

The Natural Angle

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Shoeing for Rotational Deviation of the Equine Limb

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Examination of a horse preliminary to shoeing should be made while the animal is at rest and afterwards while in motion. The object of the examination is to gain accurate knowledge of the direction and movements of the limbs, of the form and character of the feet and hoofs, of the manner in which the foot reaches and leaves the ground, of the form, length, position, and wear of the shoe. (A. Lungwitz, 1884)

A rotational deviation is a twist in the limb. The twist can be in a long bone or in a joint. A single limb can have multiple deviations of varied degree. Some deviations are normal and may be breed specific. Draft horses tend to toe in (an axial rotational deviation). Some deviations are discipline specific. Thoroughbreds as foals tend to toe out, an abaxial rotational deviation. Some deviations are considered within normal ranges and some are outside normal ranges. The acceptable ranges are determined by the activity of the horse, weight of the horse, environment the horse is in and the speed in which the horse travels. The

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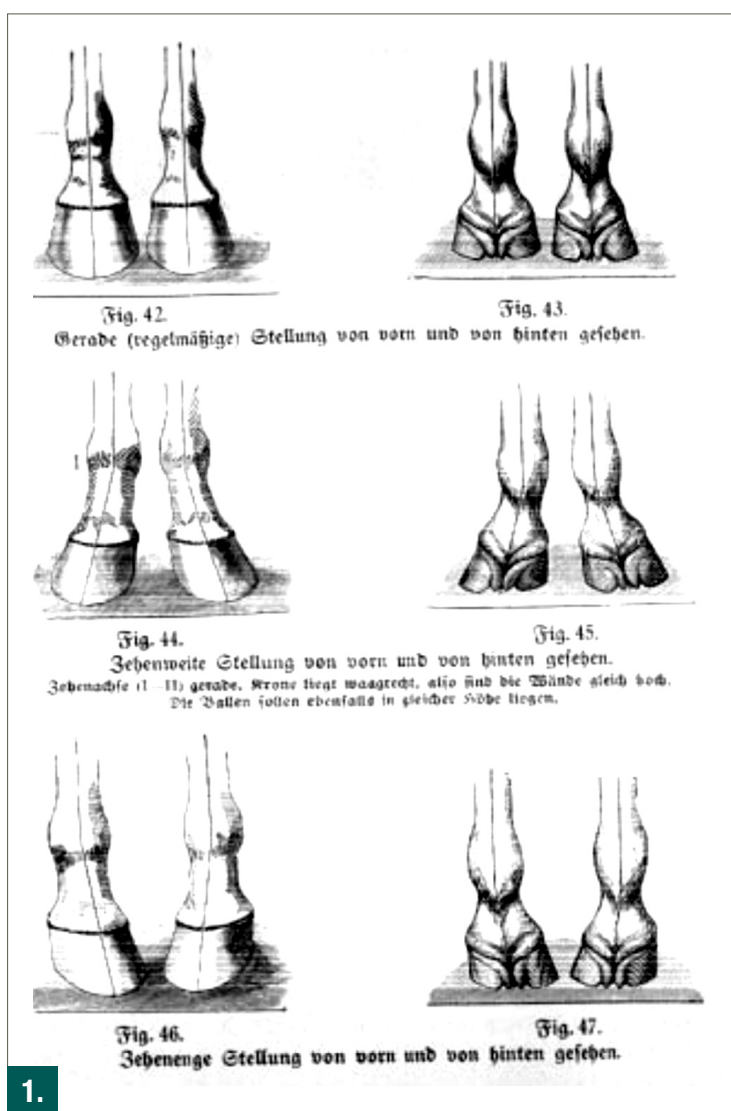


Figure 1. Schwyter, Swiss Farriers Manual, 1906.

