

HEALTH ZONE

Breathe Easy

Nasal Strips

BY AMANDA DUCKWORTH



Nasal strips are designed to help a horse naturally perform his or her best

run faster with nasal strips than without them.

“They are applied to the top of the nose, and anyone can see their use prior to a race,” the letter continued. “If improperly applied, equine nasal strips cannot interfere with performance. In my opinion equine nasal strips fall into the same category as tongue ties.”

Like tongue ties, instead of acting as a performance enhancer, nasal strips are designed to help a horse naturally perform his or her best.

“The strips make no more difference in the outcome of a race than do horseshoes, tongue ties, figure-eight bridles, or other equipment horsemen are permitted to use,” explained Dr. James Chiapetta, the co-creator of Flair Equine Nasal Strips, on behalf of the company during the controversy surrounding I’ll Have Another. “The strips, however, are designed to protect horses’ lungs so they can stay healthier.”

Nasal strips for horses came on the scene as a result of Chiapetta and Dr. Ed Blach. The veterinarians began developing equine nasal strips in the mid-1990s after observing the regularity of breathing struggles in high-performance horses. Since then, Flair has been awarded more than 20 patents internationally related to the concept that by supporting the external wall of the nasal passages, nasal strips reduce upper airway resistance to improve equine health and optimize performance.

Whether connections use them or not remains a personal decision, but the science behind how they work remains largely unchanged. Nasal strips, which are adhesives applied to a horse’s nose, do

I’ll Have Another breaks from the gate of the 2012 Preakness wearing a nasal strip

DUE IN PART TO THE PROMINENCE of the Triple Crown, a piece of equipment for racehorses came under the microscope earlier this decade: the nasal strip. Although nasal strips had debuted during the 1999 Breeders’ Cup World Championships and were also commonly seen in other equestrian disciplines, Thoroughbreds were not allowed to race with them in New York.

In 2012 this came to a head on a major stage. Reddam Racing’s I’ll Have Another had worn a nasal strip while winning the first two legs of the Triple Crown in Kentucky and Maryland, but the New York stewards said he would not be allowed to wear one in the Belmont Stakes (G1) because they were unregulated. It became a moot point when a tendon injury forced his retirement a day before the race.

Two years later the use of nasal strips on racehorses became a national news story when California Chrome was attempting the Triple Crown. He also wore a nasal strip, and there was a possibility he would not compete in the final leg if he weren’t allowed to use one.

Outlets ranging from the New York *Times* to *Sports Illustrated* covered the issue when New York stewards agreed to

end the policy that prohibited them. In the end, California Chrome finished fourth in the Belmont.

The stewards changed the rule on the advice of Dr. Scott Palmer, the equine medical director for the New York Gaming Commission.

“Equine nasal strips do not enhance equine performance nor do they pose a risk to equine health or safety and as such do not need to be regulated,” said Palmer in a letter sent to stewards before California Chrome’s run. “While there is research to indicate that equine nasal strips decrease airway resistance in horses and may decrease the amount of bleeding associated with EIPH (exercise-induced pulmonary hemorrhage) to some degree, I am unfamiliar with any research indicating that equine nasal strips enable a horse to

MARYLAND JOCKEY CLUB

not contain any medication.

Instead, they are designed to support the tissue over the nasal passages behind the nostril in order to keep it from collapsing. Unlike humans, horses cannot breathe through the mouth when their nose is failing them. Equine nasal strips are often compared to—and were originally inspired by—the Breathe Right strips used by people, whether they be snorers or high-profile athletes.

Those using equine nasal strips are usually advised to apply one to a horse's nose 30 minutes prior to the time it will be exercising or racing. To support the soft tissue of the equine nasal passage, nasal strips should be placed two-finger widths above the horse's nostrils, and they should be removed after the sweat-inducing activity has concluded.

The idea behind nasal strips is not that they inherently help horses run faster. Rather, they help horses breathe better, which is indisputably an important fac-



Dual classic winner California Chrome

tor when it comes to running to the best of one's ability.

