



## Introduction

- Nearly 43 million Americans —almost one in every six people, including nearly 300,000 children — have some form of arthritis.\*

\*Source: Arthritis Foundation 1999

- Arthritis costs the U.S. economy \$64.8 billion per year in medical care and lost wages.\*

\*Source: Arthritis Foundation 1999

- The number of dogs suffering with arthritis is unknown, but is estimated to be quite high. By one estimate\* as many as 10 million dogs in the U.S. (about 20 percent of dogs over 1 year of age) are affected by osteoarthritis.

\*Pfizer Animal Health Survey 1996

Osteoarthritis (OA), also called degenerative joint disease (DJD), is the most common form of arthritis diagnosed in small animals. It is the result of damage and erosion to the articular (joint) cartilage from excessive wear and tear. This can be due to a life of hard joint use or very often secondary to a hereditary / congenital joint problem such as hip dysplasia that results in premature cartilage damage. Pain is associated with inflammation of the joint and direct bone on bone contact within the joint. Normally the joint surfaces are kept apart with a film of joint fluid. In addition to creating the lubrication and majority of the shock absorbing in the joint, joint fluid is the sole source of nutrients for the articular cartilage.

## Treatment

Although there is no specific treatment or cure for OA, a combination of steps can be taken to improve the quality of life of patients living with OA.

## Activity

The single most important step in treating osteoarthritis is daily, regular, low impact activity. Joint fluid is produced during joint movement. Patients should be encouraged to begin each day with a slow leash controlled walk. Although a 15-20 minute walk is usual, we normally let patients dictate how long the walk can be. Avoid high impact activities like rough housing, ball chasing, running, jumping and stairs. Application of a warm compress to the affected joint before and after exercise may be comforting.

## Weight

Studies in both humans and dogs have shown that just being 10% overweight can have a significant impact on the severity of the signs associated with OA in certain joints. For a 50 pound dog that's only 5 extra pounds of body weight! It is imperative that overweight patients lose weight and normal dogs do not gain excessive weight. In addition to the calories burned during low impact walks, a decrease in the amount of dietary calories consumed is also required. Weight reduction formula diets are available from your veterinarian and may represent the safest way to restrict calories during weight loss.

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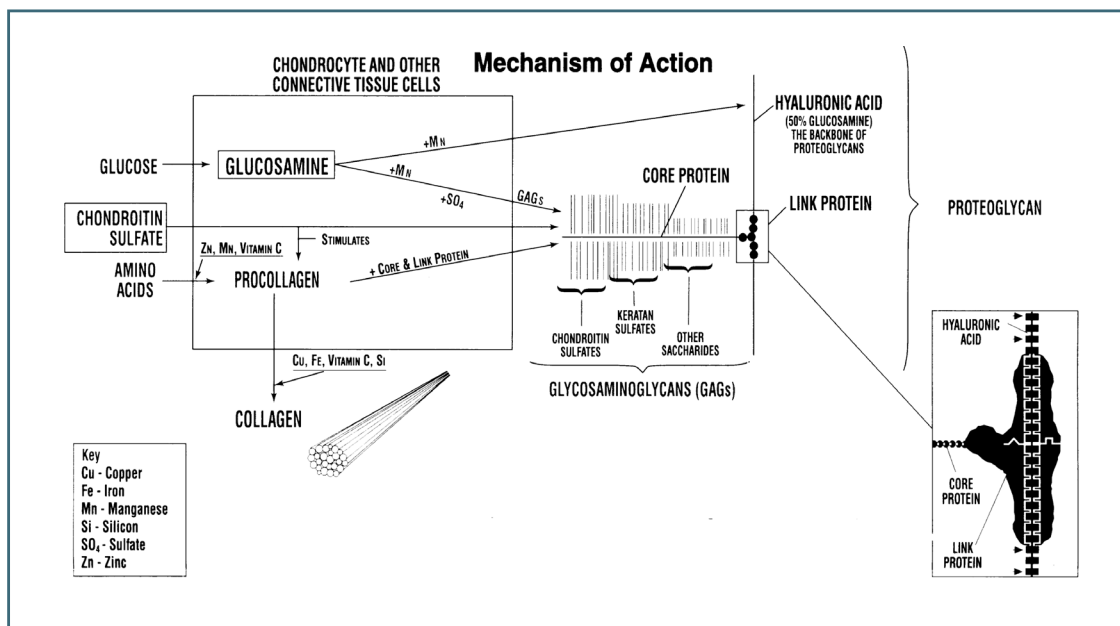
## Physical Rehabilitation and Conditioning

Pain, inflammation, muscle spasms, muscle weakness, decreased joint range of motion and edema all contribute to functional loss and decline in our osteoarthritic patients. There are a variety of modalities that have been widely used in the treatment of human osteoarthritis that have also translated nicely for the treatment of our canine and feline companions, as well.

Heat/cold packs, electrical stimulation, TENS, and laser therapy are among the modalities used to help reduce pain and inflammation. Furthermore, therapeutic exercises such as range of motion, stretching, balance/proprioception and aquatic exercises have been shown to be effective in improving overall strength, range of motion and balance. Evaluations and treatments to determine the appropriate use of modalities and therapeutic exercises can be accessed through our surgery and rehabilitation departments here at Veterinary Medical and Surgical Group (VMSG). We offer comprehensive rehabilitation services which are rendered by trained and certified rehabilitation specialists.