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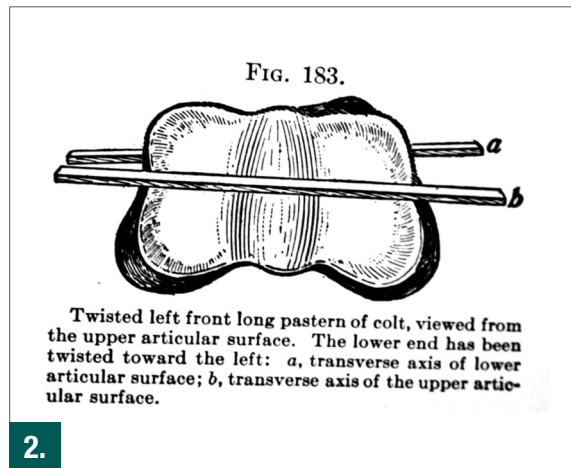
draft horse used in agriculture to pull a plow has to walk in a furrow, a depression in the soil the same width as the plow. The breed of the horse is heavily muscled and is base narrow. The toe in conformation predisposes the horse to paddle, or wing out, which is acceptable as the horse works at a walk. The conformation allows the horse to walk the narrow path, without stepping on the potatoes while cultivating weeds. The thoroughbred may begin, toed out, yet as the animal matures and muscles up the limbs rotate towards the center.

Dr. James Rooney points out that some rotation occurs in normal limbs:

"The amount of spin is only about 7 to 8 degrees and thus not readily seen except in high speed film or video. This small amount of spin, however, is very important in the pathogenesis of arthritis of the fetlock joint and fractures of metacarpal 3, metatarsal 3, or the 1st. phalanx."

As hoof care providers this information is important. We need to choose the appropriate shoes and make modifications to accommodate the characteristics of every limb.

One important fact is that a horse with a rotational deviation does not break over at the center of the toe. So, determining the point of break over and modifying the shoe is important to the well being of the horse (Figure 4). Flexing the limb in the natural range of motion so that the hoof is off the floor will define break over (Figure 5).



2.

Figures 2 and 3. Illustrations that show Rotation; The illustrations are by A. Lungwitz. A textbook of Horseshoeing.

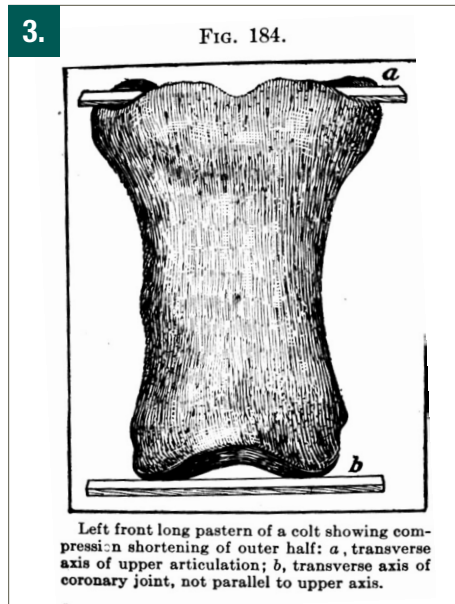


Fig. 184. Left front long pastern of a colt showing compression shortening of outer half; a, transverse axis of upper articulation; b, transverse axis of coronary joint, not parallel to upper axis.



4.



5.

Evaluation would include; 1) Watching the horse walk away from you and towards you. 2) Walking around the horse to observe the limbs from many angles. 3) Lifting the limbs in the natural range of motion. 4) Observing the conformation. 5) Look at the wear on the hoof or the shoe that is on the horse (use a camera capable of slowing down the motion of the limbs in movement). We cannot change the conformation of the mature horse, though we can assist them in using what they have.

"The twisting movement of any hoof should, for physiological reasons, not be hindered by Shoeing." (Lungwitz 1884)

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Observe the wear patterns of the used shoe to evaluate break over and build them into the new shoe (Figure 6). The old shoe is a road map giving direction to the new shoe. Using the Kerckhaert Classic Roller will save time and energy as the shoe has the modifications necessary to ease break over in all directions (Figure 7).

