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Photos courtesy of The Mayfield  
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# An inconvenient hoof

*Things change radically for the equine hoof when a gate is shut in front of horses and they are confined for our convenience. Instead of existing in a natural regime of constant trimming, whereby large amounts of movement over tough ground means that wear equals growth, hooves that grow long and out of balance lose their ability to function correctly, and the 'plastic' hoof is no longer supported to best effect and begins the insidious process towards deformity.*

Simultaneously, the equine hoof that is no longer getting conditioned by existing on hard terrain 24/7, goes soft. Not only does the 'fenced in' hoof need regular trimming, but it also needs to be protected in order to work on hard ground.

(See image 1 above)

Equine hooves need constant management. They may well be inconvenient, but to ignore them is to risk your horses' long term soundness.

## What does a normal hoof look like?

(See image below)

The normal hoof is short in both the toe and the heel so it remains balanced to the limb's centre of gravity and the wall does not grow too far past the sole.

There are environmental variations. As a rule, the hoof will be slightly longer in wet environments but slightly shorter in dry climates.

The angle of the hoof should match the angle of the pastern for correct bony column alignment.

The hairline should be straight and parallel to the ground when viewed from in front, but from the side should be slightly and symmetrically curved and slope from the front downwards to the heel at about 30°.

The hoof walls should be straight when viewed from all directions.

When we look underneath a normal hoof, the first thing to notice is the frog which should be a big part of the picture. It should be wide at the heels and at least two thirds of the weight bearing distance from heel to toe.

In addition, the bottom of the foot is not flat. The outer portion of the hoof wall is non weight bearing and the inner portion of the wall follows the contour of the sole plain, rising through the quarters accordingly.

A lot of the equine hoof's amazing strength comes through the integrity of the laminar

Image 1: Don't fence us in!



Image 3: How do we return a hoof to normal and then keep it there?



(yes, this is the same horse!)

attachment, which should be a thin, tight line, with no separation or widening. There should be no flares or wall cracks.

Please note that there is endless variation among horses' hooves. They don't all look the same, but the underlying science is always the same – no matter what breed or size or equestrian discipline, a horse is a horse is a horse!

## Anatomical landmarks - your signposts for safe trimming.

Many horses' hoof capsules have deformed due to unnatural pressure from years of shoeing, physiologically incorrect trimming or simply from neglectful ownership. It is the aim of professional hoof trimmers to slowly return the hoof capsule to a physiologically correct form so it can again function correctly.

How can we return a deformed domestic equine hoof back into nature's grand plan? And then keep it there? (See image 3 above.)

Fortunately there are some anatomical landmarks – nature's sign posts – that are external indicators of internal anatomy and skeletal alignment. Such landmarks take the guess work out of balancing

hooves and allow us to objectively analyze and relate any equine hoof we see in front of us to what is normal for the species.

This is possible because the anatomical landmarks are consistent reference points that remain static even when hooves overgrow and deform.

The development and use of anatomical landmarks has been a quantum advancement in educating students to objectively trim horses' hooves. They form the basic parameters of good trimming.

## Sole plane

The sole plane on the bottom of the equine hoof is the dome of skin that uniformly covers the pedal bone and directly reflects its three dimensional orientation. It is the primary landmark for hoof balance. (See image 4 below and 5)

The hoof wall is trimmed relative to its height above the sole plane; an equal height of hoof wall above the sole plane around the hoof perimeter.

The sole plane is very easy to find on a working barefoot horse and appears as a marble-like surface after the 'dirt plug' has been removed (see image 5).

Balancing to sole plane provides an objective three dimensional balance. It takes the guesswork out of the trimming equation.

There is however, an important variation that needs to be considered, which is the length of wall relative to the sole, as affected by the environment; the ground surface a horse is living and working on. Soft country hooves are different to hard country hooves.

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Image 5, The sole plane is very easy to find on a working barefoot horse and appears as a marble-like surface after the 'dirt plug' has been removed.



Image 2: What a normal hoof looks like... it looks tough because it is tough.



Image 4: The sole plane on the bottom of the equine hoof is the dome of skin that uniformly covers the pedal bone and directly reflects its three dimensional orientation.

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(These photos courtesy of Brian Rourke, [www.fireforge.com](http://www.fireforge.com))



Image 6: Characteristics of a dry ground hoof



Image 7: Characteristics of a wet ground hoof

With hard country hooves, the most important consideration is the sharing of the horse's weight between all of the components – frog, sole and wall. It is vital that the wall is not forced to carry solely the weight of the horse. There is little or no length of wall above sole plane with hard country horses.

With soft country hooves, weight sharing is not an issue because the whole foot bears weight as it sinks into the ground. Of more importance, is having a longer wall that provides grip as well as extra support for potentially softer hooves.

A note of caution is that for horses living in tropical environments, the wall needs to be kept short to keep the bugs out (horses don't do tropics!).

The dry and soft ground photos (images 6 and 7) show the same hoof 5 months apart after the horse moved from a wet environment to a dry environment.

## Footprint

The outline of the weight-bearing footprint is expressed by the shape of the sole which is a direct reflection of the outline of the pedal bone. The aim when trimming is to develop weight-bearing uniformity around the solar margin.

## Weight bearing distribution

The ground surface of the equine hoof is not flat. Both the outer wall and the quarters should be 'passive'; non-weight-bearing on a hard surface. The outer wall is that portion of the hoof wall that grows from the coronet, as opposed to the inner wall that originates from the corium surrounding the pedal bone. Outer wall is a darker color and is thickest at the toe and graduates to be quite thin around the heels. It

## Breakover balance

The length of weightbearing foot in front of the point of the frog should be about one third of the total foot length or less (see image 8).



Image 8: One third or less of weightbearing footprint front of frog

**“ The best way to manage equine hooves is to simulate the trimming regime they would receive in normal conditions – that is a small amount very regularly. This would maintain the hooves in constant, functional balance. In other words, wear equals growth. ”**

The sole plane is more than just a guide to hoof balance, it also represents an important boundary not to be crossed except by very experienced trimmers. Most domestic horses do not have a sole plane that is thick enough. Always err on the side of caution!

Successful barefoot trimming is more about what is left behind than what is taken off!

needs to be rasped at an angle of about 45 degrees so that it does not support the weight of the horse.

With regard to the quarters, you will notice that the sole plane is not flat from toe to heel, rather it always deviates downwards through the quarters, forming an arch. The hoof wall should follow the shape of this arch, with the height of wall above sole remaining constant.

## Constant maintenance trimming is the key to success!

The best way to manage equine hooves is to simulate the trimming regime they would receive in normal conditions – that is a small amount very regularly. This would maintain the hooves in constant, functional balance. In other words, wear equals growth.

Function is maintained by keeping the hooves constantly balanced; with a touch up trim every 2-3 weeks. Simple but very effective! Many horse owners are choosing to learn how to do this themselves.