

Is It Psychological, Physical, or Both?

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Behavior changes in the absence of obvious physical causes are often challenging to diagnose. The role of the veterinarian is to carefully rule out all possible physical root causes. Whether or not the causes can be determined and whether or not the root cause is physical or psychological, behavioral abnormalities provide an excellent opportunity for the veterinarian to recommend detailed monitoring of the behavior and if necessary, involve the professional assistance of an equine-behavior specialist. In many cases, detailed review of videotaped samples of the horse undisturbed in its stall or paddock ("stall video") can be an efficient aid in identification of physical discomfort. Author's address: Equine Behavior Lab, University of Pennsylvania School of Veterinary Medicine, New Bolton Center, 382 West Street Road, Kennett Square, PA 19348; e-mail: suemcd@vet.upenn.edu. © 2005 AAEP.

1. Introduction

A common and often considerable challenge when evaluating undesirable or abnormal behavior is to sort out physical from psychological primary and secondary factors. Almost any physical discomfort can result in behavior changes that are easily interpreted as primarily psychological (social, learned, or "normal" adaptation to suboptimal environmental conditions). Common example complaints include a negative change in attitude toward work or a general drop in athletic performance without recognized sign of a physical cause, a variety of types of episodes of hyper-reactivity, spookiness, or apparent panic with bolting or "freezing," and any of a variety of specific undesirable behaviors such as kicking, stomping, pawing, biting, tail-wringing or slapping, teeth-grinding, head-tossing, or self-mutilation at work and/or at rest without a readily apparent source of physical discomfort.

The objectives of this article are to outline a general strategy and to share practical tips for differentiating between psychological and physical primary

causes of behavior changes. The author's experience involves cases that are referred from primary care general large animal or equine practitioners or specialty groups within a veterinary teaching hospital when one or more physical causes have been ruled out and advice is being sought on other possible physical causes or on diagnosing and treating a psychological problem. The emphasis of this paper is on cases referred as likely psychological behavior problems in which further detailed evaluation by a team including a behavior specialist led to identification and treatment of a physical root cause.

2. General Approach

Our approach to evaluation of behavior complaints is to consider and rule out physical discomfort as the primary cause. Our general method includes reviewing medical, management, training, performance, and behavior histories, observing behavior, and evaluating suspected sources of physical discomfort (medicine, sports medicine, imaging, reproduction, etc.).

NOTES

3. History

Whenever possible, the medical, performance, and general management history is reviewed with owners, trainers, and referring veterinarians. It is useful to communicate directly with people who have been working regularly with and/or caring for the horse, including those who have observed the horse first hand. Whether discussing normal or problem behavior, we find it most useful to present questions that elicit specific descriptions of the problem behaviors as opposed to interpretive summary statements. The main objective is to reach as precise of an anatomical description as possible (e.g., “stallion turns head back to the flank, usually to the left but sometimes to the right, sniffs prepuce, nips at stifle, squeals, kicks out, and turns in a circle to the left” as opposed to “he pitches a fit, trying to get attention, tearing the barn down, getting even with the barn manager, and even hurting himself”). Video samples or photodocumentation, when available, can be helpful in developing a clear understanding of the specific problem behavior. Similarly, it is useful to establish precise descriptions of what precedes and terminates an episode: how does it start, how does it end, when and how did the behavior develop, when and where does it occur, when and where does it not occur, what is the observed frequency, are there any apparent ameliorating or exacerbating conditions, and can the behavior be predicted or produced.

