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Horse Transportation and its Implications for Animal Welfare

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Introduction

In Australia and around the world, horses are transported on a daily basis, most commonly by road or air. Transportation is a stressful event for many of them and this has important welfare implications. Many horses exhibit trailering problems that contribute to the stress of the experience. The orientation of horses while being transported by road may play a significant role in decreasing or increasing stress. In an effort to determine optimal ways to transport horses, several studies have used biochemical indicators and physiological factors as stress indicators. Whether or not horses respond differently to transportation stress, depending on their previous experience, health status, social interactions, environmental conditions, breed, age and gender, has also been studied.

Discussion

According to a survey of 103 horse owners with trailer problems (Lee et al., 2001), horses that do not want to go onto a float or truck and have problems loading and/or travelling or unloading, have higher indices of stress, which has implications for animal welfare. The aim of this study was to determine the prevalence of each type of trailering problem and whether or not certain breeds were more likely to exhibit particular trailer problems. The results showed that problems with loading were the most common, followed by misbehaviour during travel. No breed propensity became evident.

It seems likely that the trailer itself may be the source of some loading problems, as horses may be reluctant to enter a dark, enclosed space. Loading problems may be acquired in the young horse, and past experience in transport may play a significant role in trailering problems. The design of the trailer could be an important factor in minimising stress in horses that must travel. Single- or two-horse trailers are often less stable than a truck or livestock trailer. This study had limitations because of the small number of people surveyed. Furthermore, because it relied on people's opinion of the problem, no comparison was possible among the horses and the severity of the problems involved.

For some time it has been debated whether the animal's orientation during transport could improve balance and reduce the need to make postural adjustments, and whether orientation might reduce the effects of transportation stress and improve the animal's long-term welfare. In one study (Toscano and Friend, 2001), 12 mature horses were transported around a 14.4 km artificial course, complete with bumps, turns and hard stops. By using a large commercial trailer that would allow for simultaneous comparisons, it was hoped that the study would help to clarify the effects of forward- and rear-facing orientation on the movement of the horses. Each horse was transported around the course facing forward and facing the rear, in a 16-m-long, single-deck, open-topped semi-trailer. Movement was recorded by video cameras and each animal's total forward and backward motion during transport was calculated to estimate the effect of orientation on each horse's ability to maintain its balance. The horses' orientation did not appear to decrease movement, but certain horses demonstrated a superior ability to maintain balance in a particular orientation.

It was concluded that neither the forward- nor the rear-facing orientation had a clear overall effect on the horizontal motion of the horses during transportation. However, individual characteristics

and other factors, such as experience of travel with a certain orientation, seemed to play a larger role than orientation alone in the horses' ability to maintain their balance.

In a similar study of 59 horses (Collins et al., 1999), the lack of preferred forward- or rear-facing orientation was attributed to density effects, horse interactions, the preference of horses to look out through ventilation slots in a forward direction, or individual preferences of the selected horses. Smith et al. (1994) showed no difference in the heart rate of horses when tied in either the forward- or rear-facing direction. Similarly, cortisol concentrations were unaffected by orientation (Clark et al., 1993). Several studies have tested the hypothesis of rear- versus forward-facing horses and the results do not indicate a clear preference among horses nor a substantial difference in physiological indicators of consequent stress, including heart rate.

Weight loss is a significant issue in relation to long-distance transportation. In a study of six horses that were flown from Europe to Atlanta (Marlin et al., 2001), weight loss was $4.1 \pm 0.8\%$ bodyweight after the flight and the horses took about seven days to regain the weight. Slight visible sweating was observed in all horses during the flight, but otherwise the horses appeared calm during all episodes of transport. Transportation caused a significant increase in plasma sodium and albumin concentrations. Although all the horses were dehydrated after the flight, they rehydrated rapidly. However, there was a relatively slow recovery in bodyweight. The aim of this study included providing data on which to base recommendations for safe transportation, but the study was limited by the small number of horses involved. However, it did show that transportation of this nature is stressful, despite the fact that these were Olympic-standard horses accustomed to travelling and to stressful situations.

Another study of 15 mature horses (Stull and Rodiek, 2000) showed a 6% loss in bodyweight after 24 hours in transit, probably due to heat dissipation, sweat loss and decreased gut fill during the journey. Plasma cortisol and neutrophil:lymphocyte ratio increased with the duration of transportation. There were significant physiological responses in horses undergoing 24 hours in transit, including changes in muscle metabolism, stress indices, dehydration and bodyweight. These responses may increase susceptibility to disease, and elevated glucose concentrations after transportation may alter energy metabolism during an athletic endeavour performed within 24 hours after arrival.

There are many factors that cause distress in horses, with transportation being a major one. Because of the frequency of travel and the number of horses involved, this distress has become a significant welfare issue. Attempts to decrease the stress through interventions, such as changing the orientation of the horse, have not proved wholly successful. Past transport experience of the horses and their resulting ability to respond to the difficulties of travel are important factors to consider in deciding optimum travel orientation, and may allow for improved health and fitness during travel. Many horses exhibit problems trailering and this is a cause of increased distress for them. Dehydration is a significant issue, because many horses that are transported are called on to perform within a couple of hours after arriving at their destination. This has welfare implications for the horses involved, and further research on this topic is necessary.

References

Clark, D.K., Friend, T.H. and Dellmeier, G. (1993) The effect of orientation during trailer transport on heart rate, cortisol and balance in horses. *Applied Animal Behaviour Science*. 38, 179-189.

Collins, M.N., Friend, T.H., Jousan, F.D. and Chen, S.C. (1999) Effects of density on displacement, falls, injuries, and orientation during horse transportation. *Applied Animal Behaviour Science*. 67, 169-179.

Lee, J., Houpt, K. and Doherty, O. (2001) A Survey of Trailering Problems in Horses. *Journal of Equine Veterinary Science*. 21, 237-241.

Marlin, D.J., Schroter, R.C., White, S.L., Maykuth, P., Matthesen, G., Mills, P.C., Waran, N. and Harris, P. (2001) Recovery from transport and acclimatisation of competition horses in a hot humid environment. *Equine vet. J.* 33, 371-379.

Smith, B.L., Jones, J.H., Carlson, G.P. and Pascoe, J.R. (1994) Body position and direction preferences in horses during road transport. *Equine vet. J.* 26, 374-377.

Stull, C.L. and Rodiek, A.V. (2000) Physiological responses of horses to 24 hours of transportation using a commercial van during summer conditions. *J. Anim. Sci.* 78, 1458-1466.

Toscano, M.J. and Friend, T.H. (2001) A note on the effects of forward- and rear-facing orientations on movement of horses during transport. *Applied Animal Behaviour Science*. 73, 281-287.