

Crookedness in the Equine Body

The Implications on Dressage Training.

By

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It is my belief that training of the dressage horse starts in the straight line and finishes in the straight line. This is a very simplistic comment and obviously needs expanding upon. The young horse is ridden in straight lines and very easy circles, for example 20m in diameter. The amount of bend required for such a circle is negligible and so we are basically riding the young horse energetically straight forwards to both hands. The pinnacle of collection, for the Grand Prix horse, at least in the trot, is the piaffe, which is also predominantly ridden on straight lines.

Therefore the difference between the two horses on the straight line is a question of the weight transference to the hind legs. The schooling procedure is to encourage and gymnastically develop the horse to take more and more weight onto the hind quarters thus enabling collected movements like the piaffe to be performed.

However this task is made far more difficult by an issue that not only is rarely fully understood but also is sometimes not even addressed through schooling sessions. This issue, I believe, is a major contributor to uneven muscle development, incorrect saddle fit, rider discomfort, soreness, gait irregularity and ultimately lameness. The issue in question is *straightness* or, in other words, the working of the equine body in such a manner to enhance the level of balance in their work.

All horses have the similar one sidedness that humans have. This asymmetry through their bodies is a stumbling block that inhibits the progression of training over and over again even though for centuries it has been the source of one of the most common classical schooling maxims: "Ride your horse forwards and straighten him".

The horse in balance can move smoothly and more importantly efficiently without undue wear and tear on the body. The horse out of balance will have an unequal work load to parts of its body which will in time cause gait irregularities leading to health issues. The discerning rider will always be aware of "equestrian balance" and will have this as an ongoing topic through the training of the dressage horse.

With the equine in training I split the term "equestrian balance" down into 3 parts:

- The natural balance.
- The left / right balance, i.e. crookedness/straightness.
- The weight carry to forward propulsion ratio of the hind legs.

Natural Balance:

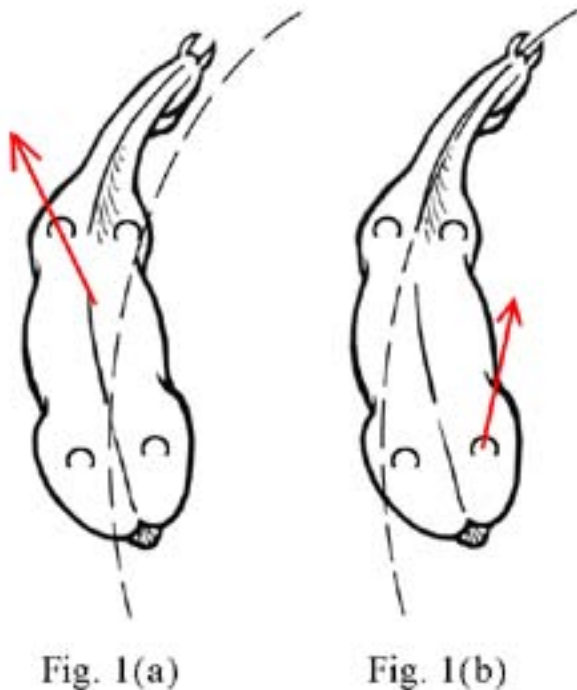
Horses have survived for many, many years in the wild and for that to happen they have needed certain characteristics which would include speed, awareness and natural balance. However this *natural balance*, which has proved important for survival, is not enough for the training environment that we aim to put the horse into. Every horse is inherently crooked in the same way that we are left or right handed. This may not matter to them in the wild but it certainly comes into play when developing suppleness, strength and ability in the school, especially when carrying the weight of the rider.

