

## Lameness Exam - Summary

### LAMENESS

W-J 1; AL 100; M 48; H 609

- **Lameness is a symptom (CS), not a diagnosis**
  - Pain or mechanical interference causes an alteration in a horse's stance or gait
  - To appreciate lameness think of why you have limped in the past (it has allowed you to walk)
- Keep **written records** of everything found on exam

### Occurrence of lameness:

- **Forelimbs:**
  - **Majority (roughly 75%) of lameness** bec. the forelimbs carry **60% of the weight** (more concussive forces) as the horse lands on them while the hindlimbs propel (less true in Standardbreds bec. of their balanced gait, 60% of lameness)
  - **95% below carpus** (proximal end)
- **Hindlimb:**
  - Most below proximal tarsus
  - **Hock >> Stifle**
- **Foot:**
  - **#1 site for lameness**
  - **& should be eliminated 1st**



"the foot is the cause of lameness until proven otherwise" Old saying (M 49)

Don't jump on & treat swelling (carpus, fetlock) w/o eliminating the foot first, or another practitioner m/ use his hoof testers & make you look incompetent!

### Lameness Exam - Summary

- **Systematically** - do the same way every time
- **Record everything!!!**

#### 1. History



#### 2. Try to determine the lame limb on presentation

- At rest (pointing or nonweight bearing)
- Walking (as getting out of trailer & walking to exam area)



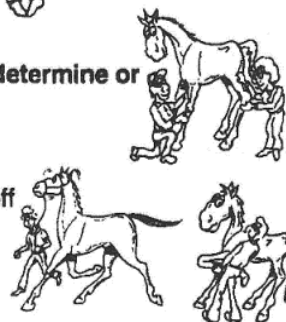
#### 3. Palpate all limbs

- Pare out sole
- Hoof testers
- Palpation



#### 4. Examine in motion to determine or confirm lame limb

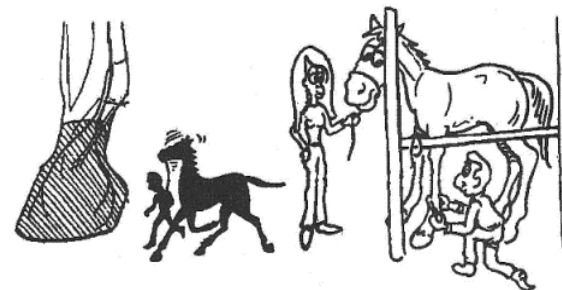
- Hand walking
- Trotting
- Flexion tests & trotting off
- Lunging
- Riding under tack
- Gait analysis



## LAMENESS DIAGNOSIS

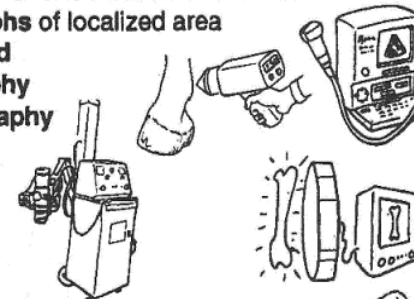
#### 5. Localize site in lame limb

- **Palpation** (for pain & range of motion)
- **Nerve blocks & trotting off** to see if goes sound
- **Joint blocks:** same as nerve blocks



#### 6. Noninvasive to look at localized area

- **Radiographs** of localized area
- **Ultrasound**
- **Scintigraphy**
- **Thermography**

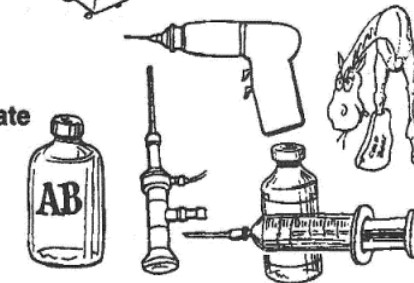


#### 7. Interpret

#### 8. Diagnose

#### 9. Treat

#### 10. Re-evaluate in time



## Hx - At rest - Age

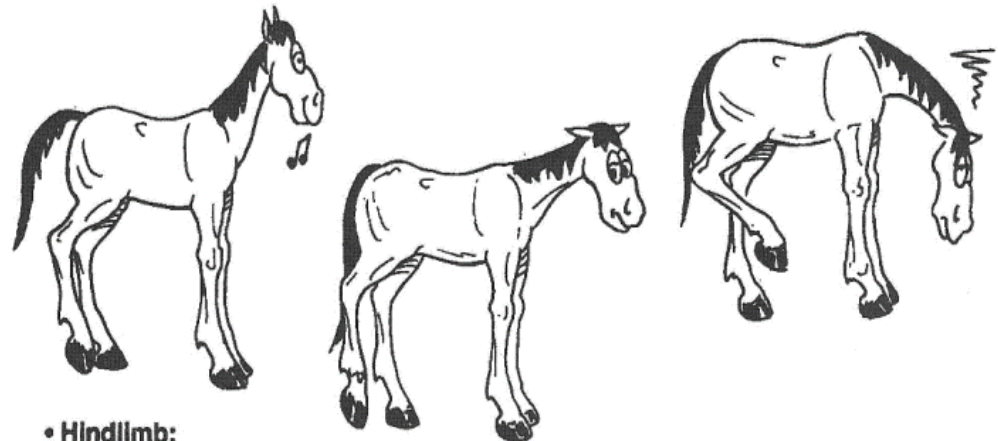
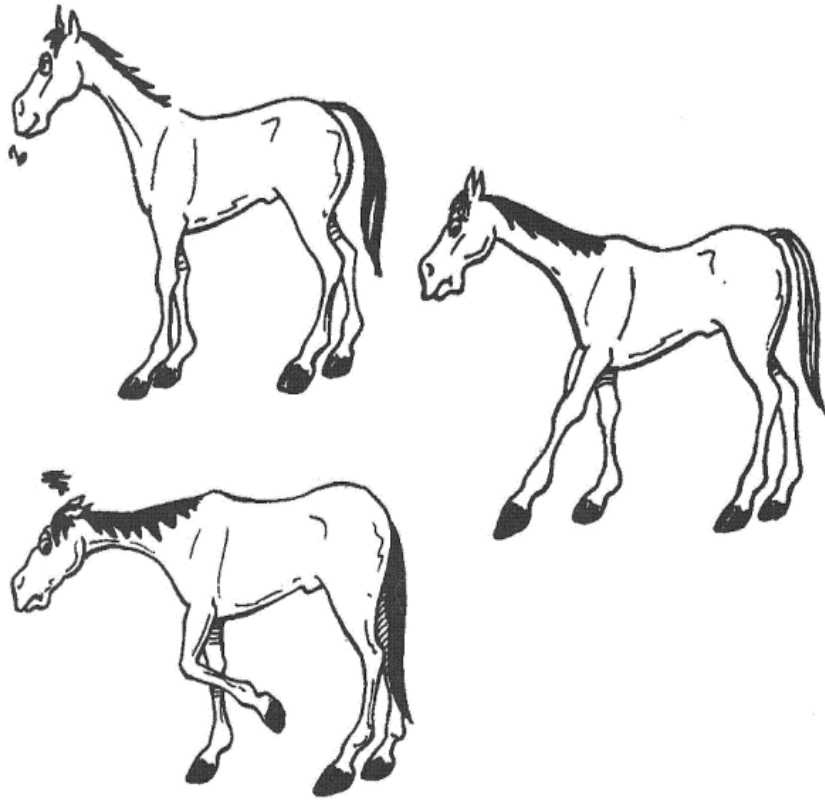
## LAMENESS DIAGNOSIS

### HISTORY - VISUAL EXAMINATION - AT REST

- **Alteration in posture: weight shifting, pointing**

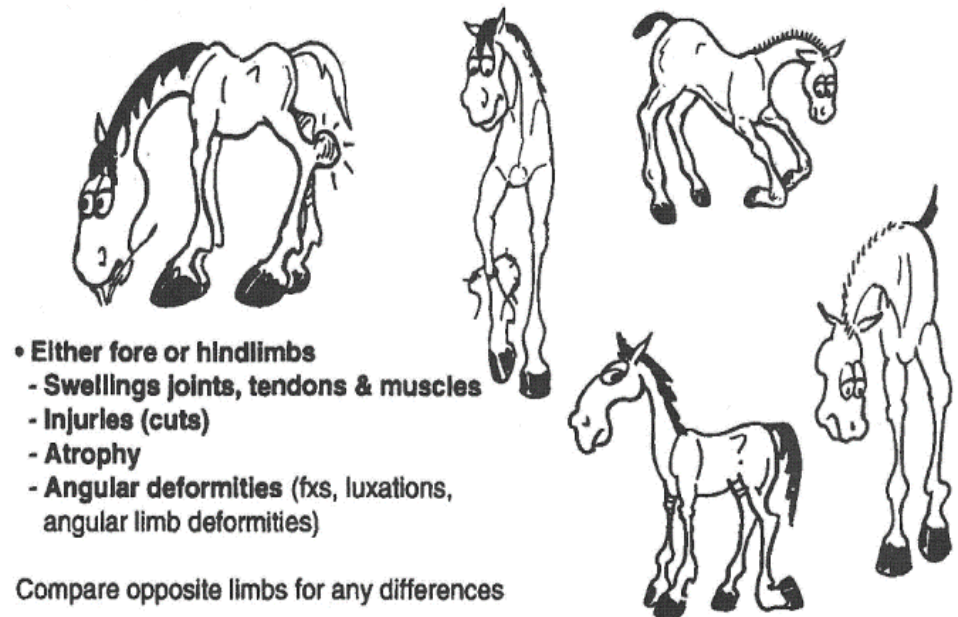
- **Forelimbs:**

- . Normally will not shift weight on front limb
- . Both limbs should bear the same amount of weight
- . **Pointing:** resting a limb m/ indicate problems in that limb
- . **Shifting weight** from one limb to another indicates bilateral problems
- . **3-legged:** refusal to bear weight on a limb (indicates infection or fracture)



- **Hindlimb:**

- Shifting weight from one limb to the other - normal
- **Refusing to put weight on a hindlimb** indicates problems in that limb



- **Either fore or hindlimbs**

- **Swellings** joints, tendons & muscles
- **Injuries** (cuts)
- **Atrophy**
- **Angular deformities** (fxs, luxations, angular limb deformities)

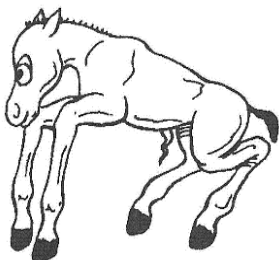
Compare opposite limbs for any differences



## Hx - Age of horse

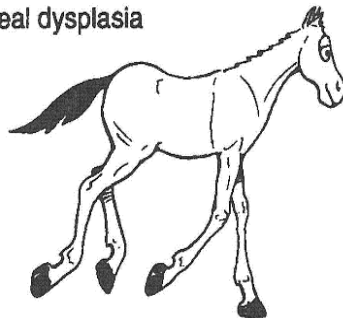
### Neonatal - congenital

- Angular limb deformities
- Flexural deformities
- Rupture of common digital extensor
- Cuboidal bone anomalies



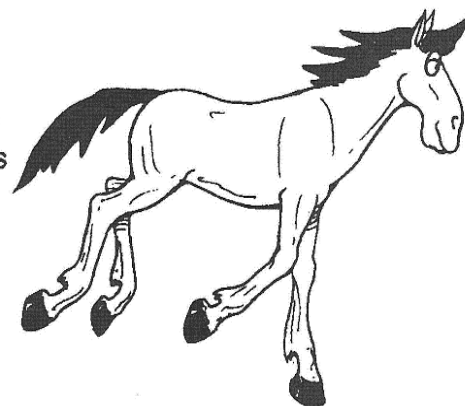
### Yearlings

- Sesamoid fxs
- OCD
  - Fetlock
  - Tarsus
  - Stifle
- Physeal dysplasia



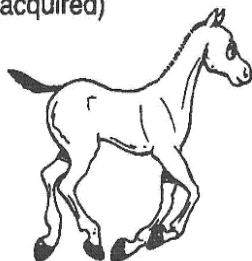
### Adults

- Navicular diz
- Bone spavin
- Osteoarthritis/DJD
  - Low ringbone
  - High ringbone
  - Osselets
  - Bone spavin
- Carpal fxs
- Splint bone fxs
- Bowed tendons
- Traumatic septic arthritis
- Sesamoiditis
- Cortical fissure fxs - Mc3
- Idiopathic tendosynovitis



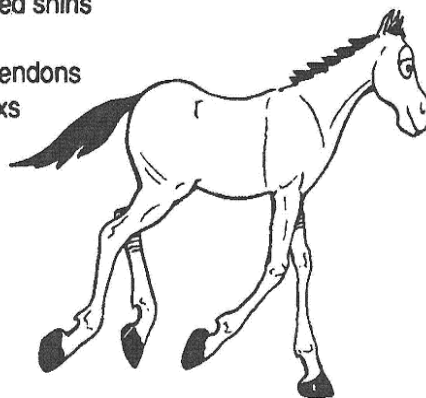
### Foals

- Hematogenous septic arthritis
- Sesamoid fxs
- Angular limb deformities (acquired)
- Flexural deformities (acquired)
- Physeal dysplasia
- Physeal fxs
- Weak flexor tendons
- OCD
  - Tarsus
  - Stifle
  - Shoulder



