



# DESIGNS ON *Synchronicity*

NEW RESEARCH BY FAIRFAX SADDLES HAS STUDIED THE EFFECT THAT THE RIDER'S POSITION AND BALANCE HAS ON THE HORSE'S MOVEMENT. THE RESEARCH BY **VANESSA FAIRFAX** AND HER TEAM HAS BEEN ACCEPTED BY THE BRITISH EQUINE VETERINARY ASSOCIATION FOR PRESENTATION AT ITS ANNUAL CONGRESS IN 2020.

**T**he scientific study investigated how the design and configuration of the saddle's seat and knee block plays a crucial role in enhancing horse and rider synchronicity. "It is the first time that a pressure mat has been incorporated into a seat saver and used to measure the rider's seatbone pressures, and the study also looks at the three-dimensional movement of the horse's spine," explains Vanessa Fairfax.

This research resulted in the development of the new World Class Dressage Mono flap which is now being used by top riders including Charlotte Dujardin.

"Changing and improving how the seat and knee block interact with the rider's body as it moves can help the rider maintain a balanced position in the centre of the saddle, enabling them to 'sit into' each stride for longer and feel more 'at one' with their horse," she adds.

**ABOVE LEFT:** CHARLOTTE DUJARDIN AND MOUNT ST JOHN FREESTYLE COMPETING AT AMSTERDAM CDI-W IN THE FAIRFAX WORLD CLASS MONOFLAP.

**LEFT:** A PLIANCE PRESSURE MAT WAS USED TO MEASURE RIDER SEATBONE PRESSURE, WHILE MOTION SENSORS TRACKED THE MOVEMENT OF THE HORSE'S SPINE.



## IN SYNC

"Synchronicity is when the horse and rider feel, and look, as if they are moving as one," explains Vanessa. "The rider's upper body remains stable while the pelvic position is neutral in the middle of the saddle, absorbing the horse's movement easily and smoothly."

"But the movement of the horse generates huge forces with every stride, shifting the rider's body up out of the saddle and then pushing the weight back down into the seat."

Dr Russell MacKechnie-Guire, of Centaur Biomechanics, placed joint markers on both horse and rider to map and record their movement patterns.

Analysis of these patterns allowed the team to see exactly how the rider's pelvis and joint

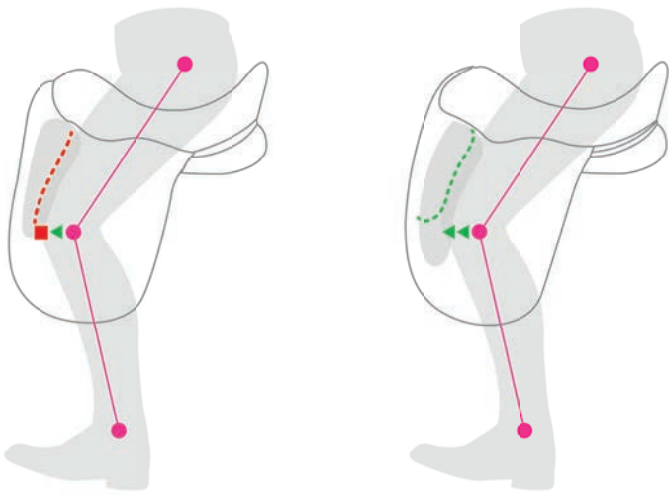
angles have to change and adapt to deal with this movement in order to remain synchronised with the stride.

"Synchronicity can only be achieved when the rider has a neutral pelvis (neither tilted forward nor back) and is sitting in a balanced position in the lowest point of the saddle. This is because a neutral pelvis can swing through a greater range of motion and absorb the movement of the horse. The rider's trunk (upper body) becomes easier to stabilise and can maintain its vertical position for longer before their weight gets repositioned by the motion of the horse's back.

"It has now been shown that this is more likely to be achieved when the knee is supported by the saddle but, crucially, not blocked by it," says Vanessa.

**LEFT:** MAPPING THE HORSE AND RIDER MOVEMENT PATTERNS (SEEN AS WAVES) SHOWS THAT SYNCHRONICITY IS ACHIEVED WHEN THE RIDER'S SEAT SPENDS LONGER IN THE 'CORRECT' POSITION IN THE SADDLE FOR EACH STRIDE CYCLE.





### KNEE IS KEY

One of the key features of the new World Class Dressage saddle is that the knee block is constructed with multiple layers, including a shock absorbing element, which enables it to accommodate the forward movement of the rider's knee.

