

# Feline Physical Rehabilitation and the Veterinary Technician

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A cat is not a dog, **Period**. Developing a program for a cat that needs physical rehabilitation is sometimes challenging, but can absolutely be performed. The misconception exists that cats will not cooperate when asking them to perform therapeutic exercises. If you ask them nicely, they will gladly be receptive. (You should be smiling after this statement). The success of physical rehabilitation with cats demands a good understanding of feline behavior, including excellent handling skills. This lecture will hopefully give some insights into dealing with cats in a potentially stressful situation.

Physical Rehabilitation or Physiotherapy is concerned with physical function, and considers the value of movement and the optimization of physical potential as being core to the health and wellbeing of individuals.<sup>1</sup> Manual therapy (e.g. Massage, Passive Range of Motion, Stretching), Thermotherapy (e.g. Hot and cold), Electrotherapy (e.g. Laser therapy, Ultrasound therapy, Neuromuscular electrical nerve stimulation (NMES)), Exercise Therapy (e.g. Basic exercises for the postoperative orthopedic and neurological patient, Hydrotherapy, Strengthening exercises, Flexibility exercises, Endurance exercises, Balance and proprioception exercises, Gait reeducation, Postural management for neurological patients, Positioning and chest care for intensive care patients and Maintenance exercises for recumbent patients) can all be utilized in feline patients.

The most common reasons to perform physiotherapy in cats are generally related to injuries sustained as a result of trauma or joint conditions.<sup>2</sup> Cats often make willing patients but sessions should be kept short and interesting, and should be undertaken in a quiet, relaxed environment.<sup>3</sup> Cats are most often referred for rehabilitation for osteoarthritis,<sup>4</sup> fractures, neurological conditions, femoral head and neck excision (FHNE) and weight reduction. Cats appear to have fewer developmental orthopedic diseases and orthopedic injuries as a whole.<sup>5</sup>

## Helpful hints for handling stress, anxiety and pain

If cats are faced with something stressful, their most common method of alleviating the stress they feel is to create distance between themselves and the stressor, i.e. they use flight.<sup>6</sup> If they can't run, they may attempt to groom or "waste time" hoping the stress goes away. As a last resort, they use aggression.

When the cat arrives at the rehabilitation facility or even if the rehabilitation is held in the patient's home, the kitty may already be stressed or painful from whatever condition has prompted the need for therapy. Transportation to the vets can be stressful causing them to toilet or even vomit, something that may be particularly unpleasant for these obsessively clean animals.<sup>7</sup> Waiting rooms can be extremely stressful for cats. Use pheromone diffusers like Feliway® or Comfort Zone® in the hospital/rehabilitation facility and exam rooms. Feliway® is clinically proven to help reduce stress related to traveling and visiting the veterinarian.<sup>8,9</sup> Keeping waiting times to a minimum, having separate areas for dogs and cats, or providing benches, so that the cat carrier can be placed off the ground, thus helping the cat feel less exposed. Examination areas should be quiet and secure, with little or no traffic to cause disruption. Gather any equipment required for the visit prior to getting the cat out of the carrier. Take time to allow the cat to become familiar with the surroundings. Allow it to explore the area and feel more comfortable. Remember "less is more" in terms of restraint for cats. Avoid sudden or rapid movements, as these can be threatening. Encouraging the owner to bring the cat's own bedding and toys not only makes the owner feel useful, but can also help the patient feel more settled through the retention of the more familiar scent. This time spent with the patient helps to develop a rapport between cat and nurse. Cats can mask signs of pain. The rehabilitation nurse **must** be skilled at recognizing pain in feline patients. The therapy will have little to no benefit if the patient is painful. Immediately alert the rehabilitation veterinarian if you suspect pain in your patient. Do not proceed with any stressful therapy until the cat is no longer suffering from pain. The owner should be asked prior to the first visit what "treats" their cat enjoys. Having a variety of low-calorie, palatable treats on hand is helpful in bonding with the kitty and goes a long way to establishing trust for future rewards after therapeutic exercises.

## Manual Therapy

The therapies that veterinary technicians/nurses can perform include Massage, Range of Motion Exercises, Stretching.

