



# Does symmetry exist?

## 2013 Assessment and Asymmetry Conference UK

by Lisa Ashton  
BA(Hons), PGGE, MBA, Ass.Dip ESI BHSII  
Photos by Helen Richmond Photography

*How does symmetry - or the lack of it - impact horse and rider, their performance, comfort, and welfare? Are performances compromised by the patterns that develop as horses and riders compensate for being 'crooked'? Is the lack of symmetry in fact a symptom to a much deeper cause?*

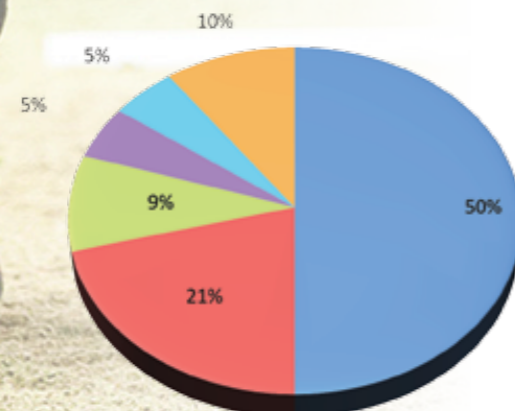
*On a freezing weekend in February, I travelled to my first Horses Inside Out Conference to find some answers to these and many other questions.*

Originally started by Gillian Higgins from Horses Inside Out five years ago, to increase her own knowledge and to make scientific research available to everyone, this year's conference had sold out months earlier. Not long after the conference began I realised why. The two-day event consisted of relentless cups of coffee and yummy cake with the most friendly and passionate equine therapists, coaches, trainers, lecturers, saddlers and farriers.. I quickly realized this was going to be a very educational and lively weekend!

### Does symmetry even exist?

Contemplating the concept of 'normal' and thinking about deviations from 'normal' horse and rider got us all thinking. Can compensatory patterns acquired in both horse and rider help identify 'inhibitory' performance? Or should we in fact as professionals see asymmetry as a symptom to a much deeper cause?

*The Assessment and Asymmetry Conference sold out months ahead and was attended by:*



- Professional Therapists
- Coaches / Trainers
- Saddlers
- Farriers / Trimmers
- Lecturers
- Others

### Science and research:

#### Not Just a Pretty Picture

The conference opened with Dutch scientist Dr Meike van Heel prodding our consciousness by analysing modern breeding policies to produce the best equestrian athletes. In the past 25 yrs the Royal Dutch warmblood stud book (KWPN) has seen an increase in the height at the withers by 0.1cm per year in horses (n=85,000) resulting in an average increase to 165.9 cm.

Large, long legged horses with relatively small heads are believed to be more optimal for the archetype of the "beautiful horse", but has our indulgence for aesthetic looks cost the horse its soundness and durability?

#### Asymmetric Limb Loading

Every year 12,000 foals are born in Holland with only 3,500 admitted into studbooks, begging the question; why are so many foals not good enough?

One area of rejection is unevenness of the foot, but is an uneven hoof capsule heritable or do uneven feet develop as a result of environmental influences? Dr Van Heel studied 24 warmblood foals from birth and measured until the age of 3 years for; conformational changes, limb preference whilst grazing and the development of uneven feet.

Results identified a group of foals whose conformational foot changes in the first year correlated with asymmetric loading of the uneven foot whilst grazing and which remained at the age of 3yrs.



*Dr Meike van Heel (on right) studied Dutch warmblood foals from birth and measured until the age of 3 years for; conformational changes, limb preference whilst grazing, and the development of uneven feet.*



#### Fast Fact

*Foals with relatively long limbs and small heads were predisposed to develop laterality and, consequently unevenness of the foot. (Photo on left courtesy of Meike van Heel).*



*Dr Lars Roepstorff explained how they were able to study and analyse the effect of head and neck position on the biomechanics of the walk and trot.*

**Interested in Dr van Heel's laterality work?** Follow these links: <http://onlinelibrary.wiley.com/doi/10.2746/042516406X159070/abstract> • <http://onlinelibrary.wiley.com/doi/10.1111/j.2042-3306.2010.00064.x/abstract> • <http://onlinelibrary.wiley.com/doi/10.2746/042516406X159089/abstract>

#### Head and Neck 'Nerds'

With the focus of training methods and modern riding technologies on the position of the head and neck, Dr Lars Repstorff explained the functional properties of the back in relation to horse training and the importance of flexion and extension dynamics in performance.

