

## 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 quite delicate essential structures, like joints (especially joint cartilage), bones, tendons, ligaments and hoof wall structure.

These forces exerted repetitively during training & competition cause wear and tear damage to the joints, tendons, ligaments and hoof structure. Often the areas to show damage earliest are the cartilage of the joints and the hoof wall structure.

## Joints - Why Is Cartilage Important?

A joint is a junction of 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.

It is the cartilage and joint fluid that allows joints to withstand tremendous repetitive forces for pain free movement. 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 joint fluid.



## Healing and Repair of Cartilage

The poor blood supply to cartilage is a primary factor in why joint and cartilage damage is so serious and difficult to treat. Replacement of damaged cartilage, or of old cartilage that is ready to be absorbed into the adjacent bone, are both slow processes, and easily disrupted by inflammation or a lack of available nutrients that the cartilage producing cells use to make new cartilage material.

Cartilage cells replace damaged or old cartilage material 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 hold the right amount of water in the cartilage and provide the resilience required when compressive forces are applied (when horse is weight bearing). Both must be produced as rapidly as possible to allow adequate cartilage maintenance to occur.

## Raw Materials For Joint Repair:

Continuous manufacture of components for 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. There are several raw materials necessary 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). It also helps stimulate the secretion of GAGs in the cartilage.

**Chondroitin Sulfate** - the major GAG found in cartilage; it also helps inhibit degradative enzymes which break down cartilage during times of joint inflammation.

**Manganese** - is a mineral essential in the processes in cartilage cells for manufacturing new GAGs for cartilage repair.

**Ascorbate (Vitamin C)** - an antioxidant (damage reducer) which is also essential for synthesis of collagen.

The combination of these ingredients has a **chondro-protective** (cartilage protective) effect - 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 a supplement, where the response to the combination is far greater than the response from any one individual component.

## Prevention is Better than Cure!

New approaches to joint maintenance allow for both:

- Protection** of joint cartilage during exercise, and
- Therapy** of existing cartilage degeneration.

No matter what type of horse activity is considered, from racing to eventing, showjumping, dressage, endurance or "Western", there will be ongoing joint cartilage damage. Failure to manage and protect against that damage can cause the loss of years of training and preparation because a joint

is not able to be rejuvenated or maintained. Every athletically active horse deserves the best quality joint support you can give it - before it's too late!

## Joint Guard:

1.5 kg pail

**Joint Guard** provides the necessary components and co-factors for cartilage repair and maintenance. It 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**.

Give 40 g daily in feed, as a regular preventative (Initial loaded dose 200g as per label for treating joints previously damaged): Each 20 g contains:

**Glucosamine HCl 1.8 g Chondroitin sulfate 0.60 g plus Manganese gluconate, Calcium ascorbate, Zinc proteinate, Copper proteinate, Vitamin E, and MSM (a sulphur compound useful for connective tissues)**

For damaged, inflamed and painful joints, we would recommend that your first approach should be to consult with a veterinary surgeon, who can prescribe additional "vet only" treatments for enhanced and more rapid response. Joint Guard can be used alongside veterinary prescription treatments such as Pentosan Equine injections to supply the raw nutrients needed for the most efficient response possible.

Joint Guard does not contain substances that may cause a problem during "swabbing", and may be used as a protective nutritional supplement during all competitions.



## No hoof, no horse....

It is common in performance horses that a gradual deterioration of the hoof wall occurs, leading to poor hoof wall condition with extensive cracking, separation from the underlying laminae that bind the wall to the hoof proper ("seedy toe") and ultimately the farrier may have great difficulty in finding enough stable wall in which to place nails to keep the shoes on. These damaged hooves often also grow slower than "normal", compounding the problem or at least making it even more difficult to fix. There are two main reasons for why poor hooves are common in performance horses:

- a) the forces put on the hoof wall are greater than for a resting horse, and applied more frequently, and
- b) the nutrients required for good hoof growth are also required by general body metabolism in large amounts during exercise, leading to a relative deficiency in these nutrients compared to a resting horse.

## Understanding Hoof Growth



Hoof grows from the coronary band (coronet) where hoof and skin meet, at the rate of approximately 0.8 cm per month - slower in winter or in very dry weather. Material produced at the coronary band today influences hoof wall condition at the bottom of the hoof in about 9 months' time!

Growth of healthy, resilient (not brittle) hoof is influenced by many factors including nutrition, weather, physical stress/forces on the hoof (during exercise) and blood circulation to the coronary band. Of all these factors, superior nutrition is one of the most easily managed, and goes a long way towards supporting healthy hoof growth even under difficult conditions.

## What nutrients are needed for hoof growth?

It has been known for quite some time that adequate supplies of the B group vitamin BIOTIN (also sometimes erroneously called Vitamin H) are necessary for efficient and healthy hoof growth. But Biotin alone is not always effective. The reason for this is that other nutrients are also extremely important in healthy hoof growth. The rate and quality of new hoof growth will be limited by the supply of whichever of these nutrients is scarcest in each individual horse.

Other important nutrient to feed in conjunction with Biotin (in order to ensure that none are a limiting factor) are Methionine (a sulfur-containing amino acid), and the mineral zinc.

These important nutrients are provided together in one convenient daily feed additive in **RETREAD**. For best results, it is important to feed **RETREAD** daily, not allowing nutrient levels to fall below optimum. Due to the slow rate of normal hoof growth, the supplement should be fed continuously for at least 9 months. The result will be stronger, healthier hoof.



*Recommended by leading equine veterinarians!*

**Available at:  
all leading equine supply stores.**

**Proudly manufactured in Australia by:**



**For further information,  
Telephone toll free: 1800 624 174  
Email: [info@naturevet.com.au](mailto:info@naturevet.com.au)  
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# **Nature Vet Health and Performance**

**Equine Series 4.**



# **From the Knee Down**

**a guide to routine maintenance**

This pamphlet series was compiled by Dr. J McLeod 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.