

Hoof Health and Hoof Care

Proper hoof care is essential for maintaining soundness and performance. But just how vitally important it is becomes more and more evident the more we understand about the interior and exterior functions of the hoof capsule and its wide ranging ramifications for the rest of the body.

New research regarding hoof function and hoof health is being conducted on an ever broader basis, be it in a laboratory or out in the field, and many old beliefs and ways of caring for hooves have been put in serious question.

As with all research, it is fully embraced by some and rejected or ridiculed by others, but no matter what, it has helped to raise awareness and to stimulate discussion, often to the point of heated controversy. Any increase of attention, however, sheds new light and will ultimately benefit the horses.

As one of the results, the benefits of a more natural life style for our domestic horses and its importance to hoof health have become evident, and in this spirit, a new and very strong movement of barefoot hoof care came into existence and is rapidly expanding world wide.

As part of this movement, more and more horse owners are starting to get involved in the care of their horses' feet, and being disappointed and disillusioned with conventional farrier performance, have taken over the care of their horses' hooves themselves, often with very good results.

An increasing number of farriers are starting to embrace this movement as well, partially because they do believe that barefoot is best, and partially, because there is more and more demand on part of horse owners.

On the other side of the spectrum, there are of course the traditional hoof care providers who feel that great harm comes to horses through the inexperience and incompetence of their owners, and that shoes are the only way that at least a working horse can be kept sound and comfortable, no matter on what surface.

Like with most things in life, there is truth to both and I would like to recommend to the interested horse owner or professional to form his/her own opinion with

help of available literature. Thanks to the world wide web, any information is truly at the tip of our fingers.

The hoof is a very alive and complex structure, extremely adaptable and deformable, but also very vulnerable, either by surface, use or applied protection devices.

Most harm to hooves is inflicted out of ignorance, some due to neglect, but hardly ever intentionally. By the latter comes to mind the cruel practice of some show horse trainers who will intentionally induce pain to alter movement. As horrible as this idea is, it is accountable only for a very small fraction of inflicted damage and pain.

As to the two remaining causes , research and education should be able to take care of them eventually, at least to a large extent.

It will take time to raise the general awareness and consciousness, but the progress in the last 10 years or more has been very encouraging, and I would like to urge every horse owner to learn all about feet they possibly can and spread the word.

At the conclusion of this article, I will give a list of some web sites and recommended reading.

To briefly discuss and somewhat summarize this extensive subject, I will try to present a short overview of the workings of the hoof and point out some of the many things that can go wrong.

As mentioned before, the hoof is an extremely complex and superbly designed structure. Attached to the very end of the skeleton it is responsible for weight support, traction and shock absorption.

The outer covering of horn is really just a protection of the very sensitive and vulnerable inside structures. This outer layer is relatively thin and quite flexible, and easily damaged by wrong trimming or shoeing. Surely many a horse owner has watched a farrier accidentally draw blood, either when trimming, or when nailing on a shoe.

Inside the hoof capsule, within this very small and cramped space, are bones, joints, tendons., ligaments and a huge number of nerves and blood vessels. If the hoof were considered an organ, (some say, a horse has 5 hearts) only the spleen contains more blood in relation.

The fact that such a heavy animal can pound the ground at high speeds and not injure any of these inside structures is due to the ingenious suspension apparatus of the coffin bone, the bone around which the hoof capsule is built, and the intricate network of blood vessels which act very much like a hydraulic system.

The suspension of the coffin bone within the hoof capsule could be compared to a Velcro attachment.

The corium of the hoof wall, a very soft blood sponge that surrounds the coffin bone, almost resembles the gills on the underside of a mushroom, and from these gills, called laminae, horn is produced to mirror these soft folds exactly. These soft laminae, and the horny laminae they produce interlock similar to velcro and create an immensely strong bond, connecting the wall to the bone inside and suspending it - and with it, the entire horse - literally in space.

This suspension alone prevents damage to the soft structures that grow the sole and to the bone itself and ensures the healthy arrangement of all the components inside this tightly arranged capsule.

Unfortunately, this suspension is easily damaged, either mechanically or systemically.

Every horse owner has either heard of or experienced laminitis or founder. This is what happens when this connection gets either inflamed or destroyed. Great pain is the result, esp. when the connection fails and the coffin bone sits now literally on the ground.

Systemic damage is due to metabolic disturbances, be they related to food, climate, vaccines, wormers, pregnancy, or stress; mechanical disturbances include excessive concussion like work on hard surfaces; poor hoof balance, which literally can cause to pry this connection apart; neglect, usually resulting in poor hygiene and literal rotting of the horn; or overly aggressive trimming.

Often times, warning signs are visible from the outside, be it the angle that the hoof wall presents, quality of horn and the shape of the hoof, but sometimes only x-rays will be able to point out an underlying problem.

Physical or attitude changes in the horse also can point to a hoof related problem but are most often overlooked due to lack of understanding and experience.

Many horses receive any alternative, drug or surgical treatment known to date, but the real cause may remain undetected and thus untreated: hoof imbalance and with it either pain in the hooves themselves or musco-skeletal or joint pain due to compromised body balance.

As pointed out before, the outer horn covering of the foot is only the protective layer of what is beneath, and very simply phrased: the more closely the outside resembles what is inside, and the more uniform the thickness of this outside covering is and the healthier the horn quality, the better the protection.

One might think, in this context, that a lot of surplus wall beyond the sole surface would be a good thing. It would lift the hoof well above the ground, and supply lots of material for wear and tear.

