Continuing Education Article #6

Modifying Unruly Breeding Behavior in Stallions*

KEY FACTS

- Most stallions can be trained and handled to behave in an orderly, safe manner for in-hand breeding.
- 3 Unruly stallions are those that are overly aggressive in the breeding shed or that exhibit specific behaviors that make in-hand breeding inefficient or unsafe.
- Simple behavior modification can be effective in retraining unruly stallions; pharmacologic aids are rarely required.
- Truly savage stallions should be distinguished from simply unruly stallions: attempting to retrain savage stallions Is not recommended.
- Successful behavior modification involves eliminating undesirable habits without suppressing normal sexual behavior.

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Although most stallions are readily trained and handled in a manner that allows safe and efficient collection of semen or in-hand breeding of mares, more than 10% of stallions presented to our sexual behavior clinic exhibit what we refer to as unruly behavior.' This is characterized by overly aggressive breeding, usually coupled with habits that make the breeding process dangerous for the mare, stallion, and personnel. Specific unruly behaviors include rearing; kicking or striking the mare or handlers; resisting examination of the penis or testicles by kicking or moving away when touched; forcefully approaching the mare or dummy mount before being signaled to do so or despite signals to wait: thrusting the pelvis excessively, kicking, striking, or biting when the penis is washed; and thrusting with excessive force once mounted, which can lead to injury of the mare or stallion and malpositioning on the dummy mount.

In our experience, unruly breeding behavior is more common among stallions with inherently high energy and libido; however, bad breeding habits can develop in a stallion with a relatively calm temperament. The manner in which the stallion has been restrained and handled for breeding apparently often exacerbates or provokes unruly behavior in the breeding shed. Related handler factors include giving unclear signals to the stallion, applying discipline based on unreasonable expectations for breeding-shed demeanor (e.g., jerking on the shank when the stallion vocalizes or prances in place), providing inconsistent breeding-shed protocol, failing to reinforce desirable behavior, and applying inappropriate discipline (ill-timed, too harsh, prolonged, too little, or unsuited to the type of disobedience).

Unlike simply unruly or misbehaved stallions, savage (so-called killer) stallions viciously attack handlers ot other horses.[2] For savage stallions, we advise euthanasia rather than ordinary handling or retraining. If owners insist on breeding savage stallions, we recommend management in bull-stud conditions, in which people are at minimal risk of direct interaction with the

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stallion. In our experience, most savage stallions are described as well-mannered in breeding situations, with generally calm, compliant, and gentle temperaments. Vicious attacks are sporadic, sudden, and usually unprovoked and are not necessarily associated with breeding.

Relatively simple behavior modification procedures are typically effective in retraining stallions presented to our clinic with unruly behavior problems. Usually, less than one week of brief (5- to 15-minute) daily sessions are required, at the home farm or at our specialized facility. Even in the most fractious stallions, the training time for horse and handler often totals less than one hour. This article describes general principles and procedures for modifying unruly behavior and presents two cases of unruly stallions retrained at our facility.

BEHAVIOR MODIFICATION

The successful modification of unruly behavior of breeding stallions is challenging because undesirable behaviors must be eliminated without suppressing normal sexual behavior. Such behavior to be allowed in the breeding shed includes vocalization, prancing gait, eagerness to approach a mare, stomping or pawing, olfactory investigation and/or gentle nipping, flehman response, erection, willingness to mount, insertion of the penis, thrusting, and organized dismount. It is not always intuitive or easy for horse handlers to recognize and tolerate the normally vigorous sexual behavior of stallions, particularly the high-pitched vocalization or prancing gait when approaching a mare. Rushing up to a mare, wheeling and kicking, rearing, striking, and biting are elements of equine sexual interaction that are generally not safe for in-hand breeding and that can be selectively eliminated.

Stallions can be readily trained to proceed at the handler's pace and direction as well as to tolerate procedures and associated delays during the precopulatory sequence. As a minimum, we expect most stallions to be trainable to tease in a safe and controlled manner, to tolerate washing of the penis or examination of the testicles, to approach a mare and mount at a controlled pace, and (if required) to serve an artificial vagina and use a dummy mount. We also expect training and routine handling to be done in a calm and systematic manner, without rough handling and commotion.

