

# Performance Hooves - The Importance of a Healthy Frog

This article is the first in a series about getting the best possible set of hooves under your horse.

## ***Why is the frog so important?***

A healthy frog is essential to a high performance hoof. By that, I mean a hoof that is one of a set strong and tough enough to enable a horse or pony to crunch over a stony track, complete a three day event, or even an endurance ride, with no tenderness at the time or soreness afterwards. Although there is more to a performance hoof than establishing a good frog, it's the place to start.

According to the Suspension Theory of Hoof Dynamics (see "The Chosen Road" by *KC La Pierre*), the hoof wall can be considered as a spring. Have you ever noticed a strip of hoof wall nipped off by the farrier? After 15 minutes or so, it will have curled up considerably. A healthy frog resists this contraction, keeping the heels apart. It also plays an essential role in regulating flexion of the hoof capsule under load.

As a model of the horse's sole, imagine an upside down paper plate. Now try to distort the plate as if the sole were flexing. Note that it won't flex much without tearing. If you cut out a triangle about the size of a frog, note that the "heels" can now flex independently, up and down, as well as in and out. Note also, that the possible range of flexion is large and the area of greatest distortion in the sole is around the apex of the frog. Now imagine that the triangle is filled with frog, a tough, rubbery substance which permits some distortion but also resists it. The entire hoof capsule can now distort under load but not so far that the sole around the apex of the frog is excessively stressed.

The frog also plays a vital role in the development and growth of the soft tissues which make up the back two thirds of the foot. As the foot hits the ground, the impulse is transmitted through the heels, via the frog, to the digital cushion and lateral cartilages. Provided the frog is a healthy size, shape and texture, the impact energy produces pressures inside the hoof which provide the stimulus for correct growth. This will be covered in more detail in a future article.

## ***So what happens if the frog is less than perfect?***

The first thing to note is that weak frogs are much more prone to infection than healthy ones. Since frog tissue is higher in fat than the rest of the hoof capsule, it is particularly susceptible to attack by the various bacteria, fungi, yeasts and viruses which are present everywhere in the soil in our mild, damp UK climate.

These organisms thrive in anaerobic (oxygen-free) conditions such as those found in the tiny cracks and tears present in weak frog tissue. Infection soon becomes noticeable as smelly areas which may be black, grey or white and slimey or crumbly. In no time at all the tiny tears can become very large and big pieces of frog start falling off. Unfortunately, I see frogs like this all the time in the winter on horses which spend all their non-working time out in the field.

Another very common site where infection may take hold - even with healthy frogs - is in the collateral grooves, on either side of the frog. The horny layer at the bottom of these grooves is quite thin and losing tissue to infection here can quickly lead to soreness. It is vital to scrape the grooves out thoroughly at least once per day. There should be no black or crumbly material here and absolutely no unpleasant smell, not even a slight whiff on the hoof pick. Left untreated, infection in the collateral grooves will eat its way under the sides of the frog, affecting the growth of the bars which become weak and bent.

Worst of all is the frog infection which sets up home in the central sulcus - the groove in the middle of the heel end of the frog which should be clean and shallow. If infection takes hold here and the groove becomes deep, the resulting two 'halves' of frog are squeezed together by the hoof wall and rub as the horse moves. As mass is lost from the groove, the frog becomes progressively narrower and the heels contract. As the heels contract, they also move forwards, which is how they become under run.

In the worst case, the heels become completely sheared and there is nothing left to limit the flexion of the heels in the vertical direction. This is extremely painful for the horse as the sensitive layer which grows the frog becomes inflamed and infected and is irritated by every stride. To avoid the pain, the horse will walk with most of its weight on its toes. The extra pressure on the toes causes thicker and faster growth in the toe area and the toe becomes longer and longer, resulting in a flat foot with very weak heels. A hoof in this condition is very susceptible to sub-solar abscessing due to the excessive flexion of the sole around the apex of the frog.

### ***How can I improve my horse's frogs?***

An infected frog must be trimmed carefully by an expert to remove all infected tissue and then treated with a safe disinfectant. While there are many products on the market, I would always recommend CleanTrax, as it is non-necrotising, kills fungal spores and penetrates right in to the hoof capsule. I believe it is important to use a non-necrotising disinfectant to avoid damage to healthy frog tissue which might provide a foothold for further infection.

Once the hoof has been cleared of infection, we need to provide the horse with a suitable environment. Contrary to popular belief, life in a damp field is not conducive to a strong hoof. It makes the hoof capsule damp and soft – the perfect environment for infection to get started. Allowing the hooves to dry out completely every day makes a huge difference. This is best done on plain concrete, rubber matting or a dry bed of straw, wood pellets or hemp. A dry indoor school surface works very well too but note that a horse with deep central sulcuses should never be allowed onto sand as it works its way up into the crack, causing abrasion and painful rubbing. Note that wood shavings tend to dry out the hoof too quickly and may cause cracking of the hoof wall.

As a daily routine I would recommend picking out the feet very thoroughly and treating anything black, crumbly, slimey or smelly. Some suitable disinfectants for daily care are: weak borax solution (1 tablespoon per gallon of water), zinc sulphate solution (2 oz per pint of water) or Equine Elite Thrush Relief spray. A good routine would be to spray, scrub and then spray again.

After cleaning, leave the horse for at least 3 hours on a dry surface. To help avoid cracking, leave any mud attached to the outsides of the hooves to dry slowly. Before the horse is turned out again, rub Sudacrem into any infected areas, packing it into deep central sulcuses. Sudacrem is a mild antiseptic and will protect the frog from damp. It also acts as a lubricant, easing the pain of sheared heels.

On a daily basis, the hoof needs correct stimulation to encourage new and healthy tissue to grow. Provided there is no soreness, this can easily be achieved by hand walking the horse with SoleMates pads either taped to its feet or inserted into hoof boots for 10 to 15 minutes per day. Walking on sand is a great alternative to walking in pads provided the horse does not have deep central sulcuses.

### ***What results can I expect?***

While the consequences of neglecting frog infections can be disastrous, the good news is that with suitable daily care, a set of healthy frogs is easily achieved and maintained. A good frog is key to the correct functioning of the hoof and is the first step towards achieving performance hooves.

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For further information, including a list of product suppliers, please visit her website at [www.performancehooves.co.uk](http://www.performancehooves.co.uk)