



FranklinVets

Lameness UPDATE

SPRING 2026



DR DAN FITZHARRIS
BVSc
Farm Vet & Branch
Manager, Waiuku

The theories of lameness, **inside out or outside in?**

This debate rages on in the veterinary world, and while it's largely academic, it may help you better understand your approach to lameness prevention. With that said, here's my (hopefully educated!) opinion, based on facts and lots of first-hand experience, but it probably shouldn't be taken as absolute fact, yet...

Contents

- P1 The theories of lameness, inside out or outside in?**
- P3 Mating and the 'Calving Effect'**
- P4 From Feed to Feet: Nutrition and Lameness**
- P4 Lameness intervention success**
- P5 Lameness workup**
- P6 Lameness treatment**

Stones on yards, dogs, backing gate pressure and poor race surfaces **aren't the cause of lameness in dairy cattle**; they just aggravate it.

It may seem like semantics, but understanding this difference can help us see why some lameness prevention measures work better than others, or why we still get lame cows even when all these things are well managed.

Many of you will be familiar with Dr Neil Chesterton's work determining the associated environmental risk factors in NZ and the standard approach to reducing clinical lameness. This guide still has a valid place in the prevention plans used across the industry today. I'm not suggesting he was wrong; improving race surfaces, cow flow, reducing pressure behind cows and removing sharp turns have all been proven to reduce the incidence of clinical lameness time and time again; however, this is only half of the story.

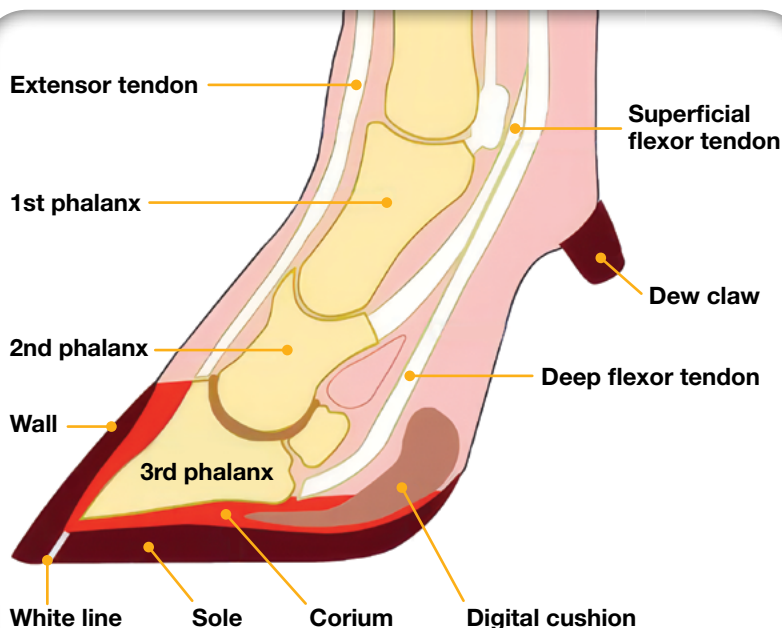
Studies using cadaver hooves and hydraulic presses to drive stones through the soles found that the force required is greater than a cow could generate by hopping with its entire weight on a single claw. The idea that the stone you found buried in your cow's hoof caused the lameness is false. While it undoubtedly causes pain, the stone has found an underlying weak spot in the hoof rather than causing it. This weak spot has been weeks in the making, which helps explain why we regularly lift a cow's foot that "only started limping yesterday" and find extensive damage that doesn't fit the timeline for sudden-onset lameness. The cow demonstrating she is in pain is definitely new; the problem with her foot is not.

Most people have heard of laminitis, but few of us consider the role of this inflammation in the lame cow limping in front of them. To understand this relationship, we must first look at the basic anatomy of the hoof and the role