For initial evaluation of the behavior of an unruly stallion, we proceed with the specific routine at our clinic for natural breeding or semen collection. The mare is confined in stocks located in one corner of a 40- x 40-foot breeding shed. The stallion is brought into the shed and teased near the mare until erection occurs. He is then backed away from the mare, and the penis is washed with warm water. For natural breeding, the mare is removed from the stocks and positioned in the center of the room. For semen collection, the stimulus mare is positioned next to the dummy mount if the stallion will not mount the dummy. The stallion is again led forward to the mare (natural breeding) or to the dummy mare (collection of semen).

During the initial session, specific desirable and undesirable behaviors are recorded. Based on the observations, and with reasonable expectations, a strategy for training is designed. The behaviors to be encouraged or maintained and the behaviors to be eliminated are listed. The overall goal of the course of behavior modification is to train the stallion to be safely manageable in the breeding situation to which it will be discharged. We thus consider what facilities and equipment will be available, what type of breeding will be done, and whether the farm personnel are experienced in handling breeding stallions.

Depending on what type of training the handlers need to manage a particular stallion, we may simply discuss our procedures and recommendations, bring the handlers in for training at our facility, or work with them at their farm. We recommend that a particular time be set aside for each training session, with minimal distractions and pressures for breeding or obtaining semen for breeding on a particular time schedule.

In our experience, stallions learn the desired responses to a handler's cues most efficiently when a routine is established and handling is consistent. Multiple, brief sessions that end with the successful completion of specific short-term goals (as opposed to attempting to perfect the entire breeding sequence performance) may avoid frustrating the handlers and stallion. The behavior modification techniques we use are routinely applied in training horses in general. These techniques are directed toward altering specific unruly responses without discouraging the expression of acceptable sexual behavior. The stallion learns to associate the judicious use of punishment (simple verbal reprimands, pressure on the lead shank chain, and occasional slaps to the shoulder or belly) with specific undesirable behaviors.

Negative reinforcement is the application of an aversive stimulus until a desired response occurs. For a stallion that will not stand still for washing, for example, the verbal command "stand" is immediately followed by steady pressure on the lead shank (over the tongue) until the stallion stands still; pressure is then released. Simple hand or postural signals are consistently paired with punishment or reinforcement so as to become conditioned stimuli. During all

phases of teasing, washing, standing, and approaching, controlled behavior is positively reinforced by the handler's relaxed posture and verbal and tactile praise. As with all training, the timing of application of punishment or positive reinforcement is important. The more closely the handier's response follows a particular behavior, the more readily the horse will learn.

The physical facilities and staff used to train a difficult stallion are important considerations. We prefer an area with plenty of space that is free of obstacles, extraneous personnel, and animals. Although some handlers feel more secure and are effective with stallions confined to small spaces or with numerous handlers and assistants, we recommend a large breeding enclosure and a minimum of personnel.

During initial training of a stallion, and especially during retraining of an unruly stallion, the handler must have the skill and facilities necessary to prevent the stallion from forcefully gaining access to the mare and copulating. Ineffective handling that leads to such a situation inadvertently rewards the stallion for undesirable behavior and thus counteracts the training effort. At our clinic, the stallion handler initially works with the horse away from the breeding shed to familiarize the horse with the chain shank and to teach appropriate responses to simple, calm voice commands (e.g., "stand", "back", and "walk") and associated postural signals. This can usually be accomplished in a brief period just before entering the breeding shed; in particularly difficult cases, we devote at least one training session to establishing basic communication and discipline.

Particularly if the stallion has been charging ahead, it is essential to teach it to walk close beside the handler, not advancing the shoulder ahead of the handler (like training a dog to heel). At the beginning of the breeding situation, we routinely test the horse's willingness to obey commands or signals when it is still at a distance from the mare; a disobedient horse thus can be safely diverted and removed from the breeding area for further training. When a stallion exhibits an undesirable behavior, he is immediately returned to the last successfully completed step in the prebreeding procedure. If necessary, we move the stallion to a corner to stand quietly and await the handler's next cue, or we remove him from the breeding shed for a brief period. This technique is similar to the so-called time-out procedure used with children.[3] Access to a mare and eventual copulation apparently are the ultimate positive reinforcements for tolerating handling and prebreeding procedures.

