

HORSE CARE



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Care for his joints

Your horse's joints are marvellous things - discover how they work and how to keep them healthy with the help of our expert vet Andrew McDiarmid

Words Katy Islip

Joints are the hinges and swivels of a horse's body, articulating his skeleton and allowing him to move in all manner of different directions when his muscles contract. We've enrolled expert orthopaedic vet Andrew McDiarmid to explain how your horse's joints work, looking at how they are formed, common problems affecting joints and how you can help keep them healthy so he stays happy and sound.

WHAT ARE JOINTS?

At the most basic level, joints are formed where two bones meet, and fall into two main categories: fixed (synarthrodial) and moveable (diarthrodial), which we're going to look at here. Moveable joints are further classified as to what type of movement they allow - ball and socket joints, such as the hip, which allow the joint to move in different directions; hinge joints, such as the elbow or stifle, which allow for folding movement; hinge and plane joints, such as the knee, which combine folding movement with gliding movement; and pivot joints, which allow for rotation, such as where the head joins the neck.

Despite all this variety however, the majority of your horse's joints are set up to enable him to run. "The horse's joints are quite primitive and most are in a front-to-back plane of movement," says Andrew. "Even those in the horse's back allow little rotation. Our hip joint allows quite a lot of movement, as does our shoulder, but horses don't have that - it's all about going forward."

"If they don't get away from wolves or predators quickly they'll get eaten, and to go fastest they need to run in a straight line, rather than twist and turn quickly."

Joints can also be classified by how much movement they allow, and the amount of weight they carry. "High load/low motion joints, such as the spavin joints in the hock, don't move very much. Then you also have high motion joints, such as the fetlock coffin joint, which have a far greater range of movement," says Andrew.



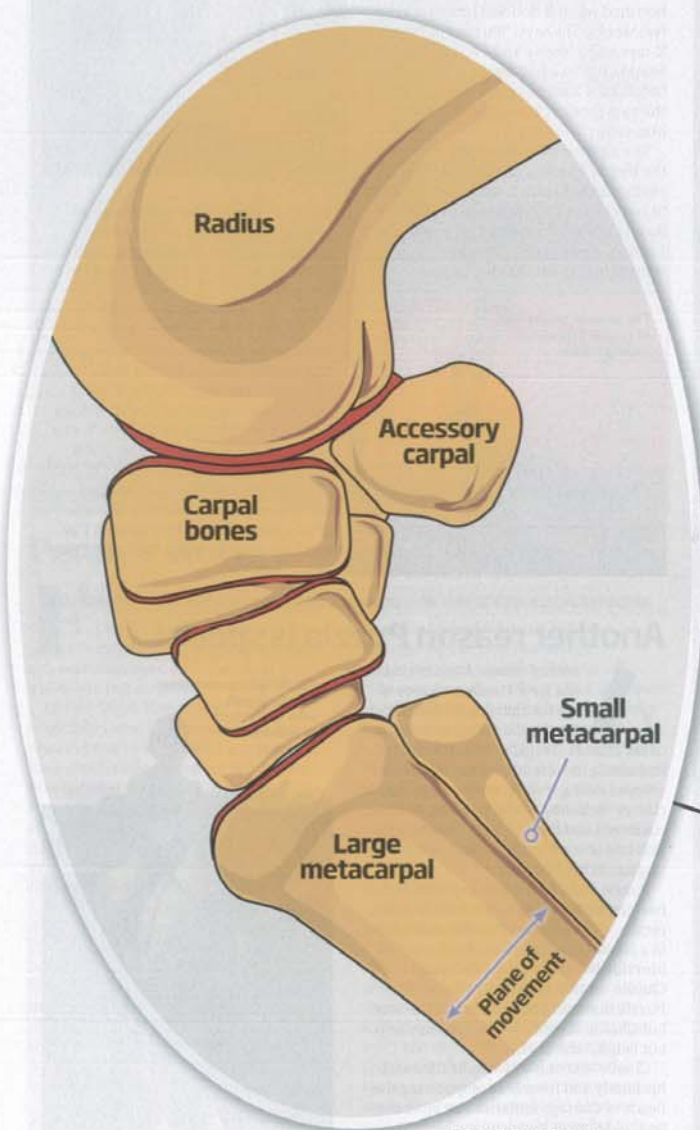
OUR EXPERT

ANDREW McDIARMID is a director of Clyde Veterinary Group Ltd in Scotland, overseeing the equine hospital, where his area of expertise is equine lameness. Andrew has worked in equine practice as well as in teaching roles at the Royal (Dick) Veterinary School and charity World Horse Welfare (formerly the ILPH). Clyde Veterinary Group is a member of XLVets - find out more at www.clydevetgroup.co.uk and www.xlvets.co.uk



