

Stable
Management

VOLUME 31

EXTRA



**HOUSING
OPTIONS
to COMBAT
HORSE
BOREDOM**

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Housing Options to Combat Horse Boredom

Practical adaptations and alternatives to traditional stabling methods

Lucile Vigouroux, MS

As a horse owner, if you find yourself wondering about your stabled companion's happiness, you're not alone. In recent years scientists have likewise pondered and investigated domestic horses' physical and mental welfare. New research highlighting the benefits of accommodating horses' genetically ingrained needs is booming, and we are listening. Equestrians are opening their minds, some even their stall doors, leaving behind traditional single-

horse stabling in favor of more natural options such as group housing and track paddocks

Meeting Your Horse's Needs

To best provide for our horses, we must first understand what they need for optimal health, welfare, and longevity. Some basics—food, water, shelter, veterinary care—apply to all animals. Then, we dive into species-

specific needs. Horses evolved over the past 50 million years as foraging herbivores and social herd animals. Therefore, providing ample opportunities to move freely, graze, and browse while forming social bonds allows these innate needs to be met. While each horse is different, and we must be flexible in our management programs to accommodate various situations, providing a lifestyle aligned with the animal's nature offers many physical and mental benefits.

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EQUIOXX IMPORTANT SAFETY INFORMATION: As a class, non-steroidal anti inflammatory drugs may be associated with gastrointestinal, hepatic and renal toxicity. Use with other NSAIDs, corticosteroids or nephrotoxic medication should be avoided.

LEGEND IMPORTANT SAFETY INFORMATION: The following adverse reactions have been reported following intravenous injection: occasional depression, lethargy, and fever. Following intra-articular injection: lameness, joint effusion, joint or injection site swelling, and joint pain.

HYALOVET and HYVISC IMPORTANT SAFETY INFORMATION: A mild inflammatory response may occur post injection. For intra-articular injection in horses only. Do not use in horses intended for food. Caution: Federal law restricts this drug to use by or on the order of a licensed veterinarian.

SURPASS IMPORTANT SAFETY INFORMATION: SURPASS topical cream is only approved for use in horses and has not been evaluated in breeding, pregnant, or lactating horses, or in horses under 1 year of age. Do not exceed the recommended dose.

Equioxx® Tablets
(firocoxib) 57mg

Brief Summary: This information is not comprehensive. Before using Equioxx® (firocoxib) tablets, please consult the product insert for full prescribing information. The product insert may be obtained from your veterinarian or by visiting www.equioxx.com.

CAUTION: Federal (USA) law restricts this drug to use by or on the order of a licensed veterinarian.

Indications: EQUIOXX Tablets are administered once daily for up to 14 days for the control of pain and inflammation associated with osteoarthritis in horses.

Dosage and Administration: Always provide the Client Information Sheet with the prescription. The recommended dosage of EQUIOXX Tablets is one 57 mg tablet administered orally to horses weighing 800–1300 lbs, once daily for up to 14 days. For ease of administration, EQUIOXX Tablets may be given with food.

The overall duration of treatment with any firocoxib formulation in horses, including EQUIOXX Tablets, Injection or Oral Paste, should not exceed 14 days. Please see the package insert for EQUIOXX Injection or Oral Paste for appropriate prescribing information for those formulations.

Contraindications: Horses with a hypersensitivity to firocoxib should not receive EQUIOXX Tablets.

Warnings: For use in horses only. Do not use in horses intended for human consumption. Store EQUIOXX Tablets out of the reach of dogs and other pets in a secured location in order to prevent accidental ingestion or overdose.

Human Warnings: Not for use in humans. Keep this and all medications out of the reach of children. Consult a physician in case of accidental ingestion by humans.

Precautions: Horses should undergo a thorough history and physical examination before initiation of NSAID therapy. Appropriate laboratory tests should be conducted to establish hematology and serum biochemical baseline data before and periodically during administration of any NSAID. Clients should be advised to observe for signs of potential drug toxicity and be given a Client Information Sheet with each prescription. See Information for Owner or Person Treating Horse section of this package insert.

Treatment with EQUIOXX Tablets should be terminated if signs such as inappetence, colic, abnormal feces, or lethargy are observed. As a class, cyclooxygenase inhibitory NSAIDs may be associated with gastrointestinal, renal, and hepatic toxicity. Sensitivity to drug-associated adverse events varies with the individual patient. Horses that have experienced adverse reactions from one NSAID may experience adverse reactions from another NSAID. Patients at greatest risk for adverse events are those that are dehydrated, on diuretic therapy, or those with existing renal, cardiovascular, and/or hepatic dysfunction. Concurrent administration of potentially nephrotoxic drugs should be carefully approached or avoided.