A number of studies done in university settings verified the claims that nasal strips can make breathing easier during high rates of activity and reduce bleeding by normalizing pressure across the pulmonary capillary membrane.

Because EIPH is an ongoing concern

with Thoroughbred racehorses, nasal strips offer an alternative to furosemide, which is more commonly known as Lasix or Lasix.

In 2000, Kansas State University published "Effects of External Nasal Support on Pulmonary Gas Exchange and EIPH in the Horse" in the *Journal of Equine Veterinary Science*.

Six Thoroughbreds and one Quarter Horse were evaluated while running at high speeds on a treadmill, once with a nasal strip and once without, in randomly ordered trials two weeks apart. Whole-body gas exchange, arterial blood gases, acid-base, and blood temperature were measured.

"Bronchoalveolar lavage (BAL) revealed a 33% reduction in EIPH (quantified as red blood cells/ml BAL fluid) in the nasal dilator trial," the study concluded. "These data demonstrate that nasal dilation can lower whole body VO₂ and reduce EIPH. It is possible that these ef-



IT'S ABOUT **THE HORSE.**

Developed by veterinarians, FLAIR® Equine Nasal Strips are clinically proven to: make breathing easier, reduce lung bleeding (EIPH), reduce fatigue, conserve energy, and quicken recovery.

FLAIR
EQUINE NASAL STRIPS
PREVENT. PROTECT. PERFORM.™

763-972-9056 | INFO@FLAIRSTRIPS.COM | FLAIRSTRIPS.COM | f i t y

MESSAGE FROM THE GRAYSON-JOCKEY CLUB RESEARCH FOUNDATION

EXERCISE INDUCED PULMONARY HEMORRHAGE

Results of a pair of research projects



Grayson-Jockey Club
Research Foundation

BY DR. LARRY BRAMLAGE

TWO RESEARCH PROJECTS on Exercise Induced Pulmonary Hemorrhage solicited by The Grayson-Jockey Club Research Foundation and funded in cooperation with The Jockey Club, the AAEP Foundation, Keeneland Association, Oak Tree Racing Association, The Stronach Group, Churchill Downs, Kentucky Downs, New York Racing Association, The Del Mar Thoroughbred Club, Oaklawn Park, and The Thoroughbred Horseman's Association have now appeared in peer-reviewed journals.

Knych HK, Wilson WD, Vale A, et al. Effectiveness of furosemide in attenuating exercise-induced pulmonary haemorrhage in horses when administered 4- and 24-h prior to high speed training. Equine Vet J. 2017;50:350-355.

Bayly W, Lopez C, Sides R, et al. Effect of different protocols on the mitigation of exercise induced pulmonary hemorrhage in horses when administered 24 hours before strenuous exercise. J Vet Intern Med. 2019;

1-8. <https://doi.org/10.1111/jvim.15574>

In March of 2015, a special call for research on exercise induced pulmonary hemorrhage was issued by the Grayson-Jockey Club Research Foundation. Emphasis was placed on strategies to control EIPH without race-day medication. Two projects were selected. The premise of the research was to look at the post-treatment effect of furosemide (Salix, or Lasix) if it had been given 24 hours before exercise with water intake limited to maintenance

water levels (which are known).

One project submitted by the University of California at Davis under the direction of Dr. Heather Knych proposed to take 15 fit Thoroughbreds with no known history of bleeding and assess three treatments head-to-head against each other: saline placebo, furosemide four hours before exercise, and furosemide 24 hours before exercise with limited water access. The horses were paired in five-furlong simulated exercise sessions and assessed for bleeding via endoscopic examination using the conventional 0-4 scoring system and via broncho alveolar lavage (BAL) counting the number of red blood cells (RBC) found in the lung lavage post exercise. The horses trained conventionally at a racetrack, and the exercise sessions were separated by a two-week interval.

The results showed with 24-hour administration the pharmacologic level of furosemide is approximately 1/100th the level of circulating medication when compared to four-hour pre-exercise ad-

ministration. So, more than 99% of the medication has cleared by 24 hours.