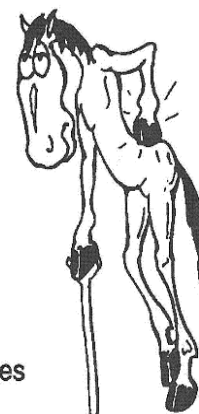
### 2-year-old (race training)

- #1 Bucked shins
- Splints
- Bowed tendons
- Carpal fxs
- OCD



### Old horses

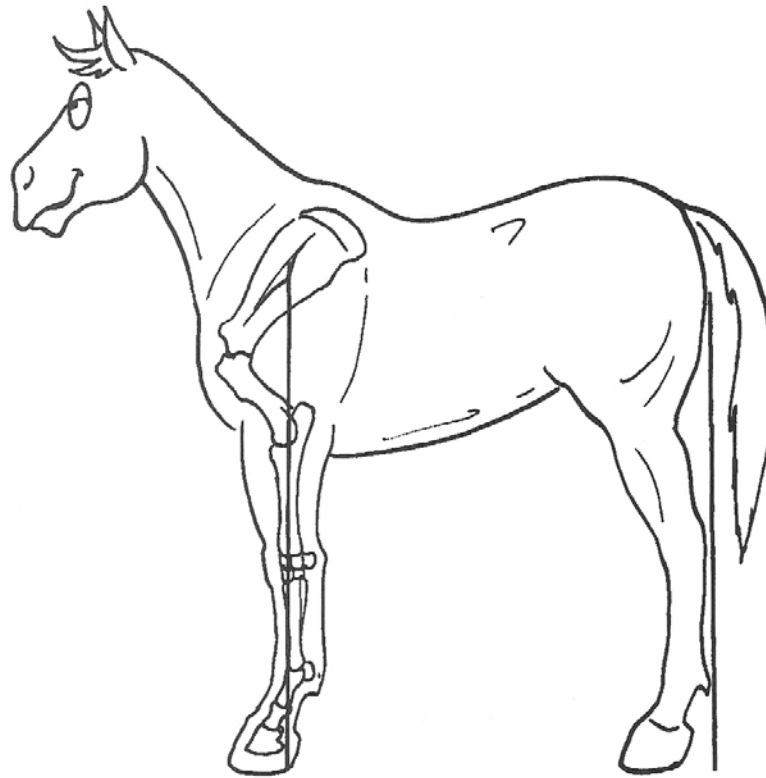
- Ossification of lat. cartilages
- DJD



## Hx - Conformation

22

## LAMENESS DIAGNOSIS



**CONFORMATION:** judged from a distance & up close, look from all directions RA p147

- Weight well distributed between fore & hind limbs
- Bones, ideal lengths & angulation between them
- Body condition

### Forelimb

- **Side (lateral) view:** a vertical line from the tubercle (scapular spine) should pass through center of the elbow, carpus & fetlock & reach the ground behind the heels
  - Angle of shoulder = angle of the foot. A straight shoulder is associated with a straight pastern angle.

A sloping shoulder absorbs concussion better than a straight shoulder

### • Front (cranial) view:

- Limbs straight
- Distance between feet = distant between origin of limbs from body
- Vertical line from shoulder divides the limb



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Pasquini's Guide to Equine Clinics, vol. III, Lameness Diagnosis is available from [SUDZ publishing](http://SUDZpublishing.com)





# Lameness Differential Dx

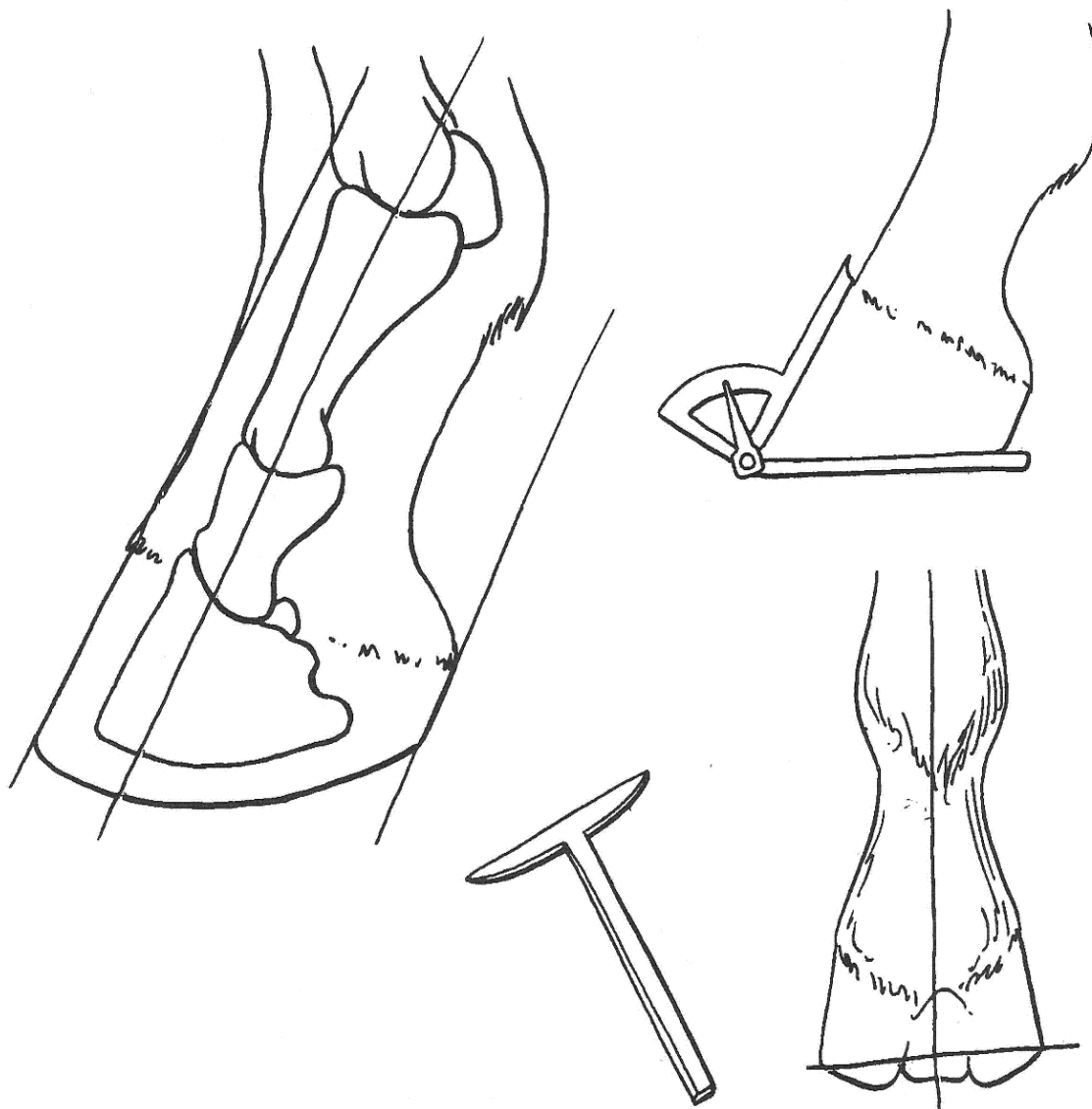
Guide to Equine Clinics, vol. III, Lameness Diagnosis Pasquini, 2<sup>nd</sup> ed.

## Hindlimb

- Side (lateral) view: a line dropped from tuber ischii should touch the point of the hock, pass down the plantar aspect of cannon region and hit the ground 3-4" caudal to heel
- Caudal (rear) view: a line dropped from the tuber ischii should divide the limb equally

## FOOT CONFORMATION

- More important than limb conformation
- Conformation of foot reflected in the conformation of the limb
- **Foot axis:** line through the coffin joint parallel to the dors. surface of the hoof wall (lat. view)
- **Angle of the hoof (foot wall):** angle between the dors. surface of the hoof & the ground, Roughly 55-60° for fore- & hindlimbs
  - Must equal angle of the foot/pastern axis
- **Pastern axis:** line drawn through the center of the pastern
- **Foot (hoof)/pastern axis:** a line through the center of the coffin & pastern joint (front & side views)
- Straight & equal to the angle of the hoof
- Angle of foot & pastern axes being equal & continuous is more important than an ideal angle of the hoof
- Trim feet to make the foot & pastern axes equal & straight, do not trim for an ideal angle to the hoof wall
- **Foot level:** med. & lat. wall of equal length (an imaginary line passing through the coffin, pastern & fetlock at a right angle to an imaginary line across the ground surface)



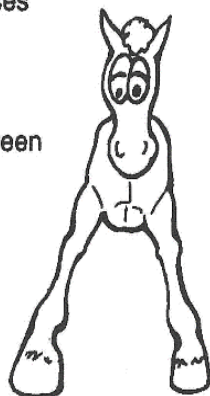
## Conformation Defects

### FORELIMB CONFORMATIONAL DEFECTS & associated conditions



- **Base-narrow** distance between feet < distance between origin
  - Articular wind-puffs (fetlock)
  - Lat. sidebone
  - Lat. ringbone & lat. heel bruises

- **Base wide:** distance between feet > origin of limbs
  - Fetlock problems
  - Med. sidebone
  - Med. ring bone
  - Winging



- **Pigeon-toed or toe-in:** toes point towards each other
  - Congenital defect m/b accompanied crooked limbs
  - "Paddling"

- **Splay-footed or toe-out:** toes point away from each other
  - Congenital problem w/ twisting of limb
  - "Winging" (see foot)



- **Calf or sheep knees:** palmar deviation of carpus
  - Injuries to check ligg. & palmar carpus
  - Compressions on dors. carpus
  - Chip fx's - carpus (dorsomed. side)

- **Bucked knees or Knee sprung:** forward (dors.) deviation of carpal joints
  - Strain on sesamoid bones, suspensory lig., SDF tendon & extensor carpi radialis m.



- **Knocked knees, carpus valgus, or knee-narrowed:** lat. deviation dist. to carpus
  - Stress on med. collateral lig. (carpus)
  - Angular limb deformity

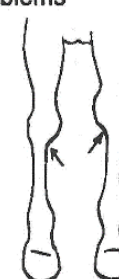
## LAMENESS DIAGNOSIS

- **Bow legs, carpus varus, or bandy-legged:** med. deviation dist. to carpus
  - Incr. stress on lat. collateral lig. & med. carpus
  - Angular limb deformity



- **Open knees:** irregular carpal profile (side view), carpal joints appear not to be closed, young horses (1-3 yrs) that improves w/ age
  - Physeal dysplasia (physitis)
  - Carpal problems

- **Benched knees** or offset knees: lat. deviation of the metacarpal bones (front view)
  - Medial splints



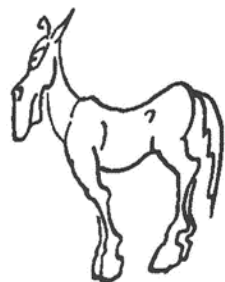
- **Tied-in knees:** Flexor tendons appear too close to the cannon bone (lat. view)



- **Cut out under the knees:** dors. surface of cannon bone appears "cut out" just below the carpus (lat. view)







- **Standing under in front:** elbow & dist. limb behind line dropped from tuber spinae
  - Shortened stride, stress on limb & tendency to stumble

- **Camped in front:** elbow & dist. limb in front of line dropped from the tuber spinae
  - M/b compensation to alleviate pain due to navicular diz or laminitis.



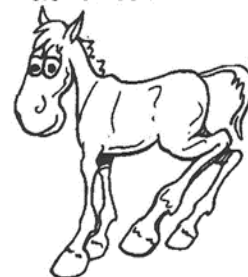
## HINDLIMB CONFORMATIONAL DEFECTS & assoc. conditions

- **Base-narrow:** distance between feet less than center of the thighs
  - Interference if good conformation in front
  - Strains to lateral structures of limb



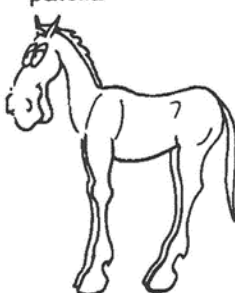
- **Base wide:** distance between feet greater than distance between center of thighs
  - Most common form is cow hocked

- **Cow hocked, tarsus valgus:** med. deviation of the hock joints: base narrow to hock & base wide from hock to hoof
  - Bone spavin
  - May be accompanied by sickle hock



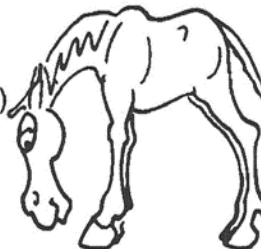
- **Sickle hock, curby conformation:** excessive angulation of hock joints (lat view)
  - Curb (strain on plantar aspect of hock)

- **Straight behind:** excessively straight limbs (lat. view)
  - Bog spavin & upward fixation of patella



- **Standing under behind:** entire limb too far forward (lat. view)

- **Camped behind:** entire limb too far caudally (lat. view)



## FOOT CONFORMATIONAL DEFECTS

- **Broken hoof (foot) pastern axes**

- Low heel, long toe
- Heel bruising
- Navicular diz
- Hoof cracks
- Interference



- **Coon footed:** steep foot angle, low pastern angle
  - Extensor process pedal bone
  - DJD of coffin joint
  - Pedal osteitis



- **Hoof imbalance:** med. & lat. wall of unequal length
  - Osselets (fetlock)
  - Ringbone (pastern)
  - Navicular diz
  - Hoof cracks
  - Sheared heel



- **Long sloping pasterns**
  - pastern bone long & pastern angle normal or subnormal
  - Tendosynovitis (flexor tendons)
  - Sesamoiditis/sesamoid fxs
  - Desmitis (suspensory lig.)

