FOCUS ON
Rehabilitation

A supplement to *Today's Veterinary Practice* September/October 2017

MODALITIES

POSTOPERATIVE CARE

INTEGRATION

Your PARTNER on the Journey to WELLNESS

com•pan•ion

1. a person or animal with whom one spends a lot of time
2. one of a pair of things intended to complement or match each other
3. your animal health partner

Your Partner for Every Stage of Care

Companion®, your trusted source for laser therapy, now offers you more than just great therapy lasers. For every stage of care, Companion has the right therapeutic solution to produce superior outcomes. The newly expanded portfolio includes diagnostic, pain management, rehabilitation, and regenerative medicine products. Your partner on the road to recovery – see the difference the right Companion makes.

COMPANION® ANIMAL HEALTH

CompanionAnimalHealth.com | 1.302.709.0408 | info@CompanionTherapy.com

Rehabilitation: A Field for Forward Thinkers

Welcome to our special rehabilitation supplement, designed to bring you pioneering perspectives in this expanding field of veterinary service. Rehabilitation creates new opportunities in both specialized and general practice, and *Today's Veterinary Practice* is dedicated to helping veterinarians and staff keep up-to-date on critical topics by providing peer-reviewed articles in this area. In the past we have covered…

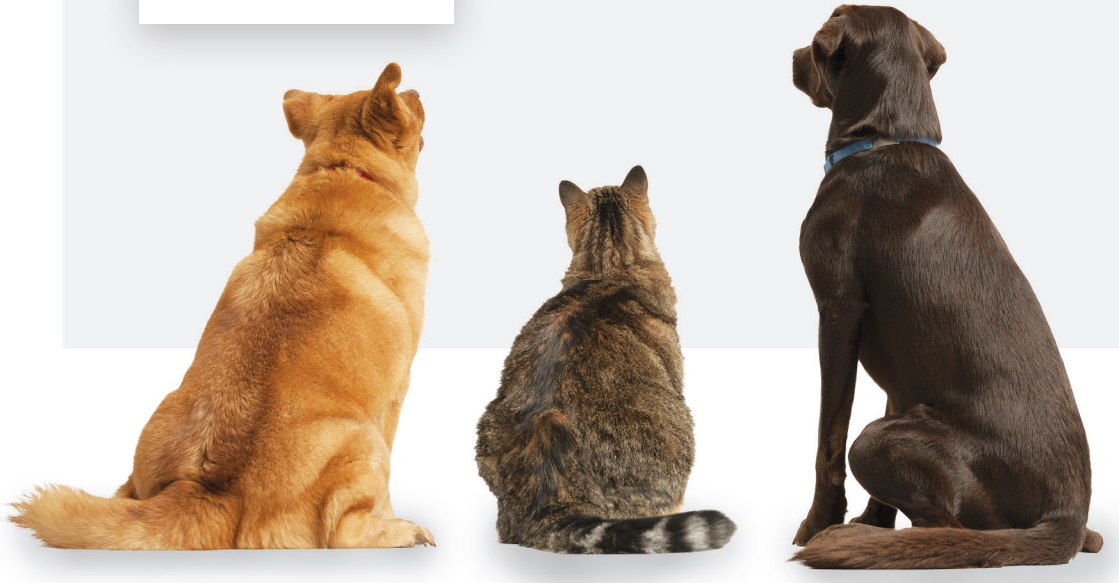
- Recovery & Rehab: Canine Gait Analysis
- Regenerative Medicine for Soft Tissue Injury & Osteoarthritis
- Canine Orthopedic Devices

CONTENTS

Many more topics are available under the "Rehabilitation" tab on tvpjournal.com.

Rehabilitation is a field marked by innovative methods and technology that come from groundbreaking research and experienced practitioners. In this supplement, we offer articles on the following topics:

- **Rehabilitation modalities:** Get a glimpse of the variety of available services and their benefits
- **Rehabilitation after surgery:** Learn why rehabilitation is an important part of surgical recovery
- **Integrating rehabilitation into practice:** Pick up some quick tips on how to begin offering rehabilitation services



Common Rehabilitation Modalities: An Overview

» **Emily Schlimm**, RVT, CCRP
» **Debra A. Canapp**, DVM, CCRT, CVA, DACVSMR
Veterinary Orthopedic & Sports Medicine Group
Annapolis Junction, Maryland

ABOUT THE AUTHORS

Emily Schlimm, RVT, CCRP

Emily currently works alongside Dr. Debra Canapp, assisting in diagnostic musculoskeletal ultrasound as well as performing rehabilitation therapy at Veterinary Orthopedic & Sports Medicine Group in Annapolis Junction, Maryland. After working in general practice for a few years, Emily found her niche in rehabilitation therapy and completed her rehabilitation certification through the University of Tennessee. Emily lives in Baltimore County with her boxer, black lab, and basset hound mix.

