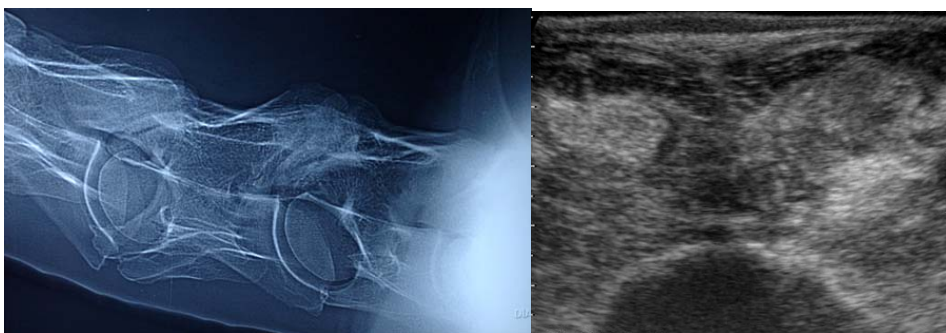
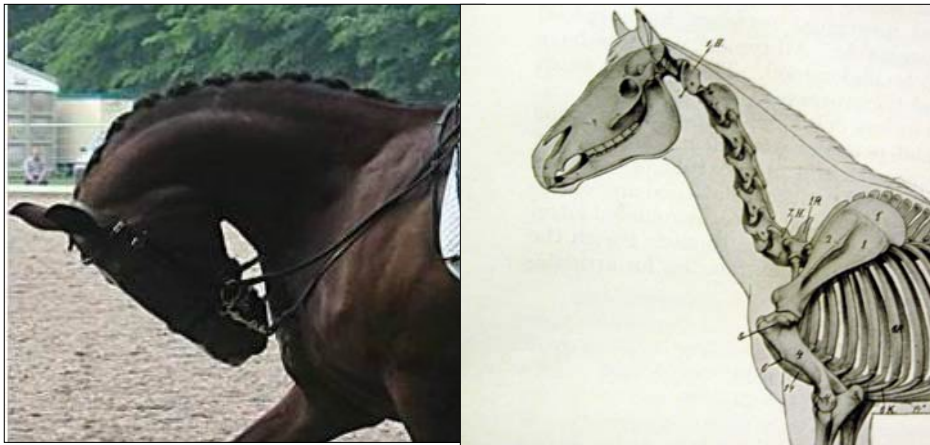


# Report of the FEI Veterinary and Dressage Committees' Workshop



## The use of over bending ("Rollkur") in FEI Competition



31 January 2006 during the FEI Veterinary Committee meeting at the Olympic Museum, Lausanne.

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Report dated 26 February 2006.

## 1. Executive Summary

1. A meeting of 50 invited representatives from all aspects of international dressage and equestrian sport was organised by the FEI Veterinary and Dressage Committees to review the training technique that has become known as "Rollkur".
2. It was agreed that a suitable form of words must be found to better describe "Rollkur-like" techniques as tools used in the training of horses for dressage and other disciplines.
3. The Workshop considered the term "hyperflexion" and the following working definition was agreed:

*"Hyperflexion of the neck is 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 time without welfare implications."*

*"There must be an understanding that hyperflexion as a training aid must be used correctly, as the technique can be an abuse when attempted by an inexperienced/unskilled rider/trainer."*

4. Both the term "hyperflexion" and the working definition need further work by the Dressage and Veterinary Committees to refine the wording, taking into account the comments and opinions of those present at the Workshop.
5. Delegates were unanimous in their agreement that horses must not be seen to be put under pressure by this or any other training techniques. At all times there must be a clear understanding and proper application of such training tools by riders and trainers, and the welfare of the horse must remain paramount.
6. Evidence presented at the Workshop indicated that in experienced hands there was no apparent abuse, improper welfare or clinical side effects associated from the use of hyperflexion. However, if not practiced correctly, there are serious concerns for welfare and possible clinical injury that will affect a horse's well-being and performance.
7. The meeting agreed that ground rules are urgently required so that Stewards can be briefed to take action and prevent abuse of the technique in all disciplines.
8. The Veterinary Committee should now identify what research is required to confirm unequivocally whether or not there is a welfare issue involved in training techniques using hyperflexion.

## 2. REPORT OF THE SCIENTIFIC SESSION

### 2.1. INTRODUCTION by the Chairman, Professor Leo Jeffcott

In his introduction, Professor Jeffcott, Chairman of the FEI Veterinary Committee and Convenor of the Workshop, welcomed all present and particularly thanked Mrs Mariette Withages, Chairman of the FEI Dressage Committee, for her close involvement with the programme. He said he was pleased to see so many international speakers and experts including distinguished judges, stewards, riders and trainers. Although this was a closed meeting, he added that he was very happy to welcome key representatives of the specialised equestrian press, together with members of the Veterinary, Dressage, Media Advisory Committees and the Welfare Sub-Committee.

The Chairman explained that over a period of time there had been considerable controversy in the media over the use of the training technique that had recently become known as "Rollkur" (or, erroneously called "over-bending"). Some riders, other knowledgeable experts in equestrian sport, including dressage, and members of the public considered the technique unnecessary, offensive to the viewer and, importantly, a potential welfare issue to the horse. The FEI had received complaints and it had therefore been decided to arrange a Workshop to investigate thoroughly the issues surrounding the use of the technique.

The Chairman outlined his aims for the meeting as follows:

- review current training techniques;
- identify any welfare implications;
- establish a list of "Pros" and "Cons";
- better understand the biomechanics and kinematics of neck movement in the horse;
- identify any clinical side effects of long term use;
- consider areas of research for which further scientific evidence was needed;
- prepare a report to the FEI on the way forward.

The Chairman explained that his role was impartial. He emphasised that the audience were the experts; they should listen to the evidence of the speakers, following which he would seek maximum participation in the discussion. The Rapporteurs would then prepare a Summary of the day's proceedings for submission to the FEI.

### 2.2. AN INTRODUCTION FROM THE WELFARE PERSPECTIVE <sup>1</sup>

Dr Andrew Higgins, Chairman FEI Welfare Sub-Committee

Dr. Higgins explained that the Welfare Sub-Committee had been established by the FEI in 2004 to promote the health and welfare of sport horses competing in the FEI disciplines and reports to the Veterinary and Ethics Committees. In June 2005 the Welfare Sub-Committee was asked by the Chairman of the Veterinary Committee to examine the possible welfare implications of the use of "Rollkur" as a training technique. He referred to the FEI Code of Conduct, which requires those involved with international equestrian sport to ensure that at all times the welfare of the horse remains paramount and which prohibits any training methods which are abusive or cause fear or for which the horse has not been properly trained.

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<sup>1</sup> The Abstracts for each of the papers presented can be found in the Appendix.

In examining the use of "Rollkur" the Welfare Sub-Committee had sought the advice of a number of experts in the field and reviewed the available evidence. The following preliminary findings were presented:

- There is (at least) a perceived welfare issue to be addressed;
- Although there appears to be a lack of reliable scientific or veterinary evidence that the technique causes lasting damage to a horse, there should be a thorough review of any effects the technique may have on the musculoskeletal, psychological and physiological systems;
- It seems that there is a serious welfare risk that less experienced riders, often at locations outside the FEI's jurisdiction, may imitate more skilful riders in attempting to use the technique;
- Within the FEI's jurisdiction, e.g., in warm up areas, the FEI through the Dressage Committee and others should seek to supervise the use of the technique, probably by upgrading the training of stewards;
- The FEI should keep riders, trainers and the general public informed of its concerns and of the actions it is taking to assess any demonstrated welfare issues and to address abuses.

### **2.3. EQUITATION AND LEARNING THEORY – POSITIVE AND NEGATIVE REINFORCEMENT**

Dr Andrew McLean, Dr Paul McGreevy & Professor Leo Jeffcott, Australian Equine Behaviour Centre, 730 Clonbinane Road, Broadford, VIC 3658, & Faculty of Veterinary Science, University of Sydney, NSW 2006, Australia.

Dr. McLean opened his presentation by defining "Rollkur" as a technique of working/training horses to produce a degree of cervical flexion that cannot be self-maintained by the horse for any length of time. He compared classical training with operant conditioning which is used in most training systems. The former made responses more likely in the future but the latter, which relied on reinforcement and punishment, made them less likely. He discussed positive and negative reinforcement – positive reinforcement involved the addition of a primary reinforcer while negative reinforcement relied on the immediate release of pressure as an instantaneous reward. Failure to release such pressure could cause conflict in the horse and "learned helplessness", which he described as a state of learned pain tolerance when, for example, a horse's head was held on its chest and it had no way of relieving the position. Over-bending did, in fact, occur in nature but only for brief periods at a time.

In equestrianism, problems arose through incorrect use of pressure that was applied for too long. Dr. McLean said he considered that research could help remove emotiveness from the debate by establishing, for a range of equine athletes, how much contact was neutral, how much rein tension was too much, how contact discomfort and pain could be measured and how learned helplessness manifested itself in horses. Dr. McLean concluded by asking whether there could be good and bad "Rollkur" and whether a self-carriage test might be used to distinguish between them?

## 2.4. THE TRAINER'S VIEW ON OVER-BENDING ("ROLLKUR") AS A TRAINING AID FOR DRESSAGE COMPETITION

Mr. Sjef Janssen, Dressage Trainer, Tack Factory, Erp, The Netherlands

Mr. Janssen explained the basic philosophy of his training methods, which he illustrated, with a series of photographs. The message he particularly wished to project was his use of **low, deep and round (LDR)** as just one of the many tools in his system of successful training. Mr. Janssen reviewed the centuries-long history of this type of training which was now used in virtually all disciplines. He emphasised many aspects of his techniques including daily work and relaxation regimes. Daily routine included warm up, which he considers essential, transitions, specific movements and short spells of LDR followed by relaxation. Rewards were given following all satisfactory movements. Total relaxation, on a daily basis, included periods loose in the field or hand walking, normally twice daily weather permitting, hacking to cool down after training, occasional sessions on the horse walker and plenty of good mental relaxation. Regular contact with people was important and routine veterinary examinations took place at 6-weekly intervals and with other professionals as necessary.