## Joint Supplements

A large number of nutritional supplements are advertised to help promote the production of healthy joint fluid and thus healthier joint cartilage. Glucosamine sulfate is one such supplement. Although this supplement has been around for over 20 years, it has only recently gained widespread popularity. Omega-3 and 6 Essential Fatty Acids (EFAs) are also gaining popularity in the management of osteoarthritis. Sources of Omega-3 and 6 include fish oils (especially Salmon oil), as well as oils derived from flaxseed, avocado and soybean. Special dog foods are now being formulated with these ingredients to promote maximum joint health. There is no regulation of Nutritional Supplements. As such, consumers should be aware that there may be no guarantee of product purity or consistency between manufacturers or batches. Likewise, pet owners must be cognizant that other so called “natural” or homeopathic products have not been adequately tested for safety or effectiveness.



## Joint Fluid Precursors

Hyaluronic acid, or hyaluronate (Legend®, Hi-Visc®), and polysulfated glycosaminoglycan or PSGAG (Adequan®) injections may improve the quality of the joint fluid by providing a source of these joint fluid building blocks. It is presumed that healthy joint fluid means better lubrication and nutrition to the articular cartilage. Although the hyaluronate and PSGAG molecules may only be present for a few days to a week, the effects may be more long lasting. A loading schedule of weekly and twice weekly injections may be needed initially.

## Medications – Nsaids, Nonsteroidal Anti-Inflammatory Drugs

Non-steroidal anti-inflammatory drugs (NSAIDs) are the most common class of drugs used to treat the pain and inflammation of OA. Carprofen (Rimadyl), deracoxib (Deramaxx), firocoxib (Previcox), tepoxalin (Zubrin) and meloxicam (Meticam) are some NSAIDs that have been tested and approved for use in dogs. Meloxicam (Meticam) is one of the few NSAIDs that might be safe to use in cats. NSAIDs marketed for human use may not be safe for other species. The most common side effect of NSAIDs is gastrointestinal irritation (stomach upset) and ulcers. In addition, kidney and liver damage has been reported on a rare occasion. If your pet is taking NSAIDs, any sign of nausea, vomiting, diarrhea or inappetance (loss of appetite) should be reported to your veterinarian and the medication discontinued. NSAIDs can have unexpected side effects in certain individuals. Pets receiving NSAIDs on a regular basis should have regular blood and urine tests to monitor for toxicity.

## Medications – Analgesics

Analgesics or pain relievers may be required in severe or advanced cases of osteoarthritis. Some of the drugs that may be indicated to allow a patient to function or even exercise more comfortably include Tramadol (a narcotic), gabapentin or amantadine (drugs that modify pain perception) or Duralactin (a dried milk protein concentrate derived from hyperimmunized cows).

## Stem Cell Therapy – Regenerative Medicine

Stem cell therapy, or Regenerative Medicine as the broader category is known, is gaining favor as a minimally invasive treatment option to treat osteoarthritis. Fat is surgically harvested from your pet in a minimally invasive fashion. This fat or adipose tissue is processed and undifferentiated mesenchymal (precursor) cells are isolated and concentrated. This process requires a few days. These cells are then injected into the affected joint. These are your pet's own cells and thus pose no risk of transmitting disease or rejection. Surplus cells are stored at sub-freezing temperatures and can be injected at later dates without need to surgically harvest more fat. Platelet Rich Plasma (PRP) is also gaining some interest in musculoskeletal injury and osteoarthritis treatment. A blood sample is drawn from the patient, spun down in a special centrifuge and separated into various layers or components. The plasma layer that has high concentration of platelets is retrieved and injected into the affected tissue. This is PRP. PRP is not stem cells, but like the fat derived cells, it is a stimulator or recruiter of the body's own healing and response to injury. Alternatively, actual stem cells can be retrieved from bone marrow, sent to the laboratory and cultured. After 2-3 weeks in cell culture, enough stem cells have grown to be injected into the affected joint. Although, growth of new healthy cartilage is not expected, clinical improvement may be noted for many months. Stem cells might be expected to be most effective when combined with PRP and surgeries that alter the biomechanics of the joint.

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## Radiation Therapy

Radiation therapy can decrease the pain of a joint by damaging the nerve endings responsible for pain sensation. Radiation is given over only 3 treatments at a dose much lower than would be given to treat cancer. Early published research suggests that many patients benefit from this non-invasive treatment approach. Partial responders can be re-treated again in the future. Surgery might still be an option on patients who do not respond to radiation therapy.

## Surgery

Despite all available treatments, there is no known way to reverse OA. In the end, when nonsurgical management is no longer effective in controlling the clinical signs, surgeries, such as off-loading osteotomies (cuts made in the bone to shift the weight to healthier regions in the affected joint), joint resurfacing (Elbow), partial or total joint replacement (Hip, Knee and Elbow joints can now be replaced), joint excision (“Excision Arthroplasty”), joint fusion (Arthrodesis), or denervation (Neurectomy) may offer return of pain free use of the affected limb. Your pet's surgeon can discuss appropriate surgical options with you in more detail.

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