



Your Grid, Your Views, Your Tomorrow.

Responding to
Equine Concerns

Appendix 3



The current. The future.

Appendix 3

Equine Psychology and Behaviour

Michael P Sadler

MVB CertESM CertES(Orth) MACVSc(EqSurg) MRCVS

Introduction

This report has been commissioned by EirGrid. The report was prepared to inform and assist EirGrid in responding to the concerns raised by the equine sector during public consultations on major electricity transmission projects. The report is based on an independent review of literature and professional expertise. The report provides information relating to Equine Psychology and Behaviour.

Social Organisation

Horses are social herd animals that follow a leader and conform to a dominance hierarchy. For their own safety they choose to be part of a group. A horse is a grazing animal, never the predator and always the prey. In order to escape predators, horses have evolved an extreme sensitivity to any perceived threats in their immediate environment and when alarmed, they either prepare to fight or use speed to try and escape - the “fight and flight mechanism”.

In the wild, herds of feral horses are usually made up of several separate small bands that share a territory. A band (or harem) of horses is an organised social group normally containing a dominant stallion, mares and juveniles. A dominant stallion, usually 6 years old or older will be in the company of a group of mares (usually between 4-7) 24 hours a day, 365 days a year. He sires the offspring and these foals are with the band for a minimum a year and most usually two years. ⁽¹⁾

Occasionally a two or three year old will still be with the band, but generally the stallion will discourage a young male who is coming of age from consorting with the band. Colts driven out from several herds usually join together in small bachelor groups until those who are able establish dominance over an older stallion in another herd. Young females may be driven off by their mothers, or they simply may choose to leave when they reach puberty. They may select or be selected by another stallion who will breed with them and guard them vigilantly from rivals. By encouraging their offspring to leave the band, wild horses avoid inbreeding. ⁽²⁾

Hierarchical Matrix

Horses have evolved to live in herds. As with many animals that live in large groups, establishment of a stable hierarchical system or pecking order is important to reduce aggression and increase group cohesion. This is often, but not always, a linear system. In non-linear hierarchies horse A may be dominant over horse B who is dominant over horse C, yet horse C may be dominant over horse A. Dominance can depend on a variety of factors, including an individual’s need for a particular resource at a given time. It can therefore be variable throughout the lifetime of the herd or individual animal. Some horses may be dominant over all resources and others may be submissive for all resources. Once a dominance hierarchy is established, horses more often than not will travel in rank order. ⁽³⁾

Aggressive interactions risk causing injury. Therefore, once the dominance hierarchy is established, aggressive behaviour is reduced between herd members. Higher-ranked animals often will assume a role of exercising control and moderating aggressive behaviour in the herd.

The centre of the herd offers the most protection from the elements and is further away from predators than the periphery. Because of this, punishment of misbehaving members is sometimes delivered in the form of temporary expulsion from the herd, or sometimes permanently.

Rejection teaches a horse to be submissive and dependent upon the leaders for survival and food. This complex social dynamic holds the wild horse bands together and each individual knows his or her place in the order. Rules of band behaviour are carefully followed and punishment is swift.

Role of Dominant Mare

Every herd has leaders, followers and a well defined pecking order known as a dominance hierarchy. The Alpha Horse is the dominant leader in a band. Horses instinctively seek leadership. The Alpha Horse provides leadership and security in a band. It is quite common for the Alpha Horse to be a mature mare, familiar with the territory and food resources. The members of the band are submissive to the Alpha Horse when it's time to eat or drink. ⁽⁴⁾

Role of Stallion

Stallions tend to stay on the periphery of the herd where they fight off both predators and other males. When the herd travels, the stallion is usually at the rear and drives straggling herd members forward, keeping the herd together. Mares and lower-ranked males do not usually engage in this herding behaviour. ⁽⁴⁾ During the mating season, stallions tend to act more aggressively to keep the mares within the herd, however, most of the time, the stallion is relaxed and spends much of his time “guarding” the herd by scent-marking manure piles and urination spots to communicate his dominance as herd stallion. ⁽⁵⁾

Communication

Horses communicate in various ways, including vocalizations such as nickering, squealing or whinnying; touch, through mutual grooming or nuzzling; smell; and body language. Horses use a combination of ear position, neck and head height, movement, and foot stomping or tail swishing to communicate. Discipline is maintained in a horse herd first through body language and gestures, then, if needed, through physical contact such as biting, kicking, nudging, or other means of forcing a misbehaving herd member to move. In most cases, the animal that successfully causes another to move is dominant, whether it uses only body language or adds physical reinforcement.

