PROCEEDINGS
NO LAMINITIS! 2017 CONFERENCE • TUCSON, AZ
Equine Cushing's and Insulin Resistance Group

TRIM: The Essential, Missing Ingredient Diagnosing Common Hoof Pathologies Through Case Studies That Illustrate Them

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Oftentimes, the first inkling an owner has that their equine's trim is not optimal is when the animal is hit with an "inexplicable" lameness: an older equine develops tenderness in the Fall/Winter; the rotund pony or Morgan founders; a fit and active Thoroughbred suddenly becomes footsore. During the diagnostics and lameness work-up — and to everyone's surprise — the vet's observations contain the comment that the trim needs attention.

WHAT?!? How can this be possible? The owner has always taken excellent care of the horse; had a reputable hoof pro come every six weeks like clockwork; feeds a hoof supplement; has been complimented on how nice the horse's feet look.

But the radiographs don't lie….

Identifying hoof pathologies is a vital part of the diagnosis when a horse becomes "lame". They may be causative or contributory but either way, unless fixed, the horse's chances of returning to soundness are compromised. (Figure 1)

1. Diagnosis:
    a. Nerve blocks to rule hoof pain in/out.
    b. Radiographs to assess bony column alignment, relationship between hoof capsule and bony column, sole depth. Lateral and DP views are the most helpful.
2. Trim ASAP — don't wait.
    a. Align breakover with where bony column needs it to be, most often by removing any excess toe length so as to stop lever forces from continuing to tear connections apart.
    b. Raise/lower heel height based on palmar angle and hoof pastern axis (HPA).
    c. Address any medial-lateral imbalances that may exist.
    d. Add/preserve/lower sole depth based on needs.
    e. Correct wall flaring to remove tearing forces.

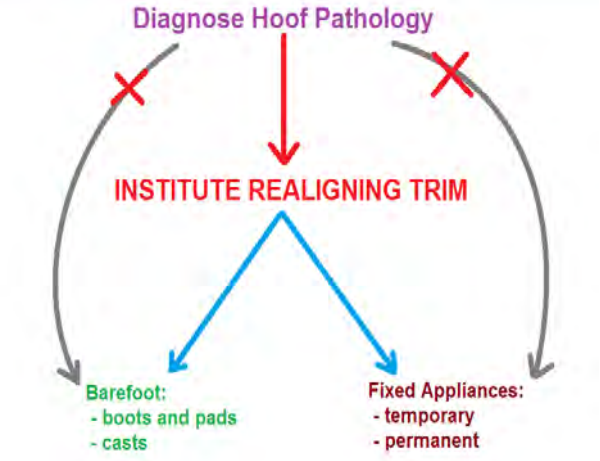

Figure 1. Identifying and correcting hoof pathologies start with obtaining the correct diagnosis, followed by a realigning trim.

Then decide:

Horse stays barefoot

a. *B*evel walls to redirect tearing forces on already compromised attachments.

b. Fit boots and pads to provide comfort, protection, and support and to increase positive mechanics; or cast to stabilize and protect

OR:

Level foot in preparation for shoeing and/or application of other fixed appliances

Because the trim generally needs to be adjusted regularly — and on a short schedule — to remain optimal, leaving the horse barefoot is advisable at least initially so that making those trim adjustments is easily done.

When to Institute a Realigning Trim

Immediately. The longer it takes to get the trim optimized, the longer the mechanical damage continues. Waiting for the foot to become “more stable” will only prolong the amount of time it remains unstable, as it cannot start to heal until AFTER the trim has realigned the hoof capsule to match the position of the bony column within.

Figure 2.

Figure 3.

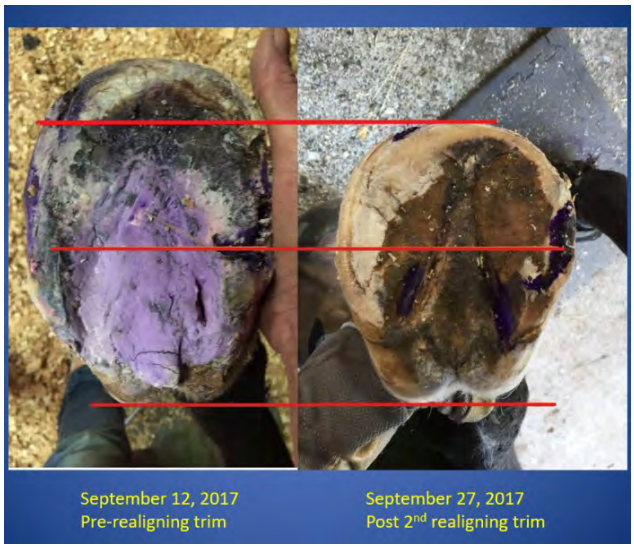

Figure 4.