- **Long upright pasterns:**
  - pastern too long & angle steep
  - Restoring the normal hoof angle by lowering the heels results in a broken foot/pastern axis putting even more stress on the navicular bone





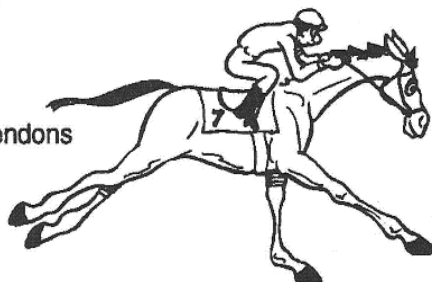
## Hx - Work

**Hx: work performed:** can effect lameness & should be suspected & eliminated first  
RA p147

## LAMENESS DIAGNOSIS

### Racehorses (Thoroughbred & Quarter horses)

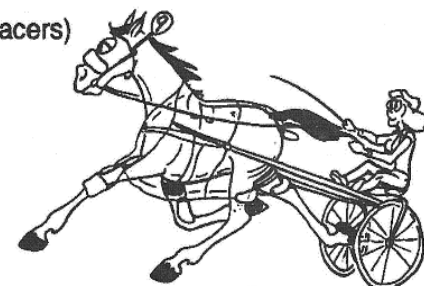
- Carpalitis
- Carpal fractures
- Fetlock joint injury (traumatic arthritis)
  - P1 fxs
  - Condylar fxs McIII
  - Osslets
- Injuries to suspensory lig. & muscle tendons
- Injuries to sesamoid bones
- Navicular disease
- Hock injuries
- Foot injuries



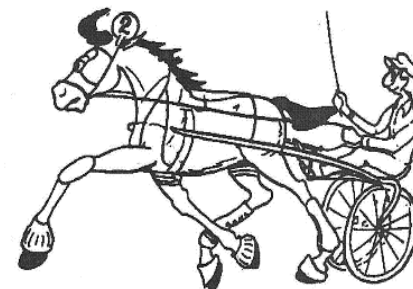
### Standardbreds (trotters & pacers)

(VC/A 109, 1990)

- Myositis - gluteals
- Exertional myopathies
- Back soreness
- Hock #1 lameness
  - OCD - tarsus
- Carpal fractures
- Splints
- Splint fractures
- Suspensory lig. desmitis
- Tendinitis - SDF
- Fetlock joint injuries
- Sesamoiditis
- Interference
- Back problems
- Subluxation of sacroiliac joint
- Foot injuries



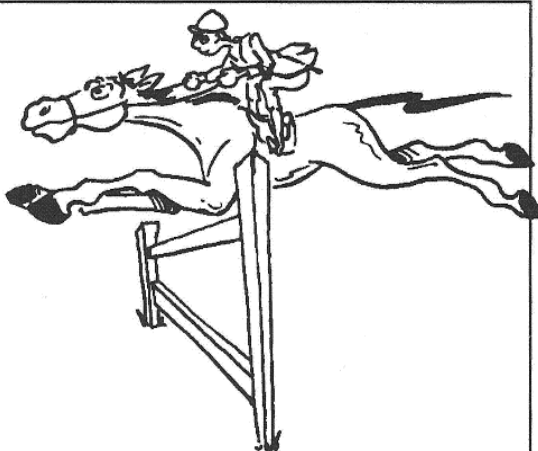
Pacer



Trotter

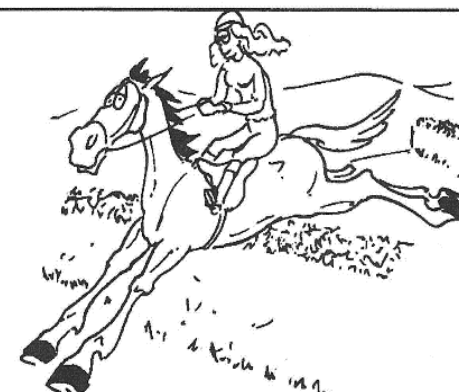
### Hunter-jumpers

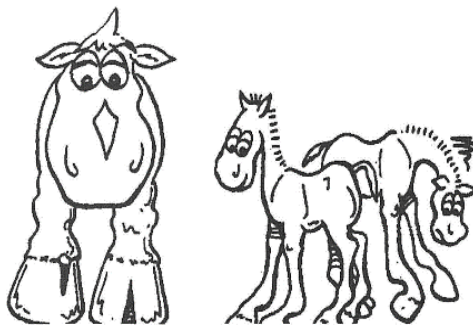
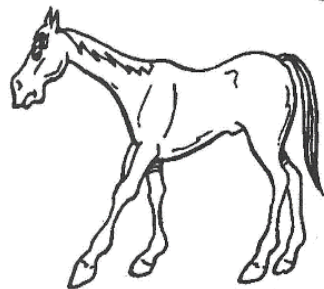
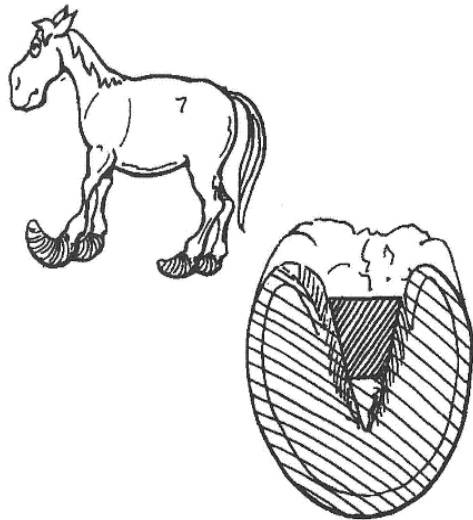
- Sacroiliac problems
- Back problems
- Desmitis of dist. sesamoidean lig
- Rupture of dist. sesamoidean lig



### Steeplechase

- Desmitis of dist. sesamoidean lig.
- Fractures
- Sacroiliac subluxation
- Back problems





## FOOT CONDITIONS - DDx

Page #s, Guide to EQ Clinics, LAMENESS, vol. 2, Pasquini

### \*\*\*\* VERY COMMON

• Broken forward	25
• Bruised sole/corn	22
• Hoof imbalance	27
• Laminitis	54
• Navicular disease	62
• Puncture wounds of foot	35
• Run under heels	25
• Subsolar abscess	32

### \*\*\* Common

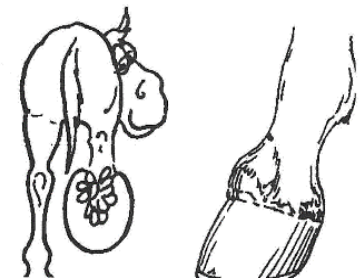
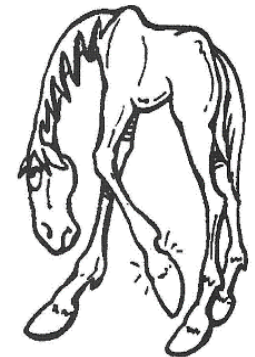
• Abscesses of white line	34
• Brittle feet	40
• Conformational defects	24, 46
• Contracted heels	26
• Coronary band injuries	45
• Hoof cracks	42
• Hoof lacerations	44
• Limb contact	47
• Nail prick	37
• Pedal osteitis	61
• Synovitis of DIP joint	70
• Thrush	49
• Traumatic heel wounds	45

### \*\* Uncommon

• Coronitis	49
• DJD (Low ringbone)	71
• Extensor process fxs of P3	67
• Flat feet	29
• Flexural deformity	72
• Quittor	50
• P2 fractures	73
• Pyramidal diz	68
• Seedy toe	59
• Septic arthritis - DIP	69
• Sheared heels	27
• Thin wall & sole	29

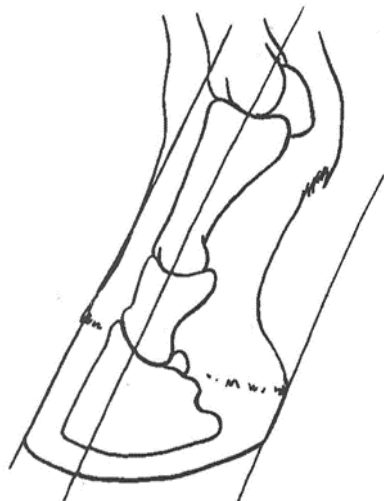
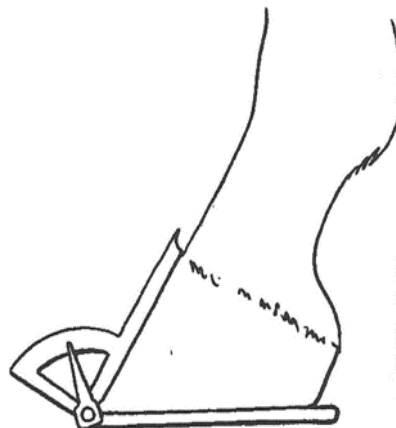
### \* Rare

• Keratoma	48
• Navicular bone fx	65
• Navicular bursa infec.	38
• Canker	48
• Selenium toxicity	41
• Subchondral bone cyst of P3	61



## Weight Bearing Foot

## DX - PALPATION



### 1-A. Visualize weight bearing foot

#### 1-A-1. Foot/pastern axis

- Check that its equal & continuous
- Broken axis predisposes to developing problems
  - . Broken back foot/pastern axis
  - . Broken forward foot/pastern axis
- **Club foot:** axis of 60° or more

#### 1-A-2. Angle of heel:

- Should equal the angle of the toe
- Common problem is underrun heels

#### 1-A-3. Shape & size: compare to opposite foot

- Asymmetry in foot size may be due to congenital or developmental factors, trauma or lack of weight bearing
- Smaller foot usually on lame limb

#### 1-A-4. Hoof ring formation - normal or pathological

- Normal
  - Changes in season or plane of nutrition can produce natural rings
- Pathological rings
  - Laminitis
  - Systemic diseases w/ fever
  - Low ringbone
  - Bilat. due to laminitis or systemic diz
  - Unilateral rings due to trauma

#### 1-A-5. Hoof wall cracks: rule out as cause of lameness using hoof testers or nerve blocks

#### 1-A-6. Bull-nosed foot: toe rasped down to fit a shoe

- Over time can result in pathological changes

#### 1-A-7. Buttress foot: Swelling on the dors. surface of prox. hoof wall (exostosis of the extensor process of the distal phalanx)

- Results from low ringbone or fractures of the extensor process

#### 1-A-8. Contracted heels:

- Usually due to a decr. in weight bearing due to lameness
- View heels from rear

#### 1-A-9. Discharge above coronet

- Gravel
- Quittor



## Visualization - weight bearing foot - DDx

### \*\*\*\* Very Common

- Broken foot/pastern axis 25
- Broken back
- Broken forehead
- Hoof imbalance 27
- Laminitis 54
- Navicular disease 62
- Run under heels 25

### \*\*\* Common

- Brittle feet 40
- Conformational defects 24, 46
- Contracted heels 26
- Coronary band injuries 45
- Gravel 34
- Hoof cracks 42
- Hoof lacerations 44
- Limb contact 47
- Traumatic heel wounds 45

