

Natural Barefoot Trimming

Why Barefoot?

Barefoot versus shoes. The debate is still going on and may continue well beyond my lifetime. Those of us who believe in barefoot believe strongly that shoes are damaging to horses. I use the analogy of a cast to explain to my clients what happens to the foot when shod. Imagine you break your leg. Naturally you go to the doctor and get it fixed. A cast is put on so that the leg is stabilized enough to heal. When the bones have knit back together the cast is removed. Let's say the cast was on for 6 weeks. Even in those six short weeks, your leg has atrophied. It has shrunk and lost mass. That is the natural result of those muscles not being used fully. Now imagine you had that cast on for 10 years!! What do you think your leg would look like? You'd be lucky to have a leg left. Putting shoes on a horse has the same effect on the internal structures of the hoof.

When a hoof is shod, it is locked into a contracted state. This is because the foot is shod when the farrier is holding it off the ground and therefore it is bearing no weight at all.

The horse's foot has evolved over millennia to function in a certain way. It NEEDS to function in that way for the horse to be healthy. How is it meant to function? To put it simply, as the hoof lands (heel first with a healthy foot) the weight of the horse coming down on the leg is borne by the hoof. The hoof expands under the pressure. That action causes the coronary band to be tightened, and the lateral cartilages to press on the veins and arteries which pass over the pastern, effectively preventing blood from entering or leaving the foot. The frog and digital cushion absorb some of the impact of landing, but the blood trapped in the foot also plays a role in shock absorption and heat dispersal. As the toe breaks over, the heels leave the ground, the hoof contracts, and blood is forced out of the foot, under pressure.

It is critical to hoof health – and the health of the entire horse – for the hoof to be able to expand and contract. Shoes prevent this. It's that simple. With the hoof locked into a contracted state by the shoe, the internal structures begin to atrophy. The digital cushion shrinks. Blood flow is affected. Shock is not absorbed effectively, and the horse starts on the road to arthritis, navicular, and premature aging.

What is natural trimming?

Natural trimming is trimming the foot in a manner which will enable it to function as nature intended. It is not the same as trimming a hoof to apply a shoe. It is not the 'pasture trim' applied by many farriers, which is often the same trim as for shoes, without the shoes. It is NOT just being barefoot. There are lots of barefoot horses with hoof problems. Taking off the shoes is not enough, in most cases, to achieve true hoof health.

How I came to barefoot trimming and the Hoof Guided method

In 2001, I stumbled over Jaime Jackson's book, *The Horse Owner's Guide to Natural Hoofcare*, at the Loveland, Colorado Public Library. Then I did what it seems all barefoot enthusiasts do – I went online to find out more.

Unfortunately, at that time everyone was talking about the necessity of trimming the bars, heels, and sole. And so I trimmed them. Thankfully, I was fearful of going too far, so didn't make my horse as sore as I could have. Still, I noticed that I wasn't making progress. Because I was not making progress, I believed those who said I needed to trim more. Clearly I wasn't taking enough heel, bar, and sole. I am not proud of the fact that I started soaking my horse's feet so I could trim more sole and bar. Thankfully, I only had the one horse at the time.

After 5 months, I was very discouraged – I didn't see any significant change in my poor horse's feet, nor was he any sounder, though he wasn't any worse - a fact for which I am grateful beyond words now. On a very popular barefoot forum I was told that I still must not be trimming enough.

I was extremely fortunate in that, many years ago, when I was working with racehorses, the trainer who taught me shod his own horses. Always insatiably curious, I had paid close attention and eventually had even gotten him to show me how to shoe. Further, his horses stayed sound and raced for years, especially those he bought as yearlings. They frequently had gone without shoes – in fact, any time they weren't racing they were barefoot. In short, they had good feet. Having seen those good feet, and ridden one of those barefoot horses all over town, over every terrain, without issue, I knew barefoot worked. I also knew that trimming had not been very hard work. Deep inside I knew I was doing too much.

As I so often do, I listened to my gut. I stopped trimming my poor horse altogether. Clearly I was doing something wrong. I was not going to continue doing something that was clearly not working. Evidently, this is where I differ from other people in my view of

patience. While I kept hearing that progress could take years, I was not willing to wait that long. I wanted to see progress NOW. And I did – only a few weeks AFTER I stopped trimming. That was when I really started learning.

I started doing less. In fact, I had bought a second horse, and as an experiment I did nothing at all to his feet. With interesting results.

The Huey Experiment, as I called it, was to record how the feet trimmed themselves without human interference. (I did ride him during that time.) The idea came to me when I went to give him his first trim, and saw that the bars, which had covered the entire sole when I first got him, had already begun to self-trim.



August 4, 2002

This was the first photo I took, not the original condition of the foot. I didn't take an initial 'before' photo, as the idea for the experiment came when I took this one. Note my comments, on the photo, that this already shows a large improvement!

The photo shows overgrown bars, false sole, a deformed frog and long, forward heels.



August 22, 2002

This is the second photo – taken only 18 days after the first. Already the frog looks better, the false sole is gone, and the bars are reduced.

Sep 2, 2002



Only 29 days after the first photo, this foot has transformed itself. The bars are in normal position – though slightly long by some standards. The sole is concave, smooth, and clean. The heels have come back on their own and are standing above the sole and, if I were trimming this foot, could be trimmed at this point to very close to a normal position. The frog has improved even more. All of this without me touching it.

While I learned from, and experimented on, my own horses, I also continued to study what others had to say. I bought Jaime Jackson's initial video. I went to a Martha Olivo clinic – not that I believe in her method – I DON'T – but her anatomy presentation was phenomenal. I bought two of Gene Ovnicsek's videos, and KC LaPierre's first video. I bought KC's book. Later, I bought Pete Ramey's book. In 2006 I went to one of Pete's clinics. I bought two more of Jaime Jackson's videos and I bought KC's DVD set. I enrolled, briefly, in the AANHCP, but was very discouraged by what was being taught and dropped out. I bought Pete's 10 DVD set. And I continue to study what is out there, even today. Did I say I was insatiably curious?

I think my curiosity makes me a good trimmer. Everything we do – *and don't do* – has an effect on the foot. Being curious, I pay attention to the smallest details. I have learned from the horses – and their feet – that the foot tells us what it needs. And what it *doesn't* need. Which is equally important – if not more so. Most trimmers are guilty of doing too much – and worse, doing too much of the wrong thing and not enough of the right thing.

What is the Hoof Guided Method?

The Hoof Guided Method (HGM) is based on the theory that the toe is the cause of the vast majority of hoof issues, and that the hoof tells us what to trim and what to leave alone. After making mistakes in my early days of trimming, I started paying close attention to what the sole looked like each time I trimmed. After trimming hundreds of horses and thousands of feet, it became apparent that the foot was giving clear indicators of where it needed to be trimmed.

I realized, eventually, that a natural trim should mimic – or **simulate** - the action of the ground on the hoof, and that the true purpose of the trim was to **stimulate** the foot to grow healthy. *Simulate and stimulate*. The more I listened to the foot and didn't try to do more than it 'asked for', the faster and better the results of my trimming were. The foot neither needs nor wants to be micro-managed. In nature, the ground has no agenda toward the hoof. It is neutral. We need to respect the hoof, and not try to force our ideas onto it.

I cannot tell you how many trimmers and barefoot horse owners I've listened to over the years. Naturally, they all want results. Yet when they don't get the results they're looking for, they just continue to do what they've been doing – or they escalate and do more of it. For months and even years!

I do not have the patience to wait years for results, and I'm sure the horse doesn't want to wait that long either. I do have the patience to allow nature to do its work. For that is what truly happens. We as trimmers do not really fix anything. We can only help the foot by removing what the horse cannot remove on its own, and leaving the rest alone. *Yes – leaving it alone*. For some reason, the majority of people find this extremely difficult. We humans seem to always want to DO something, giving very little credit to nature to be able to handle things.

The Hoof Guided Method works with nature, not against it. The hoof responds to everything it experiences, and that includes trimming. By trimming only what is indicated, then waiting at least a few weeks for the foot to respond, the hoof is allowed to transform itself. And it will. The next time we trim we will see the results of nature at work, and the foot will indicate what is needed next.

Nature is always ready to heal the foot

It doesn't matter how old the horse is, nature is always ready to take advantage of any opportunity to heal the foot. Sadly, there are times when the damage to the coffin bone is too severe, but in most cases, even with aged horses, the foot responds virtually immediately to a correct trim.

Below is an extreme case (Figure 1). The mare, a Peruvian Paso, had been foundered for several years before I was called in. She was in shoes the entire time. As is clear in the far left photo, taken at my first visit on 7/25/06, the hoof is in terrible shape and the hairline is lower at the front than at the heels. The center photo was taken 4 weeks later and there is already improvement. The hairline is returning to a more normal position as are the heels. [Please Note: I never trimmed the heels.] The photo on the right was taken on 10/10/06, and it's clear that the hairline has returned to normal and new growth at the coronary band

is in the right direction. It was at this point that x-rays were taken which revealed that almost half the coffin bone had eroded away. The ruler in the last photo shows the hoof height to be less than 2 inches. Due to the coffin bone loss, the decision was made to euthanize the horse. But despite the tragedy of this case, it demonstrates that the hoof is always immediately responsive to a correct trim.



Figure 1

Figure 2 shows the feet of a horse who was 27 at the time of the trims. The photo on the left was taken after the first trim (1/6/07). He had been shod and the arrow points to one of the nail holes. The photo on the right was taken after the second trim (2/10/07). In only 5 weeks his foot grew out the nail holes - about an inch of wall. More striking is the fact that the angle of the hoof wall has changed significantly. Evidence of how fast the hoof can work to achieve health, even with aged horses.



Figure 2

Another example of how the hoof will rehab can be seen in Figure 16. The horse in those photos was 19 at the time the first photo was taken. Despite not being ridden, his digital cushion and lateral cartilages returned to a healthy state in less than two years.

I must emphasize here that trim alone cannot make all the difference. I have had cases that could not be cured. The mare in the founder example above, with half a coffin bone, could not be healed. Horses whose owners will not change a diet that is too high in sugar, or calories, cannot be completely healed, though the trim will help avoid disaster.

Anatomy and Function of the Hoof – as Related to Hoof Trimming

Introduction

First let me say that no one completely understands the anatomy and function of the hoof. In fact, most of the information out there – aside from anatomy – is theory, often presented as fact. Fortunately, like the ground, which provides truly natural trimming, we do not have to be experts in anatomy, though it is very helpful to be able to visualize what is inside the foot, and to know how it functions.

My approach to anatomy and hoof function is to use anatomical fact, the theories of others, my own personal experience, and most importantly – common sense. Common sense is sadly lacking with regard to the horse's hoof, and trimming, and it is my hope not only to educate people, but to stimulate their minds and get them thinking. Only a thinking trimmer can learn from his or her observations – which benefits not only the trimmer, but the horses he/she trims, and barefoot trimming in general.

Before I get started I want to stimulate thought right away. In our everyday interaction with horses we are so often standing observing the horse – who is also standing. We must consider the horse when he is moving. Observed from behind, the hoof should land flat with regard to medial lateral balance. The hoof should land heel first. And the hoof should expand and contract as nature intended. Since it is very difficult, if not impossible, to view this expansion and contraction with the naked eye, it's easy to believe there is not much movement. This is an illusion.

