

# Managing Joint Health

## Tips for year-round joint health and management

BY STACEY OKE, DVM, MSC

**N***o Joint, No Horse.* Should this be the new motto for 21st century horses? Joint injury, joint disease secondary to trauma or injury, and osteoarthritis (OA) are major causes of attrition and loss of function in horses. As a result, joint health in pleasure and athletic horses is an omnipresent topic.

Maintaining joint health is important to the overall well-being of the horse. Since there is no cure for OA (defined as a painful, progressive deterioration of the joint) a multimodal approach to treatment is currently recommended, including:

- Administration of pharmaceutical drugs such as non-steroidal anti-inflammatory drugs (NSAIDs) or corticosteroids;
- The use of oral joint health supplements;
- Weight management; and
- Dietary modifications (e.g., omega-3 fatty acid administration).

In addition, veterinarians might consider surgery (arthroscopic surgery to remove osteochondral fragments or “chips,” for example) and novel therapies such as IRAP (interleukin-1 receptor antagonist protein) or stem cell therapy in some horses. We'll discuss these and other items herein to provide year-round tips for either maintaining or maximizing your horse's joint health.

### Spring

**Joint Medications** At this time of year many athletic horses are gearing up for their peak competition season, and injections of joint medications are widely employed in equine practice. These are designed to decrease inflammation,



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restore the horse to the owner's desired performance level, and protect the cartilage for long-term benefit. Veterinarians might consider using intravenous (IV) hyaluronic acid (Legend) or the FDA-approved intra-articular (IA)/intramuscular (IM) administration of polysulfated glycosaminoglycans (Adequan).

Polysulfated glycosaminoglycans (PSGAGs) are similar in structure to naturally occurring glycosaminoglycans in articular cartilage. This product is indicated in horses with degenerative or traumatic noninfectious dysfunction of the tarsus (hock) or carpus (knee). It decreases IA protein concentrations and increases

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synovial fluid concentrations of hyaluronic acid that helps lubricate joints. Clinical trials (largely sponsored by the company) have demonstrated:

- A 71% improvement in maximum carpal flexion;
- An 83% improvement in synovial fluid protein;
- Peak therapeutic levels in joints two hours after intramuscular injection, and;
- PSGAGs are detected in cartilage and subchondral bone (located under articular cartilage in the joint) up to 96 hours after a single IM injection.

IV hyaluronic acid and IA/IM polysulfated glycosaminoglycans must be administered by a licensed veterinarian.

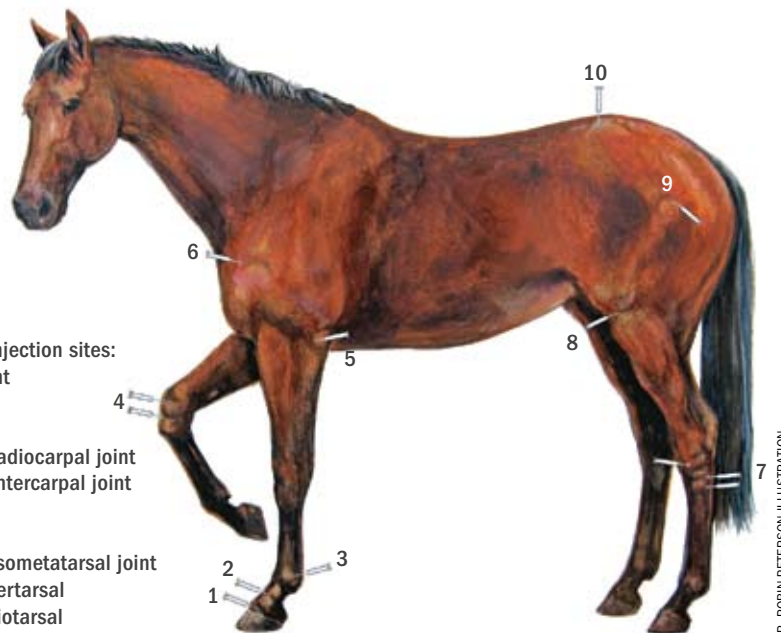
**Oral Joint Health Supplements** Additionally, in the spring owners and trainers can consider which oral joint health supplement products are most appropriate for their horses with joint problems.

