

NEW YORK THOROUGHBRED BREEDERS, INC.

Growing Pains for the Terrible Two's: How to Deal with Bucked Shins

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Considering that the horseracing industry loses approximately \$10 million a year due to bucked shins, it pays to examine all the factors surrounding this common horse injury and to look at some of the alternative treatments that are proving remarkably adept at treating it, including ultrasound.

What Are Bucked Shins?

Bucked shins are similar to shin splints in humans. Also called dorsal metacarpal disease, this inflammation of the membrane (periosteum) surrounding the cannon bone (or shin) commonly afflicts young horses and is primarily caused by running a horse too hard and for too long distances while the shinbone is still developing and therefore unable to cope with such stressful racing demands.

Because thoroughbreds undergo more long distance training than other racehorses, they are more likely to suffer from this repetitive motion injury than standardbreds. According to Daniel J. Burba, a veterinary professor at the Louisiana State University, seventy percent of young thoroughbreds develop bucked shins, which commonly surfaces in two-year-olds during the first six months of their training. As horses age, their cannon bone naturally becomes stiffer and less susceptible to the condition.

Twelve percent of horses that develop bucked shins go on to experience stress or saucer fractures. The classy racehorse suffering from bucked shins is particularly susceptible to further complications because he/she is less likely to notice or react to pain while racing. Spurred on by adrenaline, they'll often push so hard that fractures occur. That's why it's always wise to have x-rays taken of a bucked shin to determine if a fracture is associated. By completely assessing the full extent of the problem, veterinarians and owners can best determine how to deal with it – both in terms of treatment and employing effective training tactics.

Keep in mind that shin soreness is influenced by the track surface. A high moisture content and impacted soil can exacerbate the situation.

Signs Of Bucked Shins

While horses sometimes develop bucked shins in both forelegs, they are more likely to experience it in the left leg first. The indications that a horse is suffering from bucked shins are often similar within age groups, especially as the problem is associated with the development of the cannon bone. A simple way to detect soreness is by gently pressing your fingers into the shin area and observing the horse's reaction.

The most common signs that a two-year-old horse is suffering from bucked shins includes heat, pain and pressure in the affected area, and swelling on the surface of the shins. As well, the horse may become lame, short strided, or simply uncomfortable while exercising. Radiographs may show a noticeable thickening in the front of the bone where tiny micro fractures generally occur.

When developing bucked shins at age three, horses likewise tend to experience pain and swelling, although the problem is more often manifested along the inside edge of the cannon bone.

While it's much less common to see bucked shins in four-year-olds, it usually surfaces as a localized 'sore spot' on the leading foreleg about one-third of the way down the cannon bone. When x-rayed, small hairline stress or fatigue fractures can often be seen in the outside layers of the bone.

Re-Bucking Problems

Horses usually only experience bucked shins once. However, horses that buck their shins and stop training for a substantial period of time are at higher risk for a repeat than those that do not. Rather than give a horse with buck shins a long rest, it is better to treat and continue a moderated training schedule. Specifically, a short stall rest is in order until the pain and swelling has gone down, followed by a modified training schedule that includes short, high-speed workouts (or breezing).

For a ten-year study on bucked shins conducted at the New Bolton Center of the

University of Pennsylvania School of Veterinary Medicine and published in 2002 indicated that stables that breezed their horses more frequently had the lowest incidence of bucked shins. Whereas, the stables that galloped their horses more frequently had the highest incidence of bucked shins. This study concluded that galloping increased the likelihood of bucked shins by 36.4%, whereas breezing reduced the likelihood of bucked shins by 98.6%.

First Aid For Bucked Shins

While icing and cold water hosing remain the best and most common first aid treatments for bucked shins, there are alternative treatments that should be considered, particularly when dealing with severe cases.

In acute cases with severe swelling and lameness, the horse should be confined to a stable or small yard and rested to avoid risk of long-term bone damage. For the first 36 to 48 hours, utilize cold and compression therapy to reduce swelling and discomfort. Two to three times a day, apply an icepack to the injured area using a Vetrap bandage to keep it in place for 15 to 20 minutes per session.

In addition, a course of the anti-inflammatory phenylbutazone, supervised by your veterinarian, will help reduce pain and inflammation. Once the pain and inflammation has subsided, a thorough examination by a veterinarian is advised to assess the relative severity of fibrous secondary bone deposition.

While pin firing and blistering are among the most commonly used treatments, some experts disagree about their efficacy. The theory is that heat helps damaged tissue to heal by increasing circulation to the area. In fact, excess heating causes tissue damage and irritation, and is counterproductive.

Dr. D. M. Nunamaker, the leading equine orthopedic surgeon at the University of Pennsylvania School of Veterinary Medicine and the author of the New Bolton study, says, "Classical treatments involving pin firing of MCIII and rest were used without proof of

efficacy.” In other words, these treatments have no scientific basis and have not worked.

Training Techniques For Reducing Bucked Shins

All the practitioners consulted and quoted in this article agree that, in cases of shin soreness, extended paddock rest may prove detrimental, resulting in bone re-absorption and weakening. They say that after the initial pain has subsided, training should immediately recommence in order to build necessary bone strength and to achieve proper bone remodeling.

