

# Injectable Joint Therapy

## Making The Right Choice For Your Horse

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Dr. Maureen Kelleher

**Dr. Kelleher performing a lameness examination. Horse owners have a range of options when selecting injectable arthritis treatments. The first step in the process is a thorough examination by a veterinarian.**

No matter your chosen discipline, horses put considerable stress and strain on their joints during exercise. Just as with our joints, excess trauma can lead to osteoarthritis (OA). The result of OA can be reduced performance, lameness and behavior changes due to pain. This article describes the equine joint and effects injectable joint therapies can have on the joint.

Joints have five parts: articular cartilage, bone, joint capsule, synovial membrane, and synovial fluid. The articular cartilage is contoured to the subchondral bone forming the basis of the joint. The synovial membrane lines the joint capsule and serves to produce and contain joint fluid. Joint fluid is a lubricant, nourishing articular cartilage, and removing waste produced. The cartilage does not have its own blood supply so all functions that would be provided to tissues by means of the vascular system is provided by the synovial membrane and joint fluid.

When the joint undergoes mild to moderate repetitive strain or an acute overload injury, some or all of the five parts of the joint may be affected, resulting in decreased function of each part. When inflammatory proteins accumulate in the joint due to trauma, synovial membrane and synovial fluid function is reduced, leading to poor nutrition to the articular cartilage and buildup of waste products.

Most injectable joint therapies are aimed at improving the quality of joint fluid or supporting the components of articular cartilage. The most commonly recommended products fall into three categories: hyaluronic acids (HA) polysulfated glyco-saminoglycans (PS-GAG), and polysulfated xylans (PX or PPS).

The synovial membrane produces hyaluronan, which serves as a lubricant to provide smooth gliding between articular cartilage surfaces of the bones. Additionally, hyaluronan molecules connect collagen fibers to the structural protein portion of the cartilage.

The goals of treatment with a product containing **hyaluronic acid (HA)** is to trigger the synovial membrane to produce better quality hyaluronan, improve lubrication of the joint and provide HA for the cartilage. While there are minimal studies on HA for OA in horses, the hallmark study noted that HA reduced the fraying of the cartilage surface in horses with OA.

Cartilage is composed of collagen, water, and a non-cellular matrix. As noted, HA connects collagen to the matrix. Within the matrix are chains of repeating protein-containing subunits (GAG - glycosaminoglycans) all serving to house the water portion of cartilage and create viscosity of joint fluid.

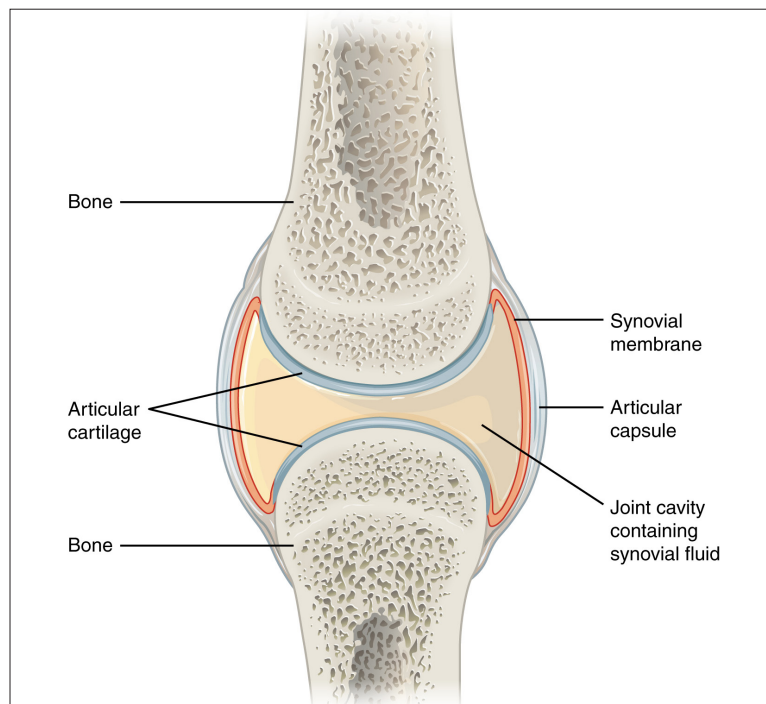
**PS-GAG products** have several mechanisms. They encourage the production of new GAG, HA, and collagen and they inhibit enzymes that break down GAGs and HA. One study revealed that PS-GAGs in horses with OA decreased fibrosis and inflammation-induced vessel growth in the joint capsule. Another study showed a decrease in lameness, joint circumference, and better range of motion in treated horses.

The last type of injectable joint therapy is **polysulfated xylans, also known as pentosan polysulfate (PPS.)** PPS is used in human medicine to combat clot formation and relieve bladder inflammation. It has a structure similar to PS-GAGs and thus is thought to have similar activity to PS-GAG products - encouraging production of collagen, matrix subunits, and HA while preventing breakdown of these substances.

Like the other two product types, there is a dearth of information in equine scientific literature, however a study showed PPS decreased fraying of collagen and increased one of the matrix subunits (chondroitin sulfate) in both diseased and control horses.

Treating or preventing joint disease with medications containing any of these products may have a beneficial effect, but note minimal research has been done in the horse, with minimal positive effects seen. However, there is much clinical based evidence that injectable joint therapy (used over many years in the horse) does have a positive effect in some horses. Decisions to use these types of treatments may come down to recommendations by your veterinarian and a cost-benefit ratio for yourself.

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