

5th Annual
★ S T A A R ★
Symposium on Therapeutic Advances in Animal Rehabilitation
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Date: April 25 – April 27, 2014 (Pre-Symposium Workshop, April 23 – April 24)
Location: Wyndham Hamilton Park Hotel & Conference Center, Florham Park, New Jersey
Target Audience: Veterinarians, veterinary technicians, physical therapists, occupational therapists, and other veterinary rehabilitation practitioners.
Educational Credits: 3.5 total contact hours per workshop; 16 total contact hours for pre-symposium workshop; 3.5 contact hours for AARV lecture series.
Certificates of attendance will be awarded.

PRE-SYMPOSIUM PREREQUISITES & COURSE DESCRIPTION

(16.0 contact hours)

Manual Therapy Essentials for the Canine Spine

Instructor: Laurie Edge-Hughes, BScPT, MAnimSt (Animal Physio), CAFCI, CCRT

Prerequisites: This 2-day course is open to Veterinarians, Veterinary Technicians, Physical Therapists, and those who have successfully completed a canine rehabilitation certification program. Others may be admitted by special permission based on review of applicant's previous coursework and experience.

Course Description: Through lecture and lab, the instructor will lead participants through a thorough evaluation of the canine spine from a mechanical perspective. Focus will include manual therapy concepts and evidence-based rationale for treatment selection. Participants will gain a greater depth of understanding of spinal mechanics, a better appreciation for the detection of spinal dysfunctions, and the ability to manually treat (via mobilization techniques) the spinal system.

WORKSHOP DESCRIPTIONS & OUTLINES

(3.5 contact hours per workshop)

Advanced Manual Therapy for the Canine Spine

Instructor: David Acciani, PT

Course Description: This workshop, *Advanced Manual Therapy for the Canine Spine*, is designed to introduce the participants to the concept of joint mobilization techniques as they pertain to the canine patient. Lecture, demonstration, and guided lab practice will allow the practitioner to gain efficiency in evaluating and treating joint restrictions of the cervical, thoracic, and lumbar spine.

A solid, working knowledge of canine anatomy and manual skills must be present.

Learning Objectives

- Participant will gain basic knowledge of the principles of joint mobilization for evaluation and treatment purposes
- Participant will learn safety precautions, indications, and contraindications of joint mobilization techniques
- Participant will gain basic knowledge of joint biomechanics
- Participant will have a working knowledge of basic application of joint mobilization techniques for a variety of diagnoses
- Participant will learn specific joint mobilization techniques that will provide them with immediate applications to use within their practice

Advanced Manual Therapy for the Canine Spine - continued

Course Outline

Lecture: (25 min)

- Introduction to joint mobilization and principles
- Indications/contraindications/safety
- Review of joint arthrokinematics and cervical spine (CS) anatomy

Lab: (45 min)

- Assessment of normal/abnormal motion of the CS and specific joint mobilization for treatment
- Palpation of bony landmarks and proper hand placement

Lecture: (25 min)

- Specific joint mobilization techniques of the thoracic spine (TS)
- Indications/contraindications for treatment of the TS

Lab: (45 min)

- Practice hands-on techniques and direct application of joint mobilization to the TS
- Assessment of normal/abnormal motion of the TS

Lecture: (25 min)

- Specific joint mobilization techniques of the lumbar spine (LS)
- Indications/contraindications for treatment of the LS

Lab: (45 min)

- Practice hands-on techniques and direct application of joint mobilization to the LS
- Assessment of normal/abnormal motion of the LS

Questions & Answers, Wrap up

Selected Soft Tissue Techniques for Activation or Relaxation of Muscle

Instructor: Laurie Edge-Hughes, BScPT, MAnimSt (Animal Physio), CAFCI, CCRT

Course Description: This workshop, *Selected Soft Tissue Techniques for Activation or Relaxation of Muscle*, is designed to provide participants with a physical therapy approach to management of muscle dysfunction in the canine patient. Topics covered will include muscle assessment for weakness, myofascial restrictions, or myofascial trigger points. Targeted therapies for muscle dysfunction will include manual or mechanical stimuli to activate muscles, therapeutic exercises to ameliorate specific orthopedic conditions, and myofascial release concepts and techniques.

Learning Objectives

- Participants will gain a basic understanding of the difference between strength and motor control timing
- Participants will improve their soft tissue palpation skills
- Participants will be instructed in palpation of trigger points and myofascial restrictions
- Participants will understand how to facilitate muscle activation via targeted exercise strategies
- Participants will learn basic manual therapies to apply to myofascial trigger points and restrictions

Course Outline

Lecture: Background theory for muscle / myofascial dysfunctions (1 hour)

- Review of anatomy
- Theory for cause of muscle dysfunctions
- Introduction to therapeutic concepts

Lab: Testing and/or palpating for muscle dysfunctions (1 hour)

- Assessing for muscle weakness
- Assessing for myofascial trigger points
- Assessing for myofascial restrictions

Lab: Therapeutic exercise for hind limb dysfunction (45 min)

Lab: Myofascial treatments (45 min)

- Myofascial trigger point therapies
- Myofascial release therapies

Physical Therapy Differential Diagnostics for the Cervico-Thoracic-Shoulder Region

Instructor: Laurie Edge-Hughes, BScPT, MAnimSt (Animal Physio), CAFCI, CCRT

Course Description: This workshop, *Physical Therapy Differential Diagnostics for the Cervico-Thoracic-Shoulder Region*, is intended to provide participants with the background theory and hands-on skills to confidently perform a physical assessment of the cervico-thoracic-shoulder region in the dog. Physical therapy assessment skills and clinical reasoning will be highlighted.