A few years ago a new television show debuted, titled *Time Warp*. It was pretty fascinating, as everyday events, as well as the more exotic, were filmed with ultra high speed cameras, resulting in ultra slow motion video, revealing things never before seen. Making it dramatically clear that things are not nearly as static as they may seem, and certainly our eyes are not fast enough to see most of what is happening. A great example of the movement we DON'T see, is the video at the link below. Watch the video and keep it in mind while considering how much hoof movement we miss.

http://www.liveleak.com/view?i=8a9_1221557956&c=1

The Swedish Hoof School (though I do not agree with their theories) has excellent high speed videos of horses in motion, posted on YouTube. They also have videos of cadaver feet under stress. I only mention this because you might see them. However, these videos

are based on very simplistic and inaccurate pseudo science. As you can imagine, having your foot put under pressure in a vise is not the same as running. Certainly it would be even less similar if your foot was detached from your body, and dead. When the body is alive, there are many systems in play. In addition, our bodies, and the hoof, are closed systems – cutting into cross section changes everything. Just as a single example; inside the hoof, blood fills the blood vessels, providing support. Compare this to a hose – you can easily bend an empty hose, or drive over it and crush it flat. When the hose is full of water, under pressure – just as blood is in the hoof – it offers resistance to force. Fluids under pressure are very powerful – look at any tractor with a bucket. What moves that bucket is nothing but hydraulic fluid - fluid under pressure. When something is cut into cross section, any blood remaining is not under pressure. Something to keep in mind.

This is only one area in which common sense comes into play. There is a lot of valuable information out there on the web – some of it you’ve probably already seen or read. However, there is also a lot of hooey (substitute word of your choice). Always think. Always apply your own experience. Always compare what you see/read with your own body. Use common sense.

The Leg

People often seem to forget that the horse’s foot is the end point of the leg, and must be treated accordingly. It is not a standalone object or a block of wood. And it is not always straight.



Figure 3A

There are many joints in the leg, any of which can be less than perfect. Sometimes the bones themselves are less than perfectly formed. This will often affect the foot, sometimes resulting in a less than perfect *looking* hoof capsule. As trimmers, it is not our job to try to ‘correct’ angular limb deformities.

Figure 3A, left, shows that altering the hoof capsule – something done routinely by farriers – does not affect only the hoof capsule. The leg is what it is. Allowing the foot to be what it needs to be is the best course of action. Again – a

human example helps us see the truth: If you were to put on a pair of shoes that was $\frac{1}{2}$ higher on the inside than on the outside, what would happen? If you have a hard time imagining things, find a way to alter a shoe and try it out.

In contrast to Figure 3A, Figure 3B shows a leg that has mildly deformed bones (both pastern bones), yet due to a correct barefoot trim, the joints are perfectly spaced allowing the force of the horse's movement to flow straight through the leg, AND, since the coffin bone is level (medial/laterally – side to side), the foot - without putting excess pressure on any one joint. From the outside, the foot does not look perfect, but internally things are where they are supposed to be. That is what is most important.

Note: Both radiographs were taken from the rear (posterior) view.



Figure 3B

The importance of the leg is that it supports the horse. People seem to forget that and to treat the foot as though it is separate from the leg and the rest of the body. It's not.

The weight of the horse applies significant force to the hoof, more speed equals more force. It is crucial to the soundness of the horse that the hoof land as it is meant to land - heel first, and evenly, side to side. With both sides landing simultaneously on even ground, not tipped one way or the other, and heel first. This is nature's design.

Over millions of years, the horse developed systems that are highly specific. Unlike us, when a horse runs he's really landing on a single toe, not a flexible foot. Balance is crucial, and I cannot state that often or strongly enough. ***Balance is crucial.***

It is our job, as trimmers, to be sure the horse's foot is balanced and lands heel first and evenly (side to side.) While we cannot immediately get a hoof to land heel first, we can be sure the hoof lands flat as observed from behind.

If we do our job correctly, as much as it is physically possible, based on the conformation of each leg on each horse, the joints of the leg will line up correctly – with even spacing. This too is critical. Joint problems occur when joints experience uneven pressure. If one side of a joint gets more pressure than the other, cartilage will be worn and arthritis will occur. I would venture to say that 80 percent of arthritis in horses could be prevented with superior hoof care.

Rather than going into too much depth here, I will point you to excellent material on the web regarding anatomy. Below is a link to an excellent video showing the skeletal structure of the foreleg. Additional videos are available, if you wish to watch them, on the head and neck, and hind legs at the same site.

<http://www.thehorse.com/Video.aspx?n=the-horses-skeleton-forelimbs&vID=446&src=RC>

There is a lot of talk, in farriery, regarding the deep digital flexor tendon. This is most often in reference to founder, where it is believed by some that the tendon applies pressure to pull the coffin bone into a 'rotated' position. This is untrue. The only thing we need to understand is where the deep digital flexor tendon attaches to the coffin bone – and most importantly where it passes over the navicular bone - and what damage is done to it when the horse does not land heel first. This will be covered in the next section - The Hoof.

The Hoof

The horse's hoof is very interesting. Unlike the feet of humans, dogs, camels, elephants, and most other mammals, the horse's hoof consists of what I consider to be the Foot, and the Hoof Capsule. I consider the hoof capsule to be a bionic 'shoe' or 'boot' created by the foot. I use this analogy because it is perfectly possible for the entire hoof capsule to slough off, leaving the 'foot' exposed. Unlike what happens when other body parts are removed, this is not a permanent state - the foot is capable of producing an entirely new hoof capsule.

Many people compare the hoof to our fingernails, but that is a gross oversimplification. We could live our whole lives without a fingernail with very little inconvenience. The hoof capsule is critical to a horse's survival. The hoof capsule is a complex structure which performs vital functions.

Let's first examine the horse's 'foot', or the structures found inside the hoof capsule. These include the following:

- The coffin bone, or P3 (the third phalanx)
- The lateral cartilages
- The digital cushion
- The navicular bone
- The coronary band
- The various coria (sole corium, frog corium, laminar corium)
- The laminae (sensitive and insensitive)
- The venous plexus

Parts of the hoof capsule include the following:

- Sole
- Frog
- Bars
- White Line
- Inner Hoof Wall
- Outer hoof wall
- Coronet

The collateral grooves are a feature of the sole, but not an actual structure, as is the central sulcus of the frog. (See the chapter on Frog Health.)

External Structures

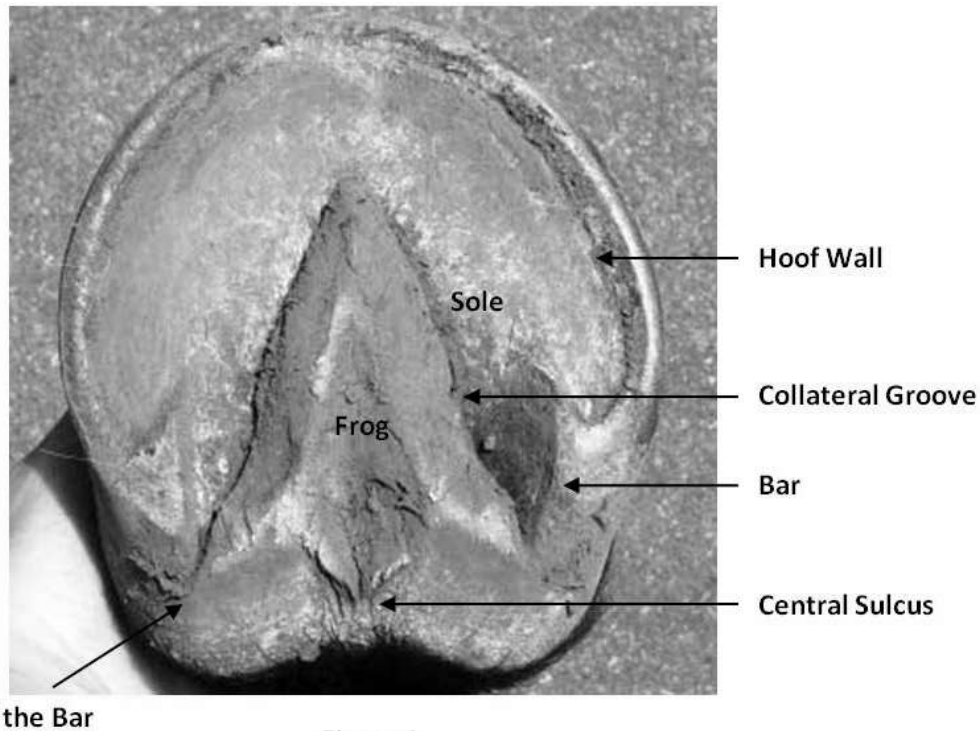


Figure 4

The sole, frog, and bars are created by their respective coriums. The white line is created by the terminal papillae of the sole. The outer hoof wall is produced by the coronary band, and the inner hoof wall is created by the insensitive laminae. The insensitive laminae are created by the sensitive laminae.

The Sole is the part of the foot which is (or certainly should be) in contact with the ground, and bears the weight of the horse. Because of shoes it is believed by many that the hoof wall is the primary weight bearing structure. This is untrue. The sole and the frog perform that function. [Here is another place to practice common sense. Unless the horse is standing on concrete or some other extremely hard, flat surface, the wall (if long enough) will cut into the ground and the sole will have ground contact.] Since the sole does the work of bearing the weight it should be thick and tough.



Figure 5

Coronet

Periople



Figure 6

The white line is not white. Its function is to join the sole to the inner wall, and to act as a barrier to foreign material, bacteria, etc.

The inner hoof wall is white. It is more pliable than the outer wall due to its higher moisture content, which allows it to flex as the outer wall moves and distorts. Its function is to protect the inner structures of the foot and also to absorb shock.

The outer hoof wall may or may not have pigment. It can be difficult to tell the inner hoof wall from the outer on white feet. But normally, even white feet have some pigment. Its functions are to protect the inner structures, and to store and release energy as it impacts and then leaves the ground.

The bars are extensions of the hoof wall, and run along the side of the frog, terminating approximately halfway along its length. The primary purpose of the bars is to add strength and support to the hoof wall as it expands, and again, in the manner of a spring, to help it

snap back into shape as the foot leaves the ground. It is also theorized that the bars act as a natural brake during landing, as the hoof slides forward.

The angle of the bar is commonly referred to as the heel or the heel buttress. It is the point at which the hoof wall turns back and forms the bar. Its function is to receive the impact as the hoof strikes the ground.

The frog. K.C. LaPierre theorizes, and I agree, that the frog acts as a hinge of sorts – allowing the back of the foot to expand as it hits the ground, preventing it from expanding too far, and assisting it to contract back to normal as the hoof leaves the ground. It also allows the heels to move independently, as when the horse lands on uneven ground. The frog also absorbs some of the shock of hoof impact. It is flexible and should be tough and thick. Unfortunately, a healthy frog is not nearly as common as it should be.

The collateral grooves lie on either side of the frog. Pete Ramey theorizes that collateral groove depth is indicative of sole thickness, the deeper the groove, the thicker the sole.