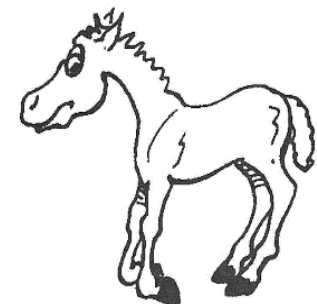
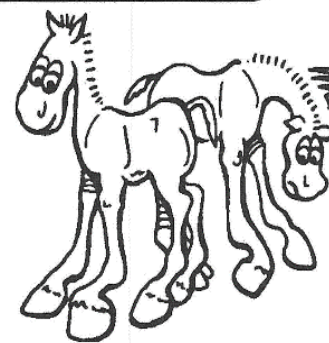
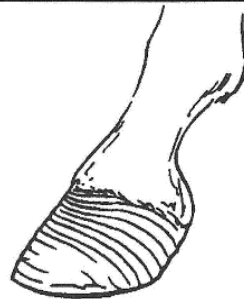
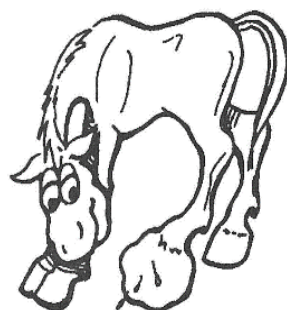
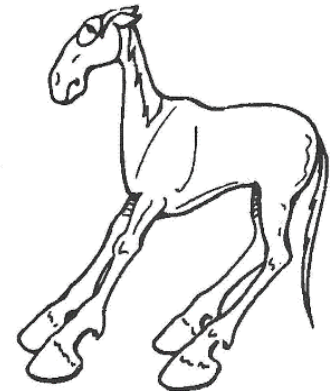
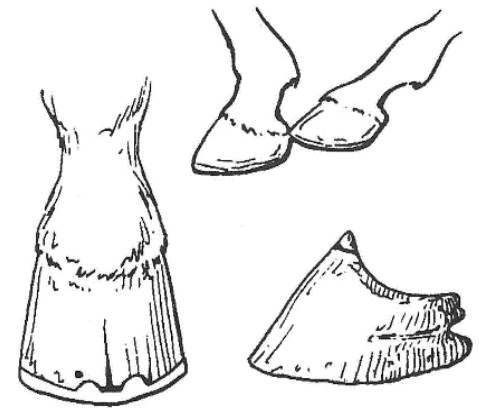
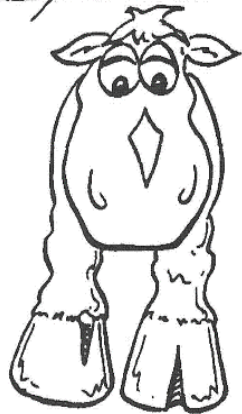
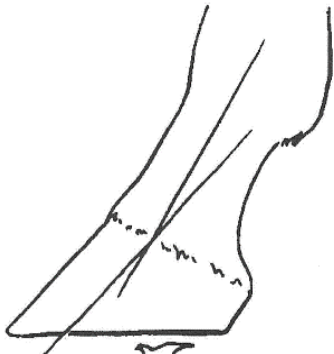
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- DJD (Low ringbone) 71
- Extensor process fxs of P3 67
- Flexural deformity 72
- Quittor 50
- P2 fractures
- Pyramidal diz 68
- Sheared heels 27

### \* Rare

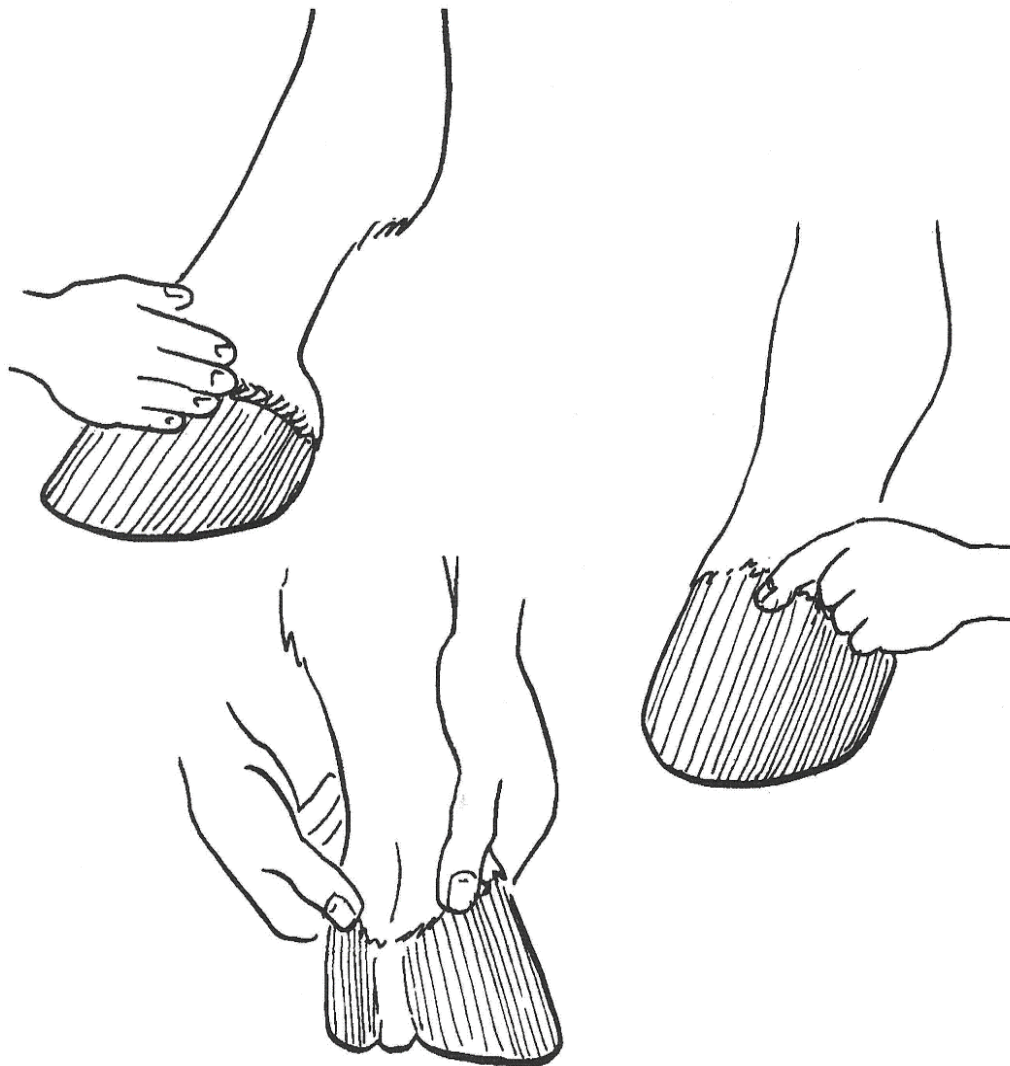
- Canker 48
- Selenium toxicity 41

Page #s, Guide to EQ Clinics,  
LAMENESS, vol. 2, Pasquini



## Foot - Palpation & Inspection

## DX - PALPATION



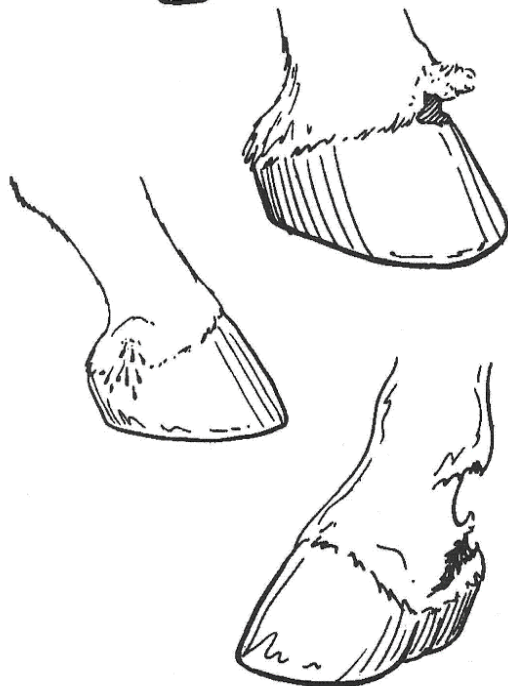
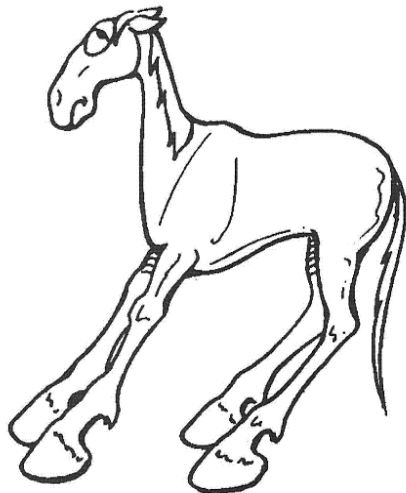
### 1-B. Palpate weight bearing foot:

#### 1-B-1. Coronary band: palpate for heat, pain or swelling

- **Heat in coronary bands:** suggests laminitis
  - Back of hand m/b more sensitive than palm
  - Thermography

#### • **Swollen coronary band:**

- Can be superficial (wire cuts or trauma) or involve the deeper structures as in **gravel** or **quittor**
- **Extensor process:**
  - . Swelling w/ pain over extensor process suggests **fracture of extensor process**
  - . Swelling w/out pain over extensor process suggests **developing ring bone**
- **Swelling above quarters**
  - . Swelling, pain w/ or w/out drainage over quarters suggests **gravel** or **quittor**
  - . **Calcification of lat. cartilages, quittor** or **keratoma**
- **Swelling of bulbs of heels**
  - . Heat, swelling & pain over bulbs w/ or w/out drainage suggests **subsolar abscess**
- **Laceration of coronet**



## Palpate - weight bearing foot - DDx

### \*\*\*\* Very common

- Laminitis 54
- Subsolar abscess 32

### \*\*\* Common

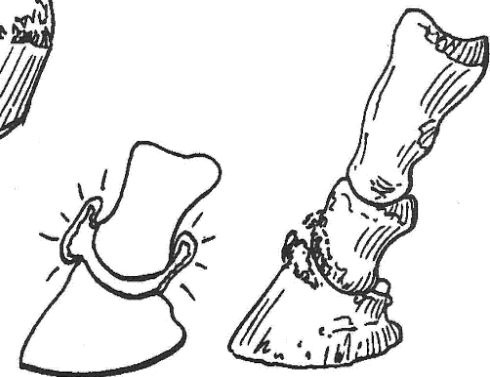
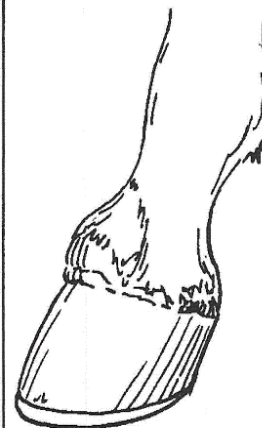
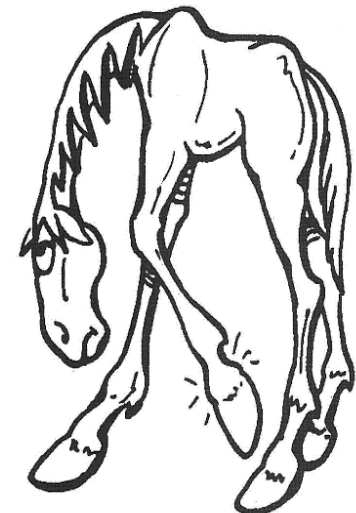
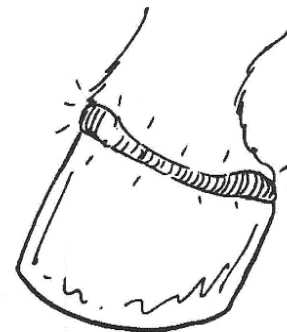
- Coronary band injuries 45
- Gravel 34
- Hoof lacerations 44
- Limb contact 47
- Nail prick 37
- Sidebones 51
- Synovitis of DIP joint 45
- Traumatic heel wounds 45

### \*\* Uncommon

- Coronitis 49
- DJD (Low ringbone) 71
- Extensor process fxs of P3 67
- Quittor 50
- Pyramidal diz 68
- Septic arthritis - DIP 69
- Sheared heels 27
- Thin wall & sole 29

### \* Rare

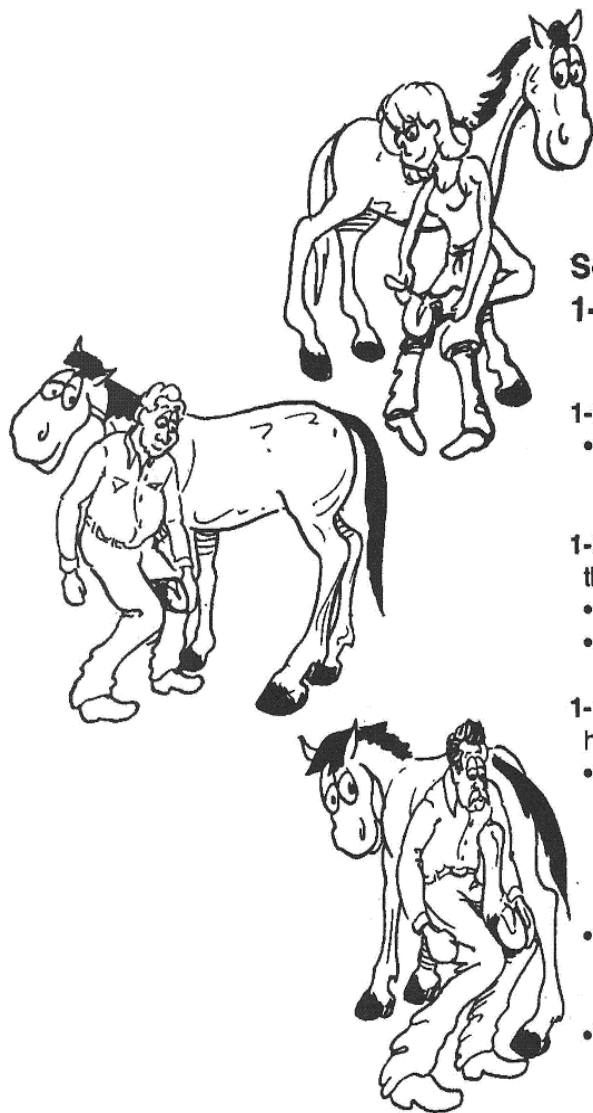
- Keratoma 48
- Selenium toxicity 41





## Sole - Palpation & Inspection

## DX - PALPATION



### Sole: palpation & inspection

#### 1-C. Check sole; lift foot & superficially clean the sole with a pick

##### 1-C-1. Assess shoeing:

- Commonly shoe has excessive contact w/ angle of sole (undesirable - **corns**)

