

# Understanding Osteoarthritis

Also known as Degenerative Joint Disease (DJD), Osteoarthritis is a condition that can affect virtually any horse. Osteoarthritis is basically progressive joint inflammation due to trauma or wear and tear. This inflammation leads to the erosion of the articular joint cartilage, which becomes frayed and thinned, causing pain and eventually loss of function. Osteoarthritis mainly affects a horse's weight-bearing joints. Most frequently it involves the hocks, front fetlocks, and coffin joints and navicular bones in the front feet.

To fully understand osteoarthritis and its affects, it is important to understand how a healthy joint functions.

The joint is composed of two parts: the fibrous outer joint capsule and the inner synovial membrane. The bones of a healthy joint fit closely together, with the ends of the opposing bone surfaces coated with a thick cushion of cartilage. Cartilage protects the bones and acts as a shock absorber each time the horse's hoof hits the ground. It also provides a friction-free surface for the opposing ends of the leg bones to rub against as the horse walks or runs.

Strong collateral ligaments surround and connect the bone ends. These ligaments provide stability and protection for the joint. The entire joint cavity is filled with a thick fluid that moves whenever the horse moves. Called synovial fluid, this vital substance fills and bathes the joint like a lubricant. Cartilage has no blood supply of its own so synovial fluid also nourishes and carries wastes away from the cartilage.

The viscous joint fluid is made up of large, tangled molecules of hyaluronic acid (HA) that form a thick, impervious barrier to inflammatory cells that are trying to gain entrance to the joint. Good quality HA is imperative to the joint's well-being.

Just working a horse regularly can cause the joints to incur trauma and stress, which can damage the tissues that enclose the joint, the delicate synovial membrane and the fibrous joint capsule. Because lameness isn't always present when this first occurs it can be hard to detect.

As work continues and the damage progresses, the joint will become hot and swollen and the horse will become lame. The tissue damage allows white blood cells from nearby blood vessels to invade the joint space. The white blood cells release

destructive enzymes and "free radicals" that begin to eat away at the joint cartilage. The enzymes also attack the HA, turning it into a thin, watery liquid.

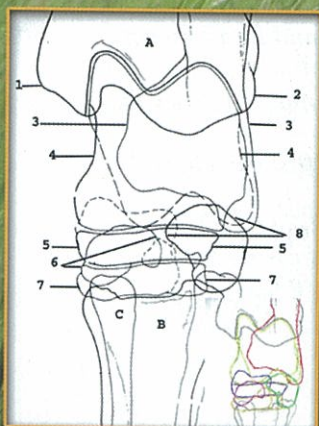
Left untreated or allowed to recur, this damage progresses to full-blown osteoarthritis. Once damaged, articular cartilage does not repair itself. As stated above, it does not have its own blood supply and must rely on the already compromised synovial fluid. Once osteoarthritis has developed, it cannot be corrected, only managed. It often leads to premature retirement and it sometimes leads to putting the horse down.

The best defense against this career-ending disease is early detection. Early signs of the disease are subtle so owners must be trained to look for mild joint swelling and heat, rather than lameness.

It is also important that owners be aware of some of the risk factors for developing osteoarthritis. Horses with crooked legs or horses that toe in or out will have greater pressure placed on the their joints predisposing them to conditions that may lead to osteoarthritis.

Older horses are also at greater risk. In younger horses, cartilage replacement roughly equals normal joint cartilage wear. However, from about age 15 on, cartilage wear begins to outstrip replacement. Thin cartilage means that the bones will rub against and hit each other causing injury to the joint. Tendons and ligaments in older horses also become less elastic, making them susceptible to tears, which can lead to joint instability and inflammation.

— SARAH GEE



- A – Tibia
- B – 3<sup>rd</sup> Metatarsus
- C – 2<sup>nd</sup> Metatarsus
- 1. Medial malleolus
- 2. Lateral malleolus
- 3. Medial & lateral margins of the calcaneus (red)
- 4. Medial & lateral margins of the talus (yellow)
- 5. Medial & lateral margins of the central tarsal bone (blue)
- 6. Medial & lateral margins of fused 1<sup>st</sup> & 3<sup>rd</sup> tarsal bones (purple)
- 7. Medial & lateral margins of the 3<sup>rd</sup> tarsal bone (orange)
- 8. Medial & lateral margins of the 4<sup>th</sup> tarsal bone (green)

#### References:

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