The central sulcus, of the frog should be wide and shallow. The condition of the central sulcus indicates the health of the frog. A deep central sulcus is indicative of infection and/or contraction. (Refer to the chapter on Frog Health.)

The coronet is where the hoof and hairline meet. It is common now to refer to the coronet as the coronary band, but the coronary band is an internal structure.

The periople is similar to the cuticle on human fingernails. It extends from the coronet down the hoof for about an inch. Normally dry and almost invisible, it can sometimes be seen to be ‘crispy’ and peeling, and to turn milky white when the hoof is wet.

Internal Structures

Coffin Bone. A cross section view of the hoof (Figure 7) allows us to see inside, but is also misleading to some extent. In cross section, the coffin bone looks like a spear, but actually it's shaped more like a miniature hoof. In addition, the lateral cartilages, which fill a large portion of the inside of the hoof, are not visible at all, having but cut off, along with the outer side of the coffin bone.

Figure 8 shows three aspects of the coffin bone. Left to right: as it sits inside the hoof capsule; the solar surface (bottom); side view as the coffin bone points to the right. NOTICE that the coffin bone sits in the front part of the hoof capsule – not the back. This is important to remember.

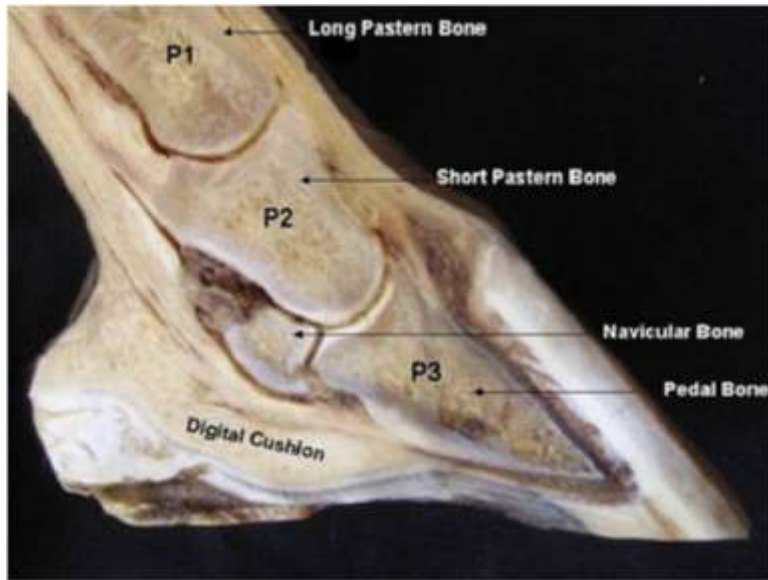


Figure 7

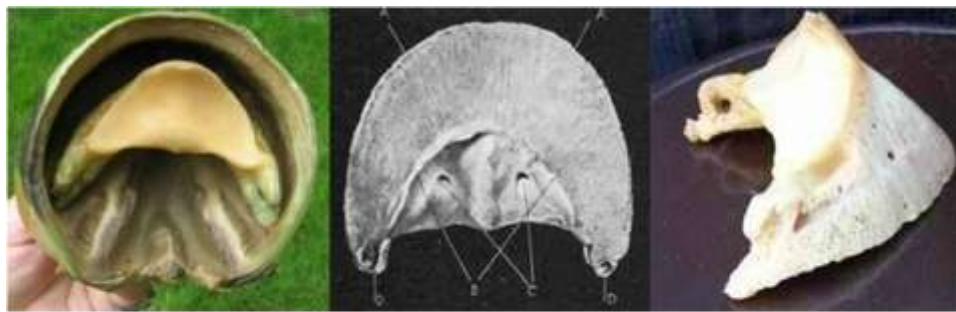


Figure 8

The navicular bone is a very complex component of the horse's foot function: It's a pivot point, or fulcrum, at the back of the coffin joint, crisscrossed by ligaments and cradled by the deep digital flexor tendon, which extends the length of the leg and attaches at the bottom of the coffin bone. The navicular bone stabilizes the deep digital flexor tendon's attachment to the coffin bone, while a tiny sac, called the navicular bursa, acts as a cushion between the deep flexor tendon and navicular bone.

This area is where problems begin, which lead to diagnoses of navicular. When horses land on their toe, instead of their heels, the resulting movement of the joints causes irritation of the deep flexor tendon. Over time, the tendon will become worn and the horse will be lame. Eventually the navicular bursa will be affected, and finally, the navicular bone itself. Dr. James Rooney (*The Lambe Horse*), after thousands of dissections, discovered that horses with tendon damage did not necessarily have bone damage, but that all horses with bone damage had severe tendon damage.

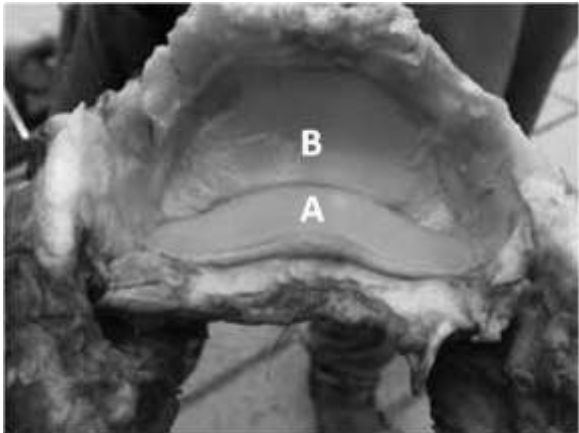


Figure 9

Figure 9 (left) shows how the navicular bone (A), fits into the coffin bone (B).

Figure 10 (below) shows the navicular bone in a living horse. This coffin bone appears to be slightly deformed – the wings appear closer together than is normal. The heels and frog appear contracted.

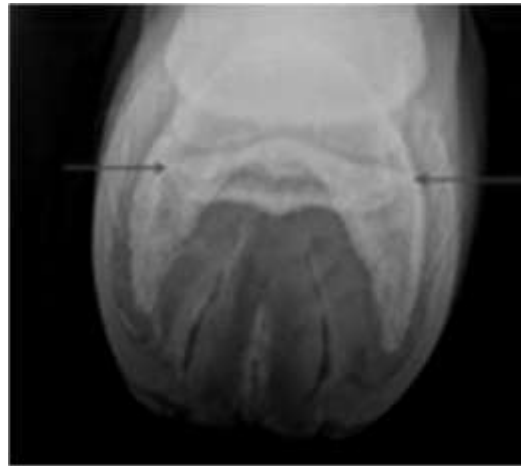


Figure 10

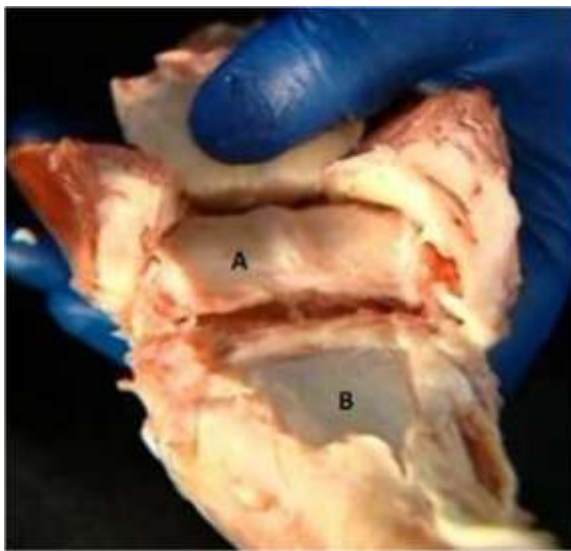


Figure 11

Figure 11 (left) shows the short pastern (B) and the navicular bone (A). The thumb in the photo is holding back the deep flexor tendon.

The lateral cartilages are attached to the coffin bone, and extend rearward all the way to the back of the foot.

Figure 12 shows a view of the lateral cartilages at the back of a cadaver foot which has had the skin removed.



Figure 12

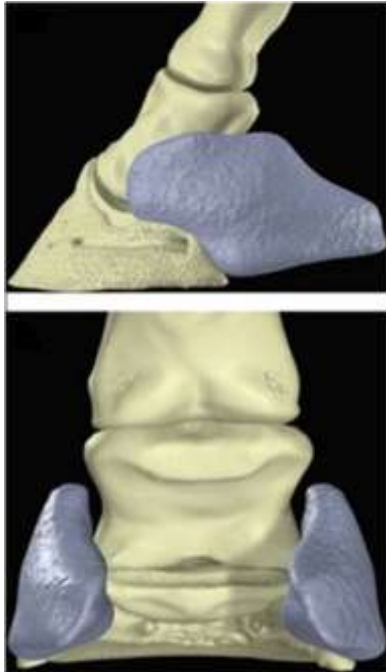


Figure 13

Figure 13 shows images of the lateral cartilages as seen in the Glass Horse. It's apparent from these images that the lateral cartilages form a substantial portion of the mass of the inside of the foot. Their function is to provide resistance as the coffin bone descends during weight bearing, regulating the amount of pressure applied to the coriums. In addition, they press on the artery and vein at the back of the pastern, shutting off blood to the foot on landing. They also help to suspend the pedal bone in the correct position as well as acting as a spring, storing and releasing energy during locomotion.

Figure 14 shows the thickness of the cartilages. The one which is visible has been cut with a scalpel. [Note: these were not considered to be of optimal thickness.]



Figure 14



Figure 15

Figure 15 is a cross section showing how the digital cushion fills the back of the foot (between the lateral cartilages which are not present). This is a healthy foot, with a thick, arched sole, a tight hoof wall connection to the coffin bone, and a thick digital cushion.

The digital cushion lies between the lateral cartilages, behind the coffin bone, and above the sensitive frog. It plays a vital role in the absorption of shock, through the transfer of blood through its venous plexus. In an improperly functioning foot, the digital cushion atrophies and becomes 'fatty' as opposed to springy, cartilaginous material, and the blood vessels within it will change, inhibiting its ability to absorb shock. It has been theorized that the shape and health of the digital cushion will influence the angle of the coffin bone,

with flat soled horses (those whose coffin bones do not point slightly downward at the toe) having severely atrophied digital cushions.



Figure 16

Figure 16 (above) is a photo comparison showing rehab of weak digital cushions and stiff lateral cartilages. The photo on the left was taken at the first trim. The horse was 19 at the time. The photo on the right is the same horse 2 years after the first photo. The digital cushion has become thicker, filling the back of the foot, and the lateral cartilages now are more flexible.

The sole and frog coriums. The sole corium produces the sole, the frog corium the frog. Figure 17 shows the sole corium, the sensitive frog, and some hoof wall. Figure 18 shows the frog corium (sensitive frog) on one half of the foot and the sole and frog on the other half. The frog in Figure 18 is quite thick and healthy, as is the sole.



Figure 17



Figure 18

The angle of the bar is also called the heels. It is the point at which the hoof wall turns back and forms the bars.

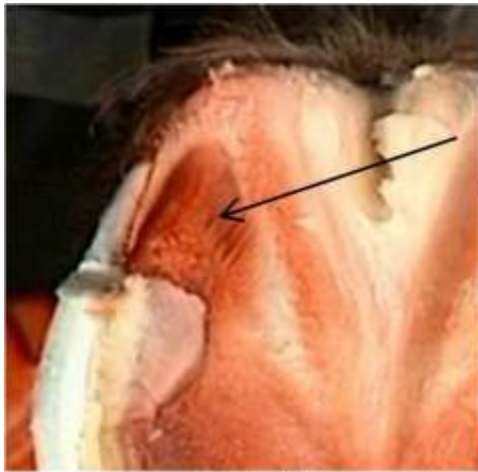


Figure 19

Figure 19 shows the insensitive laminae which produce the bar wall. The arrow points to the angle of the bar.

