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## The Geriatric Patient

It is very common for people to see their dogs as part of the family, often developing very close bonds throughout the dog's life and into the dog's geriatric years. This is why it can be very disheartening when people notice their dog showing signs of reduced mobility, increased discomfort and decreased interaction with the family. While many people may view these signs as their dog "just getting old," these are actually symptoms caused by various conditions common to the geriatric dog. Luckily, many of these conditions can be eased through the combination of medical management and rehabilitation to improve the dog's overall quality of life.

A few common conditions of the geriatric dog include musculoskeletal and neurologic changes, behavioral and cognitive changes, metabolic changes, cancer, cardiopulmonary and renal diseases, and urinary and fecal incontinence. If you have a geriatric dog, it is important to schedule frequent examinations with your veterinarian (at least every 6 months) to perform tests such as a complete blood count, thyroid panel, urinalysis, fecal testing, serum biochemistry and a comprehensive physical examination so they can diagnose any conditions early and manage these conditions medically as necessary. The diagnosis and treatment of systemic conditions will be important when developing a physical rehabilitation program for the geriatric dog and may affect and/or direct certain aspects of therapy.

Physical rehabilitation goals for the geriatric patient include pain management, improving mobility, increasing strength and providing client education for appropriate home modifications.

Pain management can include LASER therapy, Targeted Pulsed Electromagnetic Field, acupuncture, and manual therapies. LASER therapy works on a cellular level to inhibit inflammation, reduce pain, increase the release of endorphins and enkephalines, improve lymphatic drainage, improve cartilage maintenance, and promote tissue healing, among many other things. Targeted Pulsed Electromagnetic Field is a non-pharmaceutical anti-inflammatory device that works by sending micro-currents through damaged tissues, causing a series of chemical reactions that ultimately leads to an upregulation of nitric oxide, which is the body's own anti-inflammatory molecule. This process helps to reduce inflammation, reduce swelling and promote tissue healing. Acupuncture initiates immune and anti-inflammatory mechanisms within the body, accelerates tissue healing, and reduces pain through the release of endorphins and serotonin. Manual therapies performed by a canine rehabilitation therapist, such as soft tissue mobilization, joint compressions and low-grade joint mobilizations, all have pain management benefits by improving circulation, reducing swelling, inhibiting transmission of

pain impulses, stimulating mechanoreceptors and reducing muscle tension. Supplements and nutraceuticals can also play a role in stabilizing comfort.

Once pain is reduced and being managed properly, the focus of rehab will be to improve mobility. Manual therapy techniques such as medium-grade joint mobilizations, passive joint range of motion and manual stretching of musculature all help to improve mobility. These techniques promote proper joint mechanics, reduce joint stiffness and increase muscle extensibility. Proprioceptive training and functional mobility training also improve mobility by reeducating the patient to think about where his or her limbs are in space and how to use them appropriately during functional tasks, such as moving from sit to stand and performing obstacle negotiation. Assistive devices, such as special harnesses, can also be used to assist with mobility. Biological therapies, such as platelet-rich-plasma and stem cell therapy, can have a positive effect on arthritic joints, thereby helping to improve mobility as well.

Strengthening the geriatric patient is the next step in the process. Therapeutic exercises and the underwater treadmill are both methods that promote strengthening. Specific therapeutic exercises are determined by the rehabilitation therapist based on the individual limitations and deficits of the patient, all with the goal of increasing strength, weight bearing and muscle recruitment. The underwater treadmill has a number of properties that are beneficial for the geriatric patient who is medically stable. The buoyancy of the water reduces the bone-on-bone grind of arthritic joints and reduces the body weight of the patient, which normalizes weight bearing of otherwise painful and weak limbs. The resistance of the water causes the patient to work harder to move their limbs through the water compared to moving their limbs on land, thereby strengthening their muscles in a low-impact environment. Hydrostatic pressure, which is the compressive pressure of the water surrounding the submerged portions of the body, promotes circulation throughout the body and provides a proprioceptive effect when the body is in motion.

Home modifications are an important part of improving the quality of life of the geriatric patient, and are a necessary part of the rehabilitation program. Non-slip flooring, such as runners or yoga mats strategically placed around the house will allow your dog to move around the home easier, with less chances of slipping and improved ability to get up from the floor. Keeping the hair on the bottom of your dog's paw pads trimmed will also help to reduce slipping during gait and functional mobility. Raised food dishes will decrease the amount of forward weight shifting your dog must perform while eating and drinking, which will reduce excessive strain on the front limbs and neck. Soft bedding, such as an orthopedic mattress or "egg crate" mattress, will prevent pressure sores over bony prominences.

While aging is inevitable, and immortality impossible, advances in science and rehabilitation have allowed for a much more nuanced approach to the geriatric patient. All of the aforementioned rehabilitation aspects have been shown to increase comfort, expand function and improve the overall quality of life for your aging pet. So hopefully when you feel your pet is "just getting old" you will now be inspired to look a little deeper into the causes and be an advocate for your best friend's quality of life.