The importance of correct leg conformation

The better the horse's body is attuned to the breeding goal- the sport - the easier the requested job can be done. And just as important: with less chance of injuries. That is why it is important as a breeder or rider to be able to assess the different body parts, and what effect the conformation has on the performance of the horse under saddle. In this article we focus on the leg conformation

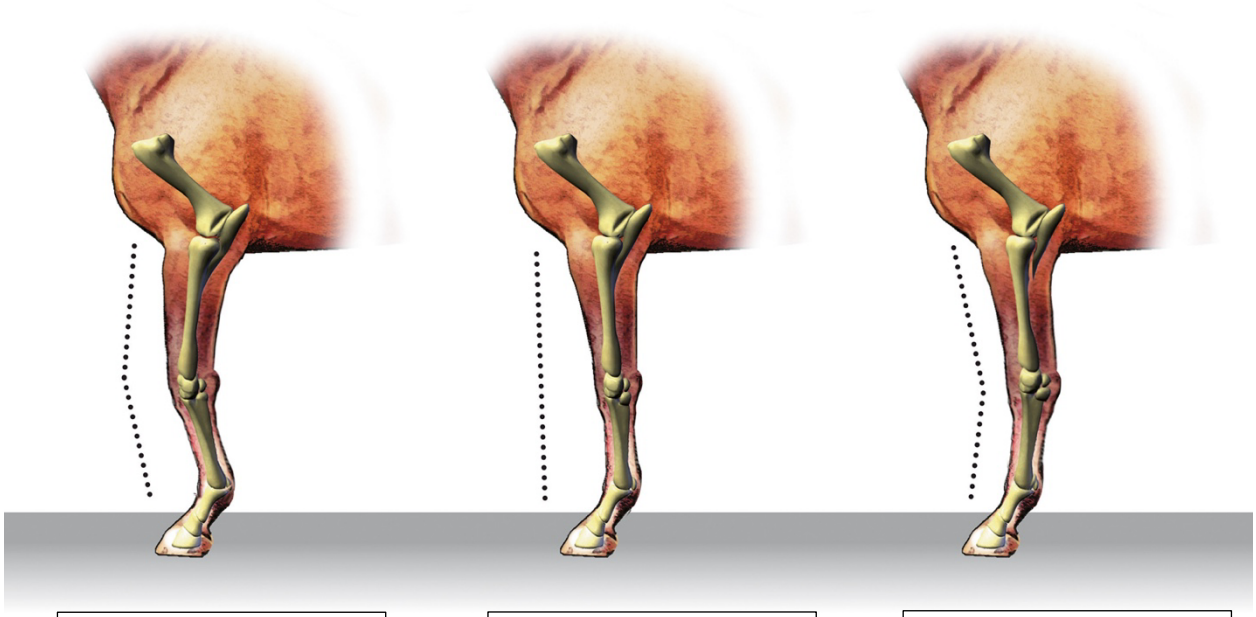
Text: Charlotte Dekker, translation by KWPN-NA
Image: Duco de Vries and others

Lean legs, curb, a weak pastern position: these are frequently heard terms, but what do they mean exactly? And: why does the KWPN find it so important to meticulously assess every part of a horse's foundation? The answer is simple: because we want to breed healthy horses that can handle the demand – the sport performance – well, and for more than just a few years. A horse's foundation is a critical factor from a sustainability point of view. After all, sport horses are all about movement, where we strive for the highest achievable. That is why we are particularly attentive to the risk of wear and tear in the legwork. With the correct position of the legs, the joints, ligaments, and tendons are loaded as evenly as possible. And that reduces the risk of injury.

Stance of the front leg

Marian Dorresteijn, a member of the Dressage Stallion Selection Committee for many years and still active as a jury member, explains: “The foundation of a horse is extremely important. We would like a horse that is healthy and strong, and that is only possible if the foundation, the legs, are set correctly. When assessing the foundation, the four legs, we first look at the front legs. It is important that a horse is squared up. From the side view we look at the position of the front legs, at the angle that the longitudinal axes make with each other through the forearm and the leg. If we have a horse that stands with the front knee forward, we call that ‘over at the knee’ (in Dutch: ‘bokbenig’). If the line at the level of the front knee tends to the back, then we speak of ‘back at the knee’ (in Dutch: ‘hol’). Both deviations are less desirable because the load on the joints is disproportionate, and this can make the horse more susceptible to injuries of the ligaments and tendons in this area.”

Good to know is that legs that are over at the knee in foals are often temporary; the muscles and tendons at the front of the front knee are then longer than those at the back. With enough exercise, the latter can become a bit longer. But if a horse is still in that position at the age of three, then there is a structural problem.