Venous Plexus. As can be seen in Figures 20 and 21, the hoof is full of blood vessels. Figure 20 is a cast of the blood vessels. Figure 21 is an image of a venogram, which shows the numerous blood vessels in the back of the foot. According to Dr. Bowker's *Theory of Hemodynamics* these play a significant role in shock absorption.



Figure 20

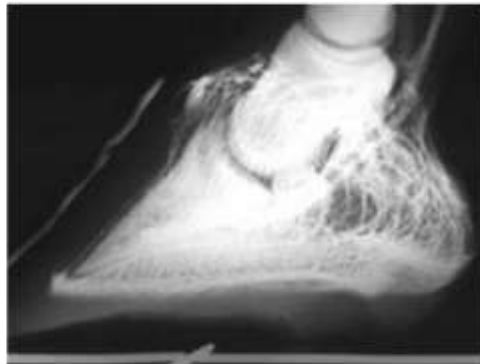


Figure 21

The coronary band is a vital structure which not only produces the outer hoof wall, but acts as a tourniquet when the hoof lands and is loaded. The coronary band is extremely strong and not at all elastic. As the hoof lands, the back of the foot expands, the pastern and fetlock descend, and the lateral cartilages apply pressure to blood vessels in the back of the pastern. The coronary band, also under pressure, shuts off the blood flow as well, trapping blood in the foot. This trapped blood actually acts to absorb shock and dispel heat from the foot. (Bowker's Theory of Hemodynamics.) As the hoof leaves the ground, the

pressure is released, and the blood, which has been under pressure, is basically pumped out of the foot. This is another reason why a heel first landing is so important. The more normally the hoof expands and contracts, the better the circulation and the better the blood absorbs shock and dissipates heat.

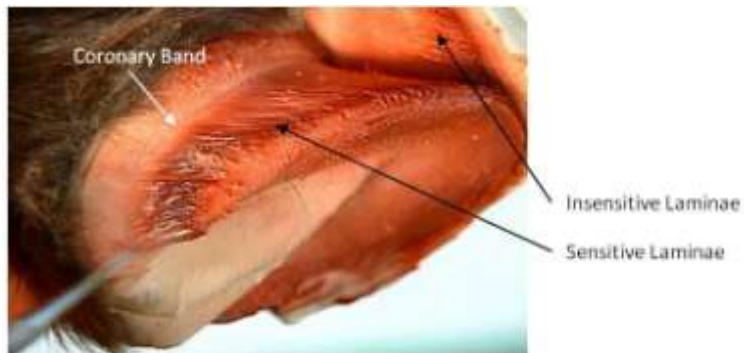


Figure 22

Figure 22 is a photo of a dissected hoof showing the sensitive (dermal) laminae, the insensitive (epidermal) laminae, and the coronary band.

Figure 23 is a photo of a dissected hoof showing the coronary band being removed.



Figure 23

Figure 24 shows the coronary groove in the hoof capsule.



Figure 24

The Hoof Wall

Below are two diagrams of the dermal and epidermal layers of the hoof.

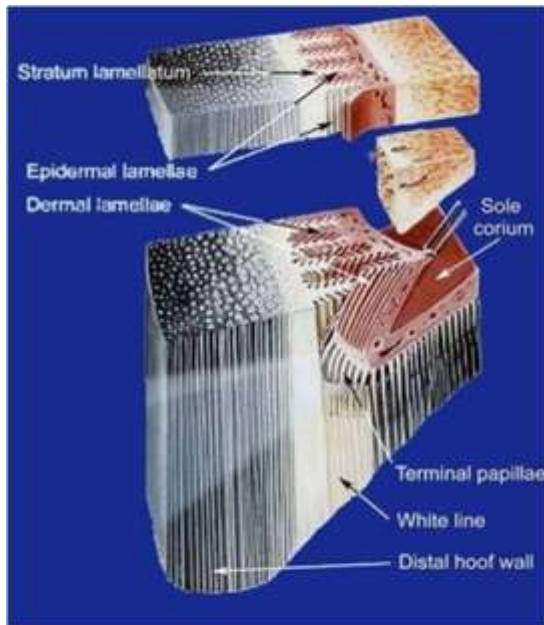


Figure 25

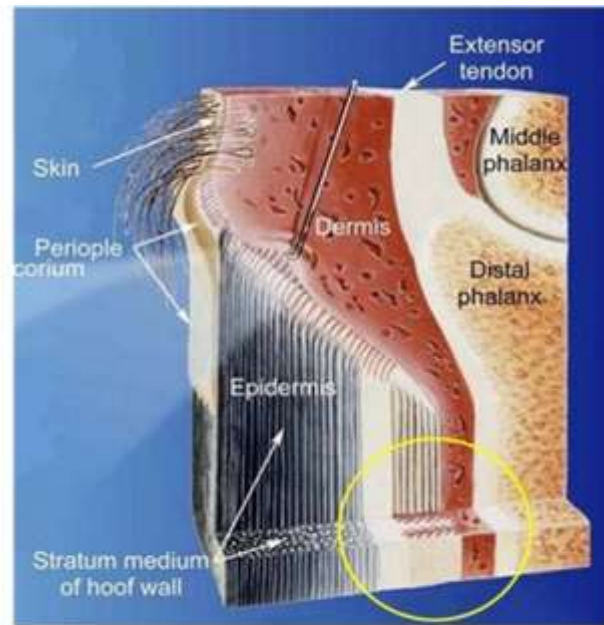


Figure 26

Figure 25 shows a cross section of hoof taken at the point of the toe. The terminal papillae of the sole corium produce the white line. The sole corium produces the dermal laminae, otherwise known as the sensitive laminae. The epidermal laminae (also known as the insensitive laminae) produce the hoof wall.

Figure 26 shows how the outer hoof wall (black/grey) is produced by the coronary band (not labeled) and grows straight down. It also shows how the inner wall (white) is produced by the epidermal laminae (circled area), which then grows out to meet and bond with the outer wall.

Figure 27 is a microscopic view of the laminae.

As you can see, the hoof is a complex structure, nothing as simple as a fingernail. And certainly not the block of wood that many farriers, and barefoot trimmers, appear to think it is. Everything we do to the outside of the foot affects the inside. And it is the inside of the foot that produces the bionic shoe that is the hoof capsule. The inside of the hoof must be healthy in order to produce a healthy hoof capsule.

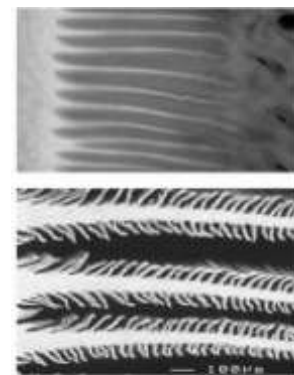


Figure 27

Trimming Theory

After 11 years of trimming, and observing literally thousands of hooves, I have come to my own (apparently unique) theory of trimming. While the advice of many is to trim the heels, my advice is to leave them alone. In my mind I recite the line from Little Bo Peep – “leave them alone and they will come home.” And it is that simple.

The poor heels are innocent victims of runaway toes. Since the heels are part of the hoof capsule and are bound to the toes as securely as the rear end of your car is to the front end. Where the toes go the heels must follow. It is simple physics. Yet who gets the blame, and suffers the abuse? The heels.

To put it ridiculously simply, consider this example: Draw the side view (lateral) of a hoof on a piece of paper. Cut out the shape you’ve drawn. Now, holding only the toe of your ‘hoof’ between the thumb and index finger of one hand, move that hand in the direction the toe is pointing. What happened? The whole ‘hoof’ moved didn’t it? Since the hoof is not made of flexible rubber or elastic, it had no choice.

Now let’s do another experiment. Taking the same ‘hoof’, hold the toe in one hand and the heels in your other hand. Hold the heel firmly and pull the toe as hard as you can. What happened? The ‘hoof’ ripped apart. That is why the heels **MUST** follow the toe. If the heels could resist following the toes the hoof would rip apart. That, in my opinion, is what actually is happening when a horse gets a quarter crack. The quarters are normally the first area of the hoof to self trim. What is more natural than when the toes and the heels get too far apart they (the quarters) are the point at which the hoof capsule gives?

Therefore, to get the heels to move back where they belong, we must address the true culprit, the creator of the distortion – the toe. As we get the toes to come back, the heels come back – all by themselves.

[PLEASE NOTE: When I say leave the heels alone I mean, specifically, never trim them lower than 1/4” above the sole. In fact, if they are 3/8” above the sole I still will often leave them alone. If the sole exfoliates and literally falls off when scraped with my hoof pick, and the heels end up more than 3/8” above the sole – then I trim, because that is the foot saying it wants/needs the heels trimmed. This is critical. For details, read the chapter on the Trim.]

I explain to my clients that if horses live on terrain that is abrasive or hard enough they wear their toes naturally, keeping them from growing forward. Those people who have dogs that get a lot of exercise on pavement – perhaps jogging with their owners – will know what I’m talking about. Their dogs’ nails will seldom need trimming. Whereas my

Chihuahua, who doesn't get any exercise on pavement, has nails which need regular trimming. In the wild, canines wear their nails by digging, and traveling over rocks and dirt. Nature has a plan. Animals developed specific life styles. The lifestyle of horses was to move virtually constantly in search of food which was not all that abundant, and certainly not delivered. Water may not necessarily have been nearby, requiring more traveling. Chances are the horse's natural habitat was not manicured green pastures, but harsher, more natural terrain, consisting of sand, rocks, etc. And probably dry. Dry means hard (unless the terrain is sand) and hard doesn't have to be harsh and abrasive to trim hooves. Dry hooves on hard, flat ground will naturally crack and break. Not doing such a pretty job as sand, but still very effective.

Since a major tenet of my theory is that the trim is to simulate the action of the ground on the hoof, let's take a look at what happens when the hoof contacts the ground. Naturally, the ground can only trim the hoof at that time.

What is the movement of the heels? Simply put, they land, they may slide forward a little, they wait for the toe to land, and then they lift up and forward as the toe breaks over and leaves the ground. The toe on the other hand, lands (after the heels on a healthy foot) then moves downward, sinking into the ground where the ground gives or merely pivoting onto its tip if the ground is very hard. As it goes from landing to lift off (the point of breakover) it pushes against the ground, scraping in an arc – basically filing itself. That is the action of the ground on the toe. Filing. Abrasion. Wear. Now let's look again at the back of the foot (the heels). It lands – absorbing the impact. It may slide forward some depending on the horse's speed and the terrain, which does cause some abrasion. It bears weight while the toe is landing and then it is lifted from the ground. So, the heels mostly experience impact. This results in densely compacted material at the heel buttress (also called angle of the bar), but not much wear in comparison to the toe, which is describing an arc and experiencing a larger range of motion and potential abrasion. As a result, the heels seldom, if ever need trimming. All my years of trimming have proven this to be the case. I may never trim the heels on a horse, but it is rare that I do not have to trim the toe.

