

Which surface is best for your horse?

By Charlene Strickland

Every horse appreciates sure footing, either on the track or the trail. For the equine athlete, sport-specific footing helps him achieve his best performance. As the athlete – human or equine -- traverses through an environment, his body impacts against a surface as he runs and leaps. The surface responds to his footfalls and helps or hinders his movements. Ideal footing feels alive; it accepts pressure without causing pain, and it feels safe and secure.

Footing Basics

When your horse contacts the ground, he prefers stable, safe footing. Good footing reduces impact, increases traction, and lessens the chance of injury.

As each hoof plants onto the ground's surface, it cuts in. The horse's body weight rests on the hoof, and bones and tissues of the hoof absorb the downward force. The surface exerts an upward force that the hoof wall assimilates. With every step, each foot impacts and retracts. In the three sports we'll discuss here, the only exception is the reiner's sliding stop.

Both upward and downward forces are influences that exert an effect on the horse's body. When the equine athlete moves correctly, engaged in the hindquarters, the hindquarters both propel the horse forward and carry weight. Hoof and leg absorb the shock of the body weight, while driving the horse forward.

When you ride across any surface, the ground should absorb and dissipate the force of the hoof contacting the ground; this reduces concussion, both the downward or upward shock of impact. An ideal layer of ground feels resilient, giving cushioned support and being somewhat elastic.

Good ground also offers traction, or an adhesive friction. The footing allows the hoof to cut in and grip. Stability is a firm base for predictable gaits, and your horse needs to weigh each step the same for correct gaits. In contrast, traveling over puddles or slick spots gives an inconsistent feel, and a misstep can mean a slip, stumble, or even fall.

Footing shouldn't impede your horse's progress over the earth. Footing that's "dead" is packed, compacted, and hard, and the horse's feet impinge the surface. Upward concussion can occur on a too-springy footing due to rebound, or the springing back from the force of impact. This sends energy back up the legs. Nor should footing be too deep: This can strain soft tissue by causing the horse to stretch beyond normal degree.

California veterinarian Dr. David Cox specializes in lameness, especially hoof problems: Originally a farrier, he noted that the most common influence of footing is bruising the sole of the foot. In Southern California, we have sandy adobe ground that's hard, and I see a lot of problems with bruising up to the coffin bone. The stone bruise comes from inside, as the coffin bone pushes down and does the bruising."

Footing should begin with a base, or a solid foundation to the riding surface. In a well-designed arena, this is a hard layer of compacted, crushed stones. The base acts like a roadbed, and it allows water to drain from the area.

On top is the riding surface, which isn't too soft or too firm. Most people ride on dirt particles, or ground-up rock. Dirt includes the three components of clay, silt, and sand. The percentage of each affects the movement of dirt, either positively or negatively. Particle sizes and shapes also contribute to the ground's composition and performance, as very fine, or microscopic particles, tend to pack or cause dust.

Arena footing also contains organic materials. Organic material can help maintain the 'spring' of a footing surface.

The microorganisms and small insects that feed on organic material and help it to decompose are constantly stirring the soil which lets air into it. The addition of one or two wheelbarrows of wood shavings per 1000 square feet will supply the organic material required in healthy arena footing.

The best type of footing for your horse depends, to a degree, on the activity that he or she is asked to do most often.

Dressage

In dressage, riders seek lightness. At any level, your horse should move with a spring in his step. He shows a balance of buoyancy and weight-bearing as he bounds lightly or gets into the ground when he digs in to propel. To show the desired elastic gaits, the horse moves with flexible joints and vigorous action. He contracts and then resumes his normal shape. Elastic, resilient ground helps him perform sprightly, lively movements.

A good base for a dressage arena should be four to six inches thick. Wayne Gregory of the Interland Group's Footings Unlimited defined the top layer: "The standard is to start with two to three inches of a good clean, articulated coarse sand. This articulated sand has jagged edges, so the sand will overlock."

Look for a glacial or silica sand, which is coarse and angular. Typical "beach" sand is too fine, round, and smooth to provide a firm support.

Among all disciplines, sand is a typical riding surface. However, David Cox notes that sand can be abrasive on the soles of the feet: "If you squeeze sand, it's a rock. But squeeze a handful of loamy soil, and you feel the springiness."

The dressage horse needs airy ground to demonstrate suspension, or lofty gaits. Particles large and small "bridge," or meet unevenly to allow minute pockets of air. As the horse steps on the particles, he's "walking on air."