This trim transformation was instituted in a two-week time frame. (Figures 2 and 3) Micky went from spending his time lying down for most of the day to walking around his paddock.

Already, the heel bulbs are starting to relax and the contracted heels are widening slightly. (Figure 4)

One month after instituting a proper realigning trim, only cosmetic remnants of the heavily damaged walls remain. While much of the damage has been removed, the rest will take time to grow out fully. But in the meantime, there are no mechanical forces thwarting the healing efforts. Time will tell whether all the infection that was present has been eliminated but, for now, he is a much happier horse.

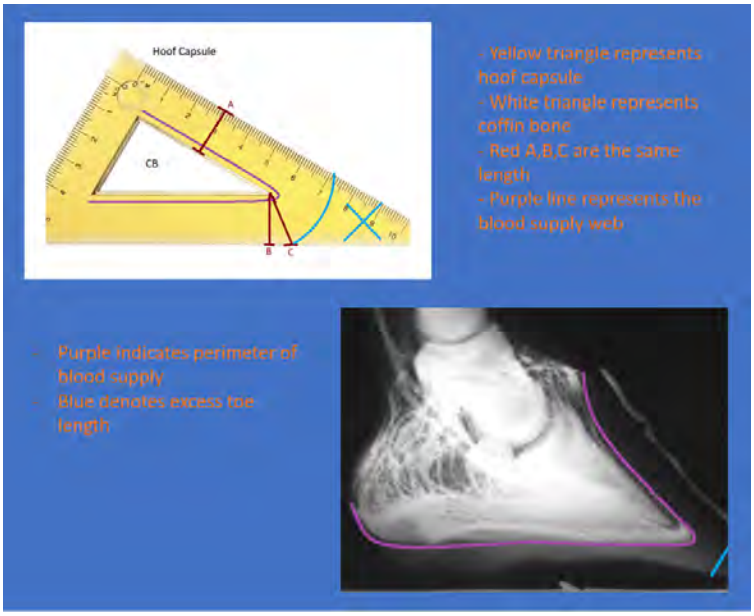

Figure 5.

Backing the Toe

Two of the obstacles presented for not backing a toe up correctly are that (1) shortening the toe horizontally will make the sole thinner; and that (2) if the toe is taken back any further one will hit the blood supply. In reality, both of these assumptions don't hold up.

Imagine the coffin bone as the clear triangle inside the yellow triangle. The yellow triangle is the hoof capsule. (Figure 5)

The Venogram shows where the blood supply is — a hairnet-like web tightly encasing the coffin bone.

The blood supply web is firmly attached to the coffin bone and stays that way even if the hoof capsule is torn away through mechanical lever forces or with rotation of the bony column.

Visualize the coffin bone moving, with the net attached wherever it goes.

Removing the area marked by the blue "X" (Figure 5) doesn't invade live tissue, nor does it thin the sole. But it does bring the breakover back in line with the needs of the bony column, thereby removing lever forces on the laminae anchoring the hoof wall to the coffin bone.

Case Study — Jesse

- A 27-y.o. Warmblood gelding, retired from the world of high-level hunter/jumper competition. He was diagnosed as likely PPID in 2012 but no blood work was done, and no treatment started.
- Feet were seriously overgrown despite regular care from a hoof pro. RF and LH had contracted heels, narrow, elongated frogs, and were clubby in appearance — classic "High" feet.
- LF and RH were flatter, had lateral flaring, bars covering half of the foot, heels were underrun — classic "Low" feet.

High-Low syndrome is generally a trim issue, rather than a conformational one, that will create compensatory pathologies further up the limb if left uncorrected. The "low" foot has been allowed to overgrow and spread in all directions, while the "high" foot has been encouraged to become extremely clubby in appearance. Neither is healthy nor correct.

