A comprehensive mobility assessment goes beyond the orthopedic or neurologic examination for the localization of pathology. This assessment involves attention to the dog’s posture and stance, a hands-on examination with special attention to soft tissue structures, and the performance of functional assessments. A comprehensive mobility assessment can guide advanced diagnostic testing as well as providing a foundation in the formulation of a successful treatment plan.

Objective kinetic and kinematic data can be used as an objective measure of treatment intervention over time but can also be used to evaluate progress of clinical patients. Force plate and pressure sensitive walkway systems both offer the clinician the ability to obtain useful kinetic data, whereas additional equipment is required to obtain kinematic data. Which system is preferred depends on what specific data the researcher or clinician hopes to acquire; both are accurate and consistent, and each offers pros and cons compared with the other that must be considered.

Many imaging options are available to the practitioner both in-house and on a referral basis to help make a definitive diagnosis for orthopedic injuries. To guide treatment, a complete understanding of the nature and extent of the injury is ideal. While a thorough orthopedic physical examination is the first step, a complete diagnostic work-up will include at least one and often more than one imaging modality. The goal of this article is to discuss the imaging options for some of the more common orthopedic issues encountered in dogs to help guide the practitioner through the selection of which should be considered to accomplish a diagnosis.

This article highlights the recommendations and considerations for maintaining a healthy canine lifestyle. A key component of a healthy lifestyle is the enhancement and optimization of mobility. Mobility is essential in
maintaining a high quality of life and involves the interplay of a dog’s structure, posture, body condition score, physical exercise, and a healthy human-animal bond throughout a dog’s lifetime.

Evidence-Based Complementary and Alternative Canine Orthopedic Medicine

Erin Miscioscia and Jennifer Repac

The use of complementary and alternative veterinary medicine (CAVM) continues to become more widespread, especially for the management of chronic pain conditions such as canine osteoarthritis. Many patients have comorbidities that preclude traditional medical options, have not adequately responded to conventional therapies, or have owners interested in pursuing a complementary approach. Evidence-based CAVM can serve as a safe and effective adjunct to manage chronic pain conditions. There is growing evidence in the veterinary literature for the use of acupuncture and some herbal supplements in the multimodal management of canine osteoarthritis. The majority of evidence supporting chiropractic is limited to equine and human literature.

Clinical Guide to Obesity and Nonherbal Nutraceuticals in Canine Orthopedic Conditions

Barbara Esteve Ratsch, David Levine, and Joseph J. Wakshlag

The typical canine rehabilitation patient with orthopedic disease may differ in its nutritional needs, with the assumption that most patients will be on a complete and balanced commercial dog food that is not enriched with agents for ameliorating their condition. For a significant number of rehabilitation patients, obesity is a major issue where hypocaloric diet plans are often implemented and are covered extensively elsewhere (VCNA Small Animal Practice May 2021). The focus of this article will be implementation of physical activity or structured physical exercise protocols and how they might be used in combination with a typical hypocaloric diet plan, a diet low in calories. Considering the limited information regarding physical activity or structured exercise programs in dogs, a human comparative assessment of efficacy is fundamental as a baseline of information regarding typical interventions. In addition, many of these long-term rehabilitation cases typically exhibit osteoarthritis (OA) and as part of case management, there is a need to implement nutrient or nutraceutical intervention to either diminish the progression of OA or help with pain control measures, particularly for the nonsteroidal anti-inflammatory intolerant patient. Nutraceutical intervention comes in many forms from botanicals to nutritional enhancement; botanicals will be covered elsewhere in this issue. This overview of nutraceuticals will cover nonbotanical interventions including fish oil, glucosamine/chondroitin, avocado/soybean unsaponifiables, undenatured collagen, green lipped mussel, and egg shell membrane supplementation.

Joint Injection Techniques and Indications

Chris W. Frye and Allison Miller

Indications for injecting synovial joints may include diagnostic, therapeutic, or combination. Diagnostic injectates aim to reduce or eliminate the
contribution of pain to lameness and may be assessed both subjectively or objectively by the clinician. Diagnostic joint injections are not specific for a disease and their limitations must be remembered when interpreting a response—including false-negative results. Patient selection and sterile technique throughout the procedure minimize adverse effects. Risks of intra-articular (IA) injections may include transient soreness, cartilage damage, and, rarely, septic arthritis. Ultrasound guidance with a trained clinician may provide further benefits including the reduction of periprocedural discomfort, reduction in iatrogenic cartilage damage during needle insertion, and improvement in synovial fluid feedback. The removal of some synovial fluid before administering an IA injection should be considered to confirm needle placement, provide diagnostic sampling, and help accommodate injectate volume.

