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Report from Lisa Ashton

Horses Inside Out 2014 Conference

Improving horse health and performance:
Training Tools, Tapering & Taping

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What are the ingredients for a fun and indulgent equestrian weekend? Lisa Ashton of EquiSci reports from this year's Horses Inside Out conference in Warwickshire, United Kingdom, where the latest in training, therapy and performance was presented to nearly 200 delegates. An annual conference, Horses Inside Out attracts therapists, coaches, riders, vets, farriers and lecturers from around the world including regular attendees from Australia and the United States.

Horses Inside Out founder Gillian Higgins opened the conference with a look back on our horse training successes, celebrating just how incredible the anatomical systems of the horse truly are and urging owners to become their horse's 'personal trainer', just like the ones we find at our gym. "It is impossible to move just one part of the horse's body without effecting the rest," said Gillian. "So understanding its adaptation to training will improve your horse's speed, skills, reactions, proprioception, coordination and awareness."

Posture perfect

Understanding that the growth plates of the hock and spine do not fuse until the horse is around eight years old, it is no surprise that how we train horses affects posture and, therefore, your horse's growth. Gillian's presentation continued to 'join the dots' to the prevalence of hock- and spine-related problems in horses. Gillian reiterated the combination of inappropriate training, poor saddle and bit fit, and the load of a rider that may

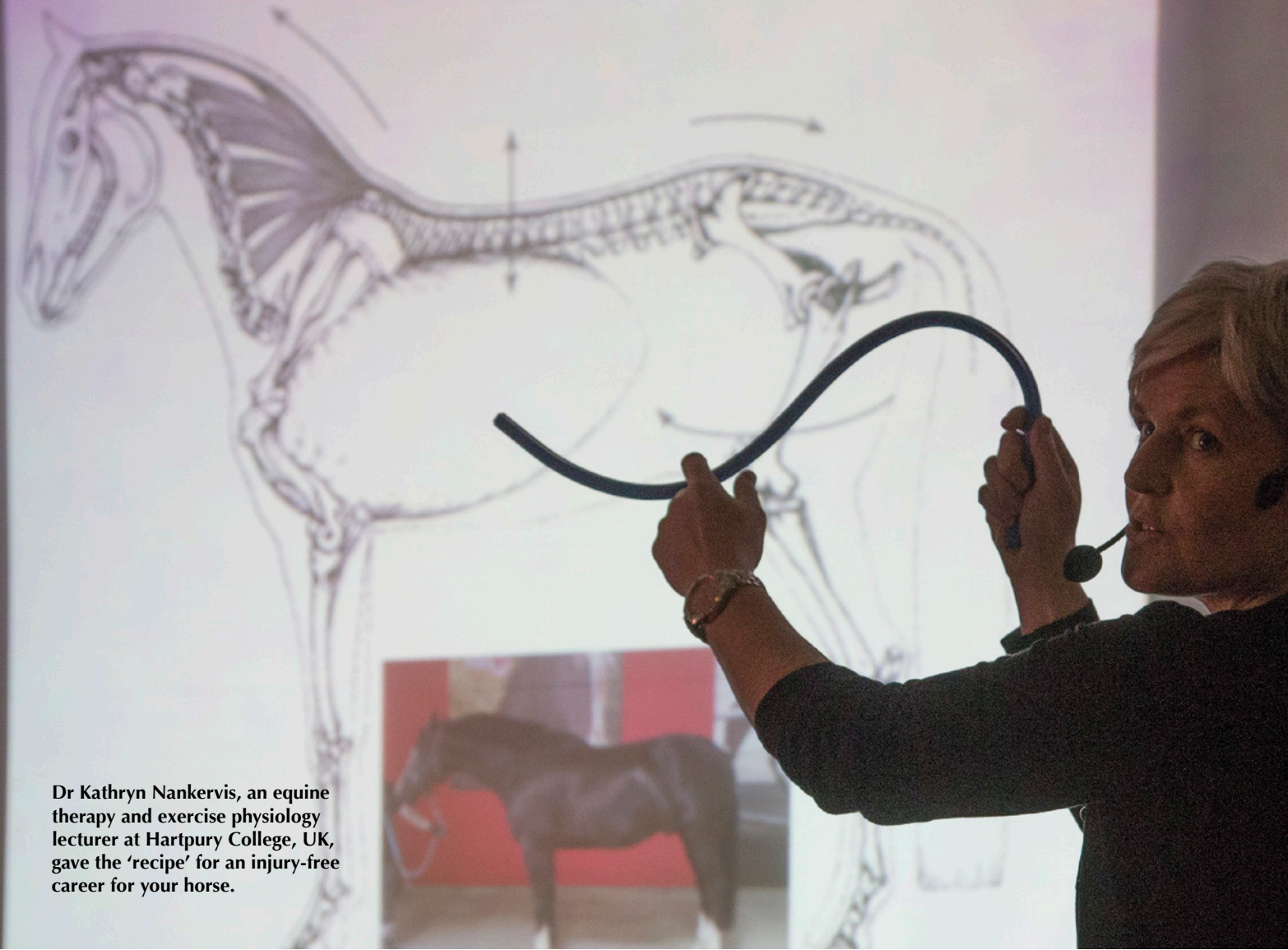
at times be unbalanced, has an impact on your horse's posture, "by considering all anatomical systems and their adaptations to training, your horse's posture and skeletal maturity can improve," she said.