Debra A. Canapp, DVM, CCRT, CVA, DACVSMR

Dr. Canapp's exclusive area of interest, clinical work, lecturing, and research has revolved around sports medicine and rehabilitation therapy. She has completed advanced courses in canine rehabilitation, hydrotherapy, acupuncture, sports medicine, orthopedics, and stem cell therapy.

continued on page 6

Physical rehabilitation therapy is a developing specialty in veterinary medicine that has become a critical piece in providing patients with the optimal standard of care after orthopedic or neurologic surgery or soft tissue injury and in improving comfort and mobility in arthritic conditions.

Many orthopedic and neurologic conditions cause pain leading to muscular atrophy, decreased range of motion, ataxia, and decline in endurance and daily activity. A variety of common nonpharmacologic and noninvasive physical rehabilitation modalities can be used to address these conditions in patients ranging from athletes to geriatrics.

Common energy-driven therapeutic modalities include photobiomodulation or laser (Class IIIb or Class IV), cold compression, therapeutic ultrasound, transcutaneous electrical neuromuscular stimulation (TENS), neuromuscular electrical stimulation (NMES), and magnetic field therapy. Underwater treadmill therapy, swimming, and exercise programs are active modalities used to increase strength and range of motion. Manual therapy is often used in conjunction with energy-driven modalities to provide a multimodal approach.

ENERGY-DRIVEN MODALITIES

Laser (originally an acronym for *light amplification by stimulated emission of radiation*) or **photobiomodulation therapy** is a noninvasive modality essential to most effective rehabilitation programs. Photobiomodulation therapy stimulates natural healing through the application of low-power coherent light to injured tissues and lesions. Broad indications in dogs include sport-related conditions, neurologic injury, and wound healing; several common conditions that typically respond to photobiomodulation are listed in **BOX 1**. Photobiomodulation is used to increase the quality and strength of tissue repair, resolve inflammation, and provide pain relief.

Therapeutic ultrasound uses sound waves to promote healing of tendons, ligaments, muscle, joint tissue, and bone. This modality is particularly useful to improve tissue elasticity, reduce scar tissue, and enhance bone healing. Wave frequency and length can be adjusted to direct treatment to different tissue levels.

TENS and NMES are forms of electrical stimulation therapy. Both use conducting pads attached to a control unit; the difference lies in the type of waveform conducted through the unit. TENS works to disrupt the pain pathway and is used primarily for pain control. NMES works to decrease swelling and stimulates muscle

BOX 1

Conditions That Can Benefit From Photobiomodulation

- Medial shoulder syndrome
- Shoulder tendinopathies (eg, supraspinatus tendinopathy, biceps tendinopathy)
- Iliopsoas strain
- Achilles tendon injury
- Early partial cranial cruciate ligament tear
- Carpal/tarsal ligament injuries
- Osteoarthritis
- Traumatic wound injury
- Intervertebral disc disease
- Lumbosacral disease

MANUAL THERAPY TECHNIQUES, such as massage, myofascial release, and mobilization of joints, spine, and soft tissues are used to increase circulation, improve joint range of motion, and reduce muscle tension.

shutterstock.com/msgrafixx

fibers to contract, which helps prevent disuse atrophy and secondary reduction in joint range of motion. NMES is commonly used in patients that are paralyzed or have difficulty using their muscles after surgery.

Cold compression therapy combines the benefits of cryotherapy with adjustable intermittent pneumatic compression through the application of a wrap regulated by a microprocessor control unit. The effects of cold compression therapy include faster increased depth of cooling with a longer-lasting effect, increase in oxygenated blood delivery, more effective removal of cellular waste products, and reduction in cellular metabolism and permeability. Indications include postoperative pain, edema, and acute tendinopathy.

Magnetic field therapy uses the power of a pulsed magnetic field to aid in repairing injured or diseased tissue as well as relaxation. This therapy can be delivered through units placed in a comfortable bed, such as the Respond Bio-Pulse PEMF Nylon Therapy Mat (Respond Systems; **respondsystems.com**), that the pet lies on while receiving other treatments. Alternatively, the Assisi Loop (Assisi Animal Health; **assisianimalhealth.com**) is a popular product that allows for direct application of the magnetic field to a specific region. Newly developed body harnesses that suspend the magnet pad in position for the duration of the treatment are also available.

ACTIVE MODALITIES

Underwater treadmill therapy uses the support, resistance, and healing properties of water to promote an increased range of joint motion and exercise in a regulated environment. Buoyancy alleviates some of the weight and stress on the patient's joints, while viscosity provides resistance to aid in muscle building. Hydrostatic pressure in conjunction with water's thermal properties helps to reduce swelling and increase blood flow. **Swimming** uses the same properties of water to strengthen muscles and promote aerobic fitness without impact on joints.

