Understanding Equine Behavior Problems: Causes, Treatment and Prevention

The true character of the horse is never completely revealed in the stable or in the riding school, beneath the saddle or in harness. To know him as he really is we must watch him under the open sky, in the meadow, among his own kind, for there we can see how different each horse is from his companions, how the ancient law of the herd lives on, and how the hierarchy is created with barely an encounter.

— Hans-Heinrich Isenbart from The Beauty of the Horse

The significance of horses in our lives today cannot be overemphasized. While the original association between humans and horses was utilitarian, by the latter half of the 20th century many horse owners considered their horses companions or pets. Today, we know that horses in healthy environments can live very long lives. Veterinarians contribute greatly to this longevity by providing preventive and corrective services when needed.

In spite of the increased quality of life, thousands of horses are sold, permanently laid-up, discarded in some way, or unfortunately even sent to slaughter every year for nonmedical reasons.

Behavior problems all too often result in one of these options. Consider some possible reasons for this. Horses divide their time between activities that allow them to satisfy their basic requirements for food, water, movement and rest. When comparing the activities of free-ranging horses with those of stabled horses, we find a significant discrepancy between the time spent walking or standing and that spent eating. Free-ranging horses generally spend about 60% of their time eating and 20% walking, while stabled horses generally spend about 15% of time eating and 65% standing. Clearly, there is a substantial amount of time available with unsatisfied physiological or psychological needs.

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In recent years much of our equine literature and public discussion have focused on the complex issue of equine behavior. Barely a month goes by that an article on the subject is not featured in an industry magazine and the number of books on the subject seems to be ever-increasing. Experts abound, some real and some imagined. Horse whisperers, equine psychologists and animal communicators all express various opinions and methods for solving seemingly abhorrent equine behavior.

Amidst the din of these discussions, the underlying genetic traits of the animal—its instinctive behavior—and/or medical deficiencies that may be contributing to behavior problems are often overlooked. As caretakers of horses, we take full advantage of adapting them for an intended purpose by manipulating their basic natural instincts through conditional reflex training. In general, two of the most common reasons for failure in this effort lie either within our own inability to develop a training regimen that properly incorporates the horse’s natural instincts or our failure to recognize a medical problem as the underlying cause of an inappropriate behavioral response.

Given that, one should not be surprised that animal behavior has long been a part of the veterinary curriculum and that your local equine veterinarian knows a lot more about behavioral abnormalities than you may think. Unfortunately, people are often too eager to seek council regarding behavioral matters in far-ranging places and often overlook a source of information standing at the back bumper of the veterinary truck. That same veterinarian performs a range of procedures from simple vaccinations to complex medical or surgical tasks on an animal whose misbehavior can be counterproductive or even dangerous to the clinician. As such, veterinarians have an interest in promoting proper behavioral conditioning in horses.

Veterinarians are a valuable source of information and assistance in dealing with all problems of undesirable behavior in animals. This resource, while seldom delivered in a whisper, should not be overlooked. In this issue of our Horse Report we provide some excellent examples of where the equine veterinarian’s medical knowledge can be used to solve behavioral problems, both human and equine.

Dr. Jeannine Berger (right) of the UC Davis Equine Behavior Service, works with a needle-shy horse using desensitization and counter-conditioning techniques to change its behavior.
Veterinarians today are in the unique position of being able to offer the broadest possible range of behavior services, which may include medical diagnostics, surgical intervention or drug therapy. Their first approach to evaluating behavior complaints is to carefully rule out any physical discomfort as the primary cause. Whether or not the cause can be determined, and whether or not the root cause is physical or psychological, behavioral abnormalities in horses can warrant the expertise of a veterinary behavior specialist who has received specialized training in observing and interpreting animal behavior.

The study of animal behavior can be traced back through time to Charles Darwin, who was among the founders of the modern science of ethology. Ethologists study animal behavior by observing how animals function in relation to physiological, ecological and evolutionary aspects. They are especially interested in instinctive behavior, which is genetically programmed.

Ethology has been a rapidly growing field. Just in the 21st century, many prior understandings related to animal communication, emotions, culture, learning and sexual conduct—long thought to be well understood—have been revolutionized, and new fields such as neuroethology (the study of instinctive behavior with a focus on the nervous system) have been created.