How well do we train horses?

According to Dr David Marlin, possibly not as well as we could. Orthopaedic injury is prevalent amongst almost all race and competition horse populations. Musculoskeletal injuries (MSI) are one of, if not the most common causes of morbidity and mortality in the sport and racing horse populations. A Swedish study in 2000 and another in 2006 reported that 55 to 70% of all mortality was related to MSI. In 2011, a UK study found the most common reason for euthanasia in horses over 15 years was due to lameness, whilst 56% of event horses and 66% of ponies in a 2013 study were withdrawn from selection due to locomotor injury. In 2008, 21% of horses intending to compete in an FEI CCI eventing competition did not start due to injury and of that 43% of these injuries involved soft tissues.

Performance, synonymous with injury

The heart and muscles need prolonged periods of regular exercise to induce adaptation. In contrast, bone only needs very small amounts of loading to induce adaptation. The respiratory system, tendons, cartilage and ligaments essentially need no training and, in fact, are likely to suffer damage from training. Thus, there is



Dr Kathryn Nankervis, an equine therapy and exercise physiology lecturer at Hartpury College, UK, gave the 'recipe' for an injury-free career for your horse.



Horses Inside Out founder Gillian Higgins opened the conference with a look back on our horse training successes.

conflict. Dr Marlin explained, “Horses have evolved as grazers, walking long distances and occasionally sprinting for short periods to escape predators. The fact that the horse is willing to be ridden and is highly adaptable to a range of tasks may well help explain why we struggle with such a high prevalence of injury.”

The failings of scientists

Despite advances in veterinary medicine, nutrition, technology and track surfaces, orthopaedic injury is still prevalent.

Studies suggest little change in frequency of injury in over 30 years, yet there have been huge increases in knowledge through scientific study, with many studies having identified risk factors for injury. “Is it the failure of science that it is not communicated to the wider horse population?” asked Dr Marlin.

Today, the dissemination of evidence-based knowledge is at best sporadic and may even be slower than it was a couple of decades ago. This could perhaps be due to the increasing ‘armchair’ experts who, at a click of a button, receive instant gratification from being ‘liked’ in online forums. It is, therefore, understandable that science is not bridging the gap between research and practice. Whilst opinions are perhaps more appealing and attractive to your own beliefs, how can evidence-based knowledge be communicated to improve your horse’s health, welfare and performance?

The application of science

In human athlete training, 2-3 weeks of training may be followed by a week at a reduced intensity to allow sub-clinical injury/damage to repair. This can even be extended into the training week. Training horses on Saturday and Sunday is followed by turnout on Monday. Tuesday, Wednesday and Thursday is training, whilst Friday turnout. Dr Marlin reiterated, “Unfortunately, training horses is often based around work, staff and social demands, as opposed to optimal equestrian practices based on the appliance of science.”

The best training ‘tool’?

The most appropriate way to set your horse’s training intensity and to monitor changes in his fitness is by using a heart rate monitor. For disciplines which require a high level of aerobic fitness, such as endurance, racing, eventing and carriage driving, a heart rate monitor is a vital tool in your training ‘toolkit’. Interestingly, Dr Marlin went on to explain that, according to a recent study of heart rate in show-jumpers, monitoring your horse’s heart rate may also be useful for disciplines with a high anaerobic component, such as elite level show-jumping. The study demonstrated an association between higher heart rates and higher number of faults.

