

CONFORMATION AND SOUNDNESS IN HORSES

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The structural development of the limbs, size and body proportions that make up an individual horse's **conformation** can influence its balance and movement during exercise. The strength of its limbs and conformation in turn, can influence its overall **soundness** and ability to perform in competition.

Conformation and **soundness** are interrelated in determining the movement, performance and overall quality of a horse during its competitive lifetime.

Soundness can be classified in a number of ways relative to the horse's freedom from lameness, but it can also relate to the horse's suitability for a particular purpose, such as eventing, jumping, polocrosse, hack and dressage competition, which can include other measures of soundness for the purpose, such as boldness, temperament and flow of the stride.

Soundness can also be influenced by factors such as the type of working surface, shoeing, dietary balance, body weight and the exercise program, especially as a horse ages. Accidental injuries such as lower limb lacerations, excessive bone modelling responses and abnormal growth and balance in the hooves can all influence the relative soundness for the purpose. A horse with a minor joint or tendon injury, for example, may not be suitable for upper level equestrian sports, but its soundness as a hack will not be compromised. As horses age, natural 'wear and tear' and other degenerative changes, that are not always related or influenced by conformation, can occur and restrict its suitability for long term training and competition. It is always important to select a horse that is sound and strong if you plan to compete over a few years, rather than try to rehabilitate a horse from the race track which has broken down due to tendon and joint problems and carries the legacy of unsoundness into retirement and equestrian competition.

Splints

Ideally, splints should be appraised on an individual basis, taking into account the location, size and interference with movement, and the overall conformation of the front legs. Most splints in the lower or mid cannon area are 'accidental', resulting from knocks or bumps of everyday life as a horse.

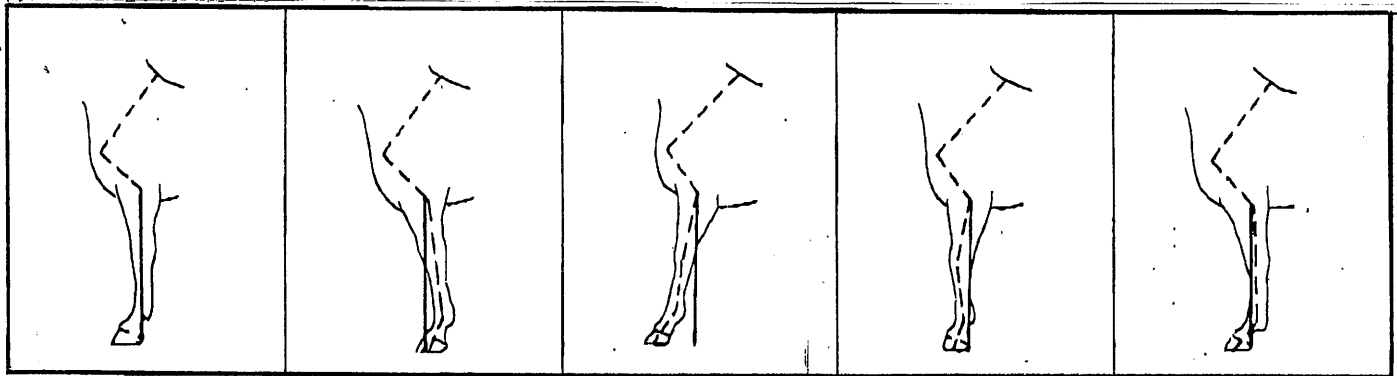
However, in contrast, the majority of splints located on the inside of the upper cannon area which appear to blend into the knee outline, are caused by underlying conformational faults. These include the degree of offset in the cannon bones, the bulk of the shoulders and neck, and the amount of hard work the animal was given in its younger days.

Therefore, lower splints on the canon can be considered a minor 'blemish', but high splints in the knee region, or those found close to tendons, should be appraised in relation to limb conformation and risk of interfering with tendon or knee joint soundness.

