

THE BIOMECHANICS OF RIDER POSITION IN RISING AND SITTING TROT

By Karin Blignault

Why yet another article about riding posture, you may ask. The answer is simple: Too many misconceptions abound regarding rider biomechanics, and how this affects the horse,

Much is written about rider position in sitting trot, but the position of the rising trot is often misinterpreted. It is often assumed that the posting position has the same parameters as does the sitting trot position. This is a misconception. The biomechanics of the rider position and posture differ vastly between rising and sitting trot. The assumption that the rising trot and sitting trot share the same posture/position should not be advocated because it affects both horse and rider balance and therefore rider effectiveness.

Many other misconceptions, affecting rider biomechanics of position and posture abound. The following are, but a few.

a) The biggest and most commonly espoused misconception in riding is that function follows form. An example of this function follows form theory is the principle that good riding position/posture makes a good rider. It is one of the reasons why there is so much emphasis on rider position during riding lessons. This assumption is far from the truth. Riding, or rather dressage, is considered an art, but it is also an Olympic sport. Superior coordination and balance are needed for all sports. This is body use. It is good body use, not a good position which makes a good and effective rider.

Experiment: Imagine walking past a riding lesson and hearing a few instructions from the teacher. As you hear these instructions, place your body parts in position as the teacher instructs. You will hear, at least, one of the following instructions: *keep your hands still; elbows by your sides; heels down; look up; straighten your shoulders*. By now your body will be totally rigid showing that instructions on how to correct the position produces rigidity. Rigidity is the enemy of good body use.

How can riders use their bodies effectively while they are trying to maintain this position? Is effective communication with the horse possible when riders try to maintain a rigid position? How can riders develop good body use with a rigid body. The answer to all of these questions is: They cannot.



Note the constant pull on the horse's mouth caused by the rigidity of maintaining the elbows, hands, shoulders and head in a specific position.

When riders are taught how to use their bodies correctly for effective riding, their position and posture automatically improve. So the real truth, in riding, is that form follows function, **not** function follows form.

b) The commonly held belief that leaning forwards puts the horse on the forehand is another biomechanical misconception. If it were only that simple then all you would need to do to solve the problem, is to sit up or lean back. We all know that sitting up straight or leaning back does not magically lift the horse off his forehand. It is good body use which affects the horse, not simply changing body position or posture. You have to use your back and abdominal muscles, your legs, seat and rein aids correctly to effect change. You need good coordination. However, if you don't have your seat in the saddle your seat muscle actions will have little effect on bringing the horse off his forehand. Thus, you only become effective at bringing the horse off the forehand when your seat muscles are correctly in the saddle. Your body will thus automatically move into the correct position because form follows function.



Here the rider is leaning forwards, but the soft reins show that the pony is not on the forehead.



The rider leaning back on this horse is not changing his clear forehead inclination. Interesting though, is that she has dropped her head to counter balance her leaning back. This action corrects her body schema around her centre of gravity.

c) Tapping with the calves triggers a reflex which will make the horse move. This is another misconception because there is no such reflex in the area of the legs, or anywhere else for that matter. If there were these 'random' reflexes, we would have chaos while riding. Other proof of this misconception is that if horses had only this one reflex, all horses would be moving off light calf taps. We know that this is not the case. Who has not experienced a young horse or an OTTT ridden for the first time? The rider taps and taps, but the horse has no idea what to do. These horses simply stand still. It is only when we teach them the voice aid on the lunge first, that they understand that calf pressure means 'take a forward step'. When trained by a pressure-release system, in which light pressure is followed by stronger pressure if the horse does not react to the light pressure, the horse will learn to react to light pressure immediately. Any sign can make a horse move forwards if this is what the horse has learnt. However, for lateral movements your legs have to be in the correct relationship to the horse's centre of gravity to move a specific part of his body. In the centre for bend; further back to move his hindquarters; further forwards to move his shoulders.

d) Collapsing the waist leads to crookedness in the horse, is a commonly held misconception. The simple act of collapsing the waist, does not make the horse crooked. Horses become crooked through many years of established laterality. When riders do not correct this crookedness, their horses will remain crooked. Riders have to use their bodies correctly if they want to be effective at straightening the horse. When body use is correct the waist will not collapse. A collapsed waist often goes together with pulling on the rein on the same side. Constant rein pulling on one side will cause crookedness in both rider and horse.