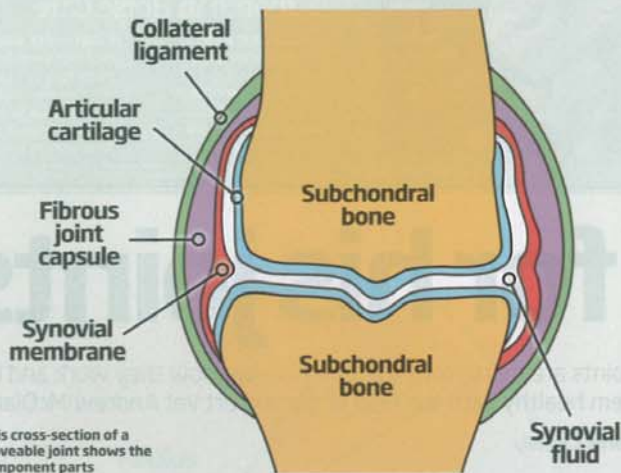
WHAT ARE FIXED JOINTS?

As their name suggests, fixed joints exist where bones which don't need to move meet, such as those between the bones that form the horse's skull.



Beneath his skin, your horse's complex knee joint allows movement





This cross-section of a moveable joint shows the component parts

JOINT COMPOSITION

Joints are designed to provide both functional movement and protection for the bones that are meeting. The ends of the bones are covered by cartilage, a tough rubber-like tissue, which protects them from wear and tear. Andrew says: "The bones either side of a joint are covered with articular cartilage, which is highly specialised and basically a water-filled, sponge-like arrangement with no nerve endings. It allows two surfaces to glide over each other, absorbs concussion and protects the bones."

The joint is surrounded by a synovial membrane, which forms a protective layer and constantly produces synovial fluid, also called joint fluid. This contains a lubricating substance called hyaluronic acid and acts as oil

within the joint, reducing wear and tear. Over this sits the joint capsule, a fibrous tissue covering which protects the joint, holds the two bones in place and keeps the synovial fluid within the joint cavity.

Completing the joint are the ligaments which support the whole structure. Andrew explains: "Virtually all joints have collateral ligaments - one on the inside and one on the outside of the joint, preventing dislocation. Depending on different joints and the jobs they do, they have other ligaments linking them to other bones."

On top of this, the horse's tendons attach his muscles to the bones, enabling his limbs to move and operating his joints through their contraction.

Common joint problems

There are two main types of joint disease: those caused by wear and tear and those caused by traumatic events or injuries. In terms of the joints that tend to cause most problems, in the foreleg it's usually the coffin joint of the foot and fetlock. In the hindleg, it's the hock or stifle.

1. Traumatic joint injuries

The joints in the horse's lower limb are more susceptible to injury and trauma than other parts of the equine body, and this is due to the high concentration of forces. These vary from strains and cuts to fractures.

If a joint is overstressed through work

or an injury, the amount of synovial fluid produced can increase, enlarging the joint so it looks swollen.

Called a joint effusion, these swellings include articular windgalls in the fetlock and bog spavins in the hock joint. These swellings will usually go down if the horse is rested, but if the strain continues they can become permanent.

In terms of fractures, as well as what are termed 'straight' traumatic fractures, resulting from things like a kick or striking an object such as a fence, there are also areas that are

under what's called focal stress. These result in predilection sites for fractures, which typically start within a joint and spread down the adjacent bone.

This type of injury tends to be seen in horses who carry out repetitive work, such as racehorses, dressage horses and endurance horses.

Andrew says: "In quite a number of cases treatment is possible. Some of these fractures require screwing together in an operation, and others may heal by themselves, so these injuries



Dressage horses are more vulnerable to focal stress fractures

2. Osteoarthritis

This painful and progressive condition, also called degenerative joint disease (or DJD), is basically the result of wear and tear on the joint, and the thinning of the cartilage on the end of the bone. As a result of this, in advanced cases the bones will be rubbing directly on each other.

Andrew says: "Once the joint starts to deteriorate, the cartilage over the ends of the bones wears away, and it can't be repaired.

"The consequences of this are stiffening on the joint, and the production of more bone around the joint as an attempt to fuse it and reduce movement, so there's less pain."

If the affected joint falls into the high load/low motion category, fusion of the bones is possible because these joints have very little movement anyway.

Andrew says: "Some treatment options actually encourage fusion, or artificially produce it through surgery, to create more stability. Instead of having two pieces of bone supported by a deteriorating joint you have one solid piece of bone - and therefore usually no pain."

The majority of horses who have experienced this form of joint fusion can return to most forms of work.

"There's a difference between absolute soundness and functional soundness," explains Andrew.

"Lots of horses working at high levels are not 100% athletically



Extra bone growth can be seen around this arthritic pastern joint (circled)

sound," he adds. "After all, many people are functionally sound, but may not be completely athletically sound. You might have twinges here and there, but it doesn't prevent you from living an active life."

"Most treatment options now are to produce a horse that's functionally sound and moving in a pain-free manner."



