

'Rollkur': a Harmless Training Technique or a Threat to Horses' Welfare?

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Introduction:

Dressage has evolved over more than two millennia, from its conception by Xenophon (430-355 B.C.) to its contemporary form (Dossenbach and Dossenbach, 1997). The perception of what constitutes flawless dressage and how best to achieve this ideal is highly subjective, therefore a potential welfare risk exists for horses subjected to varying training techniques. One technique that has attracted considerable attention in the past year following its use by high-profile riders is 'rollkur'. The Fédération Equestre Internationale (FEI) defines 'rollkur' as: '...a technique of working/training to provide a degree of longitudinal flexion of the mid-region of the neck that cannot be self-maintained by the horse for a prolonged period of time without welfare implications' (Anon., 2006). This paper will examine recent studies conducted into horse-rider coordination dynamics, the influence of head and neck position on the kinematics of the horse and physiological sequelae of 'rollkur', and their welfare implications.

Discussion:

Head carriage has long been a pre-occupation of competitive dressage (Dossenbach and Dossenbach, 1997). A study conducted by Rhodin *et al.* (2005) aimed to objectively analyse the influence of head and neck position on the kinematics of the back in horses, thus testing the popular hypothesis that deviation of the head and neck from the free position improves movement in horses. Using a six-camera system and markers attached to the horses' skin over various bones of the back, head and legs, an analysis of the motion of 11 warmbloods was carried out as they worked on a treadmill at walk and trot with their head and neck in three different positions: i) free, ii) head and neck lowered, iii) head and neck elevated. Both position (ii) and (iii) were found to reduce flexion-extension movement of the caudal back in walk, with position (iii) also decreasing axial rotation, lateral bending of the lumbar back and stride length.

This study was limited by the risk of skin-displacement artefacts, however motion analysis relying on the use of surface markers has previously been found to be valid (Faber *et al.*, 2001). A further limitation was the lack of consideration of the influence of the rider on back kinematics, as riders generally re-distribute horses' weight caudally during collection (Licka *et al.*, 2004).

The findings raise concerns for the welfare of horses ridden in a constricted frame and disprove claims that 'rollkur' stretches and strengthens horses' backs (Begeman *et al.*, 2006). The implications of decreased back movement accompanying neck elevation are especially significant in 'rollkur', which involves a sustained alteration in head and neck carriage. 'Rollkur' is particularly hazardous for young horses as persistent neck elevation may inhibit muscle development (Heuschmann, 2006).

A recent study aimed to compare workload and stress in horses ridden 'rollkur' with those ridden in a natural frame (Begeman *et al.*, 2006). Eight warmbloods were ridden in both frames at the walk, trot and canter, with periods of relaxation between each gait. Workload was assessed via

measurement of heart rate, blood lactate and glucose concentrations and packed cell volume and was found to be higher following the 'rollkur' test. Evidence of stress (as indicated by serum cortisol concentration), however, was not associated with 'rollkur'. These results, together with subjective evaluations of the quality of work, indicate that 'rollkur' results in better use of the body by horses and does not pose a welfare risk.

Both the use of draw-reins to achieve hyperflexion and the small sample size limited this study. Furhtermore 'rollkur' as interpreted by Begeman *et al.*, greatly differs from 'true rollkur' as defined by the FEI. The lack of stress detected in this study, therefore, may not be a true representation of the effects of 'rollkur' as used by elite dressage competitors. Traditional 'rollkur', as developed by Baucher (1796-1873) involves '...simultaneous application of the driving and restraining aids...' (Decarpentry, 1948). This technique omits the release of pressure integral to successful negative re-enforcement, the training method employed in dressage (McLean, 2003). 'True rollkur', therefore, is likely to generate conflict in the horse and may ultimately induce a state of learned helplessness, compromising welfare (Jeffcott *et al.*, 2006).

It may seem self-evident that synchronised '...co-ordination...between...horse and rider requires practice and training', however this finding by Kelso *et al.* (2005) may benefit the welfare of dressage horses by shifting the focus away from head carriage in preliminary and novice competitions. Motion analysis of a national-level and novice rider riding a horse at sitting trot was executed using a similar system to that in Rhodin *et al.* (2005). Tight phase-synchrony was displayed by the expert rider in movement of the joints from the shoulder to the wrist and of their upper body in relationship to the horse's trunk. In contrast, the novice exhibited a phase-shift in movements of the elbow, shoulder and wrist and greater variation in time-series of the angle between her trunk and the vertical. A higher variability in the time between extensions in the horse when ridden by the novice was also observed. It can therefore be concluded that novice riders introduce instability into the natural motion system of the horse (Peham *et al.*, 2004).

The above results indicate that novice riders should not attempt to mimic 'rollkur', as their lack of core stability may result in excessive and unbalanced use of the reins, potentially confusing the horse and inducing stress (Jeffcott *et al.*, 2006). The above study was limited by its small sample size, but the findings of Peham *et al.*, who performed a similar experiment on 21 horses, confirmed those of Kelso *et al.*

Conclusion:

Current research confirms the supposition that hyperflexion of the neck performed by skilled riders for short periods of time is not detrimental to horse welfare (Anon., 2006). Continuous restraint of the head and neck, however, has the potential to harm horses both physically and psychologically (Rhodin *et al.*, 2005; Jeffcott *et al.*, 2006). Further research into the consequences of 'true rollkur' is required before a definite conclusion on the welfare implications of this training technique can be drawn.

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