



For optimal performance the hooves of a racehorse need to be in tip-top shape

## Feet First

STUDIES SHOW EARLY DETECTION OF HOOF ISSUES  
COULD LEAD TO MORE FAVORABLE OUTCOMES

By AMANDA DUCKWORTH

**ONE OF THE** staples of equine health care pertains to the hoof. No matter what stage of life a horse is in, quality hoof care is important. As a common source of both simple lameness and even larger troubles, it is vital that a horse's hooves remain a priority. While this is true for any breed, Thoroughbreds in particular have been the subject of several recent studies.

Basic tenants of good hoof health include proper nutrition, routine trimming done by a certified farrier, and picking out a horse's feet daily. All of these factors help the hooves be healthy in

general, and they create a baseline for recognizing when something might be amiss.

Common hoof issues include thrush, hoof wall cracks, growth rings, bruising, white line disease, and perhaps the most feared, laminitis. If a horse develops lameness, it is important to work with a trusted veterinarian.

The 2025 Equine Lameness Insights report, released by Sleip, included responses from over 100 orthopedic veterinarians in the International Society of Equine Locomotor Pathology (ISELP). From that group, 95% reported they regularly see cases where earlier

veterinary intervention could have led to a better outcome.

In May 2017, Preventive Veterinary Medicine published "Cross-sectional study of the prevalence of and risk factors for hoof disorders in horses in The Netherlands." Researchers found that of the 942 randomly selected horses for the study, 85% of them had at least one hoof disorder, mostly mild, that was observed during regular foot trimming.

Understanding both a horse's history and its job can help streamline any potential diagnosis. The American Association of Equine Practitioners delves into the basics of the topic with its article "Front Foot Lameness: Don't Forget the Exam" by Dr. Michael St. Blanc.

"Some of the most important components of your horse's assessment are a solid lameness examination and history," said St. Blanc. "Knowing the performance and medical history of the horse is extremely important in helping your veterinarian diagnose the source of lameness, in addition to predilections that occur with certain breeds, ages, and disciplines.

"From here, a lameness exam is vital. This includes observation of the horse under a variety of surfaces and conditions, thorough musculoskeletal palpation, hoof tester application, flexion tests, and conformation evaluation."

Understanding hooves across all breeds is imperative to good horse health, and recent studies are helping to set better general baselines. In September 2025, the Equine Veterinary Journal published "Computed tomographic measurements in 110 front hooves of non-lame Thoroughbred racehorses and Warmblood showjumpers."

"The hoof wall can be affected by several pathologies, including laminitis, keratoma, hoof cracks, and white line disease, and computed tomography has been shown to provide useful information on these conditions," explained researchers. "These diseases can result in alteration of the hoof wall and its thickness. Chronic

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low-grade laminitis can cause mild lameness and/or poor performance, without the rotation of the distal phalanx, but with detectable thickening of the hoof wall.

“For accurate interpretation of computed tomographic (CT) studies, knowledge of the CT appearance of the hoof wall and the sole in healthy horses is required. The normal range of hoof wall and sole thickness and dorsal hoof wall to the palmar length of the distal phalanx (DHWDP) ratio have been established on radiographs, and limited data based on MRI are also available. To our knowledge, CT measurement ranges of hoof wall and solar thickness and DHWDP ratio have not been published.”

The objective of the retrospective, cross-sectional study was to establish a reference range for the thickness of the



Along with regular farrier visits, veterinarians also play a vital role in hoof health

hoof wall, the sole, and their layers and the DHWDP ratio in non-lame horses in full work and without clinically significant lameness. In total, 56 horses in full training were used. Of those, 26 were Warmblood showjumpers and 30 were Thoroughbred racehorses on the flat.

According to researchers, reference ranges were established through the course of this study. The mean total dorsal hoof wall thickness was  $14.03 \pm 1.37$  mm

in Thoroughbred racehorses and  $15.79 \pm 1.41$  mm in Warmblood showjumpers. The mean DHWDP ratio was  $0.24 \pm 0.02$  in both breeds. The sole was significantly thicker laterally than medially at the palmar measurement site, perpendicular to the ground and to the surface of the sole.

“The reported CT reference ranges, established using a soft tissue algorithm, for dorsal, medial, and lateral hoof wall and sole thickness measurements, and

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Analyzing the relationship between hooves and lameness is a popular area of study

DHWDP ratio in non-lame horses can aid accurate interpretation of CT images of horses with foot pain,” said researchers. “Further research is warranted to investigate mediolateral differences and reference ranges in other breeds and to evaluate whether the reported reference ranges based on fan-beam CT examination in a semi- or nonweightbearing position are applicable to CT studies performed in fully weightbearing position or using a cone-beam system.”

Thoroughbreds in particular have a reputation for having less than ideal feet. They often have, or are believed to have, thin, weak hoof walls. Other commonly accepted hoof challenges in Thoroughbreds include thin soles and long toes with underrun heels. Understanding the Thoroughbred hoof better continues to be a well-researched area of study.