In the horses with no known bleeding history, there was one bleeder. He bled with no treatment, and he bled through both treatments, though the four-hour furosemide treatment reduced his grade of bleeding. There were three endoscopic graders and blood in the trachea was seen in 11 of the 43 endoscopic exams; on four exams was the blood more than a grade 1 (trace) and three of those four observations were accounted for by the one horse that bled continuously.

On average there were low levels of RBC's present in the BAL in all horses after exercise, even with no blood visible endoscopically, but the levels were less than 200(105/ml), even with the bleeding horse included.

So the conclusion from the study was that, though blood was seen on the endoscopic exam of 11 of 43 endoscopic exams, the four-hour furosemide reduced the number of times blood was observed compared to the 24-hour treatment, and the BAL results suggest the 24-hour treatment is not as effective as the four-hour treatment in attenuating the increase in RBC's associated with exercise in these horses with no known history of bleeding.

The second project done at Washington State University under the direction of Dr. Warwick Bayly took seven fit

fects are secondary to a decreased inspiratory resistance, lowered inspiratory muscle work and altered intrapulmonary pressures."

In the years following the initial study, Kansas State University did several more trials testing nasal strips, and Kentucky Equine Research, University of Califor-

nia at Davis, and Michigan State University are also among those that have researched the usefulness of nasal strips. They all reached similar conclusions.

In 2001 the KER study "Effects of an external nasal strip and furosemide on pulmonary haemorrhage in Thoroughbreds following high-intensity exercise"

was published in the *Equine Veterinary Journal*. During the study, eight Thoroughbreds were asked to complete four sprint exercise tests on a treadmill.

The study aimed to see what effects an external nasal strip, furosemide, and a combination of the two had on Thoroughbreds by assessing the red blood cell

Thoroughbreds that were known to be clinical EIPH patients during racing and look at seven different treatment protocols.

The target was to assess the efficacy of furosemide at the maximum and minimum dosage administered 24 hours prior to exercise compared to the conventional four-hour treatment prior to exercise. This required seven different maximum exercise sessions from all seven of the horses separated by two weeks of routine training. The seven treatment protocols were designed to separate all the effects of furosemide and the timing of its administration to pinpoint the differences in effect of each treatment component.

The study was a two-phase project: The first segment was to look at the components of treatment with horses performing only on a treadmill, where exercise could be controlled and the horses taken beyond their aerobic capacity (115% of VO₂ Max) and exercised to fatigue where they could no longer maintain a constant speed of exercise. Each of the horses was examined with the conventional endoscopic examination and with BAL RBC assessment post-exercise. But since the horses were known “bleeders,” the BAL counts compared differences in BAL numbers two days before exercise and BAL numbers post-exercise in addition to absolute RBC numbers to pinpoint further the effect of the treatment protocols on the “bleeding” occurring in these horses. Then with the results of these trials the horses were returned to the racetrack, trained for

an additional month conventionally, and ran a simulated five-furlong race from the starting gate with all horses receiving the most promising treatment selected by the treadmill trial data and competing against each other in the races.

All seven horses underwent the seven components of the study in a double-blinded, randomized fashion: placebo (saline), conventional (low dose, 250mg, 5ml) furosemide four hours pre-exercise, controlled water access only with no medication (maintenance water access for 24 hours pre-exercise), low dose furosemide (250mg, 5ml) 24 hours pre-exercise with free access to water, high dose furosemide (500mg, 10ml) 24 hours pre-exercise with free access to water, low-dose furosemide with maintenance water access, and high-dose furosemide with maintenance water access.

In the study of horses that were known bleeders (Washington State), the findings were as follows:

No treatment produced a statistically significant difference in the endoscopic bleeding score on the treadmill because all horses bled, and the differences on the 0-4 bleeding scale were not enough to show significant changes.

However, in the BAL’s assessment, where the counting range was much larger and more sensitive, the low dose (250mg) furosemide with 24-hour maintenance water was the only treatment that statistically significantly reduced the increase in the number of RBC’s in the BAL fluid after exercise.

So, it was the treatment that was selected for validation in the simulated races of the six horses, one race with low-dose furosemide and one race with the saline control. The horses were fit after the treadmill exercise, but they were trained an additional month on the racetrack before the simulated race. The races were among six horses going 1,100 meters (5½ furlongs) from the starting gate and were separated by two weeks of training between.