Horses can interpret the body language of other creatures, including humans, whom they view as predators. If socialized to human contact, horses usually respond to humans as a non-threatening predator. Humans do not always understand this, however, and may behave in a way, particularly if using aggressive discipline, that resembles an attacking predator and triggers the horse's fight-or-flight response. On the other hand, some humans exhibit fear of a horse, and a horse may interpret this behaviour as human submission to the authority of the horse, placing the human in a subordinate role in the horse's mind.

This may lead the horse to behave in a more dominant and aggressive fashion. Human handlers are more successful if they learn to properly interpret a horse's body language and temper their own responses accordingly. Some methods of horse training explicitly instruct horse handlers to behave in ways that the horse will interpret as the behaviour of a trusted leader in a herd and thus more willingly comply with commands from a human handler. Other methods encourage operant conditioning to teach the horse to respond in a desired way to human body language, but also teach handlers to recognize the meaning of horse body language.

Horses are not particularly vocal, but do have four basic vocalizations: the neigh or whinny, the nicker, the squeal and the snort. They may also make sighing, grunting or groaning noises at times.

Ear position is often one of the most obvious behaviours that humans notice when interpreting horse body language. In general, a horse will direct the pinna of an ear toward the source of input it is also looking at. Horses have a narrow range of binocular vision, and thus a horse with both ears forward is generally concentrating on something in front of it. Similarly, when a horse turns both ears forward, the degree of tension in the horse's pinna suggests if the animal is calmly attentive to its surroundings or tensely observing a potential danger. However, because horses have strong monocular vision, it is possible for a horse to position one ear forward and one ear back, indicative of similar divided visual attention. This behaviour is often observed in horses while working with humans, where they need to simultaneously focus attention on both their handler and their surroundings. A horse may turn the pinna back when also seeing something coming up behind it.

Due to the nature of a horse's vision, head position may indicate where the animal is focusing attention. To focus on a distant object, a horse will raise its head. To focus on an object close by, and especially on the ground, the horse will lower its nose and carry its head in a near-vertical position. Fear or anger is often indicated when the eyes are rolled to the point that the white of the eyes are visible.

Ear position, head height, and body language may change to reflect emotional status as well. For example, the clearest signal a horse sends is when both ears are flattened tightly back against the head, sometimes with eyes rolled so that the white of the eye shows, often indicative of pain or anger, frequently foreshadowing aggressive behaviour that will soon follow. Sometimes ears laid back, especially when accompanied by a strongly swishing tail or stomping or pawing with the feet are signals used by the horse to express discomfort, irritation, impatience, or anxiety. However, horses with ears slightly turned back but in a loose position, may be drowsing, bored, fatigued, or simply relaxed. When a horse raises its head and neck, the animal is alert and often tense. A lowered head and neck may be a sign of relaxation, but depending on other behaviours may also indicate fatigue or illness.

Tail motion may also be a form of communication. Slight tail swishing is often a tool to dislodge biting insects or other skin irritants. However, aggressive tail-swishing may indicate either irritation, pain or anger. The tail tucked tightly against the body may indicate discomfort due to cold or, in some cases, pain. The horse may demonstrate tension or excitement by raising its tail, but also by flaring its nostrils, snorting, and intently focusing its eyes and ears on the source of concern.

The horse does not use its mouth to communicate to the degree that it uses its ears and tail, but a few mouth gestures have meaning beyond that of eating, grooming, or biting at an irritation. Bared teeth, as noted above, are an expression of anger and an imminent attempt to bite. Horses, particularly foals, sometimes indicate appeasement of a more aggressive herd member by extending their necks and clacking their teeth. Horses making a chewing motion with no food in the mouth do so as a soothing mechanism, possibly linked to a release of tension, though some horse trainers view it as an expression of submission. Horses will sometimes extend their upper lip when scratched in a particularly good spot, and if their mouth touches something at the time, their lip and teeth may move in a mutual grooming gesture. A very relaxed or sleeping horse may have a loose lower lip and chin that may extend further out than the upper lip. The curled lip flehmen response, noted above, most often is seen in stallions, but is usually a response to the smell of another horse's urine, and may be exhibited by horses of any sex. Horses also have assorted mouth motions that are a response to a bit or the rider's hands, some indicating relaxation and acceptance, others indicating tension or resistance.