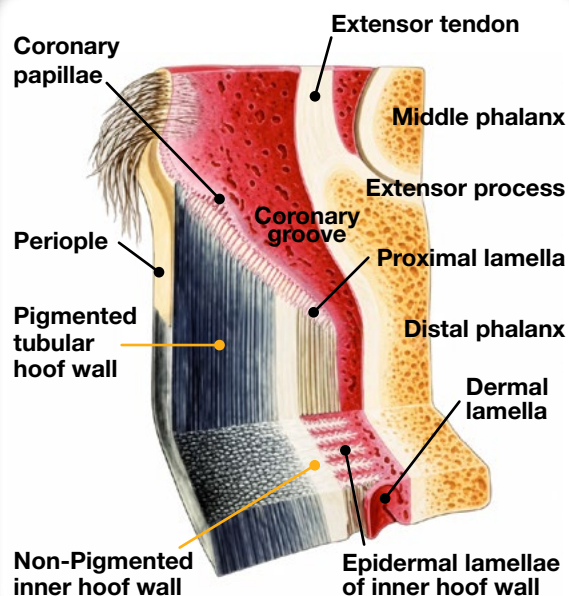
CONTINUED OVER PAGE ➔



Diagram of the foot structure



Anatomy of the hoof wall



of the lamellar tissues. In the image above, the red area overlying the bone is the corium; this connective tissue produces the hoof horn and attaches it firmly to the bone. The hoof wall is produced at the **coronary band corium** (where the hoof meets the skin/hair) and moves down the hoof as more is produced behind it, much like our nails growing from the cuticle. The sole of the hoof is produced by the **sole corium** and bonds to the hoof wall at the seam known as the 'white line'.

The **lamellar corium** is the connecting tissue between the hoof horn and the underlying bone, and when healthy is very strongly bonded. This bonding is achieved through interdigitation (think intertwined meshed fingers) at the contact surface. When this tissue becomes inflamed, it is called laminitis and causes a raft of issues. Most

significant is when it results in pockets of weak/no hoof being produced or no bond being maintained between the hoof horn (imagine small bubbles within the hoof horn); as the previously produced hoof overlying these pockets is worn away, they can essentially create a tunnel allowing the outside world to interact directly with the corium.

If, like me, you're regularly lifting lame feet, you've found weaknesses in many white lines packed with stone, and it is easy to believe the stone caused the breakdown in the white line it is now jammed into. However, I'm sure you have also found the tiny hole in a white line that is < 1 mm wide, but as you pare it away with your hoof knife, you discover a larger area of detached hoof right up to the corium, often holding a pocket of pus. Now, the question is was there really a tiny stone that drove all the way

up through the white line, shunted further in as each new crumb of dirt or stone packed in behind it, OR, was there an underlying seam through the full height of the white line, reaching down from an inflamed section of the lamellar tissue that had failed to produce any hoof material (or good adhesion between wall and sole), that had eventually had the lowest point worn away and now bacteria and dirt could travel from the outside world all the way to the corium, establishing a painful infection which has caused your cow to limp? Personally, I believe the latter.

Laminitis also causes many common hoof confirmation issues that largely go ignored. Next time you are milking, have a look for long claws, especially where the toe is no longer touching the ground, particularly in the back feet, or hooves with growth rings which look like seashells. Both can be due to periods of laminitis causing start/stop growth or allowing the pedal bone to rotate within the hoof capsule. Many events can cause laminitis (covered later), and it often goes undetected until clinical lameness occurs.

So, now that we're all aware of, and no doubt have seen, the effects of laminitis in the hooves of your herd, what else can be done to prevent and correct this underlying issue? Read on to find out.

ART: JOHN MCDUGALL

**NEED HELP?
NEED TO TALK?**

RuralSupport

Call for free, confidential
advice & support

0800 787 254

www.rural-support.org.nz

HELP & SUPPORT

**We're here to
strengthen connection
in New Zealand's rural
communities.**



DR ANNALISE RILEY
BVSc (Dist.)
Farm Vet, Waihi



Mating and the ‘Calving Effect’

One of the most common patterns we see in New Zealand dairy herds is increased lameness around the mating period. While mounting activity and increased walking during heats are often blamed, many hoof problems begin much earlier, around calving.

The impact on hoof health around calving is known as the “calving effect”. Hormonal changes meant to prepare a cow for birth also affect hoof structures. The ligaments supporting the pedal bone in the hoof relax, while the digital fat pad beneath the pedal bone, which acts as a shock absorber, becomes thinner as cows lose condition in early lactation. Together, these changes reduce support and cushioning within the foot, leaving the sensitive horn-producing tissues more vulnerable to pressure and damage. The result can be inflammation and bruising within the hoof (laminitis), often without any obvious signs of lameness at the time.

Remember that hooves grow slowly. The hoof horn cows are walking on during mating was largely formed weeks or even months earlier, around the transition period. In effect, cows are often walking on the poorest-quality hoof horn they will produce all season. Unfortunately, this occurs when environmental conditions can be particularly challenging. Spring rainfall leaves races and paddocks wet for prolonged periods, softening the hoof and reducing its resilience to wear and damage. In addition, cows are also walking increasing distances to and from the shed each day.