Our laboratory experiments and clinical examinations often require numerous, varied procedures to be conducted in the breeding shed before the stallion is permitted to mount. With few exceptions, stallions readily learn these new routines and comply with the handler's cues. It is thus evident that stallions can learn to tolerate a complex prebreeding sequence if they are eventually permitted to copulate. We proceed with the expectation that each step in the prebreeding process will be accomplished. In some instances, we may elect to bypass one step during the initial sessions (e.g., washing of the penis) if it is causing undue delay.[4]

To learn efficiently the handler's cues and associate the handler's responses with its own behavior, the stallion must focus on a human handler despite the intrinsic excitement and distraction of the situation. Intense sexual interest and excitement, as is typically observed in unruly breeding stallions, can complicate the training process. Conditions that temper sexual arousal can help in maintaining the stallion's focus on handling. A novel environment usually partially suppresses sexual arousal in stallions.[5] Suboptimum sexual stimuli (e.g., an ovariectomized teaser mare, removal of the teaser mare, or use of a dummy mount) may contribute to an unruly stallion's early and rapid progress by reducing the level of sexual arousal and thus permitting the stallion to focus on the training.

Frequent breeding or semen collection (as often as two or three times daily) is typically helpful in retraining an unruly stallion. Frequent ejaculation and the associated simple physical fatigue apparently temper libido and increase manageability.' Keeping the attention of an especially difficult stallion is usually less difficult for an experienced handler than for a novice, at least during initial retraining.

Pharmacologic aids are sometimes considered in calming unruly stallions, particularly if an experienced handler will not be doing the initial retraining. The use of progestins has been suggested for handling aggressive or unruly stallions.' There is apparently minimal advantage associated with the use of an a-adrenergic agonist (detomidine hydrochloride) in training unruly stallions.* In light of our success with behavior modification alone as well as the physiologic and behavioral disadvantages associated with progestins and other sedative agents, we avoid pharmacologic aids at our facility.

We use and recommend simple methods of restraint and physical disciplinary aids. An integral aid to behavior modification and routine handling of stallions is the chain lead shank (Figure 1). The chain is run through the mouth and over the tongue or, for more effective control, through the mouth and back across the nose. This affords excellent directional control of the head. The handler usually requires training to regulate the tension on the chain bit effectively. A lightweight, light-colored plastic bat, used as

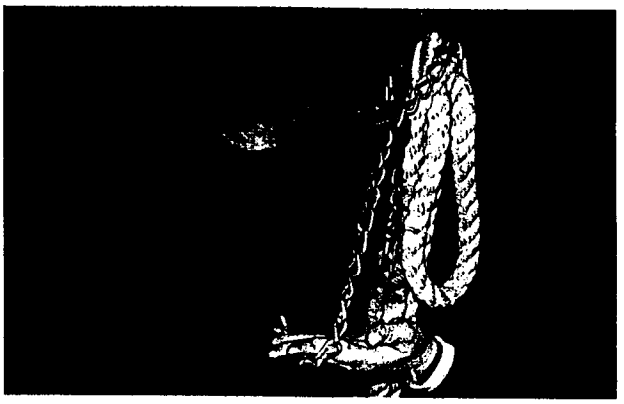

Figure 1A

Figure 1B

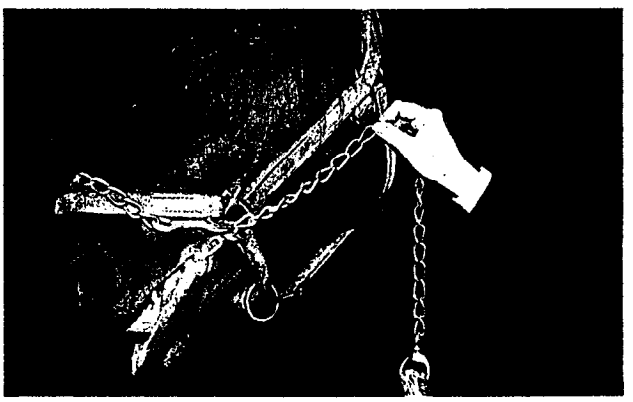

Figure 1C

Figure **1-(A** and **B)** The chain lead shank is passed through the mouth, over the tongue, and through the lower halter ring and is clipped to the upper halter ring on the far side. (C) Alternatively, the chain lead shank is passed through the mouth, over the tongue, through the lower ring on the far side, and back over the nose to the lower halter ring on the near side.