The first aim of the trainer should therefore be to bring the horse into the school and to restore this *natural balance* of the horse but now carrying and working with the rider on board. This is where the lunge work plays a vital role in the breaking in process. This allows the horse to go freely forwards around our smaller circles, i.e. 20m circles as opposed to the big open field. The horse is prepared for and then asked to carry the weight of the rider who at the outset does nothing other than be a passenger whilst the handler continues the lunge work. Then the rider takes over after a progressive transition of aiding from the handler to the rider and the horse is now working, in his natural state of balance carrying the rider.

Natural Crookedness / Straightness:

The idea or object of all our training is to encourage the horse to carry more of his weight on the hind legs and hence have a lighter more mobile forehand. This is called *collection*. Most people are aware of this but the important addition to this idea is that not only should we be training the horse to use both hind legs more but that he should use *both hind legs equally to one another*. The analogy here is that of a motor boat with two engines. We would not expect the boat to go in a straight line if the two engines are working at different speeds. The horse needs to have a balance between the work loads of the hind legs such that the propulsion forwards is in a straight trajectory.

As a side note it appears that the majority of horses are crooked such that they stay in a curve to the right.



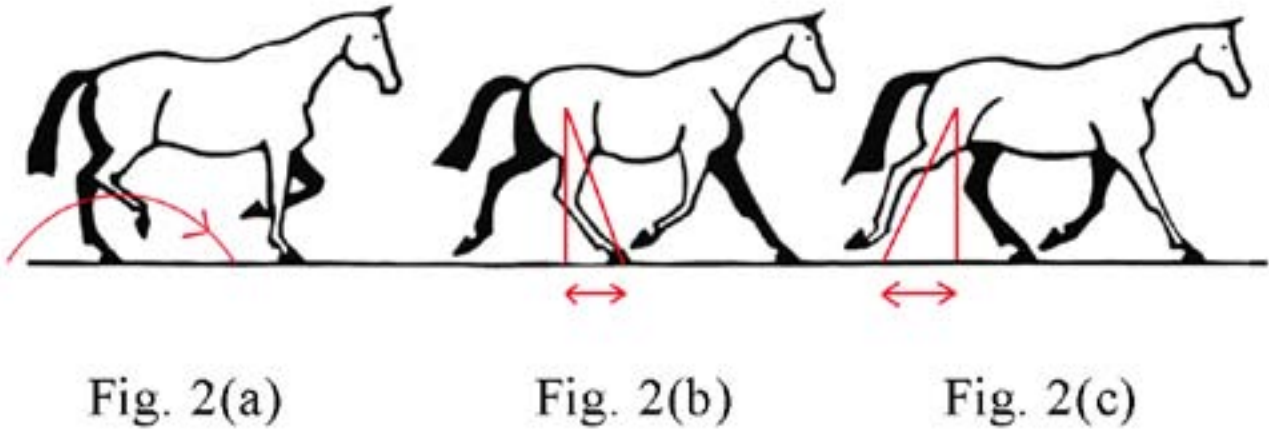
The two diagrams on the left show the natural ways in which a horse will deviate from the correctly aligned position. In theory, each hind leg should follow its respective front leg. Most horses have a weaker right hind leg from birth. They do not wish to place the right hind in direction of the right fore as this would mean moving the leg forwards through under the mass and it working equally to the left. Therefore to avoid this stepping through of the right hind they use one of two evasions. In Fig. 1(a) we see the horse diagonally shifting his weight away from the right hind over to the left shoulder and counter balancing by keeping the neck to the right. In Fig. 1(b) we see that instead of displacing the shoulder, the right hind steps to the right of the right fore and moves this hind leg to the inner track. These are the default positions without rider or exterior intervention. The diagram clearly shows that there is an obvious difference in the direction of weight shift depending upon which “evasion” the horse has

taken. These scenarios will be influenced by rider action, health issues and any previous training techniques. In some cases the horse will have a weaker left hind and therefore the diagrams above would simply need to be reversed.

Weight carry to forward propulsion ratio of the hind legs:

Each full step of the hind leg can be split into three parts:

- The flight through the air.
- Landing on the floor under the horse's mass carrying weight.
- On the floor, behind the horse propelling the horse forwards.