Learning Objectives

- Participants will gain a functional understanding of cervico-thoracic-shoulder region anatomy
- Participants will be able to identify the pain-generating conditions, structures, and mechanisms for the cervico-thoracic-shoulder region
- Participants will be instructed in physical therapy, clinical reasoning, and physical tests to identify patho-anatomical and patho-functional conditions of the cervico-thoracic-shoulder region
- Participants will better understand what physical findings may indicate the necessity for further diagnostic testing

Course Outline

Lecture: Assessment of the canine caudal cervical spine, cranial thorax, and shoulder joint (1 hour)

- Review of anatomy and biomechanics of the caudal cervical spine, cranial thorax, and shoulder
 - joint and soft tissue structures will be highlighted
- Discussion of the potential generators for pain in each of the 3 selected areas
- Subjective history and observations pertaining to the cervico-thoracic-shoulder region

Lab: Physical assessment techniques for differential functional diagnosis between facets joints, discs, and nerves in the caudal cervical and cranial thoracic spine of the dog (1 hour)

- Techniques to identify intervertebral disc disease or degenerative disc disease
- Techniques to identify neural impingement or inflammation
- Techniques to identify facet joint dysfunction

Lab: Physical assessment techniques for differential functional diagnosis of the first 4-5 canine ribs (45min)

- Techniques to identify pain and asymmetric positioning
- Techniques to identify hypertonicity in intercostal muscles
- Techniques to identify pain within the costovertebral and costotransverse joints

Lab: Physical assessment techniques for differential functional diagnosis of both soft tissue and joint issues at the canine shoulder (45 min)

- Manual techniques to help identify shoulder joint conditions such as medial shoulder dysfunction, shoulder hypermobility, early or late stage osteoarthritis, OCD, and osteosarcoma
- Manual techniques to identify soft tissue injuries such as muscle strains and tendinopathies (i.e. subscapularis, biceps tendon, supraspinatus, infraspinatus, and teres major/latissimus dorsi, and myofascial trigger points in the latter)

Brace Yourself: Splints, Soft Orthoses, and Assistive Aids – Using and Modifying Devices to Improve Mobility

Instructor: Ilaria Borghese, MS, MA, OT

Course Description: This workshop, *Brace Yourself: Splints, Soft Orthoses, and Assistive Aids-Using and Modifying Devices to Improve Mobility*, will guide participants in identifying specific functional mobility deficits, selecting the appropriate device to alleviate the deficit, and where no device is available, provide resources and skills for custom-modification or fabrication of required devices. Participants will have practical laboratory experience developing splints, soft orthoses, and assistive aids using a variety of materials including but not limited to low-temperature thermoplastics, neoprene, nylon, and hardware. In addition, biomechanical and fitting principles as applied to the canine patient will be reviewed. Specific attention will be placed on common orthopedic and neurologic conditions including but not limited to hyperextension injuries, Achilles tendon rupture, and brachial plexus injuries. Participants will be supplied with a resource guide of currently available braces for immobilization, support, protection, and assistance, as well as other resources for acquiring raw materials.

Learning Objectives

- Identify a variety of pre-fabricated and custom-made orthotic, splinting, and bracing devices
- Determine the most suitable device, either pre-fabricated or custom-made, to improve functional performance
- Identify various materials and tools that can be used in custom splinting and bracing
- Demonstrate clinical reasoning and problem-solving skills to custom-fabricate or custom-modify splints or braces using a variety of materials to meet the needs of individual small animal patients
- Demonstrate a solid understanding of the basic biomechanical and fitting principles involved in fitting and custom-making a splint or brace
- Demonstrate good beginning skills in using low-temperature thermoplastic materials, including splint fit, cosmesis, and padding, strapping, and traction options

Course Outline

Lab

- Human splinting lab
 - familiarize yourself with custom thermoplastic splinting materials and tools
 - assess short-term wear issues – fit, comfort, areas of pressure

Lecture

- Pre-fabricated splints and braces
- Custom-made soft, semi-rigid, and rigid supports and braces and mobility assists

Lab

- Case-studies - identify specific physical limitations, and create/fabricate/modify optimal device(s) to improve functional mobility
personal case studies welcome – please submit case study information including patient history and digital photos or video to Ilaria@therapaw.com prior to April 20. Thank you.