Animals are also studied by comparative psychologists who are generally interested in learned behaviors. Comparative psychology sees the study of animal behavior in the context of what is known about human psychology; ethology sees the study of animal behavior in the context of what is known about animal anatomy, physiology, neurobiology and evolutionary history. The two approaches can be complementary rather than competitive, but they also lead to different perspectives and sometimes to conflicts of opinion.

Perhaps combining these approaches to the study of animal behavior, veterinary behaviorists offer another systematic approach for understanding and resolving behavior problems, taking into account both aspects—physiological and psychological—of the animal. In 1993, the American College of Veterinary Behaviorists (ACVB) was officially recognized by the American Board of Veterinary Specialties. One of the ACVB’s primary missions is to promote education and training in behavior medicine as well as standardize programs for veterinarians to become board-certified in this specialty.

The UC Davis School of Veterinary Medicine offers a Behavior Service that includes board-certified behavior specialists with extensive experience in companion animal, shelter animal and equine behavior. Highly qualified veterinarians provide behavior counseling based on a sincere interest in maintaining the human-animal bond.

Since 2005, the UC Davis Equine Behavior Service has had a steadily increasing caseload. About 25% of the horses seen have had medical problems that were directly responsible for behavioral abnormalities. Other main presenting complaints were as follows:

- Aggression toward other horses or humans, 33%
- Fear, 14%
- Foal rejection, 12%
- Procedure aversion, 10%
- Compulsive disorders, 5%

Horses and the Development of Behavior Problems

Generally speaking, the main complaints of behavior problems involve aggressive behavior toward humans and other horses, stable vices, and transporting problems.

The term vice or stable vice has been used as a general term for unwanted behavior for more than 100 years. In actuality, these vices are better categorized as stereotypic behavior, redirected behavior, learned behavior, physical problems, or the consequence of inappropriate amounts of stimulation.

Stereotypic behavior is characterized by repetitive, relatively invariant movement that has no obvious function such as grabbing a solid object with the incisors and sucking air into the pharynx or swaying from side to side for hours. These behaviors are not usually recognized in free-living feral horses. They occur in captive animals such as zebras, Przewalski horses and domesticated mustangs and therefore have been linked to management practices.

There are two main types of stereotypic behavior in horses: locomotor and oral. Repetitive locomotor behaviors are less common in horses kept in bigger

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pastures. This suggests that it may be important for horses to express certain gaits, that is, that turnout areas for horses are large enough for them to walk, trot and canter. It is beneficial for horses to be turned out for periods of time throughout the entire year, so that depending on geographical area pasture areas with nonslip footing may be necessary.

Stereotypic Locomotor Behaviors

Many stereotypic locomotor behavior problems arise from internal and external factors that affect a horse’s desire for locomotor activity. This results in the release of goal-oriented behavior involving movements that are prevented from completion by confinement of the stall. These include stall walking, weaving, pacing, pawing, stall kicking and head movements such as bobbing, tossing, swinging and nodding.

Medical causes should first and foremost be considered for these types of behavior to rule out any physical problems. For example, a horse that paws or stomps its feet may have pain due to lameness or to mite infestation, which causes itchiness and irritation. One study has shown an increased prevalence in gastric ulcers in young Thoroughbred horses that crib. These horses responded well to treatment of the ulcers by reducing the cribbing behavior. These examples underscore the importance of a full physical workup by a trained veterinarian to rule out any physical discomfort that may be causing or aggravating the behavior problem.

Stall walking can take the form of rapid walking and turning in the stall accompanied by neighing and frequent defecation, or it can be slow and methodical walking with no autonomic component. The rapid form is seen when two bonded horses are separated and is believed to be herd behavior or escape behavior to rejoin the herd. It is usually seen in individually stalled animals but can also be seen in group paddocks when a preferred associate is removed or when feeding or some other desirable event is anticipated. Some horses seem to be truly claustrophobic as they will behave normally when in pasture.

Weaving is an obvious lateral swaying movement of the head, neck, forequarters and sometimes hindquarters. The behavior is usually visible when the horse is standing with the head over the stable door, but it can also be performed inside the stable. Factors such as the presence of a social partner or feeding cues appear particularly important to the regulation of weaving.