“Proper training adapts bone to training. So training that mimics racing will adapt bone to racing,” states Dr. Nunamaker’s study, which determined that horses are not born with the appropriate bone structure for racing. They must develop it: “Bone thickness and strength develop in the areas of most stress to the bone,” the study states. This means that proper training is key to developing the cannon bone and reducing or eliminating the incidence of bucked shins.

Therefore trainers must regulate workouts so that strength can be built into the bones. Nunamaker recommends, initially covering a maximum distance of one mile during training sessions. He cautions against slow speed conditioning jogging which is detrimental to bone build up. Instead he suggests that trainers include breezes (short, high-speed workouts) two times a week at the end of gallop sessions, and slowly increase the distance covered from a furlong to a half mile.

In the event that a horse’s training is suspended, for illness or other problems, the schedule should to be readjusted. For instance, after taking ten to fourteen days off, an extra month should be tacked onto the training schedule.

And pay close attention to the animal during this period. Whenever an animal has just returned to training or racing, he/she is vulnerable to high strain, cyclic fatigue. In fact, some horses go on to develop stress or saucer fractures in the cannon bone for up to a year after initially bucking their shins.

Increasing Bone Thickness

Improving bone thickness and density can require as little as five or six strides at speed, although more than thirty strides appears to be harmful in young, untrained horses as it can overload the bone and eventually cause damage. Thirty strides is approximately one furlong (220 yards) at a gallop.

If the horse is large and growing rapidly during training, the trainer should take the horse along more slowly. It is commonly considered that bigger, faster growing horses have relatively inferior bone quality because of the rapid manner that their bones grow. Therefore trainers must take a longer time to sufficiently increase bone quality through exercise in these animals.

Hard surfaces tend to give faster results. But there is only a small margin of error between a workload that improves bone quality and one that overloads the bones; there is a limit as to how quickly bone can increase its strength in response to exercise, so longer or more frequent sessions of fast work in the first few weeks of training do not result in greater or faster bone production.

If a racehorse must go around turns, it is important to include corners or turns in the “fast work” sessions. When a horse begins mimicking racing while training, they’re often demonstrating that their cannon bone is ready to race again.

Ultrasound Treatments For Bucked Shins

On average, bones build one to two microns a day during training. Faster bone formation can result from using ultrasound treatments, says Dr. Kayla Shaw, a leading equine practitioner in the Maryland, Delaware, Pennsylvania tri-state area, who has been conducting this non-invasive, sound wave modality on horses for ten years. Depending on the severity of the horse’s micro fractures, she says that she can heal a horse of bucked shins within a month using ultrasound.

Shaw’s case studies have been further substantiated by the double blind clinical trials reported by Drs. Rubin and Bolander in “The Use of Low-Intensity Ultrasound to Accelerate the Healing of Fractures,” published in the *Journal of Bone & Joint Surgery* in Feb 2001. This study determined that repeated ultrasound treatment therapy successfully sped up healing and aided in bone remodeling.

Recently, shockwave therapy has become another popular modality for treating bucked shins. This approach involves transmitting high-energy sound waves to the affected shin area to trigger healing. Dr. Pat Hogan of New Jersey Equine Clinic says she’s seen positive results using this therapy to treat the very early stages of bucked shins. But she cautions against its potential abuse. Because this treatment causes numbness to the affected area, a treated horse won’t necessarily feel pain afterwards during training or racing, even if the horse has developed micro fractures. Therefore, you could be setting a horse up for a potential catastrophe.

In any case, your veterinarian should be consulted about whether ultrasound or shockwave therapy is a good treatment alternative for your horse.

About Blistering

Blistering involves the injection of an irritant substance in an attempt to create an inflammatory reaction. The irritant substance usually consists of 2% iodine in an almond oil base and can elicit an inflammatory response for up to thirty days depending on the amount used and the location of the injection.

Fibrosis and scar tissue formation will likely occur as a result of severe inflammation. Since scar tissue does not function like normal tissue, blistering in certain areas may inhibit the proper functioning of any associated soft tissue. There is no evidence that blistering has any positive benefit on the modeling or remodeling of bone.

For Further Information

I highly recommend that anyone interested in knowing more about bucked shins refer to my Web site for a link to the 2002 published study by D. M. Nunamaker, VMD, Diplomate ACVS of the Veterinary School Of the University of Pennsylvania. While undergoing my veterinary education at that institution, it was my privilege to take courses in which he discussed these topics.

To locate this study, go to my Web site at WWW.ANIMALACUPUNTURE.NET
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The following chart, written by Daniel J. Burba, a veterinary professor at the Louisiana State University, details a training program that is recommended by Dr. Nunamaker.

	Protocol	Intensity	Duration of STAGE:
Horse worked 6 days/week	Walked to track Walked ½ mile on track Jogged ½ mile on track Galloped 1 mile	Daily	
STAGE 1	Last 1/8 mile of gallop completed in 15 seconds	Performed 2 days a week	5 weeks
STAGE 2	Last ¼ mile of gallop completed in 30 seconds	Performed 2 days a week	5 weeks
STAGE 3	Gallop lengthened to 1 ¼ mile. Breezed ¼ mile in 126 seconds. Strong gallop added to the ¼ mile breeze for a total time of 140 seconds.	Daily Once a week Once a week	4 weeks 3 weeks