

The Role of Osteopathic Treatment in Easing Common Behavioral and Performance Hurdles

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Intro

As a living creature progresses through life they naturally end up with an accumulation of physical baggage from the bumps and bruises, mishaps and wipeouts, and the consequences of overwork or “I thought I could” moments. These normal experiences of life hold space in the body in the form of somatic dysfunctions. The little bits of crookedness, the nerves that do not quite maintain a clear pathway, the muscles that compensate around an old injury, the fascia that holds once useful tension but now holds crookedness. These forces act upon the structures of the body limiting the range of motion through shortened muscles or muscles with impinged nerves not getting proper nerve supply to function appropriately causing posture and movement to be affected.

There are countless ways that somatic dysfunction can be expressed in the posture, movement, and comfort of a horse. Often these areas of limitation are not noticed until a horse is placed with a trainer where their activity level and the physical demands of their lives increase dramatically. After over a dozen years as a full-time professional trainer, I can look back on the variety of horses young and older, fresh-faced colts, troubled rescues, complicated rehab cases, and lost causes and see how the functionality of their bodies directly related to the ease or struggles they had in their training journey. These dysfunctions in their bodies are expressed through a wide range of behaviors that can affect how easy they are to handle and be around. Dysfunctions can create behavioral issues, as well as issues that affect their ability and willingness to perform the skill they are training for.

The purpose of this paper is to explore a few of the various ways that somatic dysfunctions create common problems we run across in the horse world. We will discuss various problems, what might be causing them, and how Osteopathic treatment can be performed in a restorative

manner to alleviate and possibly eliminate these struggles. For this paper and these cases, we will assume certain necessary factors have been met including hoof balance, teeth floated, saddle fit, and appropriate knowledge and skill application of the trainer/owner, and the presenting behaviors are still an active part of their day or training program. It is important to note that the lesions we will be discussing can cause the behaviors but the behaviors do not always signify the presence of the lesion.

The main treatment methods that will be part of this discussion are HVLA, Functional Technique, OAB, and Cranial Osteopathy. High Velocity, Low Amplitude (HVLA) is a method that uses short, fast thrusting movements to restore motion in a joint and stimulate surrounding muscles to improve range of motion and decrease pain. The joint with dysfunction is first placed very specifically in the position of bind then a short thrust is applied to nudge the joint through its restriction and restore range of motion (Nicholas and Nicholas, 2008). This can be a very effective method for restoring joint mobility but may not always be tolerated by the animal if they are highly sensitive or in pain.

Functional Technique (FT) is a gentle method that works on the segmental function of soft tissues. One hand will assess the tissue changes through palpation while the other hand facilitates movement in the direction of ease; essentially unwinding the dysfunction and restoring integrity and function of the tissues (Nicholas and Nicholas, 2008). FT is a great option in sensitive or painful areas and is nearly always well received by the animal though it can be challenging in an animal that is unable or unwilling to seek a relaxed state.

Osteopathic Articular Balancing (OAB) is a method that uses gentle movements to restore function, and range of motion and relieve pain by releasing muscle, tendon, and ligament tension and restoring joint mobility, resting tissue tension neurologic function, and proprioception.

Cranial Osteopathy is rooted in the theory that the central nervous system has subtle, rhythmic fluctuations that can be felt and manipulated. Cranial therapy uses gentle hand pressure to influence the skeleton, tissues, and rhythm of the spinal fluid, or simply to bring the body's own awareness to the problem we are seeking to treat (Nicholas and Nicholas, 2008). This treatment is very gentle and well received in painful and highly sensitive areas or in animals that are skeptical and reluctant to allow treatment.

Handling

Horses can hold somatic dysfunction in areas that we need access to in our everyday handling of them. These dysfunctions can be expressed through stiffness, reluctance, flinching, reactivity, and resistance. Let us first look at a horse that is "head shy."

Head shy

Common behaviors that are seen with a head-shy horse include things like being reactive during haltering, not liking their ears touched, resistance to bridling, and flinching when the cranial region of the neck is brushed. Historically the answer to these problems has been to train them away by teaching the horse to not respond and accept our touch through repetition. Though an osteopath will approach these issues from a viewpoint of correcting the dysfunctions that trigger the behavior rather than just training away physiological reactions. Looking through the lens of what structures, tissues, and nerves are involved we can attempt to piece together the physiology leading to the behavior.

