Equine Motor-Control Therapy Using Perceptual and Coordinative Techniques

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strategies from humans to horses. Not only do rods and cones help us differentiate colors from black/white, they help us (and horses) differentiate focal forms from peripheral vision. This is how the visual perception strategies play an important part in our treatments.

Introduction

Structural work with horses and other animals has been well researched and documented, and is usually performed under the guidance of a licensed veterinarian. In addition to the massage, chiropractic, and acupuncture treatments that are well-established in the equestrian community, Rolfing® Structural Integration is now also becoming a more common practice, thanks in large part to our colleagues, Jim Pascucci and others. While the benefits of motor control and proprioceptive rehabilitation have been successfully demonstrated with horses for about twenty-five years, there has recently been a surge in awareness among trainers and veterinarians about the value of coordinative techniques enhanced by tools such as Kinesio® Tape, TheraBands®, and a variety of neuromuscular stretching protocols (see Figures 1 and 2).

Figure 1: Horse with a TheraBand. (Paulekas and Haussler 2009)

I have found that treatment strategies drawn from work with trauma to humans and their motor cortex are readily applicable to work with horses, whose focused training easily reveals their areas of instability and nervous tension. As a result, adapting coordinative and perceptual tools from Hubert Godard's theory of tonic function[1] to work with horses, as well as psychobiological tools taught by Lael Katherine Keen in her Rolfing SI and Trauma classes, are quite effective and can lead to immediate changes in horse behavior and functioning.

While the research on equine brain development and neurophysiology is scant, I was able to determine that equine brain development has similar characteristics to that of humans. While equine brains tend to myelinate more quickly than human brains postnatally, the areas of development are similar. The brain structures relevant for motor-control therapy include the motor cortex and the anterior cingulate cortex, which stores emotion, attention, and working memory. Equine vision also relies on rods and cones, like human vision. This allows us to adapt visual perception

Figure 2: Neck stretching exercise. (Paulekas and Haussler 2009)

Trauma Response in Horses

Trauma resides in the nervous system and connective tissues, not in the traumatic event. In other words, when we meet a challenge that is above our capability to accommodate, a 'freeze response' occurs. Somatic Experiencing® practitioners such as Peter Levine and Keen refer to this ability to accommodate as 'finding resource within'. The response to activation of the sympathetic nervous system can play out in one of several ways. Ideally, the parasympathetic nervous system should activate to help the entire system dampen itself down. If this doesn't happen, then a 'freeze response' occurs and the chaos of the traumatic event can result in dissociation. This can manifest as a person feeling cold, sleepy, or frightened; or being distant, and/or not being able to feel his body. It can be observed as a 'deer in the headlights' look (where one is stuck or 'frozen' in a sympathetic state), or a 'spacey' look (where one is stuck or frozen in a parasympathetic state). When trauma is present, the sympathetic nervous system can create gaps of awareness around the body. This can manifest as 'blind spots' in certain peripheral vectors around the body.

While horses almost always have a good healthy dose of resource in their systems, they too can be overwhelmed. When they don't have sufficient resource, they can end up being a predator's dinner. Alternatively, they can begin to exhibit familiar signs of trauma: a distant or overly engaged look in their eyes, shallow or held breath (which can manifest physically in their ribs and spine being held up or held too rigidly), and being spooked easily.

Tonic Function in Horses

Balanced tonic function requires four forces working together:

- **Structural forces** relate to one's cultural and personal beliefs.
- **Coordinative forces** are about timing – what muscles are working, what muscles are working with or against other muscles, and when do muscles work?
- **Perceptive forces** relate to the idea of movement, as well as to one's body map and body schema.
- **Symbolic forces** relate to deeper meanings in one's psyche – in a sense, the introjections (attitudes or ideas subconsciously incorporated into one's personality) held in one's core.

Horses have a unique postural mechanism called the 'stay apparatus' – the mechanism that allows horses to sleep standing up. However, having any of the four tonic-function forces out of balance can manifest in joint instability, difficulties protracting/retracting the legs in one or more gait speeds, and/or shortening through the spine during various gait speeds. Balanced tonic function – between Hubert Godard's two movement centers, G and G', as well as the fascial, neural, and muscular subsystems in the body – allows lengthening to happen: lengthening in the spine, lengthening through the head, and connection through the feet.

Trauma will usually affect all four of the above forces, creating compensations that impair efficient tonic functioning. Ways of improving tonic function in a system include engaging the system's orienting reflex through the hands, feet, and eyes. Adding tonic function tools to trauma-resolution strategies can allow an organism's own healing processes to integrate the frozen sympathetic/parasympathetic nervous system responses. The client's nervous system (human or horse) can settle down, slowly resolve the trauma, and finally realize new options for movement.

