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## Hoof Angles – Part 3

Posted by [Steve](#) on April 18, 2012. [6 comments](#).

*"I cannot end the story of the horse without writing with regret that the health of this useful and precious animal has been up to now surrendered to the care and practice, often blind, of people without knowledge and without qualification."* - Georges-Louis Leclerc (1707-1778)

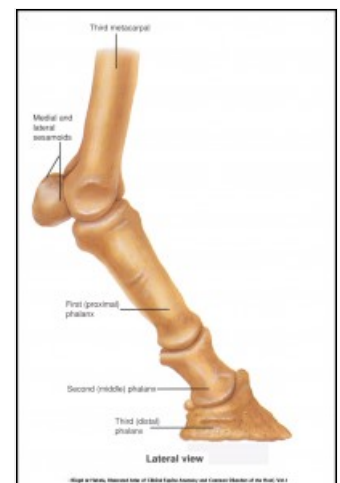
Leclerc De Buffon was a French naturalist known for his comprehensive writings on natural history. He ended his zoological description of the horse with the preceding quotation, which, sadly, is still very much the case. For example, I attended a presentation at the Equine Affaire last weekend that was a mixture of good anatomy and bad advice concerning what a horseshoe can and cannot do for the horse. And a number of the presenter's comments were directly relevant to the subject of this post: the relationship between the internal structures of the hoof and the external hoof wall.

Let's start by talking about what matters *to the horse*. After all, he's the real beneficiary (or victim) of hoof care. First and foremost, he doesn't care about what his foot *looks* like; he cares only about how it *functions*. And the point of departure for proper function is correct alignment of the bones of the lower limb, as shown in the accompanying illustration.

However, I want to point out three things about this image before I continue. First, it's not *quite* correct; the bottom rim of the coffin bone isn't really parallel to the ground. Rather, it forms about a 3° angle with respect to the bearing surface. Second, they haven't labeled the navicular bone - that tiny bone directly behind the short pastern/coffin joint. And third, note that in this lateral (side) view, the "front" of the bones (not counting the navicular bone, of course) are roughly in line with each other.

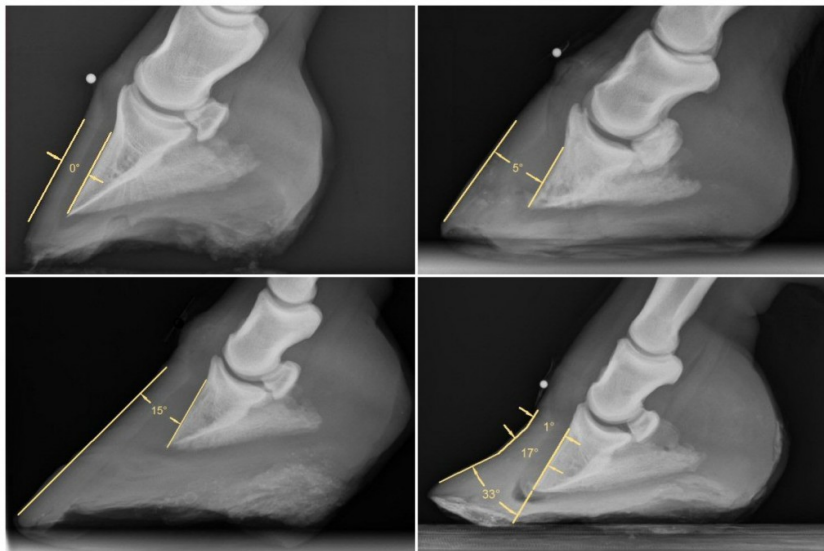
This last observation is the source of the difficulty, and the logic behind it goes like this:

1. From the side, the "front" of the hoof wall is parallel to the "front" of the coffin bone, and,
2. In a properly-trimmed hoof, the bones of the lower limb line up; therefore,
3. If the angle of the "front" of the hoof wall matches the angle of the "front" of the pastern bones, the hoof must be properly trimmed.



