

# THE BARE BONES OF FARRIERY

## A level approach to foot balance

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*"From the first moment a colt is shod, the contest between nature and the blacksmith may be said to take place".*

Written almost two hundred years ago by the Birmingham veterinarian Richard Lawrence, like so many other profound statements made by authors of the past, not only are their words worthy of repetition, they also deserve a more detailed consideration. Then through our collective efforts, we may all arrive at a greater understanding.

I personally believe that if we are to benefit fully from these words of Richard Lawrence, then we must first ask the question, what is balance?

Despite the fact that we all recognise that balance is the quintessential aspect of farriery, our understanding of how to define balance would appear to be somewhat confused. This may be because balance itself seems almost intangible and beyond proper description. Likewise, although imbalances may seem more strikingly apparent, they too pose quite a conundrum and in my opinion it is through this confusion that imbalances are so often misinterpreted, quite simply because we are not sure what balance is!

In practice balance is not a static state, instead it is a dynamic condition which rests upon a plateau of tolerance, manifesting in a period of stability. As long as any animal, object or entity exists within its own unique range of tolerance, then it may be said to be in balance.

*The concept of balance being a plateau of tolerance can easily be demonstrated by placing a ruler upon a coffee cup. Then if we were to push the ruler from right to left watching the calibration as we push; the ruler will at some point no longer be "in balance" and will simply fall off the edge of the cup. By the same token if we were to try to place the ruler too far to the right, outside the tolerable range of balance, again it would simply fall off. The calibration on the ruler marks the range of tolerance in this demonstration.*

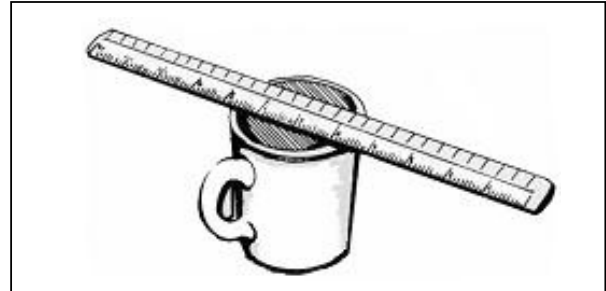


Fig.1 The 'coffee cup' analogy of balance

Our perception of balance is drawn from our understanding of equilibrium, symmetry and the need to maintain the status quo. In fact we have good reason to think along those terms. If we imagine a horse with a good sense of balance, without the strong desire to lead with one particular limb, with good general conformation, whose limbs are perfectly articulated by joints, which are geometrically sympathetic with one another, then we would expect this horse to have well balanced hooves. If we were to take this faultless horse one step further and say that his hooves were strong enough and grew at a rate proportional to wear, it would only be then, that we could expect the horse to have perfectly balanced hooves. So perfect in fact, that farriery would not only be superfluous but would likely be injurious!

However in this real world we find the domestic horse is often in need of our services. Naturally the ones we most often see are far from perfect and therefore do require our attention. Farriery in all but a few cases serving only to redress the balance and no more.

Ideally the horse, its limbs and its hooves should all function as harmoniously as possible; the equine's balance ever changing with the shifting centre of gravity, as the horse produces a range of complex attitudes, all conceived by the mental perceptions of both posture and behaviour.

As farriers we most often use the term "balance" to define the ideal level, a fixed criteria to which we trim the equine's hooves. However this ideal form, which we use as a datum or benchmark, is soon lost through a combination of growth, wear and compression this being determined by the underlying influence of conformation and movement.

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Although the term "balance" is initially applied to a standard concept, arrived at by the art of reason through experience, it should also be used to describe the period in which the hoof conformation is within the tolerable parameters of that particular animal. To reiterate, the phrase "balance", may be used to describe a period of limited duration when the hoof and the skeletal structure of the limb share a harmonious mutual relationship. Whilst interaction takes place within these almost indefinable limits, with the hoof and limb being at their most compatible, then and only then, may the term "in balance" be used.

The development and understanding of criterion used to determine the best possible hoof balance, which then produces the greatest range of tolerance of both hoof and limb is one of our daily objectives constantly reviewing and refining our practices. The rationale used for determining what is "in balance"; being probably the biggest nut we have yet to crack!

Analogies are often used to explain certain principles or theories on any subject but in farriery one of the most common parallels made is the one between hoof balance and the tracking on a car. Many authors have drawn our attention to certain likenesses but few if any have really detailed the lessons we can learn from such a comparison.

Accurate wheel alignment is essential for precise steering, handling and even tyre wear. The geometries of the front wheel alignment consist of four factors, camber, caster, steering axis inclination and toe setting. The first three are set during manufacture and should be considered none adjustable, normally only changing through the effects of accident, damage or wear. The third toe setting is more readily adjustable and is usually within the scope of all mechanics; adjustments are made by altering the length of the track rods. Track rods prevent the wheels from moving apart. Because each car is different and because the track rods are not absolutely rigid it is necessary from time to time to realign the wheels, the track rods either being compressed or stretched.

Comparisons may be taken from a basic understanding of wheel alignment, with similarities being made between the track rods and the horn tubes, which are central to the structure of hoof construction. Horn tubes can be both compressed and stretched just as the track rods are but with the added complexities of growth. Just as the track rods may be adjusted to correct the toe setting, so too the hoof may be trimmed to achieve the best possible relationship with the geometry of the limb.

We can conclude that just as the three

factors, which are set in the manufacture of the vehicle's geometry, influence the toe setting, effecting tyre wear, then so the limbs geometry will influence the equine's hoof shape. Furthermore just as it is understood that adjusting the toe setting cannot improve upon the existing geometry of the camber, caster and steering axis inclination, it needs to be recognised in my opinion, that the same laws apply to the limbs geometry. In short, attempts to change the geometries of the limb are not only futile but also damaging. The idea that it is possible to "fine tune" the balance of the equine foot like a mechanic would balance the wheels of a performance car, would not seem unreasonable, because unbalanced wheels will go on to damage and wear other, aspects of the steering and suspension mechanism. However correctly balancing the wheels will not alter the other geometric factors, which form the integral make-up of the unique mechanics of any one particular vehicle. In conclusion, although inadequate farriery can and will cause unnecessary stress, which could culminate in permanent damage, good farriery hasn't the power to alter the geometric or the habitual attitudes which cause inherent so called hoof imbalances.

We cannot make a horse better than its best!

Statistical statements which have been made that suggest that 52% of all sports horses suffer from lamenesses caused by hoof imbalances, have the added inference that these are all caused by poor farriery, it is little wonder that farriers are reputed to have fragile egos. Statistics however, can always be turned around, the same information could be used to illustrate that 48% of all sports horses do not suffer from lamenesses attributed to poor hoof balance, despite their conformation, inherent behaviour patterns and the tasks they are asked to perform. Although farriers should not be gratified with this information they should not be discredited for factors beyond their control. All, all hoofed animals have a tendency to suffer from foot balance problems; the equine is not unique, it just happens to be the animal we are asked to work upon.

Finally, the analogy between the tracking on a car and hoof balance is certainly a good one because not only is tyre wear affected by the geometry set in manufacture but also by the way the car may driven. The camber of the road also affects the tyre wear. In Europe and Australia some cars wear the outside edge of their near side front tyres, despite the wheel alignment being set correctly, that is, within the manufactures tolerances. Sounds familiar? Uneven shoe wear, lamenesses; we are not always at fault, don't take the blame but don't be blasé, keep questioning think!