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# The Veterinary Journal

journal homepage: [www.elsevier.com/locate/tvj](http://www.elsevier.com/locate/tvj)

Personal View

## About Rollkur, or low, deep and round: Why Winston Churchill and Albert Einstein were right

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### ARTICLE INFO

#### Article history:

Accepted 19 April 2013

Available online xxxx

#### Keywords:

Horse

Dressage

Rollkur

Welfare

Psychosocial factors

*'A fanatic is one who can't change his mind and won't change the subject'*

### Introduction

The horse has a long and flexible neck with many degrees of freedom that permit a great variety of so-called 'head–neck positions', including one in which the neck is hyperflexed and the chin may touch the breast. This hyperflexed position is certainly not new, as it has been amply used and discussed for centuries by riding masters such as *de la Guerinière* (1733) and *Baucher* (1852), and can be found in pictures from antiquity (Fig. 1). In modern times, use of the hyperflexed position was reintroduced by the Schockemöhles in the 1960s in show jumping, where it has been used ever since and where side reins are even allowed in competition (curiously without provoking much discussion).

The hyperflexed position became fiercely debated only after it was adapted for training purposes by some (evidently successful) dressage riders. It was baptized 'Rollkur' by Professor Heinz Meyer in 1992, a name that has nothing to do with anatomy or horses but one that seems to have stuck with the public. The controversy lingers on today, despite the Round Table conferences that have been dedicated to the topic by the Fédération Equestre Internationale (FEI), the international governing body of dressage competition, in 2006 (Jeffcott et al., 2006) and 2010.<sup>1</sup>

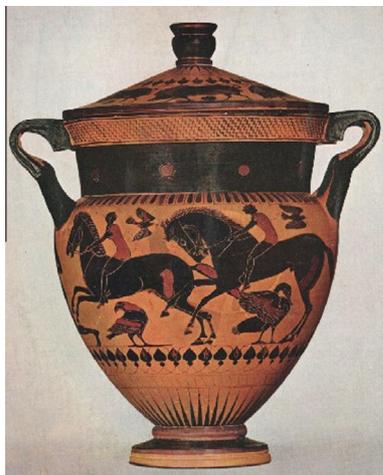
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<sup>1</sup> See: <http://www.fei.org/disciplines/dressage/press-releases/fei-round-table-conference-resolves-rollkur-controversy>

Debate and discussion are often healthy when conducted in the right way. Some articles have discussed and questioned the hyperflexed position properly and courteously (McGreevy et al., 2010), but a large part of the public argument has not been constructive, indeed has been unpleasant and even violent with people accused of 'ruining' horses and severely affecting their welfare, and with riders subjected to hate mail. These destructive and negative attacks damage the equestrian community as a whole, not only those practising any form of hyperflexion. It is the type of hyperbole we are confronted with every day in the world news, particularly over political or religious issues, and is not the type of debate you would expect in a sporting community that has a respect for the use of the horse in equestrian competition as a common denominator. So why does it happen? I will try here to present a balanced view of the facts, based on scientific arguments and psychosocial considerations.

### The facts

Since the controversy about the hyperflexed position started about 20 years ago various research projects have been undertaken. These have focussed on the biomechanical, physiological and behavioural effects of the hyperflexed position. A multinational consortium studied the kinematic and kinetic effects of several head–neck positions (HNPs; Fig. 2), using an instrumented treadmill and an optoelectronic kinematic gait analysis system (Gómez Álvarez et al., 2006). The authors showed that in the unriden horse the hyperflexed position resulted in a larger amplitude of dorsoventral back motion and a more flexed back thus confirming the theoretically predicted effects of a lowered head in the so-called 'bow-and-string' model of the quadrupedal back (Slijper,



**Fig. 1.** Chalcidian krater depicting horsemen. ca. 540 BC. Note the head-neck position of the right horse. From Arias (1962), Fig. XXVI.

1946). Ground reaction forces did not change much in hyperflexion compared to natural head carriage, in contrast to a hyperextended head-neck position (HNP5; Fig. 2), where potentially deleterious peak vertical forces increased considerably (Weishaupt et al., 2006; Waldern et al., 2009).

In the ridden horse, the effects of hyperflexion were less evident, but back kinematics could not be recorded in detail because of the presence of the saddle (Rhodin et al., 2009). The overall conclusion was that no harmful effect of hyperflexion could be demonstrated and that the biomechanical data lent credibility to the statement of some trainers (Janssen, 2003) that hyperflexion might help the horse gymnastically (i.e. by improving flexibility and engagement) of the horse (van Weeren, 2009).

Cadaver studies using computed tomography and magnetic resonance imaging have shown that in horses (as in humans) neck flexion enlarges the intervertebral foramina through which the cervical nerves exit, whereas extension of the neck decreases their size (Sleutjens et al., 2010). The same authors investigated the presumed effect of an altered HNP on airway resistance using a balloon catheter in the oesophagus (Sleutjens et al., 2012). Airway resistance appeared to increase in all HNPs that were different to natural head carriage and most in the hyperflexed position (HNP4; Fig. 2). However, the anticipated negative effect on blood oxygenation could not be demonstrated in any HNP, including HNP4.