Sleep Patterns

Horses are able to sleep both standing up and lying down. They are able to doze and enter light sleep while standing, an adaptation from life as a prey animal in the wild. Lying down makes an animal more vulnerable to predators. Horses are able to sleep standing up because a stay apparatus in their limbs allows them to relax their muscles and doze without collapsing. In the front limbs, their equine forelimb anatomy automatically engages the stay apparatus when their muscles relax. The horse engages the stay apparatus in the hind limbs by shifting its hip position to lock the patella in place. At the stifle joint, a hook structure situated on the inside bottom end of the femur cups the patella and the medial patella ligament, preventing the leg from bending. ⁽⁸⁾

Horses do not need a solid, unbroken period of sleep time. They obtain needed sleep by means of many short periods of rest. This is to be expected of a prey animal, one that needs to be ready on a moment's notice to flee from predators. Horses may spend anywhere from four to fifteen hours a day in standing rest, and from a few minutes to several hours lying down. However, not all this time is the horse actually asleep; total sleep time in a day may range from several minutes to a couple of hours. Horses require approximately two and a half hours of sleep, on average, in a 24-hour period. Most of this sleep occurs in many short intervals of about 15 minutes each.

Horses must lie down to reach REM sleep. They only have to lie down for an hour or two every few days to meet their minimum REM sleep requirements. However, if a horse is never allowed to lie down, after several days it will become sleep-deprived, and in rare cases may suddenly collapse as it involuntarily slips into REM sleep while still standing. ⁽⁸⁾ This condition differs from narcolepsy, though horses may also suffer from that disorder.

Horses sleep better when in groups because some animals will sleep while others stand guard to watch for predators. A horse kept entirely alone may not sleep well because its instincts are to keep a constant eye out for danger.

Fight and Flight

Horses evolved from small mammals whose survival depended on their ability to flee from predators. This survival mechanism still exists in the modern domestic horse. Humans have removed many predators from the life of the domestic horse. However, its first instinct when frightened is to escape. If running is not possible, the horse resorts to biting, kicking, striking or rearing to protect itself. Many of the horse's natural behaviour patterns, such as herd-formation and social facilitation of activities, are directly related to the fact that they are a prey species.

The fight-or-flight response involves nervous impulses which result in hormone secretions into the bloodstream. When a horse reacts to a threat, it may initially “freeze” in preparation to take flight. The fight-or-flight reaction begins in the amygdala which triggers a neural response in the hypothalamus. The initial reaction is followed by activation of the pituitary gland and secretion of the hormone Adreno-Cortico Tropic Hormone (ACTH). The adrenal gland is activated almost simultaneously by this hormone and releases the neurotransmitters epinephrine (adrenaline) and norepinephrine (noradrenaline).⁽⁶⁾ The release of chemical messengers results in the production of the hormone cortisol, which increases blood pressure, blood sugar, and suppresses the immune system.⁽⁷⁾

Catecholamine hormones, such as epinephrine and norepinephrine, facilitate immediate physical reactions associated with a preparation for violent muscular action. The result is a rapid rise in blood pressure, resulting in an increased supply of oxygen and glucose for energy to the brain and skeletal muscles, the most vital organs the horse needs when fleeing from a perceived threat.

However, the increased supply of oxygen and glucose to these areas is at the expense of “non-essential” flight organs, such as the skin and abdominal organs.⁽⁶⁾

Once the horse has removed itself from immediate danger, the body then returns to more ‘normal’ conditions by the parasympathetic nervous system. This is triggered by the release of endorphins into the brain, and it effectively reverses the effects of noradrenaline - metabolic rate, blood pressure and heart rate all decrease and the increased oxygen and glucose being supplied to the muscles and brain are returned to normal.⁽¹³⁾ It is also a recognised fact that horses will adapt and familiarise themselves to repeated aural and visual stimuli, initially perceived as a threat, providing they are not directly affected. Thus, horses will happily graze beside airports, motorways, etc., once they have become accustomed to the aural and visual stimuli.