Intra-articular Injectates: What to Use and Why 967

Peter J. Lotsikas

Intra-articular injections are a nonsurgical treatment modality that can be used to manage osteoarthritis, naturally occurring or surgically induced acute synovitis, and intra-articular ligamentous or tendon injury. This option may be assistive for patients in which other conservative modalities are ineffective, or in conjunction with other forms of treatment. It may also be used as the primary treatment. Injectates labeled for use in companion animal joints include corticosteroids and viscosupplements. Additional injectates, that are not specifically approved for use in companion animals are but are reported in the literature, include orthobiologics and a radioisotope of Tin-117m.

Platelet-Rich Plasma as an Orthobiologic: Clinically Relevant Considerations 977

Brittany Jean Carr

Platelet-rich plasma (PRP) is an autologous blood-derived product processed to concentrate platelets and the associated growth factors. PRP has been shown to be relatively well-tolerated and safe to use for a number of conditions in humans, equines, and canines. There are multiple commercial systems that have been validated for canine use. These systems use a variety of methodologies to produce a PRP product. However, PRP products have been shown to differ greatly between systems. Further study is needed to fully elucidate optimal component concentrations for various indications.

Physical Rehabilitation for Small Animals 997

Lauri-Jo Gamble

Physical rehabilitation incorporates several elements, including but not limited to therapeutic exercises, manual therapy, and physical modalities. Understanding of the effects, indications, contraindications, and precautions is essential for proper use, while understanding of the diagnosis, assessment of the stage of tissue healing and repair, and accurate clinical assessment of the functional limitations are essential when establishing a physical rehabilitation plan.
Patients with osteoarthritis and other orthopedic conditions may benefit from a home exercise program, as well as lifestyle modifications based on their condition. Home exercises can be performed to improve a pet’s range of motion, weight-bearing, strength, and overall mobility. A home exercise program should be designed to improve the patient’s impairments, and progression of exercises should occur depending on the patient’s response and ability to master each exercise. Modifications to the pet’s home environment should be considered so the pet can maneuver around the house and perform its daily tasks.

Extracorporeal Shockwave Therapy for Musculoskeletal Pathologies

Leilani Alvarez

Extracorporeal shockwave therapy has multiple applications in veterinary musculoskeletal pathologies. Primary indications include tendinopathies, malunion fractures, patellar desmitis, and osteoarthritis. There are multiple types of shockwave generators. Current evidence in the canine literature is primarily on electrohydraulic and radial pressure wave generators. Treatment protocols from one machine are not equivalent to other machines, and data should not be extrapolated between studies.

Conditioning Dogs for an Active Lifestyle

Julia Tomlinson and Megan Nelson

The aim of conditioning is to remodel body tissues in preparation for the physical demands of activity. Body tissues need strength to produce and withstand the forces generated during movement. Body tissues remodel in response to load, for example, training can remodel and increase the size of tendons, but this takes time. Training does more than just strengthening tissues; it also improves tissue response to exercise and recovery time. The National Sports Medicine Institute in the United Kingdom states “regular exercise increases muscle tone, facilitates good circulation, improves strength, agility and flexibility and improves the rate of waste product disposal.”

Economic and Clinical Benefits of Orthopedic/Sports Medicine and Rehabilitation

Juliette Hart

Orthopedic/Sports Medicine and Rehabilitation can be both a valuable comprehensive patient care service and economic addition to many veterinary practices. As partners within the hospital, the Orthopedic/Sports Medicine and Rehabilitation service not only provides consultations for all patients with the ultimate goal of return to function (regardless of their “job”), the service also contributes to the recovery of patients in hospital, provides critical pain management and mobility assistance for hospitalized and postoperative patients, and champions a wide variety of supportive
patient care solutions in many services within a hospital. After patient discharge, the team can then aid in the client and patient recovery at home with key home exercise programs and communications to bolster the patient’s home recovery, ongoing rehabilitation, and eventual return to function.