



Hanging

The word 'hanging' is a slang term which applies to horses performing that deviate from their required direction. Other words such as laying and lugging are all used frequently in the harness and thoroughbred industries as well as less frequently in other horse sports. Horses most commonly hang when under pressure while performing, this often occurs when horses are in the final furlongs of their race, the 'pressure is on' and they have turned into the straight to 'let down' toward the finishing line. The horse will either lay inward towards the running rail or outward towards the outside running rail. At the races this action has caused many protests and driver/jockey suspensions due to the interference imposed on the other horses running alongside the hanging horse. At home on the track this issue has caused much distress to the horse's training regime and health, as well as to the trackwork rider/driver.

In this article I am taking a look at the causes of the problem, especially looking at the musculoskeletal causes and treatments of hanging which does sit as one of the major causes for this problem. I will also take a look at other disorders such as fractures, joint issues and shoeing problems which cause pain and thus muscle hypertonicity which impedes smooth muscle function. Whilst I'm not attempting to provide the answer to every cause of hanging, I'm helping to establish a framework for sifting through the causes, establish how they cause the horse to hang and to look into treatments to resolve the issue of hanging.

If you watch the fastest man in the world Usain Bolt, you will notice that there is no torso movement in his body but massive flexion and extension from the hips and shoulders distally. This guy can fully use his core as his center of gravity and allow his limbs to evenly anchor a full range of movement and produce world record times in what looks as an effortlessly piece of pace work for him. In horses the TCM center of gravity is located at an acupuncture point known as CV-17, this acupuncture point is located along the ventral midline at the level of the ulnar. It is crucial for efficient movement that this center of gravity remains stable, it is then up to the body and it's limbs to form a dynamic balancing action of opposing forces to maintain this stability in movement.

Unbalanced movement occurs when one of the opposing force's components is out of synchronization, not functioning at the required efficiency or when tissues cannot achieve full range of function.

-Causes for components out of synchronization include both mechanical and neurologic such as muscle tears, strains and hypertonicity.

-Underfunctioning at the required efficiency is due to fatigue

-Not achieving a full range of movement can develop from the invasion of TCM pathogenic factors into tissues such as cold, damp, dry or heat. As well scarring, underlying metabolic disease (tying up) and muscle spasm.

From a TCM point of view, the opposite forces which contribute to balance can be compared to the yin and yang natures of the body. The body is made up of 12 main meridians of which 6 are yin and 6 are yang in nature. The Yin meridians course the ventral neck, trunk and medio-posterior fore and hind limb regions of the body, they tend to control medial body movements and produce a centripetal force on the body. Yang meridians course through the dorso-lateral head, neck, trunk

and pelvic regions as well as antero-lateral forelimb, chest and hindlimb, they tend to control lateral body movements and produce a centrifugal force on the body.

Together the yin and yang meridians of the body act as opposing forces on the center of gravity to maintain the horse's balance as well as function to dissipate concussive stress from the feet hitting the ground. When the causes of unbalanced movement are prevalent, dysfunction in the meridian occurs and movement is affected.

The 12 meridians which course through the four limbs anchor off two important 'extra' meridians on the body which are known as the conception and governing vessel, they course the ventral and dorsal midline of the spine respectively. The main reason why the horse's back receives constant stress is because there is excessive unilateral strain placed particularly on the governing vessel meridian (dorsal spine) from stress and dysfunction occurring in the 12 main meridians. Of these 12 main meridians the lung and liver meridians course the medial fore and hindlimbs respectively, these meridians exhibit most of the opposing force to maintain the center of gravity for the horse. They receive strong centripetal force support from their associated yin meridians such as the heart, pericardium, kidney and spleen. Other more yang meridians such as the large intestine, gall bladder, small intestine, stomach, triple heater and bladder meridians give further centrifugal support to the yin opposing forces.

As established above meridian dysfunction effects movement due to this unbalance in opposing forces acting on the center of gravity. These unbalanced forces act on the center of gravity through a muscle dysfunction called hypertonicity. Hypertonicity is a neurologic disorder where the muscle is triggered to remain in a state of increased contractility at rest and in movement. If the hypertonicity issue is bilateral then performance is effected but if it is unilateral there is an unbalance in the opposing forces acting on the center of gravity. It's pretty simply, but that's the issue of hanging, the causes however require us to dive a bit deeper and thorough into the issue.

Muscle tears would be the most common cause of unilateral hypertension that I see in my work. Muscle and fascia tissue are the weakest structures of the musculoskeletal system and are often the first tissue injured when this system is stressed. As I see it, muscle tears can either cause a horse to hang away from the side that the tear is on or hang toward the side they are on. This is all depending on the meridians effected by the tears and their yin and yang nature.

Muscle tears which effect Yang meridians tend to be located superficially, are of acute onset and are located at weak spots along the body such as muscle seams, mid bellies and muscle insertions. The common injury sites along these yang meridians include the head of the femoral biceps, the posterior gluteal seam, the lateral triceps muscle, the base of the hydrocephalus as well as the mid belly and head of the semiconducting muscle. As these muscles have a centrifugal force on the body's center of gravity, any injury to them will hamper the muscles role in maintaining balance in movement and thus the horse will hang away from the side of the injured/dysfunctional muscle.