FRONT LIMB CONFORMATION

Check the alignment and relationships of the knee and cannon bone of the front limb on both near and offside, standing 3-4 metres to the side, level with front shoulders, and then view from the front.

Side View



IDEAL

"Standing Under"

Predisposes to

- Knee chips
- Fetlock sprain
- Sesamoiditis
- Hoof Concussion

"Standing Over"

Predisposes to:

- Knee sprain
- Tendon strain
- Suspensory strain
- Fetlock sprain

"Sprung Knees"

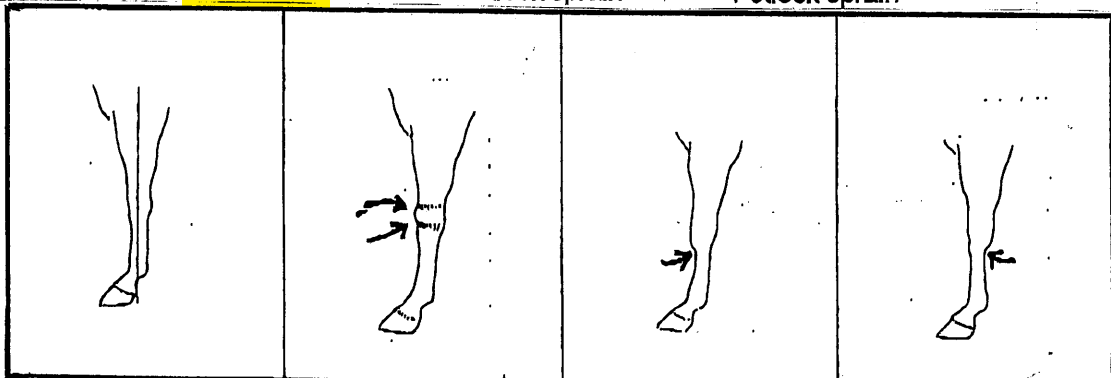
Predisposes to:

- Knee Slabs
- Tendon strain
- Heal bruising
- Sesamoiditis
- Fetlock sprain

"Calf Kneed"

Predisposes to:

- Knee chips
- Knee sprain
- Suspensory strain



IDEAL

"Open Knees"

(Immature)

Slight epiphysitis * - may need more time to mature

"Cut out in Front"

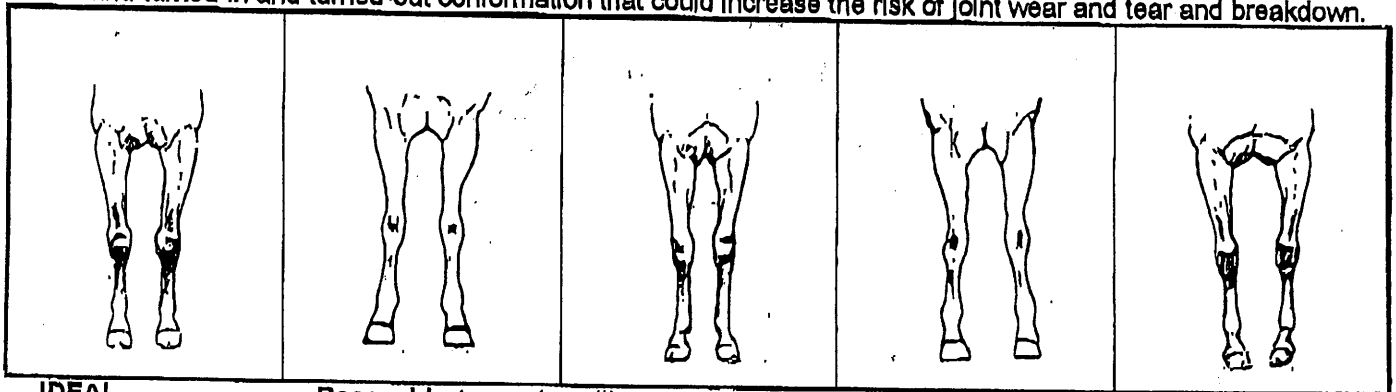
- Knee chips
- Fetlock sprain
- Heel concussion

"Cut In Behind"

- Tendon strain
- Fetlock strain

Front View

It is important to view the front limbs from the front for straightness from the knee and below, symmetry of both limbs and turned-in and turned-out conformation that could increase the risk of joint wear and tear and breakdown.