Nutrition also plays a key role. During the spring flush, cows consume large amounts of lush, highly digestible pasture that is often low in effective fibre. This can contribute to rumen dysfunction, which may negatively affect hoof horn quality and increase susceptibility to lameness.

The result is a “perfect storm”. Hoof horn produced during

transition stress is then exposed to wet conditions, high wear, and the physical demands of early lactation. Small defects that developed around calving can gradually progress into sole bruising, white line disease, and other painful lesions that become clinically apparent around mating.

Heat activity may contribute, but it is unlikely to be the primary cause in most cases. Mounting behaviour and increased movement can certainly add stress to already compromised feet. However, these behaviours often trigger an underlying problem rather than causing lameness.

From a management perspective, this highlights the importance of thinking about lameness prevention well before mating begins. Good transition cow nutrition, maintaining body condition, minimising excessive metabolic stress, supporting rumen health, and keeping races in good condition all help

produce stronger, more resilient hoof horn. Early identification and treatment of lame cows is also critical to minimise impacts on production, reproduction, and animal welfare.

The key takeaway is that lameness observed during mating is often the visible result of hoof damage that began around calving. By protecting hoof health during the transition period, we can reduce lameness risk later in the season and help cows perform at their best through mating.

If you have concerns about lameness in your herd, talk to one of our veterinarians about transition cow management, locomotion scoring, and hoof health strategies for the season ahead.

DID YOU KNOW?
We can sharpen your hoof tools. Contact your local clinic for details.

From Feed to Feet: Nutrition and Lameness



DR NEKA KATER
BSc, MSc Zoology (Dist.),
BVSc (Dist.)
Farm Vet, Paeroa

Lameness is a multifactorial problem in dairy herds, and nutrition is an important risk factor that farmers can manage. Nutrition influences both hoof horn growth and quality, as well as the cow's ability to cope with the demands of early lactation.

Strong hoof horn depends on a range of nutrients, including sulphur-containing amino acids such as cysteine and methionine, minerals such as zinc and calcium, and vitamins such as biotin. Poor nutrition can weaken hoof horn, making it more prone to cracking, bruising and infection.

Zinc and biotin – supporting strong hooves

Hoof horn is continuously growing, so a consistent supply of nutrients is important for maintaining hoof integrity. Zinc supports cell repair, wound healing, and healthy skin and hoof horn. Biotin contributes to keratinisation and the development of strong hoof horn. Supplementation has been associated with improved hoof quality and fewer lesions such as white line disease and sole haemorrhages. Cows can produce biotin through rumen microbes, but diet affects this process. High-concentrate diets and rumen acidosis may reduce microbial biotin production, making

dietary supplementation more important for some high-producing cows.

Acidosis and hoof health

Rumen acidosis is an important nutritional risk factor for laminitis and other hoof lesions. Diets rich in rapidly fermentable carbohydrates can lower rumen pH, particularly when cows do not receive enough effective fibre or are transitioned onto new feeds too quickly.

Reduced rumination means less saliva is produced to buffer the rumen. Changes in rumen fermentation can contribute to inflammation and damage to the sensitive structures within the hoof (laminitis). This can lead to bruising, bleeding within the hoof and, over time, painful lesions such as sole ulcers.

Preventing acidosis is therefore an important part of lameness prevention. Introduce new feeds gradually and ensure cows have sufficient effective fibre to maintain rumination and a stable rumen environment.

The importance of body condition

Body condition is also closely linked to hoof health, particularly after calving. Cows naturally mobilise body reserves when energy requirements exceed feed intake, but excessive body condition

score (BCS) loss can reduce the size of the digital fat pad within the hoof. This fat pad acts as a shock absorber, helping protect the structures within the foot. When it becomes depleted, cushioning between the sole and the pedal bone decreases, increasing the risk of painful lesions such as sole ulcers.

What can you do on farm?

- Monitor BCS regularly, particularly around calving and mating and ensure targets are being met.
- Minimise excessive BCS loss after calving through good transition and feeding management.
- Provide adequate, effective fibre and avoid sudden dietary changes.
- Introduce high-energy or rapidly fermentable feeds gradually.
- Review the herd's mineral programme and ensure zinc and biotin supply is appropriate.

In summary, think hoof health from the inside out. Maintaining BCS, supporting strong hoof growth with adequate nutrients, and minimising rumen acidosis all contribute to healthier hooves and help reduce the risk of lameness.