A study of 6 different head and neck positions (HNP) including desired competition and Rollkur HNP, with and without a rider (Grand Prix Dressage riders) resulted in key findings: four of the six head and neck positions resulted in large decreases in speed (walk & trot) stride length and protraction angle of the hind legs, both with and without a rider. Some head and neck positions varied the horse's ability to extend and flex vital regions of the back, severely reducing the lumbar range of motion or "elasticity".

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## When it comes to the rider it's all about the seat:

### Is there a perfect rider shape?

British Equestrian Federation physiotherapist Andy Thomas assesses patterns of movement of riders, on and off the horse, to identify and treat rider imbalances.

According to Andy most riders have imbalances and weaknesses, "better riders are better at 'hiding' their body problems. Some people have a tight side with the opposite side of their body being weak; others are tight and weak on the same side."

In a period of seven years Andy has treated 541 riders profiling rider imbalances into 3 types:

Type 1. Weak on one side and tight on the opposite side – 80%

Type 2. Weak on one side and tight on the same side – 12%

Type 3 Globally weak with no tightness or restrictions – 8%

Interestingly a rider's laterality (right or left-handedness) had no influence.



### Fast Fact:

#### It is all about the pelvis.

According to the British Equestrian Team Physiotherapist Andy Thomas, position problems almost always stem from the pelvis.



“It's not about changing one thing by 100% its about changing 100 things by 1% that makes the difference.  
Sir Clive Woodward”

### An Influential Seat is a Functional Seat

Physical traits of a functional seat are strength, mobility, control, power, stability, agility, flexibility and suppleness to optimise postural control. Andy helps coaches to assess what is actually possible for a rider but also how the horse influences the rider's body.

### Suppleness is not flexibility

Rider suppleness is the ability to absorb forces of movement without losing independent control of your limbs, giving your body control through core stability in the pelvic area.

### Female riders need greater control and stability

The key muscles involved are the gluteus minimus and medius, whilst the psoas muscle goes from the front of the spine to the hip and helps to control and decelerate the pelvis which, in turn, helps with balance and co-ordination. Females need greater control and stability as their seat bones are much further apart and much wider than males; also their hip bones are much nearer the spine than those of men, so exercises are adapted to take these differences into account.

Delegates observed and commented on two riders symmetry, position, stabilization left and right discussing what it takes to be functional on the horse. Andy then assessed each rider off the horse working on his plinth to identify weaknesses and imbalances and the riders ability to adjust position and absorb the forces, whilst staying supple and in control.

He explained different techniques recruited by riders to cope with movement, and used targeted exercises including a wobble chair and what looked like a vetrap bandage for resistance.

Results of the 'firing and release' exercises can last 2-3 weeks with the majority of the British equestrian team implementing targeted exercises 10mins before they ride at home and at competitions.

## Biomechanics and conformation:

### Asymmetry: a secondary symptom?

A residing theme of the conference was to determine the underlying cause of asymmetry. Haydn Price, consultant farrier to the British Equestrian Federation (BEF) and Team Farrier to British Dressage and Show jumping teams received a warm return to the conference offering an abundance of humor and knowledge in symmetrical quantities!

