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The Performance Joint

by Equine Veterinarians Australia (EVA)

Dr Brad Dowling

BVSc M Vet Clin Stud FACVSc

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Many horse owners falsely believe arthritis is a condition that affects only 'old' horses. This is not the case as young horses - even weanlings and yearlings - can have abnormalities of bone and cartilage that will predispose them to developing Osteoarthritis (OA), often within several months of being broken in. Conformational faults such as straight hocks, offset cannon bones and bent legs will place abnormal weight bearing loads on certain joints and increase the risk of developing arthritis. Although, even in the best conformed horse, athletic wear and tear results in progressive and cumulative joint injury, such that, by the time many owners realise their horse has a problem, the condition can be quite advanced. As with any disease state the age-old adage 'prevention is better than cure' applies just as well to arthritis.



Photo by
Liz Tollarzo

Photo by Liz Tollarzo

The equine joint comprises lubricating joint fluid, joint lining or synovium, a fibrous capsule and supporting ligaments and a cartilage covering on the two bony surfaces within the joint. Together these sophisticated structures allow complex gait movements and facilitate weight bearing. Cartilage is paramount in its action as the horse's 'shock absorber', given its sponge-like abilities to store water when not weight bearing and release it upon compression during the stance phase of a stride. Cartilage is composed of a complex array of proteins called collagen and proteoglycans, which allow it to perform its important function. Due to the elaborate make up of joints, injury can trigger a cascade of events resulting in osteoarthritis. Osteoarthritis or more commonly arthritis, is a degenerative

condition affecting all structures within the joint, however it is the injury caused to the cartilage, which may result in irreversible damage and lameness.

Clinical signs of arthritis can be subtle in the beginning, and may include joint swelling or effusion, heat, pain on palpation or flexion of the joint, reduced flexibility, lameness, altered performance, and even changes in behaviour or temperament due the pain associated with arthritis. While horse owners are generally good judges when their horses have a problem, lameness that is not severe enough to present definite or readily observable symptoms (subclinical) can be challenging to detect. OA is the most insidious and common cause of lameness in performance horses. This comes about from repetitive

Continued

The Performance Joint continued...

wear and tear on the joint, leading to release of inflammatory products, which cause damage to the cartilage. Often the best time to evaluate a horse for subclinical lameness is a few hours after work or racing. This way any area of soreness or weakness will have been placed under pressure and may be more readily detected by the veterinarian.

Unfortunately, once OA is advanced, veterinarians still have few proven methods of reversing these changes, as most treatments are aimed at slowing down the rate of progression and providing relief from pain. Therefore early detection is the key. Astute owners should examine their horse's legs and joints regularly after work and have their veterinarian check for subtle signs of lameness during an annual health check. Competitive riders often request regular (ie 12 monthly) survey X-rays of joints that may be commonly affected by arthritis to detect early changes and implement appropriate strategies aimed at minimising further injury.

Commercial joint foods that contain the building blocks for cartilage are very popular amongst horse owners. They have several advantages in that they can be easily fed and appear to have few side effects. There have been studies indicating these products can be absorbed from the intestinal tract and find their way into the joint to aid cartilage repair. However, it would appear not all of them are equal and debate still rages as to which compounds are most beneficial and in what proportions.

Research suggests products containing glucosamine sulphate and chondroitin are probably most useful. To gain most benefit from these products they should be provided in a palatable form, fed regularly and used as preventative treatments in most instances. Natural products such as those derived from avocado and soya bean oil have a small yet beneficial effect on cartilage repair and no doubt future research will find newer more natural compounds useful for managing arthritis.

The use of anti-inflammatory drugs such as low dose cortisone can provide pain relief, slow down cartilage degradation and improve performance in horses with fetlock arthritis for example. When low dose cortisone is combined with cartilage protecting agents such as hyaluronic acid the beneficial effects are enhanced and prolonged. Over the years cortisone has developed a bad reputation, however at low doses it has been shown to slow down cartilage damage and protect against further cell injury. Medications such as pentosan polysulphate, PSGAGs,

cortisone

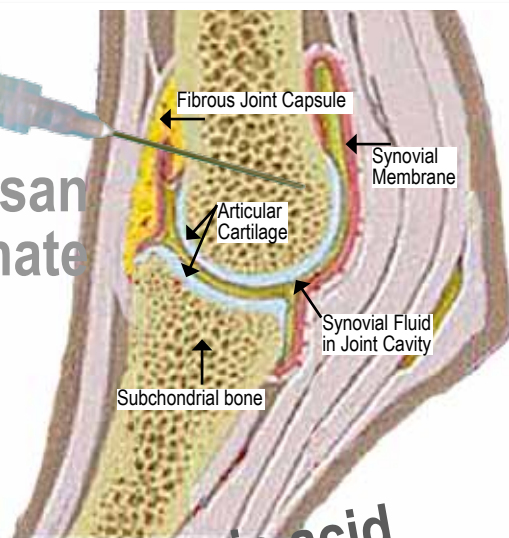
chondroitin

pentosan

polysulphate



hyaluronic acid
glucosamine
sulphate



Above: Ongoing research is identifying the range of treatments that may help cartilage repair, slow progression of osteoarthritis (OA), reduce inflammation and offer pain relief.



