An Introduction to Functional Conformation

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Conformation Books

This introduction to functional conformation is offered as a compliment to the numerous books that provide valuable information about equine conformation and is not intended to be all inclusive.

Observing aspects of functional conformation can aid in making decisions regarding the prevention of injury, the sport, discipline or level of competition for a horse.

But, unfortunately, conformation books don't always go far enough in explaining the discipline-specific structures of horses or a based towards one type. (see the e-book Ten Conformation Myths on www.jwequine.com

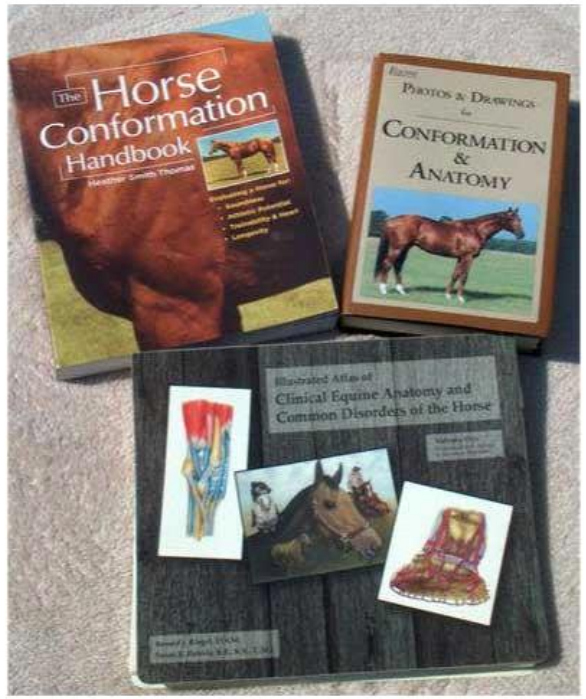

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Photo of Toe-In

For example, this horses legs are toed-in, which is considered a conformation fault, yet she remained sound through a career at the track followed by nearly 20 years as a lesson horse and dressage competitor. She was able to do all of this because she had the elements of functional conformation that lightened the impact on her front legs.

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What is Good Conformation?

Good conformation means different things to different people, but from a functional perspective it means structurally suitable for the job. If a horse is built to perform a particular job (generally something athletic), then it has functional conformation.

In many cases although a horse may exhibit less than perfect conformation by conventional analysis, if he is built to function well in a particular discipline or job, performance may not be affected.

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Functional Anatomy

Both of these horses have a trait, being over at the knee, that is considered a fault, yet One competed at Open and Young Rider level in dressage and the other was a champion racehorse. Both had functional conformation that enabled them to lighten their forehands, thereby putting less stress on their front legs.

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What is good Conformation?

When we think about conformation, we usually consider straight legs and musculature, but do these points provide sufficient information to truly assist in our breeding or purchasing decisions? Do they truly describe the horse accurately? Not if the horses in the photo's thus far are any example.

It doesn't help that a lot of the terms we generally use to describe horses are subjective. For example, what do descriptions like nice hip, good shoulder, or well-balanced, good mover and so on really mean?

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What is good Conformation?

Endurance

A nice hip for a reiner is not constructed the same as for an endurance horse….

Reiner

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What is good Conformation?

A good shoulder for a jumper likely doesn't resemble that of a barrel racer….

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What is good Conformation?

Well balanced for a Western Pleasure horse is not necessarily the same as for an eventer…

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What is good Conformation?

Good movement for a show hunter is quite different than that of a dressage horse. And so on……..

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What is good Conformation?

Skeletal aspects of conformation vary from discipline to discipline or from function to function. In order to assess the functional aspects of conformation, and in order to use them to our advantage, we need objective descriptions.

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Being Objective

As a noun “objective” refers to the intended goal and as an adjective it means undistorted by emotion, bias or interpretation. It is the opposite of subjective. Objective definitions can be advantageous when choosing all these things:

A suitable horse for our purpose

The best discipline(s) for a horse

An appropriate level of ability or level of performance within a discipline

The right match to produce the foal of our dreams

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Being Objective

Because the process can seem intimidating and it takes time and effort to learn the points of conformation that determines function, specialty and/or level of ability, we often neglect the first steps. However, we can learn the functional aspects of equine conformation by first building on some of the things we already know, which is referred to as “Step One”.

We will need to know how to identify or palpate the points of functional conformation, understand how the parts work and how they are inter-related, which is referred to as “Step Two’.

We will need an objective way of relating the information, which is referred to as “Step Three”.

We will need to understand the degrees of athleticism required for various pursuits as well as the discipline-specific aspects of conformation, which is referred to as “Step Four”.

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Step One – Building on what we already know.

We already understand function at some level and we apply our knowledge of it in all sorts of ways. Without thinking, we understand the basic principles of a teeter totter. We know that if we add or subtract a little weight from one end or the other, it affects the balance. We know that if we move the fulcrum, or balance point, even slightly, we have affected the balance once again.

In fact, if we're on an unbalanced teeter- totter, we likely compensate in order to correct the balance automatically. That is not something we were born knowing, it is something we learned, but now, is second nature.

We also understand that, depending on the degree of change, the basic mechanics of a teeter-totter can be adapted to produce a pry bar or catapult.

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Step One

We look at monster trucks and know that we wouldn't want to spend a whole day driving one on the winding highway. We look at a sports car and know that it should be a joy to drive on the same road. We can also tell which one is functionally constructed for speed. If we were looking at sand dunes, instead of a winding highway, our choice would be different.

It didn't take long to make these assessments? Again we are talking about acquired knowledge that is now second nature.

At a track meet, especially at the upper levels, we can easily identify differences between the high jumpers and the shot putters because they have different skeletal proportions. An understanding of the differences in skeletal structure of the horse is much the same and will be introduced in this course.

It isn't difficult to expand on what we already know and make a shift to a more analytical approach to decisions regarding our equine partners. Fortunately, with a little effort and the basic tools, we can learn to consciously and objectively analyze the physical strengths and physical limitations of horses as well as the requirements of the job we have in mind for them.

Step Two

Understanding the parts and how they work.

In order to understand the functional aspects of conformation that either contribute to or inhibit athletic ability, and to envision what the horse has to do mechanically, we will need to know the anatomical parts of the horse, understand how the parts function and envision how the parts are inter-related.

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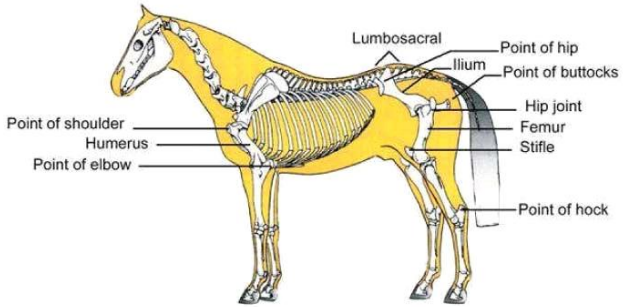
Step Two

For the purposes of this introduction, we'll focus on the lumbosacral joint, point of hip, ilium, femur, point of buttock, stifle, scapula, point of shoulder, humerus, and elbow. We'll also touch on the rear triangle and the pillar of support.