Products containing glucosamine and chondroitin sulfate, avocado/soybean unsaponifiable (ASU) extracts, hyaluronic acid, and cetyl myristoleate are the only products that have undergone scientific research in horses. A number of other ingredients are included in commercial products, but these ingredients lack supporting *in vivo* (in the live horse) data.

Some studies have shown that oral joint health supplements appear to be beneficial for horses with OA and navicular syndrome and in injured animals or those that have undergone surgery, although some joint researchers question the reliability of these study results, suggesting that further controlled research is needed. It is widely known that these supplements vary markedly in quality, and there are scores of oral joint health supplements available in stores and online. Therefore, selecting a product that is likely to be efficacious and free of harmful contaminants can be a daunting task.

The “ACCLAIM” system can help consumers rapidly assess a product label to identify safe and effective products (see article #11958 on TheHorse.com for more on this system).

Be sure to begin administration well in advance of training or competition (two weeks to three months might be required before improvement is noted). Improvement might be noted in lameness scores, increased stride length, and decreased pain and swelling.



Typical joint injection sites:

- 1 Coffin joint
- 2 Pastern
- 3 Fetlock
- 4 Carpus—radiocarpal joint  
intercarpal joint
- 5 Elbow
- 6 Shoulder
- 7 Hock—tarsometatarsal joint  
intertarsal  
tibiotarsal
- 8 Stifle—three separate joint capsules
- 9 Hip
- 10 Sacroiliac joint

DR. ROBIN PETERSON ILLUSTRATION

## Summer

The goal during this season is maintaining your horse’s joint health. Prevent injuries, identify any joint health problems or concerns that might be potential causes of lameness, and minimize “wear and tear.”

One or more of a horse’s joints might require injections of either a local anesthetic to help a veterinarian localize a lameness, one or more pharmaceutical drugs (e.g., corticosteroids because of their anti-inflammatory properties), or products such as hyaluronic acid or PSGAGs. There are pros and cons to injecting joints; consult your veterinarian before making a decision, and make sure the injections are administered by a veterinary professional.

You can administer an NSAID such as phenylbutazone (either alone or in combination with other treatment modalities to maximize joint health) as a commercial oral paste or in a formulation that’s used to top-dress the feed. However, if the horse doesn’t consume the product due to poor palatability, he won’t receive a full dose and

will not derive the full benefit of the drug.

## Fall

This season provides an excellent opportunity to reassess your joint health program. What worked, what didn’t, and what’s next year’s plan? Owners keeping a “lameness log” will likely have more accurate month-to-month or year-to-year assessments of their horses, rather than having to rely on their own impressions and memory alone. Consider the number and cost of feeds, pharmaceutical drugs, and supplements administered to the horse; number of joints injected or number of times a particular joint was injected; lost days due to lameness; and the pros and cons of other therapies (e.g., shock wave, stem cell therapy, IRAP therapy, and surgery).

## Winter

Major issues to consider are weight management and arranging any treatments or surgeries that your veterinarian

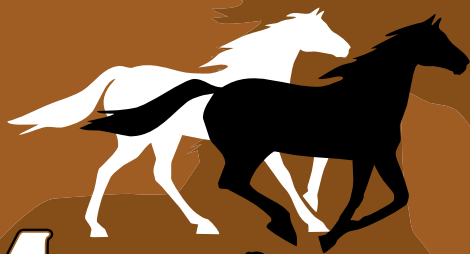
## NOT ALL PRODUCTS ARE CREATED EQUAL

In a study published in the *Equine Veterinary Journal* in 2006, only 60.8% of (14/23) glucosamine-containing equine oral joint health supplements actually contained the amount of glucosamine stated on the manufacturers’ labels. Of the products that failed to meet label claims, four contained less than 30% of the expected amount of glucosamine, and one product did not contain any.