The results after simulated racing produced some interesting changes in results. The difference between the BAL RBC’s in the control horses and the treated horses narrowed, dropping the confidence of a treatment effect to 90% from 95%. This is below the traditional 95% significance threshold reached on the treadmill study but is still 90% certainty the low-dose furosemide with controlled water access lowered the BAL RBC’s during the simulated races. But, the endoscopic EIPH scores on the racetrack actually changed in the opposite direction; i.e., the bleeding was worse, and the endoscopic bleeding scores became statistically significantly lower with the low-dose furosemide, water-restricted horses when compared to the control exercise values.

In conclusion, it looks like low-dose 24-hour furosemide with controlled water access shows great promise as a replacement treatment for our conventional four-hour pre-race treatment for EIPH in horses that are bleeding. It was less effective in horses that were not known bleeders. **BH**

count in BAL fluid. A control—meaning neither treatment—was also performed.

“We conclude that both the external nasal strip and furosemide attenuate pulmonary hemorrhage in Thoroughbred horses during high-speed sprint exercise,” the KER researchers summarized. “The external nasal strip appears

to lower the metabolic cost of supramaximal exertion in horses. Given the purported ergogenic effects of furosemide, the external nasal strip is a valuable alternative for the attenuation of EIPH.”

The same year, Kansas State University’s study titled “Efficacy of Nasal Strip and Furosemide in Mitigating EIPH in

Thoroughbred Horses” was published in the *Journal of Applied Physiology*.

Five Thoroughbreds were put on a treadmill and tested at maximum effort four times under the following circumstances: wearing a nasal strip (NS); medicated with furosemide (Fur); wearing a nasal strip and medicated with

HEALTH ZONE

Nasal Strips



IMAGES COURTESY OF FLAIR NASAL STRIPS



Flair Equine Nasal Strips were developed by Dr. Ed Blach, left, and Dr. James Chiapetta, shown with his wife, Michelle

furosemide; and the control.

“Although both modalities (NS and Fur) were successful in mitigating EIPH, neither abolished EIPH fully as evaluated via BAL,” the study concluded. “Fur was more effective than NS in constraining the severity of EIPH. The simultaneous use of both interventions appears to offer no further gain with respect to reducing EIPH.”

Then, in 2004, Kansas State University issued another study in equine and comparative exercise physiology titled “Effect of Furosemide and the Equine Nasal Strip on Exercise-Induced Pulmonary Haemorrhage and Time-to-Fatigue in Maximally Exercising Horses.”

In this study, six Thoroughbreds were monitored while exercising on a treadmill at near-maximum speeds. Both furosemide and nasal strips increased the time it took for the horses to fatigue.

“Furosemide (FUR) and the equine nasal strip (NS) decrease exercise-induced pulmonary haemorrhage (EIPH) compared with control (CON) conditions in the Thoroughbred horse during near-maximal running trials,” the study concluded. “These findings demonstrate that both FUR and NS enhance time-to-fatigue and reduce EIPH to a similar degree during high-speed treadmill running to fatigue.”

In 2002, Michigan State University’s study “Effect of Commercially Available Nasal Strips on Airway Resistance in Exercising Horses” appeared in the *American Journal of Veterinary Research*.

Five Standardbreds and one Thoroughbred were exercised on a treadmill at speeds corresponding to 100 and 120% of maximal heart rate both with and without a nasal strip. As part of the study, their tracheal pressures, airflow, and heart rate were measured.

“During exercise on a treadmill, peak tracheal inspiratory pressure and inspiratory airway resistance were significantly less when nasal strips were applied to horses exercising at speeds corresponding to 100 and 120% of maximal heart rate,” the study concluded. “Application of the nasal strip pulled the dorsal conchal fold laterally, expanding the dorsal meatus.

“The commercially available nasal strip tented the skin over the nasal valve and dilated that section of the nasal passage, resulting in decreased airway resistance during inspiration. The nasal strip probably decreases the amount of work required for respiratory muscles in horses during intense exercise and may reduce the energy required for breathing in these horses.”