These two modalities, when used correctly at the proper time in recovery, can facilitate healing, increase cardiovascular endurance, and improve musculoskeletal function. Proper assessment of the patient's healing process and fitness level by a rehabilitation therapist is critical to appropriately utilize these rehabilitation therapies.

MANUAL THERAPY

Manual therapy techniques, such as massage, myofascial release, and mobilization of joints, spine, and soft tissues are used to

Photobiomodulation therapy stimulates natural healing through the application of low-power coherent light to injured tissues and lesions.

SWIMMING uses the properties of water to strengthen muscles and promote aerobic fitness without impact on joints.

increase circulation, improve joint range of motion, and reduce muscle tension. Compromised function in joints or soft tissue causes a shift in normal body weight distribution, which inevitably causes compensatory tension. Manual techniques help patients regain normal joint and muscle function and provide relief for patients suffering from chronic musculoskeletal pain.

REGENERATIVE MEDICINE

Depending on the severity of the condition, more aggressive techniques such as regenerative medicine may be used to treat soft tissue injuries or certain joint conditions. Currently, the most successful and widely used regenerative medicine technique is the use of platelet rich plasma (PRP), either alone or in combination with adult-derived stem cells from bone marrow or an adipose source. These techniques involve harvesting the patient's own "stem" cells and molecules, concentrating them through patient-side mechanisms, and then returning them to the precise location of injury via ultrasound guidance or intra-articular injection.

Extensive literature supports the use of photobiomodulation therapy after regenerative medicine to promote stem cell differentiation, proliferation, and viability.

CONCLUSION

Physical rehabilitation relies on accurate veterinary diagnosis to establish an effective treatment plan. Proper palpation technique along with noninvasive tools, such as musculoskeletal diagnostic ultrasonography, allows veterinarians to not only provide an initial diagnosis but also monitor healing progress. This is especially important in deciding when to initiate the next phase of rehabilitation therapy.

Cutting-edge rehabilitation clinics should have medical, technical, and administrative staff who strive to provide an inviting and calming atmosphere for their patients. This environment, combined with state-of-the-art equipment, provides patients with the best opportunity to reach their fullest musculoskeletal potential. ■

ABOUT THE AUTHORS

continued from page 4

Currently, Dr. Canapp practices sports medicine, acupuncture, musculoskeletal ultrasound, and rehabilitation. She is active in teaching rehabilitation medicine, musculoskeletal ultrasound, and regenerative medicine to visiting veterinary students, rehabilitation therapy certification candidates, and veterinarians. Her current primary area of interest and research is small animal musculoskeletal ultrasound and defining specific pathology and treatment options. Dr. Canapp currently also serves as the co-principal and medical director at Veterinary Orthopedic & Sports Medicine Group.
Dr. Debra Canapp lives in Howard County, Maryland, with her husband, Dr. Sherman Canapp, their children, two dogs, a cat, and several chickens.

RECOMMENDED READING

- Carr BJ, Canapp SO. Regenerative medicine for soft tissue injury & osteoarthritis. *Todays Vet Pract* 2016;6(4):53-60.
- Dycus DL, Levine D, Marcellin-Little DJ. Physical rehabilitation for the management of canine hip dysplasia. *Vet Clin Small Anim Pract* 2017;47(4):823-850.
- Henderson AL, Latimer C, Millis DL. Rehabilitation and physical therapy for selected orthopedic conditions in veterinary patients. *Vet Clin Small Anim Pract* 2015;45(1):91-121.
- Hesbach AL. Manual therapy in veterinary rehabilitation. *Top Companion Anim Med* 2014;29:20-23.
- Hodgson MM, Bevan JM, Evans RB, Johnson TI. Influence of in-house rehabilitation on the postoperative outcome of dogs with intervertebral disk herniation. *Vet Surg* 2017;46:566-573.
- Kim H, Choi K, Kweon OK, Kim WH. Enhanced wound healing effect of canine adipose-derived mesenchymal stem cells with low-level laser therapy in athymic mice. *J Dermatol Sci* 2012;68(3):149-156.
- Marcellin-Little DJ, Levine D, Millis DL. *Veterinary Rehabilitation and Physical Therapy: An Issue of Veterinary Clinics: Small Animal Practice.* Philadelphia, PA: Saunders; 2005.
- Reigel R, Godbold J. *Laser Therapy in Veterinary Medicine: Photobiomodulation.* West Sussex, UK: John Wiley & Sons; 2017.
- Rexing J, Dunning D, Siegel AM, et al. Effects of cold compression, bandaging, and microcurrent electrical therapy after cranial cruciate ligament repair in dogs. *Vet Surg* 2010;39(1):54-58.
- Zink MC, Van Dyke JB. *Canine Sports Medicine and Rehabilitation.* West Sussex, UK: John Wiley & Sons; 2013.