Another goal that can be accomplished in history taken directly from the people working with the horse is to identify possible conditioned stimuli, reinforcement, and social or environmental conditions that may be involved in shaping or maintaining the behavior. If the root cause of a problem behavior is primarily psychological, then it should be able to be taught or prompted with social or environmental manipulation alone. In taking the history and throughout the evaluation of such a case, it is useful to keep in mind questions such as how could this behavior have been inadvertently prompted and/or shaped, is it possibly being reinforced by the consequences, what do you do when you see the behavior, and can the behavior be interrupted. In other words, how might operant or classical conditioning models specific to this horse’s situation explain the problem behavior in part or in whole. Another question to keep in mind when taking a history in this regard is could this particular behavior be taught to a horse, and how would that be done, deliberately and inadvertently. A related concept, if the problem behavior is achieving a goal for the horse (e.g., avoiding work), is it a fairly efficient method of achieving that goal? Discussion of this type with the people working with the horse can often provide insight into their understanding and skill with horse behavior, which may be helpful both in understanding the problem as well as in developing a plan for effective behavior modification.

4. Detailed Evaluation

Physical Examination and Direct Observation

We recommend that evaluation of a behavior problem begin with a physical examination with the specific behavior complaint in mind. Particular attention is paid to any injuries that may be associated with the problem behavior, specifically charting locations of any lesions or blemishes. This can also be a good opportunity to observe the general temperament and compliance of the horse and the handler-horse interaction, which is potentially relevant to the behavior problem. If the behavior occurs predictably or can be reliably provoked with challenge situations, direct observation of the problem behavior can be very helpful.

Direct Observation and Videotaping of the Horse in Demonstration and Challenge Situations

In some cases, the frequency and predictability of the problem behavior or the history of provocation make it practical to try to directly observe the problem behavior. For example, for a horse with a history of reliably collapsing during saddling, a demonstration (or partial demonstration) may be staged for direct observation and videotaping for review.

Multi-Hour or Multi-Day Continuous Video Samples

In many instances and in many types of behavior complaints, we find that a multi-hour or even multi-day sample of videotaped behavior of the horse undisturbed in a stall or small paddock can be helpful in identifying a specific physical discomfort or determining if the problem is physical or behavioral. There are many advantages to the use of multi-hour videotaped samples compared with direct live observation. Some key advantages can be summarized as follows:

- Observation of the horse’s behavior over a longer period than is practical for direct observation enables identification of infrequent behaviors.
- Similarly, hours-long samples viewed over a shorter time span often enables the detection of repeated subtle signs of discomfort.
- Problem behaviors or episodes can be reviewed multiple times, using real-time, slow-play, and even frame-by-frame mode to evaluate the elements and details. Examples of problem behavior can be reviewed with owners and with consulting specialists.
- Certain abnormal behaviors and patterns of behavior appear to be more readily recognized when viewed in fast forward than at real time. For example, postural sway associated with various neurologic conditions or abnormally frequent weight shifting associated with limb, back, or abdominal discomfort typically is much more conspicuous when viewed at fast

forward than when observed directly or viewed from video at real time.

- Associated environmental events can be identified that appear to precipitate, exacerbate, or ameliorate problem behavior. Many problem behaviors occur in association with particular events, for example, in association with feeding time or before and/or after work. Evaluation of repeated 24-hour samples enables identification of these patterns.
- In most situations, hours-long or longer video sampling enables evaluation of the horse with and without human presence and handling. Human presence and associated events can often either worsen discomfort, or distract a horse from apparent discomfort.
- The frequency, duration, and severity of a behavior problem can be compared over time, especially to evaluate effectiveness of treatment, by repeating samples under otherwise standard conditions.
- In addition to identification of specific problem behavior, evaluation of hours or days-long samples enables assessment of the general normalcy and comfort of the horse. This is not only useful in determining whether the root problem is physical or psychological, but can be useful in advising clients on the welfare status of the horse.

Video sampling can be done with the horse in a stall or small-paddock situation using a video camera with a wide-angle lens that can span the entire space and adequate lighting. Inexpensive ordinary consumer models of video equipment available from second-hand or discount sources are adequate to obtain good samples. Table 1 lists the equipment and supplies we used to obtain video samples. For reasons described in the footnote of Table 1, videotaped samples are recorded in the ordinary continuous recording mode rather than in a time-lapse mode.