In the case of being head shy, the physiology that should be considered include the facets at the atlanto-occipital (AO) joint, hypertonic muscles in the poll region such as the cranial portion of the splenius (Budras, et al, 2009), and compressed and inflamed nerves feeding that level (Kleven, 2017).

Arteries and Cranial Nerves IX, X, XI, and XII of the Head

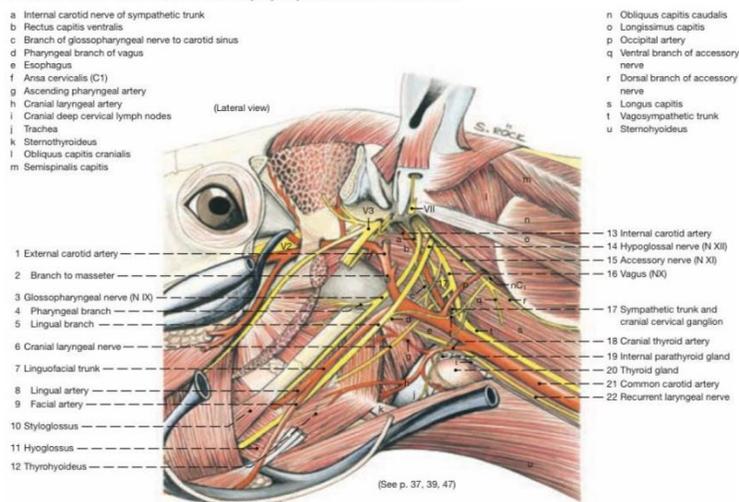


Figure 1: Anatomy of the Atlanto-Occipital Region. (Budras, et al. 2009)

Osteopathic treatment methods that could be useful in resolving this dysfunction could be high velocity, low amplitude (HVLA) for the AO, osteopathic articular balancing (OAB), or functional technique (FT) to restore correct resting muscle tone to either alleviate muscle pain or entrapped nerves. In highly sensitive cases that are reluctant to allow any of these treatments, it may be most beneficial to start with some cranial treatment work to begin enlisting the body's awareness to heal itself. Other things that could be contributing to or associated with this behavior could be a history of abusive ear twitching or traumatic repetitions of pulling back while tied.

Farrier- fronts

Another common handling issue that is often attributed to behavior but may be rooted in physiology is not standing nicely with a hoof up to be cleaned or have farrier work done. Let us briefly look at scenarios for both a front and hind hoof.

Reluctance to properly balance with a front foot elevated could be associated with osteoarthritic changes in that knee, tendon strain or muscle weakness in the opposite leg, weak thoracic sling muscles unable to elevate the horse's bodyweight away from the elevated hoof, or a lesion at C7 exacerbating nerve impingement happening in the brachial plexus due to or exacerbated by the change in position (Giniaux, 2004).

In this scenario, further investigation using palpation and OAB should be used to narrow down the cause so treatment can be applied to the appropriate region and structures. If it is osteoarthritis some OAB can be used to activate proprioceptors and mitigate the pain signals (Korr, 1975). If it is a tendon issue on the supporting leg, referral to a vet may be necessary. Muscle weakness in the leg, shoulder, or thoracic sling can be treated similarly with OAB of the forelimb to restore function. Nerve impingement at the brachial plexus is often seen with an overly tense brachiocephalic muscle and can be treated with a combination of OAB of the shoulder and some gentle cross-fiber muscle release of the brachiocephalic muscle. (Struggling to balance on one front leg can also be associated with an extremely weak or neurologic hind end.)

Farrier- hinds

Now let's briefly address the horse struggling to hold the hind limb up. Three main behaviors are seen here: reluctance to elevate the foot, pulling or pushing while it is up, and forcefully replacing the foot to the ground.

Reluctance to elevate the hoof is often associated with joint pain, typically in the hock, stifle, and/or hip. Often using some OAB alleviates joint pain, releases surrounding soft tissue, and enables the horse to be more comfortable. If the horse is pulling/pushing while the leg is up, look

for improper muscle tension in the flexors (pulling) or extensors (pushing). In this case, OAB or FT can be quite effective. If the horse is forcefully slamming its foot back down look for either pain and damage to the stay mechanism of the opposing leg (refer to the vet) or look for nerve impingement at the level of the sacrum or lumbar (Giniaux, 2004. Kleven, 2017). The best treatment for this causation depends on the severity of the discomfort. Some horses experiencing large amounts of discomfort must begin with treatment that keeps both hind feet on the ground, possibly using some OAB or even cranial treatment. Horses that are in less severe pain can tolerate OAB with the lifted hind limb, focusing on facilitating release up into the sacral and lumbar regions.

