

The Effects of Pressure and Release Training on Equine Behavior and Discipline

Addison Edwards¹ and Deborah Vajner[#]

¹Terry Sanford High School, USA

[#]Advisor

ABSTRACT

In America, there are over 100,000 horse-related injuries per year (Mendell, 2006). It is important that all horses are properly trained to avoid dangerous accidents resulting from poor training involving the horse, rider, or spectators. This study aims to understand how a person should approach properly training a horse. It determines what training methods are the most effective and why it is important that owners understand how horses process discipline. Previous research indicates the common need for pressure, but fails to explore it as a training method. As such, a definite answer that explains how Pressure and Release Training affects equine behavior and discipline has not been determined. A physical experiment collecting and analyzing quantitative data was conducted in order to obtain the most accurate and specific results. Horses of various breeds, ages, sexes, and training levels were subjected to five different Pressure and Release Training exercises and scored on their completion (attempt > accuracy). Each horse was tested twice on separate days to ensure replicability. All horses completed every exercise successfully without conflict behaviors or refusal (50/50). The experiment reveals that regardless of traits, Pressure and Release Training is an effective training method that horses understand even without previously consistent training. However, it is vital that trainers understand how horses process discipline so that they know if the training is effective and low stress for the horse.

Introduction

In America, there are over 100,000 horse-related injuries per year (Mendell, 2006). Humans have maintained a connection with horses for the past three million years since they were originally domesticated for milk and meat in central Asia (OSU, 2015). Throughout human history, horses have been employed to pull wheeled vehicles such as carts, chariots, plows, and wagons. This led to the transition from pulling to being ridden for war, travel, hunting, and even communication such as the North American Pony Express (Tallis, 2012). Today, working horses are commonly used for police work, farm or wagon driving, hauling large loads, performance, or entertainment. It is imperative to mankind that these animals are properly and effectively trained to ensure the efficiency and progression of their work. Each horse should be trained in an effective manner to prevent dangerous situations involving the horse, rider, trainer, or spectators.

Training methods and aids are heavily debated among equestrians. Consequently, owners struggle when deciding effective yet ethical methods (Waran, McGreevy, & Casey, 2007). In the United States, there are no regulations in place to be able to purchase or train a horse (NYCBusiness, 2022). This means that the majority of horse owners are recreational trainers, rather than certified trainers, and have little to no professional education in equine training.

This study aims to understand how a person should approach properly training a horse. It will determine what training methods are the most effective and why it is important that owners understand how horses process discipline. This topic will be viewed from a physiological, technical, and psychological lens in order to efficiently determine a conclusion. This research will determine whether there is a common training method

that is most effective and efficient with horses, which will be discovered through physical research and experimentation with subject horses.

Literature Review

Overview

This review of literature looked at horse behavior and various training techniques, and explained why these methods may work for one trainer and be ineffective with another. It first explored disciplinary issues among horses and training methods intended to curb these behaviors in order to establish the behavioral responses from horses. Next, the usage of certain training and riding aids such as whips, bits, and auxiliary reins, and the arguments on whether or not these tools are beneficial, ethical, or effective was explored to determine which tools are most successful and whether there is a common factor shared between methods. Finally, the trainer's knowledge and experience with horses and how much or little influence this has on the effectiveness of their training was explored in order to establish any trainer based bias. To ensure credibility, all literature reviewed came from reliable sources such as veterinary nursing journals and government run databases.

Behavioral Issues and Training

The horse training industry has been around for centuries and is constantly evolving. Animal behavioral experts note that new training methods such as clicker training are being discovered every day as further research on horse psychology is discovered and explored (Loftus, 2014). Horse training is generally used to curb unwanted behaviors and encourage desirable ones. Methods are categorized as either positive or negative reinforcement (+R or -R) training. Positive reinforcement presents a reward when the desired behavior is performed, resulting in the horse correlating commands to the behavior through repetition. Negative reinforcement has the trainer eliminate all additional options until the desired behavior is expressed by the horse. It is imperative that aversive stimuli take place at the proper moment so as to not achieve punishment mistakenly. (Rozempolska-Rucińska, Trojan, Kosik, Próchniak, & Górecka-Bruzda, 2013). It should be noted that negative reinforcement training is not synonymous with punishment or abusive training, as it does not deliver heavy consequences for mistakes and it requires a balance of rewards for desired behavior; both positive and negative reinforcement are recognized as valid training methods.