### Massage

Massage is defined as the therapeutic manipulation of the soft tissues of the body<sup>1,10</sup> and has mechanical, physiological, and psychological effects.<sup>11</sup> When massaged, muscle is mechanically stretched, reducing its tone and increasing its pliability. Over time, this can lead to a reduction in muscle soreness and an increase in connective tissue strength.<sup>12</sup> Scar tissue is also mobilized and softened, helping to maintain movement between tissues and restore function after injury or surgery.<sup>12</sup> Physiologically, massage increases interstitial pressure, which in turn increases venous and lymphatic flow. Massaging in a distal to proximal direction is recommended to move fluid from the extremities back to the central circulatory system.<sup>11</sup> As the hands move, squeeze, and stretch the tissues, pressure differences are created between one tissue and another. High pressure pushes old fluid and irritating metabolites into

the vasculature and areas of low pressure draw in new fluid. This flushing effect may be responsible for decreasing inflammation, pain, and muscle fatigue.<sup>12</sup> The body and mind are both linked to the skin via the nervous system. Different types of touch will elicit different types of mental responses. Psychologically, massage decreases stress and anxiety, produces relaxation, and improves emotional wellbeing.<sup>1,10,11,12</sup> The types of techniques used are Stroking, Effleurage, Compression (kneading, wringing), Friction, Percussion.

### **Range of motion exercises**

**Passive ROM exercises** manually exercise joints through their natural pain-free range without voluntary muscle contraction. They are typically performed in patients with stiffness secondary to surgery or in weak patients unable to walk on their own.<sup>13</sup>

**Active ROM exercises** put joints through active muscle contraction. Activities include using cavaletti rails (i.e., a system of rails placed at adjustable heights and widths); climbing stairs; swimming; and walking in water, sand, or tall grass.<sup>13</sup>

### **Stretching**

Stretches are also passive movements that help to improve or restore full range to a joint or full length to a muscle. Stretches create plastic (permanent) deformation and an increased length/range.<sup>1</sup> Long-term effects of stretching include adding sarcomeres to muscle mass.<sup>1</sup> Stretching is generally more effective if preceded by light exercise, massage, heat or therapeutic ultrasound, all of which increase the extensibility of collagen.

### **Electrotherapy**

Many electrotherapy modalities can be used on feline patients. All possess inherent dangers and should only be used by operators who have received specialist training.

### **Laser<sup>14</sup>**

The mechanisms by which low-level laser therapy (LLLT) decreases pain includes release of endogenous opioids, changes in conduction latencies of nerves, increase of cellular metabolism, increase in circulation, promotion of neovascularization, decrease in fibrosis formation and reduction of inflammation. Feline conditions that respond well to LLLT include osteoarthritis,

degenerative lumbosacral stenosis, fractures, chronic wounds and stomatitis. Most cats tolerate the treatment well as it is not in itself painful and requires a relatively short time to deliver the treatment.

### **Ultrasound<sup>5</sup>**

For deep tissue heating in veterinary physical therapy, therapeutic ultrasound (ThUS) is the commonly used modality to improve the extensibility of connective tissues, to decrease pain and muscle spasms, and to promote tissue healing and improve the quality of scar tissue. The biological effects of ultrasound differ depending on the used mode: using a continuous mode, the thermal effects are maximized and it is therefore primarily used for tissue heating before stretching. If pulsed ThUS mode is used, the thermal effects are decreased but other effects occur based on the phase of tissue repair, including the acceleration of the inflammatory process, increased fibroblast proliferation, and increasing tensile strength of healing tissues.

### **Neuromuscular electrical nerve stimulation (NMES)<sup>5</sup>**

Electrical Stimulation (ES) is a useful therapeutic modality and is often possible in cats. In fact, many cats enjoy this modality. Nevertheless, cats must be introduced carefully to ES in order for them to become familiar with ES. Principally, ES can be used for muscle strengthening and pain control. Neuromuscular electrical stimulation is a form of ES whereby current is used to stimulate a motor nerve and cause the contraction of a muscle or muscle group. To stimulate a denervated muscle (e.g., in patients with spinal cord injuries), the muscle fibers must be excited directly and the ES is then called electrical muscle stimulation. For pain control, analgesia occurs because of several mechanisms such as the gate control theory and the release of endogenous endorphins. The most commonly used type of ES for pain control is transcutaneous electrical nerve stimulation.