an exrension of the handler's or assistant's arm, may be waved in fronr of the stallion to partially divert its attention from the mare or dummy mount (Figure 2). The bat is infrequently used to deliver a relatively painless but effectively loud slap to the shoulder, chest, or belly just behind the forelegs.[9] Hitting the head typically elicits rearing and may lead to head-shyness.

We videotape the initial and subsequent training sessions, whether at our facility or at a farm. The videotapes often help in devising a behavior modification strategy, in reviewing the stallion's progress, or in showing owners and handlers who do not attend the retraining how we accomplished and maintained control of the stallion.

CASE1

A IO-year-old Thoroughbred stallion was donated to the School of Veterinary Medicine of the University of Pennsylvania because he was not controllable for in-hand natural breeding. The specific complaint was that the stallion rushed and leaped at the mare and could not be satisfactorily restrained by the handler wielding a crop or using a chain through the horse's mouth. No difficulties in general handling of the stallion were reported, although it was noted to be prone to lose weight, particularly during the breeding season.

At the initial training session, four people were present, including an experienced stallion handler. During subsequent sessions, the horse was handled by a person in training to handle stallions for breeding but with no specific stallion experience. A seasoned stallion handler was present to give advice.

During washing of the penis, the stallion was kept in the corner of the shed opposite the mare, facing away from her. If the stallion kicked or began pelvic thrusting, he was punished by a single word reprimand paired with a sharp tug on the lead shank. The person washing the stallion's penis used cool water, changed tension on the penis, or deflected the penis downward to discourage thrusting.

After the penis was washed, the stallion was encouraged to stand quietly in the corner facing the center of the shed until signaled to approach the dummy mount. This was done by standing relaxedly if the horse stood quietly; when the horse did not stand quietly, gentle pressure was applied on the lead shank and left shoulder while the word "wait" was calmly repeated. After the horse stood quietly for at least a few seconds, the handler signaled the horse to approach the dummy by saying "OK" and simultaneously dropping the hand from the shoulder of the horse and by taking a step toward the dummy mount. If the stallion pulled or charged ahead of the handler, he was punished with a single, short, downward jerk on the lead shank along with a single word command ("no" or "wait"). The horse was then

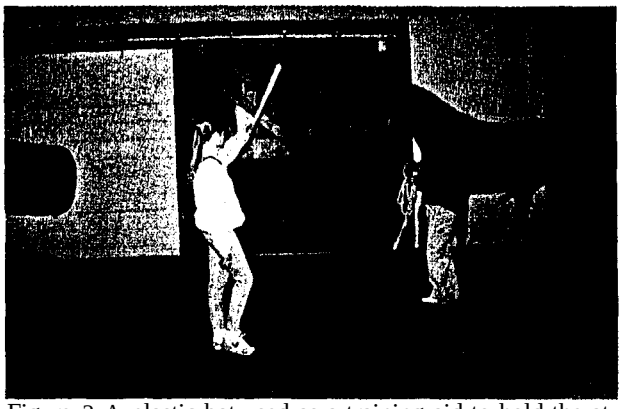

Figure 2-A plastic bat used as a training aid to hold the attention of the stallion or to deliver punishment for specific undesirable behaviors. Protective head gear (not shown) is used at some facilities and recommended to clients, particularly for working with unruly breeding stallions.

Figure 3—Method of stabilizing the artificial vagina against the dummy to discourage the stallion from traveling forward on the side of the dummy mount during thrusting.

backed or walked to the place where he was last reasonably responsive to the handler. When the stallion reared, tension on the lead shank was decreased; when the forefeet returned to the ground, the horse was immediately returned to the last successfully executed position in the procedure.