##### 1-B-2. Abnormal wear: wear on the ground surface of the wall should indicate if breaking squarely over the toe

- Worn toe - landing on toe due to **heel pain**
- Lat. or med. wear - compensating for a problem

##### 1-B-3. Contracted heels: abnormal narrowness to the heels, normally round & wide at the heels

- Front feet > back feet, bilat. or unilat. (unilateral may be congenital), sole usually more concave than normal w/ frog recessed, causing its atrophy. Recessed frog doesn't touch the ground & expands to separate the heels, increasing problem
- Caused by any painful condition (improper shoeing or lameness) resulting in the horse not putting weight on the frog or foot
- "**Hoof bound**": contracted foot that pushes against the dist. phalanx & causes lameness

##### 1-C-4. Bars: should be well developed

##### 1-C-5. Frog: check for normal consistency & elasticity

- Large & of equal size to its 2 halves
- **Frog atrophy**: due to **not** bearing weight on frog (due to painful heels, e.g., chronic navicular diz)
- Leads to **contracted heels**

##### 1-C-6. Sole: should be slightly concave in all directions & not in contact w/ the ground

- **Flat feet**: little concavity to sole - predisposes to sole bruising, often land on heels to avoid trauma to sole
- **Pumice foot** (dropped foot): check in front of the frog for convexity & possible dropped sole (rotation of P3) due to laminitis

##### 1-C-7. Thin wall & sole: hereditary, wall wears down faster than it grows

- Press against sole to assess
- Results in sole bruising & broken foot axis due to excessive wear to the heels

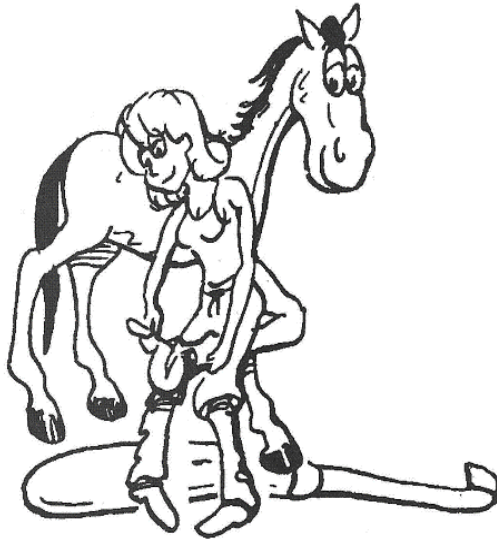
##### 1-C-8. Brittle feet: dry hoof

- Predisposes to toe & quarter cracks

##### 1-C-9. Wet sole & frog:

- Predisposes to **thrush**
- **Thrush**: smelly, necrotic material

##### 1-C-10. Collateral sulcus: grooves next to sole - location for thrush



## Trim Sole - DDx

### \*\*\*\* VERY COMMON

- Bruised sole/corn 22
- Puncture wounds of foot 35
- Subsolar abscess 32

### \*\*\*Common

- Abscesses of white line (gravel) 34
- Nail prick 37
- Thrush 49

### \*\* Uncommon

- Seedy toe 59

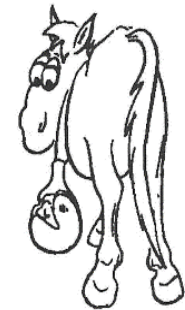
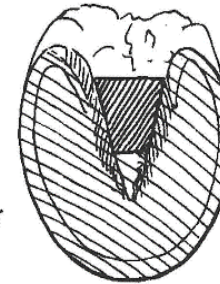
### \* Rare

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## 1-E. Trim sole with a hoof knife

### 1-E-1. Sole discoloration:

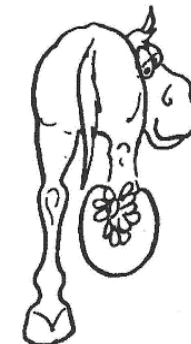
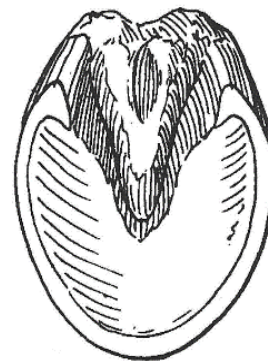
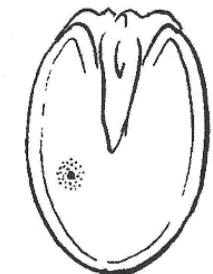
- Foreign material: nail or sticks
  - Puncture wounds
  - Nail prick
- Abscess: purulent material
- Pare out, following any discoloration until it disappears or opens up into an abscess
- Bruise
- Abscess extremely common cause of lameness
  - Drainage is the key to treatment
- Abscesses of white line



### 1-E-2. Seedy toe: separation of white line due to laminitis

### 1-E-3. Overgrown frog: trim at this time

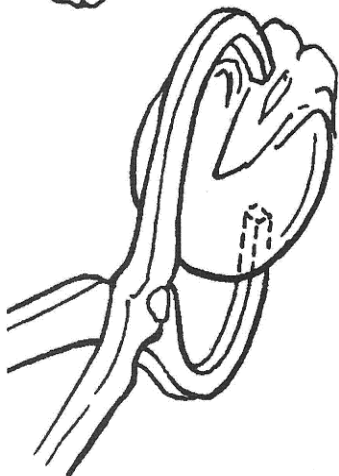
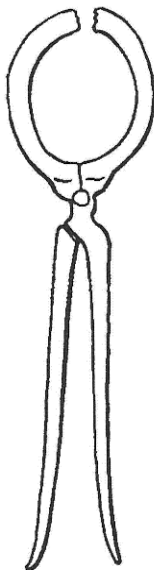
- Thrush: filthy, black, smelly material in grooves on side of frog
- Canker: rare





## Hoof Testers

## DX - PALPATION



### 1-F. Hoof testers

#### 1-F-1. Diffuse sole sensitivity:

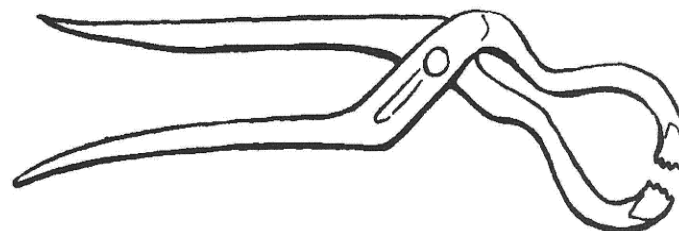
- Laminitis
- Sagittal fxs of dist. phalanx
- Diffuse pododermatitis
- Diffuse pedal osteitis

#### 1-F-2. Localized sensitivities:

- Sole bruises
- Corns
- Nonarticular fxs of dist. phalanx
- Gravel
- Solar abscesses
- Puncture wounds
- Nail prick
- Heel cracks
- Subchondral bone cyst (has to be near the sole surface)

#### 1-F-3. Sensitivity of the central frog:

- Navicular disease
- Navicular bone fx
- Navicular bursa infection
- Sheared heels
- Puncture/abscess of frog



### HOOF TESTERS

**Procedure:** use systematically over the entire sole & frog to identify sensitive areas

- One arm of the tester on hoof wall & other on the area of the ground surface to be tested
  - Check that arm on the wall is not over coronet giving a false positive
  - Use enough pressure to find pain, but not enough to elicit pain where there is none
  - **Recheck a positive response over & over**
  - **Compare results w/ opposite feet**
    - . Positive response m/ suggest site of problem, but other foot m/ show similar location of pain
- Start at one angle of the sole & test in inch increments across the whole surface of the sole to the other angle
- Then test over the center of the frog
- Lastly across the bulbs of the heel
- Hoof testers good for localized pain, but not for chronic, poorly localized pain



## Hoof testers - DDx

### \*\*\*\* VERY COMMON

• Bruised sole/corn	22
• Laminitis	54
• Navicular disease	62
• Puncture wounds of foot	35
• Subsolar abscess	32

### \*\*\*Common

• Abscesses of white line (gravel)	34
• Brittle feet	40
• Hoof cracks	42
• Nail prick	37
• Pedal osteitis	61

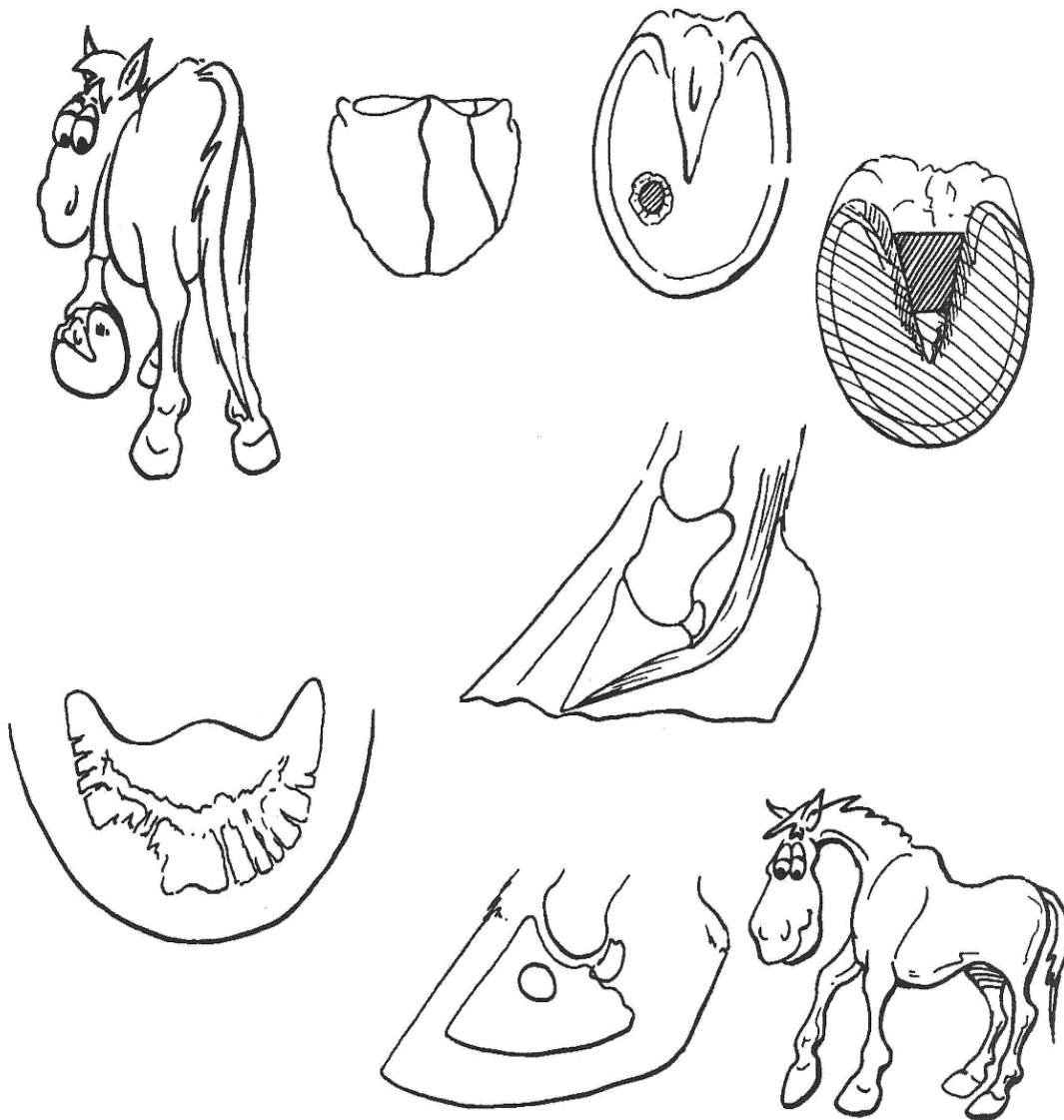
### \*\* Uncommon

• Sheared heels	27
-----------------	----

### \* Rare

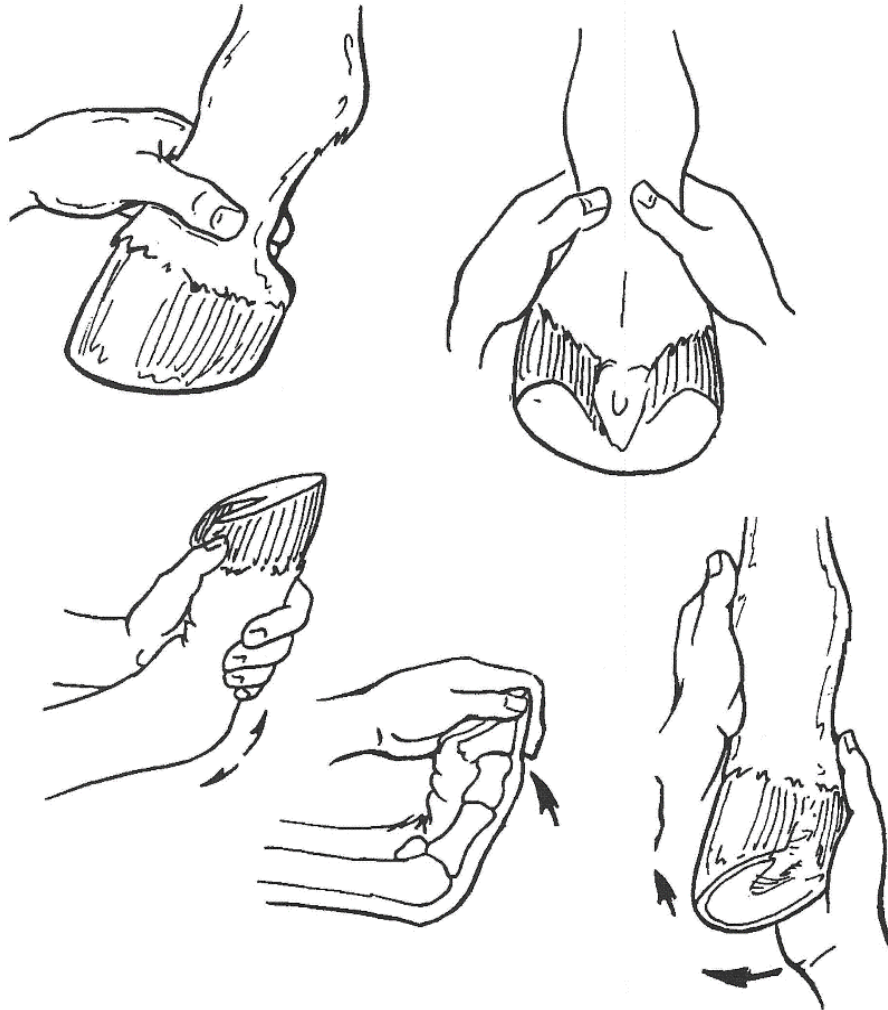
• Navicular bone fx	65
• Navicular bursa infec.	38
• Subchondral bone cyst of P3	61