THE PERFECT PAIR

Full Spectrum Support

Spectrum is a laser therapy implementation program designed to ensure your practice's success with K-Laser Therapy. It includes:

- Staff training & education by laser experts
- Practice profitability tools to maximize your ROI
- Proven marketing resources & consultation
- Implementation resources to ensure a profitable implementation

The World's Most Advanced Laser

K-Laser® delivers the technology your practice needs to provide superior clinical outcomes. With your K-Laser you get:

- The fastest laser treatment times
- Optimized treatment protocols
- A versatile modality for more than 80% of your patients
- Intuitive and easy operation for all your team members

Your practice needs more than just any laser. It needs the perfect pair of K-Laser and Spectrum.

K-LASER®

www.k-laser.com | info@k-laser.com | 866-595-7749

A Technician's Perspective: The Importance of Rehabilitation After Surgery

» **Jodi Beetem Seidel**, RVT, CCRP
University of Georgia College of Veterinary Medicine

Although the world of veterinary physical rehabilitation is growing, and although rehabilitation is considered to play an important role in the postoperative care of veterinary patients, it is still underutilized in most practices. Physical therapy is standard practice in human medicine, and it has been shown that dogs that have physical rehabilitation implemented early after surgery are able to prevent muscle atrophy, build muscle mass and strength, and increase range of motion.[1] It is important that we, as veterinary professionals, accurately communicate the benefits and importance of this care to our clients.

PATIENTS AND PRACTITIONERS

Rehabilitation therapy can be provided for animals of all species and ages that have or may develop impairments, activity limitations, and more.

More than 100 veterinarians across the United States are specialty boarded in sports medicine and rehabilitation,[2] and even more are certified in rehabilitation, along with registered technicians, physical therapists, and physical therapy assistants. Currently, there are two certification programs for veterinary physical therapy—the program at the University of Tennessee and the Canine Rehabilitation Institute out of Colorado (**BOX 1**)—and early this year, the National Association of Veterinary Technicians in America (NAVTA) recognized rehabilitation as the 15th veterinary technician specialty.

MAKING THE CASE

Although many studies have used science to prove the positive effects of rehabilitation on postoperative patients,[1,3–6] there is also an art to physical rehabilitation that is more difficult to define.[7] This is where creativity and ingenuity of the rehabilitation practitioner are put to the test.

As a veterinary technician and rehabilitation practitioner, I find that one of the most important aspects of postoperative care is helping the client understand *why* rehabilitation is essential to their pet's long-term recovery. The ultimate goal is to get the patient to resume its normal activity (or as close as possible), as this is important for both the quality of life of the patient and the owner.

Documented outcomes are one thing veterinary professionals can focus on in conversations with clients. However,

BOX 1

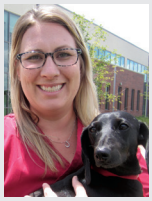
Find a Certified Veterinary Physical Therapist

Need help in finding a certified physical therapist for your patients? Use the directories on the following websites to locate certified professionals near you.

- Canine Rehabilitation Institute: **caninerehabinstitute.com/Find_A_Therapist.html**
- The University of Tennessee–Knoxville: **utvetce.com/find-a-pro**

ABOUT THE AUTHOR

Jodi Beetem Seidel, RVT, CCRP



Jodi Seidel has been working in veterinary medicine for 12 years, with 8 of those years being focused on physical rehabilitation for companion animals. After graduating from veterinary technician school in Iowa, she moved to Columbia, Missouri, to be a small animal orthopedic surgery technician and went on to become certified in canine rehabilitation. After moving to Atlanta to work in private practice, she ultimately found her way back into a university setting. Jodi now manages the small animal rehabilitation service at the University of Georgia Veterinary Medical Center and lives in Athens, Georgia, with her husband and 2 dogs.

REWARDS
Treats are used to help this postoperative patient maintain proper posture while standing on balance equipment.

postoperative rehabilitation protocols are still not widely recommended due to practitioner concerns about patient safety as well as presumed lack of efficacy.[4] The "traditional protocol" for canine patients during the first few months of postoperative recovery from orthopedic procedures involves cage rest and short leash walks.[8] Yet, in a retrospective cohort study that compared traditional postoperative recovery with rehabilitation performed by a certified practitioner, the patients that had rehabilitation were almost twice as likely to reach full function by 8 weeks postoperatively. Also, the traditional recovery group was almost 3 times as likely to be categorized as having unacceptable function at 8 weeks postoperatively.[4]

FACTORS FOR SUCCESS

Control is a very important part of any postoperative recovery program. Without controlled activities, these patients will develop bad habits, like poor posture and abnormal gaits, while compensating for a weak or painful limb. Chronic posture changes can ultimately lead to pain and injury of other parts of the body, so rehabilitation should be implemented early in the recovery period.

