

## Recognizing Learning Ability in Horses

**Intelligence is difficult, if not impossible, to quantify in a species whose language we cannot understand because actions alone cannot explain the logic or awareness behind them.**

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Like many horse enthusiasts, you may occasionally wonder just how intelligent the horses in your life actually are. You maybe among the fortunate few who own a horse that is truly a breeze to train, or alternately, your mount might be what some horsemen call dull—slow to understand and comply with your requests. Maybe you're a horse industry professional with an interest in identifying agile-minded and compliant training prospects for show or resale. Perhaps you're simply person working with one horse that behaves with such purposeful cleverness that you wonder about his capacity for advanced thought. Whatever the differences in your motivations might be, what clearly interests all of us is identifying those qualities that smart horses have in common, and devising an easy, reproducible method of measuring those qualities.

One interesting horse in my family, an Appaloosa named Denver Deuce, methodically worked for hours at opening bull-snaps and gate latches until he was free to visit other horses and raid grain rooms. His merry fun picking latches continued through several combinations of chains, snaps and latches until a padlock was finally placed on his paddock gate. These days, he knows when the lock is not truly closed and is quick to revert to his Houdini ways whenever the opportunity presents itself. His seeming awareness of exactly what is required to free himself from his confines, coupled with the diligence with which he carries out these activities, has admittedly impressed me over the years.

Additionally, there have been other behavioral tendencies that have alerted me that the wheels might be turning a little faster than usual in Denver's spotted head. He possesses a cunning, scheming type of play behavior that has included, among other things, slowly and deliberately nudging me face first into a moss-filled cattle water trough. He also seems to understand the vulnerability of children. Whenever a child climbs on his back, he changes from spirited riding horse to gentle and reliable mount. Frankly, there have been times when I have looked into this horse's eyes and felt the presence of a not-quite-so-ordinary equine mind.

The warmblood foals out of one of my hot-blooded mares exhibit intelligence of a different nature. In nearly all respects, Duchess' foals have tended to be much more accepting of their training than their dam has been. They have been relatively easy for me to teach and load into trailers, to stand tied for bathing and electric clipping, and to longe, ground-drive and start under saddle. They have exhibited a type of accepting, compliant behavior which makes them easy to train, and at least superficially, this appears to be something different than the quick-minded variety of intelligence Denver Deuce displays. Considering how many different qualities we label as intelligent behavior, we need to determine exactly what behavioral tendencies make a horse a quick and uncomplicated training prospect, and whether they correlate to a behavioral demeanor we can watch for in horses in general.

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On the other hand, learning ability, or trainability, can be measured by trying to quantify the time it takes the horse to learn tasks or solve problems. This may seem like a trivial distinction until we consider that what appears to be intelligent behavior in our horses may actually be detrimental behavior for their wild relatives.

Intelligent behavior for horses may be entirely at odds with the purposes of man. For example, spooking and bolting at frightening objects is a smart response for these prey animals to make in the wild, but humans require that horses learn to overcome such self-serving behavior to better suit our purposes. Our interest appears to be not so much in determining the actual intelligence of horses, but rather in their aptitude for quickly and correctly learning the lessons we teach. In behavioral science, we recognize a difference between the ability to perceive and comprehend meaning, which we call intelligence, and the willingness to comply with human expectations, which we call learning ability.

It is important to realize that a large part of what we expect horses to learn is at odds with their general nature. For example, most trainers have experienced the resistance green horses have to many of the tasks we expect of them, including standing still for electric clippers, crossing water on the trail and walking into horse trailers. The survival instincts

of horses are, to some degree, within them all, compelling them to flee from the loud noise and vibration of the clippers, to avoid stepping into places where solid ground is not visible and to escape the trap of trailer confinement.

In order to select horses that can be easily trained to perform task contrary to their nature, and that also demonstrate the presence of a thinking mind rather than a reacting one, we must be able to identify those horses that behave differently from the fight-or-flight tendencies of the species.

An excellent example of such a horse once belonged to a friend of mine. A few years back, Ellen was bringing her horses up to the barn for their evening meal when she noticed her new Quarter Horse mare was not with the others. She climbed on another horse and rode along her fence lines until she came upon the young mare. The mare's hind leg had become ensnared in wire fencing as a result of aggressive herding and driving by one of the established geldings in the band. Judging from the horse's condition, the leg must have been tangled in the fence for several hours, but this 3-year-old filly stood patiently on three legs, with her injured leg suspended in the wire fencing until help arrived. According to the veterinarian involved, the fact that his horse did not panic and struggle is principally what protected her from permanently debilitating tendon and vascular damage. I'm certain most of us would value such a sane and sensible disposition in the horses we trust to carry us.

One method of measuring learning ability that has been used in many different animal species is called discrimination learning. The idea is for the animal to select the "correct" item from two or more items to earn something rewarding, such as food. The assumption is that horses which perform highest on the test are also likely to have the greatest learning aptitude outside of the testing situation. The earliest discrimination studies determined that horses could learn to make correct choices between black and white feed boxes, and this early success paved the way for more advanced studies. Another group of researchers used a discrimination test to discover that long training sessions led to inefficient learning in horses, a fact we should all remember the next time we feel compelled to work on that flying lead change yet another time to "get it right!"

One type of discrimination test, called concept formation testing, measures a horse's ability to use early learning to solve new problems. In horse training, we expect horses to build upon prior learning to attain new levels of performance. For example, a turn on the haunch requires the horse to recognize and respond correctly to a combination of rein and leg aids presented earlier as separate and basic elements. A horse with an aptitude for forming concepts would presumably be easier to train than one lacking the ability to quickly grasp the overall training objective or "big picture." This presumption was consistent with the results of a study I performed with a colleague in 1994, wherein the horses that were best at learning to identify triangular shapes in a discrimination test also happened to be at the top of an unofficial ranking by the campus riding instructors for training aptitude exhibited in the lesson ring.

The next study I conducted examined the relationship between the results of discrimination testing and performance on tasks we all ask horses to perform, such as crossing bridges and jumping obstacles. A visual-discrimination test was used to see if the horses could switch from "black is correct" to "white is correct" periodically to test for quick, flexible thinking. When testing was completed, the results indicated that that reversal learning tests did not correlate well with learning to jump obstacles and cross bridges, but perhaps more importantly, the study revealed that many subjects had problems making the switch to the new correct choice at color reversal time. This finding indicated that some horses have great difficulty reversing their initial training. It may be much harder to undo bad earlier experiences than we've all assumed. The long-term effects of early training may be more important than we ever imagined.

Presently, behaviorists are making rapid advances in understanding learning ability in horses. However, that quick and easy method for measuring a horse's trainability still eludes us. As long as there are breeders trying to produce the best horses possible, trainers needing to turn out polished performers as quickly as is reasonable and a horse-buying public interested in getting the most for their money, this question merits our continued efforts to find an answer. Equine enthusiasts should remember the development of this species depends on the decisions we make. As we discover ways to determine learning ability in horses, we may soon be able to accurately select for this trait in our breeding programs. For better or for worse, the future of the horse rests with us all, and it may soon be within our power to do the right thing for both the species and for ourselves, which is to produce consistently adaptable and able-minded horses.