



## **2<sup>nd</sup> International Conference Proceedings Report**

*Anne Bondi, Trust Director*

The Saddle Research Trust 2<sup>nd</sup> International Conference, held on the 29<sup>th</sup> November 2014, by invitation of Anglia Ruskin University, was declared a resounding success.



Presenting to a full house of around 400 delegates from varied quarters of the international equestrian industry, the world's leading veterinary and scientific experts examined, discussed and debated the latest research on saddle-related equine welfare and performance issues. Presenters, delegates and the conference sponsors World Horse Welfare, the British Equestrian Federation, Amerigo Saddles and Horse & Hound commended the event as "excellent" and "a highly important step in the sharing of knowledge and expertise for the good of the horse." One journalist wrote that "the conference contained so much absolutely fascinating information, I almost don't know where to start with my reports. I have reams of notes to type up."

The conference saw leading vets, saddlers and equine therapists joining professional riders and trainers as well as leisure riders to hear the international experts share their

vast experience and present their cutting edge research.

Dr. Charlotte Nevison, Director of Equine Research at Anglia Ruskin University, opened the proceedings and chaired the morning sessions.

As SRT Director and Conference Organiser, Anne Bondi began with an entertaining and thought provoking look at horse, rider and saddle interactions which highlighted some current and very relevant findings of health issues experienced by cyclists who spend hours in their saddles. Other “seated sports” such as rowing have a high incidence of back pain and are also subjected to forces and injuries in the perineal area of the pelvis. The rider may be moving the pelvis in the same direction as the horse, but can also be opposing it, causing shear forces. Some disciplines have more “disconnected” riding styles, e.g. the modern jockey “monkey on a stick” style that removes large peak forces from the horse allowing it to move faster.



Due to the complexity of the interaction there remains difficulty in measuring individual factors. The studies to date that have measured the interaction have assumed soundness in the horses being studied, but this may not be the case. Lameness is one of the biggest factors that can lead to loss of performance, affecting jumping ability, leading to increased risk of falls. Horseback riding is more dangerous than motor racing or motorcycle riding, with the highest mortality rate of any sport. Of the many horse-related accidents that are recorded worldwide annually, there is no analysis undertaken of whether the saddle is implicated in the severity of rider injury in the event of a horse falling on the rider. Clearly, there is a need for more detailed information concerning the causative factors involved in the severity of rider injury in the event of the horse falling on the rider. Deformable saddles exist and these designs merit further investigation as to whether they may be useful in preventing more serious injury in these circumstances.

The key messages from this presentation were that horse, saddle and rider interaction is extremely complex, there remain many more questions than answers, but increasing our understanding is crucial to the future health, wellbeing, safety and performance of our horses and their riders.

Dr Sue Dyson Head of Clinical Orthopaedics at the Centre for Equine Studies of the Animal Health Trust in Newmarket discussed findings from four separate studies undertaken with her Royal Veterinary College PhD student, Line Greve. She first presented the causes of saddle slip in relation to lameness. It was stressed that saddle slippage is not necessarily either the fault of the rider, the saddle or the saddle fitter, but

is often an indicator of hindlimb lameness. Usually, but not always, the saddle slips to the side of the lame/r limb. There is no correlation between the cause or source of the pain and the way the individual horse adapts to it. Counter-intuitively, a better fitting saddle is more likely to slip than an ill fitting one, probably due to less connection with the back. Dr. Dyson said, "I've spent 34 years looking at lame horses, but I can't tell where or why a horse is lame simply by how it moves." The key message from this presentation was that riders, trainers and other professionals involved in equine care and performance need more education to recognise lameness, saddle slip, ill-fitting saddles and rider crookedness.



The second presentation focused on how the horse's back changes shape over time and how this affects saddle management. The study, which followed 63 sports horses over a period of one year to record changes in back dimensions and management, found considerable variations. Increases in back dimension were recorded in horses that were worked more regularly by better riders, had better fitting saddles and were sound. Seasonal fluctuations in weight also influenced back dimensions, highlighting the need for regular saddle checks.

Dr. Dyson went on to present the results of a third study investigating exercise-induced changes in back-dimension in ridden sports horses. We know that the saddle needs to fit the horse in motion, but until now, there has been no investigation of whether the thoracolumbar region changes in shape in association with exercise, or how improper saddle-fit may influence potential changes. The results showed what common sense should already tell us: that the back shape was greater after exercise, particularly if the horse was sound, ridden by a good rider, worked correctly and had a well fitting saddle. The study underlined the need to assess saddle fit both before and after exercise and that frequent checks may reduce the risk of injury or loss of performance.

Dr. Dyson concluded with her fourth presentation, which discussed the findings from a study of saddle fit and the implications for horse and rider. The potential consequences of a saddle not fitting the horse, or the saddle not allowing the rider to sit in a position in which they can ride in balance has received little objective investigation until now. There is also little objective information about the relationships between rider health, saddle fit and horse health. The relationship between an ill-fitting saddle, a rider's ability to sit straight and gait abnormalities of the horse remains poorly understood. In this study, a clinical assessment of horses and riders was performed and data was subsequently obtained from the same riders via an online questionnaire.