Steady downward pressure on the lead shank was used if the stallion rushed toward the dummy mount. The pressure was accompanied by a single-word command ("easy" or "slow"). When the horse proceeded at the handler's pace, the pressure was released; it was resumed if he rushed forward again. Pressure on the lead shank simultaneously punished rushing and negatively reinforced a controlled approach. The handler walked facing the stallion at an oblique angle on the stallion's left side, with the left hand on the lead and the right hand at the stallion's shoulder. An assistant, positioned just to the front and on the left side of the stallion, waved a yellow plastic bat slowly in front of him at eye-level during the approach to the dummy mount to partially divert the stallion's attention.

A desired modification of the stallion's breeding behavior in response to these techniques was achieved during the first session, The procedure was repeated once daily for five days, and semen was collected each day. The total time for each session of teasing, washing, and semen collection averaged four to five minutes. After these initial sessions, only two people were needed to collect semen from the stallion efficiently and safely.

Although the stallion had been used for natural breeding, he readily accepted the artificial vagina as well as the dummy mount on the first attempt, To train the stallion to mount the dummy, an ovariectomized stimulus mare was positioned next to the dummy. After the first five collection sessions, the stimulus mare was no longer used. On every occasion, the stallion readily mounted the dummy. His positioning on the dummy mount was rarely ideal; his hindlegs progressed under the dummy during thrusting, or he tended to move up the side toward the front of the dummy during his extremely vigorous thrusting. This forward movement was modified by a more controlled approach and mounting squarely from the rear and was further reduced by stabilizing the artificial vagina against the side of the dummy mount (Figure 3).

During the next two months, semen was collected at one- to four-day intervals and the stallion became as safe and controllable during breeding as the other stallions used in our research. The horse's demeanor in the breeding shed became less volatile after several sessions, and he was less likely to rear. He eventually did not need co be positioned at a distance from the stimulus mare during washing of the penis, although he continued some nondirected kicking with his hindlegs and moderate pelvic thrusting. The plastic bat was no longer used, The stallion occasionally adopted a sedate attitude and required more than one approach to the dummy before mounting. After two months of regular semen collection, 36 days elapsed before the next collection session. Nevertheless, there was no recurrence of undesirable behaviors. At this time, the stallion was reintroduced to a live mount mare for collection of semen: again, the original unruly behavior did not recur.

CASE2

A lo-year-old Thoroughbred stallion that had been used for natural breeding was presented to our facility because he was reportedly dangerous and difficult to handle during breeding and exhibited self-mutilative flank-biting behavior. The specific behaviors that made the horse difficult to handle were not detailed

TABLE I
Behavior Modification Progress in Case 2

Session	Total Time (minutes)	Stimulus Mare Present	Wash Attempts (per time)	Undesirable Behaviors			Corrections Required
				Kicking	Rearing	Striking	
1	20	Yes	15	>40	>20	>15	>75
2	14	Yes/no	6	3	23	4	~30
3	2.5	No	1/45 seconds	0	6	0	~5
4	8[b]	No/yes	1 / 100 seconds	0	0	0	0
5	7.3[b]	No	1/60 seconds	0	4	0	0

[a]Verbal corrections; stallion redirected with lead shank.
[b]Stallion reluctant to mount and thrust on dummy mare; abrasions on medial carpi.

further. To limit injury due to self-mutilation, the horse wore a metal muzzle that prevented self-biting but allowed eating and drinking.

The handling team for the initial and subsequent sessions consisted of an experienced stallion handler, a semen collection technician, and an assistant for washing the penis. The results of the first five behavior modification sessions are summarized in Table I. Specific undesirable behaviors were frequent rearing, wheeling (rapidly swinging the hindquarters around), intolerance of handling and washing of the penis, striking, kicking with the hindlimbs, and attempts to bite the handler.

After approximately 10 aborted attempts to touch the stallion's penis, goals for the initial session were modified from washing the penis to having the stallion stand quietly and permit the technician to simply touch, hold, and wrap a warm, wet towel around the penis. The handler helped introduce the stallion to this process by rubbing the horse's shoulder and belly with the right hand while holding the lead shank in the left hand. This allowed the stallion to habituate to tactile stimulation along the belly before the wash technician approached. When the stallion kicked, he was punished with a single, sharp, downward jerk on the lead shank; a single, firm verbal command ("no"); and/or a sharp, loud slap to the belly. Rearing was handled as in Case 1. When the horse wheeled, the handler countered the circular movement by turning the stallion's head and neck to oppose the hindquarters and by applying firm pressure to the shoulder.

