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Lameness: General - Jun 18th, 02

THE SPORT

The Federation Equestre Internationale (FEI) dressage rules state that the object of dressage is the "harmonious development of the physique and ability of the horse." Through the levels of dressage training, the center of gravity of the horse and rider is placed further back by increasing the degree of flexion and loading of the hindlimbs while at the same time freeing the front end of the horse to create a more uphill set of movements. This can only be obtained by increasing the power of the hindlimbs, by synchrony in movement between the frontlimbs and the hindlimbs, and through the freedom of movement of the back.

The key to the training and development of a dressage horse from the lowest levels to International Grand Prix is gymnastic exercises that aim to strengthen the muscles and thereby avoid injury to joints and tendons associated with an increased workload. Lateral movements apply specific unique strains to different structures within the skeleton. In shoulder-in, half-pass, renvers, and travers the horse is evenly bent in his neck and body, but moves on more than two tracks. These movements create an unusual strain on the horse's back and an additional twisting movement on the joints of the limb. The increased engagement of the hindlimbs developed through collected work allows for greater storage of elastic strain energy in the hock joints and pelvis which, via the increased lifting of the forehand, allows for high energy movements such as medium and extended trot.

Potential manifestations of a musculoskeletal disorder in the dressage horse include:

- Reluctance to accept or go to the bit, shortening the neck, stiffness
- Not taking the contact evenly on the left and right sides
- Irregular rhythm in specific lateral movements, e.g. left shoulder-in and right half-pass
- Irregular rhythm in medium or extended trot
- Short steps behind in walk
- Uneven height of steps or lack of rhythm in piaffe and passage
- Inability to collect, stiffening the back, and not "sitting down" behind
- Loss of freedom and elasticity of movement
- Late behind in flying changes or difficulties in changing from left to right compared to right to left, or vice versa

THE HORSE

The dressage horse must be naturally well balanced. The head and neck must be set on sufficiently high to facilitate working "uphill" and making easy contact with the bit. The shape of the withers region is important so that the saddle sits easily in the correct position. The dressage rider spends a lot of time sitting in the saddle, therefore correct weight

distribution is critical.

Most dressage horses are broken at three or four years of age and begin competing in young-horse classes as five-year-olds. Medium classes are reached by the age of seven and many future Grand Prix dressage horses do their "small tour" at the ages of eight and nine. Once the dressage horse has reached Grand Prix level, the training predominantly involves repetition of movements, maintaining suppleness, and increasing physical power. It becomes obvious that they will rarely succumb to acute, stress-induced, traumatic injuries, but are more likely to develop repetitive, accumulative, subclinical injuries which may surface at irregular intervals. This means that, with the correct training and management, dressage horses can continue to compete at the highest level at an advanced age, often as old as 15 to 20 years.

Wear and tear lesions frequently occur due to a less than ideal joint and limb angulation, but many other factors influence the durability of the horse, including genetic predisposition and less than ideal management conditions prior to skeletal maturity. The main requirement must be the ability of the horse to balance itself at all paces, since imbalance and asynchrony in movement apply unusual strains on many structures.

TRAINING SURFACES

Dressage horses are predominantly trained on artificial surfaces with a high degree of cushion, providing a consistency in the training surface not paralleled in other equestrian sports. The standardization of working and competition surfaces unquestionably plays a huge role in the low occurrence of many acute orthopedic problems in the dressage horse. Some trainers, however, consider consistent working on ideal surfaces likely to "soften" the limb structures and recommend the horses be occasionally either jumped or hacked out on less-than-ideal surfaces to stimulate bone, joint, tendon, and ligament adaptation.

Arena maintenance is extremely important; drainage is an essential key to a good surface. Dead corners of deep sand predispose to momentary loss of balance and thus the development of lameness. Any sudden change of surface integrity may predispose to lameness. Young horses in particular work more easily and confidently on firmer artificial surfaces, where they can obtain a more confident grip and are less likely to fatigue.

TACK

The horse must be comfortable in its tack if it is going to work optimally. Dressage saddles are designed to position the rider with a deep seat and an extended leg position. The surface area over which the weight is distributed should be as large as possible to avoid pressure points. The use of gel pads and layers of saddlepads is not a substitute for good saddle fitting. The saddle must fit both the horse and the rider, and must position the rider appropriately in balance. The fit must be assessed with and without a rider. The shape of the horse's back musculature may change as the horse develops muscular strength and power; therefore, a previously well-fitting saddle may become constricting. As the muscles over the withers and shoulders expand, a particular saddle may appear to fit correctly prior to working the horse, but be restrictive an hour later when the horse begins piaffe and passage movements.