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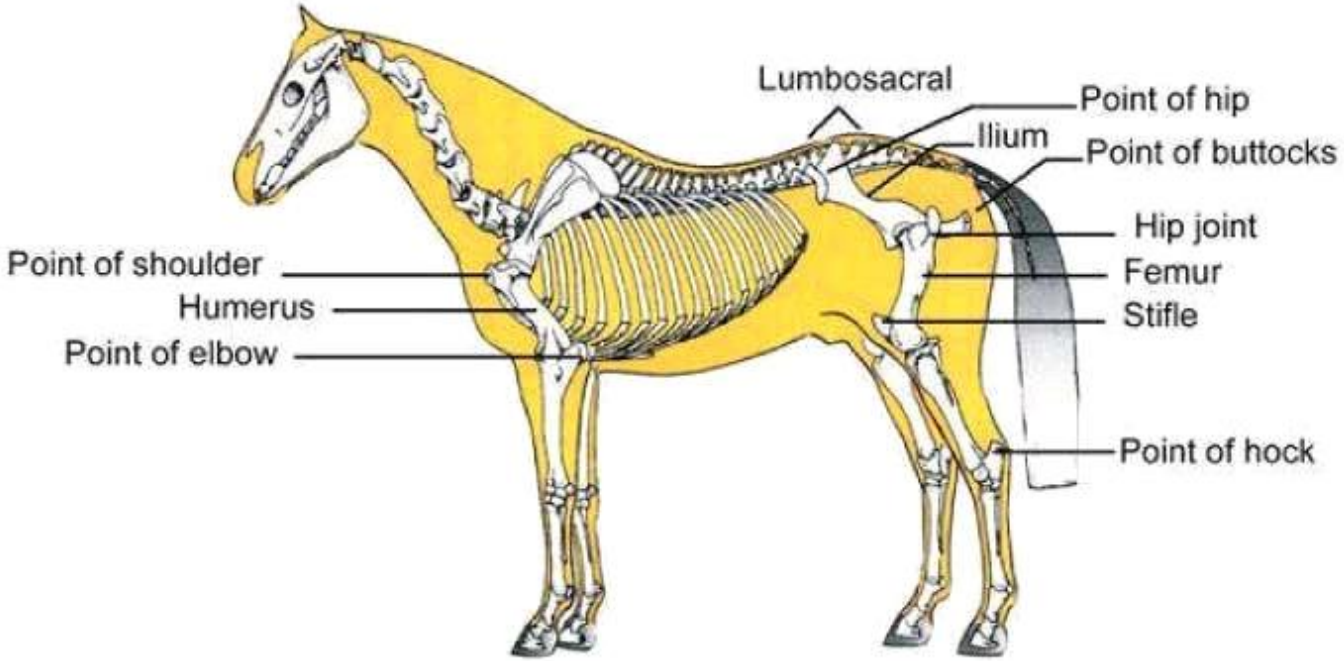
Step Two – Know the Points



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Step Two

Knowing these points is not enough, however; we need to know how they operate in unison. And, like the teeter-totter, we have to visualize and have a clear picture of all the elements in order to make an accurate assessment of function. What could we tell about the teeter-totter if we only saw a third of it?

All of the parts are interrelated, and thus must be considered as a unit. And, like the teeter-totter, different configurations can result in either different functions or similar functions.

If function is our prime concern, then starting to asses conformation at the front of the horse doesn't make sense. The horse generates its power from the hindquarters (like the motor of a vehicle) and transfers it forward and upward (like a vehicles transmission), so it makes sense to start a functional assessment from the rear. That doesn't mean you shouldn't check the horse's body language – eyes, ears and breathing. But we should be aware that if we start making a judgment at the front, we tend to forgive faults because of a pretty face or become harsher because of an unattractive one.

Step Two

If we are to purchase a truck to pull our horse trailer, we want to know about the motor, the transmission and the suspension before we choose a colour or comment on the amount of chrome.

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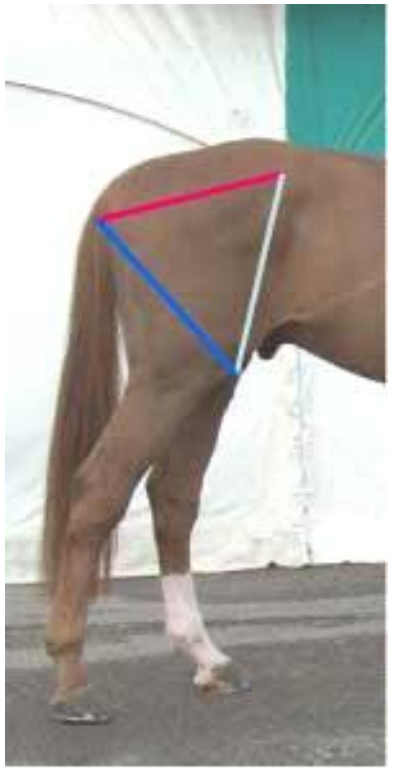
Step Two – The Motor

Where to find it: the rear triangle can be traced from the point of hip to the point of the buttock (red line), from the point of the buttock to the stifle (green line) and from the stifle back to the point of the hip (blue line). From point of hip to point of buttock is used as the ilium measurement, and from the point of the buttock to the stifle is used as the femur measurement.



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Step Two – The Motor

Differences in the length of the ilium and the femur can be “measured” within the triangle. We can tell if the ilium is the short side, the femur is the short side or if the sides are of equal length. And stifle placement, which is covered in the next section, can be measured in relation to the sheath of a male horse (or, on a mare, where the sheath would be).

How it Works; The rear triangle is the equivalent of the horse’s motor and dictates what type of power will be produced. The relationship between the bones and the joints, the length of the bone, angle or degree of slope of bones and the positioning of a stifle all determine stride length, amount of spring, ability to reach, ability to sit as well as susceptibility to injury.

Variations; Veterinarian Dr. Nancy Loving states that a short femur is effective for sprinting and draft work. Researcher and veterinarian Dr. Hilary Clayton, who is interested in Dressage, says the femur should be long and should slope forward. Who is right? Both are, because there are discipline-specific differences in construction. And that is why it is best to really examine things instead of making blanket generalizations about conformation.

More variations can be found in the discipline-specific section (Step Four) of this course.

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Step Two – the Motor

The Stifle

Where to find it; The stifle is actually a joint comprised of the lower end of the femur, the upper end of the tibia and the patella. Because there are three bones, the stifle is actually two joints: the femor-tibial joint and the femoro-patellar joint.

For our purposes, and for clarity, we will use the femoro-patellar joint (the lower portion of the stifle joint), because it is the most visible. It shows as a protusion – as seen in the photos – and we can easily watch its range of motion as a horse moves. The muscle that helps the joint move is NOT what we will use as a marker.

Step Two – The Motor

The lower part of the stifle – the part that protrudes, is easy to see or feel and is circled on the photos.

How it works; Stifle placement (in relation to the level of the sheath) is a key element in length of stride, scope over fences, ease of collection, distance preference and several other discipline-specific abilities.

