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Getting Started in Physical Rehabilitation

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Mary Ellen has written several books and contributed to numerous chapters regarding anesthesia, pain management, and rehabilitation. She has worked in various aspects of veterinary medicine ranging from small animal to zoo animal medicine.

As veterinary technicians, we vow to further our knowledge and competence through a commitment of lifelong learning.[1] Physical rehabilitation is an exciting and challenging field in which veterinary technicians can develop new skills and grow in their career development. Over the past decade, 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 more about laser therapy and underwater treadmills, equipment not traditionally covered in the veterinary technician college curriculum.

Learning more about rehabilitation enables veterinary technicians to better assist supervising veterinarians when physical rehabilitation therapies are recommended. This article aims to answer some basic questions about rehabilitation and how to become certified to work in this field as a veterinary technician.

OVERVIEW OF WORKING IN PHYSICAL REHABILITATION

The greatest asset for effective physical rehabilitation is an educated veterinary team.[2] A rehabilitation veterinary technician should work 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 (e.g., surgeon, neurologist), a veterinary chiropractor, an acupuncturist, hospital support staff, the owner, and other trained veterinary professionals.[3]

The duties of a rehabilitation veterinary technician include assisting the supervising therapist in evaluating patients and performing prescribed therapies, keeping patient records up-to-date and accurate, and educating clients on how to perform home exercises. The American Association of Rehabilitation Veterinarians strongly discourages anyone working as a rehabilitation veterinary technician unless the

person has graduated from a certified rehabilitation school. Credentialed rehabilitation veterinary technicians can apply prescribed therapeutic exercises and physical modalities, some of which are described below.

Therapeutic Exercises

Therapeutic exercises are a daily part of the rehabilitation veterinary technician's routine. The therapist chooses the exercises, and the technician carries them out. Exercises may focus on improving proprioception, balance, speed, endurance, focal strength, pelvic limb function, forelimb function, neurologic function, or land treadmill endurance training.[4] Therapeutic exercise equipment includes physioballs, cavaletti rails, balance blocks and discs, weights, tunnels, rocker boards, wobble boards, and treadmills (FIGURES 1 AND 2).[5]

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FIGURE 1. Balance discs are used to help patients improve proprioception.

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FIGURE 2. Wobble boards are another type of equipment that can be used for proprioception exercises.

Heartgard® Plus
(ivermectin/pyrantel)

CHEWABLES

CAUTION: Federal (U.S.A.) law restricts this drug to use by or on the order of a licensed veterinarian.

INDICATIONS: For use in dogs to prevent canine heartworm disease by eliminating the tissue stage of heartworm larvae *(Dirofilaria immitis)* for a month (30 days) after infection and for the treatment and control of ascarids *(Toxocara canis, Toxascaris leonina)* and hookworms *(Ancylostoma caninum, Uncinaria stenocephala, Ancylostoma braziliense).*

DOSAGE: HEARTGARD® Plus (ivermectin/pyrantel) should be administered orally at monthly intervals at the recommended minimum dose level of 6 mcg of ivermectin per kilogram (2.72 mcg/lb) and 5 mg of pyrantel (as pamoate salt) per kg (2.27 mg/lb) of body weight. The recommended dosing schedule for prevention of canine heartworm disease and for the treatment and control of ascarids and hookworms is as follows:

Dog Weight	Chewables Per Month	Ivermectin Content	Pyrantel Content	Color Coding On Foil Backing and Carton
Up to 25 lb	1	68 mcg	57 mg	Blue
26 to 50 lb	1	136 mcg	114 mg	Green
51 to 100 lb	1	272 mcg	227 mg	Brown

HEARTGARD Plus is recommended for dogs 6 weeks of age and older.
For dogs over 100 lb use the appropriate combination of these chewables.

ADMINISTRATION: Remove only one chewable at a time from the foil-backed blister card. Return the card with the remaining chewables to its box to protect the product from light. Because most dogs find HEARTGARD Plus palatable, the product can be offered to the dog by hand. Alternatively, it may be added intact to a small amount of dog food. The chewable should be administered in a manner that encourages the dog to chew, rather than to swallow without chewing. Chewables may be broken into pieces and fed to dogs that normally swallow treats whole.

Care should be taken that the dog consumes the complete dose, and treated animals should be observed for a few minutes after administration to ensure that part of the dose is not lost or rejected. If it is suspected that any of the dose has been lost, redosing is recommended.

