

## **Passive Musculoskeletal Examination of the Horse**

### **Murray P. Brown, DVM, MSc, Dipl ACVS**

Although the equine passive musculoskeletal exam is best done in a large, well-lit stall, it can be performed in any location that is free of distractions to the horse. The horse should first be observed from a distance of several feet to look at overall condition, conformation, and other conditions that may or may not be related to the lameness problem. Some musculoskeletal abnormalities, for example, synovial effusion in the carpal joints, may be seen more readily when not standing too close to the horse.

The palpation portion of the examination should be started from the front end of the left side of the horse. The brachiocephalicus muscle and jugular groove are palpated, starting at the cranial end and moving caudally. Although soreness in the brachiocephalicus muscle is not pathognomonic for any specific lameness condition, usually head carriage is abnormal in the lame horse and therefore soreness in this muscle will yield additional information. Palpation of the jugular groove may reveal injection sites that may be related to attempts to treat the lameness.

The forelimb should be picked up in a manner that is safe and comfortable. While facing forward and standing by the horse's shoulder, the hand can be slid down the medial surface of the limb. When the hand reaches the metacarpal area, gently bump your shoulder into the horse's elbow area. This will shift the horse's weight to the other limb and make the limb easy to pick up. While holding up the limb, stand in a position that is comfortable for you. When possible, rest your elbows on your knees; this will reduce the strain on your back.

Using both hands, palpate the bulbs of the heels and the coronary band. Inspect the overall condition of the bottom of the foot. To check for foot balance, that is whether the foot is level in a medial to lateral plane, face the back end of the horse and grasp the limb in the metacarpal area and let the foot hang freely. Sight down the central sulcus of the frog as you would down a gun barrel. This will allow evaluation of medial to lateral balance.

Return to the forward facing position to continue the exam. Palpate the flexor tendons in the pastern area. The course of the palmar digital nerves should also be followed to check for neuromas from a possible previous neurectomy. Palpate the base of the proximal sesamoids, then the apices. Next, palpate the dorsal cortex of the cannon bone, by exerting firm pressure with the finger tips. Be careful not to squeeze on the flexor tendons during this process. Look for pain or change in contour of the bone.

Palpate the superficial digital flexor tendon. Slide your hand from proximal to distal, allowing the tendon to flow between your finger tips. Look for pain responses and changes in size and shape. The amount of pressure exerted on the tendons with the fingertips is only mild to moderate during this palpation process. As the technique is practiced, you will learn how much squeezing of the tendons it takes to cause a response in an abnormal tendon, but not in a normal one.

Palpate the deep digital flexor tendon in a similar fashion. Palpate the inferior check

ligament by exerting lateral to medial thumb pressure in this area. The inferior check ligament occupies the space between the deep digital flexor tendon and the proximal suspensory ligament. Next, palpate the body of the suspensory ligament as it emerges from between the splint bones. Follow it distally to the bifurcation and to its insertion on the sesamoid bones.

Palpate the axial surface of the medial splint bone by using firm pressure with the tip of the thumb. Start proximally and palpate the entire length of the bone. Switch hands and palpate the axial surface of the lateral splint bone.

Fetlock flexion is then done by cupping the toe in your hand and bracing it against your shin or knee. This fixes the position of the foot. The other hand is placed over the dorsum of the distal radius and is used to forcibly flex the fetlock. Look for a pain response or a limited range of motion.

To palpate the carpus, the pastern is placed between the thighs. The fingers of each hand are used to grip the limb adjacent to the carpus so that firm thumb pressure can be exerted on the dorsal borders of each carpal bone. Look for a pain response and changes in texture of the joint capsule. First palpate the second carpal bone on the medial side of the intercarpal joint. Then move to the third carpal bone. The third carpal bone is wide. You will feel a slight step in the joint surface as you move laterally to the fourth carpal bone.

The hands should then be reset proximal to the carpus so that the thumbs can exert pressure in a proximal direction on the distal borders of the proximal row of carpal bones. Palpate the ulnar carpal bone. Then move medially to palpate the intermediate carpal bone. Then move medially again to palpate the radiocarpal bone.

