your book club!)

1. Bull'\$ Eye by Robert Kennedy of body-building magazine fame – not one of the 'other' Kennedy clan!

This is a great, easy to read book, where the late author shares his stories, secrets, thoughts, and observations of the world on several topics as they relate to success and life satisfaction.

2. Uncensored Sales Strategies XXX-Rated Secrets by Sydney Biddle Barrows (The Mayflower Madam)

with Dan Kennedy. I bet that's one you didn't expect! So, I'm not completely finished this book- but that happens to most of my books. I do believe I am 2/3 of the way through. Now, if you are not too delicate to read about the subject of call girls, then this is a fascinating read from a marketing perspective! Seriously!!!

The marketing information, concepts, and strategies fit with any business, but are presented in such a way that is anything but a typical boring business book! (So at least the men might buy it! But hey... I'm a lady, and I found it pretty

fascinating. Can't read it in public however – unless you buy one of those book covers! People stare!)



I found both books were available on Amazon!



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