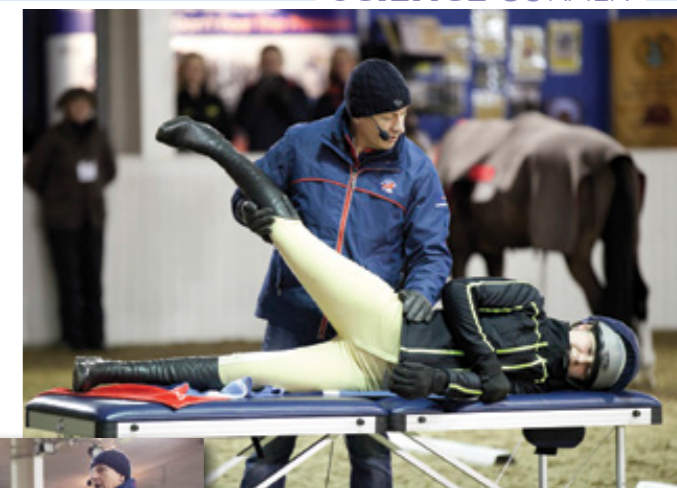
Dr Roepstorff's first-class introduction to kinematics and kinetics of equine locomotion was further impounded as speakers highlighted to delegates the importance of; inertia, velocity, energy, lever arms, body mass, equal and opposite forces and ground reaction forces. I felt lucky to have passed an equine biomechanics module more than 17yrs ago!

Mr Price explained that farriers have historically dealt with asymmetrical front feet by implementing a detailed shoeing or trimming programme, making both hoof capsules more symmetrical. However this does not address the underlying cause of the asymmetry.

### Why does the hoof capsule develop asymmetric?

Can farriers assist the engineering that creates this dysfunction? According to Mr Price, farriers should view the forelegs as lever arms of the horse and the hind-legs as angle levers, with farriers not offering protection but to create platforms for the horse's limbs to work from. Therefore if your horse has different length lever arms (asymmetric) he will have a different static position, referred to as Limb Length Differential (LLD).

Andy Thomas explained different techniques he uses to help riders cope with movement, as well as targeted exercises including a wobble chair and resistance bands.



## A crash course in biomechanics!

Biomechanics is the science concerned with the internal and external forces acting on the human body and the effects produced by these forces.

I was lucky to have passed an equine biomechanics course and was able to follow the sometimes very technical explanations from various presenters, in particular British equestrian team farrier David Price.

Here are some of the definitions mentioned:

**Kinematics:** Kinematics is the branch of biomechanics that studies movement with reference to the amount of time taken to carry out the activity.

**Force:** a pushing or pulling action that causes a change of state (rest/motion) of a body is proportional to mass x acceleration. It is measured in Newtons (N)

**Speed and Velocity:** Average speed of a body is obtained by dividing the distance by the time taken and average velocity is obtained by dividing the displacement by the time taken. Speed and Velocity = distance travelled ÷ time taken

**Levers:** A lever is a rigid structure, hinged at one point and to which forces are applied at two other points. The hinge is known as the fulcrum. The two forces that act on the lever are the weight that opposes movement and a force that causes movement. For more details see the page on Levers.

**Body mass:** the quantity of matter of which a body is composed of - not affected by gravity - measured in kilograms (kg)

**Anterior:** Nearer the forward end; nearer the head of an animal or the front of a human.

**Caudal:** synonym for the term posterior.

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## Asymmetry & the saddle

Equipment can reduce asymmetry as well as create it.

David Kempshall, saddler and Managing Director of First Thought Equine Ltd, manufacturers of Wow™, Flair, Korrektor and Equiform, briefly demonstrated pressure mapping technology under the saddle and the potential for saddles to be fitted to an asymmetric rider and horse.

Using the patented 'Flair' air flocking system David adjusted both the front two air bags, and back two airbags, whilst delegates analyzed in real time via a big screen, the pressure loading of cells, and the impact to horse and rider's symmetry.

The rear bags were raised and lowered demonstrating different balance points for the rider, and the optimal longitudinal balance point for the horse/rider combination.

Interestingly the back adjustments influenced the rider more than the horse, whilst front air adjustments made a difference to the horse's neck and shoulder.



*Saddler David Kempshall demonstrated pressure mapping technology under the saddle. Combining a pressure mat with the 'Flair' adjustable air-flocking system, delegates were able to analyse the pressure loading and the impact to horse and rider's asymmetry on the big screen and in real time.*



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## Dressage:

### The Basics of Grand Prix

Adam Kemp, a Fellow of the British Horse Society and successful dressage rider and coach, gave an enlightening and humorous display of training symmetry in his system of training for dressage.

