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FORM FOLLOWS FUNCTION? HOW DOES CONFORMATION EFFECT THE PERFORMANCE HORSE?

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In learning to evaluate conformation, you need a good understanding of all the factors that should be considered when you thoroughly evaluate each individual. The factors can be categorized under a series of major selection criteria: BALANCE, MUSCLING, STRUCTURAL CORRECTNESS and QUALITY. Travel is considered under structural correctness since the horse's structure will directly determine how it will travel. This system was developed to logically organize all selection factors, making them not only easier to learn, but easier to recall when evaluating a horse.

Balance

Balance is one of the most important selection criteria, but sometimes the most difficult to comprehend or visualize. It is defined as the way a unit's component parts fit together to form the functioning whole, or the blending of parts to form the entire horse. Balance is evaluated from the side, from 25 to 30 ft away.

A well balanced horse (Figure 1) should have a long neck, a long sloping shoulder, a long hip, a deep heartgirth and hindrib and should be relatively short in the back compared to the underline. A poorly balanced horse, on the other hand, may have some areas which are relatively shorter or longer than others. For example, a poorly balanced horse may have a short neck, a short steep shoulder, a long back, a short hip and/or be hollow in either its heartgirth or hindrib.

Length of neck is important, because the horse uses its neck and weight of its head as a counterbalance to maintain equilibrium during movement. The longer the neck (lever), the more leverage the horse will have while executing maneuvers. For example, the hunter will raise its head and neck just before taking a jump; a cutting horse will bend its neck and orient its head just before changing direction and the reining horse will raise its head and neck during a sliding stop.

Not only is length important, but also trimness and how the neck ties into the forequarter. Horses with long, clean, trim necks that tie smoothly into the withers and high into the forequarter will have more suppleness and flexibility in their movements compared to horses with short, thick, cresty, low tying necks.

Shoulder length and slope are extremely important. Horses with long, well-sloped, well-laid-in shoulders will have a wider range of movement, will give a

smoother ride and will develop less unsoundness in the forelegs. Both length and slope of the shoulder are evaluated by visualizing the scapula's spine (Figure 2). A longer shoulder will permit a greater range of movement by allowing for greater muscular contraction. The result will be a greater efficiency of movement. Since the shoulder bone (scapula) and the arm bone (humerus) work together as part of the "shock absorbing mechanism," it is clear that a well-sloped shoulder will permit more cushion or absorption of the concussive forces during movement than a short, steep shoulder. In addition to length and slope, the shoulder should blend well or be well laid into both the neck and barrel.

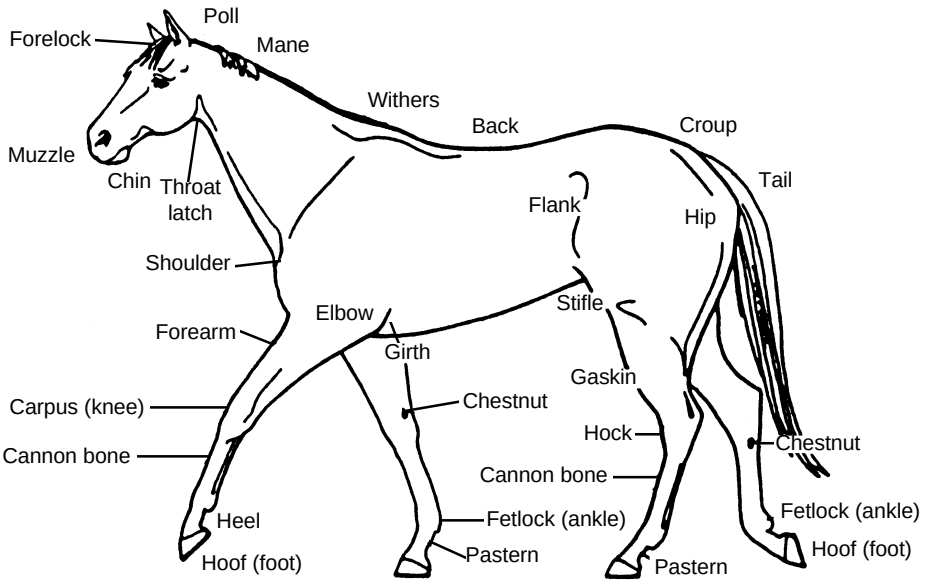

Figure 1. Parts of the Body

The back lies from the withers to the loin (coupling) and should be strong and relatively short compared to the underline (Figure 1). Horses with long, well-sloped shoulders will often give the impression of being short in their backs. A short back will be more capable of withstanding the weight of the rider and equipment and will provide more strength and support for mares while they are carrying their foals. A long underline will permit a longer stride resulting in greater efficiency of movement. Long backs may appear strong in young horses, but will weaken with age and use, leaving the horse weak and sway backed.

