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Anatomy Revision Papers

Part 2

External Structures of the Equine Foot

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(Group 35s)

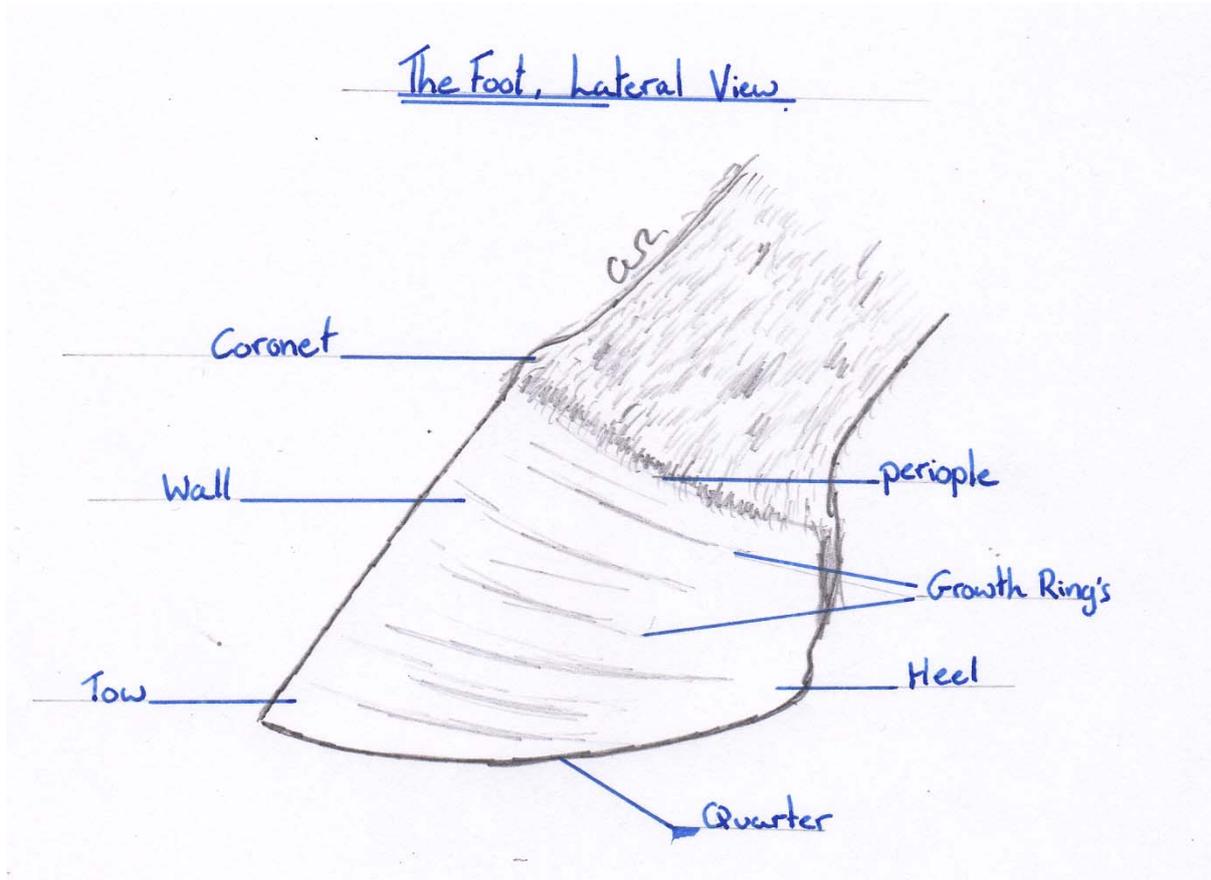




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The Equine Foot



The Equine Foot

The Equine Foot is known as the insensitive foot not because it cannot feel (the horse is however able to feel through the epidermis as the underlying nerves can feel through the wall). It has no blood supply or nerves within it and is a highly Keratinised Epidermis and covers the whole foot from heel to heel. The Periople produces the Stratum Externum that covers the Stratum Internum, The inner horny wall gets nutrition by diffusion from the corium. The horny wall is specialised at weight bearing and is the first structure to impact the ground during locomotion and so is also able to reduce concussion.