While each individual horse processes discipline differently, there is a clear pattern between responsiveness, breed, sex, and age. A study by the International Association of Animal Behavior revealed that hot-blooded horses bred for endurance, agility, and speed showed a significantly increased heart rate compared to the cold-blooded horses bred for agricultural labor, as well as a significantly higher behavior score, suggesting they took longer to habituate and calm down (Braybrook, 2017). This data is consistent with traditional thought that hot-blooded horses are more sensitive and reactive, thus making them more difficult to handle and less trainable, while cold-blooded horses are calmer.

A study conducted by the Sydney School of Veterinary Sciences revealed that with age, geldings rapidly become more responsive than mares to training.

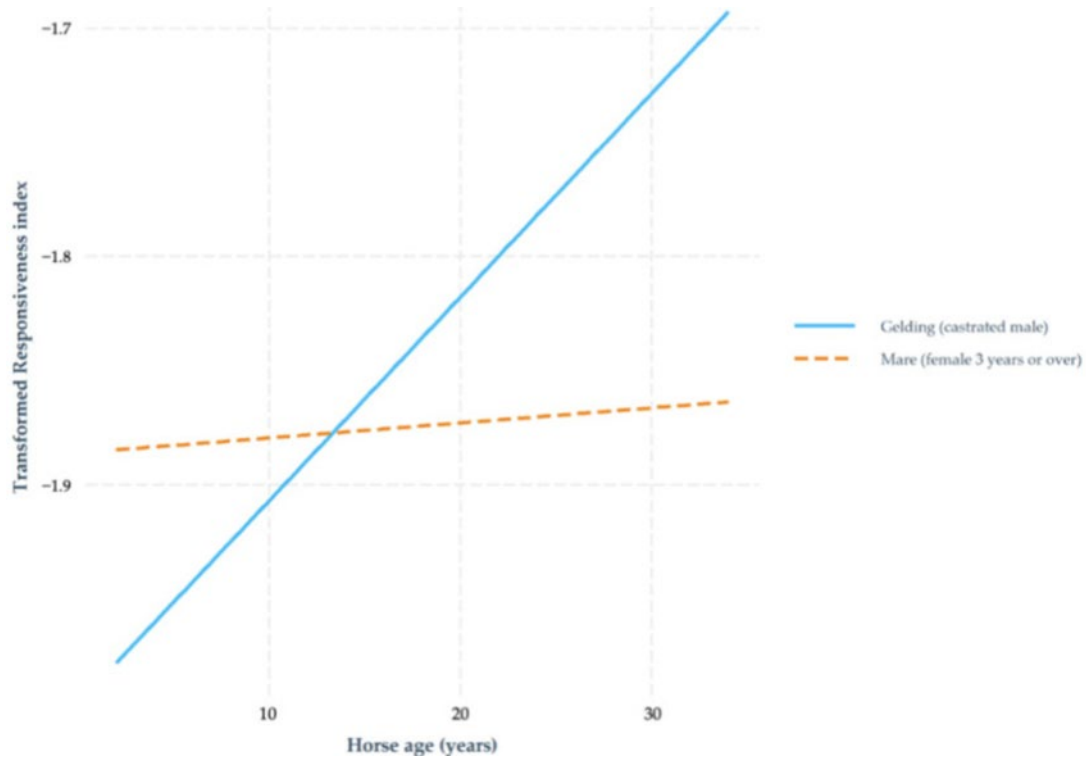


Figure 1. Gelding and mare responsiveness index at various ages. Solid line represents gelding (castrated males) responsiveness by age (years), dotted line represents mares (female 3 years or over) responsiveness by age (years)

“There was a significant interaction between horse age and horse sex in relation to the Responsiveness index. All horses become more responsive as they aged, but this effect was more pronounced in geldings. Younger mares were more responsive than geldings of the same age, but this effect diminished as age increased” (McKenzie, Fenner, Hyde, Anzulewicz, Burattini, Romness, Wilson, & McGreevy, 2020, p. 12).

Although each horse has distinct behavior, there are factors that can influence this behavior. A study conducted by the Oklahoma State University Research Scholars revealed the correlation between equine behavior and the weather. The research illustrated how horses adapt to their environment. While it is natural for horses to spend the majority of their time grazing and traveling their pasture, horses grazed less and stood still more on colder days. This is due to horses’ ability to thermoregulate to conserve energy and heat. The data revealed that on days when it was colder outside, horses spent less time grazing than they would on warmer days; they grazed just enough for their cecum to digest food and help thermoregulate their bodies. In temperatures higher than usual, the horses did not exert energy by running around the pastures; rather, they preferred to casually stroll, graze throughout the day, and display relaxed behavior (Madissen, Kieson, & Abramson, 2019).

