The Beauty in Balance

By Gillian Muir, GVHS Member, Margate, FL

Horses have captured the human imagination for centuries. Their utter grace and power, even when performing the most trivial of tasks, is nothing short of majestic and long-honored in art and literature. Why is it that the most athletically accomplished horse, of an equine activity, also seems to be the most beautiful? Much effort has been put into research on how horses are put together and how they move. We have all studied the drawings of "good" legs and "crooked" legs, upside down necks and poorly formed hindquarters. But why are those things good or not good and how do they impact the athleticism of the horse? Having a clear idea of your own horse's strengths and weaknesses can help to enhance not only your relationship with your horse but your success at competition and even his longevity. Appropriate work may help an ill-conformed horse as much as mismanagement can deform a well-conformed horse. Let's take this time to put the pieces together and look at how they affect the whole horse, and how this applies to our much loved Gypsy Vanner and their ability to perform.

A common saying in the horse world is "form to function", meaning the form, or build of the horse, must support his job. The horse's body is a miracle to behold and when one takes a closer inspection, it is even more impressive. The skeleton is the framework defining a horse's conformation. While is it far from the whole story, it is essential for an observer to mentally strip through coat, muscle, and fat to look at the naked truth shown in the bones. Joint angles, straightness of legs, how a neck is set on and length of back all are determined by the 210 bones of the skeleton. These bones are held together by ligaments and cushioned by cartilage. To create movement, the joints of the skeleton are powered and supported by opposing groups of muscles. Over 700 muscles in the horse's body work together to lift and swing legs for locomotion, turn, raise and lower the head, even swish the tail to chase a fly. Every joint in the body has muscles and tendons which contract to open or close it while opposing muscles keep the joint from over bending and straightening it. Muscles can be separated into 2 groups: fast twitch and slow twitch. Fast twitch muscles, which are used for explosive movements and speed while slow twitch are used for steady work, such as pulling a vehicle over long distances. It's safe to guess a Vanner has a predominance of slow-twitch muscle development because of their foundation as a draft animal. All of this is controlled, often quickly and minutely, by the nervous system.

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These tissues come together in balance to form an athletic machine with a powerful "engine" in the hindquarters, propelling energy forward, through the "suspension bridge" of a fairly rigid, yet supple back and supported by the forelegs. They are so well designed, even the weight of the digestive system helps suck air in and out of their lungs when they gallop! The horse's legs create a loaded spring that functions not only

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as a shock absorber as it compresses but helps propel them across the ground when it expands. With no "collar bone" and the spine supported by the "shoulder sling" of soft tissue, the forelegs allow even more shock absorption. Just watch slow-motion video of horses racing, jumping or even just walking on pavement and the observer can see this impressive display in action. This shock absorption with the rigid, yet supple, back is what makes them ride-able.

To achieve effective motion, horses engage a "ring of muscles". Dr. Deb Bennet states "unique among hoofed animals, the horse possesses a 'cable' system of ligaments and ligamentized muscles that run all the way along the top-line from poll to the hock." This system is supported by the abdominal muscles, thus completing the "ring."

One thing even slightly out of balance can be a detriment to the entire structure. One can see how a slightly crooked leg will impact the ground sooner on one side, concussion traveling up the legs slightly more on that side, which will thicken bone, while the opposite side is stretched, overworking ligaments and tendons. Over time, this can create wear and tear. Does that mean the horse that "toes out" is doomed to pain and early retirement? Of course not, but it does mean he should be placed in work that will not exacerbate the issue. One can also see how vital proper hoof care and trimming or shoeing is.

Stresses in bone show up as cracks and breaks, and while even minor fractures can seem catastrophic, they are often easier to mend than soft tissue being readily able to "remodel." Ligaments are a different story. This tissue has very little blood flow and can be difficult, even impossible to repair and often, even after years of careful recuperation, rarely return to their original state. Prevention is the best cure, so having a clear and honest picture of the horse, or potential purchase, will help an owner figure out his best job or additional support he may need. No horse is perfect, and variations, both large and small, in individual horses is limitless. We get the joy of seeing each horse as a unique being.

So let us now step back and take a look at the Gypsy Vanner and how he is supposed to function. The Vanner, while versatile as defined by his history, is a driving horse first. A good driving horse should have: a sturdy build, uphill stance, sound conformation with a broad chest, strong back and rounded hindquarters and, as Evan Moore DVM states "enough muscle to match the vehicle and weight." He should move "from behind" with a round back and ground covering stride. All of these things are also important for a good riding horse! Having all his "parts" fit together correctly and match well will go a long way toward his athleticism and longevity as a working animal.