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Step Two – The Motor

Horse #1 shows the stifle extended and at the very end of the walk stride, just before the left hind lifts off the ground. Horse #2 shows the stifle bent and reaching forward in preparation of the left hind striking the ground. Horse #3 shows the stifle beginning to extend as the body moves over the left hind in preparation of the position shown by Horse #1. All three of these horses have stifles that are well below the level of the sheath, have long strides and scope, which suits their jobs as steeplechasers

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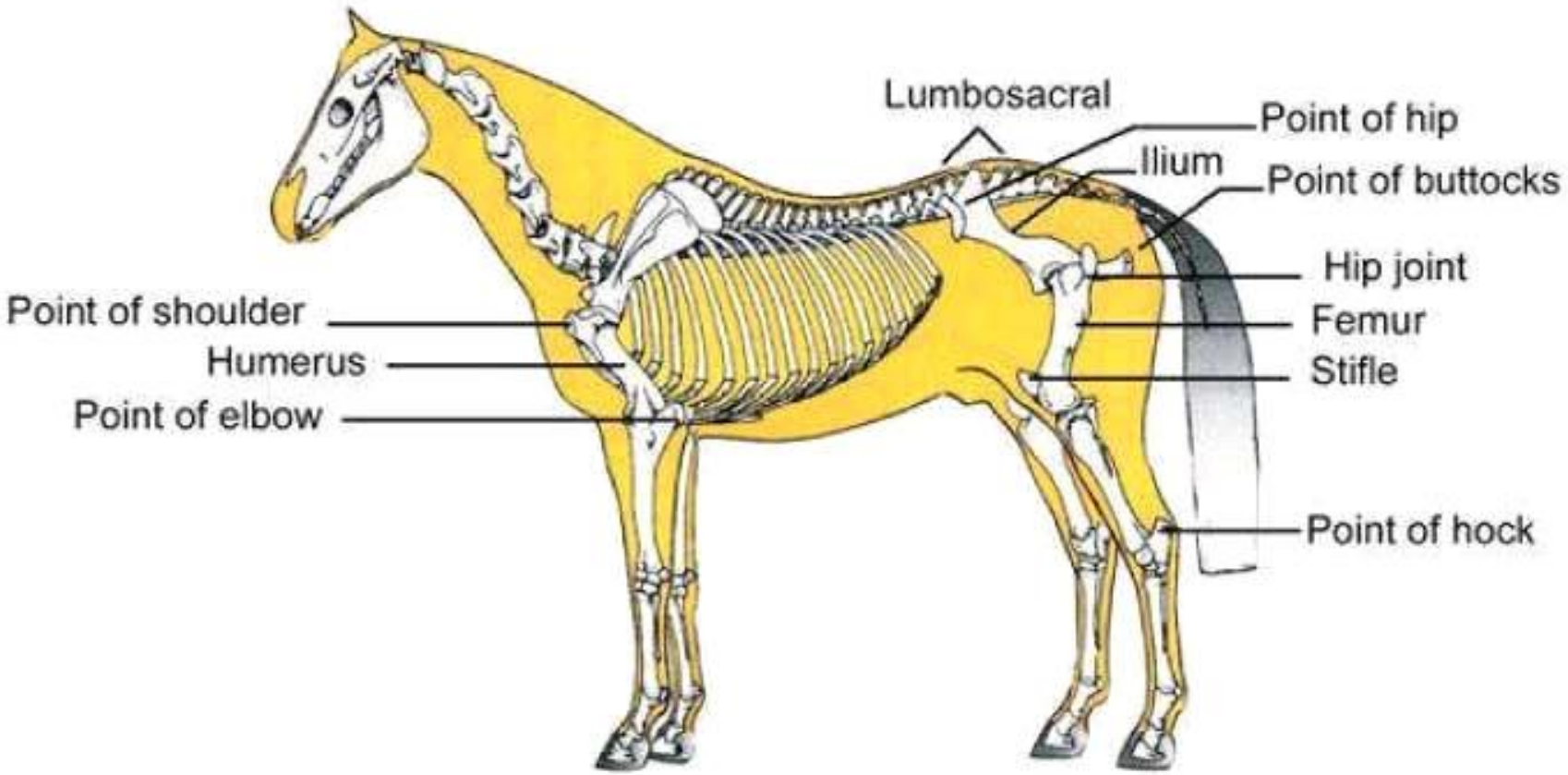

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Step Two – The Motor

Variations; As the photos of these four racehorses illustrate, stifle placement varies considerably. In the discipline-specific section (Step Four), we'll examine more variations and learn why the distance preferences of these four go from shortest (A) to longest (B) distance.

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Step Two – The Motor

Sprinter – high stifle

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Step Two – The Motor

AQHA mare – high stifle

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Step Two – The Motor

Miler – medium stifle

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Step Two – The Motor

Distance – low stifle

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Step Two – The Transmission

Where to find it; The lumbosacral gap, where the articulation of the vertebra changes just in from of the sacrum, is a palpable dip in the spinal column just in front of the high point of the croup (the high point of the spine, not the muscles). At S1 (the first vertebra of the sacral region) there is an abrupt change to the caudal inclination (towards the tail) which contributes to the space between the L6 and the S1 that we will refer to as the LS.

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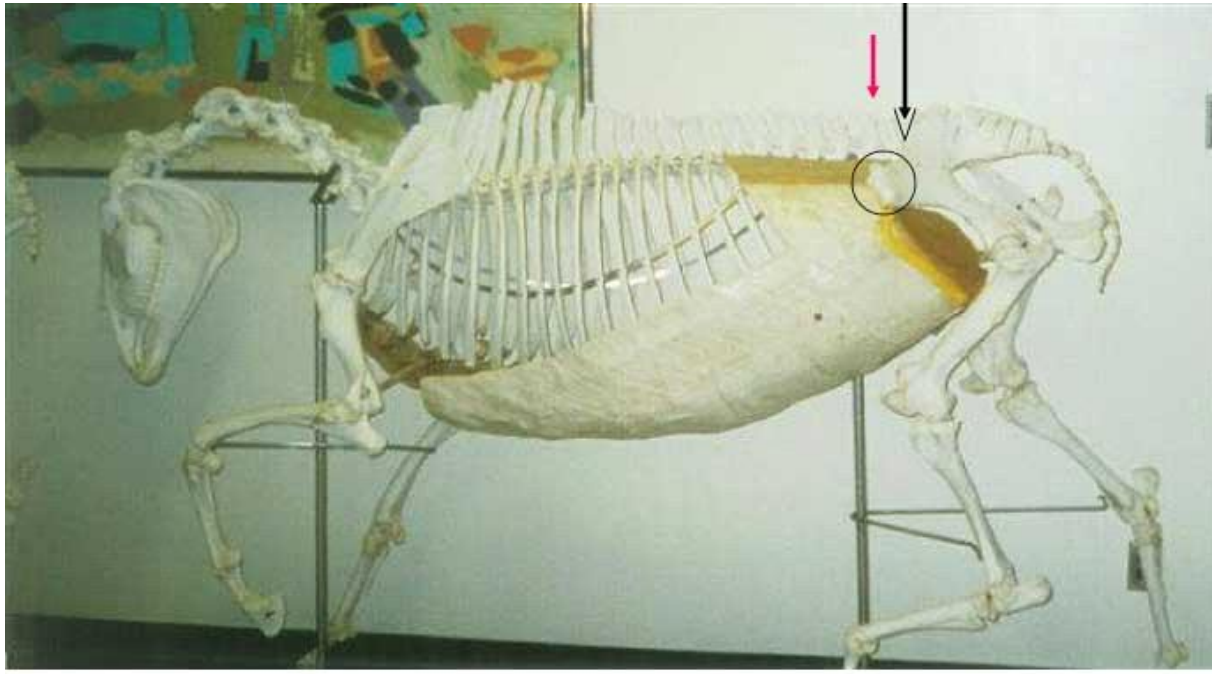
Step Two – The Transmission

Highly successful equine athletes have a lumbosacral gap which can be bisected by a line drawn from point of hip to point of hip. This equals good coupling and is a strong loin, thus a well-placed LS is a considerable asset to a horse that is expected to be athletic.