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## Pastern - Palpation

## DX - PALPATION



### 2. Pastern

#### 2-A. Palpation of pastern

- Ringbone: enlargement - w/ slight incr. in temperature
- Compare size of opposite pasterns (can be naturally of different sizes)

#### 2-B. Dist. sesamoidean ligg.: use thumbs to deeply palpate pastern

- Flexor tendons (SDF & DDF)
- Low bow (tendinitis): thickening

#### 2-C. Palpate phalanges

- Pain over prox. & middle phalanx: P1 & P2 fractures

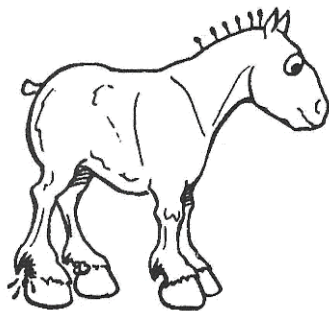
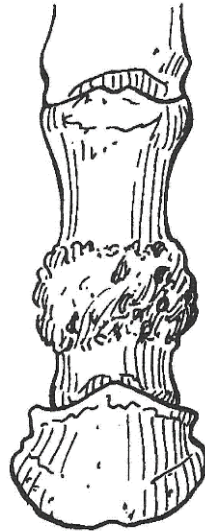
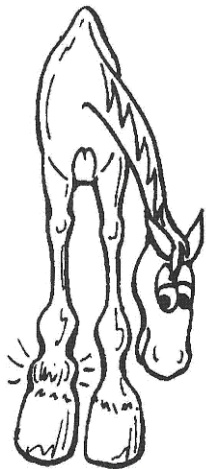
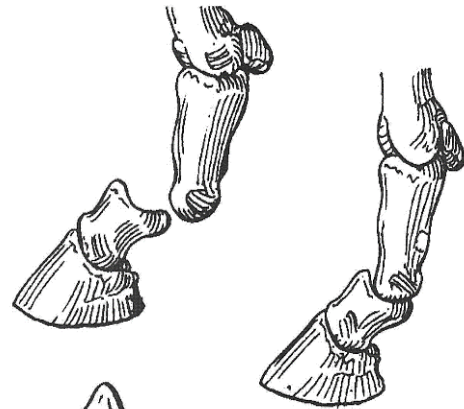
#### 2-D. Pastern flexion

- Flex fetlock first by pulling the front of pastern, if no response, then:
  - Flex pastern & coffin: extend the carpus & flex fetlock, pastern & coffin joints by pulling on the toe
  - . Pain indicative of pastern or coffin joint involvement
  - . Compare findings w/ opposite limb

#### 2-E. Rotation: hold the fetlock between your knees & rotate pastern joint by manipulating hoof (DJD, Phalangeal fx)

#### 2-F. Collateral lig. manipulation: pull foot to side

- Sprains of the collateral ligg. or non-articular ring bone



## Pastern - DDx

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### \*\*\*\*Very Common

- Sprains 86
- Synovitis 85

### \*\*\*Common

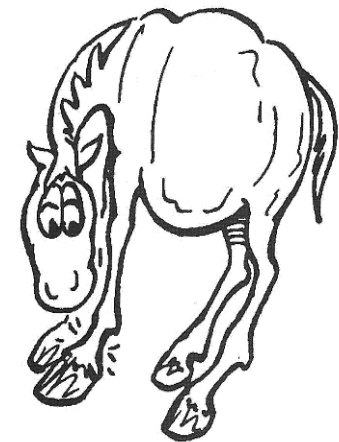
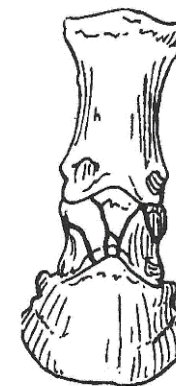
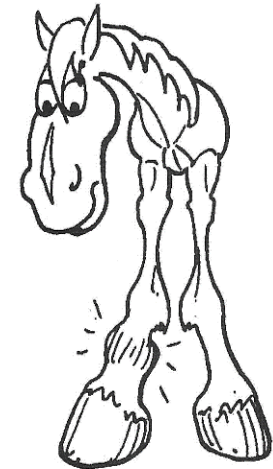
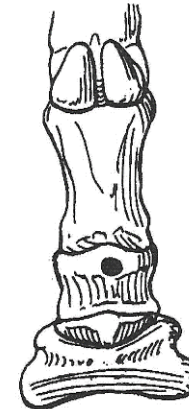
- DJD 88
- Pastern dermatitis 98
- Septic tenosynovitis 97
- Tendon laceration 96

### \*\*Uncommon

- Desmitis - dist. sesamoidean ligg. 94
- Middle phalanx fx 92
- Rupture - dist. sesamoidean ligg 95
- Septic arthritis 91
- Subluxation/Luxation 87

### \*Rare

- OC (osteochondrosis) 90
- Rachitic ringbone 98





## Fetlock

## DX - PALPATION



### 3. Fetlock - palpation

#### 3-A. Palpate swelling of dorsal pouch of fetlock

- Chronic proliferative synovitis (osselets or villonodular synovitis)
- Chip fractures
- Articular fractures

#### 3-B. Swelling of palmar pouch: palpated between the suspensory lig. & cannon bone

- Normally area indented, joint disorders will distend it with synovial fluid
- Normal swelling: "windpuffs"
- Idiopathic synovitis if bilateral
- Articular fx if unilateral

#### 3-D. Flexor tendons (SDF & DDF) & sheath: palpated on palmar fetlock for swelling, pain & heat

- Tendinitis (low bow)
- Tendosynovitis

- Performance horses often have normal swelling to all 4 tendon sheaths (windpuffs)

#### 3-C. Suspensory ligament branches & sesamoid bones: where branches attach to sesamoid bones, for pain

- Desmitis
- Sesamoiditis
- Sesamoid fxs (apical, body, bacillar)

#### 3-E. Sesamoids bones: lift limb & palpate sesamoids deeply over their apical, abaxial & bacillar parts for pain

- Fractures
- Sesamoiditis

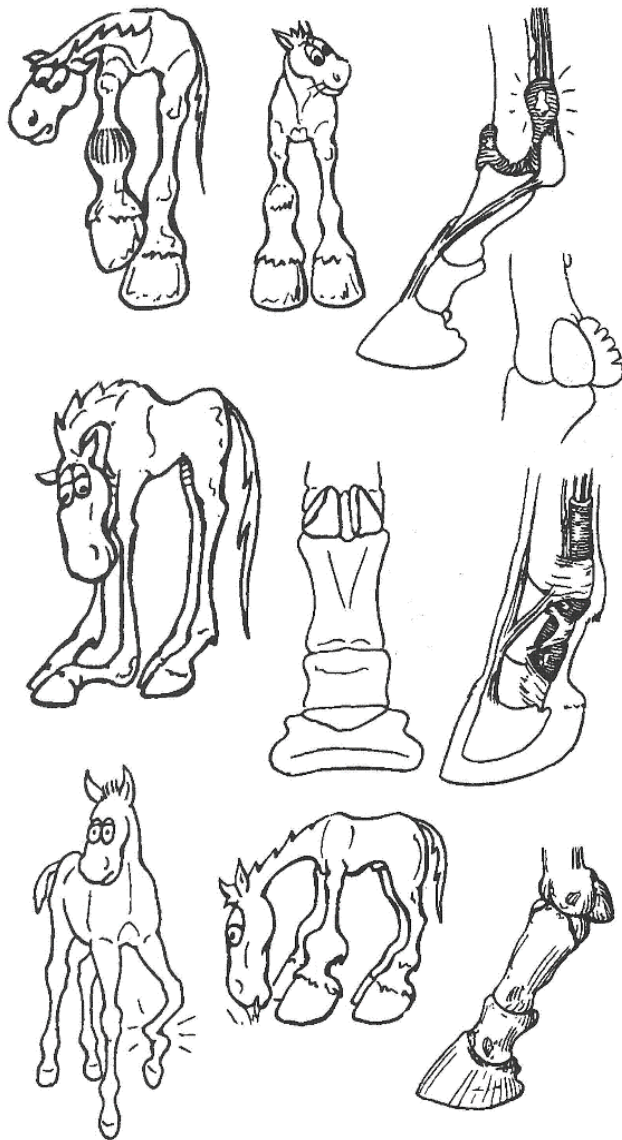
#### 3-F. Flex fetlock: to determine normal range of motion (usually 90°), decreases w/ age or w/ fetlock problems

- Synovitis
- Capsulitis
- Osteochondrosis (young)
- DJD

#### 3-G. Rotate fetlock: hold the cannon between your knees & rotate by manipulating the hoof for pain

- DJD (degenerative joint dz)
- Phalangeal
- Metacarpal fxs

#### 3-H. Collateral ligament: pull the foot to the side to check for sprains of the collateral ligg. or nonarticular ring bone



## Fetlock - DDx

### \*\*\*\*Very Common

- Arthritis (osselets) 119
- Sprains 105
- Synovitis 118

### \*\*\*Common

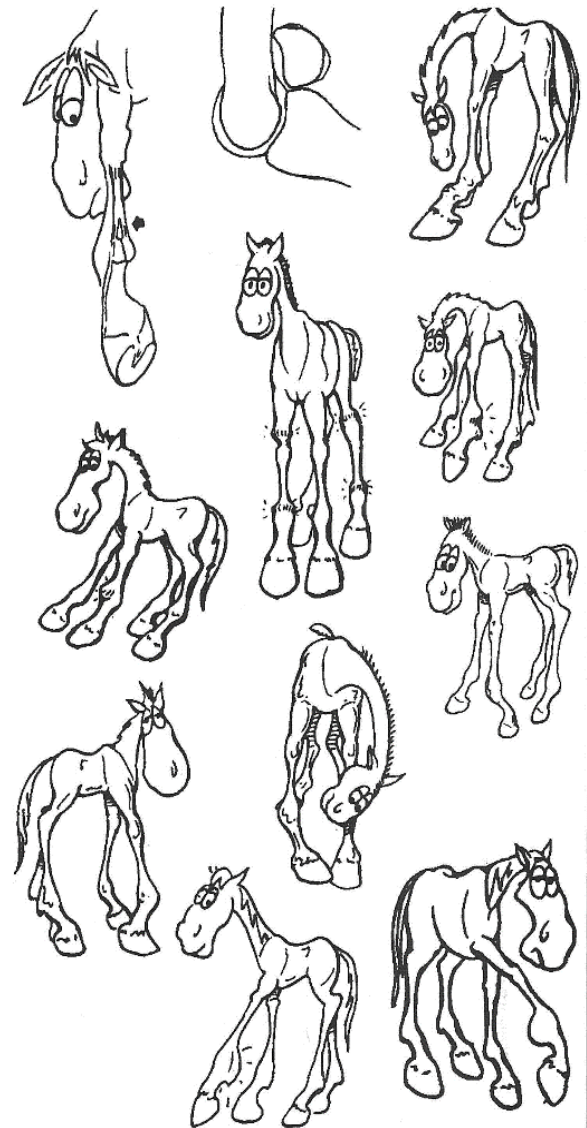
- Desmitis of suspensory lig. brs. 113
- Idiopathic synovitis (windpuffs) 120
- Idiopathic tenosynovitis (windpuffs) 128
- Lateral condylar (Mc3) fxs 110
- Proximal phalanx fx 106
- Rupture of suspensory apparatus 115
- Septic arthritis 123
- Septic tenosynovitis 128
- Sesamoid fxs 116
- Sesamoiditis 112

