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Introduction to Physical Rehabilitation for Veterinary Technicians/Nurses

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As veterinary technicians, we vow to further our knowledge and competence through a commitment to lifelong learning (NAVTA, 1987). Over the past 15–20 years, awareness of animal physical rehabilitation has increased, and rehabilitation has become a rapidly growing service within veterinary specialty hospitals, referral centers, and primary care practices. Every day, we hear about laser therapy and underwater treadmills, equipment that was not traditionally covered in the veterinary technician's college curriculum. Learning more about rehabilitation

enables the veterinary technician to better assist the supervising veterinarian when physical rehabilitation therapies are recommended. This chapter aims to answer some questions about rehabilitation for veterinary technicians and nurses.

What Is Rehabilitation?

Physical rehabilitation is the treatment of injury or illness to decrease pain and restore function (American Association of

Physical Rehabilitation for Veterinary Technicians and Nurses, Second Edition.

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Companion website: www.wiley.com/go/goldberg/physicalrehabilitationvettechsandnurses

Table 1.1 Sample conditions benefiting from physical rehabilitation.

Orthopedic	Neurological	General
Post-operative rehabilitation (e.g., stifle or hip surgery, arthrodesis, amputation, and ligament/tendon repair)	Post-operative rehabilitation (e.g., decompressive surgery and reconstructive surgery)	Pain management
Acute and chronic soft tissue injuries, involving muscle and fascia, tendon, joint capsule, or ligament (limbs or trunk)	Central or peripheral nerve injuries	Athletic/working dogs (performance problems, improving strength and endurance)
Arthritis (long-term management)	Fibrocartilaginous embolism, spinal shock	Obesity
Developmental orthopedic diseases (e.g., hip dysplasia, elbow dysplasia)	Degenerative nerve disease (e.g., myelopathy, polyneuropathies)	Depression
Trauma and wound care	Balance/vestibular problems Nervous system trauma	Senior care

Source: Adapted from Sharp (2008).

Rehabilitation Veterinarians, 2023). Rehabilitation is used to address acute injuries and chronic injuries or diseases. Rest alone after injury usually does not relieve the problems caused by inflammation and spasm; for example, a muscle in spasm may not have adequate blood supply to heal. Protective mechanisms in place in the body following injury alter movement of the whole musculoskeletal system and increase strain in other areas. Physical rehabilitation should commence as soon as is possible for the patient and caregiver (Table 1.1).

History of Human Physical Therapy

International (Physiosite, 2015)

Physicians like Hippocrates and later Galenus are believed to have been the first practitioners of physical therapy, advocating massage, manual therapy techniques, and hydrotherapy. In 460 BC, Hector practiced *hydrotherapy* – which is Greek for water treatment. In 1894, Great Britain recognized physiotherapy as a specialized branch of nursing regulated by the

Chartered Society of Physiotherapy. The first emergence of physiotherapy as a specialist discipline was in Sweden in 1913, when Per Henrik Ling founded the Royal Central Institute of Gymnastics (RCIG) for massage, manipulation, and exercise. In the following two decades, formal physiotherapy programs were established in other countries, led by the School of Physiotherapy at the University of Otago in New Zealand (1913). From 1950, chiropractic manipulations were also introduced, this was initially most common in Great Britain. A subspecialty of orthopedics, within physiotherapy, also emerged at about the same time.

United States of America (APTA, 2015; Moffat, 2003)

Physical therapists formed their first professional association in 1921, called the American Women's Physical Therapeutic Association. In 1922, the association changed its name to the American Physiotherapy Association (APA). In the 1930s, APA introduced its first "Code of Ethics," men were admitted, and membership grew to just under 1,000. With the advent of World War II

and a nationwide polio epidemic during the 1940s and 1950s, physical therapists were in great demand. The association's membership grew to 8,000. By the late 1940s, the association had changed its name to the American Physical Therapy Association (APTA). APTA represents more than 90,000 members throughout the United States. A national professional organization, APTA's goal is to foster advancements in physical therapy practice, research, and education. Currently, 213 institutions offer physical therapy education programs, and 309 institutions offer physical therapist assistant education programs in the United States.