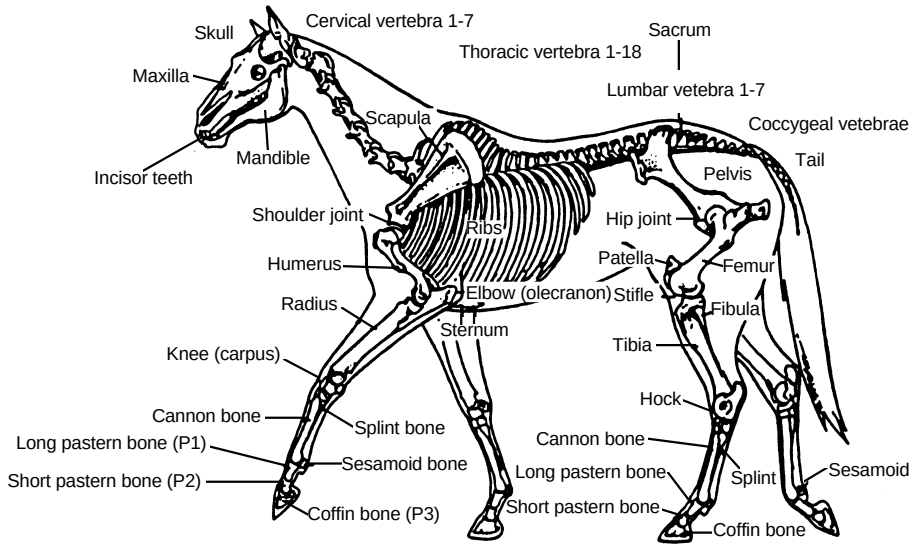

Figure 2. The horse's skeleton

Muscling

All movement originates from the contraction and relaxation of muscle. The horse depends on muscle for a variety of functions: to move its body from one place to another (locomotion), to move food through its digestive system, to run its heart and even to vibrate certain parts of its body that it cannot reach to chase away pests. However, since the horse is an athlete, it is evaluated for the muscling responsible for locomotion and control. Muscling is located over the entire body from the knees and hocks up. However, certain areas of the body should possess additional volume and definition of muscling. These areas are the chest or pectoral region, the forearm, shoulder, loin, croup, stifle and gaskin (Figure 1). The most desirable kind of muscling is long, smooth and deep tying muscle rather than short, bunchy muscling. All 7 of the major muscle mass areas contribute significantly to the horse’s ability to perform as an athlete.

The chest or pectoral region should have ample muscling that carries down the insides of both forelegs and ties smoothly into the knees giving a “V” like appearance. Horses that are wide through the floor of the chest cavity and possess ample muscling will have more extension and lateral movement power than narrow-fronted, light muscled horses.

Evidence of muscling in the forearm will ensure that the horse will have more power and strength during extension. This muscling should be bulging, but long and

should tie down well into the knee.

Ample shoulder muscling is important to bind the foreleg to the trunk. Also, shoulder muscling is useful during jumping and for forward and lateral movement.

A well-muscled loin is important for strength and support to withstand the weight of rider and equipment. Muscles in this region play an important role in coordinating the fore and rear quarters during movement as well as aiding vertical extension and jumping.

A well-muscled loin should not be confused with the undesirable condition known as being "roach backed," when the spine is abnormally elevated in the lumbar area. Light muscling in the loin will permit the back to become weak with age and use. Adequate muscling in the croup will ensure that the horse has sufficient power for impulsion and drive off of the rear quarters as well as for stopping, jumping and backing. Since the obese horse will tend to deposit fat in the area of the croup, the croup should be closely examined to distinguish between fat or muscling.

The horse gets much of its locomotive power from the stifle or thigh area. Therefore, muscling in the stifle is necessary for jumping and stopping and for manipulation of the rear quarters. Horses should be as thick, or thicker through the center of the stifle as they are through the point of the hip. Besides thickness, depth of muscling in the stifle is important. The stifle should tie in deep toward the gaskin from the side view and the quarter should be deep and wide. Horses that lack ample muscling in the stifle will not be as thick through the center of the stifle as they are through the point of the hip.