HORSES FOR COURSES

The type of work a horse does can leave him more prone to certain types of joint problems - for example eventers are more at risk of traumatic injuries from hitting fences, while racehorses commonly suffer knee joint problems caused by the intense training they do.

Osteoarthritis treatment options

Many DJD cases can be managed with the use of non-steroidal anti-inflammatory drugs (also known as NSAIDs), such as phenylbutazone - commonly known as bute. Another option is the use of joint injections, which are commonly used with degenerative conditions like osteoarthritis in sites such as the fetlock or coffin joint.

Steroid injections are anti-inflammatory and pain relieving, working to normalise the environment within the joint. Injections of hyaluronic acid can also help, or a combination of the two to lubricate the joint and reduce inflammation in the joint membrane. Injections of a drug called Adequan can also help, as it contains agents called polysulphated glycosaminoglycans, which help support articular cartilage, reducing friction and inflammation and aiding the smooth movement of the joint.



Painkillers containing phenylbutazone will help soothe the inflamed joints

3. Osteochondritis dissecans

Developmental disorder osteochondritis dissecans (or OCD) causes cracks in a joint's articular cartilage and the underlying bone - called subchondral bone - which can then cause fragments and chips to come loose.

A variety of causes of OCD are known, such as poor or abnormal bone and cartilage development in the early months of life, or a lack of minerals vital to good bone health, such as calcium or magnesium, and it's usually a combination of causes that leads to OCD.

There's also thought to be a hereditary aspect involved, with some large, fast growing breeds known to be at higher risk of the condition.

Andrew says: "The reasons for OCD are multi-factorial, but if a foal has grown too quickly, for example if he's a draught horse like the Clydesdale, the bone may not have

strengthened quickly enough. As a result, in later life, stress on the weak area may cause a portion of bone to shear off.

"This shows as joint swelling and pain, and X-rays will demonstrate the weak bone and the OCD fragment. If your youngster is a

fast-growing Warmblood or Thoroughbred, he'll be more at risk."

Signs of OCD include swelling, pain and lameness during or after work, and horses can be diagnosed from around five months old to around the age of three, when their skeleton has matured. It's often bilateral, appearing in matching pairs of joints, although the severity may vary between limbs.

While prevention of OCD is difficult because of the many factors that can cause it, a good and balanced diet is key for young and growing horses.

If OCD has been diagnosed, the most effective treatment option is keyhole (or arthroscopic) surgery to remove the chips and fragments, and with good surgical after-care and a gradual increase in exercise, many horses can return to a normal working life.



The view down the arthroscope's camera during surgery for OCD



This x-ray of a stifle clearly shows two OCD chips (circled)

This horse is undergoing arthroscopic or keyhole surgery on its stifle to remove chips caused by OCD



WHERE DOES OCD OCCUR?

OCD can occur in virtually all joints, however it's more commonly seen in the hock, stifle and fetlock.





Combine arena work with riding on other surfaces to protect his joints

Keeping his joints healthy

Supporting your horse's joints will help keep him happy and sound, and both his diet and exercise regime have big parts to play. In terms of feeding, a well-balanced diet is a must, boosting his joint health from the inside out by providing all the vital vitamins and minerals he needs to keep his bones strong. Like all cells in the body, bone cells are constantly being renewed and will respond to changes in diet – for example,

bones can reduce in diameter and become weaker and brittle if the body reabsorbs minerals stored within them such as calcium. This can happen if a horse is out of work for a while or has a diet which lacks these things. Andrew says joint supplements including glucosamine, chondroitin and MSM can also help keep your horse's joints functioning well, supporting both their structure and function.

Bones also respond to the concussion of work, which usually encourages an increase in bone size and the development of new bone, so exercise is key to helping keep

his bones, and therefore his joints, strong. Exercise also boosts circulation, helping ensure a healthy blood supply to bones, and it also helps circulate synovial fluid within joints, keeping them well lubricated and working fluently. Andrew says: "Horses are best kept exercised. There'll obviously be a threshold point at which exercise stops being beneficial to his joints, but keeping a horse locked up in

his stable day and night isn't ideal. Exercise and a little bit of movement is important, so turnout and perhaps using a horse walker will benefit a horse kept in a stabled environment."

The type of exercise you ask your horse to do can also affect his joint health – Andrew says working on a variety of surfaces will bring the most benefits to his bones, tendons and ligaments.

"It's important to mix things up, from working on grass to roadwork," he says. "Too much work on prepared surfaces like arenas can actually cause problems, and dressage horses in particular can have more problems because of this."

It's also important that your exercise programme is designed to prepare your horse for the activities you want to do with him – this means tailoring things to prepare his body and joints for the stresses they'll be under, for example if your aim is to go show jumping, then using an effective warm-up programme and gradually increasing the height of the fences you ask your horse to jump in training is vital. 



A well-balanced diet will support his joint health



THANK YOU to Andrew McDiarmid and Clyde Veterinary Group Equine Hospital for the use of the X-ray and surgery images in this feature.