

Hyperflexion, or Rollker, how this riding affects saddle fit.



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A discussion of Hyperflexion in relation to fitting saddles and how movement in this manor needs to be understood by the fitter.

Hyperflexion or Rollker, a way of riding that influences saddle fit.

This discussion was introduced because of the debate that is happening at present in the equestrian world about the legitimacy of this style of riding. If, as saddle fitters you are going to be working with and relating to trainers of upper level horses especially in dressage, but make no mistake Hyperflexion is not the domain of only the dressage rider, then you are going to come across this type of riding being practiced. I am not going to discuss the rights and wrongs of this philosophy, only to discuss the effects of this type of riding on the saddle fitting process. Hyperflexion is seen in all realms of the sport, including showjumping, and western.

The premise behind hyperflexion is the compliance of the horse and then the raising of the back to produce swing. First we will deal with the compliance issue, in nature the horse shows his inferiority or submission in the herd by the lowering of the head, the lower it goes the more submissive the horse, conversely the head ridden to a low position will rob the horse of his dominance or control and produce a feeling of inferiority in the animal, this gives the rider an extreme control mechanism, it also offers a control through the inability of the horse to see in front of him for danger, a horse will adjust his head position to focus his sight to different depths and this is his alert system, if you deprive him of this he is totally dependent on the rider to assure and guide him, his sight when ridden deep is following his nose to the ground and limiting his peripheral vision. This system of riding can cause stress and nervous behaviors in the horse and result in a lack of confidence in both himself and his rider.

The ability to raise the back in the hyperflexed position to produce swing is developed by the riding of the horse extremely round and low; however this position "puts enormous tension on the upper neck muscles and ligament system, and the back via the supraspinous ligament. This does cause the back to rise but it is in an "over-stretched" manner. Current research shows that horses moving in this way demonstrate a very large amount of motion in their backs at the trot... but an over stretched back is not relaxed during work", but produces "a straight , flat back line, with inactive trailing hind legs and no noticeable flexion through the haunches during collected or extended movements". (Tug of War by Dr Gerd Heuschmann)

A horse trained like this is actually locking the lumbar spine not allowing flexion and movement through it, "excessive lowering of the head can stiffen the back. What seems at first to be roundness, turns into a lock, which seizes the lumbo-sacral area and prevents a coiling under of the pelvis" (Paul Belasik)

The actual mechanics of this riding position “eventually damages the tendonous attachments at the cervical serratus and shoulder blade, the insertion of the nuchal ligament at the poll, the cervical connection of serratus and the hyoid and airway region” (Biomechanical Riding, Nancy Nicholson PhD)

Qualified Saddle fitters should be discussing this as a training method as it affects the way our saddles fit not in the static, but in the dynamic mode. A horse trained to pull his withers forward to raise the back will have constant stiffening through the lumbar area and an evident propensity to drop his weight to the forehand to lighten and give more freedom to the quarters to move. This causes us problems of saddle security because as the horse stiffens the lumbar area it raises it to a height greater than the wither driving the saddle forward and down into the back of the scapula, it also develops a drawing tight of the thoracic muscles to stabilize the greater movement through the back up and down, a nodding type movement created by the pull of the nuchal ligament on the supraspinous ligament and effecting the shape of the back over time, fitters will see a depression behind the wither with an over developed loin and hindquarter. The saddle itself will be forced to ride this “nod” with each stride giving it a greater force through the front of the panel bearing surface which then enhances the pull or pressure on the thoracic muscles, perpetuating the cycle of movement on the back muscles of the horse.

Can we fit for this problem? My opinion is that we cannot, as this is a serious training issue, to add more front support to the saddle or to go on to a front riser pad would only restrict the movement and the ability of the horse to lift through the front end more, the saddle would rotate to the front still as the power of the hindquarters pushes the back of the saddle through the tree against the shoulder blade and because the trapezius muscle is not lifting, but dropping the horse is forced to move the front leg lower and more forward giving the appearance of a long low stride in front whilst raising the neck from the bottom and getting a less connected stride from behind. A disconnection appears at the lumbar area of the kinetic chain.

The problem of Ventriflexion:

How does ventriflexing of the equine spine affect saddle fit?

In order to move successfully an equine must tense the spine and hold it in position. This allows the maximum speed to be achieved for flight mode. Whilst grazing or at rest a horse will hold its spine in a neutral position, which of course is different in each horse as conformation and bone structure reflect each animal's neutral. Tension for movement is held within the muscles and ligaments along the spine. Multifidus is responsible for small postural adjustments and is

the main muscle aligning and stabilizing the spine. Longissimus is the longest muscle in the body as it runs the whole length of the back, it defines the topline and allows extension of the spine (dipping of the spine) and is the main support for the head and neck. We fit our saddles on Longissimus.

All muscles are surrounded, supported and strengthened by Fascia, this is a web of soft tissue allowing the muscles to slide against one another without resistance, it also offers shock absorption and tonicity, when damaged fascia loses flexibility and slide, restricting the muscles it encapsulates. This fascia membrane connects all structures in the body and as it works in a continuous web any injury will affect a large area of the horse. Similarly, Tendons and Ligaments are made of the same collagen as fascia and are connected, so damage can cause contracture of a considerable area.

The movement chains of a horse are the muscle, fascia and ligaments that connect to produce the Dorsal Chain or Extensor Chain, the topline situated above the spine and behind the hip, producing forward movement and correct placement of legs and feet. The Ventral or Flexor Chain comprises the system beneath the spine, in front of the hip and the abdominals which are the core of the horse, they give support and posture strength. In a balanced healthy horse these systems work in an even equilibrium, however interference with that balance, through injury, poor riding or poor conformation will create problems of soundness and poor mechanics, this then creates related difficulties manifested in feet issues, soundness issues and saddle fit issues. The Dorsal chain if dominant will extend the spine and hip, dip the back and raise the head and neck, this position prevents the horse from carrying himself in a good and comfortable position as he cannot correctly engage the hind quarters. The gait is changed from a support of strength in the hindend to the hocks being out behind and not reaching forward through the stride, the front is adversely affected as the horse cannot move the shoulder forward lightly because it is taking a larger percentage of the weight. Over flexion of the pastern results in the front and toe digging happens behind due to the flattening of the pelvis. This mechanical posture creates a huge movement through the back, the spine can drop and lift through an abnormally large range (due to the lack of core support) and the saddle which sits on Longissimus is propelled forward with the up and down motion of the back, the girth is drawn towards the front of the Sternum as it is forced there by the hollowing wither in each stride and the saddle follows seeming to ride over the shoulder. This same effect can be seen when a horse has a powerful push from the hindend due to long hind legs or a long back. The shoulder is not supported at the Latissimus and Trapezius so the saddle again is thrown forward into a drop behind the Scapula and pressed against its back edge.

To conclude, saddle fitting horse's with these types of movement and carriage is extremely complex. The need to support the front of the saddle through the correct front gusset and

either a drop or K type panel should be included in the panel design. These horses quite often desire a slightly wider front arch in the tree than the actual wither shape would conclude.