Behavior issues

Horses often have somatic dysfunctions that are expressed and recognized because of behavioral issues that happen while preparing to ride or while under saddle. One of the most common complaints is that the horse is “girthy” and displays adverse behavior while the girth is being applied. We are also going to look at a possible explanation of a horse that bucks at canter.

Girthy

A horse that is “girthy” will express displeasure at the time of applying the girth in the form of pinned ears, threatening, or biting, expanding its circumference, or stepping forward, backward, or away. Most of the time the explanation for this is found in dysfunction in the region of ribs 5-7 and/or thoracic vertebrae 8-12 (Denoix, 2014). Dysfunction is found either in the fixation of the rib heads at the vertebrae, the vertebral facets, or simply within the intercostal muscles. Chronic overtightening of the girth can be a large contributing factor because it inhibits the natural movements of the intercostal muscles, rib heads, and vertebrae. Alleviating

dysfunction in these areas can be achieved with OAB through the ribs and thoracic vertebrae. In painful cases consider utilizing the Pain Gate Theory by using an HVLA thrust and then moving on to OAB. Another characteristic that may be present is a short choppy gait in the front limbs (Grisel, 2018).

Buck at canter

A dysfunction that can be expressed by behavior under saddle is bucking at the canter. Sometimes the behavior happens only occasionally, sometimes it happens only on one lead, sometimes it happens

consistently. It is most often a buck and kickout combo that only happens once or twice in the moment but occasionally the horse can continue the behavior for extended repetitions. This behavior can be caused by inhibitions in the functioning of the sciatic, crural, and pudic nerves due to dysfunctions located at the level of the sacrum or lumbar. Often when the neuralgia is worse during movement the

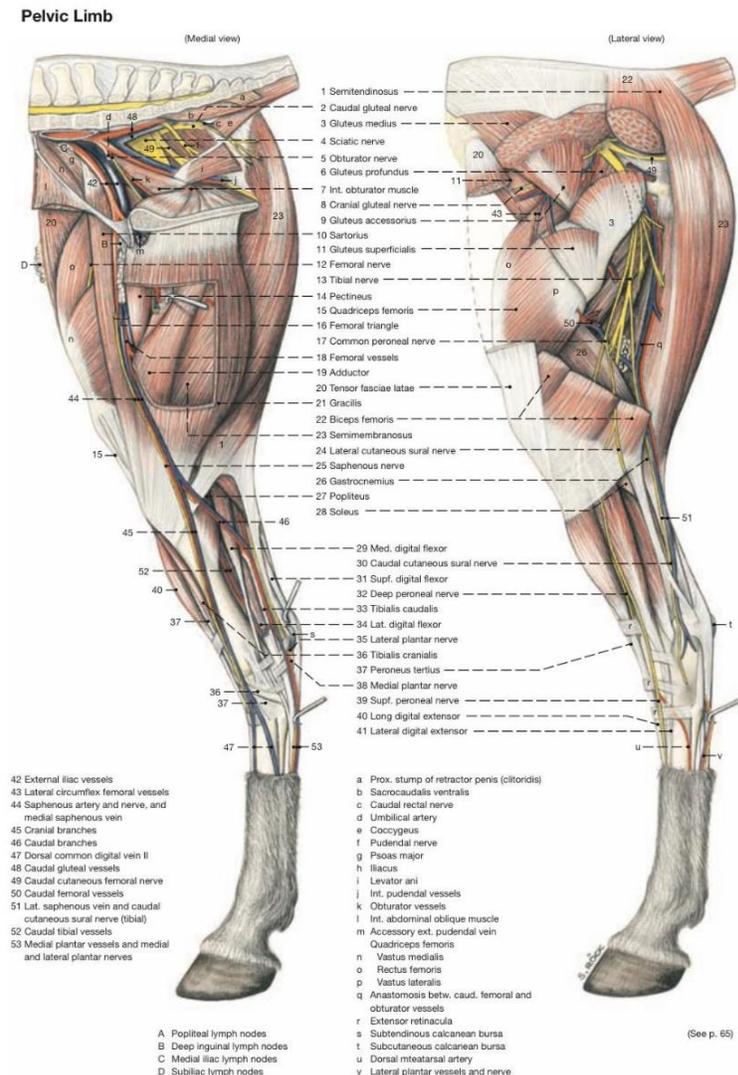


Figure 2: Pelvic Limb Anatomy. (Budras, et. al. 2009)