History of Veterinary Physical Rehabilitation

Physical rehabilitation for animals has been practiced since the 1980s. In biomedical research, the use of animal models in treatment protocols is common, and this includes research in the field of physical rehabilitation. From the late 1980s and throughout the 1990s, several groups helped to increase interest in canine and equine physical rehabilitation. These groups include the American Veterinary Medical Association (AVMA), the American College of Veterinary Surgeons (ACVS), and the formation of the Animal Physical Therapist Special Interest Group (APT-SIG) within the APTA. Success with human patients receiving post-operative physical therapy has galvanized the veterinary community into developing physical rehabilitation techniques that can be implemented for animal patients (McGonagle *et al.*, 2014). In June 1993, the APTA issued a position statement that "endorses the position that physical therapists may establish collaborative, collegial relationships with veterinarians for the purposes of providing physical therapy services or consultation (APTA, 1993)." In 1996, "Guidelines for Alternative and Complementary Veterinary Medicine" were

adopted by the AVMA House of Delegates (AVMA, 2000). New guidelines were adopted by the AVMA House of Delegates in 2001 (AVMA, 2001). Training in animal physical rehabilitation was established by a group at the University of Tennessee (McGonagle *et al.*, 2014). This training and certification course was, and still is, provided for veterinarians, veterinary technicians, physical therapists, and physical therapy assistants (see below).

The International Association of Veterinary Rehabilitation and Physical Therapy (www.iavrpt.org) became an official association in July 2008 and is a collaborative association of veterinarians, technicians, physical therapists, and other allied health professionals. Veterinarians interested in rehabilitation in the United States are encouraged to join the American Association of Rehabilitation Veterinarians, founded in 2007 (www.rehabvets.org). Veterinary technicians can become members of the AARV as associate members, as can other allied health professionals.

In 2010, the American College of Veterinary Sports Medicine and Rehabilitation (ACVSMR) was approved by the American Association of Specialty Veterinary Boards (AASVB) to establish and maintain credentialing and specialty status for veterinarians who excel in sports medicine and rehabilitation. A veterinarian can become board-certified in either canine or equine specialties under this college; more details can be found at their website, www.vsmr.org.

Veterinary technicians can take one of several certification courses in animal rehabilitation. For those technicians who are already certified in physical rehabilitation, a veterinary technician specialty group has been formed. This group is under the umbrella and direction of the National Association of Veterinary Technicians in America (NAVTA) and is called the Academy of Physical Rehabilitation Veterinary Technicians. This specialty certification will allow veterinary

technicians and nurses to possess the credential for VTS-physical rehabilitation. The Mission Statement of the Academy is, “We are credentialed rehabilitation veterinary technicians providing assistance in physical rehabilitation, encouraging veterinary technicians to further education, while improving the quality of animals’ lives.”

Specifics About Veterinary Physical Rehabilitation

The American Association of Rehabilitation Veterinarians produced a model set of guiding principles for the ideal practice of veterinary physical rehabilitative medicine (AARV, 2014). These model standards state:

- Patient care in the rehabilitation facility should be under the authority, supervision, or approval of a licensed veterinarian certified in rehabilitation therapy.
- Initial examination and diagnosis should be determined by a licensed veterinarian with rehabilitation certification.
- The rehabilitation treatment plan should be formulated and the case managed by a licensed veterinarian with rehabilitation certification, or a combination of these veterinarians, in consultation with an appropriately licensed physical therapist certified in animal rehabilitation.
- No technician/assistant (certified or otherwise) shall manage a rehabilitation patient.
- There shall be a formal policy in place to monitor and evaluate patient responses to care.
- The practice shall use individualized rehabilitation and therapy plans, including fitness plans.
- For patients with concurrent conditions, clients shall be advised early during care of the opportunity to request a second opinion or referral to a specialist for treatment of these conditions.
- The rehabilitation practice shall regularly update the patient’s primary care veterinarian as well as any other veterinarian involved with the patient’s current care.
- A summary of the initial rehabilitation evaluation findings should be sent to the referring veterinarian at the earliest opportunity, preferably within 24 hours of the evaluation.
- The patient shall be discharged back into the care of the primary veterinarian once therapy is complete.
- When referring a patient for additional workup, appropriate referral communication (such as a letter, email, or phone conversation) shall occur and should be properly documented in the patient’s record.
- Evaluation for pain shall be part of every patient visit.
- Practice team members shall be trained to recognize pain and work in collaboration with the veterinarian to provide appropriate pain management, including physical and pharmaceutical modalities.
- Since medical and emergent issues may arise during treatment, and pain management monitoring needs to be addressed by a veterinarian, having the rehabilitation veterinarian on site is ideal. A plan must be in place to address emergent care medical issues and pain management in the absence of direct (on-site) veterinary supervision.
- Practice team members should be trained to identify causes of pain, levels of pain, medications, and physical methods used to control pain.
- Pain scores should be documented in the medical record at each visit.
- Pain management techniques should be used when the presence of pain in a patient is uncertain.

