

Pinpointing Poor Performance

9 reasons your horse might not be performing as expected

Say your horse starts refusing to move off your leg, kicks out, and swaps his lead behind—when you're able to pick up the canter at all, that is. Your first instinct might be to blame his training or dismiss these issues as bad behaviors. In reality, a horse having difficulty performing as expected could be in pain. From a welfare standpoint, it's always preferable to investigate and rule out physical reasons for difficult behaviors before handing the reins to a trainer or behaviorist.

But where do you start? Here we'll walk through a workout with two vets who specialize in identifying roots of poor performance.

Poor Horse Performance Defined

When a ridden horse's athletic abilities fall short of the rider's expectations, you're dealing with poor performance. "The list of potential problems causing poor performance very much depends on what type of poor performance we are talking about," says Erin Contino, MS, DVM, Dipl. ACVSMR, associate professor of Equine Sports Medicine and Rehabilitation at Colorado State University, in Fort Collins. "If we're seeing issues with physically being able to perform an athletic job, then respiratory, cardiac, and muscle diseases would be highest on my list of possibilities. On the other hand, if we are dealing with behavioral issues under saddle, then axial (body) skeletal pain and gastric ulcers top that list."

With this in mind, let's dive into nine common causes of poor performance in horses and what it takes to get a diagnosis.

The No. 1 Culprit: Lameness

■ **Diagnostic approaches** Practitioners use palpation, lameness exam, diagnostic regional anesthesia (nerve blocks), lameness locator technology, radiographs,

ultrasound, computed tomography (CT) scan, MRI, and nuclear scintigraphy (bone scan).

■ **Possible causes** Diagnosing equine lameness involves an almost limitless range of possibilities. "The most common causes are probably hind-limb proximal suspensory disease and generalized front foot pain," Contino says, reflecting on her experience. A horse's discipline and workload greatly influence his predisposition to different injuries. Looking at two popular disciplines, researchers have suggested that show jumpers and eventers are especially at risk of developing flexor tendon injuries, while dressage horses are overrepresented in hind-limb suspensory ligament desmitis cases¹.

My Horse Isn't Lame But Isn't Performing Well. Now What?

Say your horse is "off," but a thorough

lameness exam, including flexion tests and nerve blocks, didn't provide any answers. What's next? We delve into the myriad other problems that can cause poor performance, Contino says. This conversation opens the door to what can be a complex, but necessary, investigation.

This is where an internal medicine specialist like Laura Javscas, VMD, Dipl. ACVIM, of Rhinebeck Equine, in New York, comes in. After your primary veterinarian has ruled out lameness as the cause of poor performance, you and your horse will likely be referred to an internal medicine specialist. "When evaluating a horse for poor performance, I always start with getting a thorough history to pinpoint exactly what problems the rider is experiencing," Javscas explains. "When the source of the issue is nebulous, this process can help to target the area(s) to focus on."

Regardless of case history, Javscas starts



If a horse kicks out behind, the problem might not be behavior related. From a welfare standpoint, it is important to rule out physical issues first.

with a complete physical exam, including careful auscultation (listening) of the heart, a rebreathing exam to listen to the lungs (which causes the horse to take deeper, slower breaths, making lung sounds easier to hear), and a neurologic exam. The results of this preliminary evaluation dictate her next move and could point her in several different directions. The common ones include:

2. Back Pain

■ **Diagnostic approaches** Practitioners use palpation, radiographs to check for overriding dorsal spinous processes (kissing spines) and arthritis. Some veterinarians also start a horse on a 14-day course of the muscle relaxant methocarbamol (Robaxin) and see if the horse's back pain improves. Some complex, idiopathic (occurring unexpectedly or from an unclear origin), and/or persistent back pain cases might warrant a visit to a board-certified sports-medicine specialist for further diagnostics, including advanced imaging.

■ **Possible Causes** Horse owners commonly observe back pain in poorly performing athletes and veterinarians frequently identify it as a clinical issue. In 2011² study renowned equine sports medicine and rehabilitation specialist Kevin Haussler, DVM, DC, PhD, Dipl. ACVSMR, estimated that up to 94% of ridden horses experience some degree of back pain. There are likely several factors to blame for this statistic. A 2023 survey-based study revealed the single most diagnosed pathological cause of primary equine back pain is kissing spines², while other studies have identified ill-fitting saddles, among other riding-associated factors, as a common cause of equine back pain³. "While axial skeletal issues (including back pain) can cause lameness, they often present only as poor performance," says Contino. "Axial skeletal pain, dysfunction, and/or pathology are the most common causes of poor performance in the horses that present to me."

3. Muscular Disease or Injury

■ **Diagnostic approaches** Veterinarians



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A complete physical examination by a veterinarian helps determine the next steps.

use serology, which involves testing blood levels of the muscle enzymes aspartate aminotransferase (AST) and creatine kinase (CK), both baseline and after an exercise challenge; genetic panel; and muscle biopsy. Javscas also recommends performing genetic testing and having a muscle biopsy sample evaluated by an experienced veterinary pathologist.