The horses that have rotational deviations in the stifle and the hock will rotate the hoof in the propulsion phase and it is important to allow this to happen. Using the Kerckhaert Classic Roller hind on these horses will facilitate this natural movement. Be conservative with traction devices on horses with rotational deviations. Be sure and position traction devices so that break over is not hindered. Be aware of the environment that the horse is expected to perform in. A jumping horse performing in natural environment needs traction, on a synthetic environment the traction is minimized.

Define the style of shoe by the severity of the rotation and the requirements of the horse. The seasonal variations in environment are another factor to consider. Many shoes are designed to ease break over in the toe though a horse with a severe rotational

deviation may be breaking over on the outside to quarter and the SX Roller would be a great choice as the half round stock allows break over in all directions.

Deviations from normal conformation are always a drawback to the performance of work. When strongly pronounced, and especially when two or more defects occur in one limb, they greatly predispose to striking, cutting and to disease of joints and of the hoof. No absolute rule can of course be laid down and many deviations occur, resulting partly from peculiarities in direction of individual bones and consequent irregularities in movement, from pace, that is, whether the horse walk or trot, from the way in which the animals weight is distributed between his fore and hind limbs, and from the position and amount of the load which the horse draws or carries. (A.W. Dollar1887)

For best results practice good fundamentals of conformation evaluation, balanced trimming and intelligent choices regarding the shoe modifications needed. Small changes in the hoof care can make a dramatic difference in the well being of the horse and the satisfaction of seeing the improvement is what keeps us going. Be safe. n

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- 3.Equine Podiatry, Andrea Floyd, Richard Mansmann, Functional Anatomy of the Foot, James Rooney. SAUNDERS, 2007

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TOOL CORNER

Repairing a Damaged Forepunch

A wood handled forepunch manufactured by Bloom Forge was returned for inspection recently. We had Roy Bloom inspect the tool and then do the repair that can easily be done in the field if you have the necessary grinding equipment.

Roy's analysis of the tool pointed to the fact that there was no "heat signature" near the broken tip. This indicated the tool was used either in a cold piece or something with almost no heat. Forepunches are intended for use in hot material. He concluded that the fact there was no heat and the type of break that occurred at the tip meant the tool was likely driven into the material and bottomed out on the anvil, causing the break.



Damaged Wood Handled Forepunch. No heat signature at tip, E-head "wedge" split handle.

The customer also apparently did not believe the rubber keeper was sufficient to hold the tool on the handle. Bloom uses the rubber keepers as he has found that wedges will tend to come out as the handle experiences the drying that occurs when working in hot metal. It also has a certain amount of shock absorbing benefit. The customer had driven a large E-head nail in to act as a wedge and as a result the handle was split on both sides and has to be replaced.

The head of the tool was removed, then using a 100 grit belt; he ground the tip back to flat. Then he started grinding the sides to get the proper dimensions for an E-head nail. He recommends not using gloves when fixing tools so that you can feel the heat as it builds when grinding. If the tool begins

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to get too hot to hold, it should be quenched in water. If you ever grind to a point that you get color in the tool you may cause irreparable damage to the metal.

Take your time as you go through the process. If you know the size E-head you are most likely to punch for, then you can match the dimensions to the nail head. A final “softening” of the corners of the tool will be the last step. Be sure you have checked the struck end of the tool in case it needs any dressing as well. This tool was practically brand new when it was damaged so it didn’t require any work other than on the tip end. [n](#)



Ground back and set to work. Handle still to be replaced.



1/2 HP Baldor from FPD with 2x36 FootPro Attachment arm (shown with 36 grit belt) and 10" Expander Wheel.

We have posted a video of the repair on YouTube along with numerous other shoeing and tool related videos. Subscribe to the channel (www.youtube.com/farrierproducts) to get notice as other videos are posted. You can also find tool tips in the FPD Field Guide

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