Horses were always given plenty of time to develop and no serious high-level training was introduced before a horse was 5–6 years old. LDR was introduced slowly over a period of time. Mr. Janssen said he considered the benefits of LDR as good physical and mental connection with the horse ensuring full fitness and mental adaptation. The disadvantages could be the copying of the techniques by unskilled trainers and riders who were unfamiliar with the practices involved.

Mr. Janssen concluded that there was confusion in the dressage world between LDR training, involving short periods of extreme flexion alternated with extension of the neck, and what had become known as "Rollkur", which was flexion maintained over a relatively long period of time. LDR was a useful tool in skilled hands but was not to be seen as a role model for all.

## 2.5 FUNCTIONAL ANATOMY OF THE HORSE AS IT RELATES TO OVER-BENDING ("ROLLKUR")

Dr. Gerd Heuschmann, Tierärztliche Praxis für Pferde, Warendorf, Germany

Dr. Heuschmann explained that "Classical Dressage" schooling was necessary to obtain correct future performance. The training took 1.5-2 years to achieve its objective and could not be rushed. "Rollkur" contained an aggressive component that could have a negative effect on a horse's movement compared to the acceptable and well-proven Low Deep and Round (LDR). With a neck too high too young, there would be little true muscle development which could lead, for example, to the inability of the hind leg to follow through and parallel the extended fore leg. Young horses should always be ridden with a forward and downward neck, which would produce a relaxed musculoskeletal system and a well developed "long back muscle". Tension was the enemy of positive training and abuse of draw reins was a notable cause of tension - hence each muscle must have a chance to relax after it has been "charged".

Dr. Heuschmann said that he considered that in to-day's competition arena instead of demonstrating the correctness of basic gaits some, including judges, were more interested

in rewarding the “wow” factor. His main concern was for the horses’ welfare and in his view a tense athlete was not a happy athlete.

## **2.6. RADIOLOGICAL ASPECTS OF THE CERVICAL REGION IN RELATION TO OVER-BENDING (ROLLKUR)**

Dr. Emile Welling, Blaricum, The Netherlands

Dr. Welling said that as a veterinary clinician he could not attribute specific lesions in horses to “round and deep” “Rollkur-like” training. He found a huge variation in radiological findings in different types of horses subject to a variation of training methods and not just in sports horses. Moreover, calcification and exostoses at the attachment of the ligamentum nuchae to the nuchal crest of the occipital bone was common in a great diversity of horses. However, pain in the cervical region was not as common as back or limb pain.

Dr. Welling illustrated his presentation with many radiographs, including those of two top Grand Prix dressage horses trained using “Rollkur-like” methods and which were now well into retirement, but whose radiographs showed no lesions whatsoever. Dr Welling posed the question: “Is Rollkur really dangerous to the physical status and welfare of the horse?” He thought not.

## **2.7. SCHOOLING PRINCIPLES AND WELFARE – THE SITUATION OF “ROLLKUR” IN THIS CONTEXT**

Professor Frank Ödberg, Faculty of Veterinary Medicine, Ghent University, Belgium

Professor Ödberg considered that it would be wrong just to focus on the technique of so-called “Rollkur” but rather on the wider general philosophy of schooling, much of which may be deleterious to a horse’s welfare. He warned against being too reliant on photographic images of abuses which could be misleading as the split second timing of a photograph could show an image that was in total contrast to one taken immediately before or after.

Professor Ödberg explored classical schooling principles throughout history, some of which had less emphasis on equine welfare. He posed the question - can “Rollkur” be applied in an animal-friendly way by knowledgeable people and, if so, is its purpose useful or counter-productive? He also questioned whether coercive riding affected wastage? In Germany, for example, he said that the average age of horses slaughtered was 8 – 10 years old. He wondered how much of this early wastage was due to coercive riding of young stock? He also spoke of the need to reward horses when they showed good responses to aids and not to repeat them once the desired response had been achieved. Children developed through partaking in different sports – horses also developed through a variety of training exercises. He concluded by describing dressage as an **art** and appealed for more equitation *science*; such research would require money, the potential sources of which need to be identified. The emphasis on the research itself should focus on seeking more respect for “lightness” both in competition and in training in all disciplines. We must also train judges.

## **2.8. FUNCTIONAL ANATOMY AND DIAGNOSTIC IMAGING OF THE CERVICAL SPINE**

Professor Jean-Marie Denoix, Ecole Nationale Veterinaire d'Alfort, France

Professor Denoix explained that the neck was critical in all disciplines and the proximity of joints to nerves indicated a potential cause of neck and gait problems. He described the functional anatomy of the nuchal ligament and cervical muscles and reported on flexion studies on the neck and the effects these had on the spine caused by the narrowing of vertebral canal with flexion, and narrowing of the intervertebral foramen with extension. Lateral flexion of the neck could be used as an indicator of neck injury.

He described the clinical manifestations of neck pain and its diagnosis and pointed out that a rider was often totally unaware of any injury to the horse. Hyperflexion or over-bending of the neck would cause stresses in the intervertebral discs, in the nuchal area and in the withers. Such extreme movements would not necessarily cause primary lesions but may cause pain in horses with pre-existing conditions. In all aspects the main danger was misuse of the aids. Professor Denoix concluded by stating that ultrasound was very sensitive to bone surface abnormalities such as hypertrophy or fragmentation of the articular processes and was therefore particularly useful for the treatment of cervical problems.

## **2.9. THE EFFECT OF DIFFERENT HEAD AND NECK POSITIONS ON THE THORACOLUMBAR KINEMATICS IN THE UNRIDDED HORSE**

Professor P.R. van Weeren, H. Meyer, C. Johnston, L. Roepstorff, M. A. Weishaupt, Department of Equine Sciences, Utrecht University, The Netherlands.

Professor van Weeren opened his presentation on behalf of his collaborators in Uppsala, Utrecht and Zurich by providing a theoretical and historical background to back biomechanics ("bow and string" concept). In many equestrian activities a specific position of the head and/or neck was required that was dissimilar to the natural position. Much controversy existed on the impact of these positions, but no quantitative data was available. The Zürich/Uppsala/Utrecht joint project had been motivated by Professor Heinz Meyer, and aimed to study the influence of the horse's head and neck positions on motion, the forces through the hooves to the ground and to examine ways to improve training and therapy.

Professor van Weeren quantified the effect of 5 different positions on thoracolumbar kinematics of the horse and noted that position 4 (= head and neck lowered with nose behind the vertical) affected normal locomotion with a decrease in stride length and increase in range of motion (elasticity). This lent credibility to the fact that the position could be of value in training depending on by whom and how it was applied. In contrast, other extreme positions tended to have negative effects on various body regions, could greatly disturb normal kinematics and could slow the natural speed of the horse. Professor van Weeren called for further research to obtain a more comprehensive picture of competition horse biomechanics and the potential for the use of a combination of measurement techniques with ethology.

## **2.10. EXERCISE PHYSIOLOGICAL ASPECTS OF OVERBENDING (ROLLKUR)**

Professor Eric van Breda, Masstricht University, The Netherlands

Professor van Breda said he believed that the primary goal of equine athletic training was to enhance performance and maintain health and well-being. There was a fine line between training and over-training and the aim must be to find the optimum balance between the two. Variation in training techniques was necessary to prevent horses becoming over-trained and to keep the equine athlete calm, relaxed and happy.

A recent study had compared post-training stress between elite horses in which an unnatural head/neck position ("Rollkur") had been used and a recreational horse in which such technique was not commonly used; stress was less in the elite horses suggesting that the health and well-being of top competition horses can be maintained despite non-natural biomechanical positions. Professor van Breda concluded that, based on his research, over-bending did not induce stress nor pose a serious threat to the well-being of horses in skilled hands. He did, however, call for a multi-disciplined approach to more research.

## **2.11. RESEARCH TECHNIQUES FOR STUDYING OVER-BENDING (ROLLKUR)**

Professor Hilary Clayton, McPhail Equine Performance Center, Michigan State University, USA

Professor Clayton advised that the neck is one of the most mobile parts of the horse's body. She had studied maximum flexion and extension in the neck of dead horses and showed huge motion in the region of the pole and at the base of the neck. Using fluoroscopy she had scanned the neck and measured the angles between the cervical vertebrae in different positions. This technique could also be used to evaluate patency of the airways. She called for a clear definition of what was over-bending and what it was not? Extreme flexion took place in the middle part of the neck. While it was difficult to monitor back motion during ridden exercise, due to the presence of the saddle, she described the use of ShapeTape, a fibreoptic based sensor, which can not only monitor back motion but can be combined to correlate this with movements of the limbs.

Professor Clayton reiterated the opinion of others that over-bending was employed as a training technique in a wide range of sports horses and that there was considerable scope for relevant applied research.

### 3. Synopsis of the Discussion

An enthusiastic and constructive debate took place and questions and points were raised by all representative organisations present at the Workshop.

#### 3.1. Definition of the training technique of so-called "Rollkur"

The initial discussion focused on the need to clarify what was meant by the term "Rollkur", which had connotations of potential abuse, and to separate its association from hyperflexion, which the Workshop accepted as a legitimate training exercise in skilled hands. One major difference was the length of time that the head and neck were held in the hyperflexed state.

The term "Rollkur" had apparently been coined in an article in the German press to describe the condition, but no formal definition had been produced. After considerable debate and discussion the following definition of "hyperflexion" was recommended:

*"Hyperflexion of the neck is 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 time without welfare implications."*

*"There must be an understanding that hyperflexion as a training aid must be used correctly, as the technique can be an abuse when attempted by an inexperienced/unskilled rider/trainer."*

Although the Workshop agreed this definition was not perfect, it was felt to be appropriate as a working definition pending further consideration by the Dressage and Veterinary Committees.