Gregory said, "For dressage, what's most important is the consistency and a footing that provides a lot of cushion." He defined cushion as reducing the impact when the hoof sets down. Riders may confuse this with bounce, or the footing springing back. "You have to get a balance between cushion and bounce," explained Gregory. "The bounce looks animated, if the footing pushes up." He added that riding on footing that contains too much shredded rubber, a popular footing additive, can add too much bounce. The extra shock waves can affect the horse's skeletal system and reward the horse for livelier movement. The horse can look "flat" on another, less springy surface.

Jumping

For a hunter or jumper, the ideal trip over a course is the horse flowing in a series of bounds, with the speed varying as you signal the horse to collect or extend his canter or gallop. The adroit jumper demonstrates a leap that is as smooth as an extended stride, and each foot should land exactly where you intend.

As this equine athlete launches from the ground, he needs traction and a stable platform for his hind legs. The jumper flexes and sits back on his hocks as he thrusts his body mass upward. His hind legs engage almost simultaneously in the push off. As the horse prepares to land, he unfolds his front legs to extend them in front of his body. The higher the fence, the sharper the angle of descent.

From bearing his entire weight on his front legs in the gallop stride and landing, the jumper experiences fatigue. He lands first on his leading forefoot, and pounding his weight on hard ground punishes him. Landing, he appreciates a slight give as the ground absorbs his energy. "The footing should be sufficiently loose to give one-quarter to one-half inch," explained Gregory. "The horse can't stick like a gymnast, and the footing has to have a little give and slide so the horse continues his momentum."

Here the base should be six to twelve inches thick. Jumpers perform better over fences with a footing that's more compacted than the dressage horse. Gregory noted that the mix here could be 70 per cent clay, 30 percent sand. The depth shouldn't slow the horse down as he gallops over the course.

Reining

Every reining pattern combines a series of maneuvers. Here your horse moves from lope to gallop in the circles, changes leads, and accelerates on the rundowns. He collects and slides into a stop, and plants a hind foot for fast, flat turn arounds.

Events like the National Reining Horse Association Futurity and Derby attract hundreds of competitors, and Illinois farmer Robert Kiser cares for the footing. Kiser said, "We have to achieve a balance between three things. First, make it as easy as you can on the horse's body and legs. Second is good traction, and third is to have a soil type where the horse's feet move through it easily. It's complicated to have all three at one time."

He noted that reining formerly used sand, which had to be deep to avoid slickness, but not so deep as to strain the horse. Through years of experimentation, he has blended more silt into the footing, seeking just enough mix between loose and solid.

He relies on his eye to gauge how footing performs. "We've got pretty much a 50 percent pure sand mixture with a silty type of sand," he explained. We still start with a pure sand, and add silt to it till the texture is about right. With too much sand, it compacted too fast."

Choices and Upkeep

Different performance footings produce different reactions. When you study your performance environment, decide on your goals. For safe footing, consider traction, aeration, watering, depth, consistency, and abrasion, and realize that no single recipe satisfies every sport or fits any arena. Many research studies have focused on the effects of track surface on race horses, but few if any have concentrated on the performance horse.

High-tech footings can give you an all-weather riding surface. Current choices include polymer-coated sand and processed wood fibers. You can enliven your footing through aeration, by blending an additive into a sand arena. An additive such as ground rubber can be used to "fine-tune" and adjust the performance of the riding surface. "We've found that less of an additive is better," said Gregory. "Never add more than one pound per square foot, mixed in with sand." He reported that the biggest footing error he sees is owners mixing in too much additive.

For a typical 72 by 180 arena, costs of surfaces or additives can run from around \$500 to \$40,000 for a complete new installation. Average costs run from \$1,000 to \$4,000.

All surfaces require upkeep and eventual updates. "For long-term health, the key is a maintenance program," said Gregory. He advised regular dragging of the arena and hand raking to smooth the track. "In an arena, you develop a track on the outside, along the rail. As horses go over the same spot, they pound it and condense it. The footing shears against the sides, and you build a pit. Once a month, rake or shovel the edges back in, to pull the footing off the rail."

He also cautioned about inconsistent footing, such as potholes in the footing's base. "This is the biggest cause of injuries, and it's a hidden cause because the base is so inconsistent. Sand and footing can fill a pothole. Or, the track can get beaten down, with four to five inches of sand on the edges, and only one inch in the middle."

Traditional footings require watering to control dust and add cushion. Gregory advised a moisture content of eight to fourteen percent, measured with a moisture meter. He noted to aim for the lower percentage on clay, and higher on sand.