- Clients should be adequately educated to recognize pain in their pets.
- Clients should be adequately educated about the possible effects of any dispensed analgesic, including adverse events.
- Tentative diagnoses and medical plans, or their subsequent revisions, shall be communicated to clients at the earliest reasonable opportunity.
- A rehabilitation veterinarian should have current knowledge of veterinary-approved diets, nutraceuticals, supplements, as well as knowledge and skills in weight loss and weight-management programs.
- Nutritional assessment and counseling should be part of routine care.
- Recommended continuing education requirements:
 - Each veterinarian should have a minimum of 15 hours of continuing education every 2 years, specifically in veterinary rehabilitation topics.
 - Each veterinarian should have a minimum of 20 hours per year of documented continuing education in the field of veterinary medicine.
 - Each veterinary technician should have a minimum of 10 hours of documented continuing education in the field of veterinary rehabilitation every 2 years.
 - Each veterinary technician should have a minimum of 10 hours of documented continuing education in the field of veterinary technology every 2 years.
 - Each physical therapist should have a minimum of 15 hours of documented continuing education in the field of veterinary rehabilitation every 2 years.
 - Each physical therapist should complete continuing education in their own field as recommended by their governing state board.

How Do Veterinary Technicians and Nurses Fit In?

Veterinary technicians must complete either a 2- or 4-year program in the United States. Veterinary nurses are the primary para-veterinary workers in the United Kingdom. They assist vets in their work and have a scope of autonomous practice within which they can act for the animals they treat, which can include minor surgery. Registered veterinary nurses (RVNs) are bound by a code of professional conduct and are obliged to maintain their professional knowledge and skills through ongoing continuing professional development (RCVS, 2023). In the United States, in approximately 40 states, veterinary technicians are certified, registered, or licensed (Levine *et al.*, 2014). Veterinary technician programs do not include extensive coursework in physical rehabilitation.

Most continuing education courses offered at international, national, and local meetings offer physical rehabilitation lectures and hands-on laboratories. The AARV provides a full day of lectures at the North American Veterinary Conference, and the ACVSMR offers lectures (canine and equine) at this conference and a program in conjunction with the ACVS annual symposium.

Where Can I Become a Certified Rehabilitation Veterinary Technician?

The greatest asset for effective physical rehabilitation is an educated veterinary team (Sprague, 2013). A rehabilitation technician is a certified, licensed, or registered veterinary technician who has completed a prescribed curriculum to receive the title of Certified Canine Rehabilitation

Veterinary Nurse (CCRVN), Certified Canine Rehabilitation Practitioner (CCRP), or Certified Veterinary Massage and Rehabilitation Therapist (CVMRT). There are currently five certification programs available for veterinary technicians in the United States that offer the respective titles.

The Canine Rehabilitation Institute offers the Certified Canine Rehabilitation Assistant (CCRA) program for veterinary assistants or those who do not possess a license as a credentialed veterinary technician; CCRVN for those who are a credentialed veterinary technician; and the Certified Canine Rehabilitation Therapist (CCRT) program for veterinarians and physical therapists at training facilities in Missouri and Colorado (<http://www.caninerehabinstitute.com>).

Northeast Seminars offers the Certification in Companion Animal Therapy (CCAT) for veterinarians, licensed veterinary technicians, physical therapists, physical therapist assistants, and occupational therapists at North Carolina State University (<https://www.ncsuvetce.com/canine-rehab-ccat/>).

University of Tennessee offers the CCRP, or Certified Equine Rehabilitation Practitioner (CERP), for veterinarians, physical therapists, and veterinary technicians at The University of Tennessee (<https://www.u-tenn.org/ccrp/> and <https://vahl.vet/>).

Healing Oasis offers the CVMRT program for licensed veterinarians, licensed or certified veterinary technicians, licensed physical therapists, licensed nurses, and/or licensed/certified massage therapists at their facility in Wisconsin (<http://www.healingoasis.edu/VMRT-program>).