Gaskin muscling is important for power in the flexion and extension of the rear legs. Muscling in the gaskin should be prominent in both the inside and outside areas and should be tied smoothly into the hock.

Structure, correctness and soundness

Horses should be serviceably sound. Young animals should show no defects in conformation that may lead to unsoundness. You must first know and recognize normal structure and function before you can identify unsoundness. An unsoundness is defined as any deviation in form or function that interferes with an individual's usefulness. A blemish is an abnormality which may detract from an animal's appearance but does not affect his serviceability. Some definitions and locations of unsoundnesses and blemishes are given on the following pages. Examples of blemishes can be wire cuts, rope burns, shoe boils and capped hocks.

For the horse to perform properly he must have sound feet and legs. The feet should be tough, well rounded and roomy with deep open heels. They should be set directly under the knees and hocks and should be straight as viewed from the front and rear.

The legs should be straight and the knees and hocks should be deep, wide and free from coarseness.

The bone should appear flat, be clean, hard and free from puffiness. It should be of adequate strength and substance to properly support the horse during strenuous activity. The tendons should be well defined.

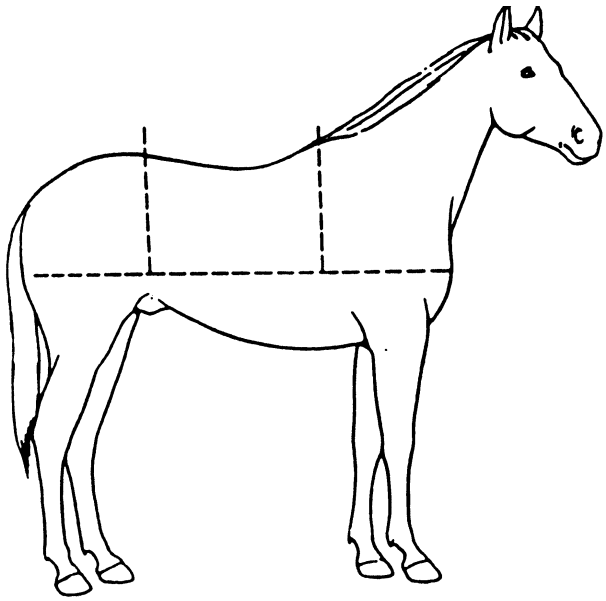

Figure 3. Balance is evaluated by dividing the body into three equal parts

Unsoundnesses and blemishes

As noted before, some conformational variations are unsightly without affecting performance, while others do need to be avoided. Here we will look at the horse from the front, side and rear and look at some of the more common conformational idiosyncrasies.

The Knees

Few horses when viewed from the front have flawless conformation. Because the front legs carry over 60% of the horse's weight, horsemen have long understood the need to avoid some of the conformational defects as being unsuitable for the performance animal. These include:

Bench knees. When the cannons (as viewed from the front) fail to come out of the center of the knees. This fault very often causes large splints to develop.

Bow-knees. Bow-kneed horses often stand over the outside of their front feet. This

faulty position brings undue weight upon the outside position of the front feet, especially the outside lateral cartilages, often causing early formation of "side bones."

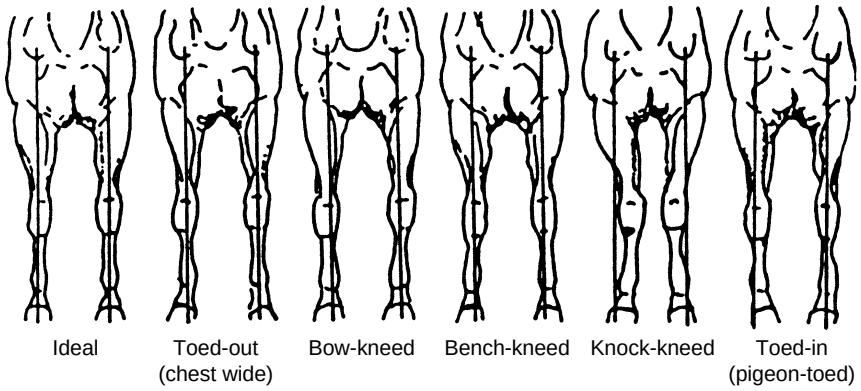

Figure 4. Schematic representation of correct and faulty frontleg conformation.