Eating Behaviour

Horses are herbivores with a strong grazing instinct, preferring to spend most hours of the day eating forage. Horses and other Equids evolved as grazing animals, adapted to eating small amounts of the same kind of food all day long. In the wild, the horse adapted to eating prairie grasses in semi-arid regions and traveling significant distances each day in order to obtain adequate nutrition. Thus, they are trickle eaters, meaning they have to have an almost constant supply of food to keep their digestive system working properly.

Horses can become anxious or stressed if there are long periods of time between meals. When stabled, they do best when they are fed on a regular schedule; they are creatures of habit and easily upset by changes in routine. When horses are in a herd, their behaviour is hierarchical; the higher-ranked animals in the herd eat and drink first. Low-status animals, who eat last, may not get enough food, and if there is little available feed, higher-ranking horses may keep lower-ranking ones from eating at all.⁽¹⁰⁾

Horses and Man

Horses are creatures of habit and have excellent long-term memory, which makes consistent training extremely important to the horse. Humans are normally viewed by wild horses as potential predators. However, horses are also innately curious and may investigate any creature that is interesting but not threatening.

Any domesticated horse with some experience of humans usually views people as generally harmless objects of curiosity worth at least minor notice, especially if they know that humans may bring food or treats. Rarely will any domestic horse become truly vicious unless it has been spoiled or abused by humans, though many stallions have a great deal of naturally aggressive, dominant behaviour that requires that they be managed only by knowledgeable handlers. However, any horse is a large animal that retains some wild instincts, so can react unpredictably by running, biting, striking, or kicking. Thus humans must always be alert around horses because they can accidentally harm people.

The ability of humans to work in cooperation with the horse is based on both the natural curiosity of the horse and the strong social bonds that horses have with each other. Horses do not like to be separated from their herd, because to be alone is to be exposed to predators on all sides. Also, in a herd, less dominant horses tend to gravitate toward the most mature and confident members. Therefore, many horse-training principles are based upon having the horse accept a human as the dominant herd member. Ideally this is not done by force, but by the horse developing trust in the ability of the human and confidence that the human will be a responsible herd leader.⁽⁸⁾

Horses are also adapted to covering large amounts of territory and must have a certain boldness to do so. A horse that is afraid more than necessary will expend energy needlessly and then may not be able to escape when a threat is real. Thus, horses have an ability to check out the unusual and not immediately flee from something that is merely different.

This willingness to consider new things can also be used by a human trainer to adapt the horse's behaviour to an extraordinary range of activities that are well outside the range of instinctive horse behaviour, including acts considered naturally dangerous by the average horse such as bullfighting, jumping off cliffs, diving into water, jumping through a ring of fire, or walking into an airplane and tolerating take off, flight, and landing, race meeting, indoor arenas with large excited crowds complete with enclosed space, bright lights, and tremendous noise and police work in crowd control.

People who train horses first have to educate them that some normal herd behaviour is inappropriate around humans. For example, biting and shadow boxing (rearing, striking) that is common play among young horses, colts in particular, could be injurious or fatal to people. Other instinctive traits, such as running away when frightened, bucking off anything that lands on a horse's back (like a mountain lion or other predator), or never entering a small and enclosed area, also have to be overcome before the horse is useful to humans.

Even when trained, most horses will still test boundaries, at least mildly, and some horses with dominant personalities will openly challenge a weak or inexperienced handler. For example, if handled with incompetence or abuse, a horse may ignore its training and attempt to nip, bite, kick, refuse to be led, or try other ways to challenge human dominance. Without consistent handling, some horses, especially young ones, will revert to their untrained ways. However, due to their good memory, horses with solid training from trustworthy handlers often retain what they have learned, even after a gap of many years.

Horse Breaking

Horse training refers to a variety of practices that teach horses to perform certain behaviours when asked to do so by humans. Horses are trained to be manageable by humans for everyday care as well as for equestrian activities from horse racing to therapeutic horseback riding for people with disabilities.