I explain to my clients what I believe, which is that, as a natural barefoot trimmer, it is my job to mimic the effect of the ground on the hoof. Period. And that means most trimming should take place between 10:00 to 2:00 (as on a clock face), with slightly less being done from 8:00 to 10:00 and 2:00 to 4:00, and even less closer to the heels. With the heels really being able to be left alone the majority of the time, and **ESPECIALLY** when the horse is laminitic or foundered.

The images in Figure 28 show a hoof that had been out of control for a long time. The owner finally became desperate and contacted me via email. The problems visible in the

first photo of the series were created by trimming the heels. The message being sent to the foot was that it was experiencing excessive WEAR. It responded by replacing and reinforcing the material being taken off. My instructions were to leave the heels alone and to focus on bringing the toe back where it belonged. Yes, the heels are long and underrun, and in addition, the frog has migrated (see the chapter on Frog Health), but that is NOT the problem. Long heels are a SYMPTOM. The forward toe is the CAUSE.



Figure 28

The image on the far left was taken in April of 2008. The other 2 photos were taken in July 2008 (not the same date). The center image shows how backing the toe has caused the thickened sole to crack and begin to exfoliate. This is due to the release of the pressure of the toes pulling on the heels. The frog is then allowed to move back into place, the sole comes off, and the foot has transformed itself in 3 months. All by just doing what the ground would do – wearing the toe.

Below is another example of leaving the heels alone to come down on their own. The first two trims I ONLY backed the toe. At the third trim the sole exfoliated, indicating the heels could now be trimmed. This is apparent in the photo. The heels are significantly lower than at the first trim, yet still above sole level, as are the bars. I have trimmed the frog to remove material which was blocking the central sulcus.



Figure 29

Do what needs to be done and the foot will do the rest. Work with nature, not against her.

I want to stress that in both instances what occurred was the foot healed (*because it was allowed to*) therefore the excess sole was no longer needed and was able to be exfoliated. Cutting sole off IS NOT THE SAME!!!

I have trimmed according to my theory for several years, and I can state truthfully that it works, all the time, to quickly (key word QUICKLY) transform the hoof capsule from distorted to normal – by which I mean to the form the particular foot needs/wants. I use the word wants – which some may find anthropomorphic - because I feel it accurately describes nature's intent. And yes, nature does have intent.

Our bodies, and our horses' bodies, naturally strive to be healthy. There are complex systems in place to achieve this. These systems have intelligence and intent. A simple example: a germ invades your body, and your T-cells and phagocytes immediately mobilize and attack it. You never even realize it happens. For every cold you may get, there were probably hundreds of times when your body protected you and you were completely unaware of it. Another example: it's fall and you've decided to rake the yard. The last time you raked was a year ago. You rake for a couple hours, and notice you have a blister in the area between your thumb and index finger. In a few days the blister is gone, but you notice the skin is slightly thicker there than it was. The next weekend you help your neighbor rake. You don't get a blister this time, but you notice a few days later that you have a fully developed callous. That is your body adapting to the demands you've made on it – protecting itself from damage. To simplify – your body experienced damage in the form of too much wear. It immediately adapted to the stress by sending a message to the cells that produce skin to lay down EXTRA skin – WHERE NEEDED. Key point – *where needed*. The skin didn't thicken over your entire body. Nor does it stay thickened unnecessarily. As time passes and you don't rake anymore, your skin returns to normal, only to give you another blister next year.

The hoof is no different. It responds to whatever happens to it. If that happens to be heel trimming, the horse will start growing heel to protect itself from what it 'perceives' as excess wear. I have seen a case where a horse was normally ridden many miles every week, then the owner went on vacation. When I came to trim the horse, instead of the minor touchup he normally got, there was over 3/4" of wall that needed to be removed! His body had adapted to the mileage and produced enough hoof to keep him sound and happy. When the mileage suddenly decreased there was the evidence of how much wall he was producing.

One of the most common things I hear is regarding the heels and founder. Over and over the refrain is 'the heels must come down so that the coffin bone can regain its normal

position'. This is a huge fallacy. If people actually used their brains and gave some serious thought to what is actually happening, there are countless horses who would still be alive today.

Let me state the scientific truth. There is no action a trimmer can apply to the hoof capsule which will lower the rear portion of the coffin bone. Please read this again. ***There is no action a trimmer can apply to the hoof capsule to lower the rear portion of the coffin bone.*** For some reason this simple scientific fact is never mentioned, or seemingly even considered. Examine the image of the freeze-dried hoof below (Figure 30) closely.



Figure 30

The greatest portion of the coffin bone (P3) is in front of the frog, and the digital cushion. Its normal position is tilted somewhat down at the toe, and up at the back, or the wings.

In addition, even if a trimmer cut the heels so low as to cut into the digital cushion (not likely to ever happen – just an illustration) the back part of the coffin bone would still not move down. Because of the size and weight of the front portion of the coffin bone, and the weight of the horse, the toe will always point down UNLESS

there is too much sole beneath it. Think of it as a seesaw or teeter totter. Once one end is down (in this case the front portion of P3) the other end must be up. Only weight from above will push the other side of the teeter totter down. Removing heels will not PULL the rear portion of P3 down.

Again, the idea of the back of the coffin bone being out of place is just a myth. Look at the images in Figure 31. Which foot is foundered?

As you can see, there is no difference in the position of the rear portion of the coffin bone between these two freeze-dried specimens. So why would we want to trim the heels? What would it accomplish, except to make the horse sore, and to force it to put more weight on the toe? Just where we don't want it!



Figure 31

Below (Figure 32) are the complete images of the above freeze-dried hooves.

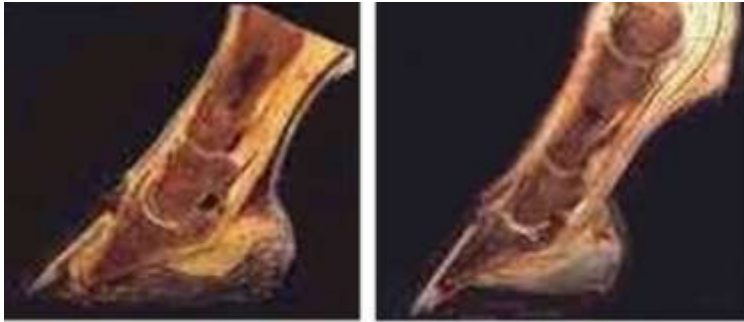


Figure 32

It's now very apparent that the hoof on the left is foundered with rotation, and very close to sole penetration, while the hoof on the right is normal.

A closer examination of the images reveals something else.

The actual angle of the

'rotated' coffin bone is not significantly different from the angle of the normal coffin bone. The illusion of angle difference is caused by the change in angle of the hoof wall. Justifiably so – as founder is not rotation of the coffin bone, but displacement of the hoof capsule, caused by loss of integrity. To put it simply – the hoof capsule is falling apart and rotating away from the foot.

The images in Figure 33 are marked with a yellow line along the front edge of P3. I drew that line in Microsoft PowerPoint, on the foundered image, and then copied and pasted the same exact line onto the normal image.

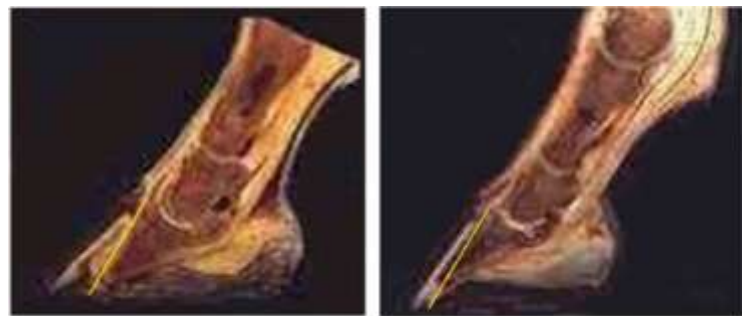


Figure 33

Who is to say that the angle difference, which is tiny, is not just because they are two different horses?



Figure 34

Figure 34 shows another comparison between a normal foot (left) and a severely founder foot. Look closely at the heels – they look the same.

In the case of the horse in the right hand photo, it's clear that trimming the heels will only reduce sole thickness in the back of the foot.

I tell my clients (and anyone who will listen) that the hoof capsule is a bionic shoe. It is produced by the horse's FOOT. Founder is when this bionic shoe fails. The solution is so simple and yet so ignored - the horse only needs to grow a new 'shoe'.

Unfortunately, if not allowed to grow this new hoof capsule correctly, founder cannot be 'cured'. Nailing on a shoe locks the new hoof growth into following the path of the old hoof, effectively preventing a structurally sound hoof capsule from forming.

Founder is a whole other subject and is mentioned here only to show how the heels are innocent victims, blamed and attacked for problems they neither created nor can fix. The vast majority of hoof problems are the result of the toe migrating forward – and that includes things like contracted heels, quarter cracks, and weak and shrunken frogs.

Fix the toe and the rest of the hoof capsule will quickly regain the form it's meant to have.

The Hoof Guided Method

Introduction

The Hoof Guided Method is simple. There is no measuring of angles, no aggressive trimming, and no guesswork. The sole is used as a guideline for trimming and the foot itself dictates where and what will be trimmed. The trim focuses on removing material the horse is unable to remove on its own and nothing else. There is no micro-management of the hoof. There is trust in, and reliance on, nature - to heal the foot's internal structures, and to grow a healthy hoof capsule.

The Hoof Guided Method allows the trimmer to do less and achieve better results, much faster than with either traditional trimming, or other natural trimming methods. It's a win win.

Key Points

- Leave the heels alone – unless the hoof indicates otherwise
- Focus on the toe
- Read the sole and trim only where indicated
- Trust nature to do the actual healing
- Expect to see changes in the sole at each trim – if you don't see changes, question why.
- Do not try to 'fix' issues, that is the foot's job

Considerations

- No trim can overcome bad diet. Many horses have problems processing sugars. Too much sugar causes disorganized hoof growth and can lead to laminitis, separation, and founder. If you're not getting the results you expect, inquire about the diet.
- The more movement the horse gets the better. The digital cushion and frog need movement for optimal health. A stalled horse is at a disadvantage. Recommend turnout and exercise.

- A better diet results in better feet. A good hoof supplement (one with sufficient copper, methionine, lysine, and biotin) will lead to frog health and better wall.

There are really two main issues in the foot – the toes and the frog.

The Toe – the toe is the main problem. The majority of horses do not get enough exercise on hard or abrasive enough ground to keep their toes maintained. As the toe grows, the hoof capsule becomes distorted, the heels are pulled forward, the sole thins and loses concavity, and separation of the hoof wall from the laminae will result to one degree or another – dependent on diet, toe length, and other environmental conditions.

The Frog – the frog is seldom truly healthy. This is a major reason why many horses seemingly cannot go without shoes. The frog should be wide, tough, without deep creases or any cracks, and should fill a good portion of the solar area. (See photos below and the chapter on Frog Health.)

Why frog health is so overlooked – even by vets - is a mystery to me. Skinny, weak frogs are NOT normal. They are a sign of one or more of the following: infection; really poor environment; lack of movement on the part of the horse; or inadequate nutrition.