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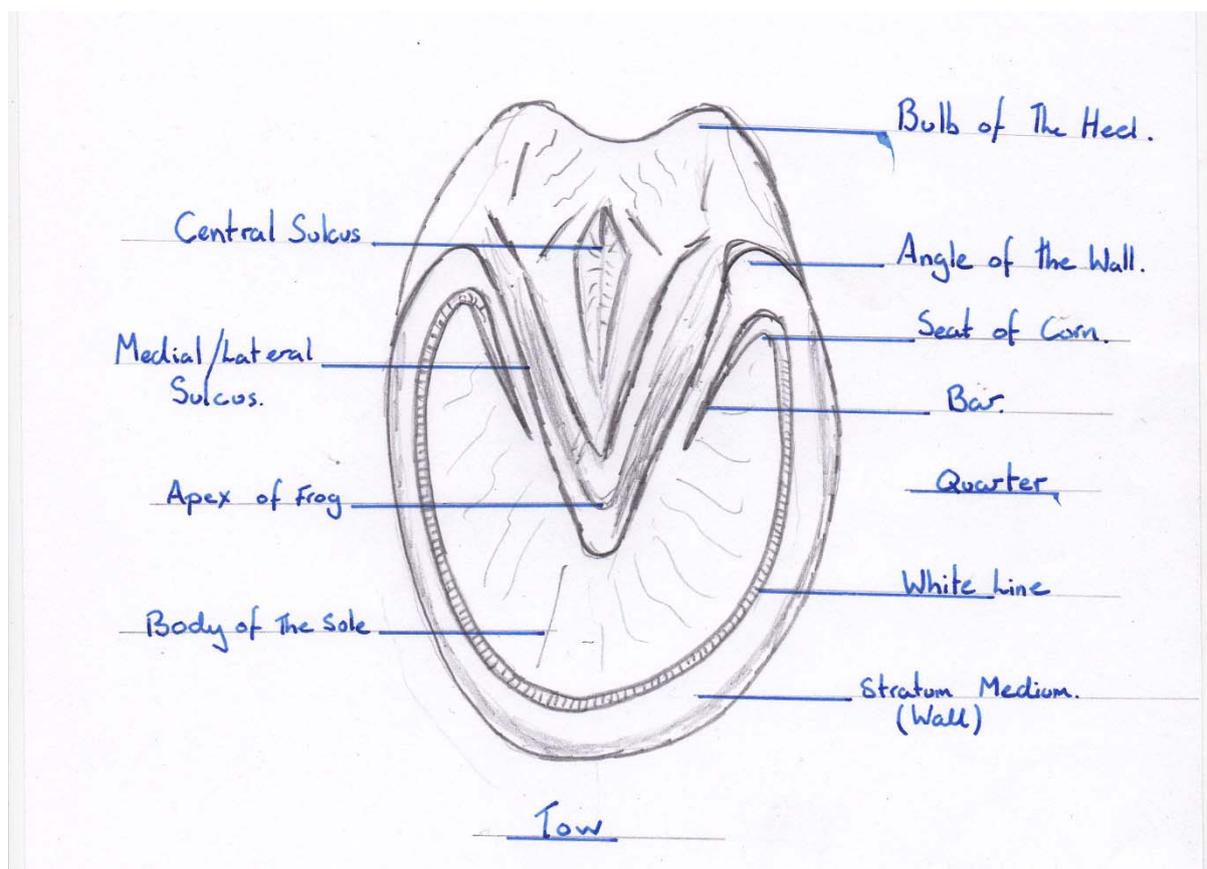
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Function

The foot has several vital functions that it must perform for the horse to stay sound. The functions include

- ✚ Protection for the underlying sensitive structures.
- ✚ Protection from hot and cold temperatures.
- ✚ Protection from Dehydration & infection
- ✚ Grip
- ✚ Reduce Concussion

The Solar Surface



The Solar Surface of the foot has several points of interest that all play an important part in foots function.





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Bulbs of the Heel

There are 2 bulbs of the heel on each foot forming a flexible tissue filling the back of the foot, as they are a continuation of the Periople becoming much wider at the palmar/plantar aspect of the foot than it is across the main wall.

As the heel bulbs also house part of the digital cushion (that is a fibro-elastic pad) they play an important part in the reduction in concussion.

Angle of the Wall (last weight bearing Point)

The last weight bearing point is an important landmark for farriery and in a normal foot is the widest part of the frog, it is the last weight bearing point of the unshod horse and is the point where the horny wall turns inward to form the bars.

Seat of Corn

This is the area between the wall and *Bars* and can cause problems if not looked after during regular shoeing.

Frog

The *Frog* is a rubbery V shaped wedge of soft horn that is not fully keratinised. It consists of 40% moisture and is the most flexible part of the foot. It grows from the corium of the frog and is located on the basal surface of the foot filling the posterior part between the heels and following the line formed by the bars. This area is known as the *Medial and Lateral Sulcus* and are a deep depression that joins the Frog and Sole. This allows for some movement between the heels. The *Central Sulcus* is only a shallow depression located at the widest part of the frog, this contains sweat glands that drain from the digital cushion and allows movement of the heels.

The Apex of the frog is the foremost part of the frog and is a blunt point in the centre of the foot extending just in front of the middle of the foot.

The functions of the frog are

- **Allow Expansion of the heels**
- **To Absorb Concussion**
- **Promote Circulation**
- **Protect the Distal interphalangeal joint & DDFT**
- **Aid in grip on both hard and soft surfaces**





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Body of Sole

The Body of the sole forms the largest part of the ground surface of the foot and is formed by the solar corium, it has a higher moisture content than the hoof wall at 33% allowing it to be more flexible. The internal surface conforms to the same shape as the distal phalanx to which it is attached. The outer surface has a slightly concave form that is more prominent in the hind feet in most breeds, this concave sole does not normally bare weight on the ground surface except near the outer border with the white line. The sole is able to have a hard rigid texture or be thin and yield to pressure again depending on breed and conditions. As the sole is self exfoliating due to the way it is created by the Solar Corium and the fact that it flexes during weight bearing the sole can differ in thickness across different breeds of horses. It is attached to the hoof wall by the White Line.

White Line

The White line is a flexible junction between the sole and Stratum medium (hoof wall) and is located on the ground surface of the foot, this unique bond between the sole and wall travels from heel to heel and acts as an expansion joint allowing the foot to move. This flexibility is achieved by a moisture content of 28%.

The White Line originates from the distal extremity of the sensitive laminae called the Distal Fringe. This unpigmented horn that can be seen on the solar surface of the foot shows the natural shape of the foot and can be used to establish the thickness of the hoof wall.