In a study on the effect of various HNPs on muscle enzyme activity and on outcome of single fibre electromyography, Wijnberg et al. (2010) found a significant increase in lactate dehydrogenase activity in both the hyperflexed and hyperextended (HNP5; Fig. 2) position and a higher mean consecutive difference of single muscle fibre potentials and motor unit action potential variables in all HNPs compared to the normal position, but particularly in HNP4.

Stress and welfare are not easy to measure in animals. Most studies use behavioural variables or cortisol levels and/or heart rate (variability) as outcome parameters. Various studies have been conducted, but with inconclusive outcomes. Sloet van Oldruitenborgh-Oosterbaan et al. (2006) concluded that no signs of uneasiness or stress could be determined when horses were ridden in 'Rollkur' and van Breda (2006) further suggested that horses routinely trained in hyperflexion experienced less acute stress. This might, however, be a sign of the experience of professionally trained horses and their riders rather than an effect of the method used, as suggested by Becker-Birck et al. (2012), who, in a lunging study, found no negative effect of the hyperflexed position alone,

but could not exclude a stressful experience of the position when achieved by active intervention of the rider. This finding is in line with the study by von Borstel et al. (2009), who reported that horses that were not used to being ridden in the hyperflexed position disliked a coercively obtained hyperflexed position. Further, Kienapfel (2011) reported that horses showed most resentment against an enforced hyperflexed position compared to a free position, based on behavioural observations.

It can be concluded that none of these studies, regardless of their varying degree of scientific solidity, provided convincing evidence of negative anatomical, physiological or welfare effects of hyperflexion, other than when accomplished in a coercive fashion.

