

In: Zeitler-Feicht (2004, translation)

Horse Behaviour Explained; origins, treatment and prevention of problem

## Locomotion behavior

### Natural behavioral patterns

Horses are not territorial. In the wild they live in home ranges, which can sometimes overlap considerably with those of other horse bands. A prime condition for this type of cohabitation is the availability of essential resources. These primarily include grazing areas, watering places, and sleeping areas, as well as possibilities for rolling and scratching, which can be located at varying distances from each other. In general, horses of a group visit these areas together because many activities are based on social facilitation.

### EXERCISE DURATION

The daily distance covered by free-roaming horses depends primarily on feed growth, on the number and the location of water sources, and on climatic conditions. Under normal conditions, horses cover a distance of about 6–11 km (3.7–6.8 miles) daily. This data, however, was derived from observations restricted to New Forest ponies, Camargue horses, and Mustangs. It cannot be excluded that, given the same conditions, breeds with higher general exercise levels, such as Arabians and thoroughbreds, would cover greater distances. As long as sufficient feed is available, all equids are relatively stationary. If, in addition to feed, sufficient watering places are available, they rarely move more than 2–2.5 km (1.2–1.6 miles) daily. In arid areas, however, longer distances often have to be covered in order to reach the next water source. From observations in feral horses in Montana, for example, it is known that their resting areas are located up to 16 km (10 miles) away from the next water source. In

this case, the animals are forced to walk great distances, because they usually require water at least every other day. Free-roaming equids migrate over longer distances in the course of the year, which is attributable to a change in climatic conditions and, as a result, feed growth. Daily weather changes also influence locomotion behavior. In windy, cold, and rainy weather, horses, especially youngsters, have an increased preference for movement.

Aside from environmental factors, exercise duration and speed depend on age, gender, and group structure. In general, the proportion of total movement represented by trot and canter is larger in young animals and stallions than in adult mares (49). Consequently, harem stallions move more than mares, and stallions in bachelor groups more than harem stallions. In addition, running and fighting games take place particularly frequently among youngsters. These differences in locomotion behavior are attributable to differences in the motivation for certain activities between horses of different age and gender.

### GAITS

The main gait of horses under natural conditions is the walk. Aside from grazing, during which slow movement occurs and which occupies 60% of a 24-hour day, all wanderings of horses mainly take place at this gait. During these wanderings, horses move on trails that, depending on the nature of the ground, are approximately 30 cm (12 in) wide, such that each horse virtually follows in the footsteps of the one in front. This walking like a "line of ducks" has safety purposes because the dominant mare leads the group. She knows the trails and the ground conditions and the other horses can trust her experience. The harem stallion usually moves at a distance of several meters (several yards) parallel to the herd or represents the tail end of the group. It is his job to drive the herd forward, to keep it together and, if necessary, to defend it. Because herd size is usually small, all animals have visual, olfactory, and auditory contact with each other. In addition, the trails most often zigzag, which further improves visual contact between the group members.

Under free-roaming conditions, faster gaits are usually exhibited only temporarily during play, in massive conflict situations, or during flight. Backing, sideways movements, turning, rearing, and kneeling are also part of the normal repertoire of movements. They can be observed especially



49 Under natural conditions, horses canter only for short periods of time.

in the course of social interactions as well as during ritualized fighting. Jumping across obstacles is generally only observed in desperate situations.

### NEED FOR EXERCISE AND EXERCISE REQUIREMENT

These two terms have to be differentiated. The need for exercise represents the emotions and tendencies of a horse and is aroused by various endogenous (e.g. hunger) and exogenous (e.g. approaching predators) stimuli. For this reason, the availability of essential resources has a significant influence on whether and how much a horse moves. Under natural conditions, horses invariably have to move more in order to satisfy their need for feed, quench their thirst, and find protection from insects. It is the exception for all resources to exist in close proximity within the activity radius, and for grass to be present in abundance. If this is the case, however, even horses in the wild show little tendency to move. This behavior is useful because the "fat times" have to be taken advantage of to replenish one's body reserves. Another important stimulus for movement is the presence of companions. Depending on age, gender, and group structure, horses exhibit different degrees of motivation for fighting and running games, for the search for sexual partners, for exploration, and so on. The need for exercise also varies depending on breed. Arabians, for example, even more so than thoroughbreds, are horses with a lot of energy that like to run a lot, while draft horses have a significantly lower need for exercise. The role of feeding should not be underestimated either. In general, the need for exercise will be increased with feeding of too much high-quality feed.

Exercise requirement, on the other hand, denotes the amount of exercise that is necessary to keep a horse healthy, or in other words to maintain the functionality of its physiology and morphology (e.g. circulation). The exercise requirement is the result of the horse's evolution into a flight animal. The musculoskeletal apparatus, the heart and circulatory system, all organ systems, have adapted to this manner of movement for millions of years. Only since domestication has it no longer been essential for the horse to walk long distances daily. But this time period is very short compared to evolution, and therefore does not alter the exercise requirement of horses considerably. Even today, movement over several hours at a slow walk is an important requirement for a horse to remain physically and psychologically healthy during its lifetime.

- Under natural conditions, horses move at a walk for about 16 hours a day. Faster gaits are rarely exhibited.
- Need for exercise and exercise requirement:
  - The need for exercise requires a stimulus to be activated (= subjective).
  - The exercise requirement results from the phylogenetic development. Accordingly, the horse is adapted to slow, continuous movement for 16 hours per day (= objective).