### \*\*Uncommon

- Angular limb deformity (varus) 124
- Constriction of annular lig. 129
- DDF tendinitis (low bow) 129
- Flexural deformities (SDF) 126
- Luxation 105
- OCD, osteochondrosis 121
- Physeal dysplasia (epiphysitis) 125
- Rupture of suspensory lig br. 113
- Rupture of dist. suspensory ligg. 114
- Villonodular synovitis 122

### \*Rare

- Med. condylar fxs 111





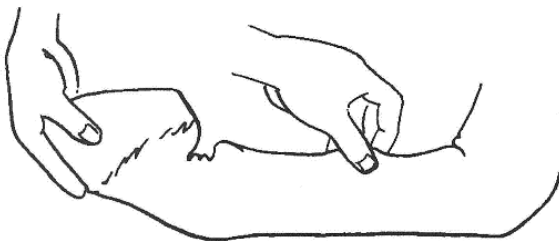
## Metacarpus/Metatarsus

## DX - PALPATION

### 4. Metacarpus/Metatarsus- palpation & inspection

**4-A. SDF & DDF tendons:** located palmar to the suspensory lig.

- Tendon sheaths surround the flexor tendons over their prox. 1/3 behind the carpus; & their dist. 1/3, over the fetlock
- Palpate the flexor tendons over their length on the standing horse for any swelling, heat or pain

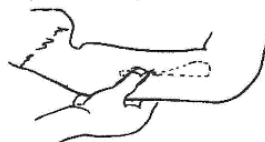


**4-B. Separate the flexor tendons:** by holding the cannon up & trying to digitally move the 2 flexor tendons apart

- Normally readily separated
- Inability to separate them indicates:
  - Adhesions
  - Swelling
- Painful swelling w/ minimal deformity (swelling)
  - Tendinitis
  - Synovitis
  - Tendosynovitis (combination of tendinitis & synovitis)
- **Bowed tendon:** chronic tendinitis, synovitis &/or tendosynovitis characterized by a firm swelling w/ or w/out pain or heat

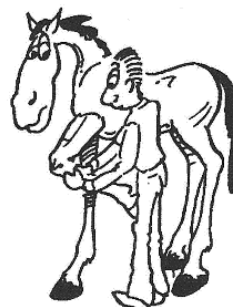
**4-C. Suspensory lig./Interosseous mm.:** palmar to metacarpal bones; palpate while the horse is standing & w/ limb flexed for pain & swelling

- Hold limb up & move SDF & DDF tendon to side to palpate
- Distal 1/3 of metacarpus (most common site of damage)



**4-D. Origin of suspensory ligament:**

- Palpate by pressing thumbs against either side of lig. with the limb flexed - pain
  - Tears of the origin of the suspensory lig.
  - A strong, repeatable withdrawal response indicates pain in suspensory. Some horses resent palpation of suspensory irregardless of lameness state

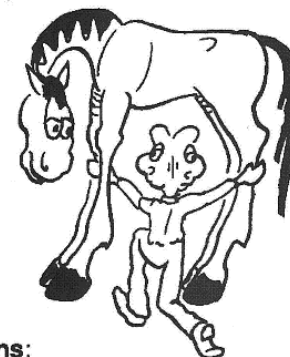


**4-E. DDF (inferior) check lig.** (carpal [inferior] check lig.): extends from the palmar carpal lig. to the DDF high in the metacarpus

- Palpate the DDF check lig behind the suspensory lig. for pain or swelling
- Check lig. desmitis

**4-F. Splint bones** (metacarpal 2 & 4)

- Palpate over their entire length w/ horse standing
- Then lift limb, flex fetlock & palpate the palmar & med. aspect of the splint bones by pushing the interosseous away from them
- CS - swelling, heat & pain over a splint bone
  - "Splints"
  - Splint fracture: break of the splint bones
  - Sequestrum of a splint fracture



**4-G. Extensor tendons:**

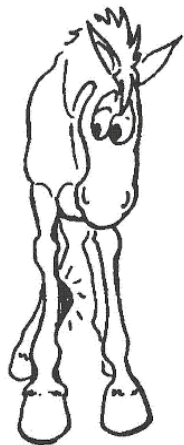
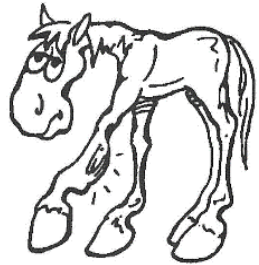
- Palpate for pain, swelling & heat; manipulate them for adhesions (located on the dors. cannon bone [Mc3])

**4-H. Dorsal middle 1/3rd of cannon**

- Palpate for heat, pain & swelling especially in 2 & 3-year-olds
  - Bucked shins (dors. metacarpal diz)
  - Saucer fractures







## Metacarpus/Metatarsus

### \*\*\*\*Very Common

- Bowed tendons 138
- Bucked shins 146
- Splints (exotosis of Mc2 & 4) 146
- Stocking up 166

### \*\*\*Common

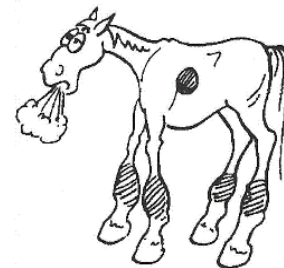
- Acute tendosynovitis 164
- Cellulitis 169
- Cortical fissure fxs (saucer fxs) 140
- Idiopathic tenosynovitis (windpuffs) 164
- Laceration of tendon sheath 165
- Lat. condylar Mc/Mt 3 fxs 110
- Osteomyelitis 145
- Pathological swelling of limb 167
- Septic tenosynovitis 162
- Severed extensor tendon 158
- Severed flexor tendon 160
- Splint fxs 146
- Suspensory desmitis - branches 154
- Transverse fxs Mc 3 142

### \*\*Uncommon

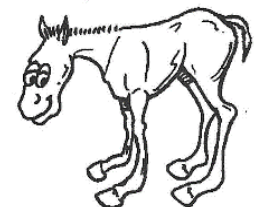
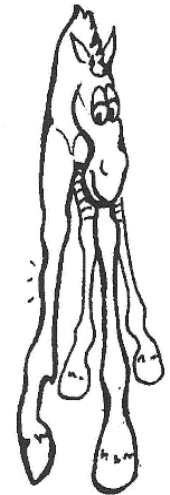
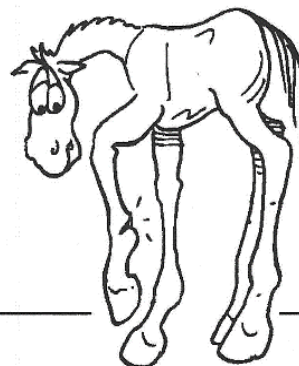
- Chronic tenosynovitis 165
- Constriction of annular lig. 129
- DDF tendinitis (low bow) 156
- Incomplete palmar fxs - prox Mc3 141
- Lymphangitis 168
- Physeal dysplasia (epiphysitis) 400
- Salter 2 fxs - Mc3 144
- Suspensory desmitis - midbody 154

### \*Rare

- Check lig. DDF desmitis 157
- Degenerative suspensory lig desmitis 155
- Pathological stocking up 167
- Rupture of CDE tendon 190
- Suspensory desmitis - origin 155



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## Carpus - Palpation

## DX - PALPATION

### 5. Carpus - palpation (M 53)

#### 5-A. Palpate dorsal carpus

##### 5-A-1. Swelling on dors. & palmar surfaces

- **Point swellings:** usually med. to the extensor carpi radialis
  - Chip fxs
- **Diffuse swellings:** assoc. w/ other joint problems
  - Articular slab fractures
  - DJD
  - Capsulitis
  - Synovitis
  - Carpalis (proliferative exostosis)
- **Diffuse fluctuating swelling on the dorsal surface:**
  - Chronic hygroma
  - Acute hematoma
  - Acute seroma
- **Needle drainage:** used to distinguish diffuse dors. swellings (blood/hematoma, serous fluid/hygroma)



##### 5-A-2. Distention of synovial sheaths of extensor tendons

- Tendosynovitis
- Rupture of the tendon
- Draining synovial sheath indicates tendinitis

**5-B. Flex the carpus:** to evaluate joints & bones of carpus. (Do this carefully & slowly in severely painful conditions to avoid injury to horse or examiner.)

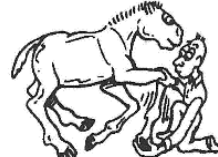
- Many show pain only on extreme flexion, so pull foot up past elbow

##### - Reduced flexion w/ pain:

- Chips or slab fractures
- Acute synovitis
- Tendinitis
- Tendosynovitis

##### - Reduced flexion w/out pain:

- Proliferative exostosis
- Chronic degenerative joint disease
- Flexural deformity



**5-C. Rotate the carpus:** by moving the cannon region medially & laterally while the limb is held up.

- Strains to the collateral ligg.



#### 5-D. Palpate carpal bones

- Flex limb & palpate the dors. surface of the bones w/ deep, intermittent thumb pressure
- Locate chip or slab fractures



#### 5-E. Accessory carpal bone: flex limb & palpate for pain

- Fractures of accessory carpal bone



#### 5-F. Carpal canal & flexor synovial sheaths

- For carpal canal syndrome
- Fractures of accessory carpal bone

## Carpus - DDX

### \*\*\*\* Very Common

- **Synovitis (carpitis)**

### \*\*\*Common

- **Angular limb deformities (valgus)**
- **Chip fxs**
- **Hygroma**
- **Osteoarthritis (DJD)**
- **Physitis**
- **Septic arthritis**
- **Slab fxs**
- **Soft tissue damage**

### \*\*Uncommon

- **Carpal bone anomalies**
- **Desmitis of origin of suspensory lig**
- **Extensor tenosynovitis**
- **Flexural deformities**
- **Immature carpal bones**
- **Med. palmar carpal lig. tear**
- **Nonspecific carpal lameness**
- **Rupture of common digital extensor**

### \*Rare

- **Accessory carpal bone fxs**
- **Acquired flexural deformities**
- **Carpal canal syndrome**
- **Comminuted fxs**
- **Desmitis of check lig of DDF**
- **Desmitis of check lig of SDF**
- **Luxation**
- **Osteochondroma of dist. radius**
- **Osteochondrosis (OC)**
- **Rupture of extensor carpi radialis m.**
- **Sagittal slab fxs**

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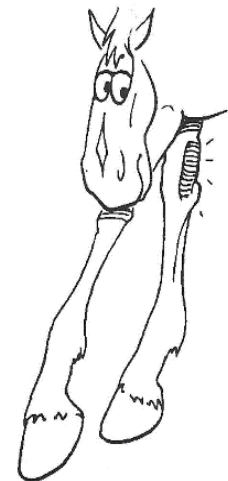
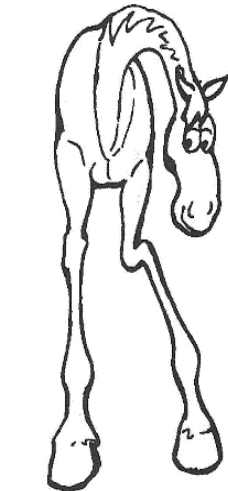
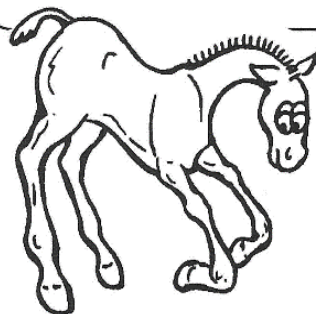
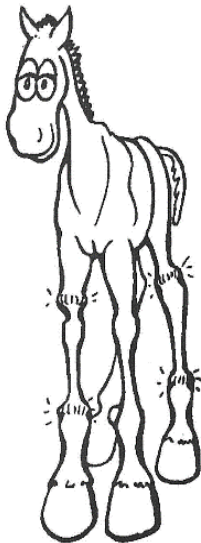
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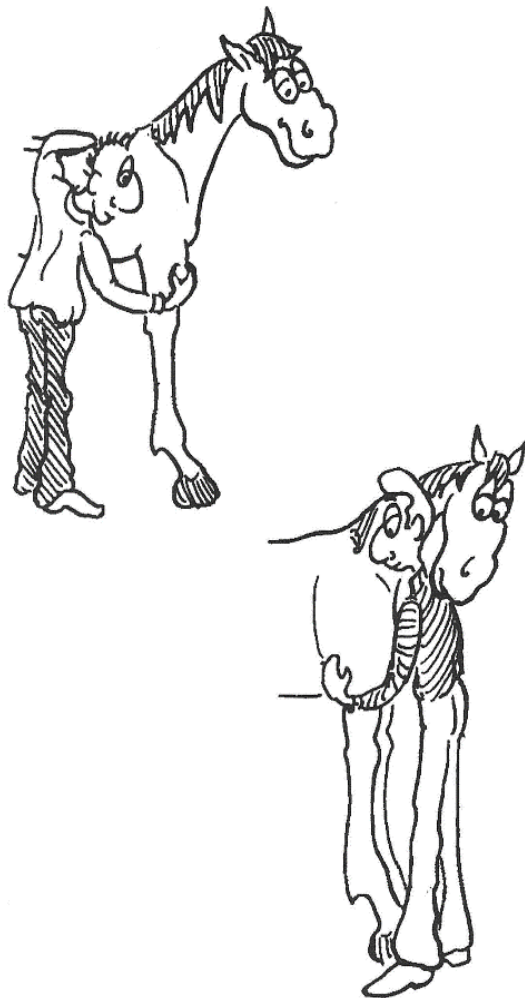
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## Forearm & Arm