Although horses’ bodies have an excellent system of dealing with stress with sufficient instinctual fight or flight response, it is very natural for horses to experience stressors such as excitement or fear as prey animals (Rodrigues, Freitas, Oliveira, Martins, Silva, Gomes de Oliveira, Rodrigues Lima Júnior, & Velarde, 2021). Though these experiences are inevitable, there are methods of relieving this stress such as mobilization exercises and acupuncture. For example, longitudinal cervical flexion of the horse’s head between its front hooves after working resulted in higher relaxation expression rates ($P < 0.05$) after only one session. A 20-minute acupuncture session prompted the same results. Both treatments visibly increased the relaxation of the horses through behaviors such as chewing, lateral ear positioning, and lower neck frequencies, as well as promoted intense muscular response throughout the horses’ entire bodies (Rodrigues, et al., 2021). According to a

study conducted by the University of Sydney, simple exercises like this decrease the horse's stress by more than 5% and increase the human-horse relationship with trust. These natural training methods are displayed in disciplines such as dressage, where the rider communicates with the horse through body language and aids to perform moves as one unit (Savvides, 2012).

Training and Riding Aids

Controversy is not uncommon among horse trainers and riders. It is debated whether whips are a necessary tool for safety, correction, and encouragement; or a cruel instrument used to hurt animals. Trainers and riders have their own opinions on training methods and on the usage of aids such as whips, bits, and various types of reins, so new tools are constantly reviewed by the media (Waran, et al., 2007). Recent technology such as the new 2020 360 GT crop designed by Ramón Dominguez that elevates the protection of the horse by switching the hard, sharp edges of the traditional padded popper with a smooth, foam cylinder are far gentler on the horse and just as effective as an encouragement tool due in part to the loud sound it makes on contact contribute to the increasing media attention (Dominguez & Márquez, 2020). Rule changes in sports contribute to the debate on the acceptable use of animals in competitions. For instance, Harness Racing Australia's rule change in 2015 led Australia to become the first nation in the world to voluntarily ban whip usage in harness racing (Graham & McManus, 2016).

A study conducted at the University of Sydney revealed that on average, there was no response in terms of velocity from the usage of whips (Evans & McGreevey, 2011). In other disciplines such as show jumping, eventing, and cross country, it is common for riders to carry a whip but not necessarily to use it (Evans, et al., 2011). As of 2019, the United States Equestrian Federation enforces the rule that states, "The use of the whip must be for a good reason, at an appropriate time, in the right place, and with appropriate severity," in showjumping and cross country. They further describe a "good reason" as, "an aid to encourage the horse forward, or as a reprimand. It must never be used to vent a rider's temper," (USEF, 2021, p. 10). It is also deemed excessive if a whip is used multiple times between two fences. Any action against a horse by a competitor in the ring, deemed excessive by the judge, may be penalized by any one or combination of the following: official warning, or elimination from the class. Such action(s) could include, but are not limited to, excessive or improper use of the whip, spurs, reins, rider's weight, or rider's hands (USEF, 2021).

While there are strict regulations regarding aids in competition, there are very few enforced rules for recreational riding and training. Several aids are very commonly used by equestrians such as bits, spurs, whips, and specialized reins. Although bitted horses are often viewed as being largely free of bit-related mouth pain, it is likely that most behavioral signs of such pain are simply not recognized (Mellor, 2020). In response to pain, horses will typically exhibit changes from normal day-to-day behaviors reflected in appearance, demeanor, posture, gait, activity or inactivity, vocalization or silence, interactions with other animals (including people), and reactivity to handling. Moreover, animals may "guard" or protect the painful site (Mellor, 2020). Auxiliary reins are criticized for causing this behavior when used incorrectly. This mechanical training aid exerts influence on the posture of the horse, and when used correctly, encourages the horse and rider to maintain the proper head position (Gehlen, Puhlmann, Merle, & Thöne-Reineke, 2021).