For our purposes, we will refer to ideal lumbosacral placement as directly above the point of hip in side view photos, because that means the LS would be bisected by a line drawn from point of hip to point of hip.



LS gap (black arrow) back of point of hip (circle). Ideal marked by red arrow.

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Step Two – The Transmission

How it Works; It is probably one of the most important points of functional conformation, yet the LS is often one that is overlooked. It functions as the horse's transmission as well as contributing significantly to the ability to compensate.

According to research, the greatest degree of flexion and extension of the equine spine occurs at the end of the lumbar vertebrae and beginning of the sacral vertebrae (L6-S1). The greatest amount of up and down (dorsoventral) movement of the thorasic spine occurs at the lumbosacral articulation. Watch that area as a horse walks, and you can see the movement.

So how important is LS placement? Dr. Hilary M. Clayton, veterinarian and researcher says, "the hind limb rotates around the hip joint in the walk and trot and around the lumbosacral joint (just in front of the croup) in the canter and the gallop. The lumbosacral joint is the only part of the vertebral column between the base of the neck and the tail that allows a significant amount of flexion (rounding) and extension (hollowing) of the back. At all other vertebral joints the amount of motion is much smaller."

Step Two – The Transmission

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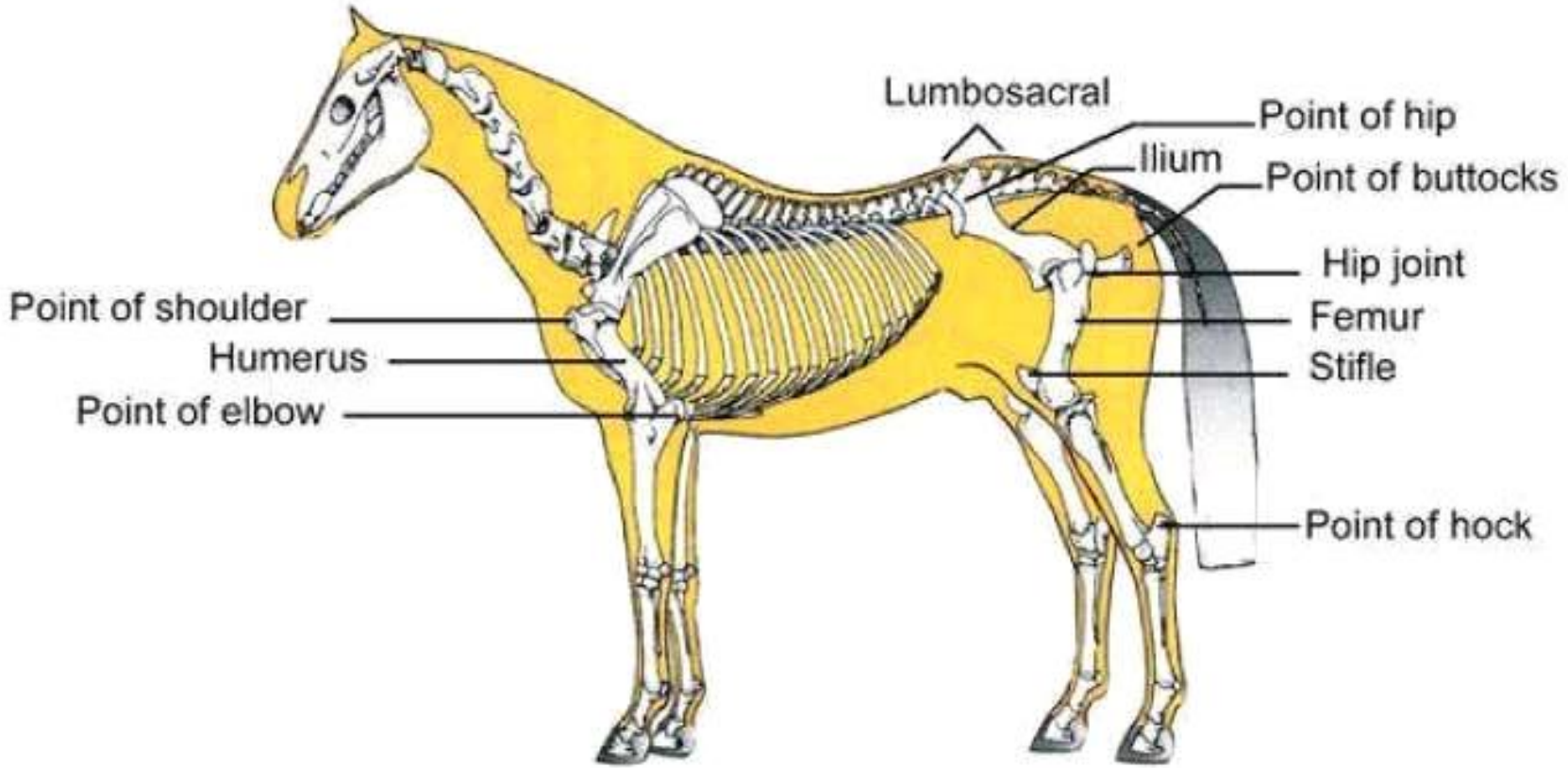

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Step Two – The Transmission

AQHA mare – high stifle

Sprinter – high stifle

All four horses pictured have ideal LS Placement

Miler – medium stifle

Distance – low stifle

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Step Two – The Transmission

Having a lumbosacral gap over (bisected by a line drawn from point of hip to point of hip) or nearly over the point of hip allows the horse to transfer power forward no matter what his sport or distance preference. The lumbosacral is also one of the main areas of compensation, so it needs to be strong if athletic demands are placed on the horse. The farther rearward the point of hip, the weaker the horse's transmission is and the less ability he has to compensate.

The LS is a stress point for lifting and suspending the front of the horse, and lifting the forehand is an integral part of the canter and gallop. Without good LS placement, a horse cannot transfer all his power forward or upward and, if asked to jump for instance, he cannot maintain the stretch required over obstacles.

Step Two – The Transmission

Variations; Those horses with an LS considerably back of the line between points of hip are susceptible to back problems, most obviously a condition commonly referred to as a hunter's (or jumper's) bump. Another result of poor LS placement is ridging of the lumbar muscles along the spine, indicating the horse's attempts to protect the LS region. And, if the LS is rearward of ideal, many people will see the horse as having a "long" back.