The diagram shows Fig. 2(a) the hind leg flight through the air. Fig. 2(b) shows the time on the floor under the mass weight carrying and Fig. 2(c) shows the hind leg just leaving the floor after the forward propulsion phase.

The rider needs to develop the control over these three phases, improve the balance between how much each hind leg carries and propels the horse forwards but on top of this develop the same amount of carry/propel in each hind leg. Then, and only then, can the horse work forwards with true power and balance. The understanding and ability to feel these three phases will also dramatically increase the rider's ability to time the aids and thus making them far more effective.

The rider therefore has a great deal to keep in mind when the training of the horse begins. They must obviously understand the need for calmness and that the training needs to be thought through with a gymnastic structured approach. Many of the issues facing the rider will be down to this topic of body alignment and equine balance. Correctly worked through not only does the horse show an enhanced way of going but also has a prolonged working life.

From the diagram above we can see the horse moving in a natural crooked fashion, "banana shape right" so to speak, along the track, next to the wall. The weight, especially of the horse starting out in his training will be more to the left fore, as shown by the more pronounced red mark. The right hind leg will have least weight on it. The right side of the body is shown by the red curve to be the contracted side and the left side shown by the blue curve to be the expanded side. What this also means is that the horse will make shorter turns to the left as he loads the left, inside shoulder and larger curves to the right as the momentum is taking the horse out through the loaded left shoulder.

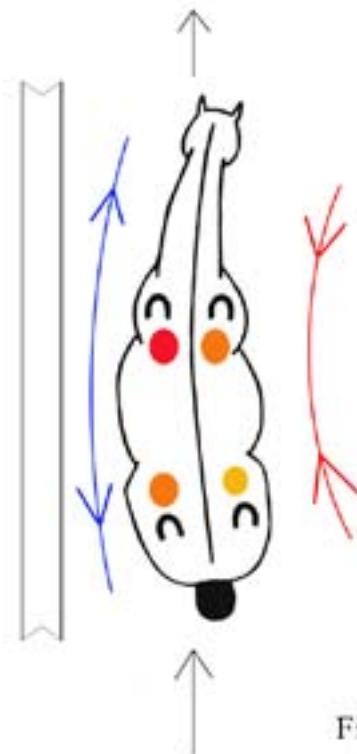


Fig. 3

The two topics of straightness and movement phases of the hind leg are very much interlinked. When a horse is crooked, say curved to the right, then the time through the air and stance phases for each hind leg will be different. The left hind, which is taking more weight, will have a shorter flight phase but a longer stance phase and invariably carry the left hip higher. The right hind will have a longer flight phase but a shorter stance phase and will probably drop the right hip. We can see quite clearly from this that this will have an impact on the muscle development in each hind leg compared to the other with further knock on effects through the whole horse.

Through every level of work and exercise required, issues, with regards balance and training, will show to the educated eye and, if not paid attention to, will have potentially damaging effects to the horse. The concerning rider with a more accurate knowledge of the mechanics of the horses locomotion will understand the balance issues and the cause and effect of their aids to the way of going of the horse. The dressage movements required in competition are not simply there for the way in which the judge can assess the level of work but they are gymnastic tools for the rider to enhance the way of going.

Straightness and equestrian balance should be the priority for any trainer. For this to happen suppleness, both longitudinal and lateral, have to be the first port of call for the rider. This combined with a good reaction to the aids. Both these aspects start with the lunge work whereby the horse must arc a constant circle around the handler. Without this the handler has no knowledge of whether the horse is deviating from the initial line and so they cannot assess the crookedness issues. Also there can be no release to the aids, a factor itself that can induce further tension. A correct long and low stretch, on the lunge, with the horse actively stepping forwards, allows for the hind legs to reach through under the mass, with a good elongation of the top line. This is the start to the straightening process as it makes sense if one side of the horse is contracted, the other expanded, the handler should first expand both sides out evenly.

