



When a horse needs shoes

Part 3 - The set-up (cont.)

by Andrew Bowe, BAppSc, Master Farrier

Photos courtesy of Mayfield Barehoof Care Centre - www.barehoofcare.com

Andrew Bowe admits he has had 'quite the journey'. From decades working as a 'traditional' farrier shoeing horses all day every day to a 'barefoot' farrier trimming horses all day everyday.

The bare-boned truth is that there are certain unavoidable and deleterious consequences to long-term shoeing. "If there weren't such outcomes and the barefoot alternative was not viable", says Andrew Bowe, "then I would have long ago gone back to what I always did: Plating gallopers at the track every morning in the high country frost."

Despite this, the philosophy at the Mayfield Barehoof Care Centre, is not about never ever shoeing, but rather that shoes shouldn't automatically be the first option when a horse is working under saddle.

Andrew still works as a farrier, trimming a large number of horses, and even though there is a nice hint of rust on the well worn face of his anvil, it still travels in the wagon. As Andrew points out: "There is always a horse somewhere that 'needs' shoes and in the broader industry, the reality is a lot of horses still get shod."

"Shoes may be the only practical way to overcome issues such as excessive abrasion or the need for traction or to protect soft, thin soles. Sometimes it is simply what the rider wants" says Andrew.

This article series explores ways to manage shod horses for minimal long-term impact.

In Part 1 of the series, 'A story with legs', Andrew delved, "as objectively as possible", into the underlying science that explains the physiological problems associated with the shod hoof (see the September 2013 issue of Horses and People Magazine).

In Part 2 - 'The set-up', Andrew explained that shoeing with an eye to long-term soundness starts with trimming a hoof to optimum balance before a shoe is put on it, and explained how to achieve the ideal anterior/posterior balance.

In Part 3 - 'The set-up (cont.)' Andrew talks about about medial/lateral balance.

Medial/lateral balance

Medial to lateral balance is what you see when you are standing in front of your horse. It is the balance of a hoof from side to side; from the medial side (towards the middle of the body) to the lateral side (away from the middle of the body).

All of the joints below the shoulders and hips are hinge joints designed for flexion and extension but not for lateral movement. As such, these joints are held in balance from side to side. If you were looking at the skeleton of a balanced horse from the front you would be seeing even spaces between each side of the joints.

The alignment of these hinge joints is dependant upon the bottom joint – the coffin joint – being balanced, which in turn is directly affected by the medial to lateral balance of the hooves. Long term soundness is a more likely outcome when horses spend most of their days standing and moving on balanced hooves.

Medial to lateral balance becomes crucial when a horse is wearing shoes, because the hooves are subjected to greater internal pressures than they are designed to accommodate. This is due to the inability of a shod hoof to absorb concussion. Instead of spreading the load over the whole ground surface of the hoof, the hoof wall alone is receiving the entire impact which enters the hoof as a high frequency shock wave. To avoid any further concentration of impact, it is vital to spread the shockwave as evenly as possible, meaning hooves need to land as close to flat as possible.

It would seem – to the layman – that setting a horse up with hooves that land flat from side to side would be simple. In fact, medial to lateral balance has traditionally been linked with creating symmetrical hooves.

Perfect symmetry is an easy concept to understand and create and may well be pleasing to the human eye, but it actually has little to no relevance when a horse steps out of the cross-ties. There is little in common with the static picture you see when a horse is standing square on the concrete and when it is moving and creating impact forces.

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Balance needs to consider movement because a hoof does not land flat from side to side and nor should it. When moving, the legs move inwards towards the midline which results in a slight lateral first ground contact and then a 'roll' down to the medial side.

Horses are built to accommodate this uneven loading with the medial side of the bones having larger joint surfaces, and the hooves growing steeper medial walls and more oblique lateral walls.

Balance therefore becomes a matter of minimising both the inherent asymmetry in the hooves and the degree to which the lateral side lands in advance of the medial side. A satisfactory definition of having a horse in medial to lateral balance is when you need to look closely to see both the asymmetry in the hooves and the lateral first contact.

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// When a horse moves, its hooves are designed to land heel first, so medial to lateral balance needs to focus on the back of the hoof where the frog is the main component.

Uneven loading is one of the reasons why a hoof is a fully flexible 'plastic' structure, and herein lies a further complication of shoeing. A rigid shoe takes all flexion out of the plastic hoof, especially on uneven ground or with a horse that has conformational imbalances. The outcome is usually seen when a shoe wears unevenly from one side to the other. See Photo 1 (below).