Samples are viewed on a standard monitor. Tapes are viewed at fast forward, stopping and rewinding for real-time viewing of any periods of interest. At fast forward, a T-200 recorded at super long play (SLP) mode yields ~630 min (10.5 h) of tape when viewed at 22 times real speed without pause or stops and examining the tape takes ~30 min. With stops, rewinding, reviewing, and note-taking, an experienced technician generally requires 1 h to review a single 10.5 h taped sample. For a standard 24-h sample, we typically use one of three combinations: three T-160 videotapes, two T-180 and one T-120 tapes, or four T-120 tapes. In any of those combinations, viewing and basic note-taking of the 24-h sample requires 2–3 h of technician time. These typical viewing times are for obtaining basic information for the general report shown below along with notation of times and capture of example footage. The estimates do not include the time required for a detailed time-based quantitative analy-

Table 1. Equipment and Supplies for Obtaining Stall Videos

VHS or VHS-C color* video camcorder with wide-angle lens and time/date feature* to obtain the image (\$200–\$300 used, \$200–\$600 discount retail).
VHS video recorder (VCR) or monitor/VCR with SLP continuous recording mode [†] to record sample (\$50–\$400 discount retail).
T-120, T-180, or T-200 VHS video cassettes to record 6–, 8–, or 10–h samples per tape, respectively, in SLP–recording mode
Video tripod or camera mount to hold camera stable for hours
Extension cord, power strip, and cables to connect camcorder to VCR
Cable ties and duct tape for securing cords
Labels and marking pen

*Common to almost all models made after 1990.

[†]Continuous recording rather than time lapse is essential for this purpose. Time-lapse recording is a series of still single frames or continuous samples recorded at a fixed time interval. Consumer-grade recorders that have time-lapse features typically have one or more options for the time-lapse interval and sample length (e.g., 1 s recorded at 1-min intervals, 1 s recorded at 1-h intervals, or 1 min recorded at 1–h intervals). More sophisticated time-lapse recorders (usually professional grade equipment) can be programmed to set the recording interval and sample length. Although time lapse enables a single videotape to record over a very long time, short samples at intervals will miss all or part of the behaviors of greatest interest.

sis with exact frequencies and durations of a variety of measures or the construction of a quantitative time budget. For clinical purposes, it is usually not necessary to do the more detailed video analysis, which can take up to several hours to evaluate a 24-h sample.

Table 2 summarizes examples of behaviors indicating physical discomfort that can be seen on these “stall videos” as well as examples of specific diagnoses that have been reached with follow-up examinations. Table 3 summarizes our reference ranges for stalled horses. These are based on clinical and research experience. We also find that a good understanding of natural behavior of horses is helpful in identifying unusual behaviors. Recommended references are Houpt,¹ McGreevy,² McDonnell,³ and Waring.⁴

Figure 1 is an example of our basic “stall video” report form that we use as a template. In practice, this report form is more or less custom modified for each case.

5. Follow-Up Specialty Examinations

Depending on the history, physical examination, direct observation, and video sample results, we formulate a step-wise plan for follow-up examinations and consultations, including services such as cardiology, medicine, dermatology, reproduction, sports medicine, and imaging. We often conclude that, especially with referral cases, imaging procedures such as endoscopy and nuclear scintigraphy are the most efficient approach when done early in the plan. We find it useful for one or two clinicians to serve as a primary clinician to coordinate communication

Table 2. Example Behaviors Observed in “Stall Videos” and Possible Physical Causes

