

Performance Hooves – The Hoof Capsule

This is the second article in a series by Jo Clark which explains how to get the best possible hooves under your horse. Having previously looked at the importance of the frog, here Jo explains about the hoof capsule, bars and sole.

Why the hoof capsule is a spring

Traditionally, we are taught to think of the hoof mainly as a shock absorber, which dissipates (loses) the energy of impact each time the hoof hits the ground. As I mentioned in my article about the frog, however, KC La Pierre's *Suspension Theory of Hoof Dynamics* states that the hoof wall acts as a spring. KC believes that when a healthy hoof capsule is pushed, pulled or twisted out of shape, it **stores** energy. As soon as the force causing the distortion is removed, it springs back to its original shape, returning the stored energy as movement.

Even from a purely evolutionary point of view this makes perfect sense: the horse is a prey animal, equipped with pretty poor weapons to defend itself against attack. Its reaction to danger is to run away – as fast as possible. For an animal beautifully designed for speed, what would be more likely to evolve on the ends of those long, lightweight legs; shock absorbers to waste the energy of the horse's movement or springs to return the energy at each stride, allowing the horse to run faster and more efficiently?

What can go wrong?

At the toe area in a healthy hoof, where the hoof wall is tightly connected to the pedal bone via the laminae, the hoof wall is thick and does not flex very much. It thins out progressively around the quarters until reaching the heels - the first part of a healthy hoof to contact the ground during each stride. Here, the spring is thick and reinforced by turning back on itself, in the shape of the bars.

The hoof wall is vulnerable to so-called "white line disease" (WLD). In fact this is an infection, not a disease, which attacks the inner hoof wall, not the white line, and it shows up as black lines – so it's probably one of the most unhelpfully-named problems a horse can have! The infection is found everywhere in the UK, in all types of stabled and outdoor horses, shod or unshod.

In the mildest form of WLD, the layer of horn just outside the white line becomes soft and chalky. Often a groove develops here which tends to fill with small stones. It also may be visible as black lines in the inner hoof wall and bars, most obvious when the hoof is trimmed and fresh horn is exposed.

WLD can lead to delamination of the hoof wall, where the outer layers become weak and flake off. At the heels, the inner wall may crumble away, leaving a very small surface area in contact with the ground.

In the worst case, the infection works its way up into the sensitive laminae, creating cavities between the hoof wall and bone – often known as seedy toe. This is not always obvious but can be detected by tapping the hoof wall which will sound hollow.

At this stage, the horse may well be lame. As with frog infections, weak hoof walls are much more prone to infection than healthy ones.

Even if there is no infection present, the hoof capsule may become distorted as a result of poor trimming, poor environment, e.g. living in a wet field or a dirty stable, and/or lack of a suitable workload. Believe it or not, the feet in this picture belong to the same end of the same horse! The right fore is suffering from collapsed, under-run heels with a lot of excess flare while the left fore is contracted and upright, with a very narrow frog and sheared heels. It is important to understand that even these deformities are avoidable, should not be considered acceptable and can be corrected.



How can I improve my horse's hoof capsules?

Any sign of white line disease should be taken very seriously and treated accordingly. Traditionally, severe infections have been treated by “resection”, i.e., removing part of the hoof wall to expose the infected tissue to light and air. This is a drastic approach and is almost always unnecessary. To clear up WLD, I would always recommend a CleanTrax soak, as it kills bacteria, fungi and fungal spores, penetrates right in to the hoof capsule and does not damage healthy tissue. This will get rid of all infections present and, repeated every six months, will protect the hoof from further infection.

Once clear of infection, the next step is to provide a good environment for the growth of healthy hooves, as I described in the first article in this series.

Once a healthy frog has been established, any white line disease has been treated and the hoof has been correctly trimmed into balance, the hoof needs daily work in order

to stimulate correct and healthy growth of the hoof wall. This usually means beginning with 10 minutes of daily hand walking on tarmac or concrete.

Be particularly careful at this stage to avoid any loose stones which might cause bruising if the hoof is not yet sufficiently strong. Build up cautiously until the horse can be hacked out on the roads with no signs of soreness either during the session or afterward.

If the heels have been worn down or trimmed very short, daily hand walking in SoleMates pads will encourage growth without wear. Once again, begin with just a few minutes and build up very slowly, always ensuring that there is no soreness either during or after the session. If you are at all unsure, don't hesitate to call me or another Equine Podiatrist for help and advice.

Since the bars are an essential component in the strength and stability of the hoof capsule, our view is that they should never be "cut out", as practiced by some trimmers and farriers. Cutting out of the bars, or excessive trimming of the heels, increase the risk of soreness and sub-solar abscessing due to excessive flexion in the rear part of the hoof. If this has occurred, or the horse has weak, indistinct bars, walking in pads will strengthen them and encourage them to grow back.

What results can I expect?

There's nothing quite like the feeling of floating along on a set of performance hooves functioning as a set of efficient springs! With good frogs and healthy, well-shaped hoof capsules, your horse is well on the way. It's quite likely that all your horse needs now is correct trimming to keep the hooves in balance, a good environment and regular work.

On the other hand, if your horse has a hoof wall infection or has poor or deformed hoof walls, then don't despair as there is a very good chance that this can be put right through a combination of trimming the foot into correct balance and suitable daily conditioning work. If you need help I do recommend calling out an Equine Podiatrist as we are trained to understand the cause of the problem, trim the foot into balance and recommend the appropriate conditioning to stimulate the return to good health.

And the horse in the picture with the mismatched feet? Luke is the newest resident of my rehabilitation centre at Hyde Mill Farm. If you'd like to follow his progress, you can get regular reports in my blog at performancehooves.blogspot.com.

Jo Clark specialises in rehabilitating horses with poor quality feet and is a qualified Equine Podiatrist, trained by KC La Pierre.

For further information, including a list of product suppliers, please visit her website at www.performancehooves.co.uk