After a period of stretching on the lunge or under saddle the horse needs to be put to a contact. Without this the horse will simply stay too much in the forward propulsion aspect of the hind leg phase and as such send himself more onto the forehand. The reins act as a regulatory factor and help the rider start to work on the ratio of the phases of the hind leg.

Most riders will start to feel issues through the training via the rein contact. Their aim should be to feel that they have each hind leg stepping through into each hand. In essence this is splitting the horse into left and right sides and monitoring them individually, both in the horizontal and vertical planes. However the problem soon becomes apparent when horse starts to take a firmer hold of one rein, usually the left, and not want to step into the opposite rein. Through some methods of teaching, and also naivety, the rider believes that the correction starts with the hand through the moving of the head and neck. This could not be further from the truth. The rider must be aware that the cause of these issues is the crookedness combined with the carry / thrust ratio of the hind legs. For example the rider, upon feeling a heavy left rein combined with an intermittent contact in the right rein, should quickly realise the right hind is not stepping through, the right side of the body is contracted and the weight is on the left shoulder. However the human's natural reaction is to work on attempting to gain the release to the left rein by stronger flexions. This frequently results in a tipping of the nose to one side and a severe brace through the throatlash area. This can result in a brace to the effect that the tongue comes out as a symptom, not, as some would say, an evasion. The added negative impact is that by riding "backwards" or blocking with this stronger left rein the rider shuts down the length of step of the left hind, which is already the hind leg taking a shorter step anyway. Awareness of the left to right hind leg balance would help the rider understand the cause and effect of their aids. Through being blinkered into thinking that the hand should be the first resort they forget / don't realise to feel through the seat as to the vertical differences between the left and right hind leg.

The rider therefore utilises the stretching of the horse to induce suppleness in the longitudinal sense and an elongation to both left and right reins. This is then brought to a contact whereby the phases of the hind leg can start to be regulated. The rider though still has to address the issue of one hind leg being weaker but flightier than the other hind leg which is stronger but slower. Pole work, which will include raised poles and

poles in a fan shape, are excellent at inviting a natural flexing of the joints of the hind leg.

From here lateral suppleness in a normal training programme or the scenario where issues with gait deviation and apparent irregularity in the steps will need the riders more specific attention. The co-ordination of the aids and some lateral patterns are vital I believe in the therapeutic resolving of the above problems.

The exercise that I have found to be extremely beneficial is the giravolta which is started from the ground. This dates back to the mid 1600's whereby the horse was moved laterally around a single pillar in the school. It involves walking the horse around a circle approximately 10 meters in diameter. Once established on the circle the handler encourages the horse to bend the neck and head slightly towards them and invites the inside hind leg to step forwards and sideways. The result of this is that the horse's shoulders stay on the original circle path and the inside hind leg of the horse steps diagonally towards the outside foreleg with a result that as it touches to the floor it is underneath the centre of gravity. This is particularly good for the mobilisation of all of the joints of the hind leg in question.

There are three main factors that are taken into account that can vary the degree of difficulty for this exercise. They are:

- i) Size of circle
- ii) Angle of neck to the ground
- iii) Angle of body to circle path

The larger the circle, the lower the neck, the lesser amount of sideways step the easier the exercise is. Conversely the smaller the circle, the higher the neck and the steeper the angle the more strenuous the movement becomes. Therefore the handler can vary these three aspects of the work depending again on the horse's needs.

Another important aspect of this exercise is that the handler can really assess the difference in action and mobility between each hind leg. This, when linked to their "feel down the rein" when riding, can really emphasise that any corrections to the rein contact have to start with the hind quarters.