Historically, horses were trained for warfare, farm work, sport and transport. Today, most horse training is geared toward making horses useful for a variety of recreational and sporting equestrian pursuits. Horses are also trained for specialized jobs from movie stunt work to police and crowd control activities, circus entertainment, and equine-assisted psychotherapy.

There is tremendous controversy over various methods of horse training and even some of the words used to describe these methods. Some techniques are considered cruel, other methods are considered gentler and more humane. However, it is beyond the scope of this report to go into the details of various training methodology, so general, basic principles are described below.

The range of training techniques and training goals is large, but basic animal training concepts apply to all forms of horse training. The initial goal of most types of training is to create a horse that is safe for humans to handle and able to perform a useful task for the benefit of humans

A few specific considerations and some basic knowledge of horse behaviour helps a horse trainer be effective no matter what school or discipline is chosen:

- Safety is paramount: Horses are much larger and stronger than humans, so must be taught behaviour that will not injure people.
- Horses, like other animals, differ in brain structure from humans and thus do not have the same type of thinking and reasoning ability as human beings. Thus, the human has the responsibility to think about how to use the psychology of the horse to lead the animal into an understanding of the goals of the human trainer.
- Horses are social herd animals and, when properly handled, can learn to follow and respect a human leader.

- Horses, as prey animals, have an inborn fight or flight instinct that has to be adapted to human needs. Horses need to be taught to rely upon humans to determine when fear or flight is an appropriate response to new stimuli and not to react by instinct alone.
- Like most animals, a young horse will more easily adapt to human expectations than an older one, so human handling of the horse from a very early age is generally advised.

Breaking Process

Regardless of the goal of training, most horses go through a predictable series of steps on their way to being broken in for a given discipline.

Training of foals and younger horses

Most young domesticated horses are handled at birth or within the first few days of life, though some are only handled for the first time when they are weaned from their mothers. Advocates of handling foals from birth sometimes use the concept of imprinting to introduce a foal within its first few days and weeks of life to many of the activities they will see throughout their lives. Within a few hours of birth, a foal being imprinted will have a human touch it all over, pick up its feet, and introduce it to human touch and voice. ⁽¹¹⁾

Others may leave a foal alone for its first few hours or days, arguing that it is more important to allow the foal to bond with its dam. However, even people who do not advocate imprinting often still place value on handling a foal a great deal while it is still nursing and too small to easily overpower a human. By doing so, the foal ideally will learn that humans will not harm it, but also that humans must be respected.

While a foal is far too young to be ridden, it is still able to learn skills it will need later in life. By the end of a foal's first year, it should be halter-broken, meaning that it allows a halter placed upon its head and has been taught to be led by a human at a walk and trot, to stop on command and to stand tied. ⁽¹²⁾

The young horse needs to be calm for basic grooming, as well as veterinary care such as vaccinations and de-worming. A foal needs regular hoof care and can be taught to stand while having its feet picked up and trimmed by a farrier. Ideally a young horse should learn all the basic skills it will need throughout its life, including: being caught from a field, loaded into a horse trailer, and not to fear flapping or noisy objects. It also can be exposed to the noise and commotion of ordinary human activity, including seeing motor vehicles, hearing radios, and so on. More advanced skills sometimes taught in the first year include learning to accept blankets placed on it, to be trimmed with electric clippers, and to be given a bath with water from a hose. The foal may learn basic voice commands for starting and stopping, and sometimes will learn to square its feet up for showing in in-hand or conformation classes. If these tasks are completed, the young horse will have no fear of things placed on its back, around its belly or in its mouth. ⁽¹¹⁾

Some people, whether through philosophy or simply due to being pressed for time, do not handle foals significantly while they are still nursing, but wait until the foal is weaned from its dam to begin halter breaking and the other tasks of training a horse in its first year. The argument for handling and halter-breaking at weaning is that the young horse, in crisis from being separated from its dam, will more readily bond with a human at weaning than at a later point in its life. Sometimes the tasks of basic gentling are not completed within the first year but continue when the horse is a yearling. Yearlings are larger and more unpredictable than weanlings, plus often are easily distracted, in part due to the first signs of sexual maturity. However, they also are still highly impressionable, and though very quick and agile, are not at their full adult strength.