University of California at Davis and Kansas State University also studied horses that wore nasal strips in active training at

QUILLIN
Leather & Tack

Sale Halters (from) \$34.95
Lead Shanks (from) \$29.95
Sale Catalog Covers \$89.95

Plus MORE Great Custom Made Leather Goods
Full Service Repair & Engraving - All In Our Paris Shop!

CALL OR DROP BY OUR MAIN STREET SHOP
VISIT & ORDER ONLINE AT QUILLIN.COM
SINCE 1982 ... KENTUCKY'S LARGEST CUSTOM SHOP
WE SHIP WORLD WIDE

1929 South Main Street • Paris, Kentucky • 40361
(859) 987-0215 • www.Quillin.Com • facebook.com/QuillinLeather



Nasal strips are used in many disciplines, including three-day eventing

the racetrack. The first published its study, “Effect of an External Nasal Dilator Strip on Cytologic Characteristics of Bronchoalveolar Lavage Fluid in Thoroughbred and Racehorses,” in the *Journal of American Veterinary Medical Association* in 2004, while the latter discussed findings during the proceedings of the 53rd Annual Convention of the American Association of Equine Practitioners in 2007.

In California, 23 Thoroughbreds in active training at Golden Gate Fields Racetrack raced once with a nasal strip and once without a nasal strip. All of the horses raced on Lasix.

“Horses were grouped as having mild or severe bleeding on the basis of red blood cell count in BAL fluid after horses raced without the nasal dilator strip,” the study concluded. “Mean count when horses with severe bleeding raced without the nasal dilator strip was significantly higher than mean count when these horses raced with the strip. Mean count of lymphocytes in BAL fluid was significantly lower after horses raced with the external nasal dilator strip.

“Results suggest that use of an external nasal dilator strip in Thoroughbred racehorses may decrease pulmonary bleeding, particularly in horses with severe exercise-induced pulmonary hemorrhage.”

Meanwhile, Dr. Howard Erickson of Kansas State University presented “Review of Alternative Therapies for EIPH” at the AAEP convention.

From 1999-2000, almost 400 Thoroughbreds that wore nasal strips were evaluated at Calder Race Course in South Florida. Horses racing with the strip had a win percentage 3.4% higher than horses that did not wear a strip. Horses wearing a nasal strip also had a 15% decrease in the interval to the next race, compared with the race-to-race interval before wearing a nasal strip.

An outlier when it comes to studies involving equine nasal strips is one of the earlier ones conducted. Presented by the University of Illinois at Urbana-Champaign, “Nasal strips do not affect pulmonary gas exchange, anaerobic metabolism, or EIPH in exercising Thoroughbreds” ran in the *Journal of Applied Physiology* in 2001.

That particular study looked at seven Thoroughbreds that were tested twice—once with a nasal strip and once without—after they were exercise-trained in random order seven days apart.

“In both treatments, plasma ammonia and blood lactate concentrations increased significantly with exercise,” the study concluded. “Statistically significant differences between the control and the nasal strip experiments could not be discerned, however. Also, all horses experienced EIPH in both treatments.”

However, the study did not measure pulmonary gas exchange, and later there were also questions concerning whether the nasal strips had been properly placed on the horses involved.

Today, nasal strips are largely viewed as an accepted piece of equipment. They are seen in a wide variety of equine disciplines ranging from horse racing to the Olympics, and they are approved by the Fédération Equestre Internationale (FEI).

Nasal strips are easy to purchase and require no prescription. As with all other alternative therapies, it is important that those looking to use equine nasal strips buy them from reputable manufacturers and that they are used correctly. **BH**

Amanda Duckworth is a freelance writer based in Lexington.

PINKSTON'S
(est. 1937)

Leading Manufacturer of Sale Halters

Best Price Guaranteed

PINKSTON'S TURF GOODS, INC.
1098 WEST HIGH STREET, LEXINGTON, KY 40508
P: 859-252-1560 PLADD@PINKSTONS.COM
WWW.PINKSTONS.COM