

Did You Know?

During a maximum speed gallop, at the stage of the gait when only one leg is supporting the horse, the forces transmitted through the bones and joints can be up to 18,000 pounds per square inch. That is tremendous pressure by any terms, and all of this force is transmitted directly through the essential joint structures, especially cartilage, then into the bones.

The tremendous forces exerted on skeletal joints (fetlock, knee, stifle and hock) during training & competition cause wear and tear to the joint cartilage.

Why Is Cartilage Important?

A joint is a junction of any two or more bones. Immersed in synovial (joint) fluid, it is structured to allow smooth, low friction, controlled movement, while maintaining strength and support by transmitting the large loads to the underlying bones.

Because of cartilage, synovial joints can withstand tremendous forces and repetitive motions which would quickly destroy most man-made materials.

Of all the component parts of a joint, the **articular cartilage** plays the most vital role in joint function, by reducing friction during joint movement and absorbing shock, without pain, as well as providing flexible support.

Cartilage is an unusual tissue, as it contains no nerves or blood vessels.

All nutrients required by cartilage for the constant repair and maintenance of joints are supplied by diffusion from the blood supply in the underlying bone, or from the synovial (joint) fluid.

Why Is Cartilage So Difficult To Heal?

The poor blood supply to cartilage is a primary factor in why joint and cartilage damage is so serious and difficult to treat. Cartilage does have limitations: all body cells, including joint cartilage, must undergo repair constantly to keep pace with breakdown that occurs during normal daily activity.

How Does Cartilage Repair?

Cartilage has a huge capacity to replenish its major components in response to the forces placed upon it, by manufacturing large amounts of collagen and proteoglycans. Collagen is a tough, ropey protein which connects all the cartilage tissues, and provides the tensile strength of cartilage. Proteoglycans provide the resilience required when compressive forces are applied to cartilage (when horse is weight bearing).

Raw Materials For Joint Repair:

The continuous manufacturing of components for joint cartilage repair and maintenance generates extremely high demands for the building blocks of both collagen and proteoglycans. If these raw materials are not available in the amounts required, at the right time, the repair process is impaired or halted. There are several **ESSENTIAL** raw materials for cartilage repair, required on a daily basis:

Glucosamine - is the major building block for manufacturing glycosaminoglycans (GAGs) and hyaluronic acid (the major component of joint fluid). Its primary role is to stimulate the secretion of GAGs in the cartilage. The hydrochloride (HCl) form is highly bioavailable.

Chondroitin Sulfate - in addition to being the major GAG found in cartilage, its primary role is to inhibit many of the degradative enzymes which break down damaged cartilage.

Manganese - this is an essential co-factor in the process of manufacturing GAGs for repair.

Ascorbate (Vitamin C) - is also essential for synthesis of collagen.

The combination of these components in any supplement for joint repair and protection has what is called a **chondroprotective effect** (joint protective), where Glucosamine increases the synthesis of cartilage while Chondroitin sulfate inhibits cartilage breakdown. Without Manganese and Vitamin C, these activities cannot take place with maximum efficiency.

There is a **synergistic effect** when these components are combined in any supplement, where the response to the combination is far better than the response from any one individual component.

Conventional Joint Treatments:

Drug therapy for joint degeneration focuses primarily on the use of anti-inflammatory agents to reduce pain and inflammation during the acute stages. While these are effective in pain control, the corticosteroids and NSAIDs also actually prevent or reduce further joint repair processes initiated by the body. The side effects of these approaches are well known.

Newer Approaches to Cartilage Management:

No matter what type of horse activity is considered, from racing to endurance or eventing, there will be ongoing joint cartilage damage, where often years of training and preparation are lost because a joint is not able to be rejuvenated or maintained.

Prevention is Better Than Cure:

Newer approaches to joint maintenance allow for both:

- Protection** of joint cartilage during training and competition to reduce cartilage injury, and
- Therapy** of existing cartilage degeneration.

This brochure cannot attempt to provide all of the details you will require, but may help to lead you into some questions you can ask your veterinarian. Consider the following products:

Joint Guard:

1.5 kg pail

Joint Guard provides all the essential components and co-factors for cartilage repair and maintenance, and is designed for **daily administration in diet to help prevent cartilage degeneration**, by supplying critical components on a daily basis. This is a **protective effect**.

