Introduction to small animal physiotherapy

Small animal rehabilitation therapist Deirdre Duggan RVN, Cert SA Hydrotherapy, Dipl Canine Hydrotherapy, PG Cert SA Rehab Therapy, MIRVAP, of Cork Canine Rehabilitation Centre and Gilabbey Veterinary Hospital, provides an overview of small animal physiotherapy

In Ireland, canine and feline patients are commonly referred for veterinary physiotherapy to optimise recovery following specialist orthopaedic or neurological surgery. Land and water-based physiotherapy is regularly incorporated as part of the multi-modal approach to pain management, in particular with chronic conditions such as degenerative joint disease. Many small animal veterinary practices are now incorporating physiotherapy into their multidisciplinary list of veterinary services. Physiotherapy complements conservative veterinary medicine and veterinary referral and good communication is essential to ensure accurate diagnosis and effective treatment.

Small animal veterinary rehabilitation and physiotherapy is an evidence-based discipline, which specialises in improving, maintaining and promoting the comfort, mobility and function of small animals.

Veterinary rehabilitation specialists have a sound knowledge of species-specific biomechanics, behaviour and functional anatomy. Choice of treatment techniques utilised are assessment-driven and require clinical reasoning to ensure treatments are tailored to the animal's individual needs.

There are many different treatment techniques that may be employed by the small animal physiotherapist, which may include a combination of land and water-based therapies, such as:

- Therapeutic handling techniques
- Electrophysical therapies
- Proprioceptive rehabilitation
- Manual therapies
- Movement therapies
- Behaviour modification enrichment techniques
- Aquatic therapies and hydrotherapy.

BENEFITS OF PHYSIOTHERAPY

There are many benefits of physiotherapy for the small animal patient, which include:

- Pain relief and improved comfort
- Acceleration in healing times and return to function
- Prevention of further injury
- Prevention of secondary effects of disuse or recumbency on neuromusculoskeletal structures and respiratory systems
- Improvement in endurance and cardiovascular performance
- Improvement in co-ordination and balance
- Increased strength, flexibility and range of motion
- Improved overall psychological wellbeing.

Common conditions that benefit from physiotherapy

There are many conditions that benefit from physiotherapy and rehabilitation. These include, but are not limited to, the following conditions.

Orthopaedic and soft tissue conditions

- Cranial cruciate ligament (CCL) disease: pre/post-surgical and conservative treatment
- Luxating patellar repair
- Post-fracture repair
- Osteoarthritic management
- Elbow/hip dysplasia
- Muscle and tendon injuries.

Neurological conditions

- Intervertebral disc disease (IVDD)
- Chronic degenerative radiculomyelopathy (CDRM)
- Lumbosacral disease
- Central nervous system (CNS) and peripheral nervous system (PNS) trauma
- Post-spinal decompression surgery.

Intensive care

Intensive care patients who experience prolonged recumbency are therefore at risk of developing:

- Muscle atrophy
- Soft tissue tightness
- Stiffness
- Reduced bone mass density
- Secondary respiratory issues such as secretion retention.

Weight reduction in obese animals

- In conjunction with dietary management.

Physiotherapy can also be used to promote good health in the companion animal and top athlete.

Performance enhancement

- For the athletic or working dog.

Conditioning and strengthening

- For the geriatric animal

- For patients recovering from medical, surgical and neurological conditions
- To accelerate return to function.

ASSESSMENT

A thorough subjective and objective assessment leads to the formulation of a 'problem list' for the animal and will highlight any pre-existing conditions that may be contraindicated for some physiotherapy modalities. Elements such as breed knowledge and understanding what is normal and abnormal with regards to behaviour, gait and conformation can provide vital information regarding the comfort levels of the canine and feline patient.

It is imperative that the animal as a whole is assessed and treated, and not just the condition. Animals in pain will adapt compensatory movement patterns that involve the whole musculoskeletal system. The forequarters and hindquarters are designed to support the canine axial skeleton against the force of gravity and provide acceleration to facilitate locomotion. Approximately 60 per cent of the overall standing body weight is supported by the forequarters, while the hindquarters support 40 per cent. The vertical forces exerted during walking are approximately the same, and correlate with a greater thoracic foot size.[1] Therefore, a canine patient experiencing pain in one limb will consequently redirect its weight distribution over the other three limbs. This will increase stresses exerted upon these limbs, and alter the biomechanics of the animal during normal gait and when accelerating and decelerating. Other functional elements that contribute to normal movement patterns or gait are within the axial skeleton and can be divided into the epaxial muscles (muscles of the back), tail, head and neck. Each of these components can be adjusted to assist in redirecting normal internal and external forces away from the affected painful area or limb. With these alterations in normal movement patterns comes associated secondary musculoskeletal issues and discomfort.

Veterinary nurses play a vital role in the post-operative care of small animals and, during this period, are often the main line of communication between small animal inpatient and the attending veterinary surgeon. In particular, patients recovering from orthopaedic surgeries and neurological conditions or those with medical conditions may experience prolonged recumbency.

Veterinary nurses can enhance their skills by liaising with the small animal rehabilitation specialist on care for inpatients in relation to physiotherapy. With appropriate training, veterinary nurses can be taught when and how to implement immediate post-operative physiotherapeutic treatments, which can accelerate the healing process, improve patient comfort and prevent the adverse effects of functional disuse.

Including physiotherapy modalities in a patient's care plan will enhance inpatient care, hasten recovery and promote an improved quality of life. An understanding of the indications and contraindications is important when utilising these modalities, together with good therapeutic handling skills to ensure safe application.

The veterinary nurse can incorporate techniques such as:

- Cryotherapy – to reduce oedema, reduce nerve conductivity, and reduce cellular metabolism
- Thermotherapy – to reduce secondary muscular tension
- Passive range of motion (PROM) – to improve range of motion in an individual joint and prevent soft tissue tethering
- Active range of motion (AROM) – to prevent stiffness and maintain muscle strength
- Alignment and postural management techniques – to improve static and dynamic balance and posture
- Motor patterning, movement shaping and sequencing techniques – to initiate movement and improve overall quality of gait by tapping into animals' locomotive system
- Appropriate therapeutic handling techniques and positive behaviour modification techniques – to assist in safe and positive application of treatments.

Relevant outcome measures are utilised to identify progress and in achieving short, mid and long-term goals. Outcome measures can include objective markers such as use of tape measurement of limb circumference or use of goniometry to assess range of motion in a joint. Continually reassessing quality of gait and functional transfers, such as sit to stand and lying to sit, or observing for improvements in weight bearing of the affected limb, could be used to measure success of treatments. Owner feedback can also provide essential information relating to the animal's return to normal behaviour and form.

Sound knowledge of small animal functional anatomy and quadruped movement, coupled with the use of a range of appropriate assessment skills, is key to successful treatments and outcomes. A good understanding of breed-related common conditions and diseases is necessary, as is knowledge of the conservative and surgical treatment options available. Veterinary rehabilitation and physiotherapy, when utilised inappropriately, can be detrimental to the patient but, when implemented correctly using current techniques, will be highly beneficial for the small animal patient, and will enhance the good work of the referring veterinary surgeon.

REFERENCE

1. Fischer MS, Lilje KE. Dogs in Motion. Bonifatius GmbH: Paderborn, Germany, 2011