Lameness intervention success

Early detection and effective treatment are two crucial determinants of lameness intervention success. Early detection means identifying the cow as soon as she becomes identifiably lame. This is where scheduled, regular lameness scoring can have a significant positive impact. Studies show that early detection of lame cows reduces recovery time, the likelihood of future lameness, and the negative impact on

milk production, fertility and, ultimately, profitability. Scoring your herd every two weeks is recommended; however, the scoring schedule you implement must also be practical for your farm. A scheduled lameness score every two months is far superior to none at all. Start small if needed.

Once identified, record and treat lame cows promptly. Lift and thoroughly examine

the affected claw(s) to diagnose accurately; successful treatment depends on an accurate diagnosis. Ensure your farm is set up well to treat lame cows. This includes having sharp, functional hoof knives, cow blocks, an easy-to-use crush set up in a location that loads cows well and, ideally, is protected from the weather. Perhaps most importantly, staff treating lame cows need to be well educated and

trained to do so. Contact your veterinarian to discuss training opportunities for your farm.

Alleviating pain with non-steroidal anti-inflammatories such as Ketomax or Metacam and shifting weight off the affected claw by applying hoof blocks has been shown to significantly reduce recovery times and improve

CONTINUED OVER PAGE ➔

the welfare of lame cows. The validity of using antibiotics to treat lameness depends heavily on the individual animal and an accurate diagnosis. Common conditions requiring antibiotics include foot rot and digital dermatitis. Other common conditions that do not require antibiotics include white line disease (although, if left untreated, it can lead to infection of the underlying soft tissue), sole bruising, sole abscesses, sole ulcers, and hoof wall cracks. If in doubt, consult your veterinarian to

discuss the best plan forward. Adhere to the withholding periods for any medications used in treatment.

Managing the lame cow well during treatment is also important in achieving good outcomes. Record her treatment plan and schedule re-examinations to ensure her recovery is tracking positively. The lame cow needs to be rested as much as practically feasible. Consider moving these cows to once-a-day milking and grazing them close to the shed to reduce

walking distances. Avoid putting pressure on them walking to the shed and, where possible, minimise time spent on concrete. Lastly, pain can reduce appetite. Regular body condition scoring and/or, if using wearables, monitoring grazing and rumination can help guide nutrition decisions to prevent reductions in condition.

The time and effort required to treat lame cows is certainly not an easy investment. Still, it undoubtedly promises



DR CLAUDIA KNILL
BVSc
Farm Vet, Taupiri

dramatic improvements in animal welfare and reduced production losses associated with this condition. Regular lameness scoring, prompt identification, effective treatment, and appropriate management of lame cows are fundamental to lameness intervention success.

Lameness workup

When talking to farmers about lameness, one of the first things I come back to is the hoof. Lameness can affect how much she eats, how much milk she produces and how well she gets in calf. The earlier we pick these cows up, the easier they are to deal with.

When I'm walking through a herd, I look for small changes: a shortened stride, an arched back, a cow that is reluctant to walk, or one that shifts weight from one foot to another. These cows are worth a closer look.

<https://www.dairynz.co.nz/animal/lameness/identifying-lame-cows/>

When it comes to trimming, I'm not trying to make every hoof look the same. My goal is to create a functional hoof that allows the cow to bear weight evenly and comfortably.

The biggest mistake I see is taking too much away. The sole is there for a reason, and once we start thinning it down, we're taking away the cow's protection from the ground. We want to keep as much

good, healthy horn as possible while removing loose, damaged or underrun horn.

I also want the two claws balanced, so one isn't carrying more weight than the other. Good trimming is about function, not appearance.

For me, the next step is working out why the cow is lame. A sole ulcer, white line disease, bruising, digital dermatitis or footrot will all need a slightly different approach. Trimming without finding the lesion can mean we miss the actual problem.

With white line disease or underrun horn, I want to remove the loose horn so the affected area is no longer trapping dirt and infection. But again, I don't want to start digging into healthy tissue just because I can.