Specific Behavior Observation	Possible Physical Problem or Discomfort	Example Diagnoses
Apparent reluctance to lie down and/or difficulty lying down or getting up	Limb pain, neck or back pain, sore feet	Joint disease, fractured pelvis, neurologic disorders, back pain
Partial or full collapse		
Forelimb bucking or falling to knees	Central nervous system (CNS) disorders, cardiac dysfunction, recumbent sleep deprivation	Narcolepsy, cataplexy, epilepsy, inability to get down and up for recumbent rest
Hindlimb collapse	Neuropathy	Cervical vertebral malformation (CVM), equine protozoal myeloencephalitis (EPM)
Forelimb and hindlimb collapse	CNS disorders, cardiac dysfunction	Narcolepsy, cataplexy, epilepsy, CVM
Stumbling, collapse when startled	Neurologic disorders	EPM
Seizure	Neurologic disorders	Epilepsy, EPM
Treading when recumbent	Neurologic disorder	Seizure
Altered mentation	CNS disorders	Narcolepsy, epilepsy, trauma, tranquilization, fluphenazine toxicosis ^{6,7}
Ataxia	Neurologic disorders	EPM, CVM
Leaning hindquarters or side into wall, fence, or corner	Neurologic disorders, hindlimb pain	Narcolepsy, EPM
“Non-physiologic” postures		
Head tilt	Head discomfort, neurologic disorder	Vestibular disease, neoplasia, EPM
Head held lower than normal	Neck discomfort, weakness	EPM
Limb position not “corrected” from far forward or back, limbs crossed, or limb “wide”	Neurologic disorder	EPM, CVM
Stiff gait	Muscle soreness, back pain, limb pain	Lyme disease
Frequent pawing, rolling, dog-sitting	Abdominal pain	Gastric ulcers, colic
Tail lifting, slapping, wringing	Abdominal, urogenital discomfort	Vaginitis, urethritis, kidney stones, testicular torsion
Frequent urination or posturing and/or straining to urinate	Abdominal, urogenital discomfort	Vaginitis, urethritis, bladder stones, cystitis
Frequent defecation or posturing and/or straining to defecate	Caudal abdominal discomfort	Impaction, flatulent colic
Odd pawing or hind leg extensions into space, odd neck extensions with head tilt, glazed eye, “spacey” gaze	Extra-pyramidal signs	Fluphenazine toxicosis ^{6,7}
Hind leg lifting, drawing stifle toward body	Abdominal, pelvic discomfort	Kidney stones, bladder stones, inguinal hernia, colic, jejunal abscess, gastric ulcers, cystitis, pelvic fracture, genital trauma
Kicking out with one or both hindlimbs	Abdominal, pelvic discomfort	Kidney stones, bladder stones, inguinal hernia, jejunal abscess, gastric ulcers, cystitis, testicular torsion, vaginitis, genital trauma, seminal vesiculitis
Kicking toward abdomen	Abdominal discomfort	Kidney stones, bladder stones, inguinal hernia, jejunal abscess, gastric ulcers, cystitis, testicular torsion, genital trauma, seminal vesiculitis
Stomping, forelimb or hindlimb	Skin irritation, abdominal discomfort, fasciculations	Chorioptic mange, back pain, myopathy
Throwing head or biting at dorsal midline	Back pain, skin irritation	Muscle soreness, Lice
Throwing head or biting at abdomen	Abdominal pain	Colic
Throwing head or biting at shoulder, chest	Pain, discomfort	Myopathy
Throwing head or biting at flank	Abdominal, pelvic pain	Kidney stones, bladder stones, inguinal hernia, jejunal abscess, gastric ulcers, cystitis, testicular torsion, seminal vesiculitis
Biting at legs, rubbing one limb against another	Pain, skin irritation	Laminitis, degenerative hock disease, chorioptic mange
Shifting weight frequently on hindlimbs*	Foot pain, back pain, caudal abdominal discomfort, pelvic discomfort	Pelvic fracture, laminitis
Shifting weight frequently on forelimbs*	Foot pain	Navicular disease
Shifting weight frequently from the forelimbs to the hindlimbs†	Limb pain, back pain	Laminitis, sore back

Table 2. (continued)