A collapsed waist does not necessary mean that the rider has more weight on one side of the horse than on the other. Our bodies make automatic adjustments to maintain our centre of gravity over our base of support. Our natural body schema ensures this. Thus when the waist collapses, the hip on the other side pushes out and the shoulder on the same side drops down to maintain the centre of gravity over the base of support - the seat. Therefore no actual weight change on the horse's back has occurred.



In the photo at left the horse appears to be mirroring the rider. The photo at right shows the rider's corrected position, but the horse is still crooked. The rider's position has improved, but her body use has not. To straighten the horse, she will have to instruct the horse with a clear body language. If we draw a vertical line through the centre of the horse's back (use the black back-line behind the saddle as a guide) it will dissect the rider's neck.

e) Another positional misconception is that riders should move their inside shoulder back on a circle and also look to the inside of the circle. These acts have two consequences.

- It will move the rider's outside shoulder and arm forwards. This will soften the outside rein, but tighten the inside rein. The horse thus loses his true inside bend. The proof of which is a soft inside rein and a straight outside rein with a positive contact. In this position the rider loses the control of the horse's shoulders. The horse will then 'fall' into

the circle with his shoulders, take the incorrect lead in canter and swing his hindquarters out in pirouettes. Horses take sideways steps to turn. Their heads then automatically and naturally move to the outside to counter balance. Riders have to explain to the horse to bend his own head to the inside. They control the horse's shoulders with the outside rein and have to hold it to prevent the shoulders from 'falling in' during turns and circles. This means that the rider's outside shoulder should be back. This is not body position, but correct body use. When a rider controls the horse's shoulders with the outside rein in circles, turns, shoulder-in, canter depart and canter pirouette, her/his outside shoulder will move back automatically. This is another example of form following function.

- If you look into the circle or move your inside shoulder back, your body will over compensate. We are born with automatic reactions. One of these automatic reactions is to go where we look. We follow our eyes. This is called visual-motor coordination. Thus we should simply look at the circular track we are following (not to the inside of the circle), and our bodies will automatically give the guidance to the horse to follow the track we are looking at.
- The rider's shoulders should be in line with the horse's shoulders and the rider's hips should be in line with the horse's hips when riding in a circle. The horse's inside forelimb is in a slightly more forward position on a circle when the horse has the correct bend. Therefore his inside shoulder is also in a more forward position during the circle. Therefore, according to this rule, the rider's inside shoulder should also be in a slightly more forward position.

THE SITTING TROT POSITION

Everyone knows the sitting trot position of ear, shoulder, hip and heel alignment. This is a balanced position in which the body parts are stacked and balanced on top of each other. The rider's centre of gravity is over her base of support - her seat. The rider's seat never loses contact with the saddle and therefore stays in balance with the horse's movement, no matter the dressage movement being performed.



The ear-shoulder-hip-heel alignment of the sitting trot position. Because it is free from tension, the contact with the horse's mouth is light and yielding.

However the position is of little use if the rider's body does not have independent coordination and independent balance. Without independent coordination and balance, the rider cannot pass on clear messages to the horse. The horse will receive opposing messages. For a soft yielding contact and the ability to give clear independent messages in sitting trot, the rider has to release arm tension right up in the shoulder joint. This allows the arms to move with the bit as the horse takes it forward with his head and neck. There can be no locking of elbows against the rider's sides. This will block forward movement. When the rider moves her arms with the bit, there will automatically be a straight line from her elbow to the horse's mouth. When the arms move with the horse's mouth in this manner, they will not give a stopping instruction. Miraculously, the horse will start to move with more forward freedom.

Independent fine and gross motor coordination, in which one body part does not affect the function of any other body part, automatically leads to a correct position. Communication becomes easy, light and invisible.

A good example of good body use leading automatically to a good position, is the canoeist's seat. The canoeist will fall into the water if his body use is incorrect. The body thus learns very fast, and subconsciously, to move and sit correctly because 'it does not want to fall into the water'.