Bones of the lower limb

The flaw in this train of thought lies mainly with the first item, because the statement is true **only for a 100% healthy and properly-trimmed hoof**. It's a misconception that the dorsal hoof wall *necessarily* accurately reflects the position of the coffin bone inside the hoof capsule. Many, many horses have some degree of thickening of the dorsal hoof wall due to long-term imbalances coupled with bad farriery practices, and so that relationship will no longer hold true. Even a *slight* amount of thickening will affect the angle read on a hoof gauge by several degrees. And that's in an otherwise-healthy horse; in the laminitic horse where the white line has stretched to one extent or another (particularly at the toe), the angle discrepancy between the dorsal hoof wall and the coffin bone can be anything from a few degrees to dozens of degrees. Take a look at these radiographs -



### Coffin bone - Hoof wall Relationship

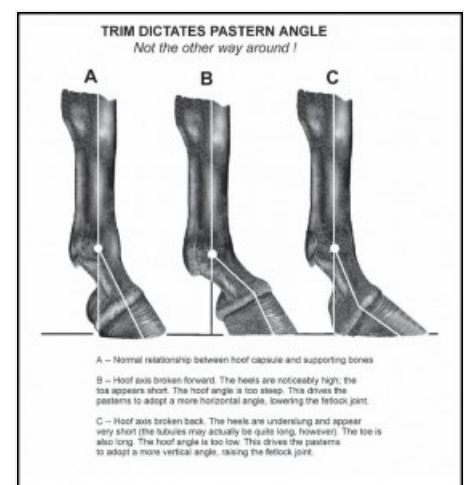
Which one would you want your farrier to use? If you're 100% certain your horse's hoof is like the one on the upper left, things would probably be fine. But the upper-right hoof is pretty typical-looking in appearance, yet the radiograph reveals a 5° discrepancy between the hoof wall and coffin bone. That means if your farrier uses this horse's wall as a reference, he/she is going to "rotate" the coffin bone 5° out of alignment, causing an imbalance in the tendon and ligament tensions.

From here, it only gets worse. While fairly long, the hoof in the lower-left radiograph has a smooth-looking hoof, which means many farriers and vets would attempt to match the hoof-pastern angle, leaving the heels too long with respect to the toe and/or wedging up the heels with a shoe/wedge pad. The result? A horse with a misalignment of 15°! Then, when the horse starts having heel pain (because he's pounding down on his heels), someone will eventually x-ray the horse and declare the coffin bone is "rotated" 15°. The horse can't win!

Remember - **the horse doesn't care what his foot looks like.** He cares only about how it *functions*. And bone/joint misalignment means he's not going to function as well as he could. The lower-right image shows a laminitic horse with at least three distinct hoof angles. Which should your farrier follow?

As I've mentioned in the past, I'm a big fan of much (but not, I hasten to note, all) of what Dr. Deb Bennett has to say about hooves. I like the following illustration and quotation from her [Principles of Equine Orthopedics](#). In the quotation, she's rendering her opinion of a particular "method" of trimming based on proportions of the hoof (Russell)

***"If you want to cordially make yourself insane, try analyzing proportions in horses' feet. It is a very slippery business. Because the pastern and ankle are driven to take on whatever angle they have by the shape and angle of the hoof capsule, this "ideal" from Russell is just that – one possibility out of many theoretically possible. Particularly, I am critical of the idea that the toe of the hoof should line up perfectly with the pastern axis. I think this can happen but is not in fact the relationship most likely to keep most horses sound.... The pastern angle must never be used as a basis for predicting the "proper" angle of the hoof.... The toe must not be trimmed to parallel the line of the pasterns. It may - or may not - wind up there after the fact."***



This is why trimming methods based on lengths and angles and numbers of any sort can't possibly work. The *only* way to ensure the foot will be properly balanced is to use the *bottom* of the foot - with an accompanying comprehensive understanding of the characteristics of the various tissues present - as the singular guide for trimming. Armed with that knowledge, every foot you trim will always be correct!

More later...



Filed under: [Hoof form & function](#), [Lameness](#), [Laminitis & founder](#), [Shoes & shoeing](#)

Tags: [barefoot](#), [Deb Bennett](#), [founder](#), [hoof angle](#), [horseshoes](#), [laminitis](#), [natural hoof care](#), [navicular](#), [Steve Hebrock](#)

Next post: [Pasture Time and Laminitis](#)

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## Comments

 Susan

May 23, 2012 at 8:31 PM

Hoof Angles- I have a new certified natural trim ferrier. How do I know she is trimming my horses feet properly, before her I never had thrush problems or cracked outer walls and now my 20 year old pony has laminitis with a 9 degree rotation in one front hoof and a 6 degree rotation in the other...What are the questions I need to ask her and how do I really know it's nothing to do with her trims which she insist are right and balanced, she study under Jamie Jackson..

