

The Physiology of Dressage

You know dressage training can better any horse. Here's why.

By Jennifer Walker

The picture of a well-performing dressage horse is a pleasant one: His neck is arched, he is on the bit with an elastic rein contact, his back is lifted, and he steps well under himself with his hind legs. His gaits are springy and elastic, his movements are precise, and his soft eyes and relaxed ears indicate that he enjoys his work.

This perfect picture tends to garner good scores in the show ring, but there is much more to how we ride and train than achieving that oh-so-desirable 70-percent score. Working

in a proper outline makes for a comfortable horse—which not only makes him happy in his work now, but also could have long-term positive effects on his health and soundness.

McPhail Dressage Chairholder Hilary Clayton, BVMS, PhD, DACVSMR, MRCVS, is a dressage enthusiast and a USDF bronze, silver, and gold medalist who has made a career of studying equine biomechanics.

“We are just starting to accumulate information to support the long-term health benefits of training the horse in the proper ‘frame,’” Clayton explains.

“We are doing a lot of research on the back and neck at the moment.”

Examining equine spines in post-mortem study, “we find a lot of back pathologies—lesions that had to have been painful,” Clayton says. “Like people, horses learn to tolerate pain and function in spite of it.”

Clayton has long emphasized the importance of core strength in horses, and her book *Activate Your Horse's Core* offers unmounted exercises to increase core strength.

“Just like riders, performance in the horse is greatly improved by having sufficient core strength,” Clayton says. “This allows him to round his back. A lifted back relieves strain on bones, ligaments, tendons, and other tissues.”

Core-strengthening exercises have obvious benefits in performance horses but also are useful in building strength in young horses prior to backing and in horses that are returning to work after time off. Riding your horse in the appropriate dressage outline for his stage of development will develop the core muscles, but Clayton's unmounted exercises are a good supplement.

Dressage horses need properly developed neck muscles as well. After all, the neck is an extension of the back, cantilevered out in front.

Clayton explains the neck-back connection: “There are two types of muscles: long muscles that move the entire back or neck, and short muscles that lie close to the vertebrae all along the neck and back that are really important for adjusting the angles of individual joints, as well as for stabilizing the back and neck. Without that stability, we get micromotion of the joints that can predispose the horse to arthritis.”

Studies have shown that back or neck pain in both humans and horses causes the short stabilizing muscles to “turn off,” leading to instability and weakness. Even if the pain goes away, these muscles don't necessarily reactivate without a physical-therapy intervention. If nothing is done to reengage



SOUND BODY, SOUND MIND: *Correct dressage training benefits the horse both physically and psychologically, experts say*

the stabilizing muscles, an ongoing pain cycle and the development of arthritis can occur. Clayton's research found that core-strength training helps to activate and strengthen the small back muscles, with just three months of training resulting in a significant increase in their size and strength.

For more on Clayton's research on the equine back and an introduction to her unmounted core-strengthening exercises, see "Horse-Health Connection" on page 20.

Correct Carriage Means Better Trainability

Teaching a horse to carry himself in a rounded outline with his back lifted affects not only his physical health, but also his mental well-being. Sandy Savage, an FEI-level dressage trainer and a USDF bronze, silver and gold medalist from Wilton, CA, finds that a comfortable horse is a happy one—which leads to better performance.

"Horses naturally carry 60 percent of their weight on their forehead and 40 percent on the hind end," Savage says. "By teaching them to carry themselves properly, it moves more of the load to the hind end and relieves pressure on the front feet. Horses were not made to carry people on their backs, but lifting the back helps the horse to carry the rider on the back muscles instead of the spine. This all means the horse is less likely to be sore. If they are comfortable, it decreases their mental stress. When there is less pain and discomfort, they are more submissive and relaxed."

Savage notes that even the best-trained horses will have their bad days, but a horse that finds his job painful and unreasonably difficult is more likely to have behavioral problems, even outside of the arena. He may become difficult to handle on the ground, or he may pick up such vices as cribbing or kicking the stall. Pain may also lead to severe disobediences under saddle, such as bucking or rearing. ➔

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Savage emphasizes the importance of following the pyramid of training and of progressing level by level instead of skipping ahead.

“It’s important to teach the movements in order,” Savage explains. “This helps to build the proper musculature. The horse should be able to perform each movement in the level consistently without difficulty or strain before you move up.”

Many riders struggle to discern whether “resistance” is disobedience or simply a natural reaction to a new training challenge. Savage offers these guidelines: “It’s acceptable for horses to make mistakes when they’re learning something new, as long as they’re trying. Breaking gait, sucking back, and hollowing their backs are all common behaviors when they are first learning. This will get better as you ask them to do it correctly, a little at a time, and they get stronger—as long as you have laid a good foundation. But acting out, such as kicking, bucking, or rearing, is never acceptable.