Ill-fitting saddles were identified in 43% of horses during the clinical assessment. Saddle slip was observed in 14.6% of horses, which was significantly associated with

hindlimb lameness. Worryingly, only two riders had linked saddle slip and lameness despite strong associations between a history of lameness, back problems and saddle slip. In most cases, saddle slip occurred with well-fitting saddles. This rather surprising finding may be caused by a bridging saddle becoming more fixed in position than a well-fitting saddle.

Over a third of riders reported back pain, which was associated with crooked posture, ill-fitting saddles or unsoundness in the horse. Saddles that were regularly checked by a professional tended to be in a better condition and fit better. Horses ridden by expert riders were less likely to have asymmetry of the back compared with those ridden by novice riders. Nearly a third of horses that had their saddles professionally regularly still had an ill-fitting saddle. It is unknown whether these saddles had ever fitted correctly or whether a saddle fitter was responsible for the fitting. Dr. Dyson finished by stating that: "We do not have enough saddle fitters who are good at the job."

The key message from this presentation was that saddle fit should be checked regularly by a professional and that riders, trainers, vets and other professionals should not only learn how to identify ill-fitting saddles, but should also become more educated about the complexity of the links between lameness, saddle slip, ill-fitting saddles and rider crookedness.

One journalist later wrote, "Dr Sue Dyson should need no introduction; she is a legend in the field of competition horse lameness, diagnosis and treatment. After this presentation, I am confident that I now know a LOT more about what causes saddle slippage, and what it can indicate. I hope this report is worth reading for anyone involved with competition horses. There were a couple of things in the results of Dr Dyson's studies that really surprised me, but which made total sense when explained. At the AHT clinic, a treeless saddle is often put on a horse that is under investigation if the owner's saddle does not fit well, because the treeless design is more likely to adapt to the horse's shape and movement. "



In recent years laboratory-based research has made great strides in describing movements and coordination patterns of horses and riders. This information is being applied in developing new applications that can be used by riders, coaches and veterinarians to record, analyse and store information describing horse and/or rider performance. Hilary Clayton, Emeritus Professor of Equine

Sports Medicine at Michigan State University's College of Veterinary Medicine gave a fascinating overview of the potential to use new technology in the riding arena to help improve rider position and technique. She explained the potential role of easy to use gadgets for basic kinematic analysis, including sensors to buzz reminders at every

crooked, out of balance move and an electronic belt to help improve core strength and control by detecting rider pelvic tilt whilst riding. Many riders train on their own, without the benefit of an experienced coach's eyes from the ground so the increasing choice of relatively inexpensive tools is a very attractive prospect, particularly when they can provide instant feedback. One such tool, a video application for smart phones, is a very simple, user-friendly tool for rider posture analysis that enables slow motion replay, frame by frame advance and the ability to draw lines and angles within split screens for comparison.



A perceptive introduction to the afternoon sessions came from British Equine Federation Director of Equine Sports Science and Medicine, John McEwen MBE, who said that “Research in this area is important for horse welfare and for top class performance at Olympic level to our teams”.

The presentation that followed was a fascinating insight into the state-of-the-art in knowledge of animal movement science, given by Professor Christian Peham, Leader of the Movement Science Group at the University of Veterinary Medicine, in Vienna, Austria. Professor Peham said, “ Horse and rider interactions are very complex. The SRT International Conference is the only meeting that focuses on the crucial role of the saddle in communication and coordination between horse and rider. It brings riders, scientists and saddle manufacturers together to improve saddles and in consequence riding sport and animal welfare.”

Over the past few decades, back pain and diseases of the vertebral column and spinal cord have become recognised as important and often performance limiting orthopaedic problems in horses. Especially in ridden horses, such as show jumpers, the load can be enormous. Through the improvement of methods such as biomechanical simulation based on real data motion analysis can potentially assist vets as an important clinical tool in the future. Professor Peham demonstrated how a biomechanical simulation method, based on real data, could assist vets as a clinical tool and delegates learned much more about the movement of the equine back and neck, through his video demonstration of a 3D computer model.

Dr. Katja von Peinen travelled from the Equine Sports Medicine Department at the University of Zurich in Switzerland to present the effects of saddle design and function on rider and horse. She shared her fascinating work of pressure mapping and reiterated how the expert interpretation of results is key to success with this technology. She was a very enthusiastic speaker and her opening remark really got the audience's attention: Q: “What saddle should I buy for my horse? A: “The one that fits.”



Dr. von Peinen explained that particularly more sensitive horses e.g. younger or blood types often prefer lower pressure measurements under the saddle. When the rider stands up in the stirrups at trot, the saddle can pinch on the withers as the horse steps forward. Dr von Peinen said that more funding is necessary to be able to carry out studies into the many different accessories on the market e.g. pads, saddle cloths etc. Some saddle pads may actually worsen the pressure under the saddle because the materials in the construction

cannot react fast enough with the changes in pressure and the horse and rider move. In her opinion, sheepskin adapts to pressure changes best, but only if the saddle was first fitted with the sheepskin pad.

