The Natural Angle

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Shoeing For Deviations of the Fetlock and Pastern of the Hind Equine Limb

by Michael Wildenstein, CJF, FWCF (hons)

"Conformation of an owner's horse can be a very sensitive subject." (Ted S Stashak)

In my experience that statement is very true and includes individual horse owners that I felt were open-minded. Study the equine conformation; learn what is normal for a breed, discipline and environment. Use that information to modify shoes to enable the horse to do the best of its ability, in comfort, with the conformation it has. The study of equine conformation and the effect of modifications to the horseshoes on the hoof and limb can be overwhelming, yet interesting. "Conformation, a major factor in soundness of the limbs, often determines the useful lifetime of a horse." (Ted S Stashak) It is our responsibility as hoof care providers to take the conformation into consideration when defining shoe type, weight, size and modifications made to the shoes. "Every modification to the shoe has an influence on the biomechanics of the horse." (Denoix, 1999) Historically, we have guidelines that are used when defining modifications to shoes, such as, "The principle thought should be to set the shoe, which should always be regarded as the base of support of the hoof, farther towards the more strongly worn side." (Lungwitz, 1884) Another guideline, "If the shoe wears hard on the in or outside of the foot, place the wide branch of the shoe on the side of greatest wear." (William Russell, 1887) I use historical references, as well as modern studies, to help define the modifications that will be made to a shoe. Knowing the environmental conditions, including the ground conditions are also taken into consideration. Artificial surfaces will require different modifications and shoe types than a natural surface.

Photo 1: Right Hind

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Observe the shoe, hoof wear and the conformation of the hoof as this will give indications of deviations or issues above. Observe the horse in movement, standing in flexion and in extension for a complete evaluation of conformation. Radiographs and filming the horse in movement and reducing the speed of the film are useful information. *(Photo 1 – Right Hind)* This horse travels base narrow, the right hind is fetlock varus, pastern valgus. There is an abaxial rotational deviation at the hock. There is an axial rotational deviation from the Fetlock down. There is exaggerated rotation of the hoof as the hoof begins to break over. The hoof flares laterally.

Explanation of description:

Base Narrow = "The distance between the center lines of the feet at their placement on the ground is less than the distance between the center lines of the limbs at their origin." (Ted S Stashak)

Fetlock Varus = the limb deviates in below the fetlock.

Pastern Valgus = the limb deviates out below the pastern.

Abaxial rotational deviation = Twists out.

Axial rotational deviation = Twists in.

Rotation of the hind hoof during break over = "The result of a rotational deviation in the hock joint."

Denoix Flares laterally = "An outward distortion which may occur on any portion of the hoof wall." (Millwater's Farriery)

When trimming, I follow the guidelines set forth by Michael Savoldi in trimming to uniform sole thickness. The width of web of the shoe is defined as twice as wide as the wall is thick. To define the wall thickness, measure from the outside of the live sole to the outside of the hoof wall. Traditionally the crease or nail line would be placed in the center of the web of the shoe. This would place the nail line over the white line. Uniform wall thickness on an average saddle horse is 3/8 inch; therefore a 3/4 inch width of web shoe would be appropriate. Web width over 3/4 would be considered wide web and under 3/4 would be narrow web for a horse with a 3/8 inch thick hoof wall. A shoe with wide web would be used for greater protection of the solar surface of the hoof or to reduce traction. When defining thickness of the shoe, consider the weight of the horse, environment, wear, and integrity of the hoof. A thick shoe would be appropriate for a weak hoof, to increase traction for longer wear, or to increase the mechanics of modifications built into the shoe. When defining Shoe type, consider; weight of horse, conformation, condition, environment, rider ability, discipline and management.