Animal Rehabilitation Institute offers Certified Equine Rehabilitation Assistant (CERA) offered to Veterinary Technicians and Physical Therapist Assistants (<https://animalrehabinstitute.com/open-enrollment-2/>).

What Is Involved in Becoming a CCRA, CCRVN, CCAT, CCRP, CVMRT or CERA, CERP?

Formal educational courses and wet labs are involved in all the certification courses. Each school has its own curriculum. The cost is relatively expensive for a veterinary technician, but this certification may allow the veterinary technician to command a higher salary. You must be an LVT, CVT, and RVT to attend most of the courses. The best way to investigate the programs is to visit the webpages listed below:

- 1) <http://www.caninerehabinstitute.com>
- 2) <https://www.ncsuvetce.com/>
- 3) <https://www.u-tenn.org/ccrp/> and <https://vahl.vet/>
- 4) <http://healingoasis.edu/veterinary-massage-rehabilitation-therapy-program>
- 5) <https://animalrehabinstitute.com/about-ari/>

Practice Regulations for Veterinary Technicians

Candidates for certified, registered, or licensed veterinary technician are tested for competency through an examination which may include oral, written, and practical portions. Every state is unique and maintains its own regulations with respect to the practice of veterinary medicine. Practice acts, legislated by states and provinces, often define the responsibilities of the veterinary technician. These responsibilities and duties are dependent in part on the type of employment the individual chooses. The current standards include obtaining an associate or bachelor's degree from a program accredited by the AVMA's Committee on Veterinary Technology and Education Activities (CVTEA), a passing score on the veterinary technician national examination by the American Association of Veterinary State Boards (AAVSB), and a varying

number of continuing education hours within the renewal process.

A rehabilitation veterinary technician should be working under the direct supervision of a credentialed rehabilitation veterinarian who directs therapy. The larger team may be made up of a credentialed physical therapist, the referring veterinarian, a veterinary specialist (surgeon, neurologist, etc.), a veterinary chiropractor, acupuncturist, hospital support staff, the owner, and other trained veterinary professionals.

Working in the Physical Rehabilitation Field

The duties of the rehabilitation veterinary technician include assisting their supervising veterinarian in evaluations and in performing therapies. Therapies that the technician can provide include application of prescribed physical modalities and therapeutic exercises. Part of patient care is ensuring patient records are up-to-date and accurate. Proper documentation of treatments should be completed each day. Any member of the rehabilitation team should be able to refer to the record and understand the needs and past treatments of each patient. Clear client communication and education are also necessary. Chapter 2: Joining a Rehabilitation Team goes into detail about the role of each team member.

Pain plays a role in any patient's willingness and motivation. A patient's pain score should be assessed and documented in the medical record during each visit (AARV, 2014). A detailed history should indicate the degree of pain and the disability (Davies, 2014). How does the patient cope with the disability? If changes in a patient's pain level are noted, the supervising veterinarian should be notified. It is very important for the rehabilitation veterinary technician to remain in open communication with their supervisor about anything abnormal or any changes in

progress. Chapter 3 will address pain management through physical rehabilitation.

Much of the certified veterinary rehabilitation technician's day is like any other LVT, RVT, or CVT. Animal patients are admitted, housed appropriately, and kept clean. Often during the day, patients are taken outside so they can relieve themselves. Records are pulled for the therapist (veterinarian or physical therapist). Patient forms must be in order, records sent from the referring veterinarian are available, and equipment is clean, orderly, and ready for use. Assisting the therapist with their patients and listening to them is all part of the routine. At this point, any veterinary technician could fill this position. What sets the veterinary technician apart who is certified in rehabilitation?

Therapeutic Exercises

Therapeutic exercises are a daily part of the veterinary technician's routine. The owner/handler must be well educated on the exercise program, especially the home exercise program (HEP). The supervising veterinarian chooses the exercises, and the technician carries them out. Exercises target proprioception and balance, specific muscle groups, overall pattern of gait, and overall strength and endurance. Therapeutic exercise equipment includes physioballs, cavaletti rails, balance blocks and discs, weights, tunnels, rocker boards, wobble boards, treadmills, air mattresses, and planks (Coates, 2013). Patient considerations such as motivation, footing, assistive devices, and leash/harness control must be assessed prior to beginning any exercise program, and therapist/handler body mechanics must be monitored to prevent injury. Exercises are designed to address specific impairments, and each is described with a goal, a technique, and a progression (McCauley and Van Dyke, 2013). In order to fully understand the therapies, certification at one of the rehabilitation schools is necessary.