Specific Behavior Observation	Possible Physical Problem or Discomfort	Example Diagnoses
Sudden interruption of quiet eating or resting, as if startled	Sharp intense pain	Kidney stones, seminal vesiculitis
Muscle fasciculation at shoulder, flank, or hindquarters	Myopathy, mini seizure	Myopathy, epilepsy
Head movements and non-physiologic postures		
Jerking up and down with snorting, nose-flicking, nose-rubbing	Trigeminal irritation	Photoc headshaking syndrome (trigeminal neuralgia)
Figure-eight head toss	“Frustration” with any type of physical pain, usually intermittent acute	Kidney stones, testicular torsion
Apparent reluctance or discomfort to forage with head high (e.g., from elevated hay rack)	Neck discomfort	Trauma
Frequent rolling	Abdominal pain, skin irritation	Colic, lice
Teeth grinding	Extreme physical pain, CNS neurologic	Gastric ulcers
Lip quivering, repeated yawning outside usual rest context, repeated flehmen response without olfactory stimulus context, frequent lip licking, lip smacking, sighing	Sudden intermittent or chronic pain, irritation	Colic, small airway disease, seminal vesiculitis
Hyper-reactivity to visual, auditory, or tactile stimulation	Pain, CNS, trigeminal stimulation	Trigeminal neuralgia
Frequent masturbation (>36 episodes per 24 h for stallions and >24 episodes per 24 h for geldings)	Pain, genital irritation	Laminitis, genital trauma
Rubbing hindquarters against objects	Tail, anal, vaginal irritation	Parasites, vaginitis, clitoral inflammation

*On fast-forward viewing, a rhythmic side-to-side rocking or sway at 1–5 s intervals (20 s–2 min real time) distinct from normal standing rest and standing sleep. During undisturbed, normal standing rest, the hind quarters remain relatively motionless for intervals of ≥30 s of viewing in fast forward, which at 22 times real time represents >10 min real time.

†On fast-forward viewing, a rhythmic rostral-caudal rocking is distinct from normal standing rest and standing sleep.

among the various services or consults and to lead the client through the diagnostic plan. In our facility, this is usually the admitting clinician (usually sports medicine, medicine, reproduction, or surgery) and/or the behavior clinician.

6. Examples of Common Behavior Complaints

Certain types of behavior patterns are especially difficult to determine if the root cause is physical or psychological; these cases are commonly referred for

detailed evaluation. Three examples are discussed: a change in attitude and performance, a variety of types of episodes of hyper-reactivity, spookiness, or apparent panic with bolting and “freezing,” and self-mutilation.

Change in Attitude and Performance

Psychologically stressful management, handling, training and work program, or social environment alone can certainly induce changes in attitude and

Table 3. Reference Ranges for Behavior of Horses Alone in Stalls or Small Paddock

Behavior ^{2,8}	Typical Frequency and/or Duration
Major activity changes (eating, standing rest, standing alert, resting recumbent)	30–110 episodes, typically 20–60 min per activity when undisturbed (includes stallions and estrus mares, which typically have more changes than geldings and non-estrus mares)
Standing rest	10–30 episodes, 5–120 min each, 8–12 h total
Recumbent rest	0–6 episodes, 10–80 min each, 0–6 h total
Eating when fed hay 2–3 times daily or continuously	10–30 episodes, 5–30 min each, 4–12 h total
Drinking	2–8 episodes, 10–60 sec each, 1–8 min total
Urination	4–15 episodes (greater for mares in estrus and stallions in situations where marking behavior is elicited)
Defecation	4–15 episodes
Rolling	2–8 bouts, 2–8 rolls per bout
Spontaneous erection and masturbation	stallions, 18–36 episodes; geldings, 9–24 episodes

Equine Behavior Lab, New Bolton Center Videotaped Surveillance Sample	
Hospital case #: _____	Animal ID: _____
Breed: _____	Age: _____ Gender: _____ Use: _____
Owner: _____	Referring veterinarian: _____
Date/Time of sample: _____	Tape #: _____
Clinician requesting consult: _____	Purpose of sample: _____
Location/conditions of sample: _____	
General temperament and activity pattern:	
Interaction with humans:	
Interaction with other horses:	
Eating behavior:	
Urination:	
Defecation:	
Rest/Recumbency:	
Masturbation:	
Specific unusual/abnormal behaviors:	
Conclusions/Recommendations:	
Viewed by: _____	Date: _____