The training load

Training load should be increased gradually. The importance of understanding training load was demonstrated by a 2002 study on Australian event horses being prepared for competition. The authors measured heart rates during training and competition. Only one horse was found to have been trained according to the heart rates it reached during competition. The implication is that the other horses were trained at too low an intensity and were thus not fit enough for the competition. Dr Marlin



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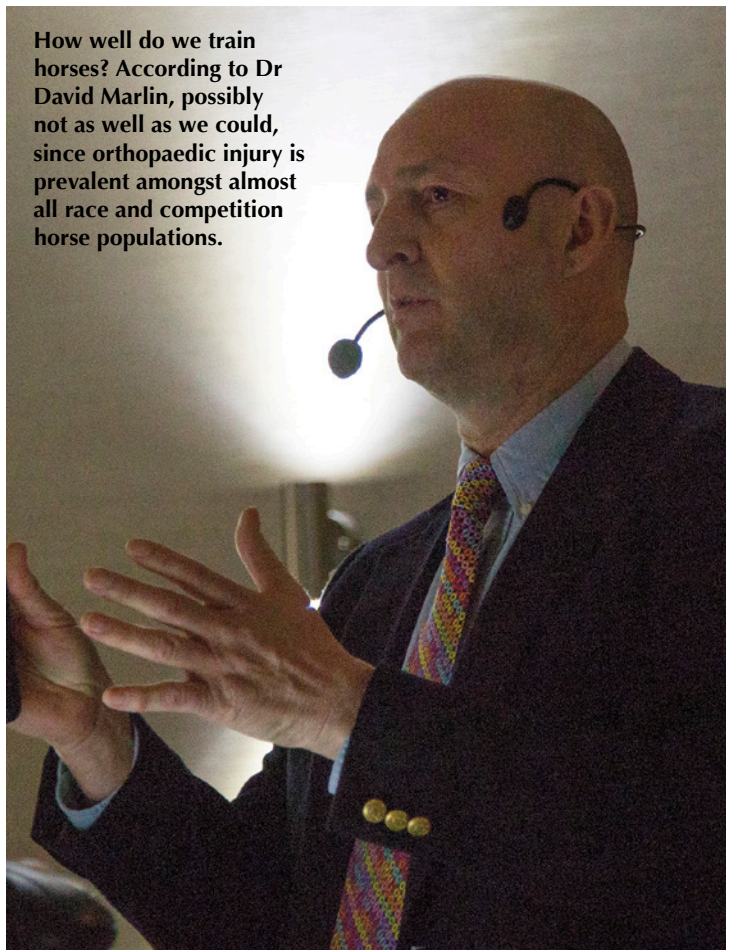
HYGAIN



ABOVE AND BELOW: Current National Coach to the German Olympic Three Day Event Team and Managing Director of the Yorkshire Riding Centre, Christopher Bartle, showed many variations of pole work and jump training to demonstrate that jumping is dressage.



How well do we train horses? According to Dr David Marlin, possibly not as well as we could, since orthopaedic injury is prevalent amongst almost all race and competition horse populations.



reminded delegates not to increase both speed and distance/duration at the same time. For example, if your horse is being exercised 3 to 5 times a week, only increase his training load approximately every 2 to 3 weeks.

Tapering

According to Dr Marlin, the risk of horses becoming lame as a competition approaches is very high. Due to the increased frequency and intensity of training by an anxious rider, the recognised practice in human sports science of tapering (reducing duration of daily exercise, but maintaining the intensity) has yet to be embedded in horse fitness regimes. One study demonstrated tapering in the seven day period leading into a competition actually enhanced performance.

“The task for scientific experts within the field should be to produce a consensus statement on current best practice in training of horses, which could be widely disseminated throughout the horse industry. This may help to counteract the large volume of unsupported opinion that exists online and contribute to reducing injury and improving welfare.”

Recipe for injury-free training

Who better to ask than Dr Kathryn Nankervis who oversees the Equine Therapy Centre at Hartpury College (which she set up in 1999, as well as lecturing on equine therapy and exercise physiology post graduate degrees) for the ‘recipe’ for an injury-free career for your horse.

The first ingredient? The perfect training programme.

Dr Nankervis explained, “Exact cycles of walk, trot and canter, and not a step more to overload him, easy!” Interestingly, we already have established maximum and minimum thresholds for racehorses, which are 4 to 10 furlongs at 14 seconds per furlong.