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has recommended. Additional therapies to consider are IRAP and stem cell therapy, which are discussed here.

**Weight management/nutritional modification** While most athletic horses are fit year-round, older horses or pasture pets can commonly have weight issues. In fact, Eleanor Kellon, VMD, proprietor of Equine Nutritional Solutions in Pennsylvania, believes many owners overfeed their horses. Scientists haven't explicitly studied obesity's impact on OA—or even the impact of being above an ideal body weight—in horses, but achieving and maintaining an appropriate body weight is widely encouraged in human and canine OA patients.

**Stem cell therapy** The therapeutic use of stem cells and regenerative medicine is a rapidly expanding field of research in the equine industry and is now available commercially at numerous North American hospitals. Stem cells are the body's "master cells," which can, upon stimulation, turn into any one of the more than 200 different cell types found in the body. These can be harvested from bone marrow and adipose (fat) tissue, processed, and re-introduced into the body at the injury site.

In horses, bone marrow-derived and adipose-derived stem cell therapies have been studied by Alan J. Nixon, BVSc, Dipl. ACVS, director of the Comparative Orthopaedic Laboratory at Cornell University, and bone marrow-derived stem cell therapy has been studied by Roger Smith, MA, VetMB, PhD, DEO, Dipl. ECVS, MRCVS, professor of Equine Orthopaedics at the Royal Veterinary College in the United Kingdom. In these studies they assessed the safety and efficacy of stem cell therapy on tendon healing in horses.

"While these studies have reported beneficial effects and stem cell therapy is available commercially, it should be noted that stem cells and regenerative medicine is in its infancy and only a limited pool of research data and virtually no clinical data is available," cautions Nixon.

Research is ongoing at various institutions, including the Atlantic Veterinary College and the Ontario Veterinary College in Canada, Cornell University's Comparative Orthopaedic Laboratory, and the Gail Holmes Equine Orthopaedic Research Center at Colorado State University. The latter is led by C. Wayne McIlwraith, BVSc, PhD, FRCVS, DSc, Dr. med vet (hc), Dipl. ACVS, Barbara Cox Anthony University Chair.

**IRAP therapy** Another experimental area is the use of IRAP—also called autologous-conditioned serum (ACS)—to combat inflammatory conditions, including OA. This system, which is commercially available in the United States (Orthokine, Arthrex VetSystems), uses the horse's own blood to produce IRAP and other anti-inflammatory proteins to combat pro-inflammatory molecules such as interleukin-1.

Veterinarians collect a sample of the horse's blood with the manufacturer-supplied syringe containing glass beads that are coated with a substance designed to promote the production of the anti-inflammatory molecules (IRAP and others). The sample is processed (i.e., filtered, assessed for sterility, and frozen) and divided into individual doses that are injected into the affected joint. It is administered to the arthritic joint in a series of three injections, followed up at monthly intervals with additional doses as needed.

In a Colorado State study, eight horses with experimentally induced OA were on an IRAP/ACS treatment regimen, and eight others received a placebo treatment. The veterinarians assessed the horses' lameness and analyzed joint synovial fluid throughout the study, and they examined cartilage and synovial membrane samples at necropsy. They found that there was significant clinical and histological improvement in the horses treated with IRAP/ACS as compared to the placebo horses. In this study, the researchers noted that it's important to consider cases carefully before proceeding with treatment, as some cases respond better than others. The researchers on that study generally use the treatment in cases that have not responded to other treatments, such as HA and triamcinolone (a type of corticosteroid), and they also use it when they diagnose early cartilage disease and as a postoperative treatment.

**Take-Home Message**

Joint health is exceedingly important in all breeds of horses involved in all types of activities ... even retirement. You and your veterinarian should expend all efforts to maintain your horse's joint health for as long as possible. ◀

**ABOUT THE AUTHOR**

Stacey Oke, DVM, MSc, is a freelance medical writer based out of Canada. Her areas of interest are nutrition, supplements and osteoarthritis, and she contributes to scientific journals, magazines, and tabloid publications.

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