■ **Possible Causes** Hyperkalemic periodic paralysis (HYPP) and polysaccharide storage myopathy (PSSM) are genetic diseases that affect horses' muscles. In Warmblood breeds myofibrillar myopathy (MFM) leads to muscular disease. PSSM and MFM most commonly cause clinical signs of tying-up and/or signs of vague poor performance, muscle soreness, and sometimes hind-limb gait abnormalities (depending on breed), while HYPP can cause muscle tremors and paralysis.

4. Neurologic Deficits

■ **Diagnostic approaches** Veterinarians use physical, lameness, blood tests, and neurologic exams. They refer to an internal medicine specialist or neurologist for cerebrospinal fluid analysis (looking for pathogens that cause neurologic disease),

CT scan, and myelogram (radiographs obtained under general anesthesia using a contrast injection around the spinal cord to look for compression). "Neurologic and muscle diseases can cause poor performance and are often confused with lameness," notes Javscas.

■ **Possible causes** Equine protozoal myeloencephalitis (EPM) stands out as the most common neurologic disorder in horses and is arguably overdiagnosed and overtreated. A 2017 study showed 78% of apparently healthy horses in the U.S. tested positive for EPM antibodies⁴, meaning they were exposed to but not necessarily actively infected with EPM. However, EPM can cause neurologic deficits that negatively affect a horse's performance. Other neurologic conditions, such as equine degenerative myeloencephalitis (EDM), cervical vertebral stenotic myelopathy (CVSM), and Lyme disease can produce similar neurologic deficits.

5. Hoof Problems

■ **Diagnostic approaches** Practitioners use lameness exams, hoof balance radiographs (lateromedial [side-to-side view] and dorsopalmar [front-view]), MRI, hoof

Is Your Horse Lame or Dealing with DOMS?

Veterinarians long believed delayed-onset muscle soreness (DOMS) was caused by lactic acid buildup in the muscles after exercise. Recently scientists found that's not the case. Humans and horses alike can experience muscle soreness and tenderness 48-72 hours after strenuous and/or unfamiliar exercise from microdamage accumulation in the muscle fibers⁵. If you've experienced DOMS, you know how crippled you can feel—and look! Though physicians consider DOMS a mild injury, they report it as one of the most common reasons for compromised human athletic performance⁶.

testers, and diagnostic nerve blocks, and they might refer to a podiatrist.

- **Possible causes** Most foot problems stem from various musculoskeletal issues, primarily categorized as lameness (see No. 1). Researchers have shown hoof bruising and podotrochlosis (aka navicular syndrome) are the main foot-related causes of lameness and poor performance in both dressage horses and show jumpers⁷. Primary issues of the hoof capsule can also limit performance and include white line disease, solar abscesses and bruising, and hoof cracks, to name a few.

6. Respiratory Problems

- **Diagnostic approaches** Vets use auscultation, rebreathing exams, bronchoalveolar lavage (BAL), transtracheal wash (TTW), chest radiographs, lung ultrasound, and airway endoscopy to investigate these issues. Dynamic endoscopy has helped as a means of finding problems only present during work.
- **Possible causes** Javicas cites equine asthma as one of the top three causes of poor performance she diagnoses. Other-

wise, respiratory problems include everything from laryngeal hemiplegia (roaring) and dorsal displacement of the soft palate to epiglottic entrapment and arytenoid chondritis. Contino agrees, adding that the literature suggests upper airway conditions such as these are another common cause of poor performance in horses.

7. Cardiovascular Restrictions

- **Diagnostic approaches** Veterinarians use cardiac auscultation, exercise tolerance tests, electrocardiogram (ECG/EKG), and cardiac ultrasound.
- **Possible Causes** Heart problems also made the top-three list of causes of poor performance in Javicas' caseload, but this statistic likely does not represent the entire equine population. "Cardiac issues are a relatively rare cause of poor performance, but horses are referred to me—an internal medicine specialist—for further cardiac workup if a murmur is auscultated or arrhythmia detected, hence the bias," she explains. Cardiovascular malfunction is, however, the most common reason for sudden death in horses during and immediately after exercise, says Cris Navas, LV, PhD, Dipl. ACVIM, a large animal internist at the University of Pennsylvania's New Bolton Center Veterinary Hospital, in Kennett Square. In his presentation at the 2023 Veterinary Meeting and Expo (VMX) in Orlando, Florida, Navas cited atrial fibrillation as the No. 1 cause of cardiac limitation to horses' athletic performance.⁸

8. Gastric Ulcers

- **Diagnostic approaches** "Gastric ulcers have a variety of clinical signs, including colic signs after eating, bruxism (teeth grinding), and girthingness," Javicas says. "Gastric ulcers can also cause poor performance. The most common manifestations I see are reluctance to move forward and bucking, signs that may mimic back pain. While these observations are helpful in guiding horse owners and veterinarians toward a gastric ulceration diagnosis, only a gastroscopy can confirm or rule

out the presence of ulcers in an individual horse's stomach and determine the location and severity of the ulcers, which dictates treatment."

