



HOOF CONTRACTION

Hoof contraction is a highly visible deformity of the equine hoof that indicates loss of hoof function and loss of equine athletic performance, leading ultimately to navicular and flexor tendon based chronic lameness.

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THE
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Simply put, hoof contraction is the atrophication and shrinkage of the soft tissue in the back half of the hoof (the caudal hoof), particularly the frog and digital cushion.

In a healthy hoof, the frog and digital cushion combine to form the mainstay of the hoof's 'landing gear'; the energy dissipating pad that not only nullifies the high frequency shockwave that enters the hoof on ground contact, but also facilitates proprioception (spatial awareness and touch; sure footedness) and indeed provides vital support during the weight bearing phase of stride. A healthy, fully functioning caudal hoof is absolutely vital for a horse's long term soundness.

When seen from the ground surface, the frog should be a big piece of the pie, a chunky wedge that is wide apart at the heels and is at least two thirds of the weight bearing surface from front to back. (Photo 1)



In addition, when the centre of gravity of the hoof is considered, half of the weight bearing hoof should be posterior. (Photo 2)

When viewed from behind, the outline of the digital cushion should appear bulbous, not unlike ripe plums on a tree. (Photo 3)

The differences become quite stark when a hoof becomes contracted. Most noticeably, the frog becomes a much thinner wedge, (Photo 4) but it also contracts towards the centre of gravity (Photo 5) and the landing gear begins to look more like squashed plums on the ground. (Photo 6) The effects of hoof contraction are far reaching, with a loss of concussion absorbing ability, loss of proprioception and no weight bearing support (which has a significant impact on circulation). Chronic lameness 'down the track' is inevitable.



**What causes hoof contraction?**

Any situation that takes the frog away from its primary role in weightbearing will initiate the process of contraction. It often starts with foals that are not maintained so their hooves grow long and prevent frog contact with the ground. Foal hoof trimming is a vital (but often overlooked) aspect of horse management.

Environmental suitability of breeds is also a factor with hard-hoofed breeds such as Arabs and Morgans needing to live on hard ground. It doesn't matter how well these horses' hooves are maintained, they are more likely to contract on soft ground.

Horse shoeing, despite its short term convenience, inevitably leads to hoof contraction. It takes the frog out of the weight bearing equation, particularly on hard ground.

**How to avoid hoof contraction.**

The frog must remain weightbearing and fully functional throughout the life of the horse. Hooves should be maintained from an early age and horses should be kept barefoot if possible.

If hoof protection is needed for work, consider using a padded hoof boot or maybe even tips that cover just the toe and leave the frog to perform its duties. If shoes are needed, consider using plastic shoes which assist with concussion dissipation and have frog support.

A tale of two horses

The following photo shows graphically the effect of hoof contraction. It shows two horses of very similar breeding, from the same property where they have lived their lives. The difference has been in the hoofcare, with the older horse on the right (about 15yo when photographed) having been shod constantly from 4 to 8, but the younger horse on the left 10 years old but never been shod. The older horse is showing advanced hoof contraction and was retired due to chronic lameness issues. The younger horse will most likely never be shod and is going like a train!



(photo courtesy of Mary House, South Australia)