Research trials on combinations of Glucosamine, Chondroitin, Manganese and Vitamin C report a significant **synergy** between these components, and a **Chondroprotective**, as well as mild **anti-inflammatory** effect following regular administration.

By using low daily preventive doses from an early stage, it is possible to avoid the expense of administering very high doses of this product after any injury, to try to achieve high blood levels rapidly. **Joint Guard** is formulated specifically for regular, cost-effective, low dose administration.

Give 20 g daily in feed, as a regular preventative:

Each 20 g daily dose contains:

Glucosamine HCl	2.6 g	Chondroitin sulfate	0.63 g
MSM	2.66 g	Manganese gluconate	0.39 g
Calcium ascorbate	0.70 g	Zinc proteinate	1.25 g
Copper proteinate	0.012 g	Vitamin E	0.25 g

In the event of existing cartilage damage, where **therapy** is required, it is recommended that the daily dose of **Joint Guard** be increased to 40 g daily for an initial period of 6 - 8 weeks to ensure rapid response.

In these cases where therapy is required, discuss the use of **PENTOSAN EQUINE** in combination with **Joint Guard** with your veterinarian.

This product contains no prohibited substances, and is safe for all competitions.



PENTOSAN EQUINE

This product is available only through veterinarians, and it is important to discuss its use with your vet.

PENTOSAN EQUINE contains *Sodium Pentosan Polysulfate 250 mg/mL* in a 6 mL single dose bottle for intramuscular injection. This provides the correct dose for a 500kg horse to **actively stimulate joint cartilage repair.**

PENTOSAN EQUINE is a plant product, with no animal proteins. **It acts to stimulate cartilage production**, and hyaluronic acid production, increasing joint fluid volume naturally to reduce further cartilage damage.

It also has direct anti-inflammatory activity to reduce pain and inflammation, and reduces blood clots in bone blood vessels which accompany cartilage degeneration, thus improving nutrient supply to cartilage.

Pentosan Equine may be used **therapeutically**, by giving one injection weekly for 4 weeks, to stimulate cartilage repair for up to 6 months, and is also commonly used on a regular basis as a **protective agent** for horses involved in any hard competition where maximum exertion is required, and the possibility of joint damage is high.

PENTOSAN EQUINE acts in *synergy* with **Joint Guard**, where combining both products produces a markedly improved response than either product used alone will give. Daily doses of **Joint Guard** will help provide a protective function, and **PENTOSAN EQUINE** is used in addition, either to protect horses in hard competition such as racing, endurance riding, eventing, etc, or therapeutically to treat damaged joints and encourage repair.

PENTOSAN EQUINE contains no prohibited substances.

Molecular Weight (Particle Size) of Supplements is Very Important.

Make sure that supplements are of low molecular weight (very small particle size), so that they are efficiently absorbed. Many currently available less expensive supplements are of variable, or very large particle size, which the intestine cannot absorb well, and are of very limited value as supplements. Typically the more expensive products reflect a much more refined processing technique to very significantly improve absorption, and clinical effect.



Other Things To Consider:

Pain & Inflammation:

Cartilage damage is accompanied by pain and inflammation in varying degrees, depending on the severity of the injury. Pain reduces function and performance, and inflammation reduces the adequacy of the healing response. Acute injuries usually require anti-inflammatory / analgesic treatment. Talk to your veterinarian about **CU-ALGESIC paste or granules**, so that the negative side effects (such as gastric ulcers) of using anti-inflammatory agents in horses are reduced.

The amino acids in **PANACIN PASTE** may help to reduce the perception of low grade pain in performance horses, and **CU-ALGESIC paste or granules** are a potent anti-inflammatory agent prescribed by your veterinarian for acute and sub-acute pain and inflammation.

The daily administration of **Joint Guard** will provide a low level anti-inflammatory action to help protect joints during training and competition.



Available from:

For further information on the Nature Vet product line,
Telephone toll free: 1800 624 174
Email: info@naturevet.com.au
Web: www.naturevet.com.au

BEST ADVICE

Equine Series

4.



Joints - How to Protect Them

This pamphlet series was compiled by Dr. G. Best, B.V.Sc, and Mark Day, to help trainers better understand the demands of modern day horse competition, and how to meet these demands by using the Nature Vet product range economically and successfully.