Importance of Balance in Reining Horses

The horse's front hooves play an important part in your reining horse's health and performance.

WITH STUART MUIR - NZCEF, CJF, APF Resident Farrier at Rood & Riddle Equine Hospital, Lexington, KY.
BY MEGAN ARSZMAN

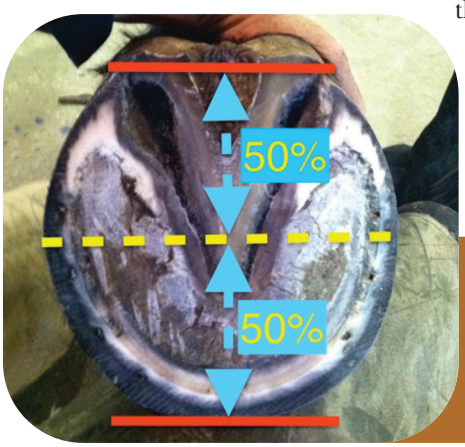
The front legs of the reining horse take a lot of stress. Combine high speed with turns, stops and circles, and the front limbs, carrying about 62 percent of the horse's total body weight, are stressed to the maximum.

Any assistance your horse can get from proper shoeing and care can mean the difference between a long, successful career in the arena and a shortened one due to soft tissue injuries.

First Impressions of the Hoof

"When I evaluate a horse's foot, I'm always looking for the most robust structures of the foot and that tells me that the hoof capsule or that area is coping very well with the load that it is enduring," explains Stuart Muir, certified journeyman farrier with Rood & Riddle Equine Hospital in Lexington, Kentucky. "Meanwhile, the weaker structures (crushed heels, under run heels, hoof wall flares) tell me that the horse is probably overloaded in those areas."

These initial evaluations of a horse's hoof give Muir an idea of the next steps when it comes to helping the hoof grow in the best direction to ensure the horse's longevity.

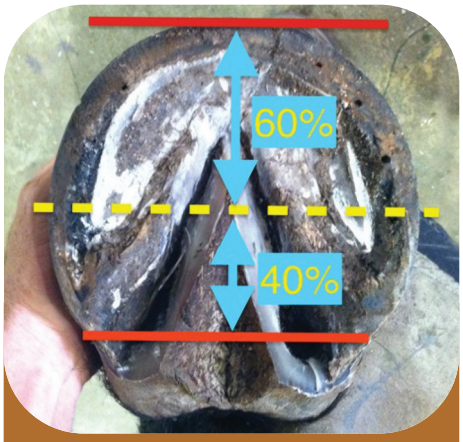


A hoof correctly balanced after trimming: when the hoof is trimmed to these parameters, the hoof is interacting with the ground in the most efficient way.

An overloaded hoof needs more support in one area versus another, so Muir will manipulate the trim to push some of the load to an area of the hoof that is coping better.

"There are numerous ways to do that," he explains. "Sometimes it can be as simple as changing the style of the shoe, trimming for extra length, or changing up the shoe."

Muir emphasizes that it's important for farriers and trainers to be open minded when it comes to therapeutic shoeing and what's best for the horse's hooves. What might work at the beginning of the year might not as time goes by.



The 60% ratio indicates the horses toe is creating excessive leverage on the front (dorsal) part of the hoof capsule, therefore the foot is out of balance.

The Basics of the Breakover

Muir explains that there are essentially four phases of the horse's stride. The first is the initial impact, which is the only phase of concussion. Second, the horse will slide momentarily (milliseconds). The third is when the horse actually decides it's safe to move over the top of himself, and then the whole body will move over the top of the toe. The fourth is the breakover phase, which is when the heel leaves the ground and then there is rotation around the toe of the hoof, which is still in contact with the ground. All of this happens in a blink of an eye, yet it is one of the most important aspects of the horse's health and movement.

"There's significance to the sliding and stopping phase of the horse's stride," explains Muir. "There is a very fine line when it comes to the footing—too much traction means you can actually do some internal soft-tissue damage."

Muir explains that in recent years, numerous racetracks have removed their synthetic track surface because it had been found that the horse's limb was decelerating too fast, thus causing an increase in soft-tissue injuries.

"If the footing is too sticky, it can cause inflammation within the hoof capsule, and that can be very hard on the ligaments of the horse's leg," he says.

While most of the arenas that reining takes part in are meticulously manicured, Muir cautions that there are still those times you might be working in a practice pen that's not the best footing.

Achieving Balance in the Hoof

In order to alleviate the amount of stress and pressure on the horse's front legs during movement, it's imperative that the front legs breakover with as little force as possible.

"We need to get the horse moving very efficiently," says Muir. "To do that, we work a lot at balancing the hoof with trimming and shoeing. It's very important, especially in reining, to make sure that the front end is balanced."

Understanding biomechanical science in relation to the horse's movement means understanding the horse's internal mechanical movements throughout the locomotion phases. Equal amounts of ground pressure (anterior and posterior, or front and back) throughout the phases of a stride are needed so the horse can interact with the ground surface in a positive manner.

There's not only anterior and posterior balance, but also medial and lateral (side to side), so that's essentially looking at the horse's foot in four quadrants; farriers like to keep those all in balance. The widest part of the hoof capsule directly relates to the location of the coffin joint, so when the farrier assesses the hoof health and condition, he or she can quickly recognize this landmark and calculate the balance percentages. Radiographs can also be used to measure all these parameters. As a result, shoeing prescriptions are becoming very accurate.