Pawing is most often a prefeeding or feeding behavior. It is believed to come from the pawing motion used by horses that cannot get to feed due to snow or ice. If a horse paws to reach food, it is not surprising that when it paws in anticipation of being fed and then is fed that its behavior is being rewarded, or unintentionally reinforced. This behavior can be observed in many boarding facilities. Changing the feeding routine or training a horse that no pawing will result in feeding can reduce this problem. Some horses paw while eating most likely due to a highly palatable feed such as sweet feed. A less palatable diet may be helpful.

Stall kicking can arise in four situations: (1) as aggression toward an adjacent horse, (2) in anticipation of feeding, (3) as a stereotypic behavior that serves as enrichment, and (4) as an escape behavior. Stall kicking as an act of aggression should be treated as such. However, rather than punishing the behavior, which may only serve to increase frustration and anxiety, it would be better to change the horse’s motivation.

Sensitive management of all of these behaviors should consider reducing cues (i.e., changing routines such as feeding time, feeding sequence, person who feeds, and so forth), which could cause an expectation of feeding or exercise. Equally important, horses should be given adequate exercise, feed and social interactions.

Stereotypic Oral Behaviors

These include cribbing, wind-sucking, tongue and lip movements and wood chewing.

Cribbing is the most debated equine stereotypic behavior. It involves the horse grabbing a solid object, such as the stall door or fence rail, with his incisors, arching his neck, pulling against the object, and sucking in air. Like most vices, cribbing is thought to cause the release of endorphins in the horse’s brain, causing a sensation of pleasure. However, the few studies that
have been done on this have yielded conflicting results. There also is no supporting evidence that horses learn to weave or crib from other horses, but clusters of weaving or cribbing horses may occur due to management factors.

Cribbing behavior begins at weaning and is more likely to develop in foals weaned onto grain diets than pasture-weaned foals. Higher rates of gastric ulcers occur in cribbing foals, but it is not clear if cribbing results in ulcers or if cribbing helps horses cope with ulcers. Treatment of cribbing behavior may be necessary due to extreme teeth wear and potential colic risk. However, it may also result in increased frustration to the horse if the primary cause is not addressed. Methods that involve physical restraint often seem to cause further welfare problems and ultimately prove unsuccessful because the motivation for the behavior remains.

Wind-sucking is similar to cribbing in that the horse sucks in air but does not hold onto any fixed object.

Tongue and lip play are usually derived from feeding. Horses gather grass with their prehensile upper lips, which also can be used to push shallow snow layers aside. This behavior, like pawing, may occur only in association with feeding. Some horses protrude their tongue while riding, and physical causes must be ruled out before a behavioral diagnosis is made. Ill-fitting tack or rider errors must also be ruled out as possible factors. Diverting the tongue-play with shaped or tasting bits or a bitless bridle is suggested as one approach. Tongue ties are sometimes suggested for these horses but are not generally recommended because if improperly applied they can cause neurological trauma to the tongue and lead to permanent tongue protrusion.

There are a few specific indications among horses used for racing where tongue ties are used to keep the tongue properly placed inside the mouth. Tongue ties are carefully applied to prevent the tongue from getting over the racing snaffle bit (rendering the horse uncontrollable). There is also some evidence that their use can assist in preventing soft palate displacement during competition. Our recommendation is that they should be used carefully and judiciously for known and prescribed conditions by people who are knowledgeable in their use.

Wood-chewing is regarded as unwelcome because it is far more destructive than cribbing. Many ethologists consider this behavior a normal analogue of bark chewing, a normal feature of the repertoire of free-ranging horses. It is commonly accepted that horses fed low-forage diets spend significantly more time chewing wood than horses fed hay.

Preventing Stereotypic Behaviors

With our current knowledge, it is not possible to give a single cause for stereotypic behavior, since these behaviors are the final common pathway of multiple conditions and combinations of multiple factors. Not all horses in a given environment develop stereotypies. Successful treatment involves
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addressing all the causal factors, but there is no recipe for success in every case.

Transporting Problems

These can include problems with loading, unloading and/or traveling in a horse trailer. Horses must learn how to be loaded onto a trailer because it does not know how to do so instinctively. As such, a horse will benefit greatly from learning at a young age how to enter a trailer. This can be done when the foal is still with its mother and can follow her onto the trailer. There is no evidence that horses learn by observation, but because they are social animals they can benefit from social facilitation. Therefore, a calm and confident horse partner for teaching sessions can be of tremendous benefit.