NSAIDs may inhibit the prostaglandins that maintain normal homeostatic function. Such anti-prostaglandin effects may result in clinically significant disease in patients with underlying or pre-existing disease that has not been previously diagnosed. Since many NSAIDs possess potential for causing gastrointestinal ulcerations and/or gastrointestinal perforation, concomitant use of EQUIOXX Tablets with other anti-inflammatory drugs, such as NSAIDs or corticosteroids, should be avoided. The concomitant use of protein bound drugs with EQUIOXX Tablets has not been studied in horses. The influence of concomitant drugs that may inhibit the metabolism of EQUIOXX Tablets has not been evaluated. Drug compatibility should be monitored in patients requiring adjunctive therapy. The safe use of EQUIOXX Tablets in horses less than one year in age, horses used for breeding, or in pregnant or lactating mares has not been evaluated. Consider appropriate washout times when switching from one NSAID to another NSAID or corticosteroid.

Adverse Reactions: The safety and effectiveness of EQUIOXX Tablets was established in a relative bioavailability study, comparing EQUIOXX Tablets and EQUIOXX (firocoxib) Oral Paste. These studies were not performed to support the effectiveness of EQUIOXX Tablets. In controlled field studies, 127 horses (ages 3 to 27 years) were evaluated for safety when given EQUIOXX Oral Paste at 1 mg/lb (0.1 mg/kg) orally once daily for up to 14 days. The following adverse reactions were observed. Horses may have experienced more than one of the observed adverse reactions during the study.

Table 1: Adverse Reactions Seen in U.S. Field Studies with EQUIOXX Oral Paste:		
Adverse Reactions	EQUIOXX n=127	Active Control n=125
Abdominal Pain	0	1
Diarrhea	2	0
Excitation	1	0
Lethargy	0	1
Loose Stool	1	0
Polydipsia	0	1
Urticaria	0	1

In these field trials, EQUIOXX Oral Paste was safely used concomitantly with other therapies, including vaccines, antihelmintics, and antibiotics. The safety data sheet (SDS) contains more detailed occupational safety information. To report suspected adverse events, for technical assistance, or to obtain a copy of the SDS, contact Boehringer-Ingelheim Animal Health USA Inc. at 1-888-637-4251. For additional information about EQUIOXX, contact your veterinarian for animal drugs, contact FDA at 1-888-FDA-VETS or online at www.fda.gov/reportanimal.

Animal Safety: The safety of EQUIOXX Tablets was supported by a relative bioavailability study comparing EQUIOXX Tablets and EQUIOXX Oral Paste. CLINICAL PHARMACOLOGY, Relative Bioavailability Study, pharmacovigilance information, and target animal safety data for existing firocoxib containing products in horses. No additional target animal safety studies were conducted with EQUIOXX Tablets.

In a target animal safety study conducted to support the approval of EQUIOXX Oral Paste, firocoxib was administered orally to healthy adult horses (two male castrates and four females per group) at 0, 0.1, 0.3 and 0.5 mg firocoxib/kg body weight (1, 3 and 5X the recommended dose) for 30 days. Administration of firocoxib at 0.3 and 0.5 mg/kg was associated with an increased incidence of oral ulcers as compared to the control group but, no oral ulcers were noted with 0.1 mg/kg. There were no other drug-related adverse findings in this study.

In another target animal safety study, firocoxib was administered orally to healthy adult horses (four males or male castrates and four females per group) at 0, 0.1, 0.3 and 0.5 mg firocoxib/kg body weight (1, 3 and 5X the recommended dose) for 42 days. Administration of firocoxib at 0.1, 0.3 and 0.5 mg/kg body weight was associated with delayed healing of pre-existing oral (lip, tongue, gingival) ulcers. In addition, the incidence of oral ulcers was higher in all treated groups as compared to the control group.

Clinical chemistry and coagulation abnormalities were seen in several horses in the 0.5 mg/kg (5X) group. One 5X male horse developed a mildly elevated BUN and creatinine over the course of the study prolonged buccal mucosal bleeding time (BMBT), and a dilated pelvic to the right ureter. Another 5X male had a similar mild increase in creatinine during the study but did not have any gross abnormal findings. One female in the 5X group experienced prolonged BMBT, bilateral tubulointerstitial nephropathy and bilateral papillary necrosis.

Tubulointerstitial nephropathy occurred in one 3X female, two 3X male horses, and the 5X female horse discussed above with the prolonged BMBT. Papillary necrosis was present in one 1X male horse and the 5X female horse discussed above. Despite the gross and microscopic findings, all of the horses were clinically healthy and had normal hematology, clinical chemistry and urinalysis values.