Hunter's Bump

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Step Two – The Transmission

The farther the LS is rearward of the point of hip, the more stress on the ligaments, the more likely the horse is to develop a hunter's bump and the more likely the horse will suffer from back ailments.

Although top athletic equines invariably has an LS gap that is bisected by a line drawn from one point of hip to the other point of hip, a horse that is not asked to do anything athletic may not have to meet such a high standard. However, very few horses or ponies go through life without someone asking them to do something requiring a degree of athleticism.

Step Two – Front End Apparatus

Where to find it; The front leg apparatus includes the scapula, humerus, elbow and forearm, and it works as one apparatus – nothing works independently from top of scapula to point of shoulder to elbow to knee. From the knee down the front leg operates as a pendulum and a shock absorber when the horse is in motion.

If you have read conformation books, you know that the front leg apparatus is not attached to the spine and that the scapula sits on the outside of the ribcage. We will not go into depth about this in this course.

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Step Two – Front End Apparatus

How it Works; When a horse rotates his scapula back (when the top of the scapula moves towards the rear of the horse) the point of shoulder is raised, the elbow moves forward, the forearm is lifted and extended to that the lower portion of the legs swings forward. The rotation of the scapula is important to remember when considering saddle position and saddle fit.

Length and inclination of the scapula affect stride, but so do differences in the height of the point of shoulder, the length of humerus and the placement of the elbow. Therefore, we should not make assessments based solely on the shoulder.

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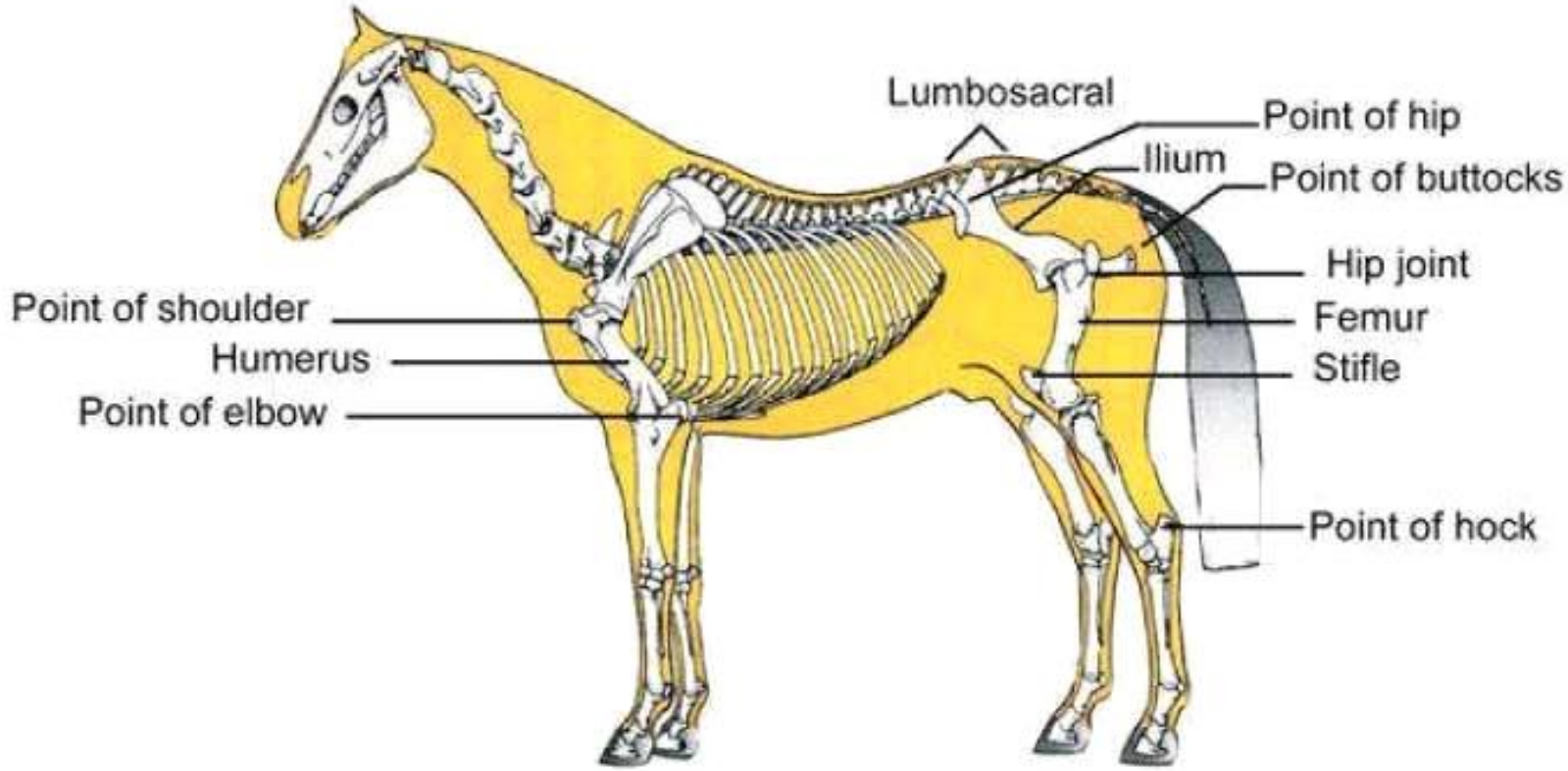

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Step Two – Front End Apparatus

If the horse cannot lift the point of shoulder without rolling the scapula back and cannot lift the point of shoulder without moving the elbow forward and cannot move the elbow forward without moving the forearm, how can anyone make an accurate assessment of the forehand without including all these points of functional conformation?

Step Two – Front End Apparatus

Variations: Even though these two horses have similar scapula (length and angle) and similar lengths of humerus (elbow to point of shoulder) they have different capabilities. This illustrates why it is important to consider the point of shoulder when assessing function of the forehand.

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Step Two – The Front End Apparatus

Imagine what happens when these two horses rotate their scapula in order to lift the point of shoulder, move the elbow forward and lift the knees over a fence. Even if they rotate their scapula exactly the same distance, their front legs will react differently.

The elevation from elbow to point of shoulder on the dark horse is an integral part of what makes him a very capable grand prix jumper. An angled humerus, where the point of shoulder is considerably higher than the elbow, results in his high point of shoulder, which means he can get his knees up quickly. This is definitely an attribute at his level of competition.

The Grey horse has a considerably lower point of shoulder, which means he will lift his forehand slower and have lower knees over a fence compared to the dark horse. He physically will not be able to lift his knees as high in order to clear fences. That is why he is a low-level jumper and why he has more of a hunter form over fences.

Although both of these horses are used for jumping, we can still use them for functional comparison in different disciplines, assuming that they were identical in other respects. The dark horse would be lighter to ride in dressage than the grey, and the dark horse would be a better eventer. If they were used in driving, the grey would have better pulling power, but the dark horse would be more maneuverable. The grey would be comfortable in pleasure driving while the dark horse would go much further towards the FEI level

Step Two – The Front Apparatus

Where to find it; The elbow joins the humerus to the forearm and is located at various distances from the ribcage. It can be palpated when not visible.