Lecture

- Introduction to custom splinting with thermoplastics
 - splint applications, designs, materials and tools
 - fabricating a custom splint - principles (e.g., mechanical, anatomic) applied when splinting the canine patient

Lab

- Canine lab – fitting, modifying, fabricating splints, soft orthoses, and assistive aids. Participants choose to work with devices that are most appropriate for their target patient population
personal case studies welcome – please submit case study information including patient history and digital photos or video to Ilaria@therapaw.com prior to April 20. Thank you.

Nervous About Nerves? Using Physical and Functional Neurologic Examination to Direct Therapy

Instructor: Julia Tomlinson BVSc PhD, DAVCS, CCRP, CVSMT, Dipl, American College of Veterinary Sports Medicine & Rehabilitation, Twin Cities Animal Rehabilitation Clinic

Course Description: This workshop, *Nervous about Nerves? Using Physical and Functional Neurologic Examination to Direct Therapy*, will include a short lecture encompassing an overview of the nervous system, concentrating on the practical aspects of testing nervous system function. The lab will consist of case workups, both on dogs present and video examination of cases I have seen. Audience participation through case presentation is welcomed. We will move from examination to discussing appropriate therapeutic plan.

Learning Objectives

- Participants will review the parts of the nervous system and how they interact (from a practical standpoint)
- Participants will learn how to identify subtle neurologic deficits and assign them levels of significance
- Video analysis and live analysis of neurologic patients will be evaluated and discussed - **participants should email drjulia@tcrehab.com with footage of interesting cases**
- Functional examination techniques and use of diagnostic tests as therapy will be demonstrated and practiced

Course Outline

Lecture

- Review of the nervous system of the dog will be covered along with updates in our knowledge about the brain and body interactions
- A small amount of comparative data will be covered to aid understanding of nerve function
- Some myths about 'functional neurology' will be debunked/explained
- How to group together clinical signs to produce your differential diagnosis list

Lab

- Putting it all together; using the examination results to direct therapy with emphasis on practical applications that can be performed in any rehabilitation setting
- Analysis using volunteer dogs and tips to correct issues of imbalance in the nervous system
- Subjective video analysis of clinical cases
- Interactive discussion of cases including treatment approach
- Interactive discussion of participant-submitted cases – **participants should email drjulia@tcrehab.com with footage of interesting cases**

AARP for our Patients: Assessment, Assistance, Rehabilitation, and Pain Management of the Senior Pet

Instructor: Julia Tomlinson BVSc PhD, DAVCS, CCRP, CVSMT, Dipl, American College of Veterinary Sports Medicine & Rehabilitation, Twin Cities Animal Rehabilitation Clinic

Course Description: This workshop, *AARP for our Patients: Assessment, Assistance, Rehabilitation and Pain Management of the Senior Pet*, will include a short lecture, encompassing common issues of senior dogs, as well as ways of assessing pain, differentiating ageing from clinical disease, and putting this together to provide comprehensive care. The lab will consist of analysis of senior pets as well as examination of assistive devices, mobility aids, and other tips and tricks to help with activities of daily living.

Learning Objectives

- Participants will learn how to differentiate natural ageing from clinically relevant issues using the latest information about ageing in dogs
- Participants will observe and examine senior pets in the lab and via video (useful handouts such as weight charts, pain scoring, mobility questionnaire, nutritional recommendations, and 'real age' charts will be provided)
- Therapeutic plans will be formulated with interactive discussion so participants will learn new approaches
- Putting it all together – participants will learn to use all the information to educate owners on how to best care for their senior pet

Course Outline

Lecture

- Introduction to the ageing process - what is normal ageing?
- Common diseases that occur in senior pets
- Mobility problems in older pets
- Adapting to care for the senior pet, educating your clients, educating yourself
- Resource guide

Lab

- Evaluation of volunteer dogs, differentiating issues that can be improved from the natural ageing process
- Subjective video analysis of additional patients
- Formulating a comprehensive care plan
- Information sharing session, discussion of what everyone has found useful in their practice, with the ideas being shared via email after class
- Interactive discussion of participant-submitted cases – **participants should email drjulia@tcrehab.com with footage of interesting cases**

Canine Conditioning: The Link Between Rehabilitation and Return to Sport

Instructor: Linda McGonagle, MSPT, LVT

Workshop Description: This workshop, *Canine Conditioning: the Link between Rehabilitation and Return to Sport*, provides participants with an understanding of how to create a conditioning program for canine athletes. The lab sessions will include a review of the Sports Medicine Examination and focus on lesson plans with specific exercises to increase conditioning and fitness. Guidelines for puppies and senior performance dogs will be included.