#### 3.2. General debate on how the issue should be managed

There was a lively and extensive discussion on how best to move forward. The bullet points below are among the points raised:

- Why change the name of "Rollkur"? Why not train stewards to identify the problem and brief them on control?
- Hyperflexion is a training tool. It is not part of basic training;
- A horse which has been well treated will maintain its flexed position when the reins have been relaxed;
- At what stage does hyperflexion "use" become "abuse"? What constitutes "too much" hyperflexion? Research is needed to specify the differences;
- What is "correctly applied" hyperflexion?
- What is an acceptable length of time to keep a horse hyperflexed?
- "It is a fact that most "Rollkur" trained horses have severe irregularities in their natural gaits and some of them show obvious mental problems";
- What evidence is there that lower level horses do not have neck lesions resulting from hyperflexion?
- The standard and quality of horses has improved considerably over the past four decades. "Rollkur" is more applicable with highly sensitive horses. How long should it be used and how much harm is it doing?

- There needs to be an understanding of the use of “Rollkur”; it is clearly dangerous when used by unskilled riders/trainers;
- How can a Steward know what level of hyperflexion is acceptable? There is a real danger of confrontation if a steward attempts to reprimand a top professional rider who probably knows considerably more about the training technique than the steward;
- Why use hyperflexion at all? Flexion is what the judges want to see and it wins medals;
- Top riders have huge responsibilities. Inexperienced and unskilled young riders, and particularly the young, must not be misled into attempting to emulate their peers by undertaking training methods for which they are ill prepared;
- There are too many examples of aggressive riding which is not good for the image of the dressage, or other, disciplines;
- Poll flexion can obstruct the airways;
- Refer to “Basic Training” and not to “Classical Riding”

### 3.3. Summary of Discussion

The Rapporteurs summarised the discussion and Dr Higgins gave a PowerPoint presentation listing the main points:

- The interim definition proposed by the meeting needed further consideration.
- The Dressage, Veterinary and Welfare Subcommittees should carefully assess the evidence and opinions presented at the Workshop and advise the FEI on the way forward and the actions, if any, which must be taken;
- Hyperflexion is a welfare issue in the hands of the unskilled;
- Clarification is required for the following:
  - what is a “training tool”?
  - what is understood as the proper application of hyperflexion as a training tool?
  - what evidence is needed for stewards to prevent abuse?
- Research studies should be undertaken to increase our knowledge of the technique; these should include:
  - a scientific description of the site of flexion in the neck;
  - the effect of draw reins and similar artificial aids;
  - a clinical and scientific analysis of the impact of hyperflexion techniques on the competition horse.

#### **4. Recommendations and Conclusions from the Workshop**

The Chairman concluded the Workshop by stating that valuable progress had been made although there were still many open questions. He believed that the feeling of the meeting was that the Workshop had helped to clear the air and identify what now needed to be done to improve knowledge of this issue in FEI sport. These included:

1. A form of words must be found to better describe "Rollkur" and "Rollkur-like" techniques as tools in training.
2. The term "hyperflexion" with an appropriate working definition was considered as an alternative to "Rollkur";
3. Evidence was presented that indicated in experienced hands there was no apparent abuse, improper welfare or clinical side effects associated from the use of hyperflexion. However, if not practiced correctly, there are serious concerns for welfare and possible clinical injury that will affect a horse's well-being and performance.
4. Horses must not be seen to be put under pressure. There must be a clear understanding and proper application of such training tools;
5. Evidence is required to brief FEI Stewards adequately so that they could take action to prevent abuse in all disciplines. The emphasis must be on lightness and basic gaits;
6. The Dressage Committee would clearly wish to consider carefully the findings from the Workshop with perhaps particular focus on stewarding and judging.
7. The Veterinary and Welfare Subcommittee should identify what research was required to confirm if there is a welfare issue involved in training using Rollkur and Rollkur like techniques;
8. A draft proposal would be presented to the Dressage Committee for consideration prior to submission to the FEI.

#### **5. ACKNOWLEDGEMENTS**

The Chairman of the Dressage Committee thanked Professor Jeffcott, Dr. Higgins and Dr. Sluyter as well as all contributors to the Workshop for tackling head-on such a controversial issue in equestrian sport. She said she was delighted at the openness of the discussion and although she realised there was still much to do she was confident that the discipline was on the right track.

Professor Jeffcott endorsed the words of the Chairman of the Dressage Committee, and thanked her personally for her leadership. He said he was deeply indebted to all the speakers for the time and effort they had put into preparing such high quality presentations. The organisation of the Workshop had been arduous and exacting and he paid tribute to the staff of the Veterinary and Dressage Departments of the FEI. He particularly wished to thank the two Rapporteurs, Dr Andrew Higgins and Dr Alex Atock. Finally, and most importantly, he thanked all those who had attended the meeting and contributed so positively to the discussion.

## **List of Appendices**

- Appendix 1** - Preliminary Report of the Welfare Subcommittee on the use of "Rollkur" as a training method for Dressage horses to the Veterinary Committee.
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## **Appendix 1 - Preliminary Report of the Welfare Subcommittee on the use of "Rollkur" as a training method for Dressage horses to the Veterinary Committee.**

### **Introduction**

The Chairman of the Dressage Committee has asked the Veterinary Committee for advice on the use of "Rollkur" or "Over Bending", a practice that is used by some riders in the warm up just before going into the arena. The exercise is said by proponents to 'supple the horse' and prepare it for competition. The FEI has however received complaints suggesting that Rollkur is an 'extreme method of training', may be 'dangerous to the horse' and is 'not good welfare'. Rollkur has been observed in dressage, eventing and show-jumping and has caused adverse media attention. As a result the Chairman of the Veterinary Committee asked the Welfare Sub-Committee (WSC) to comment on the use of Rollkur with regards to possible concerns for the welfare of the horse. This is a first, preliminary report.

*The FEI Code of Conduct Article 1(b)*<sup>2</sup> prohibits any training methods of horses which are **abusive or cause fear** or for which they have not been properly prepared.

### **Definition**

Rollkur has been defined as *a training method involving forced flexion of the poll and neck with the horse's head pulled behind the vertical.*

### **Background**

Rollkur is said to have been introduced by the French horseman François Baucher (1796-1873) but some claim Baucher's 'suppling exercises' were only intended to be used on the standing horse, not when in motion. Those who are opposed to the current use of Rollkur claim, *inter alia*, that it 'stiffens the horse', 'causes excessive flexion', and 'induces discomfort to the animal' while providing the rider with 'complete domination' and control.

Professor Heinz Meyer (GER) drew attention to the technique in 1992 and has written extensively on it (see, for example, Meyer, 1996). Rollkur and other training techniques have in recent years been said to cause pathological problems in some horses. Articles have been published, for example, on lameness in the dressage horse, influence of head posture on the respiratory tract of healthy horses, effect on vision and the consequence of equestrianism generally on horse welfare (Harman et al., 1999; Kold and Dyson, 2003; McGreevy, 2004a,b; Petsche et al., 1995; Odberg and Bouisso, 1999; Racklyeft and Love, 1990).

Although some critics have suggested that subsequent neck and back problems have developed as a result of frequent and sustained overflexion of the poll and neck, many top class dressage horses that are known to be trained using Rollkur or Rollkur-like techniques have competed well into relative old age suggesting that the use of such practices is not detrimental to performance. It may be argued that a horse succeeding at top level would not perform well if it was in discomfort or if its welfare was being seriously jeopardised by a particular technique or practice.

As this (and other) training methods continue to be used by the top medal winning riders and their trainers, the conclusion is inevitable that their use must help to produce a performance that the judges wish to see. This does not mean there are no welfare issue to be addressed, but it does imply that an examination of training techniques in any horse sport or discipline should encompass **all levels of expertise** including riders, trainers, judges, regulators, and veterinarians.

### **Conclusions and Recommendations**

- Extreme flexion of the poll and neck often **appears to induce discomfort** to a horse and apparently causes offence to a proportion of other riders and spectators at events. There is

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<sup>2</sup> The FEI Code of Conduct Article 1 (b) "*Training Methods*": *Horses must only undergo training that matches their physical capabilities and level of maturity for their respective disciplines. They must not be subjected to any training methods which are abusive or cause fear or for which they have not been properly prepared.*

therefore a **perceived welfare issue** for the horse, which the public may not continue to tolerate.

- There appears to be little scientific evidence to show that the practice of Rollkur or Rollkur-like techniques actually results in lasting damage to the horse. The WSC has not therefore been able to reach a conclusive view as to whether Rollkur may be detrimental to **horse welfare**; however the WSC does believe that a potential welfare risk exists and must not be ignored.
- Given the current lack of published scientific information, the WSC recommends that in accordance with *The FEI Code of Conduct* Article 1 (b) the Dressage and Veterinary Committees urgently and thoroughly review the effects, perceived or otherwise, of Rollkur or Rollkur-like training techniques on the musculo-skeletal and physiological systems of the horse.
- While the WSC considers that in **sound, experienced professional hands at a top-level event** Rollkur or Rollkur-like practices are unlikely to cause lasting harm to a horse, it may well cause discomfort and apprehension, and could therefore be a welfare concern. Indicators of stress could be monitored in a scientific study to ascertain whether horses are compromised when such techniques are in use.
- The WSC does believe that there is a **serious risk that less-experienced riders** (including minors) or trainers may imitate the techniques seen and attempt to develop similar training methods at locations outside the FEI's jurisdiction. The WSC believes that in such circumstances **there may well be a serious welfare issue**.
- While fully appreciating that the practice of Rollkur or Rollkur-like techniques has many degrees of severity, the WSC recommends that, in parallel with the instigation of appropriate scientific research and dialogue, the Dressage Committee should make every effort **to upgrade the training of stewards** to supervise practice in the warm up arenas at events (including lower grade events) to ensure that there is no evidence of perceived abuse; Any relevant official research undertaken on behalf of the FEI should also include jumping and event horses.
- The WSC recommends that the FEI should keep riders, trainers and the general public informed of its concerns and of the action it is taking to assess any perceived negative effect of the use of Rollkur.