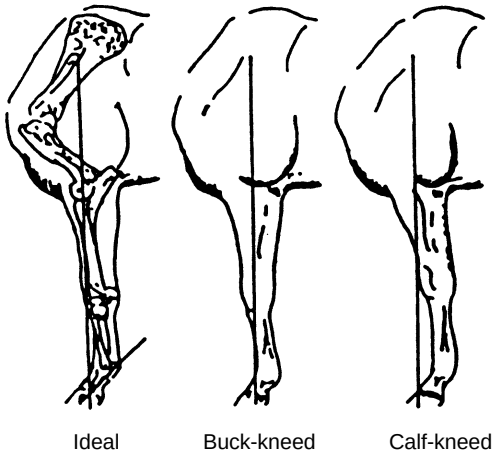

Figure 5. Conformation of the forelimb viewed from the side.

Knock-knees. Horses that stand in at the knees or are too close at the knees. Knock-kneed conditions are caused by the bones of the upper and lower leg not entering and leaving the knee squarely.

Pigeon-toed. A pigeon-toed horse appears to be standing with the aim of the hoof turned toward the center of the body. Such a horse commonly exhibits paddling as a result of this imperfection.

Buck-knees. Buck-kneed horses are ones over-at the knees or whose knees protrude too far forward when viewed from the side. Buck-knees are not considered as severe a fault as calf knees.

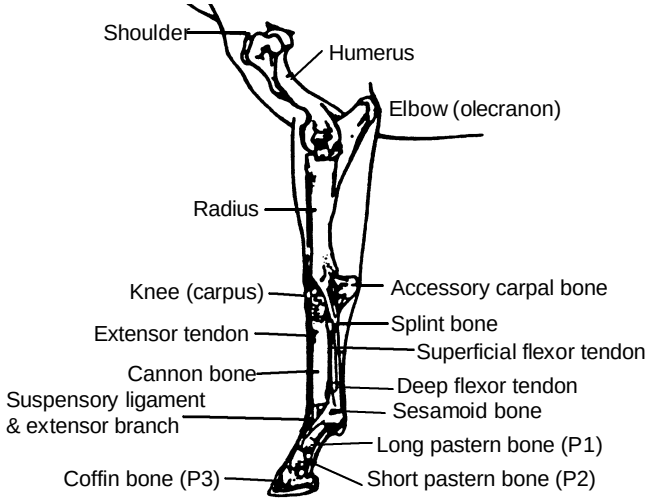

Figure 6. Basic anatomy of the equine forelimb.

Calf-knees. Knees (when viewed from the side) that break backward. They are objectionable because bowed tendons and knee ailments often develop.

The hind legs

Although they do not bear as much weight as the front legs, the hind legs provide the propulsion for the body and conformation is important here also.

Bow-legged. When a horse stands pigeon-toed on its hind feet, with the points of its hocks turned outward, it is said to stand bow-legged behind. Such horses go wide at the hocks, making collected performance impossible. A horse should work with its hocks fairly close together, not wide apart

Cow-hocked. A cow-hocked horse stands with the point of the hocks turned inward, while being base wide and splay-footed.

Camped out. The rear legs are set out behind the back of the hip. Usually starts at the hocks and continues down the lower leg.

Sickle hocked. The rear legs have too much set to the hocks and when viewed from the side, resemble a sickle.

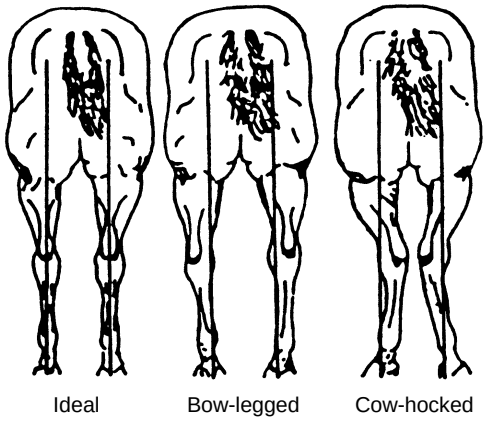

Figure 7. Correct and faulty conformation of the hindlegs (rear view).