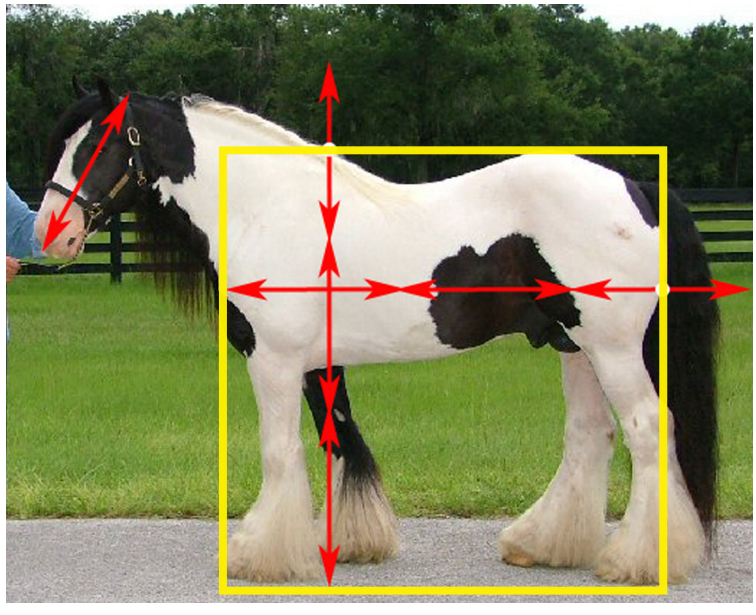
Having a working knowledge of the equine body parts and how to find them on a live animal is necessary for evaluation. Be sure you are familiar with layman's terms for equine body parts and know where to find the point of the shoulder, hip, and buttocks as well as the withers and poll. Also, you should be able to find the location of stifle and hip joints as well as observe the position and length of the scapula defining the shoulder.

The first look:

Overall balance can be determined by stepping back and getting a good side view of the horse. Imagine drawing a box around the horse from the chest to the point of the buttock and wither to ground. Is that box a square or a rectangle? If it is a square, the horse has an excellent start to being well-balanced. If it is rectangle, we need to figure out where and how much of a detriment it is.

***Overall Balance,* The Gypsy King, GV00012F**

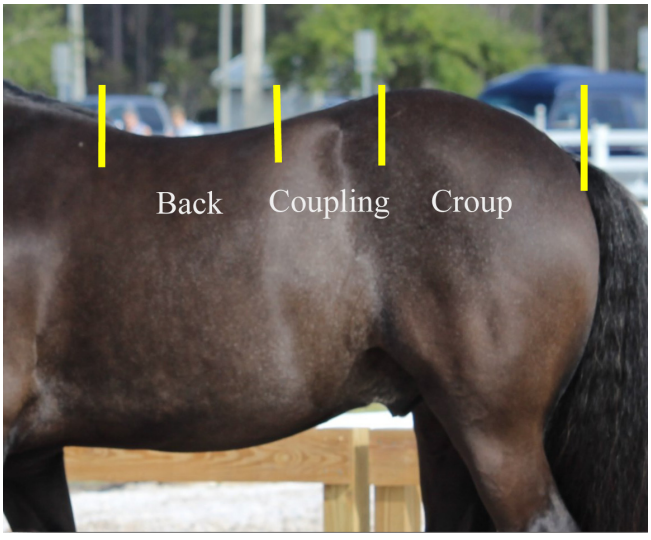
An article "Photo Guide to the Breed Standard" published in past editions of The Vanner, explains: 'The regions of the Gypsy Vanner must fit together on a proportional basis. The length of the neck should be equal to one head length of the horse. From the point of the shoulder to the buttock should be approximately 2.5 head lengths. From the front heel to the top of the withers the distance should measure 2.5 head lengths. From the rear heel to the top of the croup/hip the distance should measure 2.5 head lengths. With these visual measurements in this proportion, the horse is said to have balance and harmony.'



A more accurate way to assess general balance is to draw lines on a photograph. Start with drawing a horizontal line ground level at the horse's feet, then add vertical lines from the poll down, the highest point of the wither down, the croup down and finally the root of the tail down, making sure they are at right angles with your ground line. Then, add two more horizontal lines at the bottom of the breastbone at the girth and at the highest point of the withers. Hopefully, you see four reasonably equal squares around the neck and body and two rectangles making up the hindquarters. The distance between the vertical poll and wither lines and the wither and croup lines should be equal with the croup to tail line about half of that. Then the wither to the breastbone should be no less than from the breastbone to the ground, ideally a little more. Refer to the photo provided on the adjacent page.

How the pieces should fit:

The back: A short back is a strong back and coveted in our breed. Find the length by measuring the point of the withers to the last rib. Proportionally, this measure should be 50% or less of the body length (front of chest to the point of buttocks). Generally, actual backs are not overly long but made to appear that way by a long "coupling" or "loin." More than a hand's width between the last rib and the point of the hip indicates a long, and consequently weak, coupling.



Also, feel along the spine from the withers toward the tail. You can feel the bony processes of the vertebra until you reach a soft spot. This spot indicates the location of the lumbosacral joint. This joint is the true attachment point of the hind leg to the rest of the horse. The folding of this joint down is the "coiling of the loins" that defines collection. The closer to the line between the points of the hip, the stronger that attachment to the body is and the better able the individual will be able to "engage" his hindquarters.