IDEAL

Base wide-toe out

Predisposes to

- Knee sprains
- Fetlock sprains
- Heel and Inside hoof concussion

"Base narrow-toe out"

Predisposes to:

- Knee sprains
- Fetlock sprains
- Heel concussion
- Tendon strain

Base wide-toe in (pigeon-toed)

Predisposes to:

- Knee sprains
- Fetlock sprains

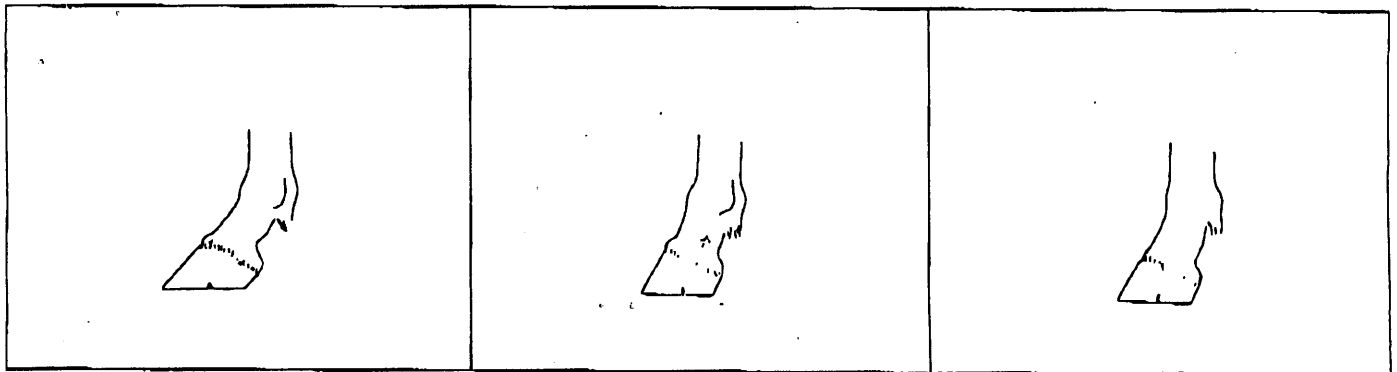
Base Narrow-toe in (pigeon toed)

Predisposes to:

- Knee chips
- Tendon strain
- Fetlock sprains
- Hoof concussion

PASTERN ANGLES

The pastern angles of both the front and rear limbs should be assessed from each side, as short upright pasterns can increase joint concussion and long pasterns pre-dispose to tendon strain and fetlock sprain, particularly if the heels are low.



Normal Pastern Angle

"Short-upright pastern"

Predisposes to:

- Joint concussion
 - **Navicular Disease**
- Accentuated by** high heels and contracted tendons *