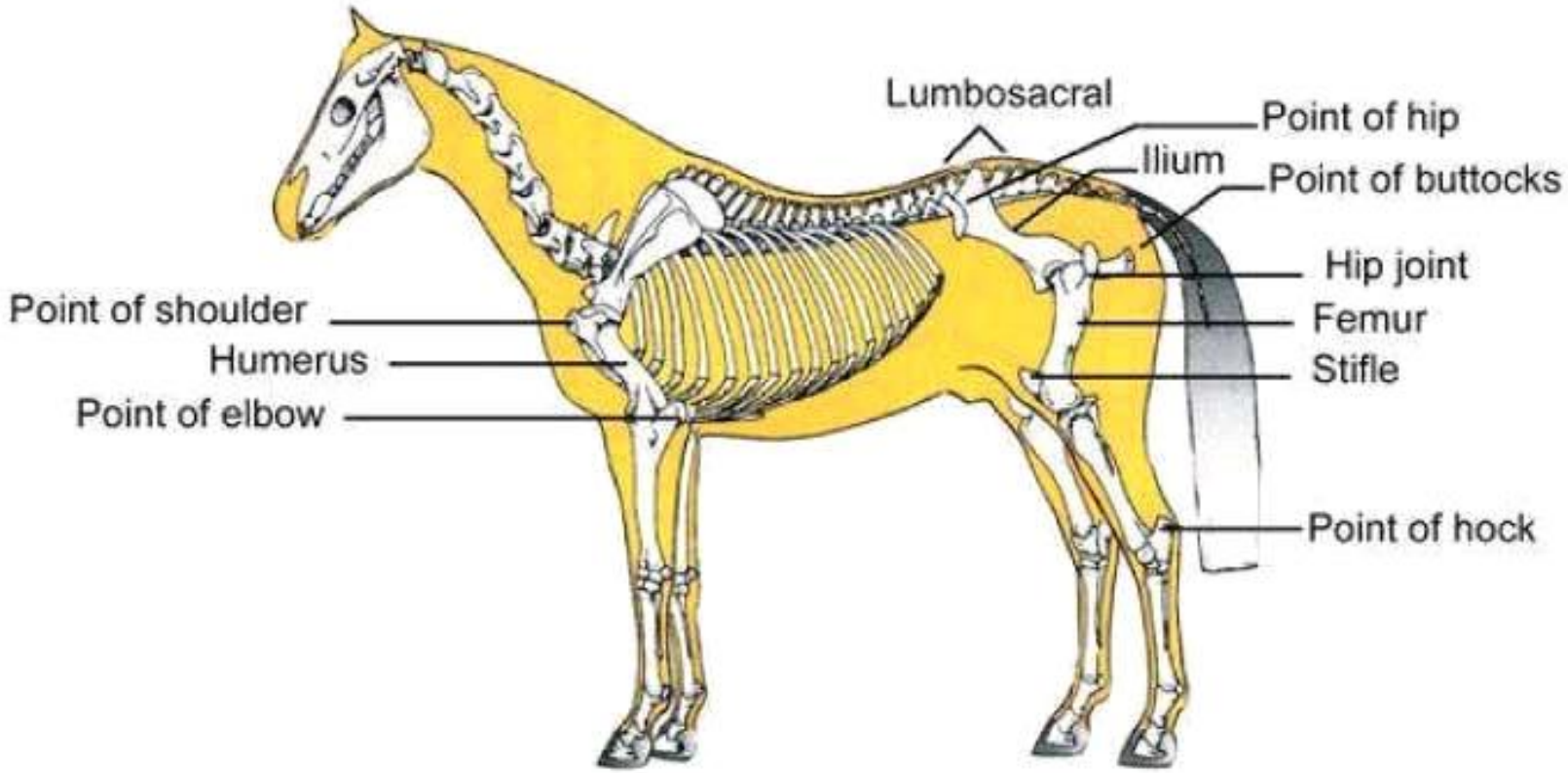
How it Works; The elbow is an integral part of the front leg apparatus and has an effect on stride length and the ability to turn as well as perform lateral movements based on positioning and freedom of movement.

Good forelimb movement is characterized by a full range of motion in the swing phase and the stance phase. The latter part of the stance phase is the part of the stride where the horse has rotated his forehand over his front leg and is about to lift that leg from the ground. That is also when the elbow is closest to the ribcage.

Step Two – The Front Apparatus

An elbow that is set so close to the body that is strikes the horse's ribcage will cause the horse to shorten the stance phase on the contact side because he will want to avoid the collision between elbow and rib. In response to the shortened stance phase on that side, he will shorten the swing phase on the opposite side.

In extreme cases, such horses will be very choppy in their gaits even if they are otherwise built to have long, fluid movement. A refusal to do lateral work can develop and a tendency to be cinchy is not an uncommon occurrence. Placing the cinch a bit further back or using a shaped girth may help in some cases.



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Step Two – The Front Apparatus

Variations: Notice the bulging muscle on this horse. He has developed that muscle because he is using it as a brake to stop his stride from going through the full range in the latter part of his stance, which would cause pain when the elbow and ribs made contact. His elbow is too close to his ribcage.

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Step Two – The Front Apparatus

Some horses have an elbow that may appear tight, yet it does not cause an impediment of range of motion or length of stride because it is lower than the ribcage. Watch the horse move, looking for a shortening of the stance phase or test for sufficient room by placing your finger between elbow and ribs while the horse takes a stride or two. If you finger gets pinched or pushed out, the elbow is tight.

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Step Two – Front End Apparatus

The freedom of movement of the elbow is particularly important in disciplines where turning, extending, bending and or speed are required. This horse can bend his body through the full range of motion and not make contact between the ribs and elbow. There is no restriction of movement when there is sufficient room between elbow and ribcage.

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Step Two – Pillar of Support

Where to find it: For our purposes, we'll use a line through the groove of the forearm (from knee toward elbow height), and we'll extend the line up to the top of the horse and down to the ground. We will use the groove in the foreleg as a guide because it is easy to discern, and we'll call this line the pillar of support because it really *is* the horse's pillar of support for the forequarters.

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Step Two – Pillar of Support

How it works: the more weight in front of the line depicting the upper portion of the pillar of support (from the elbow level upwards), the heavier on the forehand the horse will be. Conversely, the less weight in front of the line, the lighter on the forehand he will be.

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Step Two – Pillar of Support

The more substance (which equals weight) in from of his pillar of support, the more work the horse has to do to elevate the forehand. For some sports and disciplines that directly affects soundness as well as competition results. For racehorses, lightness dramatically reduces the amount of concussion experienced by the forelimbs at racing speed.

While some people use the withers as a guideline, that is not as accurate as determining the amount of horse (weight) in front of the pillar of support. The line may emerge at the same distance in front of the withers on two horses, but the horse with the lower point of shoulder and a longer humerus will generally be heavier on the forehand than the horse with a higher point of shoulder and/or shorter humerus. Length of shoulder and thickness of the neck at the base also affect lightness of the forehand.

Step Two – Pillar of Support

If the lower portion of the line passes through the heel of the hoof, the horse does not have undue stress on his suspensory apparatus (the internal bones of his hoof as well as the tendons and ligaments of the lower foreleg.