Professor Lars Roepstorff and his PhD student, Maria Terese Engell from the Department of Veterinary Anatomy and Physiology at the Swedish University of Agricultural Sciences explored the influence of the rider, emphasising that the horse is a partner in sport and, as such, needs a rider who prepares him or herself with thorough appropriate fitness and core strength exercise. To be able to apply aids optimally, the rider must have excellent postural control, balance and rhythm. At the same time, the rider must also have good coping strategies for various balance disturbances that occur while riding.



Professor Roepstorff is currently analysing fresh data collected with a computer system called the "Lameness Locator". This system enables a vet to objectively identify lameness in horses in real time with the use of non-invasive inertial sensors. A new addition to the system is a separate sensor for the rider and we were given a fascinating and privileged preview of the results of a study carried out with 60 horse and rider combinations. The preliminary findings not only showed a high degree of gait asymmetries already present in the horses, but that the rider had a significant effect on the locomotion pattern of the individual horses.

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The final session saw Professor Renee van Weeren, Head of Equine Sciences at the Faculty of Veterinary Medicine in the University of Utrecht, Netherlands summarise the evolution of the human-horse relationship, drawing comparisons with other sports and emphasising that there is a huge amount of scope for more science to be used to improve standards on all levels. There is still a lot of resistance to science from the equestrian public, which remains very traditional, and dressage is the most traditional

of the disciplines. There is a public groundswell of opinion about perceived 'cruelty' and we should be able to defend ourselves proactively.



Professor van Weeren is also concerned that horses are growing too fast and getting too big, bringing associated lameness problems. All over the world, native horses and ponies are never especially tall. Anything larger is man-made by many generations of selective breeding. The average final height of Dutch horses has been growing by 1mm every year for the last 30 years. This might not sound much at all but if Eohippus,

the tiny 8 inch tall precursor to our modern equines, had grown at this rate, year on year, then it would now be twenty miles tall!

Special guest, Olympic dressage rider, Richard Davison, ended the afternoon session by sharing his personal views of the research presentations, highlighting which areas he specifically believed to have the most practical relevance for him as a rider. He also discussed the benefits of research on a wider scale, urging equestrian organisations to take note. A final panel discussion was chaired by Professor Pat Harris, Director of Science from Mars Horsecare at the Waltham Centre for Equine Studies. The panel included all the speakers and brought the day to a lively close.



Saddle Research Trust Trustee, Annie Pollock, summarised the take-home message from the conference, saying: "There are very real welfare and performance issues that can occur when the horse, saddle and rider interaction goes wrong. As horse owners, we need the practical skill of saddle fitters, the diagnostic ability of vets, the biomechanical knowledge of health practitioners, the expert eye of trainers and the highest standards in construction and design from saddle makers."

Tony Tyler, Director of Operations at World Horse Welfare, continued: "World Horse Welfare is a practical and forward thinking charity that believes in using scientific

evidence to help guide its work. We are very pleased to support this prestigious conference that aims to apply the latest scientific research to the issues that surround saddles and their effects on both horse and rider. We frequently see welfare problems caused by a lack of understanding of saddlery and hope that this conference will improve the knowledge of all that participate. The work the Saddle Research Trust is doing has the potential to produce considerable benefits to horse welfare and as such World Horse Welfare is keen to be involved in future projects and events.”



Simon Middleton is Managing Director of Zebra Products, who as the UK distributor of the Amerigo brand of saddles, was proud to be one of the sponsors of the conference saying, “Research and development play an important part in Amerigo brand and product strategy, keeping us abreast of our ever changing and advancing market. We believe the work of the SRT has a valuable role, not least to ensure a continual focus on the health, welfare and performance of our horses.”

Delegate Claire Kincaid, a veterinary physiotherapist, expressed the sentiment shown by so many who attended: “Thank you for a great conference, I really enjoyed the day and gained so much from your speakers who were so knowledgeable and amusing. Seeing the scientifically proven analysis of subjects with relation to saddles and the horses back has given me the confidence to relate my new found knowledge to my clients.”

Gini Woodward is Operations Director at *Saddle Exchange Saddling Solutions*, which was one of several companies who took the opportunity to support the conference through the purchase of display stand space. She and her colleagues were very enthusiastic in their praise, saying, “We enjoyed the conference enormously and are very excited about the future. We are now planning a bit of research of our own with the help of our endurance riders. I was very interested in Sue’s study of the changes to the horse during a half hour of exercise and it made me wonder about the implications of longer exercise periods. I knew that some of our riders who do 80 kilometers and above sometimes experience the horse changing shape during the ride (it is common to drop weight as fat is consumed and water lost) and we have learnt how to compensate for that, but what I didn’t realise was what happened in shorter periods. I feel it will give me a better

understanding of how to adapt our saddle fitting techniques. Thanks again for what was a brilliant idea Anne; I feel we are changing the industry for the better, which makes me very excited for the future and very proud to be involved.”

Lucinda Green MBE, who had attended in her role as a member of the British Eventing Safety Committee concluded: “Well done, a magnificent day that was beautifully organised. Keep up the passion!”

#### A selection of images from the trade stands and conference area



*Alexandra Crosby-Jones being presented with her certificate for best student poster by Richard Davison*