Examine the photos below. Which frog do you think your horse would rather walk on?



Figure 35



Figure 36

When you see a truly healthy foot, it's quite apparent that most are not healthy. How many feet have you seen that look like the one on the right? And as good as it looks, it's not great.

The Heels – The heels are **NOT** a problem until people trim them. Leave the heels alone, unless they are more than 3/8" above the sole. The heels will take care of themselves as the toe returns to where it belongs, and what you'll find is that the heels seldom seem to grow at all.

THE TRIM

The Sole as Guideline

The Hoof Guided Method (HGM) is so named because the foot clearly indicates what needs to be trimmed. By reading and respecting what the foot is telling us, we can safely trim the foot effectively. Learning to read the foot is the crux of the HGM. Close observation of the sole of the foot reveals features that have meaning.

Step One – Assess

The first step in trimming the foot is to clean it. If you can't see everything clearly, how can you trim accurately? Take the time to clean all the dirt from the foot, especially the sole at the angle of the bar, and the white line.

Once the foot is clean, examine the wall height. How high above the sole is the wall at the toe? At the heel quarters? At the toe quarters? At the angle of the bar (heels)? Don't just automatically start trimming. Really look! You're trying to read the foot. You don't want to miss anything it's telling you.

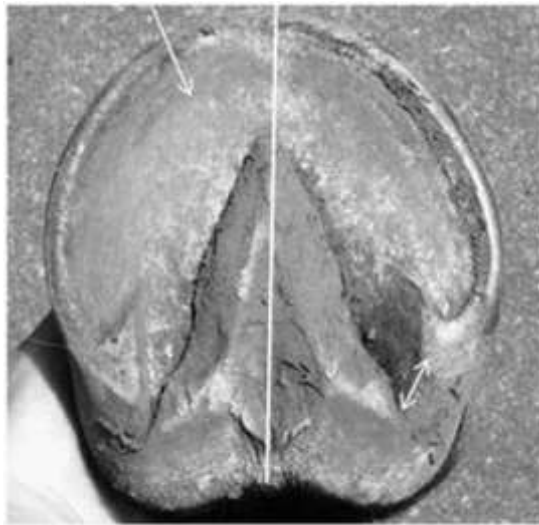


Figure 37



Figure 38

Look at each side of the hoof, as it's divided vertically. Compare the same areas on different sides of the foot. Is the wall higher on one side than the other? Does the frog point one way or another? Are there lumps and bumps? Is the sole hard or flaking? Look at all of it. Make it a habit, as it's the only way you'll learn to read the foot. Every foot looks different. Look at the details. SEE them.

Elsewhere in this book, I've used the foot in Figure 37 as an example of a healthy frog, and it is a very nice looking foot. But it's not perfect. It's telling us at least three things. First the heels are long (forward), second, the two sides have been trimmed unevenly, and third, the toe is trying to move back. There is also a fourth issue, the foot is contracted. The frog tells us this due to the little crease at the back. The central sulcus should be wider. Narrow central sulcus = contraction.

Look at the back of the angle of the bar or heels. Notice the white double ended arrow on the right side of the photo. Compare the length of the arrow with the same area on the left. There is a difference. Look at how much wall is above the sole on the right side, and see that the wall is at sole level on the left. What looks so perfect at first glance is actually unbalanced! Not by a lot, but by at least 1/4". That means that the coffin bone will be tilted, medial/laterally – by 1/4 inch, on hard flat ground.

In addition to the forward, uneven heels, the sole ridge (single ended arrow) is telling us that the toe is forward of where it wants to be. The ridge runs from 10:00 past 2:00 and is quite definite.

The in Figure 38 also has a lot to tell us. The heels are forward, the frog and heels are contracted, the frog is weak and probably infected, the sole is lumpy, the toe is forward (white arrow and line), and the hoof is wearing one side more than the other. It is also dirty – it was sent to me via email for trimming advice. Cleaner would clearly have been better – right? Even so, the foot is communicating clearly.

If you are trimming a client's horse, it helps you to remember to look, and to process what you see, if you share with the owner. You also are educating the owner by doing so.

Step Two – Trimming the sole, bars, and frog

I start at the sole because the sole's message is clearer once any dead material is removed. And I do mean DEAD. If it doesn't flake off easily, leave it. [Note: There may be times when the wall is so long you have to trim it in order to reach the sole. In that case, do not take the wall all the way down, just enough to get it out of the way.]

To repeat – trim only dead sole. This applies to every foot, even if the sole looks like it's too thick. This is not an accident, or lack of trimming. What we might consider 'excess sole' is actually sole which the foot laid down for a purpose – because it needs it. When it's no longer needed, the foot will let go of it. (See Figures 28 and 29.)

Be sure to exfoliate any dead material in the seat of corn area (sole at the angle of the bar). Smooth the sole as much as the dead material allows, but if there are hard bumps, leave

those as well. I include the bars in the sole trimming. I do trim bars IF they are more than 1/8" above the sole, AND they are dead (flakey or brittle) or punky (kind of squishy). Notice the bars in the image in Figure 28. They cover the entire sole, yet my advice was to leave them alone. Trimming them would delay healing – and we do *not* want to do that.

The frog should not be trimmed other than to remove clearly dead flaps, and to keep the central sulcus open. Everything taken from the frog and bars, other than dead material, is basically wounding it. The frog and sole serve the same purpose as the soles of your boots – which should be nice and thick.

There is often nothing to trim on the sole – in which case do nothing. I used to worry about not ‘doing enough’. I now explain to my clients that I am not there to make the foot *look* beautiful, I am there to help it *grow* healthy. Remember, if you trim professionally, you are being paid for your expertise – and results – not for your labor!

Once you’ve trimmed the sole, reassess. Things may be revealed that you didn’t see before. It’s also very helpful to take photos when you’re done, and then look at them later, to see if you missed anything the foot was telling you.

Step Three – Trimming wall

Before trimming, examine the wall carefully. Does the wall grow forward (outward) at the toe, or up? This makes a difference.



Figure 39



Figure 40

In some feet the hoof wall is so strong and the connection so tight, the wall actually grows up above the sole – see Figure 39. In most feet I’ve seen, the wall grows outward, away from the sole at the toe, and sometimes around most of the foot, as it does in the hoof in Figure 40.

With the hoof in Figure 39, before beveling, wall height actually has to be removed. In this case I nipped the wall down to sole level before beveling (see Figure 41).

With the foot in Figure 40, there is no wall height to be removed. The foot is flared in the heel quarter, and I would have nipped that somewhat – then beveled, which is the advice I gave to the owner, as this was an email consult. (See Figure 42.)



Figure 41



Figure 42

There is no set height to which the wall must be trimmed. Some horses need a little more wall than others, and some are happy if the wall is taken down to sole level. Start conservatively – leaving 1/8 inch or so of wall above the sole. See how the horse does over the coming days, and next trim adjust accordingly. In Figure 43, either of the wall heights shown would be okay – just not on the same foot at the same time.



Figure 43

All feet are not as clear-cut as the feet above. Until they have been trimmed correctly, hoof deformity is frequently the norm.

Figure 44 shows a very distorted hoof. The toe is forward, the frog is stretched, there is contraction in the back of the foot, and the toe wall itself is long.

Where to trim?



Figure 44

It's hard to, see given the limitations of the photo, but the arrows point to what I call the sole ridge.

The sole ridge is critical to the Hoof Guided Method (HGM). The sole ridge, as referred to in the HGM, is a raised area which marks the point to which the foot is trying to move the hoof wall.

Most often the sole ridge will show where the toe wants to be, but there can be a sole ridge in areas other than the toe, as will be seen later.

If you look carefully at the image above, you should be able to make out the ridge. In this case it is at the end of the sole, and is also the highest point of the sole. That is not true in all cases.

Below is what the sole looked like after trimming. By comparing photos, you should be able to find the ridge, if you haven't already. [Please note, I did not trim this foot, this was an email consult.]



Figure 45

At the time this photo was taken, that is all that could **constructively** be done to that foot. The heels have been broken off on one side, and are at sole level on the other. The bars are hard – which means they are not dead, and so not ready to be trimmed. This foot is in need of all the support it can get and we do not want to take away anything that is not ready to go.

By taking the toe back to the sole ridge, we have relieved as much pressure and pull on the foot as possible. The sole can now relax, as can the heels and the frog, and before the next trim the foot will look very different. I don't have subsequent photos of this particular foot, but what consistently happens is the hoof quickly starts healing. The excess frog at the tip will start to peel up, the bars will become more uniform, the sole will become smoother, the back of the foot will expand somewhat, and a new sole ridge will form, closer to the tip of the frog, as the foot continues to try to move the toe back.

Below are pre- and post-trim lateral shots of this foot, and though it looks like very little was done in Figure 45, you can see that just taking the toe back has created a big change. Many may feel the heels are high and need trimming – but the sole is saying a definite NO! to that idea. At the next trim, most likely the heels will be in a better position.



Figure 46

The next photos show a sole ridge that is not at the toe. The foot in question has had two trims, one of which I oversaw in person, at a clinic, the second was done at home by the owner. At the first trim, the owner marked the foot with paint in order to be able to differentiate the new growth from the old growth.

The first photo (Figure 47) is a shot of the sole, sent to me via email before the third trim. You can see it looks pretty good. There is plenty of concavity (the horse is ridden on logging roads in Alaska) and the bars are a perfect height above the sole. The frog and heels are contracted, but making progress. The heels have been worn from movement, not from trimming.

What I want you to pay particular attention to is the sole ridge running from near the center of the toe, toward the heel quarter. (The arrow points to just one point on the ridge.) Since this is a sole ridge, according to the HGM everything outside the ridge should be beveled to just in front of the ridge.



Figure 47

Why? *Because, as stated above, the sole ridge is the foot's way of indicating where it wants the hoof wall to be.* In each previous trim, there has been a sole ridge in that area. If you look closely, you can see the faint outline of the first ridge – between the current ridge and the hoof wall. This shows that when you respect the ridge, and bevel accordingly, a new ridge, will appear to give additional guidance.

This is a great example of the validity of what I call 'honoring the ridge'. The results, as well as the reason the ridge is there, are apparent in Figure 48.



Figure 48

When you see the foot from the front, and compare the area above the paint with the old growth, it becomes clear what the foot is telling us. Prior to getting a correct trim, the foot was unbalanced, causing it to flare – to the side where the ridge is visible! By beveling where the ridge indicated the hoof wanted to be trimmed, the new growth is straight. When the new growth makes it to the ground, the foot will no longer have a ridge in that area.



Figure 49

Another example of a sole ridge is the foot in Figure 49. Though this foot looks great, it is still not where it wants to be. The white arrow points to the ridge, which extends from 10:00 to 2:00. While difficult to see in this photo, the ridge can always be felt by running an ungloved finger over the sole.

Here are some more examples of sole ridges. They do not all look the same, but they are all telling the same thing – ‘the hoof is distorted and this is where I need my foot to be.’



Figure 50

Figure 50 shows another example of a sole ridge. The white arrow points to one area on the ridge, but the ridge extends all the way around the sole from heel quarter to heel quarter. (This is a photo sent to me for advice on the trim.) If you look closely, you can see that the concavity rises up from the frog to the ridge, then the sole drops away. Any time the sole drops away in front of the ridge, or becomes flat in front of the ridge, that area should be beveled. The foot in this photo has a stretched and weak frog, contracted heels, and weak, thin wall, caused by the distortion of the hoof capsule, which is created by the forward toe.



