Contents

Preface: Veterinary Rehabilitation and Physical Therapy ix
Denis J. Marcellin-Little, David Levine, and Darryl L. Millis

Evidence for Canine Rehabilitation and Physical Therapy 1
Darryl L. Millis and Ionut Alexandru Ciuperca

This article reviews some important studies regarding canine physical rehabilitation. Bones, cartilage, muscles, ligaments, and tendons undergo atrophy if loading is decreased. Knowledge of the changes that occur with immobilization and the time course of events helps in the development of a rehabilitation program to improve tissue integrity. Outcome assessment instruments are clinically useful indicators of patient progress and the success of rehabilitation programs. A number of physical modalities are used in canine rehabilitation, although there are relatively few canine-specific studies. Rehabilitation has specific benefits in the treatment of various orthopedic and neurologic conditions.

Physical Agent Modalities in Physical Therapy and Rehabilitation of Small Animals 29
June Hanks, David Levine, and Barbara Bockstahler

Physical agent modalities can be effective components of the overall rehabilitation of small animals. This article reviews the effects, indications, contraindications, and precautions of cold, superficial heat, therapeutic ultrasound, and electrical stimulation.

Therapeutic Laser in Veterinary Medicine 45
Brian Pryor and Darryl L. Millis

Laser therapy is an increasingly studied modality that can be a valuable tool for veterinary practitioners. Mechanisms of action have been studied and identified for the reduction of pain and inflammation and healing of tissue. Understanding the basics of light penetration into tissue allows evaluation of the correct dosage to deliver for the appropriate condition, and for a particular patient based on physical properties. New applications are being studied for some of the most challenging health conditions and this field will continue to grow. Additional clinical studies are still needed and collaboration is encouraged for all practitioners using this technology.

Principles and Application of Range of Motion and Stretching in Companion Animals 57
Denis J. Marcellin-Little and David Levine

Optimal function after injury, surgery, or in patients with chronic conditions requires adequate motion in joints, muscles, tendon, fascia, and skin. Range of motion and stretching exercises are commonly used in companion animal rehabilitation programs to maintain or improve motion of musculoskeletal tissues. Range of motion exercises and stretching prevent adhesions from forming, help scar tissue remodeling, may improve...
muscle tone, and prevent future injury from occurring. Stretching is used to avoid loss of motion or to regain lost joint motion. Stretching is done manually, using external coaptation, or using therapeutic exercises. Careful documentation of range of motion is necessary.

**Principles and Applications of Therapeutic Exercises for Small Animals**

Marti G. Drum, Denis J. Marcellin-Little, and Michael S. Davis

Therapeutic exercises are the cornerstone of the rehabilitation programs of companion animals. Therapeutic exercises are used to improve active joint range of motion, to improve weight bearing and limb use, to build strength and muscle mass, and to increase conditioning (eg, endurance, speed). Each case is unique as chronicity, type of injury, patient signalment and temperament, owner compliance, and level of required functional recovery vary widely. Therapeutic exercises are also essential for partial return to work or performance and to learn to perform activities of daily living after injury or surgery.

**Rehabilitation and Physical Therapy for Selected Orthopedic Conditions in Veterinary Patients**

Andrea L. Henderson, Christian Latimer, and Darryl L. Millis

A specific diagnosis is needed to perform optimal rehabilitation of orthopedic problems. A well-planned rehabilitation program is important for orthopedic patients when surgical repairs are mechanically weak (eg, when repairing fractures in skeletally immature patients or when repairing tendons or ligaments). Joint immobilization is sometimes used to protect weak surgical repairs. The duration of immobilization should be minimized, particularly in situations with potential loss of joint motion. Evidence-based information regarding specific modalities and techniques for rehabilitation of injured dogs and cats is limited. The choice of modalities and techniques must be based on common sense, knowledge of rehabilitation techniques, and clinical experience.

**Rehabilitation and Physical Therapy for the Neurologic Veterinary Patient**

Cory Sims, Rennie Waldron, and Denis J. Marcellin-Little

A comprehensive physiotherapy plan for neurology patients manages pain, prevents secondary complications, and supports the health and function of musculoskeletal tissues during recovery. Neurologically impaired patients range in ability from complete immobility (tetraplegia/paraplegia), partial mobility (tetraparesis/paraparesis), mild ataxia, to pain only. Important considerations for the design of a physiotherapy program include access to the patient, level of staff support, and safety of staff, patient, and client during treatments. A thorough overview of the treatment plan and expected outcome should be discussed with the client at the onset of therapy and should be reviewed frequently, particularly as the patient’s status changes.

**Physical Rehabilitation After Total Joint Arthroplasty in Companion Animals**

Denis J. Marcellin-Little, Nancy D. Doyle, and Joanna Freeman Pyke

Patients who have total joint arthroplasty have varying needs related to rehabilitation. In the short term, rehabilitation should be used in all dogs
to identify high-risk patients and to minimize the likelihood of postoperative complications. Many patients undergoing total hip replacement recover uneventfully without needing long-term physiotherapy. All patients undergoing total knee replacement and total elbow replacement need rehabilitation to restore limb use and maximize their functional recovery. This article presents rehabilitation considerations for companion animals undergoing total hip replacement, total knee replacement, and total elbow replacement; postoperative complications and how to mitigate risks; and anticipated patient outcomes.

Orthoses and Exoprostheses for Companion Animals

Denis J. Marcellin-Little, Marti G. Drum, David Levine, and Susan S. McDonald

Exoprostheses are devices that are secured to incomplete limbs to enable locomotion. By comparison, orthoses are devices externally applied to support or protect an injured body part. Orthoses also can be used to control, guide, protect, limit motion of, or immobilize an extremity, a joint, or a body segment. Exoprostheses and orthoses are a growing aspect of the physical rehabilitation of companion animals. They require precise design and fabrication. Patients and owners must be trained to use the devices. Exoprostheses and orthoses can have a profound beneficial impact on the mobility and the quality of life of companion animals.

Feline Rehabilitation

Marti G. Drum, Barbara Bockstahler, David Levine, and Denis J. Marcellin-Little

Cats have orthopedic problems, including osteoarthritis, fractures, and luxations that are positively impacted by physical rehabilitation. Most cats have an independent behavior that requires using a tactful approach to rehabilitation. Cats often do well with manual therapy and electrophysical modalities. Feline rehabilitation sessions may be shorter than canine rehabilitation sessions. Cats do best with therapeutic exercises when these exercises are linked to hunting, playing, or feeding.

Index