Fig. 1. Example stall video report form.

performance in a physically healthy horse and may adversely affect the horse's physical health. Gastric ulcers is probably the best example. Many times, a sour attitude is assumed to be psychological; however, underlying physical problems are eventually identified as the primary cause. We have seen many examples of physical problems over the years. One such example was a race mare whose performance

diminished and attitude soured to the point that she aggressively refused to work and was retired to be a broodmare. On reproductive examination, a granulosa cell tumor weighing over 60 lb was identified. Another classic case was a mare that showed a sour attitude, and later, recurrent mild colic, whenever getting ready for work. After months, she became dangerously resistant to work and at times, self-

mutilative. Eventually, a jejunal abscess was found with a wire twist tie at the core.

Episodes

A common presenting complaint that can be challenging to diagnose is an “episode” involving changes in mentation, perception, or posture that clients may refer to as spells, “zoning out,” falling asleep, or “freezing.” Conditions such as narcolepsy, cataplexy, and epilepsy or myopathies can occur in mild and infrequent episodes that go unrecognized. Minor episodes can be interpreted by owners and trainers as misbehavior, such as unwillingness to work. Because horses sometimes respond as if frightened by the episodes, the behavior may be interpreted by trainers as intermittent spookiness or “panic attacks.” The stall-video techniques described earlier can be extremely useful in obtaining examples of the behavior, but depending on the frequency of the episodes, it may take days to catch an episode. We find it worthwhile in many instances to persist, because these horses are often at a considerable risk of injury if used. If the behavior is seen in the undisturbed horse, it usually clarifies the cause immediately as physical; whether or not a specific diagnosis can be reached, it helps the owner or trainer understand that this is not a misbehavior.

Self-Mutilation

In the author’s experience, self-mutilation, including biting at the flank, chest, abdomen, or limbs, kicking at the body or at walls, or stomping, more often than not indicates current physical discomfort. This is particularly true in mares. In stallions and geldings, on the other hand, there seems to be two forms of self-mutilative behavior. One form is the result of current pain or irritation. The other less common form is self-directed inter-male aggression. Some of the elements of these two forms can be similar, but with careful evaluation, one can usually distinguish between them.

In the self-directed inter-male aggression form of self-mutilation, the sequence includes most or all of the elements of the natural interactive agonistic sequence that would occur between two stallions meeting under natural social conditions.⁵ The affected stallion typically sniffs his flank, groin, feces, or oily body residues on walls, gates, or doorways and then nips at his flank or testicles. This sequence is what two stallions would do in a typical inter-male head-to-tale posturing and marking sequence, except there is only one stallion and he is his own target of the sniffing and biting. The sequence often includes squealing or barking grunt vocalizations, striking, and kicking, just as would occur among two stallions. Usually the first and most common site of self-biting is the flank, but the stallion may also bite his shoulders, abdomen, chest, and limbs. This type of self-mutilation may become similar to a stereotypy in that it becomes fixed and

rhythmically repetitive in form. It may seem to be the result of boredom or frustration, because episodes tend to occur at similar times of the day when the animal is not doing other meaningful activities or being socially challenged. Like other stereotypies, such as weaving, episodes of this self-directed inter-male aggression form of self-mutilation typically begins slowly and may build to a frenzied rate of fixed repetitions. Stallions may spin violently as if chasing their tail.