Trainer's Experience

Horse owners may be poor at recognizing behavioral signs of pain (Mellor, 2020). A study conducted by the Epidemiology and Disease Surveillance Department Center for Preventive Medicine Animal Health Trust found that of the 60 horses tested in the walk, trot, and canter whose riders believed them to be working comfortably, 73% of the horses were lame on one or more limbs and 47% had gait abnormalities such as disunity in canter (Dyson & Pollard, 2020). This shows that the experience of the rider or trainer should not be overlooked. An

investigative study by the University of Sydney found that when training at liberty, professional trainers had fewer arm movements, more time spent looking at the horse during gait transitions, and fewer conflict behaviors from the horse such as kicking, biting, stomping, head-tossing, defecating, bucking and attempting to escape than the amateur handlers. The professional trainers had a better understanding and execution of timing and cues and had much better results (Kydd, Padalino, Henshall, & McGreevy, 2017). It should be noted that knowledge does not directly correlate with skill. A study by Massey Equine Institute of Veterinary Animal and Biomedical Sciences, Massey University revealed that even with professional knowledge, veterinarian students with little previous experience with horses struggled when perceiving equine behavior (Gronqvist, Rogers, Gee, Martinez, & Bolwell, 2017). The majority of the students could not determine the horse’s behavior because of their lack of handling horses. The chart shows how students with none, little, some, and much experience with horses interpreted the horses’ behavior, proving that experience can be more valuable than education in terms of understanding equine behavior.

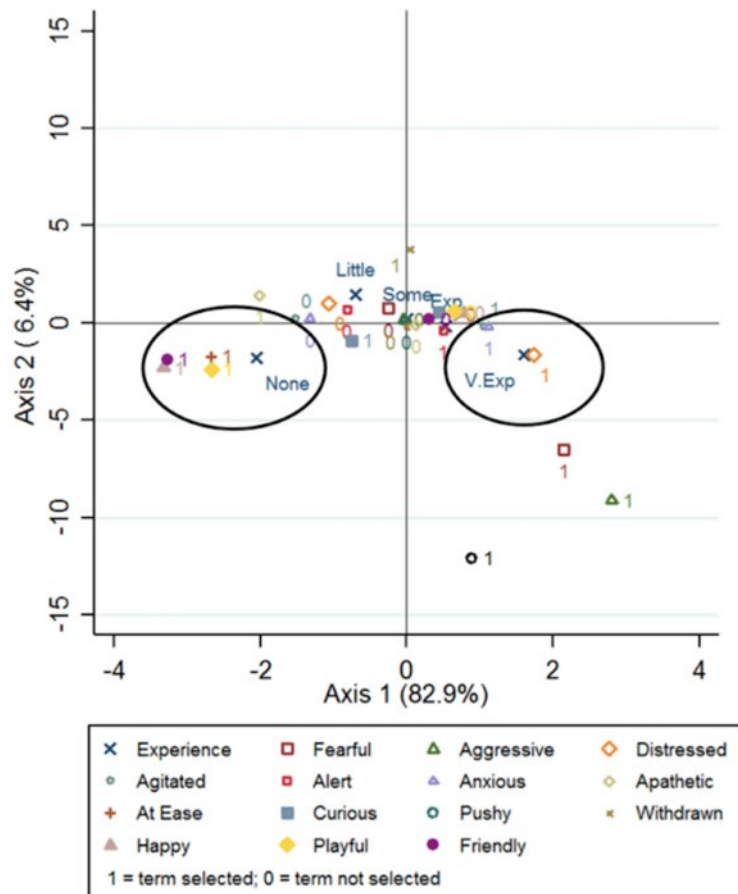


Figure 2. Horse Behavior Interpretation by Experience. Blue cross represents experience, black circles represent clusters in data, all other shapes represent varying horse behaviors interpreted.

“Multiple correspondence analysis showing the terms selected by first-year veterinary science or veterinary technology and undergraduate equine science students to describe the horse’s behavior... and the level of the students’ experience with horses. 1 = term selected at any strength; 0 = term not selected. ‘Experience = None—never interacted with a horse prior to the start of this paper’, ‘Little—interacted with or ridden horses a few times under supervision’, ‘Some—interacted with or ridden horses regularly under supervision’, ‘Experienced—interacted with or ridden horses regularly unsupervised’ or ‘Very Experienced—competitive rider or

worked in the horse industry'. Black circles are used to indicate clusters in the data" (Gronqvist, et al., 2017, p. 6).

