Foal Hoof Management Part I: Straight Legs

By Andrew Bowe

Master Farrier, Mayfield Barehoof Care Centre B reeding your own foals is an incredibly rewarding experience. It would be fair to say that most horse owners who breed foals they are planning to keep 'forever' (and not just to sell on) have a special connection with them; an emotional investment that will always be greater than it would be with a horse they have bought but not bred. This is all the more reason to do everything to keep home-bred horses fully sound for life.

Indeed, one of the main advantages of breeding your own foals is seeing them right from the start under your watchful eye. You are not buying someone else's mistakes. From hoof to bridle, you know what you are getting.

The challenge, however, is that you are in the driver's seat. You are responsible for getting that awkward, gangly, spider-legged foal through to adulthood in the best possible shape that its genetics will allow. By extension, you also have responsibility for its eventual athletic ability and also for its long-term soundness, including, and especially, the functionality of its hooves. Being the proud owner of a new foal is actually quite a responsibility.

Foals are a constantly-evolving model, changing as they grow in response to both environment and genetics, with bones, joints, connective tissue and even muscles constantly getting re-modelled. However, not all changes are for the better. The aim is to grow a foal with straight legs and avoid wholesale re-modelling of a horse's conformation that will negatively affect its potential.

The secret is to recognise and act on negative changes as early as possible.

If only foal hoof management would be so black and white. Reality suggests that certain 'abnormalities' right themselves simultaneously as a foal matures, which means they should not be actively corrected, whilst some abnormalities need intervention as soon as they are noticed. What's more, some abnormalities are permanent and simply cannot be corrected.

It takes a team to navigate the muddy waters of foal hooves. As a horse owner, you are unlikely to have the experience of a professional whom may look at dozens or even hundreds of foals every foaling season, but your job is to be the eyes that notice the subtle changes. You will then need the services of a foal experienced hoof trimmer to manage such changes and also the contact of a foal experienced veterinarian if things go astray.

How soon should a professional trimmer see a new foal?

A point to consider is that about half of a foal's total growth in height occurs in the first six months of life. Added to this is the fact that foals' hooves grow about 50% faster than mature horses. In their natural environment, they are prairie wanderers and cover enough ground - even as foals - that the hooves are worn as they grow and stay in the dynamic equilibrium they need to for proper development. But, this is not so with domestic horses that are confined in paddocks that rarely produce enough wear on such fast-growing little hooves.

Foals really need to start having their hooves trimmed no later than one month old (and sooner if there appears to be anything not right) and regularly, thereafter, until the rapid growth and massive changes slow down.

Looking at a foal from in front or behind

A good first step into the minefield of foal hoof management is the recognition that foals are actually not meant to be born with straight legs. They need to be somewhat base-wide and turned out in the toes in order to get some stability on wobbly foundations. It's one of nature's incredible party tricks that a newborn foal can be up on its pins so soon after birth to start a life of running from predators. Foals are quite often up even before their Mums are.

This knowledge should be a relief for any overly proud first-time foal owner who is looking at a newborn (no doubt a potential national champion) with legs anything but straight. Don't worry, they will nearly always simultaneously straighten up fully as a foal matures. As its 'barrel' grows wider, the front legs effectively get rotated outwards, which has the effect of turning the lower leg towards the midline, thus straightening out the direction of the hooves.

The author would be more concerned with any foal that is born too straight because it is likely to end up with turned in toes once the barrel has expanded to adult size. Importantly, the conformation of a foal needs to be judged as a foal - as a work in progress - not as a mature horse.

Assessing front legs

Front legs should be assessed from in front of the articulating plane of the entire leg, but not directly in front of the body centreline. Instead, you need to stand slightly off to one side, directly in front of the 'flat' of the knee. (See Images 2a and 2b).

Still can't see the forest for the trees?

Foal dots are a good way for a layperson to develop an eye for limb alignment. Actual sticky dots can be placed at various landmarks along the length of a limb, central to the plane of articulation of the limb. When such dots are connected with an imaginary line, it is easy to see if and where a deformity exists.

If you are still not sure, regular photos form a good database because they can objectively document even quite subtle changes in limb alignment. You can use a series of photos to help guide your hoof trimmer.