Hindquarters: Moving back, the muscling of our "apple butted" horses can give a false impression of the croup. Find the point of the hip and point of the buttock to get a read of length and slope of the hindquarters. The longer the hip is, the more area the horse has to attach muscle thus creating stability and power. Too much slope in the croup and the horse loses leverage in his lower legs as well as flexibility in the lumbosacral joint, even when giving the impression the horse is "underneath himself."

Next, follow that plumb line from the point of the buttocks, down the back of the hind leg. This line should reach the point of the hock and follow the back of the lower leg exactly. An acute stifle angle will place the whole hind leg behind ideal, making it very difficult to fold the leg and bring it forward. Alternately, an acute hock angle, or sickle hocked, will camp the feet forward, requiring a tremendous amount of leverage to propel the horse. Over straight joints of the hind leg, i.e., post-legged, are already at "open" position, and so will lack shock-absorption as well as ability to coil for power and collection.

Wither: Remember that "cable system" that supports the back and transfers energy from the hind leg forward? It starts at the hock, works up to the point of the croup to the wither and then to the poll. Going forward to the wither, which is defined by the boney processes (sometimes over a foot in length) of usually the third through eleventh thoracic vertebrae. The withers are often just considered in relation to saddle fit; however, they provide the attachment point for the muscles and ligaments of the shoulder and neck. Having sufficient withers for attachment is crucial as well as how well the neck attaches to the withers. The higher the neck comes out of the withers, the more quickly and efficiently the cable of ligaments will engage to support the back when the head and neck stretch out and downward. "Mutton" or low, flat withers is a more common fault than too high withers in Gypsy Vanners and should be avoided.

Neck: And now we come to the neck. The lower the set of the neck, the more difficult the horse will find balancing weight off of his forehand when he is asked to work with the addition of rider or cart. Humans have developed equine necks to be longer, and our modern horses have much longer necks in general than horses we bred even just a few decades ago and much longer than their wild brethren. Partly a long neck helps with balance, the analogy of a tight-rope walker's pole is often used, but imagine if that pole was too long. The neck should be in proportion to the rest of his body. Going back to the lines on our photograph, we can see how the poll to wither distance should match the wither to croup distance (blue lines), therefore giving us an ideal length of the neck.

Every equine neck has seven vertebrae and, with their respective joints, are by far the most flexible part of their body. Having shorter vertebrae and joints spaced closer together, one can see how a short neck still has pluses, remaining stable without losing flexibility, while an overly-long neck becomes a detriment. The Vanner neck is expected to be "rainbow" shaped with a proportional length. This shape, as well as being beautiful, allows a high attachment point to the withers creating a perfect fulcrum to help support the back. If one could see through to the spine, the equine neck is curved into an "S" shape. Ideally, the lower curve coming out of the shoulder should be more acute than the upper curve. Noting where the lower line of the neck attaches in relation to the point of the shoulder will indicate the height of the set of the neck. The tighter lower curve increases the efficiency of the cable system. The more open upper curve allows the head to arch and achieve the position often called "on the bit."

The Head: Aside from the brain inside, the equine head has very little influence on the movement of the rest of the body, Shape of the head can influence sight and air intake. An exception occurs when unusually large head attached to a long neck encourages the horse to tip more weight onto

the forehand. The Vanner should have a "sweet" head, meaning it is pleasantly shaped without an extreme convex or concave profile showing refinement. It should also look like it fits the rest of the horse. Also note that width of the jaw, eye placement and size of nostril all do affect the horse's ability to do his job.

The legs: Many sources are available that discuss the anatomy of the equine leg and all the lumps and bumps that can be found there. Those details are beyond the scope of this article, but a close study is highly recommended. We touched on the angles of the hind legs earlier but would be remiss in not mentioning the proportions of the upper and lower legs. Short canon bones equal strong legs and the forearm and "second thigh" or gaskin of the hind legs should be longer than the canon. The angle of the pastern and hoof should match the shoulder, which is commonly accepted as 50 degrees in driving horses and 45 degrees in riding horses. Upright angles will take away from shock absorption, and angles that are too acute are weak. Judging pastern angles in feathered legs can be challenging. Sometimes seeing with one's hands is necessary. Lastly, minimal cow hocks, or hocks that point slightly inward turning the lower leg outward, is not unexpected in driving horses with the thinking the angle allows for more leverage in pushing into a harness. Horses may be very slightly turned out, allowing the hind leg to swing forward without being impeded by the barrel. Too much angle can encourage the stifle to slip as well as being weak. Both extremes should be avoided.

In conclusion, we can see how all of these pieces work together and affect other parts of the horse. No horse is perfect and learning what faults are more detrimental, and therefore to be avoided, to a chosen discipline is important. Having a clear picture will also help to determine what training practices will be most beneficial. Having your horse evaluated by a professional, or several professionals, can give an owner lots of valuable information about their equine friend.

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