- **Possible Causes** Gastric ulcers are prevalent in many populations of equids, from racehorses and eventers to stabled horses in general. Risk factors include insufficient forage access, consuming grain on an empty stomach (not buffered by forage), high starch intake, and stress⁹. Javicas says gastric ulceration is one of the most common culprits of poor performance she sees in her caseload.

9. Repro or Behavioral Challenges

- **Diagnostic approaches** Practitioners use serology to test for abnormal hormone levels in mares (estrogen and testosterone) and ultrasonography of the mare reproductive tract.
- **Possible causes** If a mare has a granulosa cell tumor on an ovary, the hormonal imbalance might cause her to display stallionlike behavior¹⁰. The neurologic disease EDM can also cause lethargy and aggression in horses of both sexes¹¹.

When Health Is Not the Problem

When dealing with a poorly performing horse, Contino reiterates first ruling out pain and lameness with a thorough clinical exam and the diagnostics listed above. "If my examinations don't reveal anything obvious, depending on the case, I may recommend a Bute trial," she says.

Much like the methocarbamol trial mentioned earlier, a Bute trial involves giving a horse the non-steroidal anti-inflammatory drug (NSAID) phenylbutazone daily for seven to 10 days. "The goal is to determine if the horse is any different on Bute—or not," explains Contino. "If he improves, this indicates the performance issue does indeed have a pain or inflammation component."

If Bute doesn't ameliorate performance, Contino might recommend a gradually increasing fitness and conditioning program, depending on the case. She also adds physical therapy and gymnastics exercises and sees if the horse trends better—pointing to a



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Primary issues of the hoof capsule, including this repaired hoof crack, can limit performance.



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A horse reacting negatively to the girth (ear pinning, biting, kicking, or tail swishing) can be a sign of gastric ulcers.

fitness and conditioning issue. “If the horse gets worse during the fitness program, this suggests we are aggravating an underlying issue, and it’s back to the drawing board.”

Take-Home Message

“I do think horses with axial skeletal pain present more often for poor performance or behavioral issues than they do for lameness,”

Contino says. “There isn’t a ‘one-size-fits-all approach’ to these complex poor performance cases. They can be tricky for sure!”

Recognizing your horse is struggling and

reaching out to your veterinarian is the best first step you can take to get to the bottom of the issue. It could take some time and trial and error, but trust your veterinary team will do everything possible to get you back in the saddle with a horse that's feeling and performing his best. 🐾

References

1. Murray RC, Dyson SJ, Tranquille C, Adams V. Association of type of sport and performance level with anatomical site of orthopaedic injury diagnosis. *Equine Vet J*. 2006;38:411–416.
2. Marshall-Gibson ME, Durham MG, Seabaugh KA, Moorman VJ, Ferris DJ. Survey of equine veterinarians regarding primary equine back pain in the United States. *Front Vet Sci*. 2023;Jul 26;10:1224605.
3. Greve L and Dyson S. Saddle fit and management. *Equine Vet J*. 2015;47:415–421.
4. James KE, Smith WA, Conrad PA, Packham AE, Guerrero L, Ng M, Pusterla N. Seroprevalences of anti-*Sarcocystis neurona* and anti-*Neospora hughesi* antibodies among healthy equids in the United States. *J Am Vet Med Assoc*. 2017;Jun 1;250(11):1291–1301.
5. Mizumura K, Taguchi T. Delayed onset muscle soreness: Involvement of neurotrophic factors. *J Physiol Sci*. 2016;66:43–52.
6. Hotfiel T, Freiwald J, Hoppe MW, Lutter C, Forst R, Grim C, Bloch W, Hüttel M, Heiss R. Advances in Delayed-Onset Muscle Soreness (DOMS): Part I: Pathogenesis and Diagnostics. *Sportverletz Sportschaden*. 2018;Dec 32(4):243–250.
7. Dyson S. Lameness and poor performance in the sport horse: Dressage, show jumping and horse trials. *J Equine Vet Sci*. 2002;22(4):145–150.
8. Vigouroux L. Cardiac Limitations to Horses' Athletic Performance. *TheHorse.com*. February 4, 2023. [TheHorse.com/1121366](https://www.thehorse.com/1121366).
9. Galinelli N, Wambacq W, Broeckx BJG, Hesta M. High intake of sugars and starch, low number of meals and low roughage intake are associated with Equine Gastric Ulcer Syndrome in a Belgian cohort. *J Anim Physiol Anim Nutr*. 2021;105(Suppl. 2):18–23.
10. Sherlock CE, Lott-Ellis K., Bergren A, Withers, JM, Fewes D, Mair, TS. Granulosa cell tumours in the mare: A review of 52 cases. *Equine Vet Educ*. 2016;28:75–82.
11. Finno CJ, Johnson AL. Equine Neuroaxonal Dystrophy and Degenerative Myeloencephalopathy. *Vet Clin North Am Equine Pract*. 2022 Aug;38(2):213–224.