

## **Tackling transport stress – a review on recent research in horse transport and training**

*Discusses the effect of loading and transport on the welfare of horses and recent research in alternative horse-training methods to reduce stress in loading and transport.*

**By Valeria Leung**

Word count: 1011

### **Introduction**

Every day, horses are transported for various reasons, usually using a trailer pulled by a vehicle. Although transporting horses is very common, it is widely accepted that it places much stress on horses. Stress is “an environmental effect on an individual that over-taxes its control systems and reduces its fitness” (Broom, 1983); it is often measured by behavioural and physiological changes. Transport was found to induce an increase in serum cortisol concentration and heart rate (Clark *et al.*, 1993) as well as exacerbate respiratory disease (Oikawa *et al.*, 2004). It is therefore evident that a horse’s welfare can be compromised if it is poorly trained and adapted to transport. Poorly trained horses often exhibit problematic behaviour associated with transport, and can be a threat not only to their own safety, but also to their handler’s. This article reviews recent research in horses’ response to transport and alternative training methods with a focus in loading.

### **Discussion**

A study conducted by Tateo *et al.* (2012) investigated the change of behaviour and physiological parameters in two journeys of different distances (50km and 200km) using 12 horses. The data were compared at different stages: at rest, loading, unloading and at two and four hours after the journey. It was concluded that the shorter journey was more stressful to horses, as demonstrated by a significantly higher serum cortisol and glucose concentration, packed cell volume (PCV), heart rate and more movements during the ride. The authors attributed these responses to the insufficient time for adaptation when compared to the longer journey, and hence an elevated stress response. The study also identified that, irrespective of the distance travelled, loading was always stressful as reflected by the highest PCV value, an increased heart rate and respiratory rate being recorded during loading.

It is not surprising that loading was identified as the most stressful component of transport in the study of Tateo *et al.* (2012). Loading involves entering a dark, enclosed space and being confined, all of which are against a horse’s natural behaviour. Appropriate training is therefore critical for safe and relatively stress-free loading. Traditionally, negative reinforcement (NR) is widely employed in horse-training, and is especially advocated for horses with loading problems. NR involves the application of an aversive stimulus, such as pressure on a lead rope, which is removed at once when the horse complies. The key to NR is to relieve the pressure immediately and consistently. NR can therefore be difficult to apply accurately and problem behaviours may arise as a result. This is because undesirable behaviours, such as rearing up, can also cause the pressure to be prematurely removed, thus reinforcing the behaviours (Slater & Dymond, 2011). Also, undesirable behaviours are often followed by more NR. Continued application of the aversive stimulus may prompt insensitivity so that stronger and more frequent stimuli are needed to achieve the same effect. This can exacerbate any stress response and potentially compromise the welfare of the animal (McGreevy & McLean, 2007). Positive reinforcement (PR), however, involves rewarding the animal for appropriate behaviour. Although PR is less commonly employed and still regarded as an alternative training method, recent research has demonstrated that PR is a better strategy in training horses with loading problems.

In a study conducted by Hendriksen *et al.* (2011), 12 horses that could not be loaded by their owners were trained using either PR or NR. The PR group was trained to follow a target into a trailer with food and a click from a clicker as rewards, while the NR group was trained using a lead rope and a whip. The PR group exhibited significantly less avoidance and discomfort behaviour, including tail-whipping and widening of the eyes and nostrils. On average, the PR group took less time to reach the training goal of full loading. However, the authors pointed out that PR was only effective if a reward valued by the horse was identified. One horse in the study was not interested in the treat given, and so was not successfully trained. Nevertheless, the authors concluded that PR was, in general, a more efficient training solution and resulted in a lesser stress response.

In another study conducted by Slater and Dymond (2011), four problem-loading horses were trained with differential reinforcement (DR) and shaping, which are modified PR procedures. DR involves differentially giving positive reinforcement to alternative behaviours or behaviours that are incompatible with the problem behaviour such that the problem behaviour is reduced without any direct treatment. Shaping is a technique in which successive approximations of the ultimate training goal is positively reinforced. The horses were first trained to associate a click with a food reward, and then to touch a target. The target was presented for a gradually shortened time and at a progressively greater distance. The horse was then trained to enter the loading truck progressively in 10 stages, with reinforcement for the correct behaviour at each stage. No reinforcement was given if the horse behaved incorrectly or did not respond. All four horses were successfully trained to fully load into the truck without using any NR, and problem behaviours, including turning and backing up, were eliminated even without any direct treatment to reduce them. Moreover, the loading response was generalised to new trailers and handlers.

## Conclusions

Recent research has contributed to our understanding of the source of stress in transporting horses. Shorter journeys were shown to induce greater behavioural and physiological changes indicative of stress, and loading was found to be a stressful component in transport. These issues should be addressed in order to reduce transport stress in horses. One way is to use PR in the training of trailer-loading. PR is more efficient than NR and elicits a reduced stress response. DR and shaping are also effective strategies, and can be applied to systematically eliminate undesirable behaviours instead of using NR. Employing a training protocol of PR and avoiding NR both help to reinforce trailer-loading as a positive procedure for horses, and consequently reduce the stress associated with loading and transport.

## References

- Broom, D.M. (1983) The stress concept and ways of assessing the effects of stress in farm animals. *Applied Animal Ethology* 11:1, 79.
- Clark, D.K., Friend, T.H., Dellmeier, G. (1993) The effect of orientation during trailer transport on heart rate, cortisol and balance in horses. *Applied Animal Behaviour Science* 38:3-4, 179-189.
- Hendriksen, P., Elmgreen, K., Ladewig, J. (2011) Trailer-loading of horses: Is there a difference between positive and negative reinforcement concerning effectiveness and stress-related signs?. *Journal of Veterinary Behavior: Clinical Applications and Research* 6:5, 261-266.
- McGreevy, P.D. McLean, A.N. (2007) Roles of learning theory and ethology in equitation. *Journal of Veterinary Behavior: Clinical Applications and Research* 2:4, 108-118.
- Oikawa, M., Takagi, S., Yashiki, K. (2004) Some aspects of stress responses to road transport in thoroughbred horses with special reference to shipping fever. *Journal of Equine Science* 15:4, 99-102.

Slater, C., Dymond, S. (2011) Using differential reinforcement to improve equine welfare: Shaping appropriate truck loading and feet handling. *Behavioural Processes* 86:3, 329-339.

Tateo A, Padalino B, Boccaccio M, Maggiolino A, Centoducati P. Transport stress in horses: Effects of two different distances. *Journal of Veterinary Behavior: Clinical Applications and Research* 2012;7:33-42