By early 2015, Jesse was cresty, overweight, and needed a partial body clip to remove the Cushing's coat. (Figure 6.) First blood work was done, which confirmed PPID with elevated ACTH, and also IR, with seriously elevated insulin. Although the trim issues continued, no radiographs were done

Figure 6. Jesse.

until December of 2016, when Jesse experienced another bout of laminitis, likely due to insufficient pergolide to control his ACTH during the seasonal rise; the subsequent elevated insulin levels caused more damage to his already weakened laminar connections due to the ongoing mechanical (trim) problems.

The radiographs show very thin soles yet the soles continued to be pared down at each trim. (Figures 7 and 8) NEVER touch a thin sole with anything sharper than your gloved hand!

To determine sole thickness, measure the collateral groove depths at their deepest points and at the true tip of the frog. Aim for 1" in the back half and ¾" at the true tip of the frog to start. Less than this means the soles are too thin and should be left strictly alone.[1]

The doctrine of "two wrongs don't make a right" applies here — if something is already too thin/low/small, removing more only compounds the injury.

No matter how much sole a horse grows, it will always remain thin if it is consistently carved/rasped away. Concavity must be FORMED by the horse, not carved in with a tool.

The red line on the radiograph (Figure 9) is where the sole should be but isn't. In order to fix a problem, you need to do something different: if you continue to trim along the current sole plane angle to the ground when you need to change alignment in some way, you will continue to get the same result.

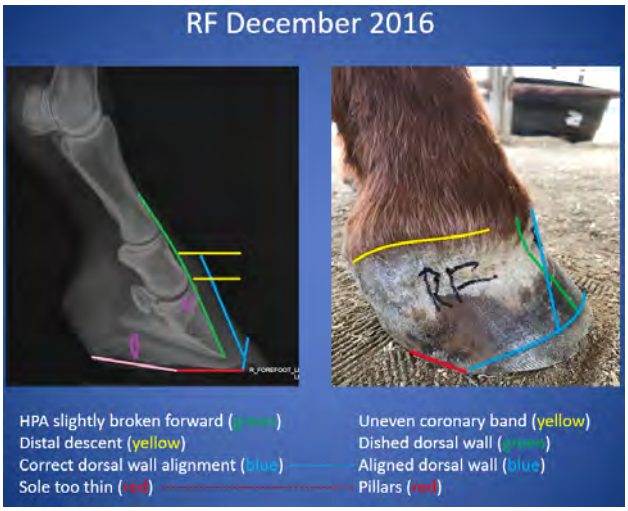

Figure 7.

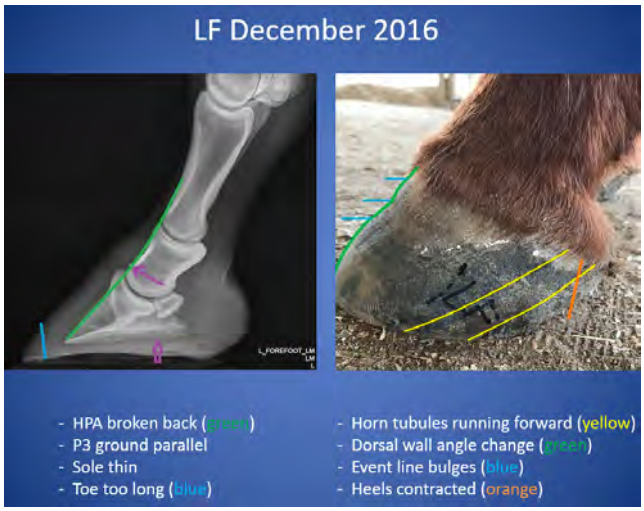

Figure 8.

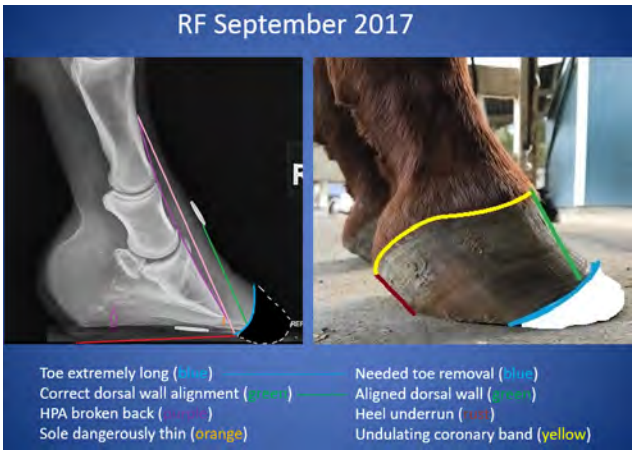

Figure 9.