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Step Two – Pillar of Support

If the line indicating the pillar of support from the knee down emerges a substantial distance behind the hoof, the stress on the suspensory apparatus and fetlocks is increased.

Anything that normally adds stress to the suspensory apparatus – being heavy on the fore hand, speed, sudden deceleration, landing after a jump – is magnified if the line emerges behind the heel.

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Step Two – Pillar of Support

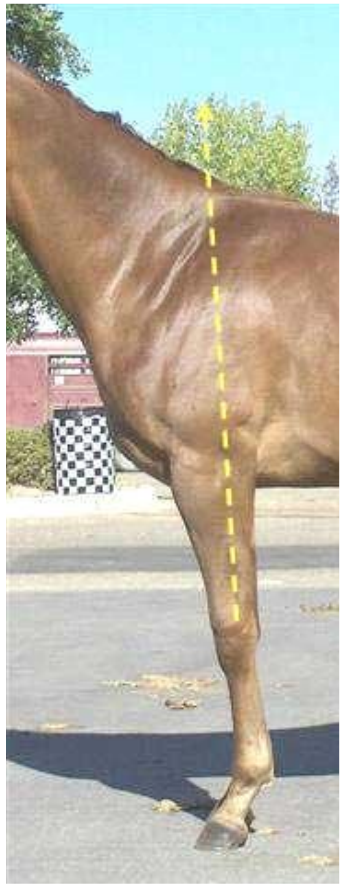
Some conditions conformation books refer to as leg faults – crooked legs, over at the knee, and so on – do not necessarily affect function. Some successful competition horses may have deviations of one or more forelimbs – not a staggering huge one – but they are not stressing it as much as a horse with straight legs that is heavy on the forehand.

The ideal horse may be straight-legged and light on the forehand, but a horse with a deviation of one or both forelegs is not necessarily prone to unsoundness….if he is built naturally light on the forehand.

Step Two – Pillar of Support

The youngster in this photo has a pillar of support that emerges just ahead of his withers and he has a lot of horse in front of that line. You may actually see that he has been using the muscles on the underside of his neck to help him lighten his forehand.

The lower portion of the line emerges behind his heel, making him more prone to suspensory injuries. Although one of the top sellers at a yearling sale, he did not come close to returning his purchase price. His particular combination of being heavy in front of the pillar of support and the emergence of the line so far behind the heel contributed to his failure as a racehorse



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Step Two – Pillar of Support

Variation: We typically look at the front legs straight on. From that view we make our assessment regarding soundness, and we would likely eliminate this horse as being severely toed-in, yet she stayed sound through a brief stint at the track and a long life as an amateur dressage mount.

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Step Two – Pillar of Support

This horse was still jumping grand prix courses at the ripe old age of 22 even though he was not raced due to very crooked right front leg. If we change our perspective to the side view, we get a much better picture of the amount of stress put on the forelimbs and therefore can make better predictions about soundness.

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Step Two – Pillar of Support

This horses pillar of support emerges just barely in front of his withers and he has a fair amount of horse in front of the line. As a result, he is a bit heavy on the forehand, something that is not always a disadvantage as a show hunter. Because the lower portion of the pillar of support touches his heel, he does not have undue stress on his suspensory apparatus (the inner bones of his hoof as well as the tendons and ligaments of the lower forelegs) even though he has a short pastern.

Step Two – Pillar of Support

This horse's pillar of support emerges further in front of his withers than the first horses and he has less horse in front of it. He is lighter on the forehand, and, because the pillar of support passes through his heel before reaching the ground, he has little undue stress to his suspensory apparatus. He continued eventing as a 16 year old, which is definitely beating the odds in that demanding sport.

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Step Two – Pillar of Support

He is the lightest on the forehand of the three. His pillar of support emerges well in front of the withers and there is very little horse in front of it. The lower portion also passes through his heel.

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Step Three

Please note that the previous mentioned conformational points can be described as key elements in function in objective terms. Fortunately we can train ourselves to look for them. We can look at the photos of top performers in our sport or discipline of choice and easily spot the common traits among them based on measurable points. We can compare those points with other horses to determine if they are the same, similar or quite different**.**

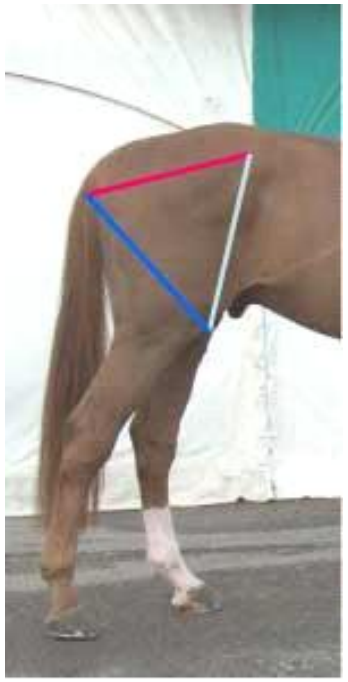
For our purposes, we'll use three increments for each of the points of functional conformation covered in this course.

Step Three – Rear Triangle

short ilium

short femur,

equilateral.



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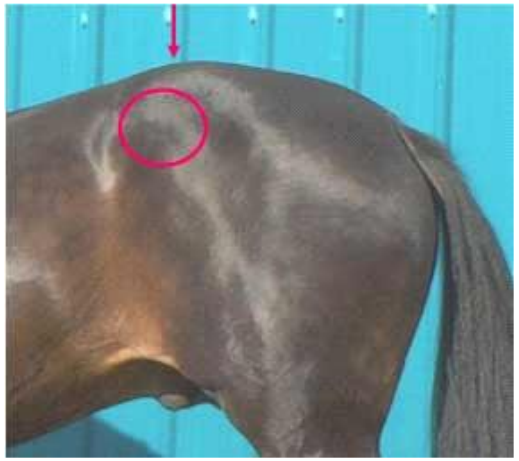
Step Three - LS

Perfect

Close



Poor

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Step Three - Stifle

Low

Distance – low stifle

Mid range

Miler – medium stifle

Sprinter – high stifle

High

AQHA mare – high stifle

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Step Three – Point of Shoulder

Low

Medium

High

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Step Three - Humerus

Can be long, medium or short (beyond the scope of this course)

Step Three – Pillar of Support

Light

Medium

Heavy

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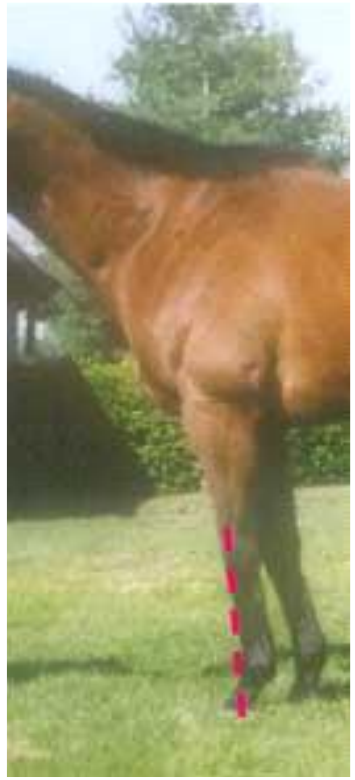
Step Three – Pillar of Support (bottom)

Good

Behind



Forward

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Step Four

We also need to understand the degrees of athleticism required for various pursuits, the discipline specific aspects of conformation as well as establish what we expect from horses.