When loading horses, it is important to set aside enough time and not to be in a hurry, since many problems arise from rushing horses, which elicits a flight or fight response. Initially, plan in advance every trailer loading session carefully. Be prepared with a safe trailer of adequate size for the horse being loaded. Park the trailer in a location that provides good footing around the entrance of the trailer as well as a quiet environment. Provide positive reinforcement to reward good behavior consistently.

Aggressive Behavior

Aggression is a normal behavior linked with any form of social interactions. Establishing a status within a group is necessary to decrease aggression and the amount of injuries. Aggressive behavior includes biting, kicking, circling and displacement. If a hierarchy is not maintained, each horse would need to affirm its position by increasing levels of aggression.

Human-horse relationships reflect mainly learned interactions with humans rather than a dominance hierarchy. Prevention of human-related aggression consists of allowing horses to interact adequately with other horses, especially during early development, and teaching proper ground-handling skills in a nonconfrontational approach. As an example, orphan foals seem to be especially prone to becoming overly pushy or even aggressive toward humans due to lack of proper socialization and interaction with other horses.

Other Types of Behavior Problems

Foal Rejection in Mares. Foal rejection is defined as a mare’s refusal to allow suckling combined with aggression toward the foal (laying back of the ears, tightening the neck and threatening to bite and kick). This is one of the most serious types of abnormal maternal behavior because the ingestion of colostrum during the first few hours of life is crucial to the health of the foal. Colostrum-deprived foals can suffer from failure of passive transfer and a subsequent risk of septicemia and death.

When no clinical reason for such behavior can be ascertained, current methods to treat this aberration consists of behavior modification which may include chemical and/or physical restraint of the mare, negative/positive reinforcement, desensitization and counter conditioning.

Procedure Aversion. Procedure aversion can manifest itself in many different forms but generally involves an intolerance for veterinary procedures such as injections (“needle shy”), oral medications, nasogastric tubing, genital examination, touch, having the feet picked up and so forth. This can be a tremendous problem when the horse needs to be seen by a veterinarian.

Ideally, young horses should be conditioned to cooperate with being handled in different ways for a veterinary exam. When rehabilitation or training is necessary, the approach may consist of straightforward behavior modification techniques adapted to the individual horse, including classical conditioning, desensitization and counter conditioning based on positive reinforcement.

Summary

Behavior problems can be an expression of pain or discomfort: collapsing due to sleep deprivation can be caused by a reluctance to lay down due to joint pain and lameness problems, gastric ulcers can trigger self-mutilation, pain in the poll area can cause an aversion to being bridled, and back pain can cause the horse to buck. In the cases we have seen at the UC Davis Equine Behavior Service, about 25% have had medical problems that were directly responsible for behavior abnormalities. Therefore, it is critical for a veterinary behaviorist to first rule out any clinical reason before tailoring a plan for behavior modification. Methods that are
used to treat behavior disorders in horses may include changing the animal’s environment, changing the animal’s social interactions, providing consistent and sufficient exercise, specific behavior modification techniques, and occasionally pharmacologic intervention.

Treatments based on punishment, including mechanical prevention, do not address the cause of the problem and only serve to inflict additional stress and pain. Similarly, treating behavior problems with drugs alone do not address the root cause of the problem.

One of the best ways to avoid behavior problems in horses is to prevent contributing factors from occurring. Knowledge of the psychological and physiological needs of horses based on observations of normal horse behavior in feral herds has helped us to better understand horses in domestication. More research is needed and is being undertaken to improve our current levels of understanding.

From Lost Cause to Bright Future

Within weeks of purchasing my yearling, he injured himself badly enough to be confined to a box stall. As the days and weeks went by in confinement, he became tense, bored and increasingly aggressive. Treating his injury, hand-walking him, and cleaning his stall meant enduring his bold attempts to charge me, bite, strike and bolt. Because he was so dangerous, the UC Davis Veterinary Field Service had to come out two to three times a week to heavily sedate him just to change his leg wrap.

After 2 long months, I thought my horse was a lost cause. I wanted to treat the injury and get rid of him, thinking he would always have these behavior traits. I consulted several trainers who only encouraged me to increase the punishment using stud chains and whips, which in turn increased our level of confrontation, making my daily battle even worse.