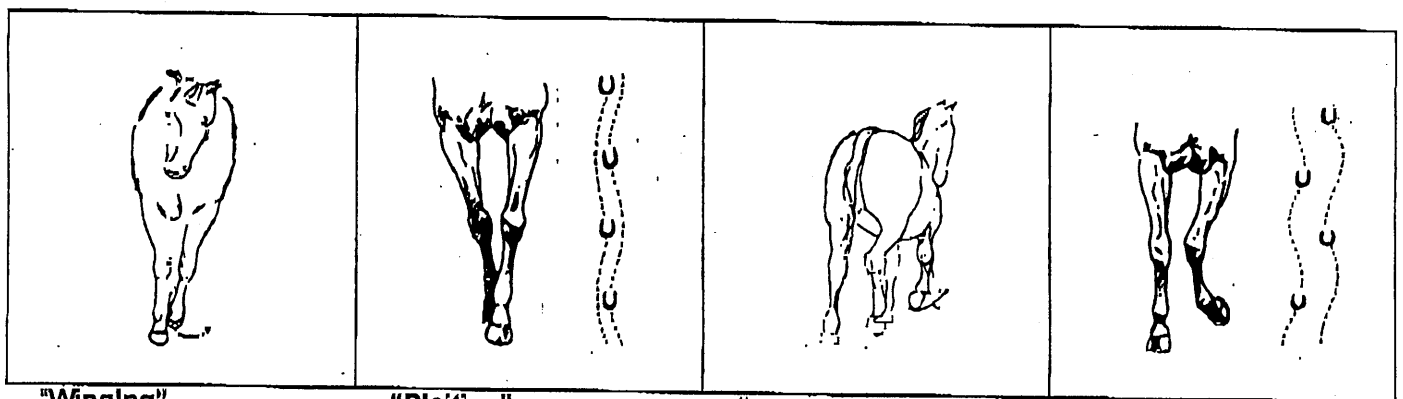
Long upright pasterns and sloping pasterns.

Predisposes to:

- Tendon strain
 - Fetlock sprain
- Accentuated by** low heels

LIMB ALIGNMENT

Observation at the walk to evaluate limb low and straightness, absence of 'paddling', 'plaiting', 'winging' and 'dishing' as poor limb alignment results in higher risk of interference and abnormal joint loading during exercise.



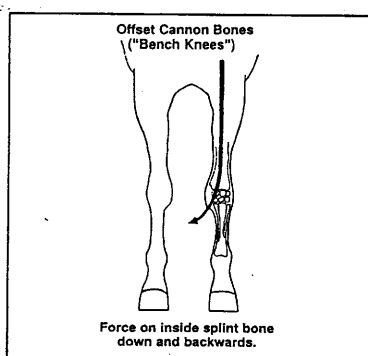
"Winging"

"Plaiting"

"Paddling"

"Dishing"