My Observations and Work with Horses

Godard says that G' (the upper pole) is our 'relationship center'. It's how we relate to others – in nature, at work, with our clients. I feel this works in reverse as well – it's how the plant, mineral, and animal worlds relate to us (if we know how to listen, feel, and observe). Thus, I incorporate elements of Bob Schrei's and Donna Thompson's SourcePoint® Therapy[2], Godard's tonic function tools, and Keen's psychobiological tools into my work with horses.

In one case, I worked with a gelding who was dragging his right rear foot, as well as not being able to fully protract his right hindquarter during the trot phase. My first clue was finding a lack of stability in the right hindquarter when I lifted up his left hind leg to test for fetlock flexibility (the fetlocks are the metacarpophalangeal and metatarsophalangeal joints in the forelimbs and hindlimbs, respectively). My second clue was seeing a rigid right rear fetlock during his trot. All his other fetlock joints had a nice springiness to them, but the right rear looked wooden.

I suspected this gelding had a core instability issue and probably a proprioceptive issue as well. I examined his trotting gait from the front (as opposed to a circular lunge line). This revealed a tendency for the gelding to cock his head to the right, thereby shortening his rib cage, spine, and gait on the right side. This confirmed that there was a proprioceptive gap in awareness on his right side.

Using a tonic function concept of orientating through the eyes, I created an 'expansive' blinder that would give him more of an opportunity to see further back, increasing his peripheral vision out of his right eye. Immediately, both on a lunge line and from front observation, three things happened simultaneously: 1) his right hindquarter was able to protract fully, 2) his right rear fetlock had the same springiness as the other fetlock joints, and 3) his ribs and spine lengthened through the right side. We also made a sort of proprioceptive anklet (or 'fet-let') for his right rear fetlock. This enabled the horse to begin to feel where his whole leg really was, and to slowly start correcting his foot dragging issue.

A blinder would best be applied while working/training the horse – on lunge first, then perhaps graduating to under-saddle work as well. I have not come across a situation where more constant use would be necessary.

In another case, a mare had been trained in the traditional manner of having her head pulled down to artificially flex her cervical vertebrae while the trainer dug his heels into the sides of her belly. As a result, it seemed as if the mare kept expecting pain every time she began to canter. This could be seen in the way she wanted to buck her way into a canter. This mare had clear proprioceptive gaps on her left side, coupled with an intense traumatic freeze response due to the inappropriate training methods. Creating an 'expansive' blinder, as with the gelding, for her left eye was not particularly effective during our first session together. It seemed the mare's nervous system needed to be settled and the traumas resolved and integrated before she could begin to accept new strategies of training.

Recalling Levine's theory on trauma, Stephen Porges' Polyvagal Theory[3], and Keen's 'coherence touch'[4] principles, I first utilized principles from SourcePoint Therapy to create a heart connection with

this mare. I was then able to apply coherence touch, or settling, on her croup and pelvic region (this was especially effective with the rider on). Slowly, she began to breathe more fully, lift her belly and spine, and relax her tail and hamstrings. Then when the rider asked for movement into a canter, there was nary a hint of a buck, with the mare moving smoothly into a canter gait.

While the results from these interventions were immediate, I suspect that these tools were also the basis of correcting these horses' 'worldviews'. As the riders and trainers continued to use these tools as 'homework', the traumas/patterns embedded deeply in the horses' nervous systems could be resolved so that new training protocols and behaviors could emerge. In general, I have found that horses (and dogs) integrate such changes into their systems more quickly than humans, and can enjoy freer, stronger movement as a result.

Since graduating from the Rolf Institute® in 2005, Robert Rex has studied neural mobilization, Rolf Movement®, pain science, and the affects of trauma. He is currently exploring the impact of unresolved primitive reflexes. He practices in Vermont.

Endnotes

1. For further reading about Hubert Godard's theory of tonic function, read any one of Kevin Frank's articles on tonic function found at Resources in Movement (www.resourcesinmovement.com).

2. Private conversation with Donna Thompson regarding application of Sourcepoint Therapy with horses and animals.

3. During her Rolfing SI and Trauma classes, Keen provided several articles from Stephen Porges on Polyvagal Theory.

4. Coherence touch denotes a quality of touch where the practitioner touches the client and tracks several different signs of autonomic nervous system regulation – heart rate variability, and oscillation of blood pressure and muscle tonus in sync with the rhythm of the breathing – in such a way as to invite the autonomic nervous system to regulate.

Bibliography

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