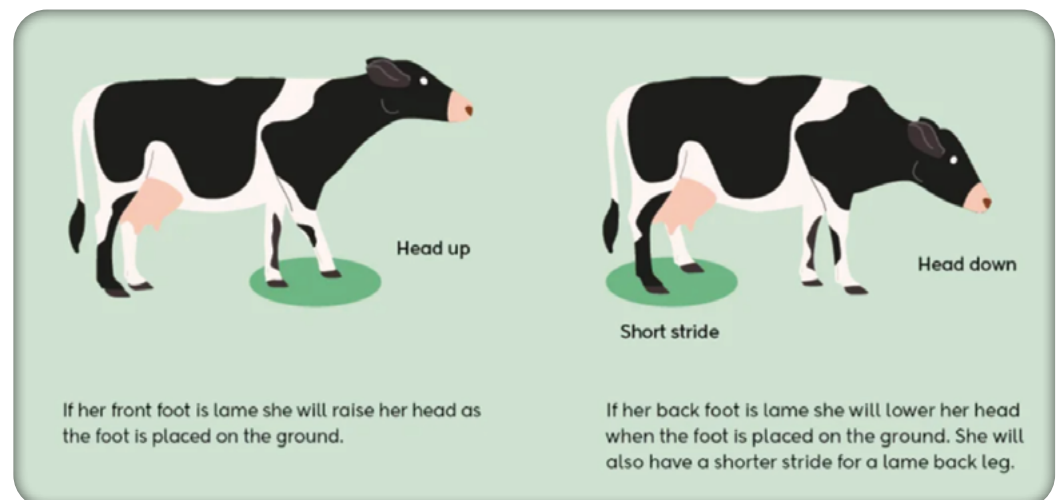
Once the problem has been treated, I think about what caused it in the first place. Are the tracks rough? Are cows spending long periods standing? Is there a lot of walking on hard surfaces? Are there nutritional or cow-comfort issues? If we keep treating the same cows for the



DR RAMEKA CHERRINGTON
BVSc, BBus
Farm Vet, Te Kauwhata

same problem, there is usually a reason worth investigating.

My biggest message is simple: don't wait until a cow is severely lame. Pick her up early, find the problem, take off what needs to come off and leave the good horn behind. A good hoof trim should leave the cow better able to walk – not just leave you with a hoof that looks tidy.



Lame Cow Treatment

work smarter, not harder!

Whilst prevention is better than cure for most animal health issues, unfortunately we will always have lame cows that need treating.

We are lucky in NZ that with our pastoral farming systems, lameness prevalence is amongst the lowest of all dairying countries in the world. However, lameness is still one of the most significant animal welfare issues on our farms. As farmers and vets, we are responsible for ensuring cows are treated quickly and effectively.

Studies have clearly shown that using a hoof knife, foot blocks, and pain relief such as Ketomax leads to the fastest recovery. Except for simple foot rot cases, using all 3 treatments on all cows leads to the fastest recovery.

The main barrier to staff doing a good job on lame cows is facilities and know-how. Purchasing a WOPA or Wrangler foot crush is a small investment that will save you a lot of time and money over the lifetime of the crush and makes picking up feet (particularly front feet) safer and far more efficient.

The use of good, sharp knives and, better still, a cordless angle grinder with the correct cutting disc makes trimming of feet a much easier task and makes application of blocks simple. Franklin Vets can order the right disc and provide training for you or your farm staff on safe grinder use.

For blocks, we have multiple options, ranging from Bovibond wooden blocks with glue guns to the fast-to-apply Deomtec Futuropad or the new, very economically priced Walkeze wood/foam composite blocks. Remember, every cow with a claw lameness should have a block applied, and every cow that is treated should have a dose of pain relief. I use Ketomax on cows that don't require antibiotics, as it is zero milk withhold, or Metacam on cows that require antibiotic treatment.

In the right hands, most cows with claw lameness should be ready to return to the herd 10-14 days post-treatment. If they haven't recovered by then, they need to be re-examined by skilled farm staff or a vet.



DR JASON FAYERS
BVM&S
CertCHP (Cattle Health & Productivity)
Farm Vet & Regional Manager, Pukekohe



Get yourself well set up and take out the barriers to treating lameness effectively, and your staff and your cows will thank you for it!

Top tips for lame cow treatment:

- Make sure you have a suitable crush, e.g. WOPA, Wrangler or similar
- Ensure staff are trained in the use of knives and ideally angle grinders too
- Purchase a cordless angle grinder and ask Franklin Vets to order you the correct trimming disc
- Stock up on easy-to-apply blocks. Try out the new Walkeze foam/ wood composite blocks- cheap and quick to apply
- Have a bottle of Ketomax set up with a multidose gun for easy administration
- Spray the treatment date on the cow's side. Cows should be sound enough to return to the herd 10-14 days post-treatment. If they aren't recovering, draft and organise the vet to check them out.

Sole Bruising



Sole Ulcer



White Line Disease



Footrot