Although I had been riding and competing on young horses for 20 years, I felt totally unequipped and helpless to work with this horse and change his behavior. I did not think it was possible. That was when I was referred to Dr. Jeannine Berger because of her extensive training and expertise as a veterinarian and equine behaviorist.

Dr. Berger was able to accurately assess and diagnose the behavior and offer me specific tools and techniques to change the behavior, focusing on positive reinforcement, repetition and reward. The first day I tried the behavioral plan I saw results! Each day I worked on the behavior plan Dr. Berger gave me, and each day it got better.

Today, my horse Loki and I have a bond that I once thought was unattainable—mutual respect, trust and a willing attitude. I feel safe and confident, able to groom, hand walk, bathe, treat injuries, stand for the farrier, longe, ground drive, and now I am weeks away from starting him under saddle. I am so thankful to the UC Davis Equine Behavioral Service for giving us the tools for success that no one else did. I could not have achieved this without Dr. Berger!

Sarah Dow

Sarah changing the leg wraps on her horse.
Foal Rejection in the Postpartum Period: A Successful Behavioral Approach

Foal rejection is a refusal by a mare to allow her foal to nurse, leaving the foal’s nutritional and behavioral needs unmet. This behavior abnormality is more commonly found in first-time mares and is generally attributed to one or more of the following: lack of experience, endocrine changes, stress during parturition, or lack of contact from the mare with the foal during the sensitive period for bond formation. Normally, vaginal and cervical stimulation during parturition signals the release of oxytocin, which causes the dam to recognize her offspring and bond with it. Foal rejection presents unique problems that can be time-consuming and costly to resolve. Each case must be evaluated individually.

The most immediate consequence of foal rejection is the failure of the foal to receive adequate colostrum from his dam, known as failure of passive transfer (FPT). When a foal is born, it is essentially devoid of immunoglobulins, or antibodies. It is only through ingestion and absorption of these immunoglobulins via the mother’s colostrum that foals receive protection against bacteria in the environment. Without protective immunoglobulins, the newborn foal is highly susceptible to infection from environmental bacteria that would not ordinarily affect adult horses. Moreover, the timing in which the foal needs to ingest the colostrum is crucial—optimally within 2 to 3 hours after birth to be protected from sepsis.

Case Study from the UC Davis Veterinary Medical Teaching Hospital

An Arabian filly was born in a pasture in an unattended birth. The filly stood and showed a strong suckling reflex when the owners approached soon after birth, but it was unable to nurse due to the mare’s aggressive behavior. The mare attempted to kick and bite the foal when it tried to suckle, and even the owners were unable to milk the mare for colostrum because it behaved the same way toward them. The placenta was passed shortly after birth and was reported to be intact.

The mare and foal were presented to the UC Davis Veterinary Medical Teaching Hospital (VMTH) about 20 hours postpartum. Because of the delayed colostrum intake, the filly was presented with failure of passive transfer and was at increased risk for sepsis and other complications. The FPT was treated with IV plasma transfusion to provide immunoglobulins and other immune factors; sepsis was treated prophylactically with antibiotics. Supportive care was also administered to assist the filly until she was able to nurse from the mare unassisted.

The young Arabian mare was kept separate from her filly while specialists worked with her to change her behavior. A common approach to helping the foal nurse is made by restraining the mare. In this case, the handlers could not get close to the mare’s hind end without the risk of being kicked, and it was impossible for the handler to touch the udder to obtain milk for bottle feeding the foal. Therefore, a behavior modification approach was taken.

Behavior modification required determining the exact cause of the problem, in this case locating a potentially sensitive area on the mare’s body. By touching the mare all over her body, the clinician found that the mare would allow the handler to touch the udder without problems but that the skin fold in the flank, directly in front of the stifle, seemed to be hypersensitive.

Normal behavior in healthy foals is innate and is characterized by the foal seeking
a stimulus that is a vertical object with an overhang. Since the whole belly of the mare is an overhang, the foal may seek the udder in the sternum as well as in the inguinal area. The searching process of healthy foals consists in moving toward the mare and turning the head toward the flank, passing the nose medial to the stifle mostly with touching the flank. Most foals show head and neck bobbing behavior.