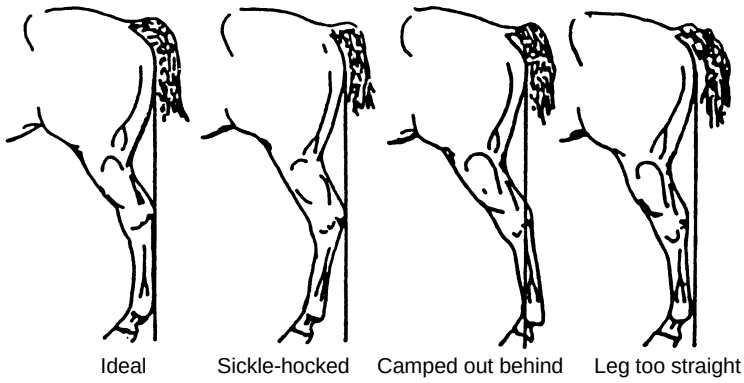

Figure 8. Correct and faulty conformation of the hindlegs (side views).

Other common defects

Blood spavin. An enlarged or varicose vein on the inside of the hock; does not cause lameness.

Bog spavin. A soft filling of the natural depression on the inside and front of the hock.

Bone spavin. A bony enlargement on the inside and front of the hock where the base of the hock tapers into the cannon bone of the lower leg. Bone spavin is an inheritable weakness and one of the most destructive conditions affecting a horse's usefulness. The lameness is most evident when the animal is used following rest.

Bowed tendons. A thickened enlargement of any one or all of a group of tendons and ligaments (usually the superficial flexor tendon, deep flexor tendon and suspensory ligament) which occupy the posterior space in the cannon region between knee and fetlock joint or between hock and fetlock joint. Bowed tendon is the name horsemen apply to ruptured tendon tissue and is more commonly seen on front legs than on rear legs.

Capped hocks, knees and elbows. Swellings located respectively, on the point of the hock, front of the knee and tip of the elbow. They are caused by injuries which result in excess secretion of the synovial fluid.

Curb. Enlargement of the hock tendon or ligament on the upper part of the cannon just below the point of the hock; caused by injury or strain.

Fistula. An inflamed condition in the withers region, commonly thought caused by bruising. Fistula and "poll evil" are very similar except for location.

Forging. A defect in the way-of-going, characterized by the striking of the supporting forefoot by the striding hindfoot on the same side.

Founder (laminitis). A serious ailment of the fleshy laminae. It can be caused by overeating, overwork, giving hot animals too much cold water or inflammation of the uterus following foaling. All feet may be affected, but the front ones are more susceptible.

Hernia or rupture. The protrusion of any internal organ through the wall of its containing cavity. It usually means passing part of the intestine through an opening in the abdominal muscle. A hernia is a genetic imperfection.

Hip down. Fracture of the hip bone with a falling away; may cause lameness with a crooked hitching gait; due to injury.

Interfering. A defect in the way-of-going, characterized by the striking of the fetlock or cannon of the supporting leg by the opposite foot that is in motion.

Navicular disease. Inflammation of the navicular bone area due to faulty conformation caused by excessive concussion to the foot (nerved horses are considered unsound).

Osselet. Abnormal bony growth at the fetlock joint.

Parrot mouth. A hereditary imperfection in how the teeth come together It is caused by the lower jaw beng shorter than the upper jaw (also known as "overbite"). The reverse of this condition, "monkey mouth" or "underbite," is caused by the lower jaw being longer than the upper jaw.

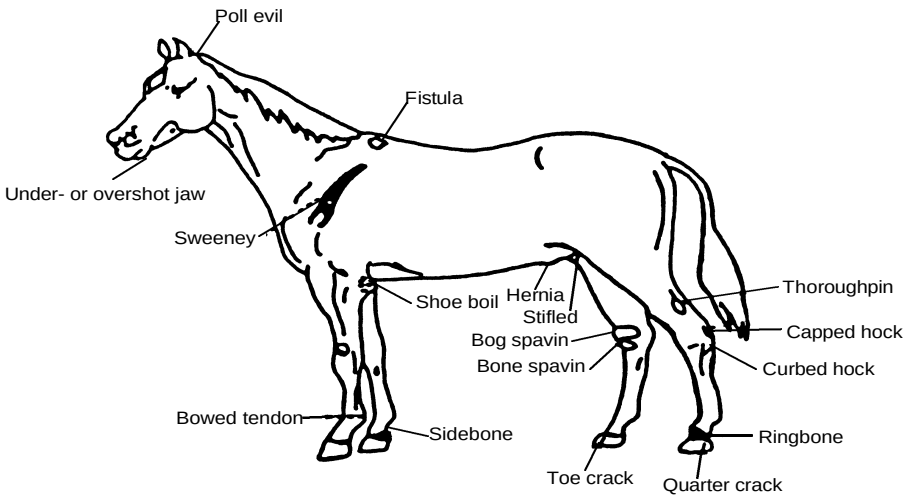

Figure 9. Some common blemishes and unsoundnesses of the horse.