HEARTGARD Plus should be given at monthly intervals during the period of the year when mosquitoes (vectors), potentially carrying infective heartworm larvae, are active. The initial dose must be given within a month (30 days) after the dog's first exposure to mosquitoes. The final dose must be given within a month (30 days) after the dog's last exposure to mosquitoes.

When replacing another heartworm preventive product in a heartworm disease preventive program, the first dose of HEARTGARD Plus must be given within a month (30 days) of the last dose of the former medication.

If the interval between doses exceeds a month (30 days), the efficacy of ivermectin can be reduced. Therefore, for optimal performance, the chewable must be given once a month on or about the same day of the month. If treatment is delayed, whether by a few days or many, immediate treatment with HEARTGARD Plus and resumption of the recommended dosing regimen will minimize the opportunity for the development of adult heartworms.

Monthly treatment with HEARTGARD Plus also provides effective treatment and control of ascarids *(T. canis, T. leonina)* and hookworms *(A. caninum, U. stenocephala, A. braziliense).* Clients should be advised of measures to be taken to prevent reinfection with intestinal parasites.

EFFICACY: HEARTGARD Plus Chewables, given orally using the recommended dose and regimen, are effective against the tissue larval stage of *D.immitis* for a month (30 days) after infection and, as a result, prevent the development of the adult stage. HEARTGARD Plus Chewables are also effective against canine ascarids (*T. canis, T. leonina*) and hookworms (*A. caninum, U. stenocephala, A. braziliense*).

ACCEPTABILITY: In acceptability and field trials, HEARTGARD Plus was shown to be an acceptable oral dosage form that was consumed at first offering by the majority of dogs.

PRECAUTIONS: All dogs should be tested for existing heartworm infection before starting treatment with HEARTGARD Plus which is not effective against adult *D. immitis.* Infected dogs must be treated to remove adult heartworms and microfilariae before initiating a program with HEARTGARD Plus.

While some microfilariae may be killed by the ivermectin in HEARTGARD Plus at the recommended dose level, HEARTGARD Plus is not effective for microfilariae clearance. A mild hypersensitivity-type reaction, presumably due to dead or dying microfilariae and particularly involving a transient diarrhea, has been observed in clinical trials with ivermectin alone after treatment of some dogs that have circulating microfilariae.

Keep this and all drugs out of the reach of children.
In case of ingestion by humans, clients should be advised to contact a physician immediately. Physicians may contact a Poison Control Center for advice concerning cases of ingestion by humans.

Store between 68°F - 77°F (20°C - 25°C). Excursions between 59°F - 86°F (15°C - 30°C) are permitted. Protect product from light.

ADVERSE REACTIONS: In clinical field trials with HEARTGARD Plus, vomiting or diarrhea within 24 hours of dosing was rarely observed (1.1% of administered doses). The following adverse reactions have been reported following the use of HEARTGARD: Depression/lethargy, vomiting, anorexia, diarrhea, mydriasis, ataxia, staggering, convulsions and hypersalivation.

SAFETY: HEARTGARD Plus has been shown to be bioequivalent to HEARTGARD, with respect to the bioavailability of ivermectin. The dose regimens of HEARTGARD Plus and HEARTGARD are the same with regard to ivermectin (6 mcg/kg). Studies with ivermectin indicate that certain dogs of the Collie breed are more sensitive to the effects of ivermectin administered at elevated dose levels (more than 16 times the target use level) than dogs of other breeds. At elevated doses, sensitive dogs showed adverse reactions which included mydriasis, depression, ataxia, tremors, drooling, paresis, recumbency, excitability, stupor, coma and death. HEARTGARD demonstrated no signs of toxicity at 10 times the recommended dose (60 mcg/kg) in sensitive Collies. Results of these trials and bioequivalency studies, support the safety of HEARTGARD products in dogs, including Collies, when used as recommended.

HEARTGARD Plus has shown a wide margin of safety at the recommended dose level in dogs, including pregnant or breeding bitches, stud dogs and puppies aged 6 or more weeks. In clinical trials, many commonly used flea collars, dips, shampoos, anthelmintics, antibiotics, vaccines and steroid preparations have been administered with HEARTGARD Plus in a heartworm disease prevention program.

In one trial, where some pups had parvovirus, there was a marginal reduction in efficacy against intestinal nematodes, possibly due to a change in intestinal transit time.

HOW SUPPLIED: HEARTGARD Plus is available in three dosage strengths (See DOSAGE section) for dogs of different weights. Each strength comes in convenient cartons of 6 and 12 chewables.