IMAGES 2a & 2b: Foals are 'a work in progress', they are not meant to be born with 'straight' legs. They need to be somewhat base-wide and turned out for stability, but they should straighten up as the 'barrel' widens. Front legs should be assessed from in front of the articulating plane of the entire leg as in the image below, but not directly in front of the body centreline as shown in the image above. Photos courtesy Mayfield Barehoof Care Centre.



IMAGE 3: Windswept is the sometimes crazy shape that foals may have when first born, due to uterine malpositioning. It really looks like they are bracing against a cyclone. Photo courtesy Mayfield Barehoof Care Centre.

Most importantly, don't wait too long to start correcting problems. Growth plates can only be manipulated when they are 'open' with active cell division.

The question remains - how do we judge what normal is?

A judgement needs to be made as to how far the elbows will rotate outwards and the legs 'straighten' as the foal matures. Fortunately, Mother Nature usually gets this part right, but the conformation of your foal's parents may need to be considered to help you make a 'guesstimate' about how much that chest is going to expand. Whilst it is obviously easy to locate the mare, this is a good argument against buying semen from overseas stallions, sight unseen.

One thing for certain is that too much correction at this point in time will lead to big problems down the track when the foal matures. Hello pigeon toes!

Hind legs are best viewed from behind, but again not directly behind a foal's midline because the planes of articulation of the hind limbs are angled slightly outwards to enable clearance of the 'barrel' when moving. There may also be inward angular deviation at the knees or hocks. Slight angulation may straighten up simultaneously a few days after birth, but any deviation greater than about 15 degrees is unlikely to be self-correcting and will need assistance.

There are other, less common deformities, such as bow legs and angular deviations at the fetlock, that are not normal, which means there will be no automatic correction as a foal matures. Such abnormalities will require intervention by your professional team.

What can trimmers and vets do to help correct abnormalities?

If you have a foal with a limb deformity, trimmers and vets are usually able to correct it by manipulating the growth plates, which are the localised sites of extremely active cell division where the long bones of the leg lengthen.

Depending on your foal's actual deformity, your trimmer may be able to provide adequate correction, whether this is simply with an orthopaedic trim or with the addition of some glued on extensions, or indeed your trimmer may further refer the case to a vet who can undertake such procedures as periosteal stripping or pinning.

What can you - the foal's owner - do to help any corrective work succeed?

Most importantly, don't wait too long to start correcting problems. Growth plates can only be manipulated when they are 'open' with active cell division. Growth plates close progressively from the ground up with the fetlock area no longer open to wholesale changes after just a month, whereas the knees (and hocks) are able to be manipulated for up to six months.

It is astounding how often a trimmer gets asked to help a weaner or even a yearling with conformational issues (unfortunately long after the growth plates have closed). Sorry, no can do.

You will also need to ensure the ground surface that a foal is spending most of its time standing on is firm and non-yielding for any correction to be effective. On soft ground, there won't be any 'feedback' coming from the ground surface to change the loadbearing pressures on the growth plates.

And, of course, choose the parents of your foals wisely. Look closely and objectively at the conformation of both mare and stallion (again, there's a very good reason to use local semen!). Unfortunately, there may be no way to determine if one half of your foal's genetic donors has had corrective work done when it was a foal. The author looks forward to the day that all stallions have declarations of any corrective work they have had done in their early years for conformational defects (wishful thinking!).

What about the windswept foal?

Windswept is the sometimes crazy shape that foals may have when first born, due to uterine malpositioning. It really looks like they are bracing against a cyclone (See Image 3).

Whilst the windswept look can get a newborn foal's owners running for the hills or thinking about putting it back where it came from, this condition usually resolves itself completely within a short time - not much different from a scrunched up flower unfurling. The author can't recall ever seeing a windswept foal that did not straighten up on its own (although some cases apparently may need corrective assistance to fully straighten up).

Some things, however, can't be changed.

Horizontal displacement of cannon bones relative to the carpal bones above (commonly called 'offset knees'), whether lateral, anterior or even posterior, cannot be changed. With such foals, it is as it is. The likelihood of producing such an athletic weakness as this can be minimised by never breeding with such poorly conformed horses in the first place. (See Image 4)

Looking at a foal from the side

When looking from the side, a foal's legs are basically a series of hinge joints that are controlled by two groups of muscles that generate either extension or flexion of the limbs. The bones are simply puppets on strings. Normal is when the muscles work in unison to support the joints and allow a foal to stand with vertical legs above the fetlocks and steep, straight pasterns below the fetlocks.