Over at the knee | Correct stance front leg | Back at the knee

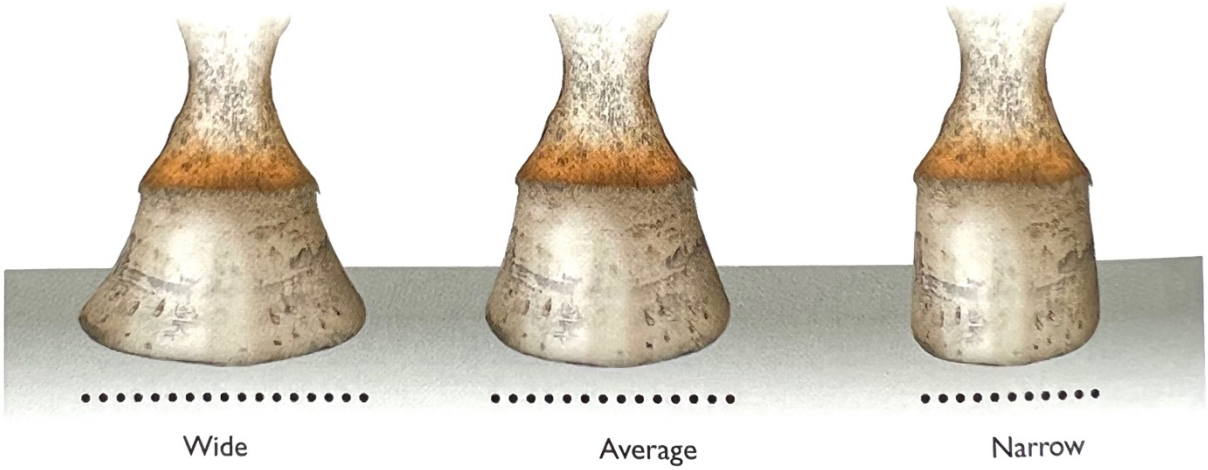
Pastern position

Then the pastern position (in Dutch: kootstand): this is the angle that the pasterns of the legs make with the horizontal. In fact, the pasterns are the horse's shock absorbers. They must be able to optimally dissipate the forces exerted on their legs and therefore have everything to do with comfort. Marian: “With a correct pastern position, the line through the pastern makes an angle of 45 degrees with the bottom. Length is important, but so is position. Horses with long pasterns that have soft pasterns often have a lot of spring in their gaits. But if those pasterns are too long and too weak, they are often susceptible to injury on the ligaments and tendons. Short straight pasterns are strong, but function less in absorbing the movement. We often see in these horses that they have less flexibility in movement. The following applies everywhere: what ‘too’ stands for is not desirable.”

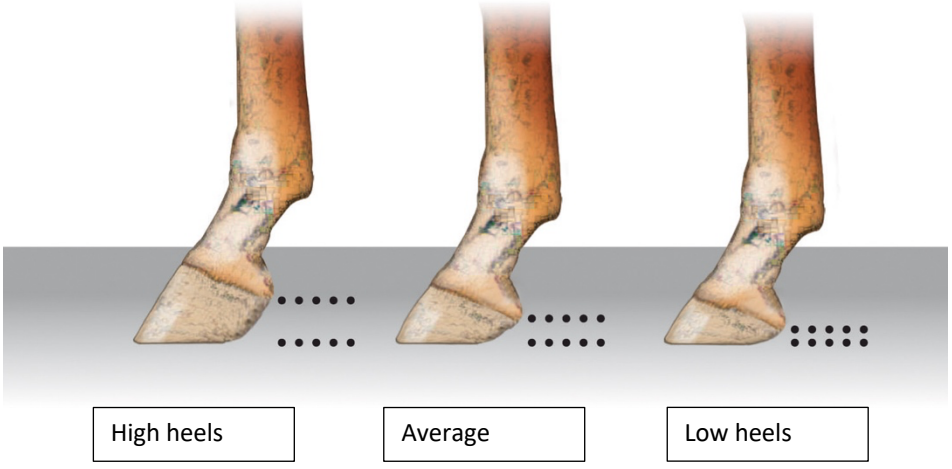
Weak | Correct pastern angle | Upright

Hoof shape

The hoof shape - the relationship between the coronet band (in Dutch: kroonrand) and the carrying surface assessed at the front of the front hooves - is a very functional part of the sport horse. After all, a well-developed, sufficiently wide foot has a larger contact surface with the ground. A narrower foot, especially in combination with high heels, can absorb the forces placed on the legs less smoothly. In addition, slightly flared hooves have a better functioning of the hoof mechanism. Marian: “Considering the hooves, it is important that they are equal in shape and size. If we have one narrow and one wide foot, such a horse will be uneven in the course of movement. And he can keep up with that for a while, but year after year such an uneven load eventually causes wear and tear in, for example, the fetlock, the front knee or the shoulder joint. Equal feet are necessary for an even load and the prevention of injuries, which is why we select strictly on this.”