If uneven landing does this to a hard steel shoe, what is it doing to the soft tissue above it?

This is why medial to lateral balance is so important to a shod hoof and why the degree of lateral first contact needs to be minimised.

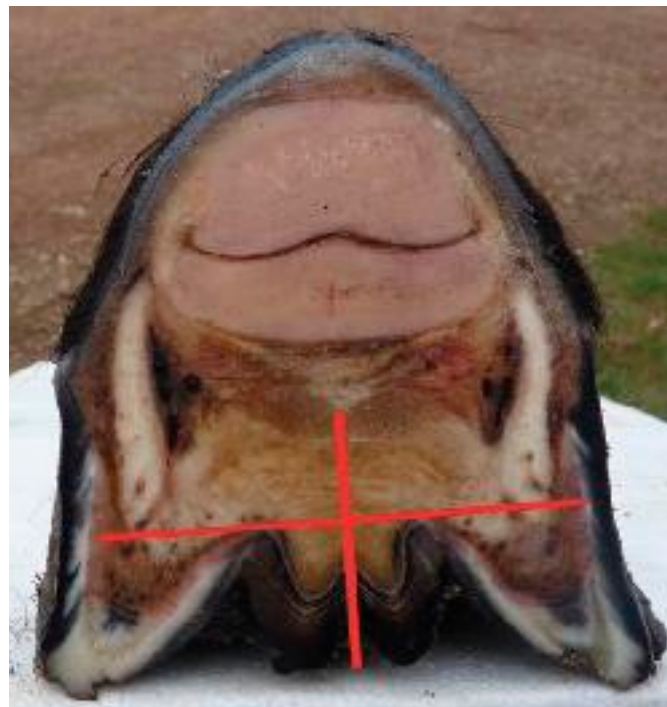
Fortunately there is a reliable and easy way to achieve the optimal medial to lateral balance when setting up hooves for shoes.

When a horse moves, its hooves are designed to land heel first, so medial to lateral balance needs to focus on the back of the hoof where the frog is the main component. The frog is tightly related to both the pedal bone and the centre of gravity of the limb above and is therefore a reliable indicator to the balance of a hoof in relation to the whole leg.

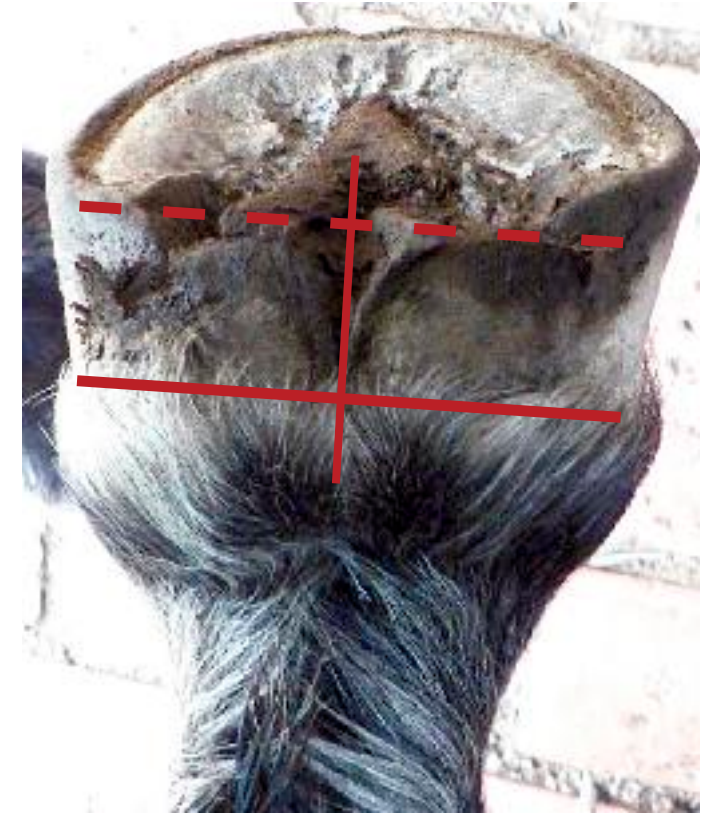
When a cadaver specimen is dissected to show the cross section of the back of the hoof, the frog is clearly independent of hoof distortions. See photo 2 (below).



The ground surface of the hoof needs to be set up perpendicular to the plane of the frog. See photo 3 (below).



With a live specimen, it is simply a matter of eye: Lining the central cleft of the frog and building a hoof perpendicular to it. See Photos 4 (below) and 5 (right).



Then simply add the shoe!



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