### **Therapeutic exercises**

Therapeutic exercises are one of the most important parts of the rehabilitation process. The design of the therapy program depends strongly on the needs of the individual patient and should ensure that the exercises can be performed safely without the risk to worsen the symptoms. The exercises should be selected based on the stage of tissue repair, and therefore, the rehabilitation veterinarian should understand the underlying pathology, the expected recovery progress, and biomechanical considerations.<sup>15</sup> Exercise represents the final element in the process of helping a cat achieve optimum function following injury, surgery or disease. If assistance is required for the animal to perform an exercise, this can be provided manually or with the aid of 'physio-rolls', slings, harnesses or carts.

#### **Therapeutic exercise may be used to improve<sup>1</sup>**

- Aerobic capacity and endurance
- Agility, coordination and balance (static and dynamic)

- Gait and locomotion
- Neuromuscular capability and movement patterning
- Postural stabilization
- Range of motion
- Strength and power
- Pain

#### Types of exercise<sup>1</sup>

- **Strengthening** - the quality or state of being strong; bodily or muscular power; vigor. Strengthening exercises include such activities as running, slope work (uphill and downhill), use of leg or body weights, dancing, wheelbarrowing and swimming.
- **Flexibility (suppleness)** - the quality of bending easily without breaking. Flexibility is important for cats as it also helps to protect against injury. Flexibility exercises include activities that make the cat reach or stretch for something, or encourage crawling under, through or over obstacles.
- **Balance and proprioception** – Balance is an even distribution of weight enabling someone or something to remain upright and steady Proprioception is the ability to sense stimuli arising within the body regarding position, motion, and equilibrium. Proprioception diminishes with age, and is also affected by injury or surgery, especially following neurological damage. All cats need good balance and proprioception to function normally. Balance exercises include activities requiring rapid responses to changes in supporting surface (e.g., wobble cushion, balance pad, trampoline) and changes of direction when moving, as well as playing with toys, dancing and standing on a gym ball. Proprioception exercises include weight shifting, walking in circles or weaving, walking over obstacles of various shapes, height and spacing, and walking over different terrains.
- **Endurance (stamina)** - is the ability of an organism to exert itself and remain active for a long period of time Endurance exercises are less relevant to cats, which rely more on stealth and rapid movements to catch prey.

#### Land-based exercises

Land based exercises should form the major component of exercise programs designed for cats because, being land animals, they must obviously be able to cope with life on land. Examples of land-based exercises are Bicycling, Assisted Standing, Weight Shifting, playing with Laser Lights, Toys, and Treats, Crawling Under Cavaletti Poles, and Wheelbarrowing and Dancing.

#### Water-based exercise

Hydrotherapy is one of the most useful forms of rehabilitation therapy, and has become a very popular modality for dogs to help in the recovery of musculoskeletal and neurological conditions. Water provides an ideal environment for performing non-concussive active exercise, and through its natural properties (buoyancy and resistance) can help improve limb mobility, strength and joint ROM.<sup>16</sup> There are several forms of hydrotherapy, including pools and water treadmills. The rehabilitation technician/nurse should accompany the cat into the water to provide assistance and reassurance until it is accustomed to the activity. Some cats may be more accepting of water if it is initially introduced to it in the home environment (bath or sink), as a gradual progression from being bathed to being rehabilitated is often more acceptable. The presence of the owner can often provide confidence and reassurance to nervous cats. At no time should any animal be left unattended during a hydrotherapy session, because water aspiration and drowning are real risks. Therefore, a lifesaving vest in a small size for cats should be utilized. Postoperatively, hydrotherapy may be employed as soon as the surgical incision has established a fibrin seal (generally 48–72 h post-surgery), although in practice most hydrotherapy with dogs is started 2–3 weeks following surgery.<sup>17, 18</sup>

#### Conclusion

Physical rehabilitation for cats is different than that for dogs. The plan must be creative, fun, easy to follow and basically have short intervals for cats. The attention span for cats is much less than that of dogs. Prior to beginning any rehabilitation, the cat must be examined by the rehabilitation veterinarian, checked to make sure pain is not an issue, observed to ensure that stress is not a huge factor for the patient and have the rehabilitation veterinarian draw up the therapeutic plan. The rehabilitation veterinary technician or nurse will most likely be interacting a great deal with the owner, carrying out parts of the therapeutic plan and monitoring comfort for the cat. Feline patients will benefit from a rehabilitation program just like any patient. It's all a matter of learning to speak "cat".

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