Gap

In conclusion, aids, whether artificial (e.g. spurs) or natural (e.g. leg), are physical pressure a rider or trainer uses to communicate with a horse (Meredith, 2022). Pressure is also utilized while working a horse at liberty (with no rope), as a horse responds to the trainer's body language (pressure) as it would to a herd mates' signals (Williams, 2004). The importance of pressure in horses is supported by six of the studies reviewed in this paper. Recent research takes a stance (positive or negative reinforcement), but fails to account for the differences between methods and highlight the common need for pressure. As such, a definite answer that explains how Pressure and Release Training affects horse behavior and discipline has not been determined. Hence, the following research will address this gap.

Methodology

Experimental research was conducted as my main focus. A physical experiment where individual horses were scored on a one to five-point scale, rating how responsive they were to five various pressure and release exercises was created and executed. The horses were first lunged on a rope to warm up their muscles and assess their temperament on a one to five-point scale. Temperament assessment scores were based on displayed relaxation behaviors reviewed in this paper such as chewing, lateral ear positioning, and lower neck frequencies (Rodrigues, et al., 2021). After the horse was warmed up, it was first asked to yield its head laterally and flex to each side from pressure on the rope. Once the horse attempted each exercise, it was rewarded with the release of pressure. Second, the horse was asked for longitudinal cervical flexion between the front legs with pressure on the rope. In a study reviewed in this paper, this exercise was proven to relax horses as well as promote a muscular response throughout the entire body (Rodrigues, et al., 2021). Third, the horse was asked to lower its head from poll pressure, rather than rope pressure. This exercise was to solidify the response to pressure from anywhere on the horse's body, not just the rope. Fourth, the horse was asked to take steps back along with me through pressure on the rope, but with no pressure from my body language, as I was stepping with the horse, rather than pushing towards the horse. Finally, the horse was asked to disengage their hindquarters by stepping to the side away from hand pressure on their hip. Movements such as the lowering of the head and disengagement of the hindquarters indicate submission to other horses in the wild, so it is important that a horse trusts the trainer enough to perform these movements on cue.

Each horse was scored on a one to five-point scale on their temperament before the tests during their warm up. The scores represented temperaments as follows: 1 = lazy and ignoring cues, 2 = lazily listening, 3 = quietly listening, 4 = excitedly listening, 5 = excited and ignoring cues. On this scale, a 3 was the desired score as it indicated that a horse was not excessively lazy or energetic. This score was used to identify differences in temperaments between the two days each horse was tested, as well as trends among species traits such as how the average temperament of hot-blooded horses compared to that of cold-blooded horses.

Each horse was also scored on a one to five-point scale on their completion (or lack thereof) of each individual exercise. The scores represented exercise attempts as follows: 1 = conflict behaviors, 2 = refusal, 3 = weak attempt, 4 = moderate attempt, 5 = strong attempt. Conflict behaviors were classified as kicking, biting, stomping, head-tossing, defecating, bucking and attempting to escape as described by a study reviewed in this paper (Kydd, et al., 2017). Refusal was described as no attempt made to complete the exercise. A weak attempt was identified as a careless attempt made after much urging or prompting by the researcher. A moderate attempt was described as a calm attempt after some urging or prompting by the researcher. A strong attempt was classified as a calm attempt made when asked. It should be noted that a horse was not required to successfully

complete the exercise to earn a 5, it was merely required to attempt the exercise calmly when requested. On this scale, a 5 was the desired score as it indicated that a horse calmly and honestly attempted the exercise when cued.

Horses were categorized by sex, age group, and breed. To ensure that horses were prepared to train, they were first warmed up. To ensure that they were not more responsive to certain exercises based on attention span or boredom, the order of the exercise varied with each horse. Horses completed the experiment in a familiar arena on their home property to minimize stress. The horses each participated in the experiment twice on separate days to establish the replicability of the experiment. The temperature and weather was recorded during each test to establish the possible correlation between temperament levels and temperature as shown in a study reviewed in this paper (Madissen, 2019). To ensure anonymity, horses were each assigned a letter for their data rather than their name. All horses, owners, and barns remained anonymous.

It was hypothesized that the majority of the horses would complete the Pressure and Release Training exercises efficiently and effectively. It was also predicted that there would be little to no age or breed related differences, but that there would be a gap in responsiveness between geldings and mares. Geldings would likely be much more responsive than mares, which was supported by a study from the Sydney School of Veterinary Sciences (McKenzie, et al., 2020). Hot-blooded horses would likely be more energetic or temperamental than cold-blooded horses as supported by the IAABC (Braybrook, 2017). It was hypothesized that the horses would remain attentive to negative reinforcement training even without the motivation of a food reward. The release of pressure acts as the reward in this method. This idea was largely based on the success of negative reinforcement training indicated by the study conducted by Loftus, as well as five other studies reviewed in this paper supporting this method. It was predicted that, because each exercise utilized the common factor of pressure, they would each be successful in invoking a response.