This theory also applies to orthopedic patients that have not had surgery. Chronic untreated elbow and hip dysplasia lead to many compensatory actions that typically go unnoticed by the owner. Posture and balance exercises should be added immediately after surgery, injury, or diagnosis of an orthopedic condition to help maintain overall full body function.

Thermal agents are also essential to the recovery of a surgery patient. During the acute inflammatory stage after surgery or injury, cryotherapy can help reduce swelling, inflammation, and pain. While it is still common to bandage orthopedic patients after surgery, specifically stifle surgery, it has been proven that using a cold compress postoperatively decreases swelling at a faster rate than bandaging alone.[9] According to one study, 20 minutes is the ideal duration of cold compress application to get maximal cooling.[10] This can be done up to 4 times per day.

Once the acute inflammatory stage has ended (approximately 72 hours after surgery), warm packs can be used to help increase blood flow and loosen tight muscles before exercise. Warm packs can be applied similarly to cold compresses, but typically not for as long. It is important that the patient's skin be protected with a barrier from the warm/cold pack.

Chronic posture changes can lead to pain and injury of other parts of the body, so rehabilitation should be implemented early in the recovery period.

REDUCE SWELLING
Cold compress application on a patient's forelimb.

Another important aspect of managing an orthopedic patient after surgery is protecting joint health and range of motion. **Passive range of motion exercises** should be implemented right away to ensure the patient maintains functional range of motion. If they are not, normal daily postures like sitting or squatting to defecate can be difficult. These changes ultimately affect the patient's long-term quality of life. **Weight loss** also helps protect joint health and improve function and quality of life of orthopedic patients.[11]

CONCLUSION

From professional athletes returning to their sport months after serious injury to the elderly population living longer and leading more active lives, it is difficult to argue against the power of exercise and rehabilitation for humans. The same holds true for our canine and feline athletes and geriatric patients. Rehabilitation, therapy, or exercise, whatever you call it—every patient can and will benefit from some form throughout their lifetime. As veterinary professionals, we dedicate our lives to helping improve the lives of our patients. For postoperative patients, the best way to do that is to make sure rehabilitation is part of every patient's recovery plan. ■

REFERENCES

1. Monk ML, Preston CA, McGowan CM. Effects of early intensive postoperative physiotherapy on limb function after tibial plateau leveling osteotomy in dogs with deficiency of the cranial cruciate ligament. *Am J Vet Res* 2006;67:529-536.
2. Board-certified diplomates of the American College of Veterinary Sports Medicine and Rehabilitation. vsmr.org/diplomates. Accessed July 2017.
3. Marsolais GS, Dvorak G, Conzemius MG. Effects of postoperative rehabilitation on limb function after CCL repair in dogs. *JAVMA* 2002;220(9):1325-1330.
4. Romano LS, Cook JL. Safety and functional outcomes associated with short-term rehabilitation therapy in the post-operative management of tibial plateau leveling osteotomy. *Can Vet J* 2015;56(9):942-946.
5. Warren M, Kozik J, Cook J, et al. A comparative study to determine functional and clinical outcome differences between patients receiving outpatient direct physical therapy versus home physical therapy followed by outpatient physical therapy after total knee arthroplasty. *Orthop Nurs* 2016;35(6):382-390.
6. Hoogeboom TJ, Dronkers JJ, Hulzebos EHJ, van Meeteren NLU. Merits of exercise therapy before and after major surgery. *Curr Opin Anaesthesiol* 2014;27(2):161-166. Published online 2014 Mar 6.
7. Tate DG. The state of rehabilitation research: art or science? *Arch Phys Med Rehabil* 2006;87(2):160-166.
8. Slatter D. *Textbook of Small Animal Surgery*. 2nd ed. Toronto, Ontario: WB Saunders; 1993:1846.
9. Rexing J, Dunning D, Siegel AM, et al. Effects of cold compression, bandaging, and microcurrent electrical therapy after cranial cruciate ligament repair in dogs. *Vet Surg* 2010;39(1):54-58.
10. Millard RP, Towle-Millard HA, Rankin DC, Roush JK. Effect of cold compress application on tissue temperature in healthy dogs. *Am J Vet Res* 2013;74(3):443-447.
11. Impellizeri JA, Tetrick MA, Muir P. Effect of weight reduction on clinical signs of lameness in dogs with hip osteoarthritis. *JAVMA* 2000;216(7):1089-1091.