Acceptance of the bit is crucial in the dressage horse. Horses vary considerably in the shape of the mouth and the sensitivity of the corners of the lips, bars, and tongue. There is also a

huge variation in the thickness of the tongue between individuals. A slight crack in the corner of the mouth caused by an inappropriate bit can cause major problems with proper acceptance of the bit and the horse's willingness to work straight. The horse may be very apprehensive of taking the bit, may take irregular steps, or be reluctant to bend properly. The presence of wolf teeth is frequently blamed for reluctance to accept the bit properly or irregularities in gait. Provided that a wolf tooth is immediately in front of the first upper cheek tooth and not mobile, it is rarely associated with pain. At upper levels, horses have to compete wearing a double bridle, i.e., the mouth has to accommodate both snaffle and curb bits. These vary hugely in size, shape, and design and selection of the most appropriate can be critical.

LAMENESS EXAMINATION

The most common causes of reduced performance or lameness in the dressage horse include:

- Inflammation (or tearing) of the top of the suspensory ligament ("high suspensory disease")
- Suspensory branch injuries
- Degenerative joint disease of the hock
- Degenerative joint disease and inflammation of the front pastern
- Inflammation of the middle knee joint
- Degenerative joint disease and inflammation of the fetlock
- Inflammation of the digital flexor tendon sheath
- Stress fractures of the cannon bone
- Back pain

Examining the lame dressage horse does not differ in any great detail from examination of any other equine athlete. However, it frequently requires more time being spent observing the horse ridden, since many dressage horses only reproduce the perceived problem, often no more than a resistance, when ridden through certain movements or at medium or extended paces. This, however, does not mean that the horse should not be examined in hand, including walking and trotting on a straight line and lunging on both hard, non-slippery surfaces (such as gravel) and on artificial surfaces. Leading the horse on a circle at a trot tends to alter the horse's stride. The horse does not have the freedom to move his neck and instead will "set" his head on the leader's hand. With subtle problems it is particularly important that the conditions, including the surface, remain consistent throughout the lameness investigation. It is difficult to start the investigation on one surface only to find that halfway through the nerve blocks the horse has to be assessed on a different surface.

In many cases, the usual rider has to be available in order to reproduce the described problem if this is not an overt lameness. If the rider is not in balance or sits crookedly, this can itself induce gait irregularities or lameness. Therefore, it may be preferable to use a good professional rider who is not the trainer of the horse to work the horse. It may require several days to determine definitively whether the problem is one of riding and/or training, or reflects a genuine lameness. However, it should be remembered that, in addition to less-than-good riders creating lameness, good riders may hide lameness. The latter may take place completely unintentionally and involve no more than a corrective change of point of balance of the rider though a corner, but enough that for a long time the problem may not be

observable from the ground.

The veterinarian will not just focus on the limbs when watching the horse being ridden. It is important that he or she observe such changes as an increased lathering of the mouth, audible change in the rhythm of the stride or even absence of teeth grinding or grunting following a particular diagnostic test.

In many cases, the veterinarian will rely heavily on the observations of the rider during the lameness examination. This may involve the appreciation of a subtle change of gait or even just an impression of a stronger rhythm or less heavy contact on the bit following a nerve block to a limb. Many riders feel through their own body that the horse is working "crooked," i.e., not straight and in complete balance, and will be able to tell the veterinarian if this feeling has been altered by any of the diagnostic tests. It may be useful to alternate between lunging and ridden work, often going back to lunging with full tack after the horse has been ridden to see a possible difference in the gait after this exercise.

Another useful test is to ask the rider to deliberately ride "on the wrong diagonal," i.e., rising trot with the rider in the saddle when the inside forelimb is bearing weight. Both forelimb and hindlimb lamenesses and horses suffering from back pain, in particular, will alter when the weight-bearing diagonal (of the horse) is changed. The difference between the horse's outline and attitude when changing between sitting and rising trot may also add valuable information.

If a diagnosis cannot be made because clinical signs are too subtle, or it is difficult to determine whether or not the presenting clinical problem is pain-related, it may be useful to work the horse while treating it with anti-inflammatory pain-killing medication such as phenylbutazone for two to three weeks. This may or may not "provide" a lame horse when medication is withdrawn and help to determine if a performance problem can be attributed to pain.

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