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## Appendix 2 - Workshop Programme on 31 January 2006

Time	Presentation/Refreshments	Speaker
11h00 – 11h10	Welcome & Introduction	Prof. Leo Jeffcott (Chairman Vet Committee & Convenor)
11h10 – 11h25	Rollkur - an introduction from the welfare perspective	Dr Andrew Higgins (Chairman, Welfare Subcommittee)
11h25 – 11h40	Equitation and learning theory - positive and negative reinforcement	Dr Andrew McLean, Dr Paul McGreevy & Prof. Leo Jeffcott (Australia)
11h40 – 12h00	The trainer's view on over bending (Rollkur) as a training aid for dressage competition	Mr. Sjef Janssen (Netherlands)
12h00 – 13h00	<b>Buffet Lunch</b>	All delegates
13h00 – 13h20	Functional anatomy in the horse as it relates to over-bending (Rollkur)	Dr Gerd Heuschmann (Germany)
13h20 – 13h40	Radiological aspects of the cervical region in relation to over bending (Rollkur)	Dr. Emile Welling (Vet Committee)
13h40 – 14h00	Schooling principles and welfare - the situation of Rollkur in this context	Prof. Frank Ödberg (Belgium)
14h00 – 14h20	Discussion Session	All delegates
14h20 – 14h40	<b>Coffee break</b>	
14h40 – 15h00	Functional anatomy and diagnostic imaging of the cervical spine	Prof. Jean-Marie Denoix (Alfort, France)
15h00 – 15h30	The effect of different head and neck positions on the thoracolumbar kinematics in the unriden horse	Prof. Rene van Weeren (Utrecht, Netherlands), Profs Heinz Meyer (Germany), Mike Weishaupt (Zurich, Switzerland), Lars Roepstorff & Chris Johnston (Uppsala, Sweden)
15h30 – 15h50	Exercise physiological aspects of over bending (Rollkur)	Prof. Eric van Breda (Maastricht, Netherlands)
15h50 – 16h10	Research techniques for studying over bending (Rollkur)	Prof. Hilary Clayton (Michigan, USA)
16h10 – 18h00	General Discussion and plan for preparation of the report to the FEI.	All delegates

### **Appendix 3 - Delegates in attendance at the Workshop**

<b>Delegates and Speakers:</b>		
Name	Designation	Address
Allen, Kent	MAG	2716 Landmark School Rd, The Plains, 20198 VA, USA
Atock, Alex	WSC & Rapporteur	Round Oak Cottage, Bridstow, Ross-on-Wye, Herefordshire HR9 6QJ, UK
Carew, Lord Patrick	WSC	The Garden House, Donadea, Naas, Co Kildare, Ireland
Clarke, Stephen	Dressage Committee	Mill Bank Farm, Mill Lane, Somerford Booths, Congleton, CW 12 2JS Cheshire, UK
Clayton, Hilary	Speaker	Mary Anne McPhail Dressage Chair in Equine Sports Medicine Large Animal Clinical, Sciences College of Veterinary Medicine Michigan State University East Lansing, MI 48824-1314, USA
Davison, Richard	IRDC	Combridge Far, Combridge, Uttoxeter, ST 5BL Staffordshire, UK
Denoix, Jean-Marie	Speaker	U.P. Clinique Equine (DEPEC), UMR INRA "Biomécanique et Pathologie Locomotrice du Cheval", Ecole Nationale Vétérinaire d'Alfort, 7, avenue du Général de Gaulle, 94704 Maisons-Alfort cedex, France.
Duee, Michael	WSC	C/o Deutsche Reiterliche Vereinigung, Freiherr-von-Langen Strasse 13, PO Box 110265, 48231 Warendorf, Germany
Farrington, Paul	Vet Committee	The Coach House Vets, Burlins Coach House, Ball Hill, Newbury, RG20 0NU Berks, UK
Heuschmann, Gerd	Speaker	Velsen 29, 48231 Warendorf, Germany
Hinnemann, Johann	x	Harmmweg 34, 46 Voerde, Germany
Higgins, Andrew	WSC & Rapporteur	PO Box 274, Nowton, Bury St Edmunds, IP29 5NB Suffolk, UK
Hunt, David	IDTC	IDTC International Dressage Trainers Club, Uplands Studs, Brook, Godalming, GU78 5LA Surrey, UK
Janssen, Sjef	Speaker	Bolst 13, 5469 SC ERP, Netherlands
Jeffcott, Leo	Convenor & Vet Committee	Faculty of Veterinary Science, The University of Sydney, J.D. Stewart Building B01, 2006 Sydney NSW, Australia
Johnston, Chris	Speaker	Faculty of Veterinary Medicine, Swedish University of Agriculture, Box 7011, 750 07 Uppsala, Sweden
McEwen, John	WSC	Cross Country Equine Clinic, Devauden, Chepstow, NP16 6NN Monmouthshire, UK
McLean, Andrew	Speaker	Australian Equine Behaviour Centre, 730 Clonbinane Road, Broadford VIC 3658, Australia
Meyer, Heinz	Speaker	Am Wisselsbach 22, D-52146 Würselen, Germany
Nichols ,Nigel	Vet Committee	NSW, Australia
Ödberg, Frank	Speaker	Ghent University, Faculty of Veterinary Medicine, Dpt. Of animal nutrition, genetics, breeding and ethology, Heidestraat 19, 9820 Merelbeke, Belgium
Otto-Crepin, Margit	IRDC President	Elbchausee 430, 22609 Hamburg, Germany
Pochhammer, Gabriele	Journalist	St.Georg, Westerthal, 24340 Windeby, Germany
Rathore, Seamour	Journalist	Horse & Hound, IPC Media Ltd, Kings Reach Tower, Stamford Street, London SE1 9LS, UK
Roepstorff, Lars	Speaker	Vänsta 11, 73040 Kolbäck, Sweden
Salinas, Sergio	Vet Committee	Av. Amapolas 170, Rancho Contento, 45010 Jalisco Guadalajara, Mexico
Schuele, Dieter	IDJC	Steinersdorf 7, 91522 Ansbach, Germany

Snyder, Jack	Vet Comittee	8140 Olive School LN, Winters, 95694 CA, USA
Truppa, Vincenzo	Dressage Committee	Piazza Buonarroti 32 , 20145 Milano, Italy
Tyler, Tony	WSC	Anne Colvin House, Snetterton, Norfolk NR16 2LR, UK
van Andel, Claartje	Journalist	Dressage Direct, The Netherlands
van Breda, Eric	Speaker	Bergstraat 6, 6174 RS Sweikhuizen, Netherlands
van Daele, Jacques	Steward Gen. Dressage	Rue Philippe Baucqstraat 89, 1040 Bruxelles, Belgium
van Weeren, René	Speaker	Department of Equine Sciences, Faculty of Veterinary Medicine, Utrecht University, Yalelaan 16, 3584 CM Utrecht, Netherlands
Weishaupt, Mike	Speaker	Equine Hospital , VetSuisse Faculty, University of Zurich, Winterthurstrasse 260, 8057 Zurich, Switzerland
Welling, Emilie	Speaker & Vet Committee	Franse Pad 5, 1261 JC Blaricum, Netherlands
Withages, Mariette	Chairman, Dressage Committee	Kanaallei 45 , 2900 Schoten, Belgium
Young, Pamela	Journalist	Horse International , 15 Thames Avenue, Pangbourne, Reading, RG8 7BY Berkshire, UK
<b>FEI Staff:</b>		
Falciola, Jean-Claude	Secretary General	
Stone, Michael	Sports Director	
Sluyter, Frits	Manager of the Veterinary Department	
Julen, Christine	Veterinary Department	
Dominique Rochat	Veterinary Department	
Salomon, Eva	Manager of the Dressage, Reining, Vaulting and Pony Riders Department	
Milne, Anna	Dressage, Reining, Vaulting and Pony Riders Department	
Norinder, Catrin	Manager of the Eventing & Olympic Department	
Roche, John	Manager of the Jumping Department	
Faienza, Muriel	Manager of the Communications Department	

[ Key to abbreviations - IRDC= International Riders Dressage Club; IDTC= International Dressage Trainers Club; IDJC= International Dressage Judges Club; MAG= Medication Advisory Group; WSC= Welfare Subcommittee.]

## **Appendix 4 - Abstracts of the scientific presentations made at the Workshop**

### **ROLLKUR – AN INTRODUCTION FROM THE WELFARE PERSPECTIVE**

Dr Andrew Higgins  
Chair, FEI Welfare Sub-Committee,  
<ajhvet@globalnet.co.uk>

The Welfare Sub-Committee (WSC) was established by the FEI in 2004 to promote the health and welfare of sport horses competing in FEI disciplines, and reports to the Veterinary and Ethics Committees. In June 2005, the Sub-Committee was asked by the Chair of the Veterinary Committee to examine possible welfare implications of Rollkur ('or over-bending') or Rollkur-like techniques. The FEI Code of Conduct requires all involved with international equestrian sport to ensure that at all times the welfare of the horse remains paramount, and prohibits any training methods which are abusive or cause fear or for which the horse has not been properly trained. Having sought advice and reviewed some of the available evidence, the WSC offers the following preliminary findings, which will be subject to revision as further information comes to light:

1. There is (at least) a perceived welfare issue to be addressed.
2. Although there appears to be a lack of reliable scientific or veterinary evidence available that the technique causes lasting damage to a horse, there should be a thorough review of any effects the technique may have on the musculoskeletal, psychological and physiological systems.
3. It seems to us that there is a serious welfare risk that less experienced riders, often at locations outside the FEI's jurisdiction, may imitate more skilful riders in attempting to use the technique.
4. Within the FEI's jurisdiction, e.g. in warm up areas, the FEI through the Dressage Committee and others should seek to supervise the use of the technique, probably by upgrading the training of stewards.
5. The FEI should keep riders, trainers and the general public informed of its concerns, and of the actions it is taking to assess any demonstrated welfare issues, and to address abuses.

### **EQUITATION AND LEARNING THEORY - POSITIVE AND NEGATIVE REINFORCEMENT**

Dr Andrew McLean, Dr Paul McGreevy\* & Prof Leo Jeffcott\*,  
Australian Equine Behaviour Centre, 730 Clonbinane Road, Broadford, VIC 3658,  
& \*Faculty of Veterinary Science, University of Sydney, NSW 2006, Australia.  
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Rollkur can be defined as a technique of working/training a horse to produce a degree of cervical flexion that cannot be self-maintained by the horse for any length of time. It highlights some of the current debates surrounding the preparation of horses for modern dressage such as the notion of "contact". It is recognised throughout the English-speaking horse world as 'over-bending'.