RANGE OF MOTION
A veterinary technician performs range of motion therapy to protect joint health on a cat. *Photo courtesy of Lyon Duong, University of Florida | UF Photography.*

CE COURSE DATES & LOCATIONS

January 20 & 21, 2018
Tucson, Arizona

June 23 & 24, 2018
Denver, Colorado

A Different Kind of CE Course

Are your patients having

A Hard Time Getting Around?

Mobility Can Be Theirs - Give it Back.

Comprehensive **11 or 15 CE Hour** Courses for Management of Geriatric Pets with Mobility Issues for the General Practitioner

Course Summary & Topics

Osteoarthritis - the cause of many mobility issues in geriatric patients, combined with physiologic changes from aging and sometimes obesity, contributes to a vicious cycle of pain, inactivity, and declining quality of life. This course will equip you with the practical knowledge of the best multimodal approach for successfully managing the geriatric, arthritic, and sometimes obese dog or cat in your veterinary practice.

In addition to learning clinical strategies, the course will teach you how to implement strategies and market to clients with pets suffering from these mobility-restricting conditions to jump start your business.

- Intro to rehabilitation therapy for the general practitioner
- Nutritional management for the geriatric patient
- Neutriceutical use for the arthritic pet
- Pharmacologic management of Osteoarthritis
- Photobiomodulation (laser therapy) for Osteoarthritis
- Surgical management options and regenerative medicine
- Business & marketing strategies for implementation

- *Optional half-day wet lab*
  Intra-articular injections & PRP and stem cell processing

World-Class Faculty

Visit www.LiteCureInfo.com/OACourse for faculty details.

Register Today

Space is limited, take advantage of early bird pricing today.

Online www.LiteCureInfo.com/OACourse
Phone 352-468-2139

COMPANION ANIMAL HEALTH
LiteCure, LLC

CompanionAnimalHealth.com // 302-709-0408

Integrating Physical Rehabilitation Into General Practice

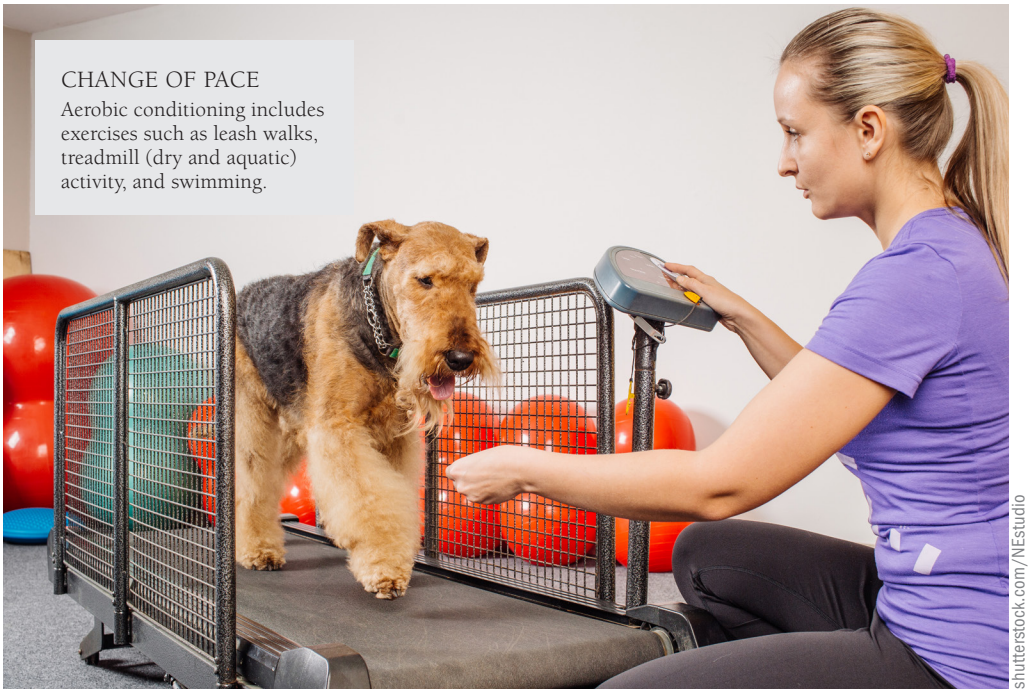
» **Laura E. Peycke**, DVM, MS, DACVS, DACVSMR
Texas A&M University College of Veterinary Medicine

Providing comprehensive care to veterinary patients is critical to practitioners. Knowing which services to add to meet this goal can be a challenge. Physical rehabilitation is a well-described and seemingly integral portion of care in human medicine and surgery; however, the discussion on where it "fits" within veterinary medicine introduces relatively new concepts. Resources to integrate rehabilitation principles into veterinary practice are readily available and should be considered when assessing ways to improve veterinary patient care.

DO YOU WANT TO OFFER REHABILITATION SERVICES?