Little 'gems' ensured a captive audience; "starting and stopping was the whole test in London. Educating your young horse to 'go' and 'stop' is teaching him Grand Prix".

Adam then explained with rider Matt the FEI Training scale and how to interpret symmetry, "the scales are not a list, just a set of words, you need them all in order to go correctly."

## Jumping:

### Whose Responsibility?

Caroline More, another Fellow of the BHS, successful event rider and British Eventing National under-18 coach explained her coaching philosophy, demonstrating how specific exercises can improve straightness in the event horse.

According to Caroline there are three key areas of training:

1. Obedience
2. Power
3. Softness

...and 3 areas of responsibility:

1. Rider:
  - a) Horses balance
  - b) self balance
  - c) correct approach
2. Horse:
  - a) Obedience
  - b) Think...hoof/brain coordination
  - c) Jump
3. Training the horse for Responsibility
  - a) Terrain
  - b) Self Carriage
  - c) loose schooling
  - d) pole work

### Improve your jumping with dressage boards

Caroline demonstrated with two U18 event riders, the importance and value pole work has in training your horse to stay on your line.

Using dressage boards and poles with different distances between them (2 1/2 feet to 3 1/2 feet) in trot, riders developed awareness for stride length and tempo. This raised the horses withers and developed more hind leg flexion.

### Which Side of Centre?

A small grid was then jumped on a straight line with riders holding their line either left or right of centre. This targeted straightness and more lift through the withers.



*Caroline Moore FBHS explained her coaching philosophy, demonstrating how specific exercises can improve straightness in the event horse. For example using dressage boards, pole work, and jumping grids.*

By building the grid up on the centre of the arena, delegates observed where the horses natural balance wanted to fall.

Exercise: To help riders take responsibility for straightness try using guiding rails followed by a small narrow fence. Riders are unable to abandon straightness after take-off.

### Use the Approach to Set Up the Landing

Leg-yield on the approach to a narrow fence across the arena to set up the landing balance. This teaches the rider to maneuver the withers to create the desired new balance for the landing, essential for the event rider dealing with technical cross country lines.

### Educating Your Horse's Eye to Read the Question

Caroline demonstrated how a line of fences without ground rails with different distances between them (bounces, one and two strides) helped the horses assess the question. The complexity of the question resulted in horses slowing and reacting with more care, which gradually became more difficult as riders were asked to hold their line both left and right of centre.

### Conference wrap up: It's the small things

This year's Horses Inside Out conference facilitated many discussions, long after the presentations, which really impressed me.

A high level and knowledge of equitation welfare was demonstrated by professionals who truly 'care for' and not just 'about' our horse friends, even in conditions of -2 degrees at Arena UK!

Perhaps like me you also feel inspired to make lots of little changes in your coaching and training. "Its not about changing one thing by 100% its about changing 100 things by 1 % that makes a difference" Sir Clive Woodward.

### The Back and Beyond

The next Horses Inside Out conference will take place on 22nd and 23rd February 2014 and is already shaping up as another not to be missed date on my calendar!

Under the title: "The Equine Back and Beyond" it will be hosted by the Royal Agricultural College, Cirencester, UK. Some of the confirmed speakers include Animal Health Trust's Dr Sue Dyson, Neuroanatomist Dr Andrew Hemmings, and Sports and Remedial Therapist Gillian Higgins. The programme will be of great interest to all riders, trainers, therapists, saddlers, farriers and vets.

For further details visit:

[www.horsesinsideout.com](http://www.horsesinsideout.com) or contact [info@horsesinsideout.com](mailto:info@horsesinsideout.com). You can also stay in touch via Facebook and Twitter.



*A group shot of some of the presenters with the team from Horses Inside Out. From left to right: Rachel Porritt, David Higgins, Matt Frost, Adam Kemp, Jenny Brown, Shirley Higgins, Flint (the Horse!), Caroline Moore, Gillian Higgins, Maggie White, David Kempshall, Liz Roberts, Nic Ross, Claire Ellis*