Learning Objectives

Participants will:

- Understand criteria for phases of recovery: rehab, conditioning, and return to sport
- Gain an understanding of the evidence available related to conditioning dogs
- Become aware of some unique aspects of a Sports Medicine Exam
- Learn the components of a comprehensive conditioning program
- Complete progressive exercises that address conditioning goals
- Learn shaping techniques that will increase quality of movement
- Complete advanced core strengthening exercises
- Understand how conditioning principles can be applied to puppies and seniors

Course Outline

Lecture

- Introduction
- Criteria for entering the conditioning phase
- Goals of conditioning

The science of conditioning

- The first step: Sports Medicine Examination
 - Unique aspects of the Sports Medicine Exam
 - History
 - Structure
 - Sports injuries
 - Performance analysis
 - Compensatory patterns
- The second step: Developing the conditioning program
 - Guiding principles
 - Team collaboration
 - Key components
 - Program design
 - Warm-up and cool down
 - Progressive exercises

Lab

- Review of Sports Medicine Examination
 - Demonstrate complete exam with special tests for structural soundness, MSI, and iliopsoas strain
 - Demonstrate practical clinical tests for weight-bearing and video performance analysis
- Accelerate canine performance through conditioning: A step-by-step guide
 - Lesson one exercises
 - Shaping movement
 - Lesson two exercises
 - Lungeing
- Advanced core strengthening: Transitions
- Using weights
- Guidelines for puppies and seniors

Summary: The next step: Return to sport

Physical Therapy Treatment Plans for the Elbow, Shoulder, and Hip

Instructor: Ria Acciani, MPT

Course Description: This workshop, *Physical Therapy Treatment Plans for the Elbow, Shoulder, and Hip*, is intended to provide participants with treatment plans and evaluation skills to assess the elbow, shoulder, and hip. The focus will include the ability to utilize manual techniques to effectively treat clinical objective findings that may stem from these areas. We will concentrate on the ability to develop and modify treatment plans given that each patient can progress through treatment at different rates.

Learning Objectives

- Participants will understand the functional anatomy of the elbow, shoulder, and hip
- Participants will learn to conduct the subjective and physical exams of the elbow, shoulder, and hip needed to determine injuries/dysfunctions
- Participants will gain an understanding of common areas of pathology that may occur in the elbow, shoulder, and hip
- Participants will understand and properly execute advanced manual techniques to effectively treat objective findings associated with soft tissue injuries
- Participants will be given treatment plans for the elbow, shoulder, and hip and learn to understand the development and progression of these plans and modify them as needed

Course Outline

Lecture: (60 min): Evaluation/assessment of the elbow, shoulder, and hip

- Quick review of anatomy of the elbow, shoulder, and hip
- Review of gait abnormalities
- Outline possible objective findings and present common subjective complaints
- Describe and present treatment plans for the elbow, shoulder, and hip
- Treatment plan – development and progression

Lab: (60 min): Special tests and goniometric measurements for assessment of soft tissue injury of the elbow, shoulder, and hip

- Demonstrate special tests
- Demonstrate goniometric measurements of elbow, shoulder, and hip

Lab: (60 min): Physical assessment techniques for identifying soft tissue injury in the elbow, shoulder, and hip

- Demonstrate general soft tissue palpation of elbow, shoulder, and hip
- How to determine progression of treatment plan and then how to modify for individual cases

Lab: (30 min): Advanced manual techniques for the elbow, shoulder, and hip

- Demonstrate specific manual techniques emphasizing proper hand placement, direction of force, and proper grade applied to achieve desired results

Using Gait Analysis and Structure to Determine Lameness and Treatment

Instructor: Ria Acciani, MPT

Course Description: This workshop, *Using Gait Analysis and Structure to Determine Lameness and Treatment*, is intended to provide participants with a working knowledge of using gait and structure as an evaluation skill to assess lameness and structural issues. The focus will include the ability to utilize gait analysis to develop treatment plans based on gait abnormalities and structural observations.

Learning Objectives

- Understanding of structural anatomy and biomechanics during gait
- Understanding of common areas of focus when determining “good” structure
- Understanding how structure relates to function during gait and the issues that may arise with common structural issues
- Understanding of gait and structure and how to determine lameness when assessing gait
- Ability to immediately apply these skills to their practice and ability to enhance their outcomes by understanding gait analysis and structure

Course Outline

Lecture: (60 min): Gait evaluation/assessment

- Quick review of structural anatomy and biomechanics
- Review of joint mechanics and gait abnormalities
- Discuss how structure relates to function
- Outline possible objective findings during gait and review proper angles for structure
- Treatment plan development

Lab: (60 min): Observe gait

- Palpate and locate all structural landmarks required for measurement of proper structure
- Measure angles of pelvis and shoulder layback
- Demonstrate normal/abnormal gait patterns with videos

Lab: (45 min): Determine treatment plan from gait abnormalities

- Demonstrate treatment techniques to utilize once gait and structure have been assessed
- Palpation techniques to identify restrictions or areas of concern once lameness has been determined

Lab: (45 min): Gait analysis using technology

- Demonstrate different gait/stance analysis products
- Observe difference between clinical observation and computer-generated report
- Learn to read computer-generated report

AARV LECTURE TRACK DESCRIPTIONS & OUTLINES*(3.5 contact hours per lecture session)***Canine Degenerative Myelopathy Updates and Considerations of Physiotherapy****Speaker:** *Joan Coates, DVM, MS, Diplomate ACVIM-Neurology***Lecture:**

Canine degenerative myelopathy (DM) is an adult-onset fatal neurodegenerative disease that occurs in many breeds. The initial upper motor neuron spastic paraparesis and general proprioceptive ataxia in the pelvic limbs progress to flaccid lower motor neuron disease. Recently, a mutation in the superoxide dismutase 1 (SOD1) gene was found to be a risk factor for DM. Mutations in the SOD1 gene are also an underlying cause for some forms of amyotrophic lateral sclerosis (ALS – Lou Gehrig's disease). This presentation will review the current knowledge of DM with regard to its clinical disease spectrum and how it impacts physiotherapy protocol development.