Learning allows animals to use information about the world to tailor their responses to environmental change. Training draws out desirable and suppresses undesirable innate behaviours to institute novel responses. There are two major categories of learning: non-associative (involving a single stimulus) habituation and sensitisation; and associative (involving a relationship between at least two stimuli becomes established) classical (Pavlovian) conditioning and operant (instrumental) conditioning. Examples of classical conditioning include stallions producing courtship behaviours in association with the breeding barn alone.

Operant conditioning is used in most training systems. It relies on reinforcement and punishment. Reinforcement makes responses more likely in the future; punishment makes them less likely. In an example of operant conditioning, the animal receives a cue (command, trigger, signal or aid), performs a response and gets a reward (primary reinforcer). Primary reinforcers are any resources

that animals have evolved to seek e.g., food, comfort, water, sex, play, liberty, sanctuary and companionship.

Positive reinforcement involves the *addition* of a primary reinforcer. Positive reinforcement alone does not lend itself to safe equitation, effective ridden training or prolonged maintenance of extreme postures. Negative reinforcement includes the word negative only because it involves the *removal* of an influence. It is not a "bad" modality *per se*. The removal of pressure is the reward (reinforcement). Educated horses show association of negatively reinforced responses with light tactile signals e.g., minimal rein tension. So, after foundation training (breaking-in) horse-training involves combinations of operant conditioning and classical conditioning.

Negative reinforcement underpins all equitation. It relies on the immediate release of pressure as an instantaneous reward and, in the best cases, is very subtle. Failure to release pressure can cause conflict and learned helplessness. Confusion and conflict have behavioural and physiological manifestations that shorten the horse's working life.

Over-bending as a learned response may be as acceptable as other forms of negatively reinforced postural responses, such as lateral bending. However, cervical flexion as a result of sustained bit pressure has a lot more to do with compliance and pain avoidance than suppleness. Therefore, some forms of Rollkur may be extreme, dangerous and capable of compromising welfare. It may be dangerous for riders since it can "deaden the brakes" and that can lead to bolting as a manifestation of habituation, and other unwelcome behaviours. It can compromise welfare since horses can learn that there is nothing they can do to remove the pressure. If the horse's head is on its chest it has nowhere else to go and may be in a state of "learned helplessness".

The immediate incorporation of transient tests for self-carriage in all gaits and movements and at all levels would effectively reward riders who apply learning theory correctly. Additionally, research can remove emotiveness from the Rollkur debate by establishing, for the range of equine athletes, how much contact is neutral; how much rein tension is too much; how can contact be measured; how can discomfort be measured; how can pain be measured and how learned helplessness manifests in horses?

## **THE TRAINER'S VIEW ON OVER-BENDING (ROLLKUR) AS A TRAINING AID FOR DRESSAGE COMPETITION**

Sjef Janssen, Tack Factory,  
Bolst 13, 5469 SC,  
Erp, The Netherlands  
<sjef@tackfactory.nl>

I have been invited to speak about our technique of training horses for dressage. This will best be achieved by explaining the basic philosophy which underlies it and then illustrating the theory with a series of appropriate pictures.

One of the crucial issues to consider in the talk will be the method of round/deep training that is just one of the many tools we use in our system of successful training. It is this message I particularly want to get across to the group.

## **FUNCTIONAL ANATOMY IN THE HORSE AS IT RELATES TO OVER BENDING (ROLLKUR)**

Dr Gerd Heuschmann, Tierärztliche Praxis für Pferde,  
Velsen 77, 48231 Warendorf, Germany.  
<gerdheuschmann@hotmail.com>

In my presentation I would like to explain how "Classical Dressage" schooling for young horses is necessary for correct performance in the future. The classical system is not only intended for dressage horses, but for jumpers and eventers and other disciplines as well.

The horse's anatomy must be considered in its training from the ground work up. This is achieved by a systematic and well planned programme. The goal is to nurture a relaxed skeletal muscle system and a well developed "long back muscle" which runs horizontally and functions as a stabiliser. For optimum movement in training this must be considered to be a very important muscle. Tension is the enemy of positive training.

Throughout training, each muscle must have a chance to relax after it is "charged" and this is specific to the back muscles. The goal here is to minimise tension. A horse that is developed by way of tension will never be truly "through", and certainly not "happy" or "healthy".

Young horses should always be ridden with a forward and downward neck. Only a free swinging back muscle allows the rider to sit with the movement and "in" the horse. This effect should be true in all three gaits. The neck position allows development of the top line muscles in the neck area which later on produces relative raising of the forehand.

AS a result of "modern training" or "self training" one can surely recognise and distinguish the difference between "classical training" and the others. This is shown in the three gaits, the walk, the trot and the canter. Walk mostly is close to parallel and stiff, trot exaggerated and often wrong in footfall and canter in the worst cases uses a four beat. Also many Grand Prix horses show piaffe without collection (i.e. flexion of the haunches), all of which are the result of wrong training in the young horse.

In my opinion, the first two years are the most important for development of the horse's body and muscle structure. Only if the horse has been given this time it may go on to be a good sport horse.

In today's "arenas" instead of demonstrating correctness in the basic gaits, some are more interested in the show effect and "wowing" the crowd.

My biggest concern though is for the horse's welfare and wellbeing. This was the basic goal of the traditional philosophy. Horses trained for the "show effect" lack, both mentally and physically, the strength and endurance and are the horses that crowding the horse clinics all over the world.

My final comment is that a tense athlete is not a happy athlete!!

## **RADIOLOGICAL ASPECTS OF THE CERVICAL REGION IN RELATION TO OVER-BENDING (ROLLKUR)**

Dr Emile K Welling, The Netherlands  
<ekwelling@planet.nl>

The basic premise for this presentation is - *do certain training methods (e.g. hyperflexion or over bending) cause more damage than other methods, especially in relation to the cervical region?*

Pain in the cervical region is not as common as back pain or pain in the limbs. Horses with clinical and radiological discomfort in the neck suffer mainly from spondylosis, arthropathy and vertebral stenosis. Another common radiological finding is calcification and new bone formation (exostosis) at the attachment of the ligamentum nuchae to the nuchal crest of the occipital bone.

Weiler (Berlin 2000) looked at 60 fresh dissections of this attachment and in 80% of the cases he found the presence of abnormal calcification and exostosis. This is curious because of the great diversity of the horses in his study.

Radiological evaluation of the cervical region of different types of horses, with different training methods, sport horses and pleasure horses shows us a great variation of radiological abnormalities.

Radiological examination of two top Grand Prix dressage horses which have been trained for many years with a special system, deep and round (i.e. hyperflexed, Rollkur), will hopefully contribute to a better understanding of special training methods. Are these methods dangerous for the physical status and/or the welfare of the horse?

## SCHOOLING PRINCIPLES AND WELFARE - THE SITUATION OF ROLLKUR IN THIS CONTEXT.

Professor Frank Ödberg,  
Ghent University, Faculty of Veterinary Medicine,  
Dept of Animal Nutrition, Genetics, Breeding & Ethology,  
Heidestraat 19, B-9820 Merelbeke, Belgium.  
<frank.odberg@Ugent.be>

It would be an error to focus only on the technique of Rollkur. It must be seen within a more general philosophy of schooling that is probably deleterious to the horse's welfare. The key questions are:

1. Does Rollkur always decrease welfare, whichever way it is carried out? (i.e. is Rollkur an inherent part of a schooling philosophy that uses coercion as a rule? Or can it be applied in an animal-friendly way as a gymnastic exercise, provided knowledgeable people perform it?).
2. If Rollkur does not decrease welfare in the latter case, is its purpose useful, a redundant practice, or counter-productive in equestrianism?

This presentation starts with some general comments on horse welfare followed by a short historical survey of the evolution of riding principles which ends with a criticism of the predominant way of schooling nowadays. Rollkur is situated within that context. Suggestions about the way forward and the role of science close the arguments.

### ***An underestimated welfare problem***

Although the welfare of animals used for sport has long been recognised as part of applied ethology (Ödberg, 1976), scientists have focused their interest on farm animals. Some of them, as well as some animal protection societies, did express concern about the fate of horses (Ewbank, 1985; Gerber, 1984; Hopes, 1984; Lawrence, 1996; Ödberg, 1987). Control of welfare at the physical level was improved by the FEI (Atock and Williams, 1995). The problem is that if the interpretation of some types of abuse (such as beating, soring the legs, exhaustion, incompetent poling) is straightforward, other practices need more objective evidence in order to be considered as unethical. This is the case with behavioural problems. Inappropriate schooling and riding is probably a frequent and underestimated source of decreased welfare, but it will be difficult to convince riders because personal pride is involved. There is a need for scientific information in this context. The very first steps in that direction have recently been dealt with during the First International Equitation Science Symposium in Melbourne (2005). Such data are important, on the one hand in order to evaluate some practices more objectively (i.e. is there a true welfare problem?), and on the other hand, whenever a problem is detected, in order to convince some members of a very traditional world to adapt certain practices.

### ***The development of schooling techniques***

A short illustrated survey will be given of the history of equestrianism and its implications for welfare. According to available historical documents, and as far as we can interpret such texts correctly, there has not been a clear progressive linear evolution from antiquity to modern times concerning schooling competence and gentleness. Each period saw probably gentle and violent people (e.g. Xenophon appears very knowledgeable in understanding horse behaviour and often insists on gentleness, giving concrete advice, while some Greek artefacts show some violent riders). Drawings and the few writings available from the Middle Ages and the renaissance suggest rather forceful techniques. Even if some authors (e.g. Grisone) mention horses should be treated with kindness, their methods elicit quite a bit of scepticism. One can however identify a gradual improvement in schooling refinement from the end of the renaissance (e.g. Newcastle, Pluvinel) up to the baroque period. The latter and its plethora of masters represent probably the acme of riding. A functional technique became an art in itself. Camera's had not been invented yet, but when scholars of these master's writings endeavour to apply their methods, results are often superb. The 19<sup>th</sup> century represents a struggle with new challenges. While some masters kept the baroque tradition alive, others experimented with new methods that influenced riding practices in the 20<sup>th</sup> century. A very representative example is François Baucher (his first method will be relevant for the appraisal of R). There are at least three reasons for those changes: an interruption of tradition due to the closing of academies by the French revolution, the development of the fashion of racing and foxhunting and the concomitant change in favoured breeds, the development of competition in the 20<sup>th</sup> century (Ödberg and Bouissou, 1999). If new methods can in principle be acceptable from the point of view of welfare if applied by tactful people, they can be deleterious in the hands of the average rider. A consequence is that the modern way of schooling is often quite coercive as compared to the baroque philosophy and lacks lightness and self-

carriage (see e.g. de Bragance, 1976; Henriquet and Durand, 1996; Loch, 1994; Racinet, 1999). It might contribute to the high percentage of horses being slaughtered at a young age, such as in Germany (von Butler and Armbruster, 1984), France (Ödberg and Bouissou, 1999), or at least before reaching the "old age" of 20+ in Sweden (Wallin et al., 2000).