In contrast, self-mutilation in response to physical pain or irritation does not usually include self-sniffing, sniffing of feces, or the inter-male type of vocalizations. Episodes often begin without warning, interrupting ongoing meaningful behaviors such as grazing or resting recumbent. In cases of sharp pain, episodes often begin quite explosively. Observers often describe the horse as responding as if it has been stung by a bee. The horse may spin in circles as if it is desperately trying to reach the site of discomfort. The spinning, although similar to the spinning seen in the inter-male form of self-mutilation, is usually shorter in duration, and it is typically interrupted by other behaviors that seem aimed at trying to reach the site of discomfort. Another distinguishing feature of discomfort related self-mutilative behavior is that there are usually less conspicuous signs of discomfort, such as leg lifting or occasional kicks toward the abdomen, interspersed between the major episodes. These minor signs often go unnoticed in casual observation of the horse, but they become more obvious when viewing long video samples, especially in fast forward.

We do see cases for which commonly used diagnostics for various conditions have been negative, yet serious physical problems are eventually identified as the root cause of self-mutilative behavior. One recent example was a young stallion with intermittent flank-biting, kicking, and bucking self-mutilative behavior. Episodes had been noticed when the horse was challenged socially by another stallion or when sexually excited and thwarted from reaching the mare. This behavior had been of some concern but had been present intermittently for several years and was accepted as “just stallion behavior.” When the horse was presented for evaluation of questionable semen quality, the manager asked if something could be irritating the testicle and provoking the episodes, which had worsened in recent months. Examination of the testicles failed to identify a problem that would account for the behavior. Evaluation of video samples as described above suggested episodic mild to severe caudal abdominal discomfort that at times interrupted ongoing eating and resting behavior. Several times per 24-h sample, the explosive reaction was judged to be life-threatening in stall confinement. In some instances, episodes were associated with posturing to urinate. Urinalysis and hematology values were within the normal range. On transabdominal ultrasound examination, a 5-cm cluster of nephroliths

was identified in the left kidney. In post-nephrectomy video samples (2–5 days post-surgery), the stallion was free of self-mutilating behavior, and eating and resting behavior patterns returned to what is normal for a stalled stallion.

Stall or paddock videotaping as described earlier can be extremely efficient in differentiating the two forms of self-mutilation. It can also provide insight into the location and severity of the discomfort. Episodes may occur so quickly, and sometimes so explosively, that it is difficult to discern what is bothering the horse. Video evaluation usually reveals behavior occurring between episodes that gives insight into the site of the problem (e.g., the horse may turn the head toward or nuzzle or gaze toward the site of discomfort).

7. Additional Comments on Physical Versus Psychological Causes of Behavior Change

- The expression of undesirable behavior, whether physical or psychological, seems to be affected by a novel environment, either worsened or improved. This can complicate the evaluation and identification of the primary cause.
- It is not unusual for a physical problem to be apparent only in particular work, social, or environmental situations. Common examples include horses that express the problem behavior (e.g., colic, head-shaking, or flank-biting) only when the owner/rider is present or when being tacked or prepared for work. Similarly, sometimes a physical problem is apparent only when the animal is socially challenged (e.g., stallions that show a problem behavior only when near another stallion or when exposed to mares, or mares that show a problem only when being teased by a stallion). This can lead to the conclusion that the behavior problem is primarily psychological. In many such cases, the root cause has actually been determined to be physical, but social or environmental events appeared to provoke expression of discomfort.
- Social and environmental conditions can also appear to distract the animal from problem

behavior. This can also cause confusion about the root cause of the behavior. The anthropomorphic interpretation can be that the horse is fine as long as he gets to do what he wants to do (e.g., the horse looks colicky until he is fed).

- In some cases, we find that a horse may have a number of seemingly minor physical problems, each of which alone would be judged unlikely to be the sole cause of a behavior problem. We sometimes conclude that the problems together are the cause of the behavior problem.
- In general, we find some horses to be extremely stoic in that they tolerate and work through considerable pain. This makes it easy to miss physical problems.
- We also find most horses to be sincere in their behavior in that the behavior quickly returns to normal when the behavior-changing discomfort is eliminated. In other words, a horse may have ample opportunity to learn that limping leads to less work; however, when the pain is eliminated, the horse does not continue to limp to reduce his work.

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