Evidence-Based Medicine in Rehabilitation Today**Speaker:** *Kristin Kirkby, DVM, DACVS, PhD, Dipl, American College of Veterinary Sports Medicine & Rehabilitation***Lecture:**

- Introduction
 - What is evidence-based (veterinary) medicine?
 - Levels of evidence
 - What is physical rehabilitation
 - Outcome measures in rehabilitation
- Evidence for physical rehabilitation programs in veterinary medicine
 - Review of veterinary studies incorporating rehabilitation
 - Orthopedic surgery
 - Neurologic conditions
 - Weight loss
 - Other
- Evidence for therapeutic modalities
 - Review of basic science studies and any available clinical veterinary research (References also to human and equine medicine)
 - Thermotherapy
 - Neuromuscular electrical stimulation
 - Ultrasound
 - Extracorporeal shock wave therapy
 - Therapeutic laser

Rehabilitation in the 21st Century – Manipulating the Neuro Frontier

Speaker: Pedro Luis Rivera, DVM Fellow American College of Functional Neurology

Lecture:

Rehabilitation is a crucial health care modality necessary to improve conditioning and allowing the patient to return to, or close to “normal” function as possible. To properly and safely provide rehabilitation, the licensed professional not only must understand the neurological consequences of rehabilitation, but most importantly when to stop treatment. By the end of the lecture, the attendees should be able to list and describe some of the neurological consequences of rehabilitation (at the peripheral, segmental, spinal cord, and some suprasegmental areas) and recognize some of the clinical signs / symptoms that would indicate that the patient is reaching peak performance during treatment (avoiding the patient becoming fatigued). Attendees should be able to integrate and describe how the neurological examination can help them determine the modality to use and its frequency.

Advancing Rehabilitation Through Research Using Computer Simulation

Speaker: Gina Bertocci, PhD PE, Endowed Chair, Biomechanics

Lecture:

Cranial cruciate ligament (CrCL) deficiency is one of the most common canine orthopedic injuries, having an economic impact of more than \$1 billion in the United States in 2003. CrCL deficiency has a prevalence of 2.55% across all breeds and is most prevalent in Newfoundlands (8.9%), Rottweilers (8.3%), and Labrador Retrievers (5.8%). Despite such high prevalence, CrCL deficiency is still poorly understood and is thought to be due to degradation and not the result of trauma. Surgical intervention is often employed to stabilize the CrCL-deficient stifle, but no single surgical procedure is conclusively supported to suggest long-term success, osteoarthritis prevention or superiority. We developed a canine pelvic limb 3D computer simulation model of walking to gain an improved understanding of stifle biomechanics, as well as factors that may predispose dogs to CrCL rupture. This model allows noninvasive visualization and analysis of stifle biomechanics, simulates the intact and CrCL-deficient stifle, and was utilized to investigate anatomical characteristics and biomechanical parameters such as ligament stiffness and tibial plateau angle to gain an understanding of their role in CrCL deficiency.

Our computer model was based on a healthy male Golden Retriever with no orthopedic or neurologic diseases. A pelvic limb computed tomography (CT) scan was conducted to obtain anatomical geometry, and gait was recorded using a motion capture system and force platform. The computer model was developed in computer-aided engineering software and included canine-specific bone geometry, ligaments, muscles and ground reaction forces. Model simulation of the stance phase of walking was used to evaluate loads placed on stifle ligaments, translation and rotation of the tibia relative to the femur, and contact forces between the femur and menisci in both the intact and deficient stifle.

Commonly employed surgical procedures (tibial plateau leveling osteotomy (TPLO), tibial tuberosity advancement (TTA), lateral femoro-tibial suture stabilization (LFTS) and TightRope™ stabilization (TR)) were implemented in the model through collaboration with a veterinary orthopedic surgeon to evaluate the ability of procedures to restore normal, CrCL-intact stifle biomechanics. Ligament loads, along with translation and rotation of the tibia relative to the femur and meniscal loads were evaluated across surgical procedures.

Finally, stifle orthoses offer an alternative to surgical intervention, especially in patients that are poor anesthesia candidates with significant co-morbidities, that are of advanced age or whose owners lack the financial means for more costly surgery. We have implemented a customized stifle orthosis in our computer model to investigate associated stifle biomechanics. We compared stifle biomechanics during gait in a CrCL-deficient stifle with and without an orthosis to a CrCL-intact stifle.