Most people agree that an increasing degree of collection should be obtained progressively through circles, shoulder-in and gait variations. A concomitant aspect is the horse showing poll-flexion. However, this all should happen in an as unconstrained way as possible. The horse should react to as discrete as possible aids and this rests on elementary learning principles (McGreevy and McLean, 2005; Waran et al., 2002). To begin with, the stimulus must be clear and well identifiable. This requires what is called in equestrian terms "the independence of aids". When the right response is given to a clear stimulus an agreeable feeling (or the absence of a disagreeable one) should follow or at least surely not the presence of a disagreeable one. That means that the stimulus should not be repeated because it will induce both habituation (i.e. less sensitivity) and the animal will think it did not give the right response and be confused, which in turn can lead to emotional responses that interfere with learning. This is simply what is meant in the French terminology by "descente de mains, descente de jambes" (and some will add "descente d'assiette"): once the horse is at the requested rhythm or in the desired attitude, refrain from doing anything, don't interfere and let him go by himself. Besides this, the discreteness of the aid is obtained by a gradual decrease of its strength in function of the increasing sensitivity of the horse. Unfortunately, all too often riders keep repeating aids at the same strength when the horse is responding correctly, which induces a vicious circle towards coercion. Furthermore, the horse should not only understand the right stimulus-response association, it should physically be able to show the response without pain or strain (i.e. it should be supple enough). As often people do not take time to make their horse supple, the disagreeable experience after the stimulus renders the animal tense which induces a vicious circle towards stiffness and less elegance. The tendency to work with a hard contact with the mouth is an illustration of what is described above. There are even instructors who require the horse to lean hard on the hand (the "5<sup>th</sup> leg") which has the additional disadvantage to hamper the horse from finding and working with its own equilibrium and to increase the chances that the horse falls on its forehead instead of showing more collection. The ideal of riding "with the weight of the reins" does not mean a loss of contact, which is demonstrated when the horse shoots forward at the slightest request of the seat.

A hard hand contact implies more problems. It represents another inconsistency with learning principles (i.e. that stimuli must be unequivocal and not contradictory). Stress occurs when two contradictory stimuli are given simultaneously or when the same response is sometimes punished and sometimes rewarded (= operant conditioning). Also when there is no clear difference any more between one conditioned stimulus (e.g. a circle) that was originally followed by something agreeable (food) and another one (ellipse) that was followed by something disagreeable (electric shock) (= Pavlovian conditioning). Experimental neuroses are produced when the conditioned stimulus becomes equivocal (e.g. half-way between the circle and ellipse). The horse learns first that a pressure in the mouth means "stop" or "slow". When later the animal is being ridden with a hard hand it gets the signal "slow" simultaneously with the aids for "go". One consequence is that the rider will have to compensate by giving repeatedly harder leg aids, rendering the development of discrete aids impossible. This can also lead to experimental neuroses. Depending from their individual predispositions (there are "active" and "passive" ways of coping with stress), some horses will show evasive behaviours and signs of frustration (the so-called "resistances", such as headshaking, ears back, tail swishing), go even berserk (bucking, rearing, bolting) and/or become aggressive, while some will fall in passive learned helplessness. Needless to say the progression towards the ideal of lightness is impossible when riding in such a way. Lightness is being defined as the unconstrained use of only those muscles necessary for a given movement.

Poll-flexion requires some specific comments in connection with the above paragraph. Ideally speaking, if lightness is implemented for the start, it should be a concomitant phenomenon occurring naturally with increasing suppleness and collection. However, due to various reasons (conformation, misunderstanding) this is not always the case, and a horse should not work with a higher placed neck without showing poll-flexion as this will result in a hollow back and no collection as is too often seen in the average rider or in jumping competitions ("star-gazers") (NB: Western riding horses can collect well without poll-flexion but they keep the neck low). Therefore, drawing reins can eventually be used in order that the horse understands what is required. However, such methods should be used very knowledgeably and for a limited time during schooling progression while keeping lightness in mind. Many riders nowadays use them as a rule and keep using them. When the drawing reins are not in use, they maintain their horse in poll-flexion by pulling the reins. A horse schooled with a constant respect for suppleness and lightness gives on the contrary the feeling of taking that position by itself when reacting to the seat aids because the contact consists of the weight of the reins.

For the sake of more complete information, it should be mentioned that Cook (2000, 2002) argues that poll-flexion always induced hypoxia (without nuances concerning the way it is obtained). The presence of a bit worsens it through increased salivation. This is in contradiction with the traditional view that salivation is a welcome sign of relaxation. However, the snag is that this author has not presented scientific data to support his hypothesis up to now. Experiments on this problem have started in Ghent (Behaeghel, 2003) and are underway.

### ***Application of these considerations to Rollkur***

In human gymnastics one can develop the body more globally by playing various, preferably complementary, sports. There was a period where Swedish gymnastics dominated. Its philosophy was that particular groups of muscles had to be developed separately by means of specific exercises. The traditional way of making horses supple has been through "global" exercising. During the first phase of his investigations, Baucher, developed specific methods for exercising particular parts of the horse (e.g. the lower jaw, the neck longitudinally, the neck sideward, combinations) with one or two reins, with various height positions etc. According to the iconography he apparently positioned his horses quite far (e.g. the neck is very strongly bent while positioned upward). The main flexion, however, is at the level of the axis/atlas.

That master developed various techniques that gave good results as long as they were used by himself and by the most tactful of his pupils (e.g. the famous "effet d'ensemble", his concept of "attaques de l'éperon"). Used by the average rider it resulted in equestrian disasters and animal suffering. The expression of one of his pupils became a legend: "*It's extraordinary, it's admirable! But it's a razor blade in the hand of a monkey!*" (Baucher, 1859).

Similarly, one can imagine that Rollkur can be applied in a tactful way, like Baucher's exercises holding the reins between two fingers, which would demonstrate that suppleness was obtained gradually. The most obvious difference lies in the position of the neck that is bent downwards. The question is then to what extent is it useful? Does it really add something more to the "global" way of exercising? As a rider with affection for the baroque philosophy, I am rather sceptical. Horses schooled with the required progression simply do not need any particular exercise of the neck. Furthermore, wouldn't it put more weight on the forehead, especially with modern breeds already showing that handicap? Maybe specialists in equine exercise physiology can contribute to solving those questions and one must remain open to new data. The most important from the point of view of ethics, is that *a priori* provided Rollkur is performed within lightness, no decreased welfare should be suspected *in se*. However, what is extremely disturbing when examining the pictures taken from various members of the Dutch team is that the horses are brought into that position by force. One notices a high tension, not only on the snaffle rein, but also on the curb (while a curb should only have a relaxing function and never one of force). The effect of that tension on the seat of the rider can even be observed, which suggests a matter of kilograms while one should work with grams. One is confronted here with the more general problem of modern coercive way of riding that is in complete contradiction with academic principles. As mentioned in the introduction, measures should be taken, not against Rollkur as such, but in order to protect the horses from a violent way of riding and lack of lightness. That implies a fundamental change in the mentality and training of modern dressage judges and riding instructors. This should be extended to jumping judges who should be trained to evaluate adequately the quality of riding and be empowered to sanction riders not only when they overtly beat their horse, but also when they ride in a brutal way. It is always wiser to wipe one's own doorstep before other people do so. The FEI should avoid potential future campaigns by some animal rights organisations. Experience shows that when it gets so far, extremists are more heard and have more influence than knowledgeable experts.

### ***Evaluating scientifically the gentleness of schooling***

Honesty compels to admit that the statement that coercive riding is deleterious to welfare rests on extrapolations from our knowledge about learning theory and behavioural responses in stress situations and on intuition. This hypothesis should be tested scientifically through direct observations and measurements.

How can one adapt the already widely used welfare parameters to riding? One could compare baseline values of horses schooled according to various schooling techniques after months of procedure. However, one is then confronted with the problem of adaptation. Could one use anticipation or a challenge? (e.g. by comparing stress parameters between horses schooled differently, when they see the rider approaching with the saddle). One could on the contrary focus on short time scale events (e.g. how does heart rate change each time the spur is used repetitively as compared to one brief attack that results in the subsequent obedience to a few grams of the calf?). Do some parameters correlate with behaviours colloquially called "resistances"? There is a need to determine lightness more objectively. This can be expressed through a low tension on the bit through the reins. Various authors have developed more recently electronic devices that measure tension telemetrically (Clayton et al., 2003; de Cartier d'Yves and

Ödberg, 2005; Preuschoft et al., 1999; Warren-Smith et al., 2005). Some used them to seek correlations with other parameters such as heart rate and behaviour during a standard dressage test with horses from different schooling levels (de Cartier d'Yves and Ödberg, 2005) while others measured the severity of various gears (Preuschoft et al., 1999).

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# FUNCTIONAL ANATOMY AND DIAGNOSTIC IMAGING OF THE CERVICAL SPINE

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## Introduction

The neck is an essential part of the horse's locomotor system. Movements of the neck are required for the longitudinal and lateral balance as well as impulsion and deceleration. Lesions of the cervical spine can be responsible for neck pain, neck stiffness, poor performance, forelimb lameness and, in some cases, can induce neurological manifestations.