Figure 51



Figure 52

Figures 51 and 52 show sole ridges that include a larger area than just the toe. This is not uncommon. Many hoof capsules have become larger than the feet they enclose, due to incorrect trimming and/or shoeing. Each of the feet need help removing excess toe, and that is achieved by beveling the area in front of the ridge out and downward at a 45 degree angle (roughly). Do not bevel the ridge, start the bevel about 1/8 to 1/4 inch in front of the ridge.

Sometimes the toe is so far forward, and the sole so stretched that there is no sole ridge visible. Figures 53 and 54 are examples of a flat sole with no ridge.



Figure 53

This poor horse was a sinker (the coffin bone had descended due to founder), as well as having severe contraction caused by a toe that was so far forward. The photo below is a side view of the sole showing it to be absolutely flat.



Figure 54

Because the sole offers no ridge, we are limited to beveling moderately. However, since the toe is clearly forward we can safely bevel to the white line – which is also stretched forward of where it should be. At the next trim a ridge should be apparent.

How to tell when a toe is forward

When there is no discernible ridge, there is always at least one sign if the toe is forward. There are several conditions which result from a forward toe, and are therefore indicators that the sole is stretched:

- Completely flat sole

- Flat 'plateau' of sole between concave area of sole and the hoof wall

- Long heels and bars

- Heel/frog contraction

- Too much distance between the tip of the frog and the hoof wall (about an inch is average)

Usually there is a combination of the above.

The ideal bevel.

There is no ideal bevel really, as every foot is different. Often the foot looks almost as ugly after the trim as it did before. That is fine. The point of trimming is to remove material the hoof has not been able to get rid of on its own, it is NOT to make the foot look pretty.

That said, it is best – though not always possible – to leave some wall above the sole. In some cases, the wall grows at an angle that leaves the sole the highest point, even before the trim. The photos below (Figure 55) show two feet on the same horse. One was beveled (by the owner) correctly, and the other had too much material taken off.



Figure 55

Both feet grow the same – the wall grows outward, away from the sole. In the left hand image, the sole is left standing alone with almost no protection. In the photo on the right, as much wall height as existed was left, and only the excess was beveled off. This horse had separation in the white line at this time, which is why there is a gap between the sole and the hoof wall.



Figure 56

Figure 56 shows an example of a bevel where hoof wall is left above the sole. This is ideal, but not always possible.



Figure 57

Figure 57 shows the same foot from Figure 55, several months later, *before* a trim.

Step Four – Finish on the hoof stand

Finishing the hoof on the hoof stand is the final step in the trim. Most of the work on a foot should be done from the bottom – or sole view. Remember, we are simulating the action of the ground on the hoof. The ground, except in very harsh terrain, really only affects the sole of the foot, and the lower edge of the hoof wall. All that should need to be done on the hoof stand is to file the sharp edge off, and create symmetry. It should be no more really than doing your own fingernails. You just want the wall even and smooth.

Do NOT rasp the hoof wall other than at the bottom edge.

Do NOT rasp the wall to remove flare.

All that is accomplished by rasping outer wall above the bottom of the hoof is to weaken the wall and make it more susceptible to further flaring. Flare is a symptom and will disappear when the foot is better balanced. Sometimes, in less than a trim cycle. Do not discount or underestimate the power of the inner wall to change the shape of the hoof for the better.

Summary

The HGM is a simple method and if followed correctly proves that less is more. By only removing what the foot clearly indicates needs to be removed, we avoid many problems created by over trimming, while allowing the foot to heal and grow a healthy hoof capsule.

The basis of the HGM trim is the understanding that we should do as little as possible to the hoof. We should simulate the action of the ground, and stimulate healthy growth. Hand in hand with that is the realization that the toe is the cause of 99% of hoof issues, and the acceptance of the fact that the heels are only innocent victims – a symptom of a problem with the toe. Leaving the heels alone and trimming the toe will result in much better and much faster results than trying to cure a problem by attacking the symptom.

The foot will not always look pretty in the beginning. But it will *grow* more beautiful with each trim.

Nature does the real work. The HGM trim merely mimics the action of the ground on the hoof. The ground has no agenda and doesn't over-think what will happen when the foot hits it. We should be the same.

Do not over-think the trim or try to micro-manage the foot.

Do not be distracted by the issues you see.

The trim is the same for every foot:

LOOK at the foot

ASSESS what the foot is saying

TRIM only what the foot indicates should be trimmed – this means leaving the heels alone, unless they are more than 3/8 inch above the sole. It means NOT trimming sole that is not dead and/or flakey. It means not trimming bars unless they are punky or brittle. It means honoring the ridge by beveling off what's more than 1/4" in front of it.

TRUST nature to do the real work. Do not trim too often. Give the foot time to heal and indicate the next step. Nagging at the foot will just delay – possibly forever – any real progress.

Change does NOT take years; the foot is always ready to transform itself if we merely do as little as it asks us to do.

Frog Health

Frog health is critical. The more I trim, the more convinced I am that frog health is not only vastly overlooked, but the reason so many horses are not able to become rock crunchers.

Below is a photo of an unhealthy frog (Figure 60). It is such a common sight that not only owners, but veterinarians seem to think it is normal, or at worst, a minor thing. You will see similar looking feet in ads for hoof products, and not necessarily as a problem!



Figure 60

This frog is not as bad as many. Most people would not even consider it a problem.

And that is the problem!

What's wrong with it? It's small and weak.

Is that a big deal? YES.

Check out the photos below to see the difference between a thin, weak frog (Figure 58), and a thick, healthy frog (Figure 59).



Figure 58



Figure 59

Figure 59 shows the lack of thickness a weak frog has. Look at the thin layer of insensitive frog which is revealed by the incision. Figure 60 shows a vastly different situation. It doesn't take a rocket scientist to figure out which one better supports the horse – especially over rocks!

The frog has at least 2 functions. K.C. La Pierre believes and teaches that the frog is triangular for a reason. (I agree with his theory.) To KC the frog is there to act as a hinge of sorts. Without the frog, the hoof would be a solid circle, or cylinder – unable to flex. The frog, being somewhat elastic, is what allows the hoof to expand and contract. KC uses a paper plate to demonstrate this, and you can try it. Take a plain, cheap, paper plate and look at it. Clearly it can't expand and contract – it is what it is. Now cut a triangle out of one area. Suddenly, you can bend the plate in different ways – you now have independence between one side and the other. Think about this for a minute. A shod hoof is locked into one plane – the plane of the shoe. A bare hoof can flex depending on the terrain. Sort of like independent suspension in a car.

In addition to being a hinge (probably there is a better word – if you know it, let me know), the frog is there for support and shock absorption. Which frog do you think absorbs more shock? The puny one in Figure 59, or the thick one in Figure 60? It's no contest. If I was going to go on a trail ride I'd want my horse to have the frog in Figure 60.

Why frog health is ignored is beyond me. Yet I have done it too! Years ago I didn't give any thought to the frog, other than to be on guard for thrush. This is so common as to be the norm. Figure 61 is a photo from Wikipedia, which is what people see when they do research. I would venture to say that most people finding this photo would assume it represents a healthy frog. They would be very wrong!



Figure 61

The frog in Figure 61 is not the worst I've seen, but compare it with the one in Figure 62.



It's not too hard to believe your horse has good frogs if it looks somewhat like Figure 61. It's pretty impossible to make a mistake using the Figure 62 as the ideal.

I firmly believe that the back of the foot is misunderstood. Years ago I was taught that there is the frog *and* the heel bulbs. In reality, I believe what we consider the heel bulbs is actually the frog.



Figure 63

Look at the photo in Figure 63 and you'll see what I mean. The white arrow points to what are called the bulbs, but this frog is so healthy it's pretty clear that area is really frog.

Really consider this. If you look at this foot, you can see that the frog is actually almost half the mass of the foot. In addition, it's very clear that the frog is meant to be a major support, not unlike the pads of a dog's foot.

Figure 64 shows a photo of a dissected hoof, with the back of the foot (the frog and digital cushion) removed. It makes it pretty clear how much mass the frog and digital cushion provide, even in a foot that is clearly not that healthy.



Figure 64



Figure 65

Figure 65 is a photo of the frog corium, showing how the corium actually reaches around the back of the foot, which in a healthy foot would produce the frog shown in Figure 63.

The following photos show how the deformity of the hoof capsule has caused what I call 'migration of the frog'. Of course the frog doesn't go anywhere, but the hoof capsule has become so distorted that the frog can no longer retain its normal position. This frog deformity is what people commonly call the heel bulbs! Such is the lack of understanding – even at the veterinary level.

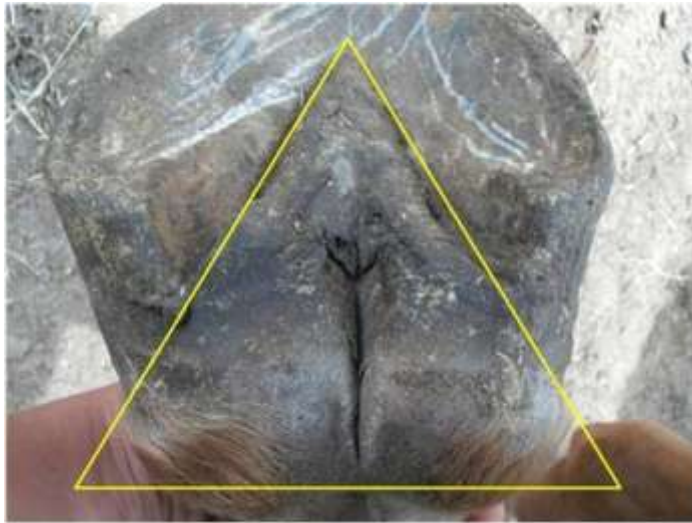


Figure 66

If you look only at the area enclosed by the yellow triangle (Figure 9) you can see that it *is* the frog. However, instead of the frog being on the bottom of the foot, facing the ground, some of it has become the back of the foot and is facing perpendicular to the ground. The crack between the 'heel bulbs' is actually the central sulcus of the frog, pushed out of position and contracted.



Figure 67

Figure 57 shows this 'migration' of the frog, in process, even more clearly. The frog is sitting at a 45 degree angle to the bottom of the foot! If it's allowed to continue migrating it will eventually look like the foot above.

With correct trimming, the frogs in both photos can move back to their correct positions.

In summary, the frog needs and deserves attention. A healthy frog is critical to a healthy foot. There are multiple factors contributing to frog health, chief among them is exercise, good trimming - by which I mean knowledgeable and skilled - and diet. Environment also plays a part, but if all other conditions are optimal the frog can be healthy despite a bad environment.

Other Considerations

Diet

Diet is important for hoof health as well as the horse's overall health. For some horses it can be critical.

The hoof wall is primarily Keratin, a protein. Insufficient protein in the diet can therefore result in less than optimal hoof wall.

Glucose and insulin levels have potentially dramatic effects on the feet. As a result, sugars in grass, hay, and grain, can lead to laminitis and founder, due to their effect on keratin production. At the very least they can cause hoof capsule deformity due to the disruption of the keratinization process.