lesion originates in the lumbar region (Giniaux, 2004). As the horse changes gait up into the canter the change in functional movement increases the inhibition and pain associated with that lesion leading to a buck and kickout to attempt to clear the pain. Often one or two kicks alleviate that discomfort enough the horse stops the behavior but in more severe cases the horse continues to buck, unseating the rider and continuing until the horse stops of its own accord.

Treatment of the somatic dysfunction causing this buck at canter behavior should address restoration of the function of the lumbar and sacrum. Treatment of the lumbar is more straightforward than sacral treatment. Using a long lever, hind leg lift an osteopath can manipulate the lumbar to restore function, freedom, and rotation. It is also beneficial to follow that up with some OAB through the region to ensure muscle tone and proprioception are restored to minimize the likelihood of the lesion quickly returning (Koors, 1975). Treating the possible sacral origin of this dysfunctional behavior can prove to be more challenging due to the large number of muscles and ligaments that act upon the sacrum. A possible way to effectively influence position and function around the sacrum is to apply OAB of the hind limb in circumduction at elevating levels and direction of flexion and extension (Pusey, et al, 2010).

Performance limitations

Another category of equine somatic lesions are ones that create performance limitations. These are dysfunctions that interfere with the horse's ability to move "correctly" at the level to which they are being asked to perform. In this section, we are going to look at the cases of a horse who braces on one or both sides of the bit, a horse that prefers one bend, and a horse that does not track straight.

On the Bit

Starting with the case of the horse that braces on the bit. This looks like a horse that is resistant to contact from the rider's hands, clenches the jaw, and does not show appropriate lateral flexion in the poll. These problems may have roots in one or a combination of the following: the AO, C2, or the hyoid. When a horse has dysfunction at the AO it inhibits not only the lateral glide and flexion that should be there but also inhibits arterial supply to the brain, flow of cerebral spinal fluid, and causes nerve compression (Kleven, 2017). A somatic lesion at the level of C2 is associated with pain in the muscles of the jaw which in turn can cause abnormal molar wear which exacerbates C2 dysfunction (Giniaux, 2004). The hyoid apparatus can also be involved. The muscular base of the tongue is rooted in the hyoid apparatus. When there is dysfunction surrounding the hyoid and pressure is applied to the tongue via the bit and rider's hands it causes pain in the region which in turn involves the temporomandibular joint (TMJ) which in turn radiates pain down the neck into the AO and C2 flaring dysfunctions (Higgins, 2020). If a horse does not have correct freedom in its poll, it will have reflected dysfunction in its sacrum and base of withers as well (Kleven, 2017).

First, we will look at the treatment at the AO junction. This can be highly sensitive and painful, thus an area the horse is reluctant for us to initially treat. When we have stuck facets at AO, we may need to start with a short lever HVLA technique to provide some initial relief and follow it up with either a long lever HVLA technique or OAB. In a horse that is in a lot of pain and reluctant to accept treatment in this area, we may need to begin with or stick to a cranial treatment for the first go around.

Next, we will look at the treatment of bit resistance that may be rooted at the C2 level. It is common to have local reactivity to a C2 lesion as well as the associated jaw muscle pain. The

first muscle, other than the tongue, that the rider encounters when applying bit contact is the muscle for closing the jaw (Giniaux, 2004). Treatment will likely need to involve HVLA at C2 followed up with some OAB. If the horse is receptive to it, functional technique can also be quite useful (Chila, 2011).

Now we will look at the involvement of the hyoid apparatus in the expression of a horse being resistant to the bit. As mentioned earlier, the root of the tongue is in the region of the hyoid apparatus, and bit contact is tongue contact. Therefore, if there is dysfunction around the hyoid, tongue pressure is uncomfortable causing the jaw brace, etc. This dysfunction can be treated using the cranial method under the jaw, applied to the involved tissues, and/or range of motion exercises applied to the tongue that influence and provide a release to the tissues surrounding the hyoid apparatus.