The fingers are then repositioned distal to the carpus to stabilize the hands to allow exertion of thumb pressure in a distal direction on the proximal borders of the proximal row of carpal bones. Start with the radiocarpal bone on the medial side of the radiocarpal joint. Then move laterally to the intermediate carpal bone. Then move laterally again to palpate the ulnar carpal bone. Again reposition the hands to palpate the distal radius.

After carpal palpation is completed, release the limb from between your thighs, flex the carpus by grasping the horse's fetlock and forearm. Next put pressure on the caudomedial aspect of the radius at the level of the chestnut. This is the area of origin of the superior check ligament. Look for a pain response. Abduct the limb. Extend the elbow. Then place your forearm under the horse's forearm to extend the upper limb forward.

To examine the back, apply firm digital pressure to the longissimus dorsi muscles. Normally, you will see a slight bobbing response to this pressure. More extensive dropping of the back (several centimeters) would be considered abnormal.

Check for gluteal soreness. This is most commonly found in the area caudal to the tuber coxa. Apply firm digital pressure to the gluteals by using the fingers of both hands. Once the pressure is applied, wait to see how the horse responds. If the gluteals are painful, the horse will

move away. Next apply firm thumb pressure in a rotating fashion over the trochanteric bursa. Stand close to the horse with your left hand on the opposite tuber coxa while your right hand palpates the left greater trochanter.

To pick up the hindlimb, place both hands on the tuber coxa while facing the back end of the horse. Then run your caudal hand down the back of the hindlimb to below the point of the hock. At this time, push on the tuber coxa with your other hand to shift the horse's weight to the opposite limb. As soon as the horse shifts its weight from the limb being picked up, slide your lower hand down to the distal metatarsal area and pick up the limb. Immediately shift the other hand from the tuber coxa and use it to assist in elevating the limb. Once the horse begins to pick up the limb, don't hesitate to follow through or the horse will put it down again. Carry the limb backwards to inspect the bottom of the foot and to check for foot balance. While in this position, do the fetlock flexion test. This can be done by bracing the dorsum of the fetlock against your shin and pulling up on the toe to flex the joint.

Next, carry the hindlimb towards the front of the horse. Position your body so that your back is against the horse's abdomen and thorax and your rear end is resting on the horse's forearm. Cup the toe of the foot in the fingers of your inside hand and rest your elbows on your knees. This way your arms and legs hold up the limb, not your back. Palpate the coronary band and bulbs of the heels. Palpate the flexor tendons in the pastern area. Palpate the sesamoid bones. Palpate the superficial and digital flexor tendons and suspensory ligament in a manner similar to the forelimb.

In the hindlimb, the axial surfaces of the splint bones are palpated by using the fingertips, rather than the thumb as in the forelimb. As with any other test, if you think you are getting a painful response, repeat the test to see if it is consistent. Shift hands to examine the medial splint. Again, rest your elbow on your knee to support the limb.

The Churchill hock test is performed by setting the thumb of the inside hand transversely over the dorsum of the proximal cannon bone and distal tarsal bones. The middle and index fingers are positioned on the head of the medial splint bone and on the first and second tarsal bones. The back of the nail of your index finger usually rests against the chestnut. The test is performed by squeezing the tips of the middle and index fingers towards the thumb. A positive response is indicated by abduction of the limb, not flexion. Limb flexion is not a positive response.

The patellar fixation test is performed by standing with your back against the horse and your feet perpendicular to the long axis of the horse's body. Place the palm of your caudal hand, with the fingers and thumb pointing medially, on the horse's patella. The horse must be positioned so that the stifle is in full extension and the horse will advance the limb being tested when the handler takes the horse ahead one step. Once the horse is properly positioned, brace your elbow against your hip and lean into the patella. Have the handler advance the horse one step. A catching or snapping of the patella indicates a positive test.

With experience, this examination can be conducted on both sides of the horse in less

than 5 minutes. This examination is an essential part of lameness diagnosis and prepurchase examinations and will yield information that cannot be gained by other means. It will often yield insight regarding the horse's primary lameness problem as well as giving information about secondary musculoskeletal problems that should be considered during the overall management of the case.