"All IR horses have weak laminar connections, whether they've been frankly laminitic or not. Therefore, you need to be meticulous about trim to avoid further stressing the laminae."

~Eleanor Kellon, VMD

Mapping the Sole

To assess whether the trim is correct, map the sole using landmarks that don't move (Figure 10). First locate the true Apex of the frog. Then determine the widest part of the foot using three methods that should yield the same result:

- Back 1" from the true tip of the frog
- Position of the bar terminations at the bottom of the collateral grooves
- Line connecting the widest point of the live sole/ wall junction on each side

Figure 10.

On #00 to #2 feet, measure 1.75" ahead of the widest part of the foot to determine the location of the tip of the coffin bone. Then move ahead another ¼" to mark the point of breakover. Adjust proportionally for smaller/ larger feet.

Next, locate the rear most weight-bearing structure, ideally the dimple in the central sulcus but it could be the heels or frog. Measure the distance from this point forward to the widest part of the foot, then compare it to the distance from the widest part of the foot forward to the calculated breakover point. A 50/50 to 40/60 (front/back) is the goal. More foot ahead of the line indicates a very real problem that needs to be addressed.[2]

Boots

For any thin-soled horse, you need to provide protection so that the sole can recover. Boots and pads are a first-line weapon to have in your arsenal. They shouldn't be looked at as an afterthought, or as something to turn to because being totally bare isn't working, but as an integral part of the process from the beginning.

There are dozens of types of boots to choose from, but the most important things to consider are proper fit and purpose.

Some popular choices for rehab situations are the EasyCare Clouds and the Soft-Rides. Both have a more forgiving fit that better accommodates oddly shaped feet. They are not meant to be used for large area turnout or during exercise.

Boots for full turnout and exercise are designed to have a snug fit and slimmer profile. They must be well fitted to prevent rubbing; if the boot can be turned by hand once it's on the foot, it doesn't fit well. Re-evaluate.

There will be limited room for padding so you need to research which style will be the best for your particular situation.

When it comes to padding, the choices are virtually limitless. Be willing to experiment to find what works best for that horse at that particular time. Also be ready and willing to re-examine what you are using as the hoof changes. What worked this week may be wrong next week.

- Take into account both the cushioning and support effects.

- Wedges may be temporarily helpful when the HPA is broken back but are not indicated if there is excess heel height. Wedges can also be used to help achieve medial-lateral balance when one side of the hoof is lower than it should be so as not to lower/compromise the opposite side that is already at the correct height.
- Frog supports may be appreciated or they may add too much pressure when frogs are weak and/or diseased.
- Cut-outs may be needed to protect acutely painful areas such as under the leading edge of the coffin bone.
- Once you have a well-fitted boot, you should add bevels onto the tread. This goes for any boot that's made, whether it already has a rudimentary toe bevel or not. The idea is to increase the horse's ability to breakover easily in any direction that it needs to. This helps to mitigate the effect of the extra height and width that a boot adds to the natural dimensions of the foot. Adding it to the back of the tread both softens and encourages a heel-first landing. The more compromised the hoof is, the more important easing breakover becomes.

Summary

The underlying forces behind hoof unsoundness are wide-ranging but many share a common component: sub-optimal mechanics. Identifying these ubiquitous pathologies is the first step toward instituting the corrective measures that will greatly increase the chances that the equine involved will be able to return to its previous level of activity — and possibly more.

The basic principles of a realigning trim apply regardless of the underlying cause, type of equine, or his job. Whether the horse is going to end up bare or shod, if the trim doesn't tightly align the hoof capsule with the bony column within, you are doomed to fail.

Photos courtesy ECIR Group members. Photo comparisons and mark ups #2, #3, #4 courtesy of Frances Hughes EPT, Victoria, Australia. All other hoof mark-ups by Lavinia Fiscaletti. Trim work performed by local hoof professionals.

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[1] Ramey, Pete. http://www.hoofrehab.com/Articles.html

[2] Ovnicek Gene, RMF, CLS. http://www.lamenessprevention.org/site_page.cfm pk_association_webpage_menu=6601&pk_association_webpage=13310