### Implications for management and handling

#### EXERCISE-PROMOTING MANAGEMENT

The only situation in which horses encounter largely natural exercise conditions is in a social group and with pasture management. For this reason, horses should be given access to pasture whenever possible, either throughout the day or for at least several hours daily. With the management practices that are common nowadays, the horses' exercise requirement is generally met in a grossly insufficient manner. Stall confinement is still the most popular form of management. Without access to a run, horses are sentenced to standing in one place for at least 23 hours a day, if not more. Studies by Rodewald (1989), as well as recent interviews by Beyer (1998) in 56 boarding facilities with more than 2,300 horses, confirm that more than 95% of horses are ridden or driven for less than 1 hour per day. The increased occurrence of "stocked up legs" is not the only signal that this type of management results in physical damage. Access to a pasture without vegetation and without further stimulus for movement will not solve the problem, however. Under these conditions, horses will also spend most of their time standing rather than moving (50).

It is useful to take note of the natural exercise behavior of horses when designing management systems. Exercise stimuli have to be provided to motivate horses to walk (51). An optimal system is the run-out shed with separate functional areas, also called a multi-room barn. The basic concept for this management system is based on different, spatially separated areas designed to meet the horses' varying needs. Similar to the situation in the wild, only on a much smaller scale, horses in this type of management system have to move in order to satisfy their different

nee  
dec  
sys  
frec  
exp  
Ha  
cov  
per  
dail  
use:  
suc  
pos  
are  
will  
gen  
conc

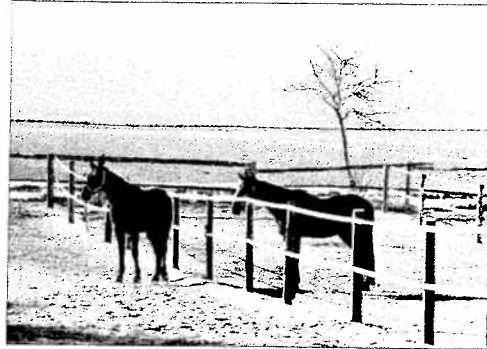


51 Lon  
several

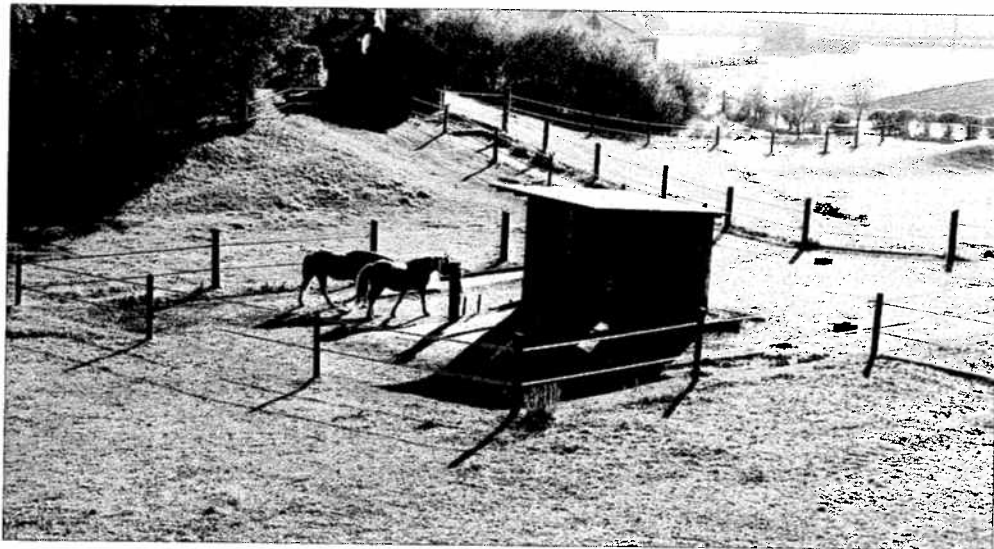
Man:  
Near-  
24-hc  
Run-c  
Day p  
Run-c  
indivc

\*539

needs such as eating, drinking, and resting. The decisive factor for an increase in exercise in these systems is the feeding frequency. The higher the frequency, the more the horses will walk. In an experiment performed by Frentzen (1994), Haflinger horses that were fed six times daily covered an average distance of 4.8 km (3 miles) per day, which took care of a large part of their daily exercise requirement (Table 5). It is also useful to design the different functional areas such that distances between them are as long as possible, because the further the functional areas are apart from each other, the further the horse will have to walk to satisfy all its needs. A generously sized area will further prevent concentration of animals in preferred areas and



50 Horses in pastures devoid of vegetation or other stimuli for movement spend most of their day standing.



51 Long distances between the different functional areas are a natural way to stimulate horses to walk for several hours per day.

**Table 5** Daily distances covered by horses in different management systems (Rehm, 1981; Rodewald, 1989; Kusunose *et al.*, 1985; Frentzen, 1994)

Management system	Distance
Near-natural management	6–17 km (3.7–10.6 miles)
24-hour pasture access	8.4 km (5.2 miles)
Run-out system with division into functional areas	4.8 km (3 miles)
Day pasture	3.5 km (2.2 miles)
Run-out system without division into functional areas	1.8 km (1.1 miles)
Individual box stall	0.17 km* (0.1 miles)

\*539 steps total: 39% sideways, 32% turning, 20% straight forward, 9% backwards