

Improving the Welfare of Horses through the use of Non-traditional Training Methods

By Danielle Gibson

Introduction

Since their domestication horses have been used for food, transport and recreation (Goodwin, 2002). The usefulness of horses in filling these roles depends on whether or not they can be trained (Sappington, 1997). For training to be effective and humane it must incorporate an understanding of learning theory, natural horse behaviour and the influence of motivation (Waran *et al.*, 2002).

Discussion

Although traditional methods were effective (McGreevy, 2007), by and large they were not concerned with horse welfare (Waran *et al.*, 2002). Alternative trainers have refined traditional techniques by advocating using body language and natural behaviour, though these methods are still based on negative reinforcement and are generally interpreted in the light of learning theory (McGreevy, 2007). The large number of horses “breaking down” during training or even being destroyed for behaviour problems indicates the continuing need for improving training methods to ensure good horse welfare (Goodwin, 2002).

Polito *et al.* (2007) investigated whether “sympathetic” training, as advocated by round-pen trainers, would improve the early training of yearlings by reducing stress and thereby improving their welfare. Sixteen thoroughbred yearlings being prepared for auction were studied. Eight were handled using conventional practices for habituating them to humans while the others were additionally given two round-pen training sessions as described by Roberts (1997). Each horse was tested for reactivity (signs of resistance or nervousness) during a series of procedures routinely applied to young horses, including grooming and first application of a girth. Results showed that both methods were effective in habituating the horses to humans and, although there were no significant variations in heart rate, the control group displayed significantly more negative reactions during the tests, indicating higher stress levels (Polito *et al.*, 2007).

Prey animals, such as horses, are highly motivated to avoid unpleasant stimuli (Casey 2002), so negative reinforcement is effective in their training. To be effective and humane, it should be subtle, consistent and removed immediately when the horse shows the appropriate response (McGreevy, 2007). However, negative reinforcement is often confused with punishment and incorrectly applied (Warren-Smith & McGreevy, 2007). Improper application of negative reinforcement can lead to fear or conflict behaviours (McGreevy & McLean, 2005) and be detrimental to welfare.

Warren-Smith and McGreevy (2007) evaluated the effectiveness of blended positive and negative reinforcement in shaping the halt response of horses during long-reining. Twenty horses were paired for breed, sex and age with one horse from each pair being assigned to the control group and the other to the treatment group. Horses in the control group were trained with negative reinforcement while those in the treatment group were trained with both negative reinforcement and concurrent positive reinforcement using a telemetrically operated reward device that delivered a food reward to the horse as soon as it responded appropriately. Results showed that using positive reinforcement did not cause the treatment horses to halt faster than control horses. Although no significant differences between the groups were found in most parameters measured, horses in the control group were found to shake their heads vertically more often than treated horses. This is significant as an unstable head carriage is often a sign of discomfort or an expression of conflict (Warren-Smith & McGreevy, 2007). Horses in the treatment group also showed more licking and mouthing the bit, which is often considered a sign of the horse relaxing and “accepting” the bit. While some of the results of this study were inconclusive, others indicate that positive reinforcement can be used to make the horse a more willing and relaxed participant in training.

The timing of a reinforcer is known to be critical in operant conditioning (Mills, 1998) as a delay between the response and the reinforcer increases the likelihood that the horse will associate a different response with the reward (Waran *et al.*, 2002). This means that positive reinforcement is often not feasible in equitation (Potter & Yeates, 1990) as it would be difficult for a rider to supply a positive reinforcer within the appropriate period while maintaining continuity of the activity. To overcome this, trainers can use a secondary reinforcer such as a “clicker” to bridge the gap between the desired behaviour and the arrival of a primary reinforcer (Karrasch *et al.*, 2000).