The heels (in Dutch: verzenen) prevent the foot from sagging. Heels that are too high, however, have a detrimental effect on the shock-absorbing effect of the foot. Just as with the hoof shape, it also applies to the heels that strong inequality is noted as a deviation and is reason for rejection for studbook entry.

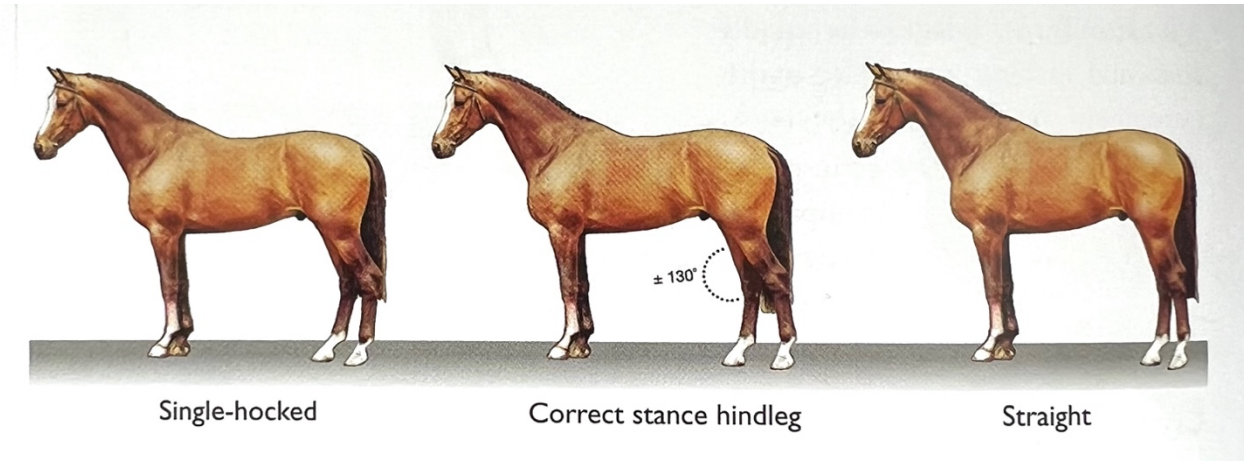


Position of the hind leg

Marian continues with the position of the hind leg. “The whole hindquarters function as one. To be able to put the hind leg well under the body, it must function well in all joints. The angles that the joints make determine how the horse uses the hind leg, so we look at the angle that the longitudinal axes through the gaskin and the cannon bone make with each other, judged from the side. There will always be small deviations, but the important thing is: is the horse functional. Anything that really deviates clearly puts greater strain on the joints. And therefore, also on the ligaments, tendons and muscles.”

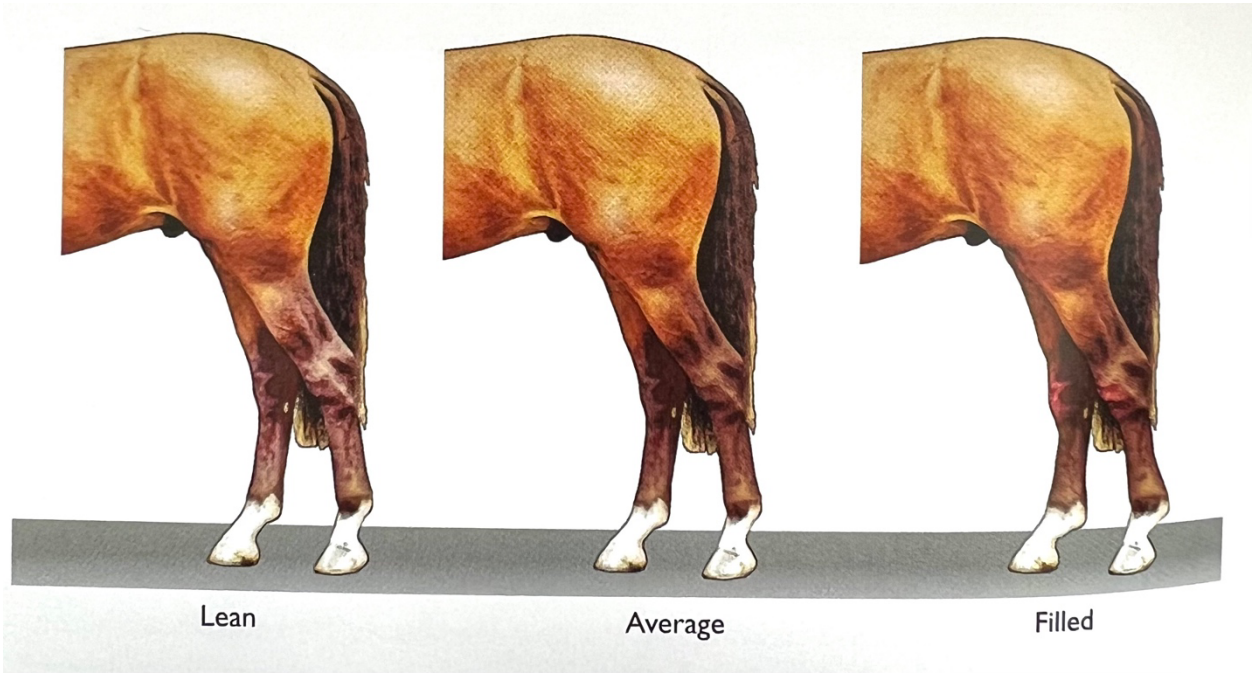
The hind leg acts as a lever mechanism. By opening and closing the three corners (hip, knee, hock) energy is created. Placing the hind legs forward and going up and down the corners in the hindquarters cause a combined forward-upward movement. Imprint and forward drive are inextricably linked. Marian: “The length of the hind leg is also important. To properly assess that, we make a line from the point of the buttock, straight behind the hind leg to the ground. With a horse with a long hind leg, you will often notice that it places the leg out behind. And we want a load-bearing hind leg, so one that is under the mass. We can also draw a line from the hip joint straight down to the toe of the hoof. The horse must of course be square. This also determines a correct position, which must all correspond with each other. The hip bone and back knee should also be in line. This all contributes to the optimal functioning of the hindquarters. If we see a horse that is larger in the angle of the hock, then it has a straight hind leg. He will then have to make that corner somewhere else in the hindquarters. You often see that horses with a straight hind leg have weak pasterns from below. With a sickle hocked hind leg, the angle of the hock joint is clearly smaller.”