However, the opposite is the case. As this “velcro” connection keeps growing past the sole level, it is no longer a real connection as only the horny part gets pushed along now and the interconnecting soft part is obviously missing, being part of the inner structures of the hoof. This weakens the connection greatly, and in addition, horn that is no longer “alive” is very susceptible to deformative forces, either due to moisture, overly dry conditions or simply the great weight of the horse. So, instead of being helpful, excess wall beyond sole level actually creates lever forces against the connection itself and can cause lots of trouble, often visible as a dished or bell shaped deformation of the hoof capsule in the lower third, or large chunks of wall broken out, nature’s way of self trimming.

Another great disadvantage of too much wall beyond sole level, esp. in the toe area, is the delay of break over. Under break over, one understands the place and time the horse’s hoof actually leaves the ground in a rotating motion. The horse places his heel first, loads the entire foot, and then rolls it off the ground over the toe, similar to the way we move. Optimally, this breakover point should be as close as possible to the very front edge of the coffin bone, it being the support column of the horse. This would ensure most efficient and stress free movement. The more toe there is in front of this point, what ever the reason (be it too much wall, a deformed structure or an improperly applied shoe or boot) the more this break over is delayed, causing stress to tendons, joints, ligaments and the entire skeleton and musculature as a result. A very large number of soundness problems are caused by this simple factor.

Without going into all the details which would fill a book, let me just summarize this: According to intensive research, the way the hoof is constructed, it is essential that wall, frog and parts of the sole are in constant ground contact and share the load, that break over takes place appropriately, and that the coffin bone is almost parallel to the ground. This will keep the structure optimally balanced and stress free.

When regarding all these factors, some of the detriments of conventional shoeing become apparent. Shoes only support the wall, and the rest of the foot much of the time has no ground contact at all. More often than not do they also add too much toe length to the hoof, mostly because the toe can no longer wear naturally, but often due to wrong application as well. Shoes also cause much higher concussion rates on hard ground and restrict quite severely the natural expansion and contraction of the hoof capsule that takes place at every stride for shock absorption and also aids in pushing blood back up the leg.

Often times the entire foot is trimmed incorrectly before the shoe is affixed, exaggerating the mistake as the horse has no means to moderate the error by wear and tear.

There are ways of shoeing that are less invasive and restrictive than others, developed again thanks to good research, but more and more people seem to agree that any shoe is of disadvantage in the long run.

Lots of new shoes keep coming on the market, made in all kinds of different shapes and of all kinds of different materials, to counteract these problems, and many different pads, fillers and foams are used to mitigate these shortcomings.

Many different kinds of hoof boots have also been devised to eliminate the need of shoes, some of which are very helpful to a good number of horses. Not all horses can be fitted well with these boots that are presently on the market as boots are always designed to a certain norm, and some feet just do not fall into normal categories. But with all the space age materials available it stands to reason that someone soon should come up with some kind of protection that would be light weight, durable and without any problems to the horse like chafing, pressure on sensitive areas, turning or simply falling off, and most importantly, not alter the horse's way of moving.

How can one tell with a quick glance at the feet if there are any problems present?

Healthy feet have no or hardly any flares and appear quite short.

Hair lines, when viewed from the front are parallel with the ground, when viewed from the side they slope at an angle of about 25 to 30 degrees toward the ground.

Front feet appear round, hind feet are more pointed in the toe. Front feet have a bit of a shallower wall angle than hind feet. Fronts are mostly around 50, hinds around 55 degrees.

Both pairs of feet match each other closely.

The horse will be comfortable standing square, on vertical cannon bones.

Pastern and hoof angle seem in harmony.

Trouble signs are:

Visible flares esp. in the toe wall, feet look very long and overgrown.

Hair lines are crooked when viewed from the front, close to horizontal from the side, or have a very acute angle toward the ground.

Oval front feet, hind feet have shallower angle than fronts.

Horse stands under with fronts and hinds, or points front feet forward.

Pastern and hoof angle appear quite broken.

It does take a somewhat trained eye to see any or all of these signs, but with a little practice and studying anyone can get quite accomplished.

In our view, every horse owner should learn to read at least his/her own horse's feet. The owner is usually the closest person to the horse, sees the horse more often than anyone else and has the highest stakes in the animal's soundness and well being.

Here is a list of some of the web sites I find very useful. There are many more sites available, and by using the search engine on your computer, you may even find some that we don't know about.

Links to hoof related sites:

- www.hoofrehab.com
- www.barefoothorse.com
- www.tribeequus.com
- www.abchoofcare.com
- www.equinepodiatry.net/
- www.barefoothorse.com
- www.hopeforsoundness.com
- www.ironfreehoof.com
- <http://appliedequinepodiatry.org/>
- www.hoofrehab.com this is Pete Ramey's site and has tons of valuable information
- www.star-ridge.com

this website contains most of the books that I would recommend, most notably the "Horse Owners Guide to Natural Hoofcare" by Jamie Jackson and "Making Natural Hoofcare Work for You" by Pete Ramey

Links to hoof- and nutrition discussion groups:

- pets.groups.yahoo.com/group/barefoothorsecare/
<http://groups.yahoo.com/group/ABC-barefoot-hoofcare/>
<http://pets.groups.yahoo.com/group/EquineCushings/?yguid=278931521>
<http://pets.groups.yahoo.com/group/ECHorsekeeping/?yguid=278931521>
<http://pets.groups.yahoo.com/group/naturalhorsetrim/?yguid=278931521>

<http://pets.groups.yahoo.com/group/TheMetabolicHorse/?yguid=278931521>