A foal's muscles, however, can be either too loose or too tight. If muscles are too loose, the joints are unable to support the weight of the foal. This is known as flaccid joints and is often associated with premature foals. In the case of flaccid joints, movement is prescribed because it will tighten up the muscles. (See Image 5, Page 70).

Additional physical support may also be needed to prevent bad re-modelling of connective tissue around the affected joints. Support is easily achieved by taping (or gluing) to the bottom of the hooves on affected limbs, wooden or plastic or aluminium strips (colloquially called 'paddle pop sticks'), positioned so they extend rearwards to beneath the centre of gravity of the cannon bone.

Adding extra support doesn't cause any harm, whereas not adding support when it really is needed can seriously degrade the coffin and fetlock joints, and ruin a foal for life. The author believes if flaccid joints don't show rapid improvement within days, it is best to add support. 'Paddle pop sticks' are a great insurance policy.

The opposite of flaccid joints is when there is excessive contracture of the main muscles that are responsible for flexing the hinge joints (and, thus, creating forward movement). (See Image 6, Page 70). This causes the lower leg joints to become constantly contracted.



IMAGE 4: 'Offset knees' where the cannon bones are displaced relative to the carpal (knee) or tarsal (hock) bones cannot be changed. Photo courtesy Mayfield Barehoof Care Centre.



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IMAGE 6: Excessive contracture of the main muscles that are responsible for flexing the joints. Photo courtesy Mayfield Barehoof Care Centre.

Whilst foals can have this 'conformation' at birth, due to how they are packed in the womb (a situation that quite often requires veterinary assistance with muscle relaxing drugs for it to be solved), it more commonly arises several months after birth during the rapid growth phase, and is noticed by one front hoof becoming more upright (boxy or clubby) than the other front hoof, which often becomes more splayed.

According to leading Chirovet Dr Ian Bidstrup (www.spinalvet.com. au), such contraction possibly begins as a result of the physical pressure that a foal undergoes during passage through the birth canal. This leads to an habitual posture with one front leg slightly forward and more weight-bearing than the other.

This is further exacerbated by the foal's habitual grazing stance that places enormous re-modelling forces onto juvenile, soft anatomical structures (See Image 7). It can also be caused by growth that is simply too rapid. The bones lengthen faster than the muscles are physically able to, which results in tight muscles. This is usually the case when both front legs are involved. Flexor contraction can even be caused by injury to a limb, which again causes muscles to tighten.

To ameliorate flexor contraction, it is important that the underlying cause is addressed. If it appears to be from birth trauma or an injury after birth, a suitably-trained body therapist may be required to 'release' flexor muscle tightness. If the foal has been growing too fast, restrict the mare's feed which will slow her milk production and, therefore, the foal's growth rate, whilst restricting the foal's exercise to help soften its musculature.

A hard situation to overcome is an habitual grazing stance that is made worse by a foal grazing close cropped pasture. If at all possible, rotate foals through pasture that is long enough that they do not need to exaggerate their habitual grazing stance but can graze when standing square.

There is a lot of creative work being done these days to overcome flexor contraction by getting foals stretching to reach hay in slow feeder nets, whether that is high in a tree, over a solid fence panel or even at the top of an open horse float with the foal standing on the angle of the ramp. Results are encouraging.

There is also a simple veterinary procedure which involves cutting of the 'check' ligament to mechanically lengthen the deep flexor apparatus, but the author believes this should only be done in the most severe cases as it permanently affects the stay apparatus.

In conclusion, the importance of getting an experienced hoof trimming professional to oversee your foal's hoof development cannot be overstated.

There has probably never been a time in the Australian equine hoof care industry when there has been such wholesale inexperience as there is currently. It seems there is a generational change occurring in the industry with many new hoof trimmers appearing within the last decade to replace older, retiring farriers. In time, these new trimmers will have a vast collection of experiences. But your foal is here, right now. Hoof care professionals need to be honest enough to acknowledge inexperience and refer problematic cases to experienced practitioners.

Nobody gets it right with foals every time. Occasionally, that crystal ball is just a bit too cloudy. But, with the combination of an experienced trimmer (and vet, if necessary), plus the meticulous observations of the foal's owner, combined with at least some knowledge of the mature shape of both parents, chances are good.

Next issue will detail the development of the internal structures of foals' hooves.



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