The decision to implement rehabilitation services in a general practice should include realistic goals. Important questions when determining goals include:

- Is physical rehabilitation something I would be interested in learning about?
- Would physical rehabilitation be a positive addition for my clinical practice?
- Do we possess the resources for physical rehabilitation?
- Does our practice have enough interested staff members to assist with a team approach?



CHANGE OF PACE
Aerobic conditioning includes exercises such as leash walks, treadmill (dry and aquatic) activity, and swimming.

shutterstock.com/NEstudio

ABOUT THE AUTHOR

Laura E. Peycke, DVM, MS, DACVS, DACVSMR

Dr. Laura E. Peycke is a Clinical Professor in the Department of Veterinary Small Animal Medicine and Surgery at Texas A&M University College of Veterinary Medicine. She joined the department in 2004 and has a clinical appointment as a Small Animal Orthopedic Surgeon. She is a diplomate of the American College of Veterinary Surgeons and American College of Veterinary Sports Medicine and Rehabilitation. She enjoys both clinical surgery practice and teaching.

- Do I have a clientele interested in this service, and would they be willing to participate in and pay for these services?

The decision to investigate these questions further is the first step in determining if physical rehabilitation has a place in your general practice. Equipment is a common concern; however, integrating simple principles and services into routine procedures and quests to find ways to help does not require the purchase of expensive equipment! Using creativity and simple resources (eg, curbs, sand, air mattresses), as well as gaining the prerequisite knowledge for applying rehabilitation, is key to finding a place for this modality in your practice.

WHAT DO YOU NEED?

Pertinent categories to consider when planning physical rehabilitation services include:

1. **Assessment.** The ability to assess a patient is at the foundation of understanding its needs, particularly in the context of owner expectations. A complete assessment includes a thorough history, behavior, nutrition, and physical examination (general, orthopedic, neurologic). It should also include limitations experienced by the patient and owner, both physical and with regard to available resources. It is very important for the rehabilitation practitioner to feel confident with his or her ability to evaluate gait and have a standardized method of evaluation. Clear and concise language is critical to communication between clinicians and owners.
2. **Measurable outcomes.** Establishing goals and objective measures is important to adapting physical rehabilitation plans to meet patient needs. Frequent outcome assessments also help with owner "buy in" and continuing commitment to their pet's care.
3. **A rehabilitation team.** Knowing the rules and regulation of your state creates great possibilities for a team consisting of veterinarians, veterinary technicians, and physical therapists. Having both veterinary and human perspectives can create useful collaboration and effective use of different skill sets.
4. **Commitment.** This category is difficult to define until you have started to explore the possibility of integrating physical rehabilitation into your practice. Survey your hospital staff and research potential owner desire. Owners are often unaware of the benefits of physical rehabilitation and are willing to be educated on its benefits.

Resources to integrate rehabilitation principles into veterinary practice are readily available and should be considered when assessing ways to improve veterinary patient care.

Of all the possible investments when considering integrating physical rehabilitation into practice, education and knowledge of its application are possibly the most critical. Available educational opportunities should be studied before offering physical rehabilitation. Continuing education, seminars, textbooks, journals, and colleagues are all practical resources when entering into physical rehabilitation. Once general principles of theory and application are studied and understood, application of this discipline can lead to positive patient outcomes and owner satisfaction.

HOW TO BEGIN?

One way to begin integrating physical rehabilitation into general practice is with the implementation of therapeutic exercise. Therapeutic exercise is the core and most easily attainable facet of a rehabilitation plan and does not necessarily require an investment in equipment. The focus of therapeutic exercise is strengthening, improvement of function (proprioception, balance, gait), and cardiovascular fitness. Evidence-based creativity can help you formulate plans that do not require special equipment.

Based on the intended area of focus and expected results, specific therapeutic exercises can be loosely grouped into these categories:

- **Passive movements:** activities such as massage, passive range of motion (PROM) of joints and stretching
- **Muscle strengthening:** exercises that use the patient's own body weight (sit to stand, dancing, wheelbarrowing) or other devices (resistance bands, Cavaletti rails, leg weights) to promote muscular strengthening
- **Proprioception/weight bearing:** exercises and modalities that use weight shifting, manual unloading, balance

LASER-ASSISTED HEALING
Laser therapy can be used on a cat with arthrosis pain. Photobiomodulation therapy stimulates natural healing through the application of low-power coherent light to injured tissues and lesions.

shutterstock.com/Benny Marty

boards, therapy balls, and sometimes assistive devices (slings, carts) to support and reintroduce limb use
- **Aerobic conditioning:** exercises such as leash walks, treadmill (dry and aquatic) activity, swimming