Photo by Rebecca Oborn

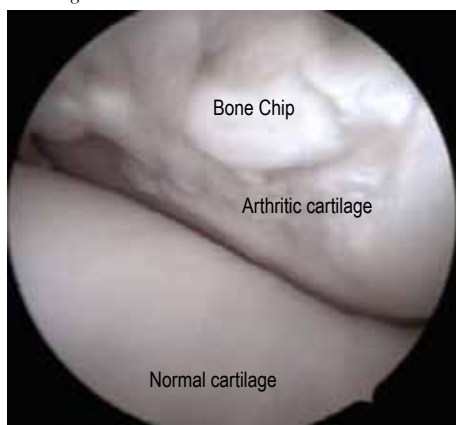
Left: Early detection is the key. Astute owners should examine their horse's legs and joints regularly after work and have their veterinarian check for subtle signs of lameness during an annual health check.

hyaluronic acid and low dose cortisone, are treatments that help cartilage repair, slow down progression of OA and allow many horses to continue competition.

Disease modifying agents such as pentosan polysulphate (ie Cartrophen® and Pentosan®) and polysulphated glycosaminoglycans (PSGAGs) (eg Adequan®) are popular and effective treatments for equine osteoarthritis. Pentosan polysulphate is administered by intramuscular injection weekly for 4-7 weeks and its clinical effect may last for several weeks. It acts by reducing inflammation within the joint, improves the quality of the joint fluid and reduces lameness. PSGAGs act to reduce inflammatory mediators within the joint when administered intramuscularly every 3-5 days for 5-7 treatments.

One of the major inflammatory causes of arthritis is called Interleukin, which if left unchecked can reach high levels in the joint causing cartilage destruction. Equine researchers have developed a system that can produce high concentrations of an Interleukin blocking agent called autologous condition serum (ACS). This revolutionary treatment uses the horse's own blood, which is collected and processed in specially designed tubes. The ACS can then be injected into selected joints with osteoarthritis or frozen and used at a later date. This cutting edge treatment is commonly used within the

Below: Arthroscopic image of a fetlock joint with osteoarthritis (OA) showing the arthritic cartilage and a bone chip compared to the bottom section that displays normal cartilage. Photo supplied by Dr Brad Dowling.




racing industry, however it is becoming more popular within other equine disciplines as its efficacy is realised.

In instances where OA is associated with a 'bone chip' or fracture, then surgical treatment may be recommended by the veterinarian. Arthroscopic surgery or 'key-hole surgery' is readily available nowadays in equine surgeries. A narrow arthroscope attached to a camera is inserted into the joint and allows the surgeon to visualise the joint, remove bone chips and damaged cartilage, and flush the deleterious inflammatory products from the joint. Although these procedures come at a cost, convalescent time is shortened and the cosmetic outcome is better than other surgical techniques.

Lameness in performance horses can be a significant problem for owners due to reduced performance and lost training time. Recent studies have proven even a subtle lameness can significantly reduce performance during a race or competition, which could mean the difference between finishing first or out of the prize money altogether. Studies have shown horses that were either rested until the lameness resolved or underwent veterinary treatment for the cause of the lameness competed more predictably and, in the case of race horses, significantly increased their race earnings at subsequent starts.

The search for the 'magic bullet' for equine OA continues, however there are also some common sense steps that horse owners can take to reduce the risk of their horse developing OA. Modify and/or vary training methods to avoid repetitive over-use injury, avoid 'overworking' the horse, maintain a good riding surface and ensure appropriate shoe types and shoeing intervals. While the use of work boots and leg bandages are useful in preventing leg injuries from direct trauma, studies have shown they have little benefit in preventing tendon and/or

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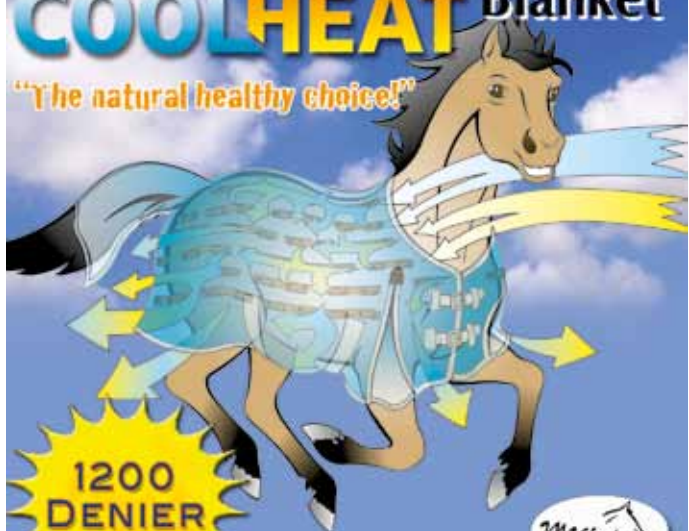
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The Performance Joint continued...

joint damage due to repetitive exercise. Achieving the delicate balance between a good amount of work and over doing it can be difficult. The best advice is 'listen to the horse', as many will show a change in temperament when they are hurting somewhere – it's up to the rider and veterinarians to work out why and where. Be vigilant, monitor the horse's legs and joints carefully before and after exercise, and if in doubt have the horse examined.

As yet, veterinarians have no universal treatment or cure for equine osteoarthritis, however ongoing research continues to expand the possibilities. Future treatments may include such novel therapies as gene therapy and joint resurfacing. However, early detection of OA and devising an appropriate management strategy with a veterinarian that suits individual horses and horse owners is currently the best option. 🐾



About The Author

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A Registered Specialist in Equine Surgery Brad became a partner in the Townsville Veterinary Clinic and established the North Queensland Specialist Equine Service. In 2005 he was appointed Adjunct Associate Professor at The School of Veterinary and Biomedical Sciences, James Cook University, Townsville. Brad completed a residency in large animal surgery, a Master of Veterinary Clinical Studies degree in bowed tendons and Fellowship in Equine Surgery at Sydney University and was the chief of equine surgery and head of equine clinical services unit at the University Veterinary Centre Camden.

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