The use of negative reinforcement potentially has greater welfare implications in horses that have been previously abused or neglected. Application of a mild aversive stimulus to an animal with a history of chronic stress can produce a heightened stress response (O'Connor *et al.*, 2004). Innes and McBride (in press) studied the effectiveness of clicker training (positive reinforcement) in training rehabilitated horses. Sixteen rescued ponies were randomly allocated to either the control group or the treatment group. Each pony underwent basic training, including standing to be groomed. Weekly reactivity tests were conducted. The control group was trained using negative reinforcement while the treatment group was clicker trained. Few significant differences were found between the treatments. However, the results did tend to suggest that animals under the positive reinforcement regime were more motivated to participate in training and, as a result of displaying more “trial-and-error learning” behaviours, were more likely to perform the correct response (Innes & McBride, in press). This motivation may make the rehabilitation process less stressful and thereby improve the horses’ welfare.

All of these studies were limited by their small sample size, which may have contributed to the low number of significant differences between the control and treatment groups. Analysis of the results was also made difficult by the absence of a reliable standard method of assessing discomfort and stress. All of the studies used variability of heart rate and varying behavioural responses as measures of stress, which means that meaningful results have to be extrapolated from one study to another and are therefore open to some interpretation.

Conclusion

Research into training methods can provide further information on learning in horses and be used to develop training methods that enhance learning and motivation and thereby improve both the effectiveness of training and the welfare of the horse.

References

- Casey, R. (2002) Clinical problems associated with the intensive management of performance horses. In: Waran, N. (Ed.) *The Welfare of Horses*. Kluwer Academic Publishers, Dordrecht, The Netherlands, p.19-44.
- Goodwin, D. (2002) Horse behaviour: Evolution, domestication and feralisation. In: Waran, N. (Ed.) *The Welfare of Horses*. Kluwer Academic Publishers, Dordrecht, The Netherlands, p.1-18.
- Innes, L., McBride S. (2008) Negative versus positive reinforcement: An evaluation of training strategies for rehabilitated horses. *Applied Animal Behaviour Science*. In press. Doi:10.1016/j.applanim.2007.08.011.
- Karrasch, S., Karrasch, V., Newman, A. (2000) *You can train your horse to do anything: on target training, clicker training and beyond*. Kenilworth Press, Buckingham, UK.
- McGreevy, P. (2007) The advent of equitation science. *The Veterinary Journal* 174: 492-500.
- McGreevy, P., McLean, A. (2005) Behavioural problems in the ridden horse. In: Mills, D., McDonnell, S. (Eds.), *The Domestic Horse, The Evolution, Development and Management of its Behaviour*. Cambridge University Press, Cambridge, UK, p.196-211.

Mills, D. (1998) Applying learning theory to the management of the horse: the difference between getting it right and getting it wrong. *Equine Veterinary Journal Supplement 27*: 44-48.

O'Connor, K., Ginsberg, A., Maksimova, E., Frank, J., Johnson, J., Spencer, R., Campeau, S., Watkins, L., Maier, S. (2004) Stress-induced sensitization of the hypothalamic-pituitary adrenal axis is associated with alterations of hypothalamic and pituitary gene expression. *Neuroendocrinology 80*: 252-263.

Polito, R., Minero, M., Canali, E., Verga, M. (2007) A pilot study in yearlings' reactions to handling in relation to the training method. *Anthrozoos 20* (3): 295-303.

Potter, G., Yeates, B. (1990) Behavioural principles of training and management. In: Evans, J., Borton, A., Hintz, H., Vleck, L. (Eds) *The horse*. W.H. Freeman and Company, New York, USA.

Roberts, M. (1997) *The man who listens to horses*. Arrow Books, London, UK.

Sappington, B., McCall, C., Coleman, D., Kuhlert, D., Lishak, R. (1997) A preliminary study of the relationship between discrimination reversal learning and performance tasks in yearling and 2-year-old horses. *Applied Animal Behaviour Science 53*: 157-166.

Waran, N., McGreevy, P., Casey, R. (2002) Training methods and horse welfare. In: Waran, N. (Ed) *The Welfare of Horses*. Kluwer Academic Publishers, Dordrecht, The Netherlands. p.151-180.

Warren-Smith, A., McGreevy, P. (2007) The use of blended positive and negative reinforcement in shaping the halt response of horses (*Equus caballus*). *Animal Welfare 16*: 481-488.