[Reply](#)

 Steve

May 25, 2012 at 12:35 PM

The quick answer is that both laminitis and thrush can *not* be caused by a trimmer, regardless of whom the trimmer is or where he/she studied. Both conditions, however, can be *exacerbated* by the trimmer through either poor trimming, which may impede the healing process, or by poor owner education, which may prevent the owner from making the necessary changes in the horse's life style to address the underlying causes and facilitate healing.

You can help get a better handle on whether or not your trimmer has been properly trained, particularly with respect to trimming a laminitic horse, by asking specific questions about his/her training, and by talking to other of his/her clients. Ask about the causes and treatments of the conditions you mentioned, and compare those answers with some of what I've provided throughout this blog. The AANHCP (Jaime Jackson's organization) has undergone a number of fairly radical changes in its training process over its life, and, unfortunately, not everyone in the organization was necessarily properly trained to trim the laminitic horse. In fact, that deficiency is what led me to create the laminitic trimming workshop I now teach through [Liberated Horsemanship](#). Jaime's method for trimming laminitic horses is very specific and very effective, but, in my experience, many of the certified practitioners, at least at one point in time, lacked that training. So find out how many laminitic horses the practitioner has personally cared for, and talk to the owners of those horses. In every case I've dealt with, there has been an immediate and profound change in the horse's comfort level following the first trim. And unless the horse is some sort of odd exception (which a 9-degree coffin bone-hoof wall divergence is not), there should be **no** "rotation" on a radiograph taken immediately after a trim. If there is, your trimmer is not trimming properly. We generally don't even use the term "rotation," because it implies that the veterinarian or farrier doesn't truly understand what happens in the laminitic foot.

Finally, ask to *see* your trimmer's certification. I've heard of a number of people claiming to be certified and claiming to have studied with Jaime that he has no knowledge of!

Good luck with your pony. I'm sorry this answer couldn't be more extensive, but it would really take an entire blog post (or two) to give a more complete response.

Steve


[Reply](#)

 Rebecca

December 1, 2016 at 5:30 PM

With proper trimming and care, can a horse with hooves similar to illustration C, be brought back to illustration A?

Reply

 Steve

February 27, 2017 at 10:54 AM

Hi Rebecca. Yes, in most cases, it's simply a matter of proper trimming. Often, hooves look like "C" because the heels have been left too long and are crushed forward ("underrun" or "run-under" heels). However, I must caution you that properly-trimmed hooves can more often resemble "C" than people might think they should, because they've gotten used to this false notion that heels are "supposed" to be long. Nevertheless, a proper trim will have the entire foot as short as the tissue allows it to be.

Steve

Reply

 Sandy Drews

June 11, 2018 at 12:38 PM

Hi Steve. I have a 19 yr old POA. She has always had funky feet just like "C" when I got her at age 3 I went thru multiple farriers that would trim her and she would come up lame for up to 2 wks. Finally went to the vet with another new farrier whom was the holy Grail and the mare has been sound since. Until we moved away. After our move, The first farrier lamed her horribly. I'm on my second farrier. While my mare is much better, she was still having issues. 2nd farrier suggested PLR shoes with a 2 degree wedge. She's 100% while working her on a short lunge line or hand walking but in the morning after standing thru the night she walks like she's on glass. My thought is after reading this article, is she has too much heel and the wedge is increasing it more. She foundered about 10 yrs ago. But I left her barefoot since and ride her in trail boots and she's been perfect until the 1st new farrier trimmed her, whom by the way based on my other horses believes in hi heels. Do you feel x-rays would benefit to see if maybe she is too hi on the heels and creating the "rotated" appearance? Thank you

Reply

 Steve

June 28, 2018 at 12:02 PM

Hi Sandy -

Yes, I'd be willing to bet that her heels are already too long, and the wedges are making the problem worse. Radiographs would definitely confirm that IF the person looking at them understands what joint alignment and the relationship of the coffin bone to the ground are supposed to look like. But someone with proper training can tell that without the radiograph as well.

If the trimmer has to take off a large amount of heel when trimming a horse's heels to the correct height for the first time, there's a good chance that horse will be sore for several days - or possibly even weeks - because of the soft-tissue changes resulting from the new foot angle. This usually manifests itself as swelling along the deep-flexor tendon down the back of the cannon bone and/or just above the fetlock. If this is the case with your horse, cold-hosing and massaging something like Aspircreme along the tendon once or twice a day will help get him/her through that period of discomfort.

Best -  
Steve

Reply

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---

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[Index of all Posts](#)

[Chips & cracks](#)

[Facilities Design](#)

[Hoof form & function](#)

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