A further root cause for the initiation of a horse being heavy in the hands is that a horse with a weak thoracic sling is constantly falling forward and down with its body which can cause them to lean into the rider's hands for balance rather than engage the thoracic sling to maintain their own center of balance (Kleven, 2017). This may require osteopathic treatment as mentioned earlier in this paper or simply better training for horse and rider.

Preferred Bend

It is very common to come across a horse that prefers one bend over the other. For years this has been attributed to the horse being "right or left-handed" which might have some truth in minor bend preferences. However, if you think osteopathically, this preferred bend could likely be rooted in a lesion and reflecting compensations.

As taught by Dr. Stuart McGregor, there are two types of these bend dysfunctions: type one and type two. We will quickly touch on these. Type one involves a horse that has one bend in the neck and an opposite bend in the thorax. Type two shows in a horse that prefers the same bend ears to tail.

Horses with a type one dysfunction will walk and trot better towards the side of their neck bend but lope better towards the side of their thorax bend. These horses are fairly straightforward in treatment. Typically, by applying some OAB through the neck, ribs, and thoracic spine, straightness can be restored. Occasionally some more advanced investigation and palpation may be needed to narrow down the location of the lesion for possible treatment with an HVLA maneuver.

A type two lesion can be far more complex yet can start from a simple slip out of the hind limb. This type has a bend to the same side throughout its body and will feel like

it prefers the same bend in all gaits.

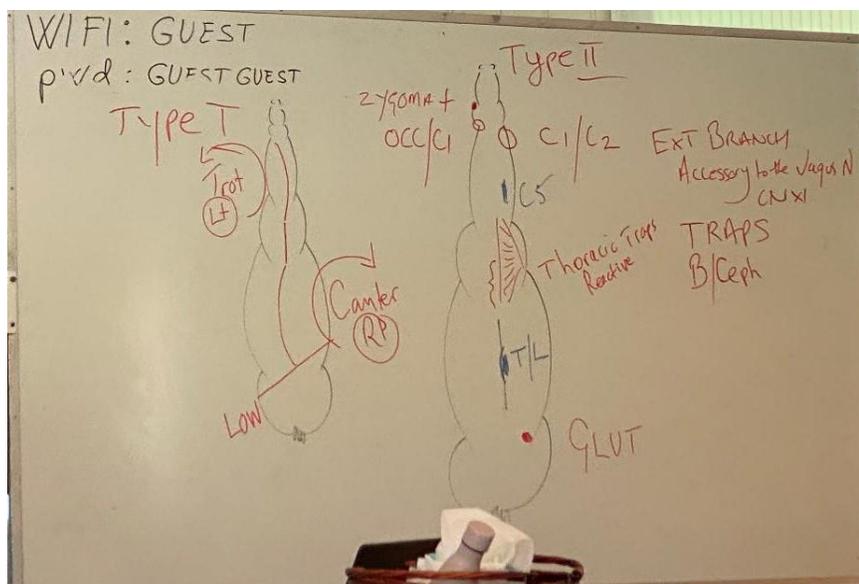


Figure 3: Somatic Lesion Patterns, Type 1 vs Type 2. (McGregor, 2023)

It is easily diagnosed by a painful reaction to palpation over the top of the glutes as well as commonly a reaction to pressure by the TMJ on the contralateral side. For the case of explanation, we will say this horse prefers the right bend. This lesion pattern begins with dysfunction at the right hip. After a while, this will radiate through the fascia causing referred pain in the area of the left TMJ. If left untreated, dysfunction will build into the left AO joint,

and the right C1-C2 which can irritate the vagus nerve and cranial nerve 11. You will also see painful reactions to palpation in the right trapezius and brachiocephalic muscles. You can see this pattern in movement as well as palpation.

The treatment methods for type two dysfunction should involve restoring function to the hip; if the pattern has progressed into the additional reflections of dysfunction they should be treated as they show. The hip can be treated through OAB and/or a hip tug. The poll and C1-C2 are mostly effectively treated with an HVLA maneuver. Treatment should be followed with a palpatory reassessment of the reactive areas.