FRONT LIMB CONFORMATION



Offset Cannon Bones

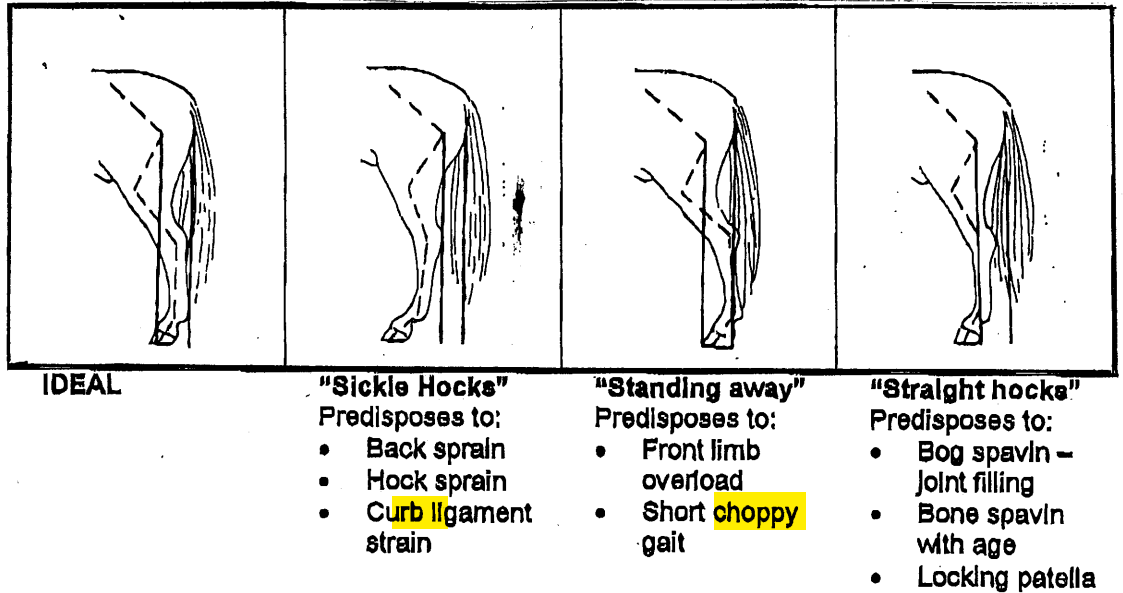
Predispose to

- High splints
- Knee weakness
- Hoof concussion

HINDLIMB CONFORMATION

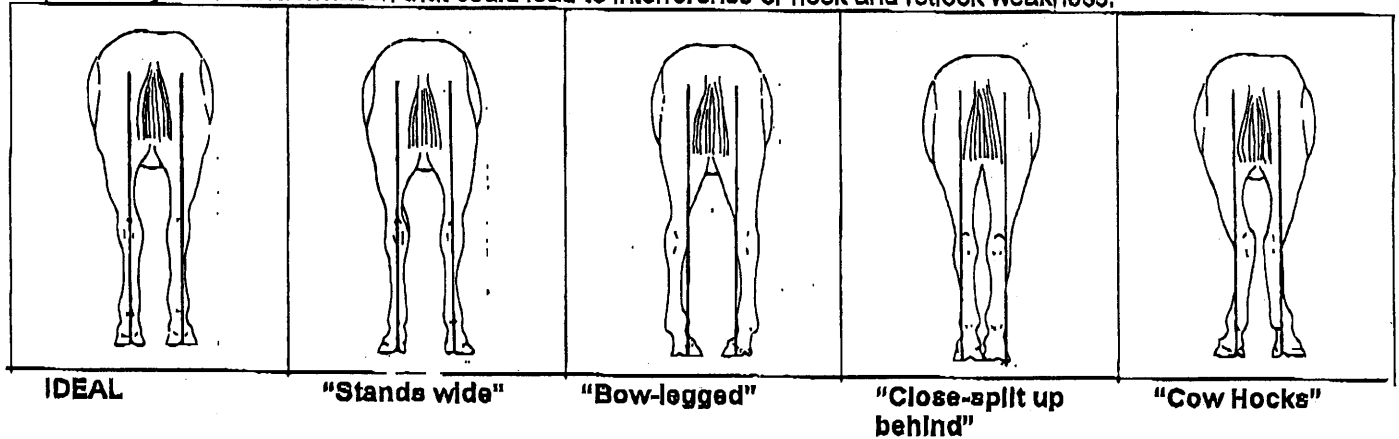
Appraise the alignment and strength of the hindlimbs standing 3-4 metres to the side, level with the hind limbs and rump, evaluating both near and off sides, and then from the rear.

