

In Search of Balance

For both horse and rider, balance is the basis of all dressage work

By Jennifer O. Bryant

Going through the motions of daily life, most of us don't give much thought to how we manage to stay upright as we walk, move, and stand. But get on a horse and—yikes!—suddenly we feel like marionettes with a drunken puppeteer.

As we struggle to sit the trot and to get our hands and legs under control, we perhaps gain empathy for our horses, whom we ask not only to

move like graceful athletes but to carry our shifting weight while doing so.

Everything in dressage requires balance—longitudinal, lateral, at rest, and in motion. Sharing a focus on balance as a starting point for both horses and riders, an equestrian-biomechanics authority teamed with an equine-biomechanics expert to present a session titled “Balance in Movement” at the 2011 Adequan/USDF

National Convention Presented by SmartPak. In this article, we'll bring you highlights of the presentation.

The Horse's Balance

World-renowned equine-biomechanics expert and *USDF Connection* contributing editor Dr. Hilary Clayton needs little introduction. Her research efforts at the Mary Anne McPhail Equine Performance Center at Michigan State University's College of Veterinary Medicine in East Lansing have influenced everything from footing choices to the official definitions of dressage horses' gaits and movements.

In the convention session, Clayton gave an overview of how horses balance—and how we as riders can help them to balance better in the work we ask of them.

With four legs, a horse might seem like a pretty stable creature, balance-wise. Actually, he does not have “a leg at each corner,” as the old saying goes. With feet positioned narrower than his shoulders and hips, “the horse's base of support is narrower than we might think,” Clayton said.

Kinematic studies at the McPhail Center have revealed that, even unmounted and at a standstill, a horse's body is not immobile. “The muscles are always contracting to make slight position adjustments,” Clayton said.

One curious discovery: Even sound horses tend to stand with more weight on their left front foot than their right front, Clayton said. The implications of this finding aren't yet fully understood, she said.

When in motion, a horse's center of gravity is not always over his base of support, said Clayton. His grounded legs “catch” him (otherwise he'd fall), and his muscles push against the ground to raise his body and provide propulsion for the next stride.

The faster the gait, the more the horse's body relies on momentum for balance. At slower gaits, the horse gets more of his balance from the size and shape of his base of support (the grounded hooves). Because the foot-fall patterns of any gait are constantly



A LEG AT EACH CORNER (ALMOST): *The horse's feet are positioned narrower than his shoulders and hips, so his base of support is narrower than one might assume. For him to perform well in dressage is a challenge requiring excellent balance from both horse and rider, as Pierre St. Jacques on Lucky Tiger are showing here at the 2010 Collecting Gaits Farm/USEF Dressage Festival of Champions.*

changing, so too is the base of support.

You may know what a horse feels like when he collects, but do you know what his body is actually doing? Clayton explained: In collection the horse steps further underneath himself with his hind legs, thereby shortening his base of support; his trunk rotates “up-hill”; and his neck arches to become more vertical. Being able to collect, therefore, requires considerable balance and strength. A horse with good control over his own balance in collection is said to be in self-carriage.

At the top levels of dressage, two of the most difficult movements are the passage and the piaffe. The transition between these two movements is especially challenging, for the mechanics of the two are quite different, Clayton said. The passage, like the trot, is a forward-moving gait, while the piaffe is more or less static. The horse's base of support shortens in piaffe because the diagonal limbs are no longer parallel, as they are in trot and passage.

Rider Balance

Susanne von Dietze is a lifelong rider who was trained as a physiotherapist in her native Germany. She is best known to American audiences as the author of the book and DVD *Balance in Movement*.

One of the most difficult athletic challenges—requiring great balance, suppleness, and core strength—is to appear still while in movement, von Dietze said. The rider must match her movements to that of the horse, thereby absorbing the motion and appearing to be doing nothing but sitting quietly in the saddle.