In this particular case, it became clear that the searching process of the foal caused the aversive reaction in the mare, resulting in the mare’s rejection. Therefore, it was important to desensitize this area completely so that the mare could handle not only being touched by humans and the foal, but also strong pushing movements in the foal’s searching process.

The clinician was able to determine that the mare’s sensitive area was a spot the size of the palm of a hand on the outer and inguinal side of her left and right flank. After several short sessions of desensitizing and counter-conditioning, the mare was able to tolerate touching and bumping of the area. In this way, the emotional response of the mare toward the foal was changed through classical and operant conditioning.

After two more days of strict observation and behavior modification, the mare and foal were released from the hospital. A recheck one and two months later revealed that the mare continued to allow the foal to nurse without problems and were turned out together.

The length of time it takes to desensitize and counter-condition a horse with a behavior problem is entirely dependent on the individual animal. Other factors and environmental stressors also can influence the success of this procedure.
Teaching a Horse to Accept Inhalation Treatment with a Face Mask: 
A Successful Behavior Approach

A 5-year-old Warmblood mare used for dressage and trail riding was presented to the UC Davis Equine Behavior Service after being diagnosed with recurrent airway obstruction—a medical condition that required twice-daily inhalation treatments. In order to provide the treatment, the horse would need to tolerate wearing a tight-fitting face mask over her nose for 20 minutes each time, with steroids being aerosolized into the mask. When the owner first placed the mask over the horse’s nose, the horse panicked and pulled backward. After that, the owner was not able to even approach the horse with the face mask in her hand.

To help the horse overcome its fear of the face mask, we used a behavioral approach adapted to the owner’s and horse’s needs to achieve compliance with the treatment. Behavior modification consisted of classical and operant conditioning using positive reinforcement to reward the desired behavior.

Initially, the horse would need to change her emotional response toward the inhalation mask, since her first experience with it was negative. The mare’s first reaction was to try to get away from the handler and raise her head up very high. It was helpful and safer to have two handlers available during the course of behavior modification. One handler held the mare loosely on her halter, while the second handler held the mask at a distance where the mare did not react to the mask. A target training technique was used to shape the behavior whereby the mare would touch the inhalation mask and receive a reward. Subsequent steps included having the horse put her nose into the mask to receive a treat.

After a short period of shaping the desired behavior, the mare allowed the mask to be put over her nose. Once she accepted the mask well, we applied one inhalation spray and the horse was immediately rewarded for standing still. After a few repetitions of immediate rewarding, the time between application of the medication and receipt of the treat was delayed. This process of behavior modification was
Veterinary behavior specialists who are also experienced horsemanship provide consultations to horse owners and veterinarians as part of the nation’s largest veterinary behavior program. The range of equine behavior problems addressed is broad and includes headshaking, head tossing, problems with loading, stall kicking, bucking, aggression, self-mutilation, narcolepsy, and a variety of stereotypic behaviors such as crib biting and weaving.

To make an appointment with the Clinical Animal Behavior Service, call (530)752-0292.

All horses should have a complete physical examination, including blood and urine testing, by their primary care veterinarian. Because the primary care veterinarian will assist the owner in the lifelong care of the animal, we encourage his/her involvement in the implementation of any treatment plan.

After making an appointment, you will be contacted by a clinician and a detailed history form will be sent to you to complete and return prior to the appointment. This information along with the horse’s management details will be used to establish a behavior profile before exploring the undesirable behavior. This allows the clinician to better understand the horse’s motivation and other unwelcome counter-strategies. In addition, you may be asked to send a videotape of the behavior so that both horse and behavior can be observed in the home environment (if this can be done safely).

The behavior exam usually takes up to several hours with the horse and client. Because many behaviors can be an expression of pain or discomfort, all somatic (physical) causes will be ruled out before embarking on a program of behavior therapy. The UC Davis Veterinary Medical Teaching Hospital is well equipped to perform many specialized exams such as ophthalmologic, orthopedic, reproductive and radiologic.

Once a diagnosis is made by the clinician, an individual tailored plan for the horse and owner will be discussed. The owner will be given written instructions on how to safely approach and implement the behavior modification techniques. We will also provide a detailed referral letter or telephone call to the primary care veterinarian. A three-month follow-up with the owner by phone or e-mail is included in the initial exam. Rechecks can be scheduled as needed and are often recommended.
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