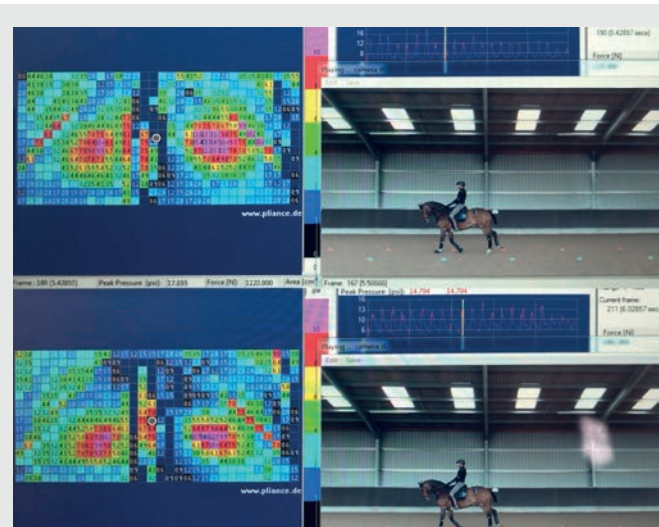
Vanessa explains: "This is the movement that happens in the phase of the stride where the rider's weight is pushed down into the saddle, the joint angles change and the knee is pushed forward. Essentially, the knee is given room to function effectively, allowing the rest of the rider's body the chance to absorb the forces generated by the horse's movement.

"A knee roll that is unable to absorb the movement of the knee can block it and restrict the rider's movement, hindering their ability to synchronise with the horse."

### DIFFICULT POSITION

Analysis of the positions of the elite riders in the trials showed that when the rider's knee is restricted by a rigid block – in the picture on the left (below) – the knock-on effect is that the pelvis gets pushed backwards and the seatbones are shifted from the lowest point of the saddle towards the rise of the cantle. The rider's pelvis also becomes tilted and a slight hollow develops in the lower back.

In the picture on the right (the World Class saddle) the pelvis is neutral – not tilted towards the front or back – and the lumbar spine is straighter.



**ABOVE:** PRESSURE MAT DATA FROM THE SAME MOMENT IN THE STRIDE SHOWS A MORE SYMMETRICAL PRESSURE DISTRIBUTION OF THE RIDER'S SEAT IN THE NEW SADDLE (LOWER IMAGE).

### SYMMETRY AND MOVEMENT

Mark Fisher, Master Saddler and Master Saddle Fitter, used Pliance pressure mapping to gather data which revealed that when a rider has a neutral pelvis, pressure is more evenly distributed between the seatbones and they sit more symmetrically. Every rider in the study showed improvements in pressure symmetry in the new design of saddle.

"Coaches and competitors have always known that a rider who is sitting level with an evenly-balanced seat is easier for the horse to carry, and this research reinforces that by demonstrating that the horse's performance improves dramatically when this is the case. Biomechanical gait analysis showed a significant improvement in the horse's freedom of movement in the new design of saddle," comments Vanessa.

### BACK IN ACTION

This research also examined how the horse's spine moved. The motion sensors demonstrated that the horse was able to use its back more freely behind the saddle when the rider sat symmetrically in the lowest point of the seat.

The World Class saddle is available in seven physique options to achieve maximum comfort, fit and feel according to each rider's individual anatomy.

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**TOP LEFT:** THE NEW DESIGN OF KNEE BLOCK (DIAGRAM RIGHT) DE-RESTRICTS THE KNEE AND ALLOWS IT TO MOVE FORWARDS. A KNEE ROLL THAT IS UNABLE TO ABSORB THE MOVEMENT OF THE KNEE (DIAGRAM LEFT) CAN BLOCK IT AND RESTRICT THE RIDER'S MOVEMENT, HINDERING THEIR ABILITY TO SYNCHRONISE WITH THE HORSE.

**LEFT:** EVEN WHEN STATIC, THE KNEE BLOCK CAN MAKE A DIFFERENCE TO THE RIDER'S POSITION (WORLD CLASS MONOFLAP ON THE RIGHT) WHEN THE RIDER'S KNEE IS RESTRICTED BY A RIGID BLOCK – IN THE PICTURE ON THE LEFT – THE KNOCK-ON EFFECT IS THAT THE PELVIS GETS PUSHED BACKWARDS AND THE SEATBONES ARE SHIFTED FROM THE LOWEST POINT OF THE SADDLE TOWARDS THE RISE OF THE CANTLE.

