

A review of recent studies into the effect of 'Rollkür' on the wellbeing of competition horses

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Introduction

The Federation Equestre Internationale (FEI), has long been concerned with the welfare of horses in competition, and in 1990 it developed a Code of Conduct stating that 'all riding and training methods must take account of the horse as a living entity and must not include any technique considered by the FEI to be abusive' (Atock & Williams, 1994). The technique currently attracting the attention of the FEI is Rollkür, or hyperflexion, a training method used in dressage in which the head and neck are maintained in a deep and round position (van Breda, 2006). It has generated much public criticism (van Oldruitenborgh-Oosterbaan *et al.*, 2006) not all of which has been objective, because little quantitative data have been available until recently. The need for scientific data in evaluating the welfare of the horse has been recognised by McGreevy (2007), and studies published in the past year (van Oldruitenborgh-Oosterbaan *et al.*, 2006; van Breda, 2006; van Weeren, 2006) have sought to meet this aim.

Discussion

Both van Breda (2006) and van Oldruitenborgh-Oosterbaan *et al.* (2006) conducted studies to determine the stress encountered by horses when ridden in Rollkür. The study by van Oldruitenborgh-Oosterbaan *et al.* used eight riding-school horses in two identical tests, one test ridden in Rollkür (achieved by the use of draw-reins), and one in a natural frame. Heart-rate monitors and blood sampling were used to collect quantitative data on workload and stress. There was a significant increase in heart rate for the Rollkür test at the trot, compared with the trot in the natural test. Blood lactate and pH both increased significantly during the Rollkür tests, but packed cell volume, HCO₃ concentration and pCO₂, glucose concentration, electrolytes, creatinine kinase and cortisol all failed to display a significant difference between the two tests.

These results indicate that while the workload was higher during Rollkür, stress levels did not increase. However, the hyperflexion used in this test was neither as pronounced nor as prolonged as would be used in Rollkür in dressage horses. As van Oldruitenborgh-Oosterbaan *et al.* (2006) note, Rollkür actually involves pronounced flexion in the mid-cervical region with 'the angle between the underside of the neck and the mandible being almost entirely closed'. While the authors proposed that the head position they imposed on relatively untrained horses is equivalent to an exaggerated Rollkür in elite dressage horses, there are no quantifiable data to support this. Further, the study included the subjective observation that the horses appeared to be more relaxed with greater use of the back and hind limbs while in draw reins. This is in contrast with Ödberg & Bouissou (1999), who noted that the use of draw reins can result in a loss of impulsion and false collection if used continuously.

Unlike van Oldruitenborgh-Oosterbaan *et al.* (2006), whose study used only riding-school horses, the study by van Breda (2006) examined the effect of Rollkür on stress levels in horses that are regularly trained with the technique. The study compared the heart rate variability (an accepted measure of stress [Reitmann *et al.*, 2003]) of trained recreational horses that were not ridden in Rollkür, with that of international-standard dressage horses, that were ridden in Rollkür for 25 of the 75 minutes of their daily training session. The lack of variability indicates that the dressage horses encountered less stress than the recreational horses during training. While this study improves on that of van Oldruitenborgh-Oosterbaan *et al.* (2006) by using the actual Rollkür technique, it is still limited in that the recreational horses and the dressage horses are of different breeds and are subjected to different husbandry practices, making direct comparisons unreliable. Furthermore, the effect of Rollkür on the recreational horse was not studied.

van Weeren (2006) further examined the physiological aspect of the technique by comparing the range of motion permitted by individual vertebrae when the head and neck are in varying positions. When the neck was lowered and flexed and the head considerably behind the vertical, as it would be in Rollkür, there was significant flexion in the thoracic region and extension in the lumbar region. Evidently, the Rollkür technique does influence thoracolumbar kinematics. However, the study showed that more disturbances occurred when the head was in a greatly elevated position, the opposite of Rollkür. Due to the lack of long-term observation, this study was unable to support or contradict Weiler (1998, in van Breda, 2006), who originally suggested that dressage horses have an increased number of head and neck problems, notably, exostoses of the nuchal crest from overloading of the nuchal ligament.

The limitations of all three studies necessitate caution in interpreting the results. The lack of long-term studies is perhaps the most concerning. Further, both van Oldruitenborgh-Oosterbaan *et al.* (2006) and van Breda (2006) concluded that in experienced hands, the technique did not appear to cause undue stress, yet as top international riders continue to win using Rollkür, other riders with less advanced horses may try to emulate them. Neither of these two studies addressed the effect of Rollkür on non-dressage-trained horses. While van Oldruitenborgh-Oosterbaan *et al.* used non-dressage horses, they failed to use the actual Rollkür technique and van Breda compared dressage horses undergoing the technique with recreational horses not undergoing it at all.

Conclusion

Along with more definitive studies into stress, workload and vertebral kinematics, there are other areas that warrant investigation before Rollkür should be considered a harmless practice. Restrictions on vision and respiratory function imposed on the horse while in Rollkür (McGreevy, 2007), and the possibility of the horse entering a state of learned helplessness (McGreevy, 2007; Ödberg & Bouissou, 1999) should perhaps be studied. As noted in the FEI report into the use of Rollkür in International Competition (FEI, 2006), further research will be conducted to 'confirm unequivocally whether or not there is a welfare issue involved in training techniques using hyperflexion' and in doing so, the FEI will be upholding its commitment to the health and wellbeing of the competition horse.

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