In another target animal safety study, firocoxib was administered orally to healthy adult horses (three females, two male castrates and one male per group) at 0, 0.25 mg/kg, 0.75 mg/kg and 1.25 mg/kg (2.5, 7.5 and 12.5X the recommended dose of 0.1 mg/kg) for 32 days. An additional group of three females, two male castrates and one male per group, was dosed at 1.25 mg/kg for 32 days but was monitored until Day 147. There were treatment-related adverse events in all treated groups. These consisted of ulcers of the lips, gingiva and tongue and erosions of the skin of the mandible and head. Gross and microscopic lesions of the kidneys consistent with tubulointerstitial nephropathy were seen in all treated groups. Papillary necrosis was seen in the 2.5X and 12.5X groups. In addition, several 12.5X horses had elevated liver enzymes (GGT, SDH, AST and ALT). One 2.5X horse had increased urine GGT and urine protein levels which was due to renal hemorrhage and nephropathy. Gastric ulcers of the margo plicatus and glandular area were more prevalent in the 2.5X and 7.5X groups, but not seen in the 12.5X group. The group of horses that were monitored until Days 147-149 showed partial to full recovery from oral and skin ulcers, but no recovery from tubulointerstitial nephropathy.

Storage Information: Store at room temperature, between 59°–86 °F (15°–30° C). Brief periods up to 104° F (40° C) are permitted.

How Supplied: EQUIOXX is available as round, beige to tan, half-scored tablets, containing 57 mg firocoxib. EQUIOXX Tablets are supplied in 60 and 180 count bottles.
1 McCann ME, Rickes EL, Hora DF, Cunningham PK et al. In vitro efficacy and in vivo efficacy of a novel cyclooxygenase-2 inhibitor in cats with lipopolysaccharide-induced pyrexia. *Am J Vet Res*. 2005; Jul;66(7):1278-84.
2 McCann ME, Anderson DR, Briedau C et al. In vitro activity and in vivo efficacy of a novel COX-2 inhibitor in the horse. *Proceedings of the Academy of Veterinary Internal Medicine*. 2002. Abstract 114, p.785.
3 Data on file Made in France.

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COURTESY DR. KELLY YARNELL

Here's an example of a horse-friendly housing setup at Nottingham Trent University.

Assessing Your Horse's Welfare

The next step in optimizing your horse's quality of life is evaluating how his living conditions impact his well-being. We can recognize adequate welfare at its most basic level as the absence of pain, discomfort, and stress. In research settings ethologists (animal behaviorists) have at their fingertips an array of cutting-edge technologies to identify and quantify stress and pain levels. Just by being conscientious observers, we too can take steps to gauge our horses' welfare.

"Monitoring your horse's behavior is one way to assess well-being without the need for expensive, specialized equipment," says Kelly Yarnell, PhD, professor of animal and equine science at Nottingham Trent University, in the U.K. She studies equine physiology and welfare, notably the impact of housing design on well-being. Yarnell and other researchers consider horses' welfare to be less than ideal if they display these behaviors:

1. Stereotypies such as cribbing or weaving.
2. Aggression toward humans.
3. Unresponsiveness to things going on in the environment.
4. Evasive or undesirable behaviors when handled or ridden.
5. Stress-specific behaviors, including hyperactivity, hypersensitivity, and excessive vocalization.

"Often, when placed in suboptimal environments, horses develop an apathetic state identified by a depressive demeanor, sensory withdrawal, and a flattened posture," Yarnell says. "This can be an indicator of impaired welfare. On the flip side, it's important to also note positive behaviors. For example, increased resting time in sternal or lateral recumbency (lying on one's chest or side) is emerging as an indicator of well-being in the absence of negative behaviors."

The simplest way to catalog your horse's behaviors is to use a purpose-built ethogram. This past February, University of Pennsylvania researchers Sue McDonnell, PhD, and Catherine Torcivia, VMD, published a comprehensive "equine discomfort" ethogram with data compiled from thousands of horses observed over 35 years.

With such resources available, how difficult can it be to recognize a stressed, uncomfortable, or unhappy horse? Perhaps more than you might think, scientists have found. And here's why: Two major pitfalls exist in our current ability to accurately evaluate a stable horse's well-being. First, as was brought to light in a 2019 study by Torcivia and McDonnell, horses hide their discomfort-related behaviors by an average of 77% when people (in the case of their study, hospital staff) are observing them. Researchers have concluded this likely stems

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Talk to your veterinarian about EQUIOXX.

