

## Dietary Considerations for Joint Health

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Just like humans, as pets age they can suffer from sore joints due to chronic inflammation called osteoarthritis. Fortunately, the right diet can help maintain joint health and keep pets comfortable and mobile. The three key focuses for a healthful joint diet are:

### A Feeding Strategy that Keeps Pets Lean

Osteoarthritis is more common in overweight and obese dogs.<sup>1</sup> A lifelong study in dogs has shown that becoming overweight increases the prevalence of hip and shoulder joint problems and increases the severity of elbow joint osteoarthritis when compared to lean control dogs.<sup>2</sup> Maintaining a healthy body weight has also been shown to delay the onset of hip joint osteoarthritis, with overweight dogs showing evidence of hip disease on x-rays at six years of age versus twelve years for lean control dogs.<sup>3</sup> While similar studies have not yet been done in cats, it is known that older cats commonly have signs of degenerative joint disease on x-rays even in the absence of observable signs, demonstrating that osteoarthritis is an unrecognized problem that deserves further attention in senior cats.<sup>4</sup> Therefore, less energy dense foods like Natura's Senior, Low Fat and Weight Control foods can be very helpful in keeping pets lean. And keeping lean can help reduce and/or delay the development of joint problems. Since extra weight puts additional stress on a pet's joints, certain foods, like EVO® Weight Management which is designed for active weight loss, can be a great option to help pets shed a few pounds and reduce the wear and tear on their joints.

### Increased Levels of Long-Chain Omega-3 Fatty Acids

Long-chain polyunsaturated fatty acids play an important role in the body by serving as precursors of inflammatory mediators which affect the presence and severity of inflammation with its associated swelling and pain. Long-chain omega-6 fatty acids, such as arachidonic acid, serve as precursors for pro-inflammatory mediators that can worsen joint health and pain. In contrast, long-chain omega-3 fatty acids, such as eicosapentaenoic acid (EPA) found in marine fish and fish oils, serve as precursors for mediators that are less inflammatory, resulting in an overall reduction in inflammation and discomfort. In addition to their role in reducing pro-inflammatory mediators, supplementation with long-chain omega-3 fatty acids has been shown to reduce matrix metalloproteinases (MMPs) within the joints of dogs.<sup>5</sup> MMPs are a family of enzymes that mediate the breakdown of the extracellular matrix in connective tissue, and can contribute to progressive cartilage damage within arthritic joints.

Because EVO Herring & Salmon foods are very rich in marine fish and fish oils, they are naturally high in long-chain omega-3 fatty acids, making them an ideal choice for pets with joint concerns. Although supplementation with glucosamine and chondroitin sulfate is generally reserved for Natura's Senior and Large Breed foods, Natura has added them to EVO Herring & Salmon dog food and EVO Herring dog treats because of their unique potency in long-chain omega-3 fatty acids making them ideal products for joint health.

### Adding Glucosamine Hydrochloride and Chondroitin Sulfate

Glucosamine and chondroitin sulfate are components of proteoglycans which serve as the building blocks of glycosaminoglycan chains that provide "cushion" within joint cartilage. Supplementation has been used in both humans and animals to promote proteoglycan production, and have been shown in vitro studies to provide anti-inflammatory, anti-catabolic (breakdown prevention) and chondroprotective effects.<sup>6</sup> Studies in dogs have also demonstrated that supplementation of glucosamine hydrochloride and chondroitin sulfate in dogs promotes normal joint cartilage metabolism, decreases the signs of pain, and improves the ability to bear weight.<sup>6-7</sup> The use of glucosamine hydrochloride and chondroitin sulfate in cats has been shown to be safe and well tolerated.<sup>8</sup> Therefore, cats are also likely to benefit from dietary supplementation of glucosamine hydrochloride and chondroitin sulfate ingredients. Glucosamine hydrochloride and chondroitin sulfate is used in many of Natura's Senior and Large Breed foods as well as in both EVO Herring & Salmon dog food and EVO Herring dog treat.



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