Another ingredient? The perfect surface. Horses are often prepared on a different (and probably imperfect) surface than the surfaces used in competitions.

Finally? The perfect horse, of course! A horse with perfect conformation, symmetrical movement, temperament and skill. In a recently published study, Animal Health Trust’s Dr Sue Dyson sampled 506 horses presumed sound and a further 275 that could be described as sound - half of the horses had some gait abnormality. Dr Nankervis urged us to consider for a moment these findings. “Half of us are sitting on a lame horse,” she stated. “The perfect horse does not exist, it is a myth.”

Dr Nankervis recommends we select our next horse for having the best ‘raw material’ we can afford and then, that we work to get the best out of our horse’s body and brain - the epitome of a great trainer.

Whole horse approach

Dr Nankervis shared with the delegates cases from her rehabilitation centre, asking us to ‘call out’ what we saw. Many had obvious conformation abnormalities, so it came as no surprise to hear that these horses had arrived at the rehabilitation centre in pain. We did learn, however, that all the horses were very successful athletes before they subsequently broke down and were admitted to Dr Nankervis’ team at Hartpury College. “Less than perfect can be successful, but they are more high maintenance,” explained Dr Nankervis. “Each of these horses



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have their normal movement patterns, influenced by breed and type, training history, health status, surfaces, muscle development, foot balance, posture and conformation. When an injury comes along, the compensation will be different between two similar injuries and horses." Dr Nankervis reiterated the prognosis must be tailored to the individual and then improved. "If you can recognise factors that threaten recovery," said Dr Nankervis, "then go about eliminating these factors. This is the way rehabilitation works, with the horse - not the injury - as you can not isolate one part of the body."

Dr Nankervis went on to explain the ideal is to take a multi-disciplinary approach that includes your vet, therapist and farrier because your horse's 'normal' may not be good enough. The horse's rehabilitation should attempt to provide more optimal movement patterns for each individual, because the horse's 'normal' movement patterns may have contributed to the injury. "One person is not enough to put your horse back on the road to recovery and performance," reiterated Dr Nankervis.

As Dr Nankervis took us on the rehabilitation journey of a Grand Prix show-jumper, delegates were asked to think about and make decisions for his programme based on specific information, the process concluding the following key messages:

1. You do not need any fancy kit. Your best rehabilitation 'tool' is a tailored plan to optimise. Dr Nankervis' team use different surfaces, ground work, poles. You should encourage the posture you want, never forcing, and ignore what you don't want. "Horses used to recover from injuries before treadmills!" she reminded us.
2. Do more prehab than rehab. Do not wait until your horse is injured to optimise movement patterns. Start to decrease your horse's risk of injury with prehabilitation.
3. Invest in musculoskeletal health. Overlap between training and therapeutic issues. Rein back has a great effect on thoracic flexion. Re-learning how to jump or jumping small oxers, riding shoulder-in and leg-yield result in lifting the base of neck, keeping the forehead up.
4. If you are a therapist and you are delivering your rehabilitation programme correctly, it should not take a long time. If it is, you are missing something. Something is going wrong.



As day one progressed, delegates heard the latest in the use of drugs in competition from Dr Colin Roberts, as well as current research from the University of Durham by Dr Graham Cross who explained their preliminary findings of an investigation into forces transferred from rein tension, cheek-piece and the poll when pressure is applied to the reins of the double-bridle. The researchers identified gaps between our theoretical understanding of how curb bits work on the poll and the actual forces of pressure on the poll.

Conference Day Two

Jumping is dressage

After handing out blankets, hot drinks and 'seat savers', the Horses Inside Out team placed the spotlight on current National Coach to the German Olympic Three Day Event Team and Managing Director of the Yorkshire Riding Centre, Christopher Bartle. Always reiterating jumping is dressage, Bartle explained, "In your equestrian partnership, there are two responsibilities - the horse's (the jump) and the rider's (dressage)." Working with a team of performance horse and riders, he showed many variations of pole work and jump training to demonstrate that jumping is dressage. "Jumping requires the same rhythm, straightness and connection that dressage does," said Bartle, who went on to explain how Michael Jung and Ingrid Klimke are both examples of professional riders who jump their Grand Prix dressage horses to optimise performance. Damon Hill, he stated, was trained regularly with gymnastic jumping exercises in his former years with Ingrid.

Why the long neck?