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Equioxx®
(firocoxib)



IMPORTANT SAFETY INFORMATION: As with any prescription medication, prior to use, a veterinarian should perform a physical examination and review the horse's medical history. A veterinarian should advise horse owners to observe for signs of potential drug toxicity. As a class, nonsteroidal anti-inflammatory drugs may be associated with gastrointestinal, hepatic and renal toxicity. Use with other NSAIDs, corticosteroids or nephrotoxic medication should be avoided. EQUIOXX has not been tested in horses less than 1 year of age or in breeding horses, or pregnant or lactating mares.

¹ EQUIOXX product labels and FOI summaries and supplements

² Kvaternik V, Pollmeier M, et al. Pharmacokinetics and metabolism of orally administered firocoxib, a novel second generation coxib in horses. J Vet Pharmacol Ther. 2007;30(3):208-217.



Housing that limits social interaction and requires the horse to live in semi-isolation has been a reported concern for equine welfare. Property managers might consider incorporating social contact into housing designs.

from an evolutionary survival instinct in prey animals to conceal any disability or injury when predators approach. Second, in a 2020 study the same authors revealed that horses' displays of discomfort are particularly subtle and easily missed by horse owners and professionals alike. These two factors combined make it harder for us to assess our horses' welfare, therefore limiting our ability to make changes necessary to help them. But such obstacles shouldn't stop us from striving to give our animals the happiest, healthiest lives possible. This is where the discussion of enrichment begins.

Stall Enrichment Options

Full of good intentions, some of us are quick to provide contraptions intended to render horses' otherwise-bland stalls more entertaining. Confined horses often find themselves surrounded by balls, toys, flavored bricks, treat dispensers, hanging ropes, and mirrors, all in the name of enrichment. If they are safely designed, such items do no harm and are popular with some individuals. But in 2019 French researcher Lea Lansade, PhD, shed fresh light on their true

role in equine welfare. Her research team observed 187 stalled horses for 50 days and disappointedly concluded that these gadgets seemingly fail to significantly alleviate the boredom and stress of solitary confinement. While ethologists recognize the value of enrichment items as potential complements to horses' living spaces, these objects cannot replace appropriate living conditions. Lansade reiterates that the essentials—free movement, social contact, and round-the-clock access to forage—must come first. Then we can add toys as perks.

Housing Design

A grumpy horse in the stall is probably also grumpy when ridden, Lansade's team concluded last year. We don't yet fully understand the cause-effect relationship of this observation, but we can certainly attempt to break what might be a vicious cycle back at the barn, starting with its very design. Yarnell led a 2015 study comparing the stress levels and behavior of 16 horses housed in four arrangements. The first setup had groups of horses turned out in paddocks. The second consisted of pairs kept

together in large bedded indoor enclosures. With the third option, horses were kept in separate box stalls but had visual, auditory, and tactile communication with their neighbors through openings in the walls. The fourth category isolated horses in individual box stalls with solid walls that prevented any social contact—a common setup in many American barns. Yarnell and colleagues found significantly higher stress levels in horses kept in housing situations that prevented contact.

"Housing that limits social interaction and requires the horse to live in semi-isolation has been a reported concern for equine welfare," she says. "These results indicate that incorporating social contact into housing design could improve the standard of domestic horse welfare."

In addition to providing much-needed interactions among horses, group housing generally comes with more acreage for the animals. More space translates to more movement, and horses are meant to stay in motion. Their physical and mental health depend on it. Studies by Werhahn et al. (2011) and Chaya et al. (2006) showed horses

expressed more restlessness and frustration when their turnout access was restricted.

Enrichment Through Foraging

While it's possible to meet all our horses' nutritional needs by tossing them hay and grain twice a day, we shouldn't neglect their behavioral need to graze and browse for forage. "Horses, which, again, have evolved as a social, free-ranging species, spend a significant portion of their day grazing in their natural habitat," Yarnell says. In the wild they can spend upward of 16 to 18 hours a day eating.