### 1. Functional anatomy of the cervical spine

The cervical intervertebral joints present a thick disk and flat articular processes allowing wider intervertebral mobility than in the thoracolumbar spine. As the centre of rotation is located within the vertebral head, during flexion, there is a dorsal sliding of the vertebral head, opening of the intervertebral foramina and widening between the articular processes. During extension there is a dorsal displacement of the vertebral fossa, narrowing of the intervertebral foramina and increased pressure between the articular processes.

Flexion of the cervical spine induces tension of the nuchal ligament and elongation of the dorsal cervical muscles. Maximum tension is observed in the nuchal ligament (especially the funicular, dorsal part) when lowering of the neck is associated with flexion of the head. Because of the tension applied by the nuchal ligament over the top of the spinous processes of the withers, flexion of the neck is accompanied by flexion of the thoracic spine. Extension of the neck induces relaxation of the nuchal ligament as well as supraspinous ligament in the thoracic area.

Lateroflexion is a wide movement in the cervical spine. Between C3 and T1, lateroflexion on one side is associated to rotation on the opposite side. In the nuchal area, lateroflexion on one side is associated to rotation on the same side.

### 2. Diagnostic imaging of cervical lesions

Our routine imaging approach to problems arising from cervical spine consists of the combination of plain radiography and ultrasonography.

#### *a) Radiography*

Radiography remains the basic imaging technique for the evaluation of the cervical spine. Our routine approach consists in taking 3 laterolateral projections including: the cranial part from the external occipital tuberosity to the third cervical vertebra (C3); the intermediate part from C3 to C6, and the caudal part from C5 to the first thoracic vertebra (T1). For each projection, it is crucial to make good superimposition of the left and right sides of the vertebra. Any rotation or craniocaudal oblique projection alters the evaluation of the size and shape of the articular processes and vertebral canal. The caudal projection (C5-T1) must be exposed enough to allow visualisation of the last cervical disc (between C7 and T1).

**Oblique dorsolateral-ventrolateral projections** are useful to avoid superimposition of the left and right articular processes. They provide a nice representation of the joint space between the articular processes on the side of the generator and a good individualisation of the articular processes on the opposite side.

**The radiographic criteria** in relation to the presence of neck lesions are:

- vertebral alignment;
- size and shape of the vertebral canal;
- size, shape and architecture of the articular processes;

- size of the intervertebral disk and shape of the vertebral fossa and corresponding vertebral head.

**A range of abnormal findings** can be indicative of cervical lesions:

#### 1- Malalignment of vertebrae

This abnormal finding is often seen between C3 and C4 and between C5 and C6. But it can also be seen in other locations such as C2-C3 and C6-C7. At every location malalignment is often associated with:

- hypoplasia of the corresponding (cranial) vertebral fossa, with relative caudal elongation of the vertebral arch;
- ventral flattening of the corresponding vertebral head (dysplasia);
- dorsal subluxation of the vertebral head inducing narrowing of the median diameter of the vertebral canal.

#### 2- Anatomical stenosis of the vertebral canal

Anatomical stenosis of the vertebral canal can be seen in any location between C3 and T1. Reference data have been published on the ratio between the median (erroneously called sagittal) diameter of the vertebral canal and the dorsoventral diameter of the corresponding vertebral head (Moore *et al* 1994, Rush, 2003). In our experience, considering this ratio, we found stenosis of the cervical vertebral canal (CVC) in sound horses and ratios above the limit because of the presence of small vertebral heads in neurologic horses.

#### 3- Dynamic stenosis of the vertebral canal

Instability of cervical intervertebral joints can be responsible for cervical compressive myelopathy (CCM) during flexion of the neck and neurological manifestations. It can be seen on dynamic plain radiographs on the sedated standing horse or under general anaesthesia. Instability of cervical intervertebral joints is often secondary to a ventral flattening of the vertebral head as well as flattening and caudoventral obliquity of the vertebral fossa.

#### 4- Hypertrophy of the articular processes

This condition is often seen in the caudal part of the cervical spine especially at C6-C7. It can be diagnosed on lateral radiographs as well as on oblique projections. Hypertrophy of the articular processes can induce dorsal compression of the spinal cord but also lateral compression which is difficult to identify with radiography even using myelography.

#### 5- Fragmentation of the articular processes

Osteochondral fragmentations as well as traumatic fractures of the articular processes may be responsible for neck pain, stiffness and/or CCM. Osteochondral fragmentation of the articular processes is often accompanied with soft tissue thickening and hypertrophy of the affected processes.

#### 6- Osteoarthrosis of the complexe articular processes-synovial intervertebral articulation (AP-SIVA)

Degenerative changes of the AP-SIVA complexes can be seen in horses presenting neck pain, stiffness and poor performance. Abnormal radiographic findings include: subchondral bone lysis, articular processes sclerosis and periarticular proliferation. They can be found on one or both sides of the cervical spine.

#### 7- Intervertebral disk lesions

Abnormal radiographic findings indicative of disk lesions include: narrowing of the radiolucent space between the vertebral fossa and head; avulsion fractures from the vertebral fossa, disk mineralisation and ventral enthesophytes. Disk cavitation and fissure formation without narrowing cannot be seen radiographically.

### **b) *Ultrasonography***

Ultrasonography is now systematically used in association with radiography in the routine evaluation of neck problems in horses. It is performed with 7.5 or 5 MHz convex probes. On a transverse section made at an intervertebral joint space, different anatomical structures can be seen in a dorsoventral direction:

- the caudal articular process of the cranial vertebra;
- the intervertebral joint space between the articular processes;
- the cranial articular process of the caudal vertebra;
- the vertebral artery and vein;
- the transverse process of the caudal vertebrae.

Ultrasonography is very sensitive to any bone surface abnormalities such as hypertrophy or fragmentation of the articular processes. With this procedure, soft issue injuries of the synovial intervertebral joint space between the caudal and cranial articular processes (synovial fluid effusion, synovial membrane proliferation, capsulitis...) can be identified. These soft tissue alterations can be responsible for dorsolateral compression of the spinal cord, not seen on radiographs.

Ultrasonography is also particularly useful for the **specific treatment** of the cause of cervical problems. Intra-articular ultrasonographic guided injection with steroids (sometimes with hyaluronic acid) is made between the articular processes. This procedure is safe and well tolerated by horses.

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### THE EFFECT OF DIFFERENT HEAD AND NECK POSITIONS ON THE THORACOLUMBAR KINEMATICS IN THE UNRIDDEN HORSE

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**Reasons for performing the study:** In many equestrian activities a specific position of head and/or neck is required that is dissimilar to the natural position. Much controversy exists on the impact of these positions, but no quantitative data are available.

**Objectives:** To quantify the effect of 5 different head and neck positions on thoracolumbar kinematics of the horse.

**Methods:** Kinematics of 7 high level dressage horses were measured walking and trotting on an instrumented treadmill with the head and neck in the following positions: 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. HNP1 was a speed-matched control (head and neck unrestrained) for all measurements.

**Results:** The head and neck positions only affected vertebral angular motion patterns (AMP) in the sagittal plane (flexion-extension). There was no influence on lateral bending or axial rotation. The positions in which the neck was extended (HNP2, 3, 5) increased extension in the anterior thoracic region, but increased flexion in the posterior thoracic and lumbar region. For HNP4 the

pattern was opposite. Range of motion (ROM) of vertebrae was reduced at walk in the lumbar region in HNP2 and 5, and at trot also in HNP3. Restriction was more evident at trot than at walk and most evident in HNP5. In this position there was an increase in ROM of lateral bending in the thoracic region at walk and of axial rotation at trot. In HNP4 there was an overall increase in flexion-extension ROM, at walk mainly thoracic, at trot also lumbar. HNP5 was the only position that negatively affected intravertebral pattern symmetry and reduced hind limb protraction.

**Conclusions:** There is a significant influence of head/neck position on thoracolumbar kinematics, principally in the sagittal plane. Positions with an elevated neck tend to induce extension in the thoracic region and flexion in the lumbar region. Lower neck positions produce the opposite. High neck positions generally lead to a restriction of ROM of vertebrae, especially in the lumbar area. Low neck positions will increase ROM. A very high position of the neck seems to greatly disturb normal kinematics.

**Potential relevance:** This study provides quantitative data on the effect of head/neck positions on the thoracolumbar spine.

## **EXERCISE PHYSIOLOGICAL ASPECTS OF OVER-BENDING (ROLLKUR)**

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Equine exercise physiological science is concerned with the overall outcome of training and exercise on the entire body. Exercise physiology in general encompasses general organ and cell physiology, endocrinology, neurology, psychology/behavioural, kinematics, biomechanics, etc. In training horses all of these components have to work in a coordinated fashion in order to reach full physiological adaptation.

The primary goal of equine athletic training is to enhance performance and maintain health and wellbeing. From a physiological point of view to push performance capacity to the upper limit, relatively high amounts of different types of training are necessary during the long term athletic career of the horse. Consequently, equine athletes are often balancing on the edge between the right amount of training (health/wellbeing) and overtraining (disease but not necessarily a decrease in wellbeing). One of the most difficult parts of the training process is to find the optimal balance between intense training, recovery and wellbeing of the equine athlete

Alternative training techniques for each horse and rider are mandatory to prevent the horse from falling into the "danger-zone" called overtraining. Overtraining can either be short or long-term and is, as far as exercise physiology is concerned, caused by central (neuro-endocrine and behavioural) aspects like pain, stress and stereotype behaviour. To date, no other (biological) parameters have been reported to be valid. One of the most likely causes of overtraining is monotony in training. Therefore, variation in training techniques is necessary in order to: 1) prevent horses from falling into a state of overtraining and 2) keep the equine athlete happy and maintain wellbeing.

Recently, we performed a study in which we investigated the effect of a new training technique in dressage (Rollkur). Parameters of stress were measured in recreational trained horses (n=7) and elite (International Grand Prix level) trained dressage horses (n=5). In the training of the elite trained dressage horses an unnatural head/neck position (Rollkur) was used whereas in the recreational horses such training technique is not common. Stress was measured by heart rate variability analysis 30 minutes post-feeding in the morning and thirty minutes post-exercise after a morning training session. No significant difference could be found at rest between the recreational and elite trained horses. Interestingly, however, during the post-training measurements the elite dressage horses showed less stress. Our results indicate that elite trained horses tend to have less stress than recreational trained horses post-exercise. The findings of the present study suggest that the health and wellbeing of elite trained horses is maintained despite non-natural biomechanical positions.