In February 2026, the American Journal of Veterinary Research published “Hoof and movement asymmetry in Thoroughbred racehorses with predominantly single direction training.”

“The overall aim of this study was to evaluate the effect of training and racing in a clockwise direction on hoof morphology and movement symmetry in racing Thoroughbreds,” explained



**THE HOOF WALL CAN BE AFFECTED BY SEVERAL PATHOLOGIES, INCLUDING LAMINITIS, KERATOMA, HOOF CRACKS, AND WHITE LINE DISEASE, AND COMPUTED TOMOGRAPHY HAS BEEN SHOWN TO PROVIDE USEFUL INFORMATION ON THESE CONDITIONS.”**

—EQUINE VETERINARY JOURNAL

researchers. “Our first objective was to compare hoof width differences between the left and right forelimbs and hind limbs. Based on the uneven distribution of forces between the inside and outside limbs when horses exercise in a circular path, we hypothesized a difference in hoof width between the left and right

limbs for both forelimbs and hind limbs.

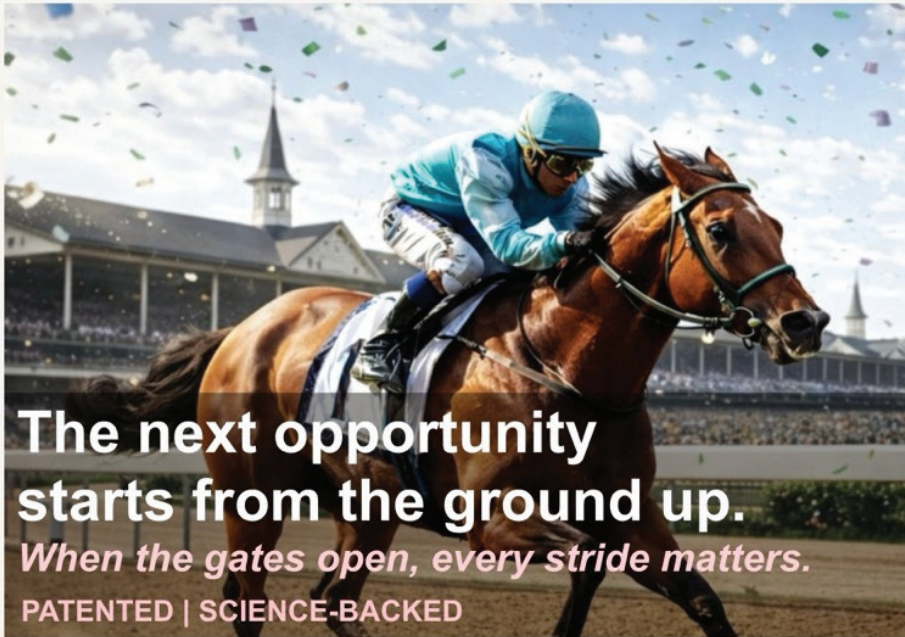
“Our second objective was to assess whether hoof asymmetry is associated with the direction of movement asymmetry. Specifically, we hypothesized that the side of the wider hoof would be associated with the direction of movement asymmetry.”

For the observational cross-sectional study, 169 Thoroughbred racehorses who were recently retired from clockwise racing at the Hong Kong Jockey Club were used. To qualify for the study, they had to be retired within 30 days before data collection, with no trimming and/or shoeing interventions. All of the study subjects were also clinically sound and injury-free for at least six months prior to data collection. The Thoroughbreds were assessed on the day of scheduled farrier work. Contralateral hoof width differences were quantified and movement asymmetry during trot measured using inertial sensors placed on the poll, withers, and pelvis.

Researchers found that racehorses training and racing in a clockwise direction commonly exhibit hoof asymmetries. In total, 70% of horses had wider right forehooves and 65% wider right hind hooves. Forelimb hoof width asymmetry was associated with poll and withers movement asymmetry, whereas hind hoof width asymmetry was not associated with pelvic movement asymmetry.

Day to day, these results can be relevant for clinical lameness examinations, where quantitative gait analysis is more and more commonly used. They also provide potential research opportunities regarding breakdowns.

“This study’s findings, combined with prior work demonstrating the association between poll movement and force distribution, provide further evidence that the forelimbs of Thoroughbreds are subjected to more extensive contralateral force asymmetries,” explained researchers. “This has potential implications for injury risk/patterns regarding the distribution of catastrophic forelimb injuries



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Early intervention in diseases of the hoof have better outcomes, according to Sleip's 2025 Equine Lameness Insights report

in Thoroughbreds. For counterclockwise racing in North America, a higher fracture incidence has been reported for the left (i.e., inside) forelimb.

“Assuming similar adaptive processes occur on both sides, where inside hooves become wider with consistent directional training, it would be interesting to further study whether the fracture incidence is in some way associated with a contralateral difference in hoof width. Specifically, are the fractures happening despite the ‘adaptations’ (in the limb with the wider hoof) or because the horse has failed to ‘adapt’ (in the limb with the narrower hoof)?”