A Kerckhaert DF Grand Prix which has a greater width of web laterally was used to allow for the modifications needed. The horse is large and heavy boned, capable of carrying the weight of the shoe The width of web was further increased laterally by extending the crease and setting the lateral heel down toward

Photo 2: Left Hind

the inside width of web. The thickest part of the lateral heel of the shoe is under the viable hoof wall. The medial branch width is decreased by grinding. The shoe is perimeter fit to the hoof at uniform wall thickness. Pins are used for traction on the concrete the horse traverses on the way to the arena. It is important to minimize the traction on horses that have rotational deviations within the tarsus – or hock. In attempting to reduce the twisting we would inadvertently create greater stress to the hock. *(Photo 2 – Left Hind)* The left hind limb is not the same. The abaxial rotational deviation at the hock and the fetlock varus are the same. There is less pastern valgus

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and no axial rotation from the fetlock down. The medial toe has a tendency to flare. The lateral heel of the hoof is collapsing. Often the lateral heels on horses with this conformation will be painful. This hoof, in extension, travels further under the body and often beyond the midline. The modifications to the shoe on the left hind need to be consistent with the differences in conformation. Because of the differences in hoof conformation we know the stresses to this hoof are not the same as those to the right hind. The medial toe flare is addressed in trimming to uniform wall thickness. Because this hoof extends closer to the midline than the contra lateral limb (right hind) the width of web on the lateral heel needs to be greater than that of the shoe on the right hind. To address the compromised heel, the shoe is set down to the outside of the heel of the shoe. The shoe is fit to the perimeter of the hoof with the thickest part of the lateral heel of the shoe under the viable hoof wall. This lateral heel is fit full. In movement on soft ground the increased width of web will widen the stance. By setting down the outside of the lateral heel we are reducing the impact on the heel during the landing phase. This shoe is historically called a side bone shoe. This conformation increases the chance of formation of side bone. To shoe the horse for the conformation we are being proactive in changing the stresses to the hoof and limb. The medial branch is reduced in width with the grinder. The heel checks are cleaned up by forging and/or grinding.

The conformation of every limb and every horse must be evaluated before defining the shoes and modifications to be prescribed. I described the guidelines that were used to shoe this individual horse. The variables from one horse to another are great and many factors have to be given consideration. The changes are conservative and adjusted on a regular schedule. I encourage you to closely study the conformation of the horses that you provide hoof care and use the information to help you help the horse.

REFERENCES

Historical references are from The National Museum of Horseshoeing, Sulpher, Oklahoma

A full Glossary of Therapeutic Farriery Terms is available on FPD's website farrierproducts.com under the Farrier Education Tab; or on FPD's Field Guide for Farriers at farrierproducts.com/fieldguide.

A GLOSSARY OF THERAPEUTIC FARRIERY TERMS

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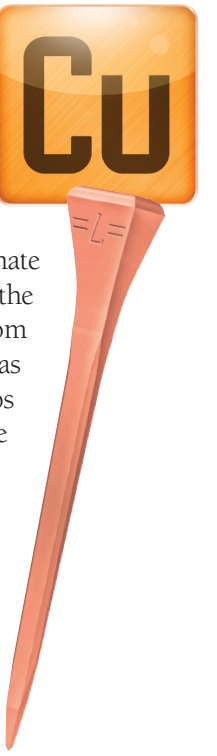
Kerckhaert introduces New Liberty Cu Antimicrobial Nail



Kerckhaert has made another major step towards healthier hooves with the design and development of the Liberty Cu horseshoe nail. The Cu nails are copper coated to provide antimicrobial benefits, offering more protection than traditional horseshoe nails.

These innovative nails are designed to eliminate micro-organisms that enter the hoof wall through the nail holes, helping prevent infection from developing. The copper surface kills bacteria as soon as it comes in contact with the nails and helps hooves remain strong and healthy throughout the shoeing cycle.

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Kerckhaert has also developed a new hoof care product called *"Kerckhaert Nail Hole Solution."* This new hoof care product was formulated specifically to treat old nail holes. When used regularly, Kerckhaert Nail Hole solution forms a permanent barrier between the environment and healthy hoof tissue so old nail holes stay clean. Use Kerckhaert Nail Hole Solution in combination with Liberty Cu Antimicrobial horseshoe nails for added protection and outstanding results.

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