Side View

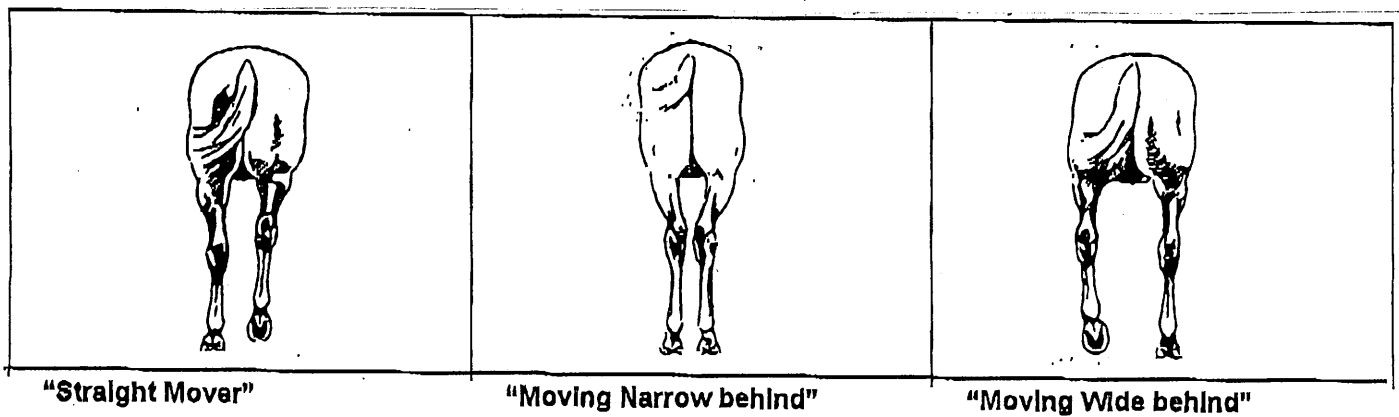


Rear View

It is important to view the hind limbs from the back for straightness, uniformity and symmetry to determine potentially weak conformation that could lead to interference or hock and fetlock weakness.



At the walk from the rear



CONFORMATION AND SOUNDNESS

Location	Conformation	Results In:	Predisposes to:
SHOULDERS	Straight shoulders (often with upright pasterns)	Increased concussion down line of front legs	Joint problems Navicular disease Ringbone Splints
FRONT LEGS	Back at the knees (Calf Knees)	Lag "bows" backward during work.	Knee Chip fractures - racehorses Knee Stress - sprain Suspensory strain
	Over at the Knee (Bucked Knees) (Knee-Sprung)	More weight carried down back of leg	Slab fracture in knee - racehorses. Tendon strain - heavy arena and rider. Heel bruising - corns? Fetlock sprain Sesamoiditis in young, heavy horses. Suspensory strain - extended trot.
	Open Knees (Immature Knees)	Depression over knee area - heavy young Warmbloods	Allow to mature - probably not a long term problem - correct calcium imbalance (eg grazing fertilized Kikuyu pastures.
	Offset Knees (Offset cannon bones) Bench Knees	More weight carried by inside splint - tearing of upper attachment. Breed influences:- - Standardbreds - Thoroughbreds	"High" splints just below knee joint (young horses worked hard - heavy bodyweight). Arthritis in knee joint.
	Long Pasterns (Sloping pasterns)	Pastern angle 45° or less (often hereditary) Aggravated by low heels.	Tendon strain Sesamoiditis/sesamoid fractures Suspensory strain Ringbone? - more often with short, weak pasterns
	Upright pasterns (straight legs)	Most common in horses with straight shoulders and short, solid build. Increases concussion up leg when worked on hard arenas.	Fetlock sprain - old age arthritis Ringbone Navicular disease
	Contracted hoof (Pinched hoof)	Breed influence - Quarter horses.	Navicular disease Toe bruising/pedal osteitis
BACK	Short back	Increased risk of interference and over-reaching	Over-reaching - lacerations - heel bulb bruising
	Long back	Extra weight on lumbo-sacral coupling	Lumbo-sacral arthritis Sacro-illac strain in show jumpers or eventers - "hunters bump" Hock arthritis - bone spavin. Old horses - sway back?
HOCKS	Straight Hocks	Increased stress pathway through hocks and stifle.	Bog spavin. Bone spavin in old age. Locking of patella.
	Sickle Hocks	Increased weight down back of hocks.	Sprain of "curb" ligament - curby hocks.
	Cow Hocks	More load carried on inside of hocks.	Bone spavin in old horses. Often associated with speedy movement - less interference with hind and fore limbs.
	Trailing Hocks	Shorter stride, increased weight on front limbs when working.	Splints on inside of forelegs, shorter strides and more steps to cover distance, choppy gait and could affect stamina in performance horses.
FEET	Toe In (Pigeon Toed)	Often congenital - can be corrected by trimming - <u>gradually</u> . Turned in - trim inside	"Paddling" gait. Corrective shoeing helpful.
	Toe Out (Splay Footed)	Often congenital - can be corrected by hoof trimming - <u>gradually</u> . Turned out - trim outside	Results in gait interference, and risk of tripping and stumbling, and splints. More undesirable than toe in. "Wing to the inside" gait. Corrective shoeing and weighted shoes.