Rarer, but not uncommon even in the modern world, is the practice of leaving young horses completely unhandled until they are old enough to be ridden, usually between the age of two and four, and completing all ground training as well as training for riding at the same time. However, waiting until a horse is full grown to begin training is often far riskier for humans and requires considerably more skill to avoid injury.

Ground Work

After a young horse is taught to lead and other basic skills, various tasks can be introduced to the horse as it matures while it is still too young to be ridden. Some schools of training do a great deal of work with young horses during their yearling and two-year-old years to prepare them for riding, others merely reinforce the basic lessons taught to the horse as a foal and simply keep the horse accustomed to the presence of humans. Many times, a young horse did not have all necessary basic skills described above taught to it as a foal and its next two years are spent learning or re-learning basic lessons.

Several ground training techniques are commonly introduced to a young horse some time after it is a year old, but prior to being ridden. All horses usually have some or all of this ground work done prior to being ridden, though the time spent can range from hours to months. While a foal or yearling can be introduced to a small amount of ground work, a young horse's bones and joints are quite soft and fragile. So, to prevent joint and cartilage injury, intense work, particularly intense work in a confined circle (lungeing), should wait until the horse is at least two years old. Common ground training techniques include:

- Free work - The process of working a loose horse in a small area (usually a round pen 15–20 meters in diameter) with the handler holding only a long whip or a rope lariat, teaching the horse to respond to the voice and body language of the handler as he or she asks the horse to move faster or slower, to change direction, and to stop.
- Lungeing - The training of a young horse to move in circles at the end of a long rope or line, usually about 25 to 30 feet long.
- Desensitisation - The process of introducing a horse to flapping objects such as blankets, teaching the horse to allow itself to be touched by an object and not to fear things that people move about a horse.
- Tacking-Up - Introduction to a saddle and bridle or harness, without actually getting on the horse or hooking up a cart.

- Long-reining - Teaching a young horse to move forward with a person walking behind it, a precursor to both harness driving and having reins used by a mounted rider.
- Bitting - The process of accustoming a horse to a bit and bridle, sometimes with the addition of side reins that attach to a saddle, harness, or surcingle (a wide leather or nylon band that goes around the horse's barrel) and accustom the horse to the feel of pressure on the bit.

A horse is not ready to be ridden until it is accustomed to all the equipment that it needs to wear and is responsive to basic voice, and usually rein, commands to start, stop, turn and change gaits.

For some disciplines, ground work is also used to develop specific types of muscling as well as to instil certain behaviours. When ground work incorporates both mental and muscular development, it may take considerably longer for the horse to be ready to be ridden, but advocates of these methods maintain that the additional time on the ground allows the horse to advance more quickly or with better manners once under saddle.⁽¹³⁾

Riding (Backing) the Young Horse

The age that horses are first ridden, or “backed” varies considerably by breed and discipline. Many Thoroughbred race horses have small, light riders on their backs as early as the autumn of their yearling year. Most horses used in harness have a cart first put behind them at age two, and even some horses not ridden until age three will be trained to pull a light cart at two, in order to learn better discipline and to help develop stronger muscles with less stress. The vast majority of horses across disciplines and throughout the world are first put under saddle at the age of three. However, some slower-maturing breeds, such as Warmbloods, are not ridden until the age of four.⁽¹²⁾

The act of getting on a horse for the first time goes by many names, including backing, breaking, mounting, and simply riding. There are many techniques for introducing the young horse to a rider or to a harness and cart for driving, but the end goal of all methods is to have the horse calmly and quietly allow a rider on its back or behind it in a cart and to respond to basic commands to go forward, change gaits and speed, stop, turn and back up.

Ideally, a young horse will have no fear of humans and view being ridden as simply one more new lesson. A properly handled young horse that had adequate ground work will seldom buck, rear, or run away when it is ridden, even for the very first time. Horses that are unbroken, can be broken at any age, though it may take somewhat longer to teach an older horse. An older horse that is used to humans but has no prior bad habits is easier to put under saddle than is a completely feral horse caught wild off the open range as an adult. However, an adult feral horse may be easier to train than a domesticated animal that has previously learned to treat humans with disrespect.