The rider's pelvis is the primary point of connection with the horse, and therefore effective and elegant riding requires a great degree of flexibility and suppleness through the hips, von Dietze said. Riding the walk may seem simple but actually demands a lot of pelvic movement (which is why it's so effective for people with physical disabilities or who are rehabbing from certain injuries). When von Dietze was pregnant, she could ride rising (post-

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BALANCE CHALLENGE: *The horse's balance and base of support must change significantly if he is to execute a correct transition from passage to piaffe. This sequence shows 2010 Alltech FEI World Equestrian Games US team members Todd Flettrich and Otto in the moment of transition. From the passage, with its trot-like footfall sequence and apparent forward momentum (left), Otto must shorten his base of support and bring his hind legs further beneath his body (center) to transition to piaffe. The piaffe has a "sitting" appearance, with the hindquarters bearing more weight, and Otto's balance is shifted rearward (right).*

ing) trot and canter with little difficulty but found the walk tiring, she said.

Sitting the trot requires increased pelvic elasticity and mobility—especially the ability to allow the hips to

swing from side to side to follow the movement of the horse's hips without the shifting one's weight back and forth. The rider's hips undulate while her shoulders remain level.

We like to think that sitting the trot is more difficult than rising, but "a good rising trot is damned hard to do," von Dietze said. Ideally the rider's back remains straight and her legs quiet, with only her hips moving. Watch a group of riders sometime and you'll see that few achieve this standard.

In the canter, the horse feels something like a rocking chair as he moves through the stride: uphill – flatter – slightly downhill. Accordingly, the rider must rock slightly from front to back over her seat bones to remain in balance with the horse.

Von Dietze showed photos and video footage of several young women, all riders, walking unmounted and in various exercises, such as walking rapidly while placing one foot directly in front of the other. All of the models were trim and fit, but conformational differences—height, hip width, leg length, and so on—made for obvious variations in gait and in the degree of ease with which they could execute the exercise movements. As von Dietze explained, it is these inherent conformational differences that affect what things we find easier or more challenging. When she showed video of the young women riding,

Improve Your Balance and Mobility

Small changes can produce big results. The next time you swing a leg over your horse, try these tips from physiotherapist and rider-biomechanics expert Susanne von Dietze.

- Think of rotating your toes inward. Even if your feet hardly move, the action will soften the muscles of your bum. Riding with the toes out tightens the gluteal muscles and stiffens the seat.
- Position flaws in the rider's torso, such as a twist or a dropped shoulder, frequently belie the way the person's body is reacting to the horse's movement. In other words, the fault may be a symptom and not the cause. Only by identifying and correcting the cause can the fault be eliminated.
- Riders must learn how to activate their abdominal and other core muscles. If the rider's abs aren't active, the horse won't be encouraged to use his own abs.
- As the above example illustrates, a horse's weak area often mirrors his rider's weakness.
- One key to good rein contact is a thumb that's slightly bent while closed on the rein. A flat, clamped thumb causes the wrist to stiffen.
- When a rider shifts her weight from one seat bone to the other, the movement in her pelvis is actually more forward than sideways. This action corresponds to the way lateral movements are ridden in dressage.

Ride in Balance with Dr. Hilary Clayton

Put equine-biomechanics expert Dr. Hilary Clayton's research findings to work in your own dressage-training program:

- You can't hope to ride a square, straight halt if your own balance is not under control. The rider must sit straight and still, without swaying from side to side.
- Sit quietly and allow your horse to settle into the halt. Interfering too early may cause him to lose his balance and step out of what otherwise might have been a square halt.
- Many horses fall on the forehand in the move-off after a halt. To help your horse keep the desired "uphill" balance, think of rocking him back slightly before you ask him to move forward.

the audience could plainly see, for instance, that a person with stiffer hips might find riding lateral movements more challenging.

Balanced Viewpoints

In dressage, we're sometimes in the position of knowing what needs to be corrected but not knowing how. With their presentation, Clayton and von Dietze shed light on how horses and humans balance, and how changes in our bodies affect those of our horses. ▲