For customer service, please contact Merial at 1-888-637-4251.

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FIGURE 3. Massage may involve tapping, stroking, kneading, wringing, or skin rolling motions, either parallel to the muscle fibers or at an angle, and can be performed at a range of pressures.[4]

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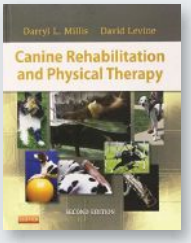
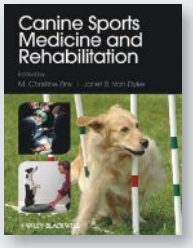
FIGURE 4. Cryotherapy is an adjunct physical modality typically indicated for management of acute injury or inflammation.

Patient considerations such as motivation, footing, assistive devices, and leash/harness control must be assessed before beginning any exercise program, and therapist/handler body mechanics must be monitored to prevent injury.[5] Exercises are designed to address specific impairments, and each is described with a goal, a technique, and a progression.[5] Details of therapeutic exercises can be found in recent textbooks (BOX 1); however, to fully understand and perform these therapies, certification in rehabilitation is necessary.

BOX 1 Recommended Reading

- Marcellin-Little DJ, Levine D, Millis DL, eds. Rehabilitation and physical therapy. *Vet Clin North Am Small Anim Pract* 2015;45(1).
- Millis DL, Levine D, eds. *Canine Rehabilitation and Physical Therapy*. 2nd ed. Philadelphia, PA: Elsevier; 2014.
- Zink MC, Van Dyke JB, eds. *Canine Sports Medicine and Rehabilitation*. Ames, IA: John Wiley and Sons; 2013.





Manual Techniques

Specialized manual techniques are used extensively in evaluating and treating rehabilitation patients.[4] Credentialed technicians are trained in these techniques, which include massage, range of motion (ROM) exercises, and stretching. **Massage** may involve tapping, stroking, kneading, wringing, or skin rolling motions, either parallel to the muscle fibers or at an angle, and can be performed at a range of pressures (FIGURE 3).[4] **ROM exercises** may be normal, in which a joint moves through its full ROM, or passive. Passive ROM exercises use an external force to move a joint without muscle contraction through its available ROM.[6] **Stretching techniques** are often performed in conjunction with ROM exercises to improve flexibility of the joints and extensibility of periarticular tissues, muscles, and tendons.[6]

Physical Modalities

Rehabilitation physical modalities are used as adjuncts to the patient's treatment plan (FIGURE 4). Physical modalities are used as tools to alleviate pain; improve strength, flexibility, and joint ROM; and aid in tissue healing.[7] A brief list of these modalities is presented in BOX 2.

Recordkeeping

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.

Because pain plays a role in any patient's willingness and motivation, each patient's pain score should be assessed and documented in the medical record during each visit.[11]

A detailed history should indicate the degree of pain, the disability,[12] and how the patient copes 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 his or her supervisor about anything abnormal or any changes in a patient's progress. (Pain scales from Colorado State University are reprinted on pages 44 and 45.)

Client Communication

Clear client communication and education are also essential to successful rehabilitation. The owner/handler must be well educated on the exercise program, especially the home exercise program.[5] However, each client's needs and expectations can vary depending on the time available for home exercises. The client needs guidance for home exercises, and the completion (or not) of home exercises should be documented in the record. Often, printed instructions, as well as verbal and physical directions, need to be provided for the client to completely understand what each exercise entails. This is also documented in the record.

BOX 2 Selected Physical Modalities

- **Superficial thermal agents**[7,8]
  - **Heat (thermotherapy):** Stimulates vasodilation and causes increases in extensibility, thus reducing joint stiffness and leading to increased range of motion
  - **Cold (cryotherapy):** Typically indicated for management of acute injury or inflammation
- **Neuromuscular electrical stimulation:** Usually used to address muscular weakness[7]
- **Transcutaneous electrical nerve stimulation:** Used for pain relief[7]
- **Therapeutic ultrasound:** Deep heating technique used for rehabilitating musculoskeletal conditions[9]
- **Low-level laser therapy:** Used for many applications, including acceleration of wound healing; promotion of muscle regeneration; treatment of acute and chronic pain, chronic and acute edema, and neurologic conditions; and postoperative care[10]
- **Extracorporeal shock wave therapy:** Used for increased bone, tendon, and ligament healing; accelerated wound healing; antibacterial therapy; and pain relief[7]

TECHPOINT

Veterinary assistants who are interested in becoming certified, licensed, or registered veterinary technicians should investigate the State Practice Act of their home state to see what practicing as a veterinary technician encompasses.