The next point is to suggest a break to the old maxim of "Whatever you do in one direction you should do in another". There is a degree of truth in this with respect to building the horse's musculature evenly but in the stages of remedial care then the handler must take the natural crookedness into account and work the horse accordingly. For example the giravolta is very useful when working both hind legs. However in cases of gait irregularity due to crookedness then by working the left hind, if this is the stronger but more braced one, the horse feels like they can let go from hip to hoof. The right side of the body, being the contracted side with a more mobile if weaker right hind needs a different approach. Working the horse such that the right hind steps towards the right contact and stretches the right hand side muscles will be more beneficial. When working the horse going direction left the exercise of leg yield head to wall which brings the right hind forwards through under the mass and later turning this into proper travers on the left rein serves to strengthen the right hind, flex the left hind and stretch the right hand side of the body.

Each horse must be looked at as an individual and then must also be broken down into component segments. Stretch work and pole work for longitudinal release combined with the giravolta and lateral patterns, of

which there are many combinations, assist with the lateral releasing. Then the rider can return to the straight line and have that feel of each hind leg stepping through evenly, both horizontally and vertically, into both hands. Then process of collection can take place without undue stress on the horse's body due to uneven loading of the hind quarters.

The pinnacle of collection in the trot work at Grand Prix is the piaffe. The effort required from the horse to execute this movement is great and this is where gaps in the training will really show. The piaffe is where the horse makes a trot whereby he moves the legs in the diagonal sequence but with very little forward travel. The legs are held in the air for an increased amount of time. This movement is possible due to the weight transference to the hind legs. In times gone by the piaffe was said to be a *preparation* for the airs above the ground. Faults in the piaffe would therefore restrict the progress to these airs. However as competition does not require anything further than the piaffe it is seen as a movement of *culmination* of the dressage training, at least in the trot work. Therefore the rider, in my opinion, does not seek to really assess the qualities of the movement in way that a rider using the piaffe as preparation would.



If the horse has not had the due training process then these short cuts will appear through this movement:

The first issue is an overall observation. If the horse has been given the time to develop, time to straighten and strengthen, then even though the effort is immense they will show a calmness through the movement.

If the rider has not paid enough attention to the carry / thrust ratio of the hind legs then a typical problem is *triangulation*. This is where the hind legs are seen to come further underneath the horse yet the forelegs draw back towards them. This basically means that the horse is supporting the load by bringing the fore legs back as the hind legs are not actually taking the weight. The horse may give the impression of moving in a piaffe like style but he is basically on the forehand with the increased wear and tear to the fore feet and stiffening of the joints through the hind quarters.

A true piaffe should have a clear rhythm and even stepping of the diagonal pairs of legs. Straightness issues that have not been addressed will show up through one diagonal pair of legs moving differently than the other. Worse still we will see one hind leg snatching or moving jerkily as it struggles with the effort. This puts immense strain on the horse. Inviting a large percentage of 500kgs of horse to be taken onto the hind legs is

a large enough request; asking one hind leg to bear an increased share will obviously shorten the working life span of the joints of that leg.

If the hind legs are brought too far under the body before they have the required strength then the horse will go against the hand and become flat and tense. They could cramp up through the muscles of the hind leg and therefore not be able to push off the floor to allow for the cadence in the movement. This also happens when the piaffe is asked for without allowing forward travel.

The piaffe when viewed from the front should have no side to side deviation. This would indicate that the horse is again not truly taking the weight back and is striving to offer more without the necessary strength.

So we can see that from the young horse working in the basic lines and curves all the way through to the trained Grand Prix horse working through the piaffe the equestrian balance must be analysed, observed and improved at every stage. Failure to do so will lead, in the short term to faulty movements, then to gait impurities and then to potential health implications as time goes by. A horse with, for example a tendon injury, should clearly not be worked. However a horse showing gait irregularities can, through suitable and progressive gymnastic work, and after a vet check, can be made more supple, straight and therefore balanced. This will not only return the gait purity, increase the competitive marks but will have a major factor on the working lifespan of the horse.