Muir recommends that farriers look at reducing the leverage by shoeing around the center of articulation, which refers to the coffin joint and the horse's limb.

"What we look for is a 50/50 ratio with the interior and posterior of the coffin joint," he explains. "You can see that with various landmarks on the outside of the horse's hoof capsule, and we can also identify that very easily with radiographs."

However, sometimes balance on the reining horse might not be achieved with just trimming alone, and that's when Muir makes modifications to the shoes. Because of the amount of circle work done in a pattern, Muir looks for directional shoes.

Working with your farrier during the off-season

The off-season for most horses means a time for turnout, where days of training are replaced with days of relaxation and less bother. But that's also the optimum time for correcting any hoof problems, says Stuart Muir, certified journeyman farrier with Rood & Riddle Equine Hospital in Lexington, Kentucky.

"I'll be quite proactive in the winter time, especially with my competitive horses before they go out on the circuit, so I've got their feet right where I want them," he says.

Muir recommends trainers and owners sit down with their farrier at the beginning of the year and line up the show schedule with farrier sessions for the best chance at keeping hooves healthy throughout the year.

"I like to know the horse's schedule in advance, which might change the way I trim a horse," he says. "In some horses, that might mean that I leave even more foot mass behind for a nice healthy strong wall. But this way I'm setting the horse up for the best campaign possible, because I know I set that horse up with the best feet possible before he goes. Once that horse is on the circuit or competing, it's very hard to make changes like that, so it's important to be proactive and get it done. Use any time that the horse is turned out proactively and be sure that you use that time to make any changes that need to be made."

"Using a directional shoe can really influence better movement and reduce the leverage that the hoof capsule has to undergo during the motions," he says. "So that type of shoe can be very beneficial."

The Case for Mid-Year Hoof Evaluations

Especially for horses competing at a high level, it's important for owners and trainers to realize that even though the shoeing prescription might have been working for a certain number of months, a change might be needed.

"The horse's foot is a dynamic situation where the foot is going to be continually adapting to the current workload that it's under," explains Muir. "Quite often I will change shoes in the middle of the season. I know some owners and trainers are weary of doing this, but it's so important to keep adapting with the dynamic nature of the hoof capsule."

And while Muir understands that horsemen tend to be creatures of habit, he preaches flexibility when it comes to ensuring their horses' feet are healthy year-round.

"We see a lot of trainers that don't want to change anything and you have to reason with them, but as long as they following good shoeing principles and it's logical, that doesn't mean that you need to turn everything upside down," he says. "I like to think that any therapeutic shoeing should be a common theme that is a well-thought out plan that applies farrier science."

Muir recommends that trainers and owners look through veterinarian-reviewed information about therapeutic shoeing to become familiar with the latest advances. Shoeing has evolved a lot in the last 10-15 years, to where farriers and veterinarians are starting to question some of the old traditional theories.

"Some of them are still standing true, but with some of them I think we need to be more progressive with the shoeing and be mindful that if science changes, we need to apply new science to that shoeing," says Muir. "So, it's important to stay educated on not only new products on the market, but in new ways of understanding the hoof capsule."

Use Leverage to Your Advantage

There are different shoes on the market that offer a biomechanical advantage. Some shoes might enhance breakover with the design profile of the shoe.

While a traditional rocker-toe shoe might seem the best to help reduce the leverage of breakover, Muir points out that the rocker toe aids in breakover only dorsally or directly in front of the hoof. For a horse going in mostly straight lines, such as a Western pleasure horse, this would be enough.

"But for horses that do a lot of circle work, I'm a little hesitant to use a rocker toe because essentially the rocker toe might not be going in the same direction as the foot," he says. "So for horses like reiners, it can sometimes be as simple as grinding the shoe and grinding the kind of mechanical advantage you want in the shoe. Occasionally, I'll bevel the shoe with a grinder from the widest part of the foot forwards (towards the toe) which will allow the horse to move with less resistance on a circle. It can also help offset break over issues due to irregular conformation."

While the idea of giving a horse an extra advantage sounds enticing, Muir points out that shoeing cannot greatly improve a horse's movement or flatten a knee. It's to provide a more healthful advantage because you're decreasing the amount of leverage on the hoof capsule during the breakover.

Reducing the amount of leverage means reducing the amount of strain on the deep digital flexor tendon. During breakover, the deep digital flexor tendon is completely engaged and there is a certain amount of force lifting that up. Once the heel lifts off of the ground, the horse's extended weight is on that toe. So, leverage reduction is about the amount of time the horse spends getting over that last phase of breakover when the horse is on his toe. The less force that the deep digital flexor tendon has to engage, the quicker the horse moves forward. That is all in relation to how close breakover is to the center of articulation.

Keeping It Regular

Keeping your horse on a regular shoeing schedule of every four to five weeks will keep the angles and leverage to the horse's benefit.

"The longer the horse's foot gets, the more strain that is referred back onto the soft tendon and ligament structure within the horse's leg," says Muir. "It's so important to have these horses, even the weekend horses, on a nice four to five-week schedule because just simple maintenance can be one of your biggest aids in evading lameness." ✦