Specialized Areas

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

HOW TO BECOME A CERTIFIED REHABILITATION VETERINARY TECHNICIAN

A certified rehabilitation veterinary technician is a certified, licensed, or registered veterinary technician who has completed a prescribed curriculum to receive the designation of CCRA (Certified Canine Rehabilitation Assistant), CCRP (Certified Canine Rehabilitation Practitioner), Certified Equine Rehabilitation Assistant (CERA), or CVMRT (Certified Veterinary Massage and Rehabilitation Therapist).

Currently, 4 certification programs in the United States offer these respective titles (BOX 3). Each program involves formal educational courses and wet labs, and each school has its own curriculum. The cost is relatively expensive for a veterinary technician, but certification allows veterinary technicians to command a higher salary.

Only certified, licensed, or registered veterinary technicians are accepted into the existing rehabilitation certification programs. In the approximately 40 states and provinces in which veterinary technicians are certified, registered, or licensed, candidates are tested for competency through an examination that may include oral, written, and practical portions. This process is regulated by a state board

BOX 3 US Veterinary Rehabilitation Certification Programs

- **The Animal Rehabilitation Institute** offers the Certified Equine Rehabilitation Assistant (CERA) program for veterinary technicians and physical therapist assistants. Classes are held in Florida.
  animalrehabinstitute.com
- **The Canine Rehabilitation Institute** offers the Certified Canine Rehabilitation Assistant (CCRA) program for veterinary technicians at training facilities in Florida and Colorado. A 40-day internship is required as part of the program.
  caninerehabinstitute.com/CCRA.html
- **Healing Oasis** offers the Certified Veterinary Massage and Rehabilitation Therapist (CVMRT) program for licensed or certified veterinary technicians, licensed veterinarians, licensed physical therapists, licensed nurses, and licensed or certified massage therapists at its facility in Wisconsin.
  healingoasis.edu/veterinary-massage-rehabilitation-therapy-program/
- **NorthEast Seminars** offers the Certified Canine Rehabilitation Practitioner (CCRP) and Certified Equine Rehabilitation Practitioner (CERP) programs for veterinary technicians, veterinarians, and physical therapists at The University of Tennessee.
  vet.utk.edu/clinical/rehab/programs.php

What Next for Credentialed Rehabilitation Veterinary Technicians?

APRVT
Academy of Physical Rehabilitation Veterinary Technicians

For those who are already credentialed in physical rehabilitation, the formation of the Academy of Physical Rehabilitation Veterinary Technicians (APRVT; aprvt.com) is under way. APRVT (proposed) is a group of credentialed rehabilitation veterinary technicians working toward forming a veterinary technician specialty (VTS) recognized by the North American Veterinary Technician Association (NAVTA).

APRVT is a nonprofit organization dedicated to supporting CCRAs/CCRPs in the field of veterinary sports medicine and rehabilitation. This board certification will allow veterinary technicians to possess the credential VTS (Physical Rehabilitation). The academy's mission statement 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."

For information about the Academy, please contact the following members of the Proposed Organizing Committee:

- **Kristen Hagler**, President | **goldengaitk9@gmail.com**
- **Wendy Davies**, Vice President | **k9guru13@gmail.com**
- **Deana Cappucci**, Secretary | **dcapps13@yahoo.com**
- **Lis Conarton**, Treasurer | **lis@vmccny.com**
- **Mary Ellen Goldberg**, Exam Committee Chair | **mewhitester@gmail.com**

TECHPOINT

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.

of veterinary examiners or the appropriate state agency. 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 veterinary technicians. These responsibilities and duties depend in part on the type of employment the individual chooses. Standards for practice acts can be found on websites of the North American Veterinary Technician Association (navta.net) and the American Association of Veterinary State Boards (aavsb.org).

Veterinary assistants who are interested in becoming certified, licensed, or registered veterinary technicians should investigate the State Practice Act of their home state to see what practicing as a veterinary technician encompasses.

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.

Many conferences offer specific tracks of learning in physical rehabilitation, such as the North American Veterinary Community Conference, WVC, and the American Animal Hospital Association Conference. If you enjoy exercise, training, massage, and recovery, then you may want to consider this field. ■

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