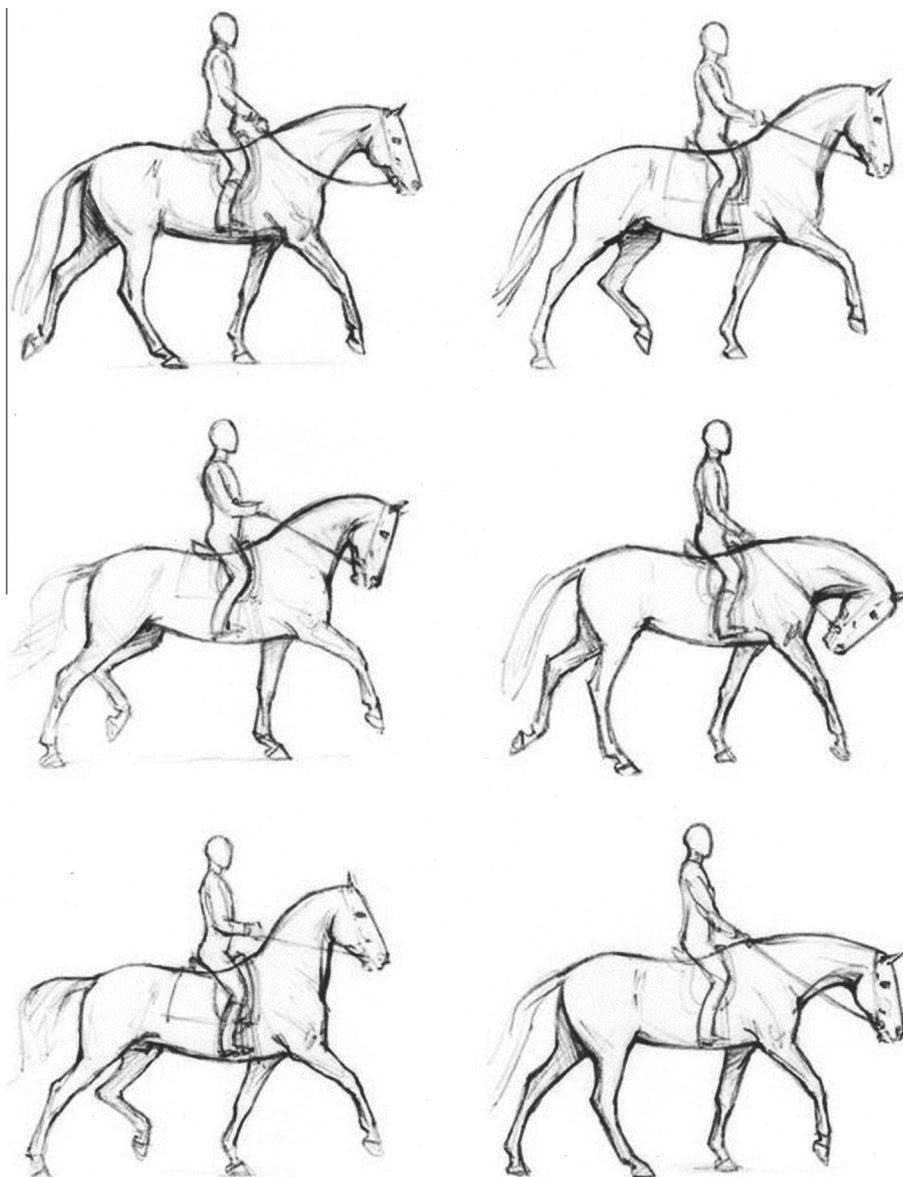
### The debate

The quote at the top of this article is attributed to Sir Winston Churchill. And it is the fanatic aspect of the debate about hyperflexion that makes it so peculiar. It is not unlike sectarian extremism: people opposing the use of hyperflexion will generally do so based on their real love of the horse and their genuine belief, rightly or wrongly, that hyperflexion is a serious health and welfare issue. Such civilised voices are, however, completely shouted down by the messages of hate and intolerance of the militant minority, who generate personal attacks on riders, trainers and sponsors of equestrian events. But the militants' arguments are based purely on emotion, not on facts, and they spin the outcome of scientific work to fit their own agenda. Let me be quite clear on one point, there is absolutely no way an experienced rider will ruin a horse using hyperflexion. If it was possible, then how could horses trained using hyperflexion have successfully competed and won medals in three consecutive Olympic Games?

Unlike in racing, longevity in dressage (and show-jumping) is critical to success and horses typically peak in performance between 12 and 18 years of age. Any training technique that severely affects a horse's welfare and health will affect longevity and be directly counter to the interests of the riders. And here let me make another important point. Top professional riders are criticised for not 'giving a good example' to the tens of thousands of amateur riders who want to imitate them (i.e. they must only employ methods that can be used without causing 'harm'). But there is no obligation whatsoever on them to do so. If I get caught on the highway for speeding, no police officer would take my argument that I was imitating my favourite Formula One driver, who covers the circuit at speeds of over 200 mph. Individual riders must take responsibility for their own horses and should be aware of their individual circumstances and limitations.

I agree that the net effect of hyperflexion is more to do with getting better submission of a 'hot' horse rather than achieving gymnastic improvement, but this cannot be condemned, as submission of animals is an essential part of domestication in general and is at the heart of what we do with horses (and especially in dressage). In other words, we make them do exercises that they are physically capable of, but which they would never perform in nature if not forced to do so by circumstances. If you are of the opinion that humans should not impose their will on animals, then stop your equestrian activities.

Does this all mean that we are talking about a non-issue and that there is no welfare issue at all? Certainly not. There is no doubt (and the scientific evidence given above confirms this) that hyperflexion is an extreme position of head and neck and that it profoundly influences the physical and mental status of the horse. There is also little doubt that equine welfare will be severely impaired by imposing this position with force for prolonged periods. And, yes, this is happening in the field and is the cause of much suffering of horses. However, the situation is complex and cannot



**Fig. 2.** Head and neck positions (HNP) studied in a large, multinational project on kinematics and kinetics. (From top left to bottom right) HNP1, control (head and neck unrestrained); HNP2, neck raised, bridge of the nose in front of the vertical; HNP3, as HNP2 with bridge of the nose behind the vertical; HNP4, head and neck lowered, nose behind the vertical; HNP5, head and neck in extreme high position; HNP6: head and neck forward downward. After Weishaupt et al. (2006), reproduced with permission of Equine Veterinary Journal.

simply be nailed down to a certain HNP only. Many factors are involved, including (but not restricted to) the skill of the rider, the conformation and age of the horse, the force used, the duration of application, and the type of HNP. *'If I am now forced to take on the Lotus position without any prior training in yoga, that will seriously affect my well-being but does not necessarily mean we should ban the position for everybody practising yoga'*, was a remark by one of the representatives of the Animal Welfare organisations during the 2010 Round Table conference on hyperflexion at the FEI Headquarters that hit the nail right on the head.

The 2010 Lausanne conference was an interesting experience and was tactfully and skilfully led by the FEI President, HRH Princess Haya, to whom the equestrian community is much indebted with respect to the 'Rollkur' debate. The final outcome was that discrimination should be made between 'Low, Deep and Round', which indicates the hyperflexed position when achieved without undue force, and 'Rollkur', indicating the same position but achieved in an aggressive, forceful way. The latter should be

condemned, the former not. This was a good outcome that is supported by scientific evidence. It can be summarised in one simple sentence: do not condemn the position itself, but the way it is achieved.

#### So where are we now?

Well, it is clear that the hyperflexed position is an extreme position that may affect equine welfare when achieved by force or otherwise if used in an injudicious fashion, but there is no evidence of its harmfulness when used judiciously. The matter is not straightforward, and many factors play a role. It is all about biology in which there is an infinite number of shades of grey but hardly anything is black or white. It is clear that we shall never convince the militants, who can only think in black and white, as pointed out by Churchill. But that does not matter as long as the influence of the extremists remains limited and the rules are set by wise,

thoughtful people, who recognise the multifaceted reality. Let us try to keep in mind the words of another great figure of the 20th century, Albert Einstein, who once said: *'One should make complicated things as simple as possible . . . but not simpler'*.

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