How a horse is shod can also impact its safety during racing. In October 2024, PLOS One took a closer look with its study “Hoof slip duration at impact in galloping Thoroughbred ex-racehorses trialing

eight shoe-surface combinations.”

“Horseshoes used during racing are a major determinant of safety as they play a critical role in providing traction with the ground surface,” explained researchers. “Although excessive hoof slip is detrimental and can predispose to instabilities, falls and injuries, some slip is essential to dissipate energy and lower stresses on the limb tissues during initial loading.”

For the study, researchers aimed to quantify hoof slip duration by using retired Thoroughbreds. In total, 13 retired racehorses at the British Racing School (BRS) in Newmarket, UK, were included in the study. All of the horses were in regular work, including gallop training, and were normally used for jockey education. To collect the necessary data, they were galloped over turf and artificial tracks in the following four shoeing conditions:

1) aluminum; 2) steel; 3) GluShu (aluminum-rubber composite); and 4) barefoot.

Researchers concluded that the mean hoof slip duration was similar amongst forelimbs and the non-leading hindlimb but was shortest in the leading hindlimb.

“We found that hoof slip duration was limb specific: the forelimbs and the non-leading hindlimb had longer hoof slip durations on turf compared to the artificial surface, whereas the leading limb had shorter hoof slip durations on turf,” explained researchers. “The leading hindlimb was also sensitive to shoeing condition, with increased slip durations found for an aluminum shoe compared to barefoot. A differing response of the leading limb to shoe and surface conditions, and its overall shorter hoof slip durations, may be related to its important role in redirecting the horse’s center of mass during the stride cycle and its higher vertical hoof velocities pre-impact.”

“The interaction between hooves and the surfaces they are galloping over is at the heart of the risk of slippage, fractures, and falls. Therefore, these findings are relevant for understanding the stability of the hoof and distal limb during landing and the likely resulting concussive forces and loading rates, which may bear relevance for injury risk.”

Of course, if something does go wrong with a horse, one of the greatest concerns in terms of equine health is the risk of laminitis. The findings from a recent study may provide safer care for horses at risk of the deadly condition. In February 2026, the Equine Veterinary Journal published “Treatment with ertugliflozin mitigates the hyperinsulinemic response to intra-articular triamcinolone acetonide.”

Joint injections that contain corticosteroids are a common anti-inflammatory used in horses to treat pain and swelling. One result of giving these injections is that a horse’s blood sugar and insulin can become elevated.

“Intra-articular (IA) corticosteroids can cause hyperinsulinemia, which can subsequently increase the risk of



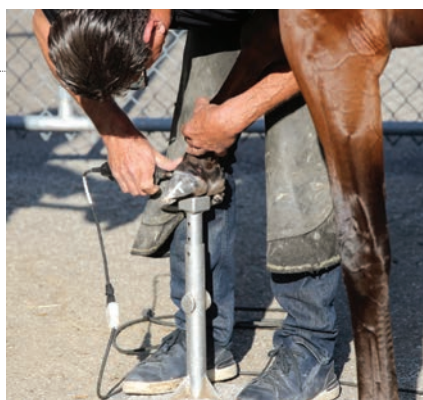
Cracks in hooves are common in performance horses



laminitis, particularly in horses with insulin dysregulation (ID),” explained researchers. “Sodium glucose cotransporter 2 inhibitors (SGLT2i), a drug class that is being utilized more commonly in horses with insulin dysregulation, could potentially be used to control post-IA corticosteroid hyperinsulinemia.”

For the prospective, controlled, crossover study, a total of eight mixed-breed, metabolically normal geldings either received no treatment (CTL) or were treated with ertugliflozin (ERT) for seven days before and seven days after a total dose of 18 mg of IA triamcinolone acetonide (TA).

Among the data collected were samples for resting glucose and insulin concentrations, as well as dynamic oral sugar testing (OST). Treatments were crossed over, and the study was repeated.



**Dornoch, the 2024 Belmont Stakes winner, experienced quarter cracks throughout his career. Renowned blacksmith Ian McKinlay, a master at patching quarter cracks, is seen here tending to the colt in advance of the Kentucky Derby**

“Insulin was significantly lower two days after IA TA with ERT treatment at 60 min post-OST,” researchers concluded. “Resting glucose concentrations were significantly lower with ERT treatment at eight hours, 12 hours, 24 hours, and 48 hours, while resting insulin concentrations were significantly lower with

ERT treatment at 12 hours, 24 hours, 48 hours, and 72 hours post-IA injection.

“Treatment with ertugliflozin decreases glucose and insulin changes following IA corticosteroid administration in metabolically normal horses. Further investigation of this treatment strategy in insulin dysregulated horses is warranted as it may reduce hyperinsulinemia and, therefore, the risk of laminitis with IA corticosteroid administration.”

From routine care to fighting off laminitis, and everything in between, understanding a Thoroughbred’s hooves is vital to its overall health and well-being. Continuing education in this realm is important as research continues to better highlight the parameters for what helps keep a hoof healthy. [BH](#)



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