Strong/weak pair

Another performance limitation that sometimes comes up in a horse is the feeling that a horse has a strong diagonal pair and a weak diagonal pair, sometimes just called a dominant diagonal. In this situation, the horse seems to have one diagonal pair that lands stronger, drives harder, and extends longer than its counterpart. If the horse has lived with this pattern of movement for an extended time while it has been at work, the discrepancy can become stronger and more evident even to the extent that the horse tracks crooked (Kleven, 2017). Other descriptors include a horse that continually puts the rider on the same diagonal, the saddle always getting pushed to one side, or one diagonal feels as though it stays “in front of” the other diagonal and the horse having a “default” bend.

Horses have a diagonal synchrony meaning that what is happening on one limb can be mirrored in the movement of the contralateral limb (Grisel, 2018). For instance, if we have a muscular dysfunction in the left hind that causes a shortened stride length, the stride length of the right front will also shorten to maintain synchrony of movement. So, if the right diagonal is

restricted and the left is normal, there will be an expression of ununiform power and length of stride, and a default right bend will be held.

In order to progress forward with an osteopathic diagnosis and treatment, the practitioner would need to do some investigatory palpation and OAB assessment

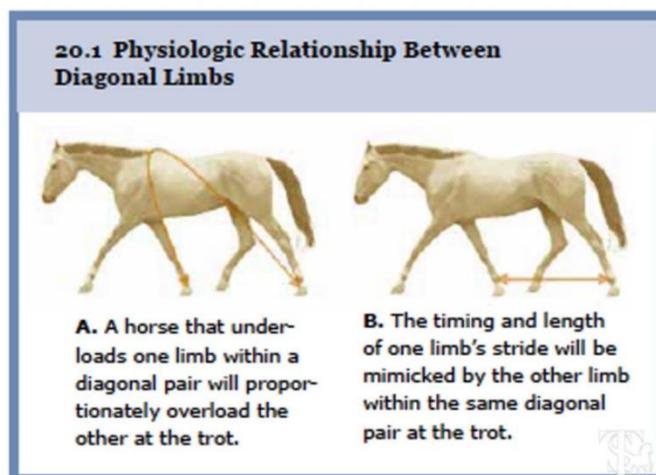


Figure 4: Diagonal Synchrony. (Grisel, 2018)

to narrow down a more specific somatic lesion that may be at the core of the expression. If we use our example above, the cause could be anything from a lesion in the triceps brachii that slows the retraction of the right front, to a compression of the brachial plexus that causes neuralgia when that limb extends, to a patella or stifle problem in the left hind that retards the movement of the limb, or a fascial restriction in the spiral line (Shultz, et al, 2021). Blockage at the level of T16-L1 is also associated with this unevenly paired diagonal pattern (Giniaux, 2004).

The treatment to resolve the dysfunctional pattern would obviously depend on the results of the additional assessment. This is an excellent example of the osteopathic principle that the body is so complexly connected and how dysfunction can affect things that are far removed, but also how restoring one area to health helps the body restore other areas to health.

Conclusion

A horse cannot make its way through life without collecting an assortment of physical baggage from bumps, scrapes, trips, or falls. These can end up as somatic lesions that inhibit the animal's body from being balanced and comfortable in life and health. These animals often end

up with trainers who begin asking them to correct or move beyond their lingering limitations. Osteopathic treatment can allow this process to happen with far less sweat, frustration, drive, and stubbornness on the side of both horse and trainer. By utilizing osteopathic treatments, we can remove the “roadblocks” that the body has picked up over the years and allow the body to return to a better functioning self.

As the horse world continues to make forward progress by adopting gentler views of training methods, it has and continues to be more widely accepted to consider the physical well-being of the horse and care thereof to be of high importance. As more trainers and competitors make use of osteopathic treatments and witness how the restorative benefits enhance their horses’ athleticism, talents, well-being, and ultimately their skill in performing their chosen discipline, the need for trained animal osteopaths will continue to grow. I would love to see an increase in animal osteopath resources and a depth to the work of categorizing the relationship between specific physical challenges and behaviors and their corresponding somatic dysfunctions.

Osteopathic treatment can and should play a very important role in the life of a horse and trainer. It can release areas that are holding old trauma that are causing restriction. It can restore nerve supply to enable correct muscle firing and relieve pain. It can restore proprioceptive input so the brain and body are on the same page with location, position, and stretch. It can improve the animal’s athletic ability and capacity. Rather than a trainer having to say to the horse, “You should be capable of doing ‘this’ so I’m going to ride you hard until you can do it.” The trainer can say, “You should be able to do ‘this,’ so after an osteopathic treatment, I can ride you well and you will be able to do it.”

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