

Preventative Health Care Series: Part Five No Hoof, No Horse: Creating a Healthy Hoof

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The horse's form to function is built from the ground up, beginning with sound, healthy feet. It is amazing; but the hoof can reveal the overall health of the horse. Changes in the hoof will occur if the horse has had a fever, stress, or a change in nutrition or environment.

A balanced diet, sufficient exercise, and of course, proper hoof care, are essential to create and maintain a horse with healthy feet.

Balanced Diet

Diet greatly affects the quality of the hoof. Poor hoof wall quality and growth rate are indicators of horses with nutritional deficiencies or imbalances.

There are several hoof supplements available, containing biotin and or methionine. Biotin, which is a B vitamin, is believed to increase hoof growth, but not necessarily increase hoof strength. For a stronger hoof, it is believed the amino acid, dl-methionine is helpful. Both biotin and methionine can be supplemented, but most importantly, don't over look providing a balanced quality diet with ample protein.

Sufficient Exercise

Exercise is essential for maintaining a good foot. Consistent exercise increases the circulation to the hoof and also helps the hoof wall to expand and bend to maintain flexibility.

Horses in box stall confinement may have more hoof problems, due to the reduction of free exercise. Stall confinement can also cause other problems, as shavings reduce the moisture content of the foot and can increase the likelihood of standing in urine and manure.

Proper Hoof Care

The feet of wild and domesticated horses are the same, but the wild horses naturally wear their feet by constantly moving on hard ground and seeking water around streams with rocks. Domesticated horses are typically on soft, groomed pastures or in stalls, with a higher plain of nutrition, and are ridden on soft terrain. Therefore, they are in need of regular trimming and/or shoeing.

To maintain a sound horse, a working relationship needs to be established with a farrier. Hooves are continuously growing and therefore need to be trimmed approximately every six to eight weeks. When properly trimmed, the hoof angle should match the angle of the pastern and should be balanced front to back and side to side. Correct angles help properly absorb



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concussion and a balanced foot will land flat on the hoof capsule.

Most horses don't require shoes if properly trimmed. But horses ridden daily, or ridden on hard, rocky surfaces, benefit from the extra protection provided by a shoe. There are also horses that require therapeutic shoes, to provide support and/or relieve pain.

Hoof Anatomy

The hoof is a very complex structure; knowledge of form and function can be helpful to understanding proper hoof care.

The hoof capsule is the hard and insensitive part of the outer hoof and consists of the hoof wall, white line, sole, frog, bars, heels, and coronary band. The hoof capsule functions to protect the underlying structures: coffin bone, navicular bone, navicular bursa, digital cushion, collateral cartilage, tendons, and ligaments.

The hoof begins at the coronary band where new hoof growth starts, at a rate of approximately 1cm or 3/8 inch per month. It takes approximately nine to 12 months for a whole new hoof to develop. The hoof wall will grow slower in a cold environment and also in a dry environment. The most elastic portion of the hoof wall is at the heel; this aids in heel expansion as the horse moves forward at speed.

The sole should be slightly concave and should not bear weight on the ground surface except near the white line, but the sole is essential for bearing the internal weight of the coffin bone. The frog, digital cushion, and heel or palmer aspect of the foot are also vital structures for support and energy dissipation.

Internally, the coffin bone is an extension of the bony support of the leg. An extensor tendon and flexor tendon provide movement to the foot. Ligaments join

the coffin bone to the navicular bone. The navicular bursa cushions the navicular bone from the movement of the flexor tendon.

The joint capsule is a sac containing joint fluid. Joint fluid provides lubrication and nutrition to the joint cartilage.

Between the coffin bone (internal structures) and the external hoof capsule is the sensitive laminae. The laminae is composed of blood vessels and nerve endings. Externally, we can appreciate this connection as the white line. The laminae contains the livelihood of the hoof; blood supply. Blood carries the nutrients and oxygen to the hoof.

Common Foot Problems

Foot Abscess: A foot abscess is a very common lameness, caused by a defect in the sole, white line, or hoof wall, which traps bacteria and results in a painful pocket of pus. Treatment consists of drainage by a farrier or veterinarian. Regular farrier care can help reduce potential abscess formation.

Laminitis or Founder: Laminitis is inflammation of the laminae causing reddening, swelling, heat, pain, and loss of function. Laminitis can be devastating. Damage to the laminae reduces the blood supply to the foot and no blood results in no nutrients, no oxygen and therefore death to the surrounding tissues. There is a multitude of situations that can cause laminitis but common causes include carbohydrate overload (either too much grain or lush grass), retained placenta, high fevers, allergic reactions, or a severe injury to an opposing leg (i.e., Barbaro). Laminitis cannot always be prevented but can be minimized by good preventative health care: proper veterinary care, nutrition, exercise, and farrier care.

Navicular Pain: This is a catch all phrase to describe lameness or problems associated with the palmer or heel region. The pain may arise from any one or combinations of the navicular bone, navicular bursa, flexor tendon, or ligaments. Treatment often consists of therapeutic shoes and medical treatments.

Other problems associated with improper hoof care include thrush, hoof wall cracks and flares, long toe/under run heels, and white line disease to name a few.

Conclusion

The majority of lamenesses are isolated to the complex foot. Many of these lamenesses may be prevented or treated with proper nutrition, exercise, and consistent care from a farrier and veterinarian.