After successful handling of the stallion's penis, the behavior modification session continued with the goal of controlled semen collection via a dummy mare. As in Case 1, the immediate goal was to eliminate the undesirable rearing, striking, kicking, and biting. The stallion was encouraged to stand quietly until signaled by the handler to approach the dummy mount at a controlled pace (as described in Case 1). With every inappropriate behavior, the stallion was returned to the last controlled location in the procedure; progress toward breeding was permitted only when the stallion tolerated the preceding step in the procedure. At the end of the first session, which was rather prolonged, semen was collected from the stallion. The degree of control during the approach to the dummy was considered to be unsatisfactory.

During the second session, the stallion was even more sexually aroused and rearing was more frequent (Table I). The stimulus mare was thus removed from the breeding shed (the stallion remained sexually excited but at a more manageable level), and the chain was repositioned through the mouth and back over the nose to improve control of the head. After these changes were implemented, the stallion reared only once. The penis was washed on the second attempt. The stallion waited quietly in the corner as directed by the handler; it was then permitted to approach. and mount the dummy for collection of semen.

For the third and subsequent sessions, no stimulus mare was used. The chain was placed only through the stallion's mouth. The horse's breeding behavior was considered to be acceptable and controllable, and the procedure was completed within a reasonable period.

By the fourth session, the stallion exhibited none of the undesirable behaviors. It had developed superficial skin abrasions over the medial side of each carpus (Figure 4), incurred during vigorous gripping and thrusting on the dummy mare. The stallion appeared to be reluctant to grasp the dummy with his forelegs, squealing and backing off when the lesions contacted the dummy. This apparent discomfort reduced his vigor and willingness to grasp the dummy mare appropriately with his forelegs, While mounted, he

Figure 4—Rub sore of the medial carpus, incurred during aggressive mounting of a dummy mare.

tended to put his forefeet on top of the dummy and stand with his chest high above the dummy. (We have observed similar postures in other stallions with carpal rub sores.) The horse mounted four times before the artificial vagina was safely applied and ejaculation occurred. For subsequent sessions, bandages were applied to both carpi; the stallion's mounted position improved.

Before presentation to our clinic, this stallion had been bred by natural cover only. Nevertheless, he readily accepted the artificial vagina and dummy mount on the first attempt. Because of his aggressive thrusting, he tended to travel up the near side of the dummy. The handler discouraged this shifting of position by attempting to hold the artificial vagina firmly at the rear of the dummy mare with the left hand while simultaneously applying pressure to the stallion's left flank with the right hand.

The stallion was discharged to the owner and manager before reintroduction to a live mount. Although significant progress had been made, further behavior modification should have been completed before discharge (including gradual reintroduction of the mare to the breeding shed). For the first month at the farm, the stallion's behavior was acceptable, even for natural cover. Subsequently, the behavior regressed to an unsafe level, which the referring veterinarian attributed to inconsistent and rough handling at the farm.

CONCLUSION

These two cases exemplify specific concepts that we stress when advising a client on training an unruly breeding stallion.' The stallion handler should establish basic control using the chain lead shank before entering the breeding shed. The breeding situation must be arranged so that the stallion i's unable to breed unless the prebreeding procedures have been performed to the satisfaction of the handlers. This usually requires a breeding area large enough to allow the handler to direct the stallion away from the mare if he attempts to charge forward.

For each stallion, the specific responses to be prevented or eliminated should be identified and a strategy devised for modifying them. Each person involved in the breeding situation should be apprised of the training goals and strategies and should know what behaviors are desirable or at least acceptable. Normal expression of sexual arousal should be permitted. The use of suboptimum stimuli and gradual reintroduction of standard stimuli can be helpful. Our experience suggests that a person who is good with horses can generally learn to handle aggressive stallions; nevertheless, an experienced scallion handler may be required for the initial training session. Additional information concerning the training of stallions is available in the literature.'

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