Muscle tears which effect Yin meridians tend to be located in the deeper tissues of the body, they are more chronic in onset and develop most commonly in mid bellies and insertions. Tears which develop in muscle seams located in the yang meridians will after time cause strain and dysfunction in the yin meridians located directly deeper in the body. Common injury sites of the yin meridians are the deep gluteal (from posterior gluteal seam tears) and medial the humeral head region (from hydrocephalus/pectoral seam tears), the longissimus muscle at its transverse lumbar vertebrae insertion and the semimembranosus muscle at its tuber ischiadicum origins will hang towards the side of their yin meridian dysfunction, the reason this differs from yang meridian dysfunction is because muscle hypertonicity is significantly increased to protect the strain or tear causing dysfunction in the yin meridian. As this hypertonicity remains present and increased in strength the pull on the

center of gravity increased and thus the horse is pulled toward the side of the yin meridian in dysfunction.

Yin an Yang meridian dysfunction, hypertonicity and the effect this has on the horse's center of gravity can be triggered from pain and dysfunction in other areas and tissues of the body. Other issues which commonly cause meridian dysfunction include feet pain and improper shoeing, joint pain and stress fractures. I will not spend time on the causes of these issues in this article but their effect on meridian dysfunction will be discussed as they form an important piece of the hanging issue.

Feet, shoeing, joint and stress fracture pain commonly manifests along the antio-medial aspect of the joints of the four limbs. The anterior aspect is commonly stressed due to hyperextension and concussion which does have an effect on the anterior yang meridians. However the medial aspect of the limbs have an effect on the yin meridians which asserts more pull on the center of gravity toward the dysfunction. This is a double edged sword as pain in the yin meridians in dysfunction causes increased muscle hypertonicity and the increased hypertonicity causes increased load bearing and stress in the associated yin meridian.

When these causes of pain and meridian dysfunction become a chronic stress in maintaining balanced movement, a compensatory stress can and often develops. This can produce both contralateral or ipsilateral compensatory stress depending on the region of the body primarily effected. The reason why this is worth mentioning is because the guidelines of hanging mentioned above can change and become quite confusing when we add compensatory stress to the issue. If the compensatory stress develops into the body's primary site of pain than the hypertonicity on the compensatory side will exhibit more pull on the center of gravity and the horse will hang toward the compensatory side, however usually by this stage there is a strong bilateral hypertonicity and obvious lameness and effected performance. An example of this in my work would be treating a tear in a horse on the offside (the compensatory stress), then coming back to the stable a week later to find strong pain an hypertonicity in the nearside (being the original cause of pain)

Dental pain is another cause of hanging worth mentioning, just as the painful issues mentioned above can cause hypertonicity and unbalanced movement, dental pain can do the same. The stomach and large intestine meridians are two meridians which course through the top and bottom teeth respectively. They are primarily effected by dental pain and can cause dysfunction through other yang meridians which intersect at the head and temporomandibular joints. Hypertonicity in these meridians tends to occur acutely and are commonly resolved when the cause of the dental pain itself is resolved.

Treating the cause of the hanging is a vital component to resolving this issue. To treat any of these causes involves a diagnosis, this involves the co-operation of the veterinarian (joint, stress fracture, feet pain), farrier (shoeing), dentist (dental issues) and muscle therapist (muscle tears and strains) to determine the cause. Once diagnosis is achieved, treatment can then be implemented and whilst treating the cause is the primary concern, there are a few complementary treatments available to help to enhance resolution of the hanging issue. The two main concerns is the use of acupuncture and the role of implementing exercise programs.

As the muscle hypertonicity is the action which initiates the hanging, we can use acupuncture to help break up the cause to hanging cycle. Acupuncture is the number one form of therapy for effectively resolving hypertonicity as it functions to 're-wire' the nervous system which is in control of all the muscles in the body and therefore the movement. When applied acupuncture can

- Reset proprioceptors such as muscle spindles and Golgi tendon organs which control muscle lengthening and shortening

- Increase circulation through hypertonic muscles
- Reset the function of interneurons in the spinal cord responsible for controlling muscle tonicity

This allows muscles to return to their pre-hanging state, reduces stress and the time needed for the horse to regain proper balance in movement whilst performing at it's peak.

There are two main changes to exercise programs which will benefit any horse that is hanging. The first is to reduce stress, this can be done by reducing gallops or fast work. By doing this the body can put more energy into repairing the cause of the hanging instead of having to maintain balance. The second is to implement exercise programs to strengthen the yang muscles. The most common way of doing this is to send a horse to a water walker farm, however there is another exercise called lunging which can be of great benefit to building tone in the yang muscles and giving the hypertonic yin muscles a break. The main reason for this is that circle work puts more pressure on the lateral (yang) muscle of the body for movement and the removal of a rider reduces stress on the yin muscles.

If you have a horse which is currently hanging than this article should give you direction on how to go about the problem. By getting a diagnosis and treating the cause with the added implementation of acupuncture and exercise programs, the horse can benefit as a whole mechanism.