Although a straight hind leg is functional for explosive use, it also has disadvantages, especially for dressage sport. With a steep hind leg, exertion puts a lot of pressure on the fetlock and socket joint, which in turn leads to a soft pastern. And it is precisely the soft tissues in the pasterns that are sensitive to wear. A straight hind leg is also often accompanied by less suppleness: very large angles are simply more difficult to open and close than smaller angles.



Harmonious and appropriate

Finally, we look at the overall quality and size of the legs. The quality of the legs is determined by the measure of leanness of the legs (lack of swelling), assessed on the hind legs, because there is more variety there than on the front leg. The quality can be lean, average or filled. The inspection standard states that the KWPN horse needs to have correct and clean legs. With the quality of the legwork, we determine whether all contours of the joints, ligaments and tendons are clearly visible. We call that hard and lean (in Dutch: droog) legs.



The size of the legs can vary from heavy to fine. Marian: “The foundation and conformation must be harmonious and appropriate to the horse. We examine whether the legs, including the various joints, are relatively well developed. The width and length of the hock joint, the front knee and the size of the leg and the transition to the hock joint are examined successively. This should be nice and smooth. This way, the joint can do its supporting work as well as possible and is less susceptible to wear. That is essential for a happy athlete, and that is what we want to see in the show ring.”

Deviations

The front legs can be 'tied in’. This is the case if the leg is narrower below the knee than above the fetlock. Such a cannon bone is less strong and loadable than a straight one. If the front legs are not in a perpendicular line downwards, but more obliquely to the rear, then we speak of ‘camped under’. Finally, there are the deviations in the stance of the front legs: this is the case when the fetlock, when viewed from the front, tends inwards (toed in) or outwards (French or toed out). In both cases, the horse is loaded too one-sidedly, which promotes wear and tear and this also comes at the expense of the stability of the movement.

Various deviations are possible in the hind legs as well. The first is the so-called 'cow hocks' position. This is the case when the hocks are turned too much inward and the knees are turned too much outward. As a result, the joints are subjected to uneven load, which promotes wear and tear and is also at the expense of the strength in the entire leg.
With a tied in hind leg, there is a (too) sharp transition from leg to hock at the front of the hind leg, whereby the latter is often short or poorly developed. And the latter is actually an even bigger problem, because most forces are developed in the joints. We speak of a curb (in Dutch: hazehak), when one of the bones that form the hock is tilted; this becomes visible obliquely at the back of the hock joint. Because an important tendon also runs here, such a tilted bone can lead to lameness more quickly. That is why a curb is a risky deviation. A so-called bone spavin is not noted as an abnormality, because this is only a thickening of the head of the pencil bone and does not entail any objections or limitations.

Selection for performance

The KWPN developed the book 'The KWPN Horse: Selection for performance', which discusses in detail all parts of the linear score form. You can order this book through our office for $20 plus shipping. Email to order: office@kwpn-na.org