“Repetition builds strength and stability,” Savage continues. “If you ask consistently with the aids, ask for a little more all the time, and reward the correct response, the horse will learn in a way that is not stressful for him. This leads to better submission and a higher degree of performance.”

Psychological Implications

While properly building the muscles is important, how the horse is rid-



FEELS GOOD: Lowering the head and neck releases endorphins and makes the horse feel happy and relaxed

den and handled can have a profound effect on his psyche as well. According to Patricia E. Blakeslee, VMD, a veterinarian and equine chiropractor at Unionville Equine Associates in Oxford, PA, those relaxed postures that we like to see as we ride and work around our horses actually make them happier and more tractable—and thus easier to train.

“When a horse is tense or startled, his body prepares to escape from prey, so his head goes up and adrenaline is released,” Blakeslee explains. “However, when a horse drops his head—particularly if you can get his eyeballs below the level of his shoulder—his body releases endorphins and he comes out of that fight-or-flight response. This is why ‘long and low’ work is so valuable.”

When Blakeslee treats a chiropractic patient, the first thing she does is

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“Rollkur” Can Affect Horses’ Vision

Hyperflexion (the so-called rollkur)—riding a horse extremely “deep” and with exaggerated poll and neck flexion—has been a hot topic in dressage circles for years. Denounced by many as harmful to horses’ bodies, hyperflexion’s effects on horses’ vision have received relatively little attention. That’s something Cindy Sydnor would like to change.

Sydnor, of Snow Camp, NC, is a US Equestrian Federation “R” dressage judge and an examiner in the USDF Instructor/Trainer Certification Program. She approached *USDF Connection* because she wanted to get the word out that “It is the horse’s natural instinct to rely on vision to check its surroundings. Rollkur puts the horse in an extreme position. All they can see at that point is the ground, and they can’t assess their environment. It’s cruelty to take away their strongest survival tool like that.”

We asked Richard McMullen Jr., DrMedVet, CertEO, assistant professor of ophthalmology at North Carolina State University’s College of Veterinary Medicine in Raleigh, to elaborate on Sydnor’s statement. He says: “The horse has small, natural blind spots between its eyes just in front of and perpendicular to its forehead, below its nose, a small oval area in its superior visual

field, and a small area directly behind its head. With the horse’s neck hyperflexed and the chin against the chest, the position of the



VISUAL IMPAIRMENT: *Hyperflexion reduces a horse’s field of vision*

eyes changes to keep the horizontal pupil parallel to the ground. Since the forehead is oriented directly in front of the horse, there is probably an exaggeration of the blind spot perpendicular to the forehead, and the blind spots below the chin and behind the head are then replaced by a blind spot that is then created by the horse’s entire body. The horse should still have a large field of view, but it is likely significantly reduced with the horse’s head in this position.”

“Rollkur” may well act as a sort of blinkering system for horses under saddle, and perhaps that’s part of the reason some notoriously spooky performers have been schooled using the method. Besides the documented drawbacks (not to mention the FEI’s rules prohibiting it in extreme forms), the use of hyperflexion may be, if you will, treating a symptom and not the cause of horses’ tension or lack of submission.

to teach the horse to drop his head until his muzzle touches the ground. Although response time varies, most horses get that endorphin surge and relax within 20 to 40 seconds, she says. Subsequently, the head-down response is quicker.

“They have to learn that having their head down is a comfortable, happy place to be,” Blakeslee says. “It’s easier to teach this from the ground, but you can transfer it to the saddle by teaching them to do it when you squeeze the base of the neck in front of the withers, or when you use a leg or rein aid.”

Blakeslee points out that the “happy place” method is useful not only when a horse is frightened. When a horse responds to confusing or difficult work by hollowing his back and tensing his neck, taking a moment to stop and ask him to drop his head and neck acts as a “time out,” interrupting the cycle of tension and allowing the horse to get back on track and approach the work more calmly, she says. ➔

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The Happy Athlete

The *Fédération Equestre Internationale* (FEI) states that “The object of Dressage is the development of the Horse into a happy Athlete.” Although the “happy athlete” phrase has caused some dressage enthusiasts to roll their eyes, recent research indicates that maybe there’s something to the concept after all. As riders, trainers, judges, and spectators, we are beginning

to understand that, in dressage, what looks good to the eye should also feel good to the horse if done correctly. ▲

Jennifer Walker works for a dressage trainer by day and is a freelance writer and novelist by night. She resides in northern California with her family, dog, cat, and Arabian horse.



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