★ INSTRUCTORS & SPEAKERS BIOGRAPHIES ★

Ria Acciani, MPT and David Acciani, PT, Advanced Canine Rehabilitation Center, NJ

Ria and David Acciani both hold graduate degrees in Physical Therapy. They are licensed physical therapists with over 20 years experience in human therapy, and have specialized in canine rehabilitation for more than 12 years. They own and operate *Advanced Canine Rehabilitation (ACR)*, a practice that focuses on the evaluation and rehabilitation of performance and sporting dogs. They also provide instructional seminars for handlers and their dogs on a variety of topics such as "Canine Stretching", "Strength and Conditioning", and "Structure Evaluation for the Canine Athlete". Ria and David are rehabilitation consultants for Dr. Sherman Canapp and the VOSM group, and have established the rehabilitation protocol for various shoulder and elbow conditions. They have published several articles in *Veterinary Surgery* and *Clean Run*, and have presented at the *International Rehabilitation Symposium* in 2008 and 2010. Topics included shoulder and elbow rehabilitation, and modalities. They also instructed at the *Symposium on Therapeutic Advances in Animal Rehabilitation* continuing education workshops in 2010, 2011, 2012, and 2013. Ria and David travel extensively to many regional, national, and international dog competitions, and work with top-level competitors. Ria was selected as Official Therapist for the IFCS US Agility Team, and traveled to Bristol, England with them in 2010. Both Ria and David returned to England with the Team in 2011, South Africa in 2012, and Spain in 2013.

Gina Bertocci, PhD PE, Professor, Bioengineering, Endowed Chair, Biomechanics, University of Louisville, KY

Dr. Bertocci earned her BS and MS degrees in Mechanical Engineering and her PhD in Bioengineering from the University of Pittsburgh. She is a Licensed Professional Engineer. Dr. Bertocci is a Professor in the Bioengineering Department and holds the Endowed Chair position in Biomechanics at the University of Louisville. She is also the Director of the Injury Risk Assessment and Prevention Laboratory. Dr. Bertocci is a Fellow of the American Institute for Medical and Biological Engineering. She has published over 60 peer-reviewed journal papers and 125 conference proceedings, and has 2 issued patents.

Dr. Bertocci's research interests include rehabilitation, assistive technology, and biomechanics as they apply to both humans and dogs. NIH, NIJ, NIDRR, CDC, Paralyzed Veterans of America, and the AKC-Canine Health Foundation have funded her research. Dr. Bertocci's injury biomechanics research has focused on the application of engineering technologies in the early diagnosis and detection of physical child abuse. Her research in the field of rehabilitation engineering has been incorporated into both national and international wheelchair safety standards. Dr. Bertocci's rehabilitation research has also included the development of technologies to prevent secondary complications, such as pressure ulcers, associated with mobility impairments to advance the quality of life for humans and animals with disabilities. Funding from the AKC Canine Health Foundation has allowed Gina to combine her life-long passion for animals with her expertise in biomechanics to investigate orthopedic conditions affecting the canine stifle joint, along with surgical techniques and orthoses designed to stabilize the stifle using computer simulation modeling.

Ilaria Borghese, MS, MA, OT, President, Thera-Paw, Inc, NJ

Ilaria obtained her MS in Neuroscience from the University of Connecticut and her MA in Occupational Therapy from New York University. From 1990-1993, she was Clinical Coordinator of the Brain Research Center of Children's Hospital in Washington, DC, assessing new drug treatments for children with Autism. She continued her research at Yale University School of Medicine, and published several papers on her studies in children.

Ilaria has a special interest in Greyhound dogs and their specific medical conditions. She has lectured and written articles on paw-related issues in ex-racing Greyhounds and, in conjunction with Auburn University and Dr. Steve Swaim, has conducted one of the largest epidemiological studies on the breed.

Ilaria used her research and therapy skills to work with canine patients, and in 2001 started *Thera-Paw, Inc.*, a company that develops, manufactures, and distributes braces, soft orthoses, mobility aids, and other assistive products for animals with special needs. Working closely with animal practitioners, Ilaria spends her time designing and fabricating these devices and developing novel approaches to custom splinting and bracing. She created the *Introduction to Splinting in Veterinary Medicine* CD-ROM, an instructional guide to splinting small animals using low-temperature thermoplastics, which can be viewed at www.jorvet.com/video-tutorials/.

Ilaria has taught workshops on splinting and bracing throughout the US, Canada, and Europe, and has contributed to the 2013 publication *Canine Sports Medicine and Rehabilitation* (J. Wiley & Sons). In 2010, Ilaria and *Thera-Paw* organized and hosted the first *Symposium on Therapeutic Advances in Animal Rehabilitation (STAAR)*. This program will be hosting its 5th Conference in 2014.