Mr Bartle provided simple explanations and illustrations with the help of a pole placed over a fence. "Try and keep two thirds of your horse 'in front of you'," explained Mr Bartle. "Your horse's neck is like this pole, the longer the neck, the better balance for jumping. Don't shorten the reins, keep the neck as long as possible."

Tape it up

Next, delegates learnt what posture at your desk, whiplash and the walking speed of stroke patients all had in common. Lee Clark, a Chartered Physiotherapist and member of the Association of Chartered Physiotherapists in Animal Therapy (ACPAT), provided delegates the opportunity to experience human Kinesio taping "One person is not enough to put your horse back on the



road to recovery and performance,” explained Mr Clark. (For further on this subject, the research and positive results in the human field go to: www.kinesiotaping.co.uk/research).

What is kinesio taping?

Kinesio tape is a thin, stretchy, elastic cotton strip with an acrylic adhesive that has been shown to benefit a wide variety of musculoskeletal and sports injuries, plus inflammatory conditions. According to Clark, the key to the tape is its elasticity, made from cotton and coloured with plant extracts. The tape was developed more than 30 years ago and was found to provide the same benefits as massage and manipulation in reducing pain in injured patients. Designed to provide support and stability to muscles and joints, without restricting the body's range of motion, the tape helps alleviate pain and facilitate lymphatic drainage by microscopically lifting the skin.

“It can be applied in hundreds of ways and has the ability to re-educate the neuromuscular system, reduce inflammation, enhance performance, prevent injury, promote good circulation and healing, and assist in returning the body to homeostasis,” explained Clark.

The attending delegates were all handed small samples of kinesio tape and, having taped up my newly found friend next to me, I soon started to feel the tape take effect on my neck. Exactly how the taping process works is not yet fully understood, however, Japanese chiropractor Dr Kenzo Kase's theory is the stimulation of the overlying skin gives the brain an increased level of proprioceptive feedback, which then allows it to modify the function of the underlying muscle, returning it to its optimum level of function. I was definitely more aware of my neck's range of movement because of the tape. After having our own experience of being taped, next up was the horse.

With interest and research in the topic growing amongst equine therapists, Mr Clark demonstrated why and where an equine therapist would apply the tape with a variety of different

horses showing different techniques for different outcomes. Clark explained taping is not intended to replace massage and manipulation but, rather, to be used in combination, that is, after treatment by a qualified therapist. Adding the tape, which can stay on for up to five days, owners have the horse's equivalent of ‘homework’, a supporting treatment before the next therapy appointment.

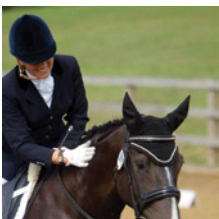
Simple, but not easy

To close the conference, dressage coach Adam Kemp dissected training in relation to performance and performance in relation to training.

“Riding and training horses is about making horses the best they can be and knowing how horses learn,” said Kemp. “Training is not clever, difficult or complicated. It is all simple - just not easy. Ask yourself why your horse would do a movement or complete a dressage test. What benefits him? What's in it for your horse?” These questions were closely followed by a demonstration about how the removal of pressure (negative reinforcement) encourages the horse to offer more of the desirable behaviour, for example going ‘on the bit’.

It seems that in what was previously an established culture of tradition and myth, the application of science is going from strength to strength. Dynamically striving forwards, the Horses Inside Out team delivered, yet again, a very well organised, educational and thought-provoking conference to practicing horse therapists, vets and coaches. A firm favourite that I have now secured firmly into my diary, the HIO team will be celebrating ten years of Horses Inside Out during 2016, with next year's conference already set to encompass asymmetry, dentistry, diagnostic imaging, and the supporting systems of posture and performance.

Backs, Balance & Biomechanics from 20th-21st February 2016 at The Royal Agricultural College, Cirencester, United Kingdom. Be sure not to miss it! Go to www.horsesinsideout.com/ to find out more.



ABOUT THE AUTHOR: Lisa Ashton, BA (Hons), PGCE, MBA, ESI Associate Diploma, BHS II, Pony Club A' Test holds the Equitation Science International Associate Diploma and tutors students from around the world studying Equitation Science International Qualifications, awarded by the AEBC. In 2011, she developed EquiSci to help horses by educating riders, trainers, coaches and veterinarians in understanding and correctly applying the science of how horses learn, and its impact on horse training. For more information, visit www.equitationscience.co.uk.



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