In conclusion, our findings are, to the best of our knowledge, the first that scientifically describe the physiological effects of any dressage training technique in elite trained horses and

showed that no acute stress is present despite the use of the Rollkur training technique. We suggest that, from an exercise physiological point of view, different training methods are mandatory in training in order to prevent athletes from falling into a state of overtraining which might hamper health and wellbeing.

**Advice to FEI:** From a scientific physiological point of view the technique of Rollkur, as measured in elite level trained dressage horses, causes no harm at the central physiological systems. Although more physiological research into the effects of the training method in young(er) horses and horses that are in an earlier phase of their long term athletic development is necessary. At the moment, based on our research the over-bending does not pose a serious threat to the wellbeing of the horses.

### **Selected references:**

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*Scientific Proceedings Voorjaarsdagen*, 2004.

## **RESEARCH TECHNIQUES FOR STUDYING OVER-BENDING (ROLLKUR)**

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The neck is one of the most mobile parts of the horse's body. In order to perform research on the effects of the type of over-bending described as Rollkur, it is necessary to define the Rollkur position and to differentiate it from other types of neck flexion. A number of research techniques are available that could be used to study neck position and its effects on the horse's performance. This presentation will describe research techniques used in the McPhail Equine Performance Center that could be applied to measure the angles between the vertebrae with the neck in different positions and to assess the effects of neck position during training on other parts of the horse's body.

Fluoroscopy is a radiographic technique that can be used to scan the neck and measure the angles between the cervical vertebrae with the neck in different positions. It can also be used to evaluate patency of the airway.

The presence of the saddle precludes the use of video-based techniques to measure back motion during ridden exercise, but it may be possible to measure thoracolumbar kinematics in ridden horses using ShapeTape, a fiberoptic-based sensor used in people to measure shape, position, orientation and movement of the back. Measurements from ShapeTape can be combined with motion analysis to correlate back motion with movements of the limbs. The neck, back and limbs are moved and stabilized by the muscular contractions, and it will be interesting to compare the muscular activation patterns when horses are ridden with the neck in different positions using electromyography. The overall effects of the horse's movements and muscular contractions can be quantified using a force plate to measure the force between the hooves pushing against the ground.

## Appendix 5 - Comments received subsequent to the Workshop

### 1. Paul Farrington (Veterinary Committee):

- Rollkur (Over-bending) are terms in common usage now. We should therefore address these terms. Otherwise many people not in that meeting may consider that we avoided the issue.
- Equally Hyperflexion is a scientific term for the full flexion of a joint, no more. I do not think that it should be applied to a training technique.
- In order to address Rollkur we should describe hyperflexion of the head as well as of the mid neck, because that then includes maintaining the head in a fully flexed position also.
- I would wish to avoid the use of the word welfare from any published wording at this stage. Nothing has been proven so far and therefore if it is used, it will only give food to others for further argument on an ill-informed basis. Obviously that does not mean that we should not keep any welfare implications under review.

My definition would be:

- Hyperflexion of the neck is the full flexion of the cervical vertebrae in the longitudinal plane.
- Horses can hyperflex but do not naturally maintain hyperflexion of the neck for any length of time.
- Rollkur (Over-bending) is a training technique/tool that uses hyperflexion of the head and mid-region of the neck.
- Although there is no evidence to date that Rollkur causes physical harm, it is recognised that it is an advanced exercise that should only be used (*for limited periods?*) by an experienced or skilled rider with a horse that has achieved a sufficient level of training.
- Rollkur can present dangers when used on a horse at a lower level of training and should not be attempted by an inexperienced or unskilled rider.

### 2. Kent Allen (Medication Advisory Grup):

Two other terms need to be defined; misuse and abuse of hyperflexion of the neck:

- Misuse of the hyperflexion training technique is characterized by resistance of the horse to the application of hyperflexion or the horse's inability to naturally and comfortably maintain the posture when pressure is released for a few strides. In either circumstance the rider should discontinue the technique and pursue either veterinary evaluation of the horse's neck or further training in the technique;
- Abuse is the harder term to define and I'm not sure it can be done without further study. An approach might be to use Hilary Clayton's Electromyography technique on the lower neck muscles that Jean-Marie Denoix identified and look at time to fatigue.

### 3. Tony Tyler (Welfare Subcommittee):

- The evidence that Rollkur does not produce damage to the horse's joints was based on the radiological examination of 2 gold medal winning horses. I think it is fair to assume that a horse winning at this level would not be in pain. There was no radiography of horses that had been schooled using Rollkur that were failing to perform well. With almost all types of training, some athlete's bodies cope well and others injure. I would not be happy with the current evidence to even suggest that it does not damage the horse only that it is more likely that a well prepared supple horse may be able to cope with the demands of Rollkur;
- I suspect the change in name is really something for the dressage committee but I agree with those that said we must first define Rollkur. A number of top riders have been using Rollkur and if it was now turned into a term for abuse they could legitimately argue that their reputations are being damaged. A change in name might well result in a new schooling definition (hyper flexion of the neck) which becomes linked to the round and

deep method of schooling, Rollkur may continue as an exaggerated form that has still not been fully investigated as a welfare concern;

- We must also ensure that the novice rider is very aware of the possible discomfort that could be caused by inappropriate use of the technique. To say that it is dangerous in the wrong hands is not sufficient to deter the amateur with delusions of their own expertise. At a competition perhaps the opinion of two stewards that a horse is being schooled in a manner that is likely to cause pain or serious distress could result in elimination, however this may be too much to ask of people who are not expert riders themselves.

#### **4. Frank Odberg (Speaker):**

My concern is only the way Andrew Higgins summarised it in one sentence. I suggest : "Some horses may be in "learned helplessness", which is a state where the organism passively undergoes pain and stress yet are unable to react. There is a need for research to identify more accurately that state in the horse" It is important that the problem is rectified as people may think it's some kind of stress-induced anaesthesia in the original draft.

#### **5. Gerd Heuschmann (Speaker):**

Returning back home from Lausanne, I was more than surprised to read the FEI-statement on [horsesport.org](http://horsesport.org)! It felt to me a little bit, like I had not been part of that workshop at all.

I believed, we all were in good favour and realized that we have to work more intensively and scientifically in the near future on the effects of "over-flexing" of horses in training. In your announcement, it sounds like over-flexing or hyperflexing is fine, if done by experienced riders over a certain time frame. That is at least, how people understand this statement. Needless to say, that the responses I got from many countries are very negative. Your announcement did not point out at all, that we are rejecting very much any aggressive and hard way of that method. That would have been in my opinion a very important fact to say. The statement sounds like a general agreement. That is not the case.

The "scientific work" of the Swiss, Dutch and Swedish group in my opinion is a big problem. I am not doubting their measurements and those results, but I think their interpretation is wrong and will lead us to very dangerous conclusions, which will effect the welfare and soundness of many horses in the long run. During the meeting already, I could not understand the fact that the horses back is supposed to have the best mobility in position 4. It took me a few days of thinking, researching and realizing all facts:

In a loose, supple horse the back has to a certain degree its own dynamic swing which does not go with the withers 100 %. If you make artificial tension on the neck ligament then the back ligament will get tense as well and the back has to follow the ups and downs of the withers. This does make a higher amplitude, but not a better mobility of the back. This cannot be the goal of correct training of the horse. Therefore, I believe, that this study presented in Lausanne is a dangerous and possibly misleading paper.

In my opinion it is very dangerous to relate to this study, to make up an official FEI-opinion. I believe that the FEI should be very careful with a final statement like this. Hundreds of years of experience cannot be so wrong!

## **Appendix 6 - FEI Press Release issued by Muriel Faienza on 31 Jan'06**

A most productive workshop was held on 31 January 2006 at the Olympic Museum and jointly organised by the Dressage and Veterinary Committees. The point of this meeting is to reassure the Dressage Community that the controversial issue of Rollkur (overbending) is being addressed by highly experienced experts from the equine world.

The workshop included presentations and reports on this controversial training technique and its possible side-effects that may affect the welfare of the horse. It also included a review of the need for applied research.

Approximately 60 participants, including riders, trainers, stewards, veterinarians, and members of the Dressage, Veterinary Committees and Welfare Sub-Committee attended the workshop.

Objectives of the Forum:

- Review the techniques of training horses
- Consider possible welfare implications
- Pros and cons from experts
- Better understanding of the biomechanics and kinematics involved in this degree of neck movement
- Reports on clinical side effects or sequelae from long term use of the technique
- Discuss possible research programmes
- Produce a report for the FEI to be able to plan the best way forward.

Further to presentations of different preliminary research projects in the field of exercise physiology, radiology, biomechanics and schooling, the meeting reached the preliminary conclusion that, when applied by skilled trainers, there was no scientific evidence that this training method was abusive to the horse. There was clearly none evidence that no structural damage is created by this training exercise, when used in the right way by expert riders.

However, the use of that technique by inexperienced people was a possible threat to the welfare of the horse. The role of top dressage riders as role models in the sport was underlined.

Most of the participants agreed that the terminology Rollkur was not well understood and decided it would be better to use a term which could be understood by riders, trainers and the general public. After an extensive discussion, it was proposed that the draft wording might be hyperflexion of the neck and a draft definition to this was established as follows:

"Hyperflexion of the neck is a technique of working/training to provide a degree of longitudinal flexion of the mid-region of the neck. Hyperflexion cannot be self-maintained by the horse for an extended period of time."

As far as the FEI is concerned, the welfare and humane treatment of horses at FEI competitions, including the training areas and stables is paramount.

Next steps:

- a more detailed definition of what is to be considered as abuse is required, e.g. stress factors, pain or discomfort.
- Education of stewards to identify possible abuse and misuse of this technique, which is not restricted to dressage.
- Veterinary and Dressage Committee and Welfare Sub-Committee will review the state of knowledge, submit a report of the meeting to the FEI and decide which scientific research is further needed.

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