Data and Analysis

The demographics of the surveyed equine population skewed the results. Each horse was represented by a letter to maintain anonymity and simplicity. Five horses of varying breeds participated in each test: one 11 year old *American Quarter Horse* mare (A), one five year old *Haflinger* mare (B), one 11 year old *Percheron/American Quarter Horse* cross gelding (C), one 14 year old *American Paint Horse* mare (D), and one 10 year old *Mustang* gelding (E). Horse C had a cold-blooded temperament as a draft cross, Horse E had a hot-blooded temperament as an endurance breed, and all other horses had a warm-blooded temperament as a result of a combination of cold and hot blood in their breeding. Prior to testing, Horse B had not been worked consistently in one year due to soundness issues while all other horses had been involved in consistent work.

Table 1A. Surveyed Demographics

Horse	Breed	Age	Sex	Type	Work Level
A	Quarter Horse	11	Mare	Warm-Blooded	Consistent
B	Haflinger	5	Mare	Warm-Blooded	Inconsistent
C	Quarter Horse/ Percheron	11	Gelding	Cold-Blooded	Consistent
D	Paint	15	Mare	Warm-Blooded	Consistent

E	Mustang	10	Gelding	Hot-Blooded	Consistent
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Note: All ages in years.

Assessed Temperament

Although horses were tested on two separate days to note possible differences, most horses maintained the same temperament throughout both tests, with the exception of Horse B (youngest and only horse out of consistent work). It was hypothesized that colder weather would result in higher temperaments, but the data collected showed no evidence of this. The lack of evidence may have been due to the limited weather during testing ranging only from 65° F to 83° F with only sunny and partly cloudy conditions. Horse A consistently scored a four (excitedly listening), Horse C consistently scored a three (quietly listening; the perfect score) and Horses D and E consistently scored a two (lazily listening), and Horse B scored a three and four. This data contradicts the theory of the blood types' (cold, warm, and hot) correlation with temperament. While Horse C displayed the typical laidback temperament of cold-blooded horses, Horse E did not display the typical high energy temperament of hot-blooded horses. No horse displayed the extreme temperament of either side (lazy and ignoring (1) or excited and ignoring (5)).

Temperament Assessment

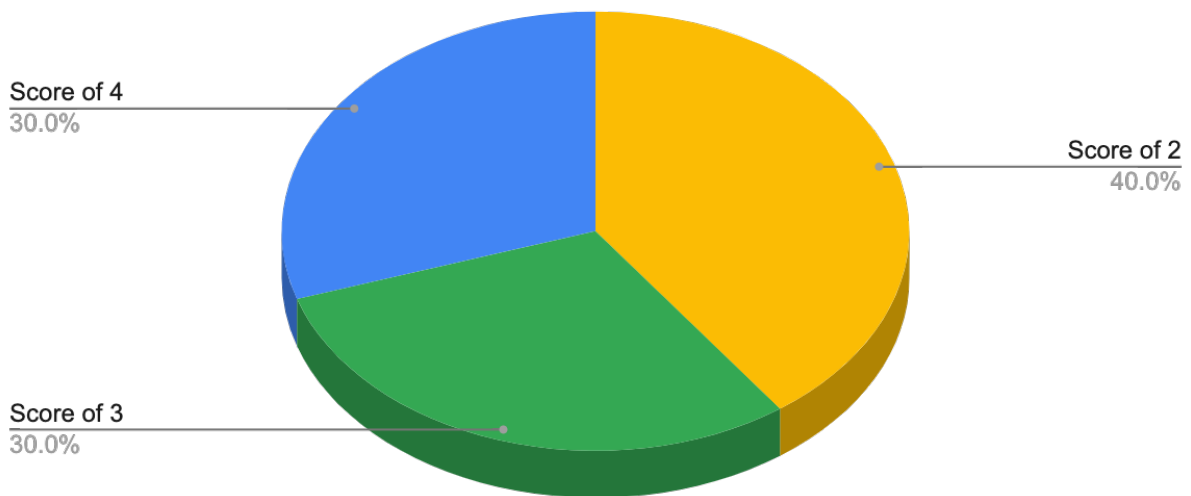


Figure 3. Temperament Assessment. Blue represents a score of 4, green represents a score of 3, yellow represents a score of 2.