I highly recommend readers avail themselves of the information available at Pete Ramey's website at the following link: <http://hoofrehab.com/LaminitisUpdate.htm>

Too much iron is also known to cause problems. The following quote is from Dr. Eleanor Kellon, VMD.

“Excess iron cancels the absorption of copper and zinc- even if there is an “adequate” amount of those minerals available. Excess iron has many effects, including predisposition to infection, a predisposition to arthritis and increased risk of tendon/ligament problems, liver disease and altered glucose metabolism – including insulin resistance and overt diabetes. “

If a horse is ouchy, despite having great hoof form and a healthy frog, consider iron as the culprit.

The following nutrients are essential for hoof health; copper, zinc, methionine, lysine, and magnesium. When looking at supplements, avoid those which show quantities in parts per million (ppm), it is extremely doubtful they contain enough of what is necessary. Avoid also what I call 'kitchen sink' supplements. This is where everything that possibly could be included, is. Do your research and try to feed only what is missing. Increasing *everything* will still leave an imbalance.

When you have been trimming a horse and still can't seem to resolve some issues, look to the diet.

Treating frog infections

Everyone has their favorite ‘thrush’ remedy, and that is fine. However, all frog infections are not necessarily thrush, and all thrush remedies do not successfully treat all infections. If one treatment is not working, change to a different product.

Some frog infections are caused by fungus, some by bacteria, and some by yeast. Once a frog is infected by one of these, it can become susceptible to the others. What this means is that some frogs may be suffering from a combination of infections.

One of the products which I highly recommend is No Thrush. Another is Kopertox. There is a lot of criticism of Kopertox and other products containing copper sulphate, however I don’t agree that it is hazardous. I FEED my horses copper sulphate, so how harmful can it be when applied to the feet? Since the feet need copper to be healthy, it is not illogical that a copper containing treatment cures hoof infections.

Again, there are many substances used to treat frog infections, the most important thing is that the infection ***be treated***, and treated ***until it is gone***. Remember, there should be NO cracks, or deep crevices in the frog. If there are, or if the frog is small and soft, chances are an infection is present – and the diet may be inadequate as well.

The effects of shoes

Coffin bone size

One of the most insidious effects of shoes is that of restricting coffin bone size. The coffin bone continues to grow until the horse is five years old. The growth is influenced by the horse’s weight. The heavier (larger) the horse grows, the more weight is supported by the coffin bone, and it is stimulated to grow accordingly. It’s easy to see that if a horse is shod as a yearling, or as a 2-year-old, the coffin bone, restricted by the shoe, will not be able to grow to its optimal size.

Coffin bone deformity and loss

Being subjected to the restriction of shoes can also result in deformity of the coffin bone. It is not uncommon for feet to ‘grow smaller’ when shod. This occurs due to at least two factors. First the hoof is shod in the contracted state. The longer the hoof is shod, the more the internal structures atrophy, and as things shrink, the hoof capsule is produced to fit those smaller structures. Second, improperly fitted shoes can cause contraction of the heels. This contraction can eventually put pressure on the ‘wings’ of the coffin bone,

pushing them closer together, and, in addition, forcing them to squeeze the navicular bone. (See Figure 68.)

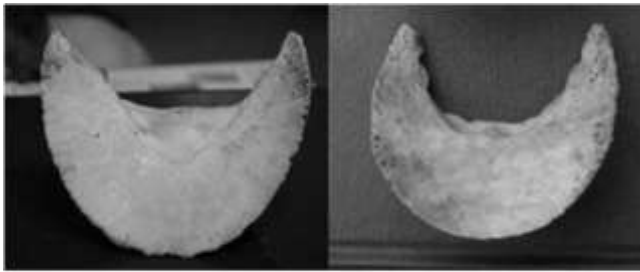


Figure 68

Figure 68 shows a comparison of two coffin bones. The bone on the left is very different than the one on the right, which has been deformed by contraction. Imagine the pressure on the navicular bone that occurred as a result.

In some cases, such as chronic laminitis, where the toe is subjected to too much pressure over a long period of time, the coffin bone starts to remodel. First comes the typical ‘ski tip’ seen on many x-rays, if the pressure is prolonged (for instance when the hoof is restricted by shoes) bone loss can occur. The damage may range anywhere from the bone becoming porous, to actual loss of bone mass (see Figure 34).

Please Note: Barefoot is not a guarantee against poor hoof form. Improper trimming and/or lack of hoof care (including untreated frog infections) can also lead to coffin bone loss and deformity.

Hoof growth rate

If you ask anyone how long it takes a new hoof to grow out, from hairline to ground, the answer you will get most often is, ‘about a year’. That is not wrong, exactly, but neither is it correct. The truth is, it depends. For a new hoof to grow all the way to the ground can take as little as 6 months – if the horse is ridden regularly. That is the fastest I personally have seen, which is not to say a hoof cannot grow out even faster.

There is one aspect of hoof growth rate that I do not hear mentioned. Remember, there are two types of wall – inner and outer. The outer wall is produced by the coronary band, which means that an abscess exit wound at the hairline must grow all the way to the ground to disappear. However, the hoof *shape* can change very quickly. Consider the hoof shown in Figure 69.



The photo on the left was taken after egg bar shoes were removed. There was very little to trim. The nail holes are visible if you look closely (one is just to the left of the top of the slight crack in the toe quarter). I revisited the foot a month later. The nail holes have disappeared, but more striking is the dramatic change in hoof shape. I credit this to the inner wall. I believe the shape of the foot, once released from the shoe, was able to relax and become normal due to the flexibility of the inner wall. Just because I discovered this change in the photo taken a month later doesn't mean the hoof shape had not changed much sooner, perhaps only days after the shoes were removed.

Though I do not have photos, I have seen similar changes in shape in other feet. In fact, I credit the inner wall for the angle change in the second image in Figure 2 (What is Barefoot Trimming). In the first photo there is a fairly straight line down the hoof, in the second photo, there is as definite change in angle between the top half and the bottom half of the foot.

Sole Concavity

Much is said about sole concavity, or the lack of it. The sole is intended to bear the horse's weight, just as our soles are meant to bear our weight. As a result, the sole 'seeks' ground pressure. This results in different levels of concavity based on different environments. A horse who experiences the majority of his movement on hard, flat terrain, such as pavement, stall mats, or hard packed, flat dirt, will most likely not have the same degree of concavity as a horse who spends his time moving on ground where the hoof sinks in, or where there are rocks.

Sole concavity is not the arbiter of soundness. I have seen horses with flat soles that could trot over rocks without issue, and I have seen horses with a lot of concavity who were

ouchy. Don't worry about the amount of concavity. More important is the health of the sole, along with the frog.

Miscellaneous Issues

Abscesses

Abscesses occur for many reasons, some of which we do not know. They are not uncommon if the hoof has been very unhealthy and is transforming. But they are not 'standard' either. Basically, abscesses are the body's way of getting rid of necrotic material that it can't reabsorb. In most cases they resolve relatively quickly on their own. It is no longer considered good practice to dig around with a hoof knife trying to find and drain an abscess. Common sense tells us we do not want to add a hole in the sole to any other issues! A better method of treatment is to soak daily in warm/hot water with Epsom salts.

Chips and Cracks

I tell all my clients that chips are our friends. Chips are nature's way of getting rid of excess wall. It's not pretty, but it's effective. In many instances it's a sign of improved hoof function.

Cracks are a different story. Most cracks are due to poor hoof form, imbalances, etc., but some are the result of infection or other real problems, and can be serious. The good news is that most cracks will grow out with a correct trim, with some may need treatment with a 'thrush' remedy as well.



Figure 70

However, there are cracks which are not caused by excess wall, imbalance, or infection. Some are the result of keratomas (tumors under the hoof wall). (See circled area on Figure 70.)

Club Foot

Some horses are born with a club foot (or club feet), and some develop them over time. Some club feet are created by trimming/shoeing. It is not uncommon for people to be concerned about hooves that appear more upright. In fact, many of these feet are actually superior, people are just not used to seeing truly healthy feet! In an attempt to avoid what they fear will become a club foot, hoofcare providers try to 'fix' the foot by lowering the heels and letting the toe be longer – making the foot 'appear' more normal. In fact, what happens is that the constant trimming of the heels causes them to grow *more*. [Remember, the hoof responds to everything that happens to it.] By trying to fix a problem they actually create, or exacerbate, it. Correct trimming – backing the toe and leaving the heels alone until they indicate they need to be trimmed, by being more than 3/8 “ above the sole - will resolve the issue.

Some feet become club-like due to problems somewhere else. Perhaps the horse has unequally developed shoulders. The theory of the 'crutch foot', is that the hoof grows taller on one foot to compensate for the problem higher up. These feet should be trimmed as the foot indicates – like all other feet.

True club foot. A true club foot is one the horse is born with, and these too should be trimmed normally. Any effort to 'fix' the 'problem' will only cause real issues. A club foot need not be a problem for the horse. I knew a racehorse who had a fairly severe club foot, and he raced successfully until he was 10.

Contraction

Contraction can be caused by pain (as from a frog infection, or weak digital cushion), and/or by incorrect trimming or shoeing. Pain in the back of the foot will cause the horse to avoid weighting it as much as possible. This, in turn, causes toe first landings, as well as atrophy of the frog and digital cushion, which in turn can cause the back of the foot to contract. Incorrect trimming can be the cause of pain in the back of the foot.

The fastest way to reverse contraction is to leave the heels alone, and address the toe. Evidence of how fast this method works to reverse contraction can be seen in Figure 71.



Figure 71

The shoes in the photo were applied the day before I removed them, and as hard as it may be to believe, they were a perfect fit.

We didn't take before photos of the foot, but as trimming progressed, I realized the foot had changed a lot, and when the owner said she had kept the shoes, we made a comparison. The changes were unbelievable. Those are wide web aluminum shoes and they show the heels had decontracted an inch in less than three months. Is it just a coincidence that's the same amount the toe came back? I don't think so.

Flares

Much ado has been made of flares, but if the foot is trimmed correctly, they will disappear on their own. They are a sign the foot is out of balance. Rasping outer hoof wall to remove flare only weakens the wall and predisposes it to flare. Flare goes away with a correct trim, not because the flares were smoothed by rasping.

High/Low Syndrome

High/low syndrome is a fairly common condition. Often the 'low' foot (more shallow hoof angle) is considered to be the 'normal' foot, and the more upright foot to be a club foot. The reverse is true. The more upright foot is actually closer to what a normal hoof should look like.

Research in France has revealed that high/low syndrome may be the result of foals grazing with one foot forward (the low one) and one foot back. Foals with longer legs tend to graze that way, while foals with shorter legs graze with both legs straight, but bent at the knee to allow them to reach the ground.

Whatever the cause, it is common and nothing to be concerned about. The trim is the same as for any other foot.

The Message – Respect the Foot

On Jaime Jackson's founder video he tells us to, "ignore pathology". When I first heard that I was horrified. Ignore pathology! How could he say such a thing? Older and wiser now, I realize he was absolutely right. Do not worry about transient issues – and anything a trim can change is transient. The foot will tell you what needs to be trimmed. Respect the foot and the trim becomes, in essence, the same for all feet.