THE BIOMECHANICS OF THE RISING TROT

The biomechanics of rising trot are completely different to that of the sitting trot because the rider is out of the saddle for half of the trot sequence. As the rider rises out of the saddle, the horse's body moves forwards from underneath her. Her feet, attached to the saddle move forwards, but her body is left behind. She will then sit down behind the spot where she originally rose from. It leaves the rider behind the movement of the horse as this photo below illustrates.



This has a few automatic consequences, some of which can be seen in this photograph.

- a) The rider will 'fall' into the saddle.
- b) It will take effort to rise from this deep position in the saddle.
- c) In the effort to rise the rider will pull on the reins at every stride, causing uncomfortable bit pressure to the horse.

- d) It takes more effort to rise out of the saddle when fully seated and behind the movement. This leads to rising too high out of the saddle.
- e) The rider will lose synchronicity with the horse's movement, always rising a little late.
- f) Beginners will double bump.

THE BIOMECHANICS OF THE CORRECT RISING TROT POSTURE

The rising trot posture has to be a slightly forward posture to ensure that the rider does not become behind the movement. To stay in balance with the movement the rider's centre of gravity has to be maintained over her base of support as she rises. In the rising trot the rider's base of support is her feet. When she maintains her centre of gravity over her base of support, she will automatically place her upper body in a slightly forward position as she rises. The faster the horse's movement, the more the rider's body needs to be forward to stay in balance with the movement. Thus jockeys' are in a complete forward seat.



The forward seat of the jockey allows him to stay with the horse while he is out of the saddle. (Notice the soft rein contact.)

The most important aspect of staying with the movement is that the rider does not sit right down in the saddle. This sitting down is common with beginner riders and is the cause of the double bump and the pull on the reins. Riders should only touch the saddle as though sitting on a clutch of eggs - so lightly that they will not break. Other analogies include, sitting on a bed of nails and touching the saddle as though touching hot coals. Riders can also think of touching the saddle with the top of their inner thighs and then rise again. This movement strengthens the rider's quadriceps femoral muscles (front of the thigh). When riders sit down they disengage these quadriceps muscles. They then have to contract them again to rise. This break in their action retards the posting rhythm and the

rider loses synchronization with the horse's rhythm. Not sitting down completely assists the quads in their action in two ways.

a) It is easier for muscles to move in mid-range between full extension and full flexion.

b) The muscles maintain their tone when maintaining this mid-range movement.

Contracting from eccentric to concentric muscle contraction, as is necessary for posting, is thus easier.

This slightly forward posture of the rider throughout the posting sequence ensures that the rider's centre of gravity is maintained over her base of support.

It also ensures that the rider moves with the horse and does not get left behind in the saddle. It creates a smooth movement, perfectly in sync with that of the horse.

All the above mentioned consequences, of rising in an upright frame, then disappear. The most important one, the pulling on the reins at every stride, will disappear.

In rising trot riders have to release all tension from the elbow joint. The elbows should open and close as the rider rises and sits. This means that the rider's hands have to stay in the same place in relation to the horse's withers during the up as well as the down phase. This is only possible if the elbows are completely relaxed. To assist this process, it helps to drop the knuckles on the horse's withers or maintain a touch on the withers with the tip of the baby fingers.

Posting in trot is not really a part of dressage. It is an English tradition. The position developed specifically for the comfort of the long distance rider. (I imagine it was started by the 'post' men of yesteryear). Dressage is about sitting trot. Some countries in Europe have simply named the rising trot, 'English'.

Today posting is used on outrides, distance rides and as a warm up for jumping and even dressage horses. In jumping, no one seems to care about the rider's rising trot position which is often very forward. They only concern themselves with getting over the fence without knocking it. The aesthetics of the posting position thus has limited importance as long as the rider stays with the horse's movement. The proper dressage trot is done sitting.



This slightly forward position of the rising trot.....



....leads to a smooth synchronization between horse and rider. The rider is now clearly in her own balance and staying with the horse's movement. Therefore she has no need to pull back on the reins to rise. (Incidentally, her hand on the rope halter is to halt this very forward horse without the bit pulling in his mouth.)