Horse Management

Humans will manage horses in many ways but one can readily separate these management interactions in two very different ways - intensive and extensive management.

Intensive management is where human and horse work in close company - this can range from humans handling mares and foals, to exercising yearlings, to breaking horses, riding horses, driving horses, transporting horses etc. In this instance, any adverse reaction by the horse to external stimuli could have serious health and safety implications on the horse handler.⁽¹⁴⁾

Extensive management is where humans turns horses out to paddock, and although humans will monitor these horses frequently, they will not be in direct contact with them. Thus if a horse has an adverse reaction to any stimuli that will cause the horse to take flight, although the horse may get injured, the health and safety implications on the horse handler are minimal.

However, as discussed previously, horses will adapt and familiarise themselves to repeated aural and visual stimuli. Thus horses that graze in paddocks adjacent to any physical infrastructure, such as roads, airports, airfields, helicopter pads, telephone poles, electricity pylons, cell phone masts etc, become rapidly acclimatised to their presence and the noise and visual effects of these physical infrastructures rarely if ever result in injury to these acclimatised horses.⁽¹⁷⁾

Conclusion

Man has used the equine social dynamic to successfully domesticate horses for many centuries by breaking the horse into a submissive state and then by clearly defining the rules of their required interaction by training and taking on the role of the Alpha Horse. With repeated exposure to threatening situations (sight, smell, sound, touch or a combination of these stimuli), most horses will acclimatise - this is one of the main reasons that man has used horses in many roles effectively down through the centuries.

References

- 1) Heitor F, do Mar Oom M, Vicente L (2006) Social relationships in a herd of Sorraia horses Part I. Correlates of social dominance and contexts of aggression. *Behav Process* 73, 170–177. Doi
- 2) Vervaecke H, Stevens J, Vandemoortele H, Sigurjónsdóttir H, De Vries H (2007) Aggression and dominance in matched groups of subadult Icelandic horses (*Equus caballus*). *J Ethol* 25, 239–248. doi:
- 3) Krueger, K., Flauger, B., Farmer, K., & Hemelrijk, C. (2014). Movement initiation in groups of feral horses. *Behavioural Processes*, 103, 91–101. viewed January 9, 2014,
- 4) Pacheco, M.A.; Herrera, E.A. Social Structure of Feral Horses in the Llanos of Venezuela 1977 In: *Journal of Mammalogy* Nr. 78 S. 15-22
- 5) “The Natural Horse and Unnatural Behaviour.” Reproduced with permission from the Proceedings of the BEVA Specialist Days on Behaviour and Nutrition. Ed. P.A.Harris et al. Pub. Equine Veterinary Journal Ltd
- 6) University of Utah, 2002, How cells communicate during the flight or fight response, University of Utah Press, Utah,
- 7) Padgett, David; Glaser, R (August 2003). “How stress influences the immune response”. *Trends in Immunology* 24 (8): 444–448.
- 8) Williams, Carey A.Ph.D., Extension Specialist. “The Basics of Equine Behaviour,” FS #525 from Equine Science Center, Rutgers University, 2004
- 9) Budiansky, Stephen. *The Nature of Horses*. Free Press, 1997. ISBN 0-684-82768-9
- 10) Klimke, Ingrid and Reiner, The New Basic Training of the Young Horse, Lyons Press, 2000
- 11) Loriston-Clarke, Jenny, *The Young Horse: Breaking and Training*, David & Charles Book, 1999
- 12) Jansen, A; Nguyen, X; Karpitsky, V; Mettenleiter, M (27 October 1995). “Central Command Neurons of the Sympathetic Nervous System: Basis of the Fight-or-Flight Response”. *Science Magazine* 5236 (270).
- 13) Burch, Preston, *Training Thoroughbred Horses*,
- 14) Holland, Anne, *Horse racing in Britain and Ireland*, Shire Publication, 2014
- 15) Willett, Peter, *Makers of the Modern Thoroughbred*, Univ Pr of Kentucky 1986
- 16) Willett, Peter, *The thoroughbred*, Littlehampton Book Services, 1970
- 17) Le Blanc et al. 1991. “Physiological Responses of Horses to Simulated Aircraft Noise

Notes