Test One

Test One required each horse to yield their head laterally and flex their neck on both sides from pressure on the rope. The data revealed that this test was more simple for each horse to complete as all horses scored either a

four or five. The horses with lazy but listening temperaments (2) tended to score a five on this test, while horses with more energy tended to score a four because they were overthinking the request before figuring it out. Horses with excitedly listening temperaments (4) tended to try to complete the last test again and predict what I was about to request of them rather than quietly focus on the current request. High energy horses also struggled to stand still for this test. Every horse quickly picked up what was being asked of them through simple pressure on the rope with this test. All scores remained the same both days.

Table 1B: Responsiveness Index - Test One

Attempt	Horse A	Horse B	Horse C	Horse D	Horse E
Day 1	4	4	4	5	5
Day 2	4	4	4	5	5

Note: Scores out of 5.



Image 1. Perfect Score - Test One

Test Two

Test Two required each horse to lower their head between their legs. This cervical longitudinal flexion is body language that horses display while relaxed and safe. As this is a vulnerable position for horses, they were hesitant to complete the test. All horses did complete this exercise after urging, however, scores did not remain consistent both days. Horses with lazily listening (2) temperaments tended to score higher on this test.

Table 2. Responsiveness Index - Test Two

Attempt	Horse A	Horse B	Horse C	Horse D	Horse E
Day 1	4	3	4	5	5
Day 2	5	3	5	5	4

Note: Scores out of 5.



Image 2. Perfect Score - Test Two

Test Three

Test Three required each horse to lower their head from poll pressure between their ears. Lowering the head to another is submissive body language between horses, so the horses were hesitant to complete this test with an unfamiliar trainer. No horse scored a perfect score of 5 on Day 1, but most scores increased on Day 2. All horses completed the exercise after much urging.

Table 3. Responsiveness Index - Test Three

Attempt	Horse A	Horse B	Horse C	Horse D	Horse E
Day 1	4	4	4	4	4
Day 2	5	5	3	4	4

Note: Scores out of 5.



Image 3A. Perfect Score - Test Three 1



Image 3B. Perfect Score - Test Three 2

Test Four

Test Four required each horse to step backwards along with me (the trainer). This test was easier for most horses to complete, and all horses scored a perfect score of five at least once. Most scores remained consistent both days.

Table 4. Responsiveness Index - Test Four

Attempt	Horse A	Horse B	Horse C	Horse D	Horse E
Day 1	5	4	5	4	3
Day 2	4	5	5	5	5

Note: Scores out of 5.



Image 4: Perfect Score - Test Four

Test Five

Test Five required each horse to disengage their hindquarters by stepping to the side away from my hand pressure without moving their forelegs. All horses completed this exercise after urging, but scores were very inconsistent.

Table 5. Responsiveness Index - Test Five

Attempt	Horse A	Horse B	Horse C	Horse D	Horse E
Day 1	4	4	4	5	4
Day 2	5	4	3	4	5

Note: Scores out of 5.



Image 5. Perfect Score - Test Five

Overall Results

Due to the fact that all horses completed every exercise, it can be concluded that all horses understood the Pressure and Release training method. Horse B, which had been out of consistent work and was the youngest horse, had the most inconsistent results. The weather appeared to have little to no effect on temperament levels or test scores. No horse displayed conflict behaviors (1) or refused to complete any test (2). In accordance with the original hypotheses, all horses completed every exercise effectively with little to no age or breed related differences. Additionally, horses remained attentive to the negative reinforcement training even without the motivation of a food reward. Contrary to the hypotheses and reviewed literature, geldings were not noticeably more responsive than mares of the same age. In fact, between Horse A and Horse C, a mare and gelding of the same mature age, the mare was more responsive. Furthermore, hot-blooded horses were not significantly more energetic or temperamental than cold-blooded horses. Horse E (hot-blooded) consistently displayed less energy and a lower temperament than Horse C (cold-blooded). Both horses were of similar mature ages.