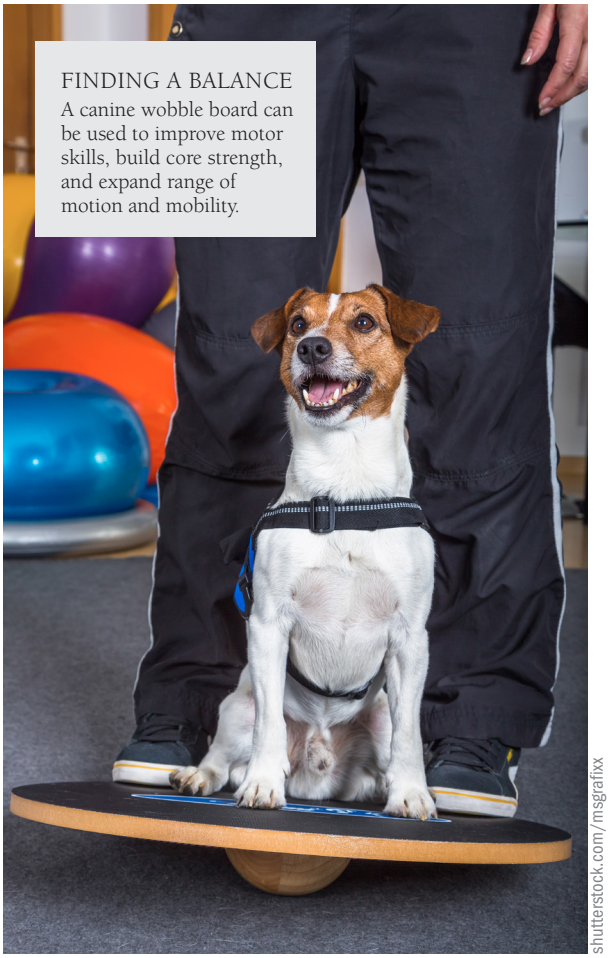
Perhaps the most difficult part of implementing physical rehabilitation is the "unknown." Unknown factors include education costs, time required for treatments, necessary equipment purchases, and the interest you and others have to promote this service in your hospital. Thorough research and preparation can help make these factors less problematic.

SUMMARY

Knowledge and critically evaluating how physical rehabilitation can improve patient care are keys to understanding how this service can fit into your practice. The addition of physical rehabilitation to veterinary medicine and surgery provides options for acute and chronic conditions and is often important to a patient's outcome and quality of function. Integration of physical rehabilitation is a realistic goal for general practices and should be considered as the standard of care in veterinary medicine and owner expectations for comprehensive care evolve. ■

RECOMMENDED READING

- Drum MG, Marcellin-Little DJ, Davis MS. Principles and applications of therapeutic exercises for small animals. *Vet Clin North Am Small Anim Pract* 2015;45(1):73-90.
- Marcellin-Little DJ, Danoff K, Taylor R, Adamson C. Logistics of companion animal rehabilitation. *Vet Clin North Am Small Anim Pract* 2005;35(6):1473-1484.
- Millis DL, Levine D. *Canine Rehabilitation and Physical Therapy*. Philadelphia, PA: Saunders; 2014.
- Millis D, Levine D. Therapeutic exercises. In: Bockstahler B, Levine D, Millis D, eds. *Essential Facts of Physiotherapy in Dogs and Cats*. Babenhausen, Germany: BE Vet Verlag; 2004:56-69.
- Sharp B. Physiotherapy and physical rehabilitation. In: Houlton JEF, Cook JL, Innes JF, Langley-Hobbs SJ, eds. *BSAVA manual of Canine and Feline Musculoskeletal Disorders*. Gloucester, Great Britain: BSAVA; 2006:90-113.



FINDING A BALANCE
A canine wobble board can be used to improve motor skills, build core strength, and expand range of motion and mobility.

shutterstock.com/msgrafixx

Business Invigorated. Happiness Restored.

MLS Therapy Lasers from Cutting Edge Laser Technologies offer an unmatched combination of **P**ower, **P**erformance, and **P**rice.

+Power | 75 watts of peak power combined with proven therapeutic wavelengths (808 and 905nm) provide you with superior clinical results.

+Performance | The patented technology of MLS features synchronized wavelengths to treat pain and inflammation simultaneously, and a 20 cm target area for fast treatment times.

+Price | Our customized-to-your-needs strategy provides you with the best technology and value to ensure a strong return on your investment.

= It all adds up to **Practice Success** and your ability to expand your services, differentiate your practice and increase revenues.

MLS Therapy Laser
EVO

MLS Therapy Laser
Mphi

Check Out Our Webinar:

New, Relevant Research on Laser Therapy
By Laurie McCauley, DVM, DACVSMR, CVA, CVC

celasers.com/research

800.889.4184 | www.celasers.com

CUTTING EDGE™ LASER TECHNOLOGIES

Partnered Exclusively with PATTERSON® VETERINARY