Manual Techniques

Specialized manual techniques are used in evaluating and treating the patient. Types of techniques the technician is trained in are:

- 1) “Massage – Effleurage consists of long, slow strokes, generally light to moderate pressure, usually parallel to the direction of the muscle fibers. Petrissage involves short, brisk strokes with moderate to deep pressure, parallel, perpendicular, or diagonally across the direction of the muscle fibers. It may include kneading, wringing, or skin rolling. Tapotement is rhythmic, brisk percussion often administered with the tips of the fingers, primarily used as a stimulating stroke to facilitate a weak muscle, and cross-friction massage involves applying moderate pressure perpendicularly across the desired tissue. Pressure is maintained in such a way that the finger does not slide across the skin, but rather takes the skin with it” (Coates, 2013).
- 2) Normal range of motion (ROM) is the full motion that a joint may be moved through. Passive range of motion (PROM) motion of a joint that is performed without muscle contraction within the available ROM, using an external force to move the joint (Millis and Levine, 2014a, b).

Stretching techniques are often performed in conjunction with ROM exercises to improve flexibility of the joints and extensibility of periarticular tissues, muscles, and tendons (Millis and Levine, 2014a, b).

Physical Modalities

Physical modalities are often used as part of the patient’s treatment plan. Physical modalities are used as tools to manage

pain, weak muscles, inflexibility, limited joint range of motion, and aiding in tissue healing (Niebaum, 2013). The modalities mentioned are not presented in detail.

Physical modalities include:

- 1) *Superficial thermal agents* – hot (thermotherapy) and cold (cryotherapy).
- 2) *Neuromuscular electrical stimulation (NMES)* – usually used to address muscular weakness.
- 3) *Transcutaneous electrical nerve stimulation (TENS)* – used for pain relief.
- 4) *Therapeutic ultrasound* – a deep heating technique used for rehabilitating musculoskeletal conditions (Levine and Watson, 2014).
- 5) *Photobiomodulation* – (not surgical lasers) is used to accelerate wound healing, promote muscle regeneration, treat acute and chronic pain, chronic and acute edema, and neurologic conditions (Millis and Saunders, 2014).
- 6) *Extracorporeal shock wave therapy (ESWT)* – benefits include increased bone, tendon, and ligament healing, accelerated wound healing, antibacterial properties, and pain relief (Niebaum, 2013).
- 7) *Pulsed electromagnetic field therapy (PEMF)* – can induce biological currents in the tissue. The Food and Drug Administration (FDA) has approved it as safe and effective for the treatment of fractures and their sequelae (Rosso *et al.*, 2015). The main therapeutic purpose is for enhancement of bone or tissue healing and pain control (Millis and Levine, 2014a, b).

Additional areas of education include topics such as aquatic therapy, canine orthotics and prosthetics, rehabilitation of the orthopedic and neurologic patient, canine sports medicine, pain management, nutrition, and geriatric patients.

Conditions That Can Benefit from Physical Rehabilitation

A range of therapies are used to achieve one or more of the following functional goals:

- Speed recovery from injury or surgery
- Increase mobility and flexibility
- Improve endurance and agility
- Decrease pain
- Maintain function and prevent further problems
- Enhance quality of life (QoL)

Physical rehabilitation helps an individual who has had an illness or injury to achieve the highest level of function, independence, and QoL as possible (Sharp, 2008). The success or otherwise of any surgery is as much down to the rehabilitation carried out as to the surgical technique performed.

Rehabilitation offers numerous physiological benefits to patients, including:

- Increased blood flow and lymphatic drainage to the injured area
- Reduction of pain, swelling, and complications
- Increased production of collagen
- Prevention of contractions and adhesions
- Promotion of normal joint biomechanics
- Prevention of other injuries
- Prevention of or reduction in muscle atrophy
- Improved function and quality of movement

Conclusion

A rehabilitation veterinary technician's job is complex and fulfilling. There are advancements in veterinary medicine daily, and animal physical rehabilitation is on the cutting edge. Specialized rehabilitation equipment is helpful, but much can be achieved without it. Physical rehabilitation is rewarding even with minimal equipment; all you need is a rehabilitation team.

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