In general terms, we want the jumper to be able to spring off the ground and clear obstacles – both high and wide. From a dressage horse or reiner we want the ability to support a higher percentage of body weight on the hindquarters and have a full range of motion up front. We want eventers to do a bit of dressage, a lot of jumping and have a efficient ground-covering gallop. We want a show hunter to display a certain form over fences and move a particular way on the flat. We want the bucking horse to kick high and land with a jolt on his front legs that can dislodge a rider. We want a racehorse to cover a particular distance in the best time – either at the track or in an endurance event.

Step Four

Samples of Discipline-Specific Construction

Unless otherwise stated, all of the following disciplines require good LS placement lightness of the forehand and the bottom of the pillar of support emerging close to the rear quarter of the heel, especially at the upper levels of competition.

Stifle placement is a key in assessing distance preferences in a racehorse. To illustrate, the photos (next slide) of the basic categories of racehorses – by distance – show that sprinters have high stifles, milers have mid-range stifles and stayers (classic distance runners) have lower stifles. These differences are also important to remember for the functional descriptions of other disciplines.

Step Four - Racing

Distance – low stifle

Low Stifle

Miler – medium stifle

Medium Stifle

AQHA mare – high stifle

High Stifle

Sprinter – high stifle

High Stifle

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Step Four - Jumper

Grand Prix jumpers have stifles that are well below the level of the sheath on a male horse and often considerably lower than those of a distance racehorse. For the jumper this stifle placement aids in scope, the ability to clear fences of considerable height and or width. In simple terms, the higher the stifle, the less height and or width the horse can clear, the less scope he will have.

The rear triangle of successful jumpers is very close to equilateral with the length of ilium, length of femur and distance from stifle to point of hip measuring about the same. They also have a high point of shoulder and are light in front of the pillar of support.

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Step Four - Dressage

Dressage horses have stifles placed similarly to the milers, mid-range (at or just below the level of the sheath) and not as low as the jumpers. The compression of the hindquarters that is required for collection at the upper levels is easier to sustain if the angles don't have to be closed as much as they would with a lower stifle. If the stifles are too high in a dressage candidate, extension is difficult.

The ilium is usually on the short side of their rear triangle. Horses with a shorter femur (compared to the ilium) and a longer tibia will move with their hocks out behind them and are highly susceptible to injury in this sport. They also have a high point of shoulder and are light in front of the pillar of support.

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Step Four - Driving

There are several types of driving horse – from draft types to show types – and several levels of performance from pleasure to World Equestrian Games competition. Naturally, the heavier the load and the higher the level of competition, the closer the LS has to be to ideal. Horses that have less than ideal LS are heavy on the forehand or have other conformational weaknesses for riding often cope well as non-competitive driving horses.

The mare in the photo is a prime example of the short side of the triangle. Her point of shoulder is low and there is a lot of horse in front of her pillar of support. She would be heavy on the forehand, and is probably very rough to ride at the trot, because she is built to have a longer stride up front than she does behind. This means she would bounce her hindquarters up and pitch the rider forward at a trot, adding the heaviness of the forehand. She was quite successful at a provincial level in combined driving.

Step Four - Eventer

Like the jumpers, eventers need a stifle away from their bodies for scope. It certainly would not be advantageous to be shy of scope when jumping solid objects at speed in cross country. A low stifle also aids in a ground-covering stride cross country, which is an advantage for making optimum time established by the course designer

Step Four - Eventer

The rear triangle of top eventers usually has the measurement from point of hip to stifle as the longest side. Horses that do well in the dressage phase generally have the ilium as the short side, and horses that are better in the jumping portions have ilium and femur measurements that are equal or close to equal. They also have a high point of shoulder and are light in front of the pillar of support.

Field hunters most closely resemble eventers, and most often those eventers that excel in cross country. However, dressage traits are not required for a field hunter.

Step Four – Recreation and Pleasure Horse

LS Placement in a recreational horse doesn't have to be as good as it does in a top athletic horse. We have lower expectations; we don't expect our horses to jump giant fences, slide to a perfect stop or cover a measured distance in a particular time frame. However, the better the LS placement is, the lower the risk of strain and or pain in that region.

Other aspects of functional conformation are matters of personal preference and type of activities – light on the forehand or not, able to collect or not, able to extend or not, degree of agility and so on.

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Step Four – Show Hunters

Show hunters vary widely in the construction of their hindquarters. Those that do well in the 4 foot division have lower stifles, which makes sense, because they need a fair amount of scope. The lower the stifle, the more scope the horse has. Those without the low stifle placement of the jumper or the eventer will not be able to compete as successfully over the larger fences, but they can do quite well over the lower fences or on the flat…if the front end is built for hunter form and movement. Those with a hindquarter construction more closely resembling a dressage horse (as determined by ilium/femur relation and stifle placement) do very well on the flat but are often limited in their scope over higher fences.

Step Four – Show Hunters

Although scope is not a necessity in classes over fences at lower heights, it can help compensate for a poor take-off spot, and many of the top hunter trainers actively seek scope in prospects.

Hunters tend to have lower points of shoulder than jumpers, eventers and dressage horses, which contribute to hunter form and hunter movement. Hunters can also be heavier on the forehand than other English Disciplines – but not too heavy.

Step Four – Barrel Racer

When viewed from the side, the top barrel horses have a stifle placement that is just below the level of the sheath. This stifle placement is lower than many quarter horses would normally posess (ie; pure sprinters, bull dogging horses, roping horses), which produces a longer stride, and in a timed event, that can be a advantage, but the real advantage for the stifle placement is the way they can run the turns.

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Step Four – Barrel Racer

They plant the hind legs and are in and out of the turn in a gliding motion (if the forehand is light) rather than running around the barrel in several strides. They also eat up the ground between barrels. They have a higher point of shoulder than many other stock types and are light in front of the pillar of support.

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Step Four - Reiner

The top reiners also have a stifle at or just below the bottom of the sheath (miler or dressage placement). The physical structure that provides the ability of a barrel racer to glide through the turns equates well with some aspects of reining. For example think of the limitations of a high stifle would put on the sliding stop or the spin. The horse would not be able to sit as well, something mentioned earlier under Dressage horses.

Lightness of the forehand and a high point of shoulder are also advantageous for a reining horse.

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Step Four - Vaulting

Vaulters want a horse (or pony) that is similar to a dressage horse in construction, way of going and rhythm, but generally require a wide, flat back in addition.

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Functional Anatomy – Continuing Education

After training ourselves by looking at photo's of stationary subjects, we are better able to apply the same principles to horses in competitions and mobile subjects. At this stage we can look at a competitor and make predictions about the horses performance, which is a great way to test our knowledge.

If anyone is interested in learning more, www.jwequine.com offers a few articles on functional conformation as well as a schedule of clinics and seminars. In-depth online courses and internship opportunities will be available in the future, and information on these courses will be posted on this website as they come available.

Congratulations!
You have completed
the JW Equine Functional Conformation
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