**Joan R. Coates DVM, MS, Diplomate ACVIM (Neurology), Dept. of Veterinary Medicine and Surgery
College of Veterinary Medicine, University of Missouri**

Dr. Joan Coates is a Full Professor in the Department of Veterinary Medicine and Surgery at the College of Veterinary Medicine of the University of Missouri. She received her Bachelor's of Science degree in General Agriculture in 1987 and DVM degree in 1990 from the University of Missouri. In 1990-1991, she went on to a small animal rotating internship at Texas A&M University and then from 1991-1994 completed a 3-year neurology and neurosurgery residency at Auburn University where she also completed a Master's of Science degree in Neurosurgery in 1994. Also in 1994, she became board-certified in Veterinary Neurology through the American College of Veterinary Internal Medicine. Since, she has served on the faculty at the University of Georgia from 1994 to 1997 and at Texas A&M University from 1997 to 2003 before returning as a faculty member to the University of Missouri. As a clinical neurologist and neurosurgeon, she is Service Leader for the Neurology and Neurosurgery Service and Co-Director for the Physical Rehabilitation Program at the University of Missouri Veterinary Medical Teaching Hospital. As a researcher, she is a member of the Comparative Neurology Program, which explores the inherited developmental and degenerative diseases of the nervous system and is involved with translational research for treatment of neurodegenerative diseases. Her main area of research focus involves the study of canine degenerative myelopathy as a disease model for translation of therapeutic strategies to amyotrophic lateral sclerosis.

**Laurie Edge-Hughes, BScPT, MAnimSt(Animal Physio),CAFCI, CCRT
The Canine Fitness Centre Ltd., Alberta, Canada**

Laurie obtained her degree in Physical Therapy (BScPT) from the University of Alberta in 1993. Following graduation, she worked in the intensive care unit at the Foothills Hospital (Calgary, AB) before practicing at a private physiotherapy clinic (Cochrane, AB). Her broad post-graduate education has been in the field of human and canine orthopaedics, including advanced assessment and treatment in spinal and extremity neuro-musculoskeletal conditions, postural stabilization, dynamic muscular stabilization, adverse neural tissue tension assessment and treatment, and osteopathic therapeutic techniques (i.e. muscle energy, craniosacral therapy, and functional indirect therapy). Laurie received her certification in medical acupuncture from the Acupuncture Foundation of Canada Institute. She also obtained special dispensation to practice spinal manipulations in the province of Alberta.

Laurie has always demonstrated particular interest in the field of animal physiotherapy. Early on in her career, she completed numerous courses offered by the Canadian Horse and Animal Physical Therapists Association (CHAP) in this field. She initiated her practice with animals in 1993, integrating her skills and knowledge in physical therapy and rehabilitation in humans with her passion for animals. Laurie founded Four Leg Rehabilitation Therapy (Cochrane, AB) in 1997, where she provided physical therapy services to animals and their owners in the greater Calgary area. Laurie currently practices animal physical therapy at The Canine Fitness Centre Ltd. (Calgary, AB), a facility she established in 2004 in partnership with Dr. Amalia Rossi Campos MVZ, MSc and Dr. Manuel Campos, MVZ, MSc, PhD.

Other accomplishments in Laurie's professional career include holding executive positions within CHAP since its inception. This association, which Laurie now chairs, is currently known as the Animal Rehab Division (ARD) of the Canadian Physiotherapy Association. Laurie has been very much at the forefront of the field of canine physical therapy, and taught the first courses in this field in Canada (1999), the United States (1999) and Australia (2001). She has created the curricula for the Canadian Diploma in Canine Rehabilitation for the Animal Rehab Division. Laurie also lectures with the Canine Rehabilitation Institute (CRI) in the USA, a canine physical therapy and rehabilitation certification program for veterinarians, physical therapists, veterinary technicians, and physical therapy assistants. Laurie holds a certification in Canine Rehabilitation Therapy (CCRT) from the same institute. Laurie has been an invited lecturer at the Second, Third, Fourth, and Fifth International Symposia on Physical Therapy and Rehabilitation in Veterinary Medicine as well as at the Second and Third Annual Conference on Veterinary Physiotherapy at the Royal Veterinary College (London, England). Laurie is a guest lecturer for the continuing professional development program at the Royal Veterinary College (London, England), the Association of Chartered Physiotherapists in Animal Therapy (England), the Australian Animal Physiotherapy Group, the Animal Physiotherapy Group of South Africa, The Animal Rehab Special Interest Group of the USA and in 2005 & 2006 was a clinical tutor for the Master in Animal Studies in Animal Physiotherapy program at the University of Queensland (Brisbane, Australia). In 2006, Laurie received her Master in Animal Studies (Animal Physiotherapy) degree from the University of Queensland, Australia. Laurie has lectured at several physical therapy and veterinary medicine conferences, is a case examiner for the International Veterinary Association of Pain Management, and is a guest clinical skills instructor for the University of Calgary, Faculty of Veterinary Medicine.

**Kristin Kirkby Shaw, DVM, PhD, Diplomate ACVS, Diplomate ACVSMR
Novartis Animal Health, Northwest District**

Dr. Kristin Kirkby Shaw is a Senior Professional Services Veterinarian with Novartis Animal Health. Prior to joining Novartis, she practiced as a small animal surgeon and rehabilitation therapist at Seattle Veterinary Specialists for 3 years and The University of Florida Veterinary Medical Center for 6 years. Dr. Kirkby Shaw received her DVM from the University of Florida in 2003 and completed a small animal surgery residency at the University of Florida. In 2008, she became a Diplomate of the American College of Veterinary Surgeons and a Diplomate of the American College of Veterinary Sports Medicine and Rehabilitation in 2013.

