

The science of rider biomechanics isn't just for professional riders looking to improve their results, it can benefit riders of all levels, as *Catherine Welton* finds out

BACK in the day, "heels down and sit up" was about as scientific as things got. "Historically, we were focused on what the picture looked like, rather than the physical demands of riding," says Jennifer Symms, a chartered physiotherapist who runs Pegasus Physio.

Today, we have a better understanding of the athletic challenges of equestrianism. "Horses move in three planes of movement during riding; forwards, up and down vertically, and their barrel swings side-to-side with each stride," explains Sarah Claridge, also a chartered physiotherapist, of Meadow Physio and Pilates. "The rider's goal is to move with the horse, without interfering with its natural movement.

"Rider biomechanics refers to how a rider uses their body to balance, stabilise and produce an aid and thus a response from the horse. Good biomechanics complete a task with minimal effort and maximum effectiveness."

Whether we're aware of it or not, most of us are not as balanced or symmetrical as we could be. In fact, common rider issues are often a symptom of this, says Jennifer: "For example, a gripping leg is normally in response to your leg trying to keep you balanced or an underlying weakness."

But assessing your own position isn't easy, as Clare Howard, physiotherapist and owner of The Balanced Rider, explains.

"It's not accurate to rely on your own feedback that you feel level or straight. Our bodies compensate quickly and most of us aren't very precise in assessing ourselves."

Riders benefit from dynamic versions of standard exercises – in this case plank on a gym ball rather than the floor



Most riders are nursing more than their fair share of old injuries, and these can have a big impact on symmetry.

"As humans we have a natural instinct to avoid pain, so our body finds other ways to function," says Sarah. "This is where compensation strategies or asymmetries form. These then become the norm and we think we're straight, even though we're wonky."



"Mechanical horses" vary. Some are used as assessment tools, others are highly technical simulators giving feedback

EVEN without the inevitable "war wounds", riders come in all shapes and sizes, all of which affects our position.

"The centre of gravity for a rider is proportional to their height, shape, weight distribution, posture and movement patterns," Sarah says. "It is made more complicated by the height, shape, posture and movement of their horse."

For this reason, Professor Jane Williams, head of research at Hartpury University, believes that rider biomechanics should be considered alongside rider weight when it comes to assessing horse/rider suitability, welfare and safety.

"You might see someone very tall on a small horse, they might be very skinny so their overall weight wouldn't have an impact as such, but their height and balance can still affect the horse," she explains.

And this can have more of an effect than you might think.

"If a rider sits more heavily on one seat bone, that might be considered a minimal amount of weight imbalance," Clare explains. "But this will affect the horse on every single stride. It's repeatedly been shown that in trot and canter, the forces loaded onto the horse are twice and two-and-a-half times the weight of

Super stretches

1 To stretch the quads and hip flexors (helps with shoulder/hip/heel alignment), hook one foot up behind you on something about bottom height. Make sure your pelvis is straight and even, relax your pelvis forward and feel a stretch along the front of the leg that

is up. For more of a stretch, slightly bend the standing leg. Repeat on the other leg.

2 Sit on the floor, with your legs wide and a straight back. Take hold of something in front of you at about shoulder height and then use that tension to

fold gently a bit further forward. This will stretch the inside of your thighs and hip flexors.

3 Standing up with your feet hip-width apart, bend forwards and take a tight hold of your calves, elbows out to the sides. Use that tension to stretch gently down the backs of your legs.

4 Warm up your ankles and stretch the fronts and sides of your lower leg before you put your boots on. In a standing position, using a curtsy like motion, point the toes of the rear foot (toe nails pressed to the floor and sole of the foot facing upwards), gently bend both knees and lower into the curtsy until you feel the stretch. Repeat on the other leg.