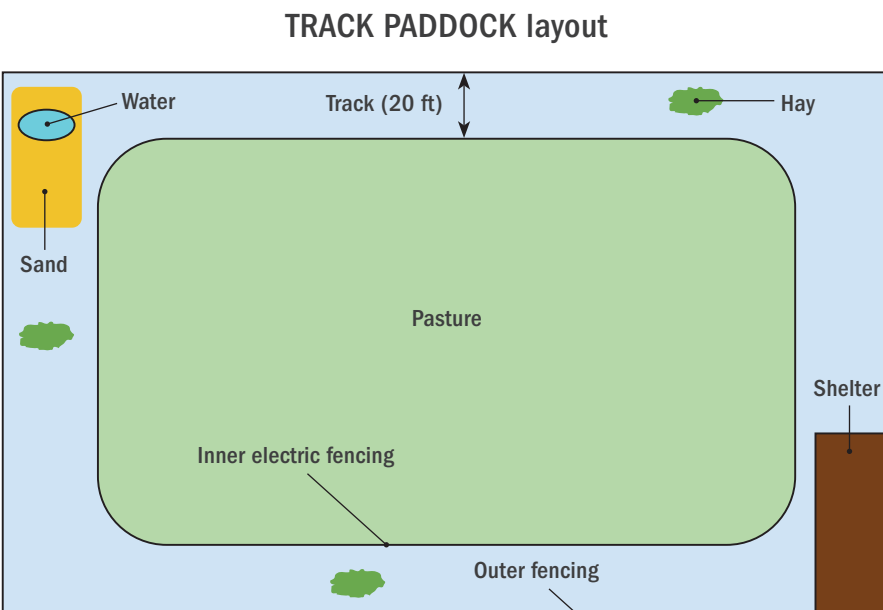
"With this in mind, allowing horses the ability to display natural (foraging) behaviors and providing suitable forage will benefit both their welfare and their digestive systems," she says. The type, quantity, and location(s) of forage can all be used to provide enrichment. Because the goal is to maximize the amount of time horses have access to fiber-based feed, hanging mixed-grass haynets in different parts of the stall or paddock can help stimulate the horse's mind while prolonging the supply.

Thinking Outside the Box

A key element of enrichment is mimicking the horse's natural environment. Track paddocks embody that goal and take it to the next level. Gabriele Neurohr manages the Haras Naturel du Plessis, a renowned track-paddock-based boarding facility in France. Ten years ago, unsatisfied with traditional stall/pasture boarding—mainly because her herd was dealing with excessive weight, thrush, and weak hooves prone to abscesses—Neurohr built a track paddock for the farm's 17 horses.

"Within three months we noticed drastic improvements in hoof health, body condition, and muscle development, not to mention behavior changes," she says. "Our horses became calm and pleasant to work with. We now have way fewer incidents involving spooking or energy outbursts from cooped-up horses. And issues such as colic, ulcers, and hoof abscesses are a thing of the past."

Neurohr saw her vet bills plummet after making the switch. Such improvements might make this innovative horse keeping alternative appealing and worth a closer look.



Track Paddock Setup

Natural horse keeping guru Jamie Jackson coined the track paddock concept "Paddock Paradise" in 2007. By design, a track paddock is a fenced network of paths. It generally involves creating an approximately 20-foot-wide track, with temporary fencing, that traces the inside perimeter of a paddock's permanent fencing. A track paddock that's too narrow can create crowding and cornering issues among residents. Inside this track horses are channeled to move, both because of the presence of pathways and the strategic placement of resources. At the most basic level, a track paddock contains several hay stations and two enlarged areas to accommodate a watering station and a camping station with shelter.

"The goal is to decentralize resources as much as possible," Neurohr explains. "In our experience, horses won't move if there is no incentive. Separate shelter, water, and resting areas, and provide as many feeding stations as possible."

Dispersing feed is especially important because it encourages foraging behaviors. The horses move as a herd along the track from one interest point to the next, constantly interacting with their environment and each other. Food, water, and shelter are the absolute necessities, but you can get creative with your track paddock design. Neurohr's features rolling areas and wooded sections. Some have scratching posts with brushes, others offer a pond or creek for

refreshment. Of course, safety remains paramount when designing your horse's living quarters.

If you're still unsure about the benefits of a track paddock over a 'regular' paddock, consider this experiment Neurohr and her team conducted: "We tracked the daily mileage of a horse in a 12-acre field and that of a horse in a mile-long track paddock using GPS technology," she explains. Their observations revealed a staggering disparity. The pastured horse only traveled an average of 1.5 miles per day, while the track paddock resident averaged a whopping 9 miles per day. Providing this kind of opportunity for movement without the rich grass that often comes with traditional pasture boarding is ideal for easy keepers and horses prone to metabolic issues. Track paddocks can also serve as more enriching, healthier alternatives to drylots.

Final Thoughts

No turnout solution is perfect. While advantageous in many ways, the track paddock does come with contraindications. For example, truly aggressive horses pose a safety risk, Neurohr cautions. Plus, in her experience the reality of setting up and maintaining a track paddock is expensive and takes just as much time and labor as running a traditional stall barn. But the benefits that arise from providing living conditions aligned with the horse's natural needs for movement, foraging, and social contact are priceless. **SM**