Dr. Kirkby Shaw is an instructor for the Canine Rehabilitation Institute, has been a regular speaker at NAVC and other national and international conferences, and has authored numerous journal articles and textbook chapters. She lives in Seattle with her husband, Aaron, and two dogs.

Lin McGonagle, MSPT, LVT, Animal Performance & Therapy Center, NY

Ms. Lin McGonagle earned a Bachelor's degree in Animal Science from Cornell University, a Master's degree in Physical Therapy from Acadia University, an Associates degree from SUNY Delhi in the Veterinary Technician program, and is a licensed Wildlife Rehabilitator. She acquired specialized training in animal physical therapy from programs in the US, Canada, and the Netherlands. Ms McGonagle has 28 years of experience in human medicine in acute care, pediatrics, and home health. She has combined her passion for physical therapy and animals to provide services to performance dogs and horses for over 15 years.

Ms. McGonagle was a founding member and first President of the Animal Physical Therapy Association (APTA) Special Interest Group under the Orthopaedic Section of the American Physical Therapy Association. She has served on the executive board and helped coordinate educational programming for the International Association of Veterinary Rehabilitation and Physical Therapy. Ms. McGonagle currently represents the United States on the international Board for the APTA Special Interest Group within the World Confederation of Physical Therapy.

Ms. McGonagle owns Animal Performance & Therapy Center (APTC), a private practice focusing on canine sports medicine and rehabilitation. APTC provides comprehensive rehabilitation, conditioning, return to sport and injury prevention programs. The hydrotherapy services feature a FERNO underwater treadmill and heated indoor swimming pool. The coverall arena is used for evaluation, seminars, training classes and events. The fenced outdoor training field, walking paths and pond add to making the facility unique in the northeast. APTC primarily addresses working dogs competing in agility, obedience, conformation, rally, tracking, hunt tests, field trials, and herding.

Ms. McGonagle has contributed to several periodicals relating to animal physical therapy as well as the following books: *Animal Physical Therapy Resource Manual*, *Small Animal Surgery Secrets*, and *Canine Rehabilitation and Physical Therapy*. She has presented at veterinary and physical therapy conferences on animal rehabilitation including the International Symposium for Rehabilitation and Physical Therapy in Veterinary Medicine, Tufts Animal Expo, APTA Combined Sections, NYSVTA, and Cornell University College of Veterinary Medicine. Her most recent work, *Accelerate Caine Performance Through Conditioning*, written in collaboration with Lin Gelbmann, CVT,CCRP, CEST, is due to be published in 2014.

**Pedro Luis Rivera, DVM, Fellow American College Functional Neurology
Healing Oasis Wellness Center, Sturtevant, WI**

Dr. Rivera graduated from Purdue University 1986. After three years in Puerto Rico as the sub-director of the Veterinary Diagnostic Laboratory, he moved back to the US. In 1992, he and his wife, Michelle, opened a holistic veterinary practice providing massage and rehabilitation, spinal manipulation, acupuncture, and herbs and nutraceuticals as the primary modes of treatment.

In 1998, Dr. Rivera and Michelle opened the *Healing Oasis Wellness Center*, the first state-approved school providing post-graduate state-approved certification programs in Veterinary Massage and Rehabilitation and Veterinary Spinal Manipulative Therapy. In 2008, the *Healing Oasis Wellness Center* became the first private school accredited under the US Department of Education to provide these Therapy Programs. In 2011, the *Healing Oasis Wellness Center* became approved by the Veterans Affairs Office to provide training and certification to military personnel who fulfill their admission criteria.

**Julia Tomlinson BVSc PhD, Dipl. AVCS, CCRP, CVSMT,
Dipl, American College of Veterinary Sports Medicine & Rehabilitation
Twin Cities Animal Rehabilitation and Sports Medicine Clinic, MN**

Dr. Julia Tomlinson earned her Veterinary Degree from the University of Liverpool, England in 1996. Her Masters degree in Diagnostic Imaging of the Equine Sacroiliac Joint is from the University of Minnesota and her PhD in Physiology is from North Carolina State University. She practiced in equine sports medicine and surgery prior to pursuing her interest in the canine field. She is board certified specialist in Veterinary Sports Medicine and Rehabilitation and a Veterinary Spinal Manipulative Therapist (animal 'chiropractic' equivalent).

Dr. Tomlinson owns Twin Cities Animal Rehabilitation and Sports Medicine Clinic in Minnesota, a busy stand-alone rehabilitation practice. She lectures nationally and is a consultant in musculoskeletal wellness for the pet food industry.

Dr. Tomlinson founded the American Association of Rehabilitation Veterinarians (AARV) in 2007 and is past president of that association. She is also a member of the Canine Sports Medicine Association and the International Veterinary Academy of Pain Management.

Dr. Tomlinson has a special interest in sports medicine, healthy aging, and management of chronic pain. She is a middle distance runner and has two spoiled dogs at home.