Total Test Scores

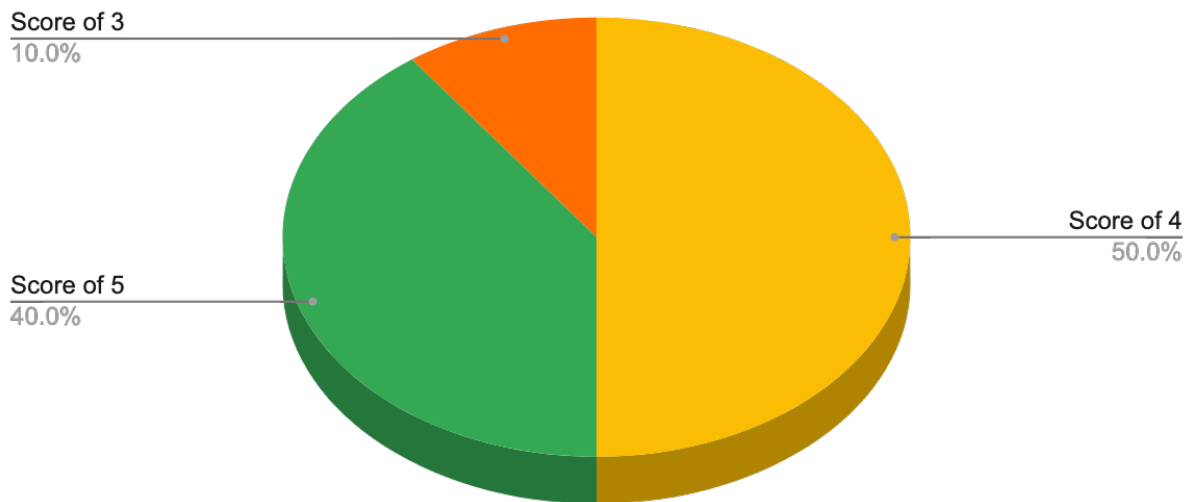


Figure 4. Total Test Scores. Green represents a score of 5, yellow represents a score of 4, orange represents a score of 3.

Conclusion and New Understanding

It is important to maintain a request for relief based rhythm when training horses, regardless of the overall method used. In accordance with the reviewed literature and collected data, horses quickly pick up requests when offered a reward/relief such as a release of pressure. In addition, the commonality and effectiveness of pressure in several riding and training aids in the reviewed literature, as well as the response to pressure in the conducted experiments indicated that the use of pressure is an effective method of communication between trainer and horse. This information indicates that, when training a horse, the combination and utilization of pressure as communication along with release as the reward is an extremely successful training technique in terms of both effectiveness and efficiency.

Regardless of age, breed, sex, and training level, Pressure and Release Training is an effective training method that horses understand. Because pressure and body language is how horses communicate with one another in the wild, horses comprehend Pressure and Release from humans. However, consistently worked horses tend to display more consistent behavior and temperaments. In order to ensure the effectiveness of training, a trainer must display confidence and success in determining horse behavior. It is vital that trainers have this skill so that they understand whether the training is effective and low stress for the horse. Without in-depth understanding of how the horse's mind and how training works, trainers may accidentally ask the horse for a behavior incorrectly. This could cause the horse to associate Pressure and Release Training with stress and be less likely to complete future requests successfully.

To ensure that working with horses is safe for both the horse and the trainer, it is crucial that all horses are trained effectively and understand the concept of discipline. The trainer must understand the equine discipline processing system to ensure that their training is effective. The research conducted revealed that Pressure and Release Training is an efficient training method that horses understand even without previously consistent training.

The review of literature and collection of data from the conducted experiment has revealed the idea that training is heavily communication based. The use of pressure is a method of communication between horses, and humans must adapt if they aim to communicate with them. Other training methods such as clicker training or treat based training are less effective because they do not communicate with the horse in a way they are familiar with. Short term future implications of these findings include more efficiently trained horses and stronger communication between trainer and horse, while long term implications include a safer world for horses, trainers, riders, and spectators due to the greater understanding of the equine discipline processing system.

Limitations

The data presented in this experiment was limited by the demographics of the surveyed barns because the experiments could only be conducted within North Carolina. Consequently, the results of this study may not be applicable to all other horse populations due to varying factors such as weather, access to nutrients, and training level. Future researchers should develop a methodology to be used at a much larger scale, in order to obtain a more accurate understanding of equine behavior in larger and more diverse populations. Data was not acquired from horses under the age of four years as they are not yet mature and may not be prepared for extended training sessions with unfamiliar trainers such as myself, making it impossible to compare the responses of adolescent and mature horses. Additionally, the study did not obtain data from stallions, as it would have been a potential health risk for the researcher, making it impossible to compare the behavior of intact and gelded male horses. A comparison between these groups of horses is necessary to determine the extent to which the utilization of pressure as a training method impacts each group.

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