Ringbone. Bony enlargement near the coronary band which may involve the pastern joint or coffin joint; usually associated with stress and faulty conformation.

Sidebone. Loss of flexibility of the lateral cartilages usually in the forefeet caused by ossification; excessive concussion and poor conformation contribute to the condition.

Splint. Calcification between the splint and cannon bones due to injury, stress or faulty conformation.

Stifled. Dislocation of the patella causing a fixation of the leg in an extended position due to injury; faulty conformation may be a contributing factor.

Sweeney. Atrophy or degeneration of the shoulder muscle(s) due to loss of nerve supply.

Thoroughpin. A puffy condition in the hollow of the hock. The puff can be seen mostly on the outside, but is movable when palpated. Thoroughpin rarely causes lameness.

Windpuff. A puffy enlargement of the pastern joint, also referred to as "windgall." The enlargement is a fluid filled distension of the bursa (joint sac or capsule).

Travel or way of going

Although the degree of action of the horse will vary somewhat with the type and breed, the usefulness of all horses depends on their action and their ability to move in various types of racing, driving, hunting and riding. In all types and breeds, the motion should be straight and true with a long swift and elastic stride.

Length. Distance from the point of breaking over to the point of contact of the same foot.

Directness or trueness. The line in which the foot is carried forward during the stride.

Spring. Manner in which the weight is settled upon the supporting structure at the completion of the stride.

Step. The distance between imprints of the two forelegs or two hindlegs.

Stride. The distance between successive imprints of the same foot.

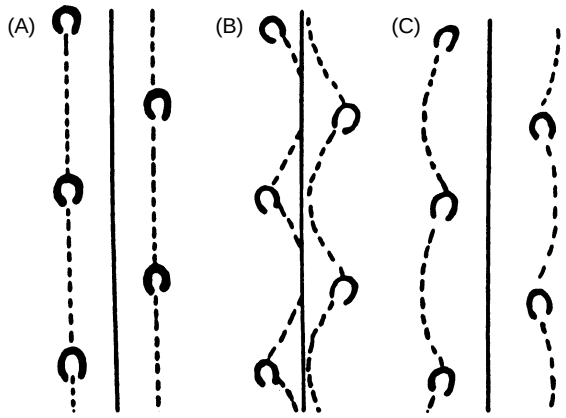

Figure 10. A. Normal foot moves in a straight line.
B. "Base-wide," or "Toed-out" feet move forward in inward arcs, "winging."
C. "Base Narrow," or "Pigeon Toed" feet move forward in wide outward arcs, "paddling."

Evaluating travel is a challenge similar to evaluating structural correctness in that deviations in the flight of the feet may range from slight to severe with some deviations being more serious than others. For example, both dishing (winging in) and paddling out are common deviations. However, dishing is a much more serious fault. If the condition is severe enough, interference between the supporting and striding legs and feet may occur.

In addition to evaluating trueness of stride, you should also observe length of stride. A short, choppy stride will result in poor ground coverage and a rough gait. Conversely, an extremely long, over reaching stride may lead to interference between the fore and rear feet and legs.

The following are some of the most common traveling faults typically associated with or caused by structural deviations. It is not uncommon for a structurally correct horse to be faulty in its movement or for a structurally incorrect horse to move in a fairly true manner.

Paddling out is commonly associated with horses that stand pigeon-toed or toed-in. The flight path of the feet tend to follow an outward arc.

Dishing (winging in) is commonly associated with horses that stand splay-footed or toed-out. The flight path of the feet tend to follow an inward arc.

Winding (rope walking) is a twisting of the striding leg and foot around the supporting leg and foot. The tracks appear very close or nearly in a straight line

Forging is the contact between the sole or shoe of the fore foot with the toe of the rear foot due to over reach.

Scalping is another form of over-reaching in which there is contact between the coronary band of the hind foot and the toe of the fore foot.