

STRENGTHENING JOINTS

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Lameness is every trainer and owners nightmare. Lameness is a universal issue; it causes 56% of lost training days, and in Victoria Australia, 60% of trainers observed shin soreness in their 2 year olds (Bailey 1998). The chance of injury increases with the speed and intensity of work. Constant high loads on the joints can cause frequent minor injuries that can often go unnoticed. A mere stumble or wrong footing can cause a small tear of the soft tissue around the joint. The healing process for soft tissue injuries is slow and as the injury itself is hidden we can never be certain as to how complete the healing process is.

Minor injuries weaken the whole structure, which can lead to a mistimed stride ending in

major joint injury, such as a flexor tendon tear, resulting in months off the track. These major joint injuries were responsible for over 70% of thoroughbred deaths during the years 1989-2004 (Boden 2006). These statistics highlight the need for protection of the tissues in and surrounding the horse's joint.

For a minor instant during the gallop, 100% of the horse's weight and force is absorbed by one front leg, placing enormous pressure on the flexor tendons, leading to 95% of bone, tissue and ligament injuries occurring in the forelimbs.



Preventing injury in the performance horse is pivotal. The pressures that heavy training and races place on the legs over time eventually shows, with early retirements, re-training to lower impact disciplines or euthanasia. To maintain healthy joints the body must maintain: synovial fluid viscosity, bone strength, tendon strength and flexibility and cartilage strength and flexibility. Strength of the tendons and cartilage can be largely attributed to collagen production in these tissues.

The connective tissue consists mainly of collagen, proteoglycans and water. Collagen is the most important component of the matrix on a dry matter basis contributing 50-80% of the cartilage matrix (Brama 2000). Collagen is made up of an amino acid sequence of glycine (which can be added to the diet in forms of chelated minerals) and proline (Todhunter 1996). Proline accounts for approximately 10% of the amino acids in collagen. Because it is only present in very small quantities in other proteins, it is often used to determine the amount of collagen in a certain tissue (Johnson *et al* 1980) and is therefore important for collagen production.

Collagen allows tendons and ligaments to stretch and contract and gives them their toughness. During exercise a horse's tendons may stretch up to 3 inches, emphasising the need for the joints to maintain their elasticity. When there is a lack of elasticity and extra pressure is placed on the joints, injury is often the result. The extent of injury depends on the pre-existing health of the horse's joint. Injury can vary from only a few collagen fibres tearing and minimal inflammation which the horse may mask quite well or many collagen fibres may tear causing pain, lameness and significant amounts of swelling.

During growth of the tendon the concentration of collagen increases (Addis 2010). Once the horse turns 3 the adaptive ability of the tendon reduces, suggesting that collagen development is vital in the first years of life to maintain tendon strength. Gradually over time the collagen concentration decreases in the tendon, causing the tendon to be more pliable as it weakens, resulting in greater angular movement in joints of the older horse,

leaving the horse more susceptible to serious injury. Collagen strength is also important to prevent degradation in the development of Osteochondrosis (Van de Lest 1999). The first stages in the development of Osteoarthritis are a reduction in proteoglycans and collagen and an increase of water, these factors result in a weakened structure.

There are many different forms of treatment for lameness, from using adjustable heart bar shoes or frog supports, injections or anti-inflammatory use to invasive surgical techniques and it would appear that treatments give no more than a 50% success rate.

At this stage of technological advancements, strengthening, conditioning and diet appear to be the method of approach in preventing lameness. Glucosamine has been proven to protect cartilage against degradation (Orth 2002). The presence of Glucosamine hydrochloride and the amino acids Glycine and Proline in Kelato's **NutriFLEX** provide support to your horse's vital structures. Methionine, like MSM in other products, is an important source of sulphur

which is essential for collagen synthesis. **NutriFLEX** has the added benefit of Boron used for bone strengthening, as well as Zinc, Copper, Manganese and Vitamin C which are all important for healthy tissues and ultimately stronger joints.

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NutriFLEX is now available from Kelato Animal Health. Ask at your local equine supplies store. For more information call 1800 KELATO or email info@kelato.com.au.

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