## DX - PALPATION



### 6. Forearm & arm - palpation

**6-A. Soft tissue inflammation:** palpate for heat, swelling, pain of soft tissue

**6-B. Distal radius:** palpate for pain

- Oblique articular fxs
- Avulsion fxs of the epicondyles where collateral ligg. attach
- Physeal dysplasia

**6-C. Palpate the cubital (elbow) joint**

- **Capped elbow**, elbow hygroma: a firm painless fluctuation over the point of the elbow (olecranon bursitis)

**6-D. Visualize dropped elbow:**

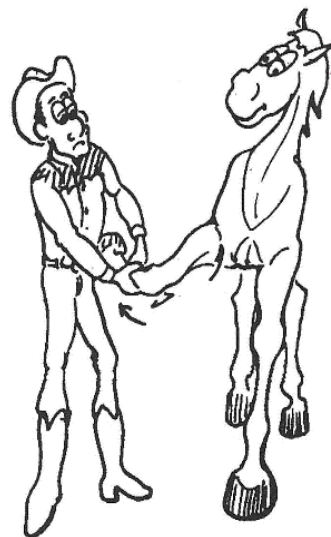
- Fx of olecranon process of ulna (quite swollen)

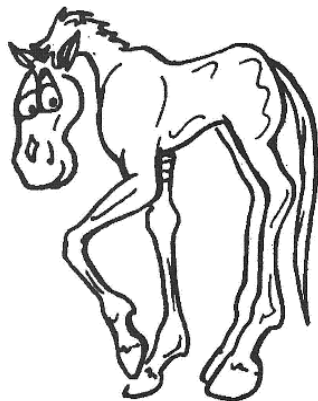
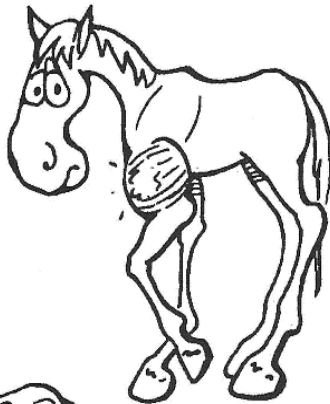
**6-E. Abduction & adduction** of the limb for pain, also affects the shoulder joint, so not selective for the elbow

- Collateral ligg. problems

**6-F. Palpate arm (humerus)**

- Fractured humerus
- Crepitation of a humeral fracture can be felt & heard (ear or stethoscope)
- Inflammation of soft tissues





## Forearm & Arm

### \*\*\*Common

• Capped elbow	210
• Humeral fxs	212
• Radial n. paralysis	213
• Ulnar fx	208

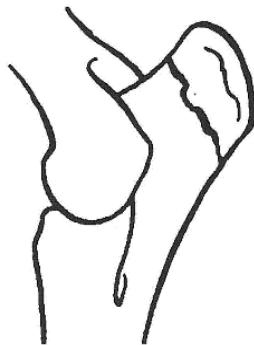
### \*\*Uncommon

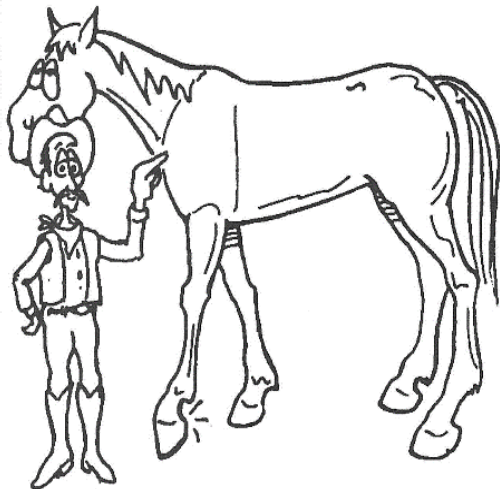
• Radius fxs	205
• Septic arthritis	211

### \*Rare

• Antebrachial compartment syndrome	206
• Arthritic elbow	210
• Luxation of elbow	207
• Osteochondroma - dist. radius	206
• Osteochondrosis - elbow	211
• Rupture of med. collateral lig.	207
• Sprain of accessory lig of SDF	207

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## Shoulder - DDx

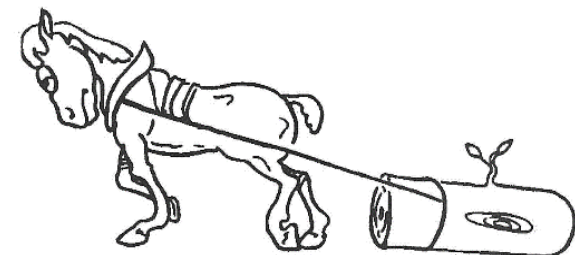
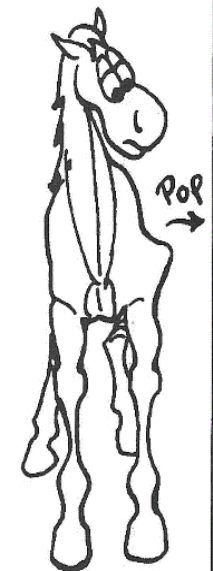
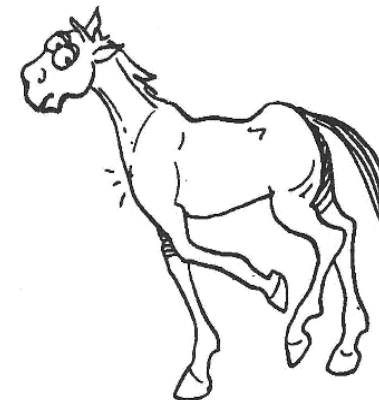
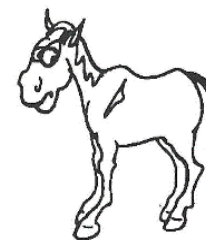
### \*\*\*Common

#### \*\*Uncommon

- Fistulous withers 227
- Osteochondrosis dissecans (OCD) 222
- Scapular fxs 224
- Supraglenoid tubercle fxs 225
- Suprascapular n. paralysis (Sweeney) 226

#### \*Rare

- Bicipital bursitis 220
- Brachial plexus avulsion 223
- Infraspinatus bursitis 220
- Luxation of shoulder 221
- Omarthritis (DJD) 221
- Ossification of bicipital tendon 220
- Prox. humeral fx 224
- Rupture of serratus ventralis m. 227
- Septic arthritis 221
- Subchondral bone cyst 223





## Palpation of Hindlimb

## DX - PALPATION

### Palpation of hindlimb

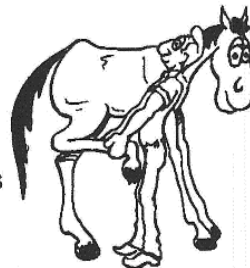
**Dist. end of the hindlimb evaluated the same as the forelimb up to the hock**

- Chronic lameness of the hindlimb usually due to structures above the foot
  - Hock most common
  - Stifle
  - Hip least common
- Evaluate symmetry of gluteal muscle in chronic hindlimb lameness
  - Atrophy of gluteal muscle common

- Assoc. w/ chronic synovitis due to:
  - Chronic interarticular fractures
  - Sprains to the joint capsule
  - DJD (degenerative joint dz)
  - Chronic septic arthritis

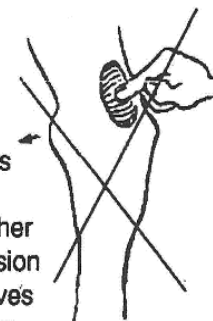
**8-B. Diffuse distention of the whole hock joint:** swelling of the joint capsule & other ligamentous structures  
 • Severe sprain

**8-C. Flex & extend hock:** this seldom shows signs even if severe hock problems



**8-E. DDF on medioplantar side** of the limb just above the hock

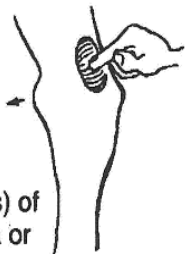
- **Thoroughpin:** swelling due to synovitis or tendosynovitis of the tarsal sheath & tendon of the DDF muscle at the tarsus
  - DDx from bog spavin
  - Distention doesn't move to other parts of the hock by compression in thoroughpin, distention moves to other pouches in bog spavin



**8. HOCK:** palpate & visualize the hock

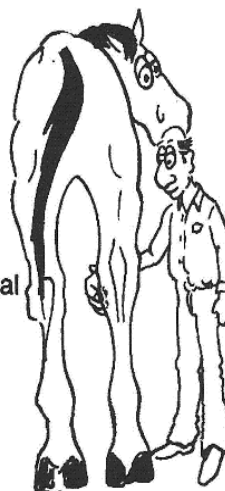
**8-A. Tarsocrural joint - palpate for swelling**

- **Bog spavin:** fluid distention of the tarsocrural joint due to synovitis
  - Movable distention: pushing on distention moves it to other pouches of the joint (from dorsomed. to plantar lateral pouch) to differentiate from nonmovable thoroughpin
  - Interarticular chip fractures
  - OCD (osteochondrosis dissecans) of
    - Dist. articular surface of the tibia or
    - Trochlear ridge of talus
- **Capsulitis:** Inflamm. of the joint capsule
  - Palpable firm swelling (due to thickening of the fibrous joint capsule, not to excess synovia)
  - Nonmovable distention (usually can't be moved from one pouch to the other by compression)



**8-D. Distal intertarsal & tarsometatarsal joints:** palpated on the med. side  
 • Normally smooth contour tapering into cannon  
 • **Bone spavin:** DJD (degenerative joint dz) of dist. intertarsal & tarsometatarsal joints
 

- Boxy appearance due to bone proliferation



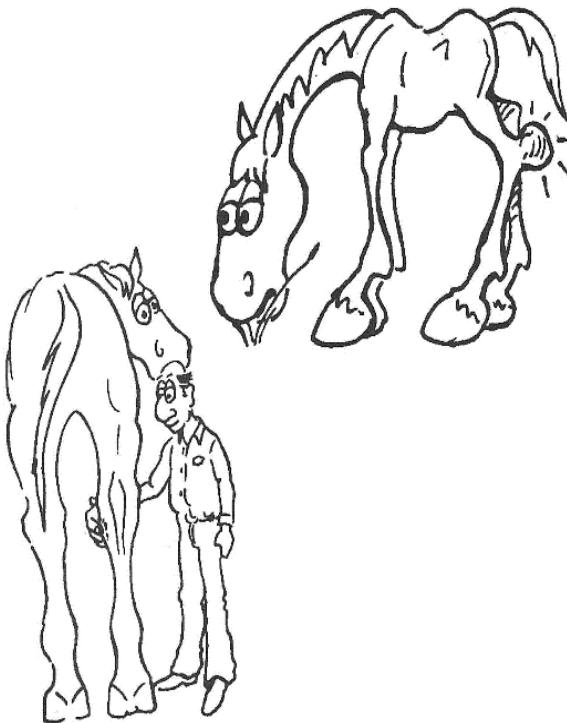
**8-F. Plantar aspect of calcaneus**

- **Curb:** swelling due to inflammation of long plantar lig.



**8-G. Capped hock**

- Swelling of subcutaneous bursa over the point of the hock
  - Initially soft fluid density then fibrotic as it hardens



## Tarsus - DDx

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### \*\*\*Common

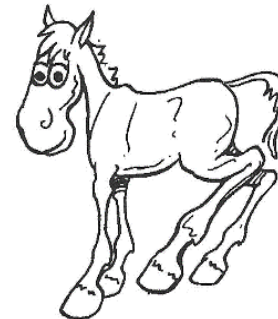
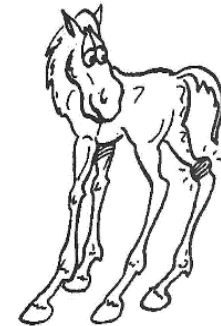
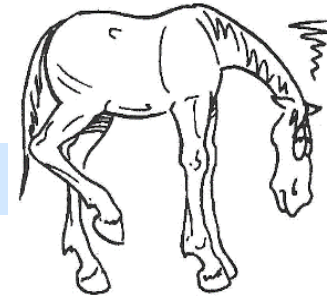
- Desmitis of long plantar lig (curb) 242
- Hygroma (capped hock) 243
- Idiopathic synovitis (bog spavin) 237
- Osteoarthritis (bone spavin) 237
- Osteochondrosis (OC) 238
- Sprains 233

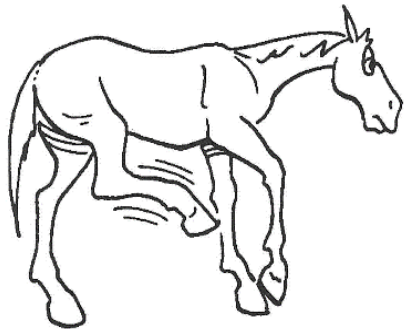
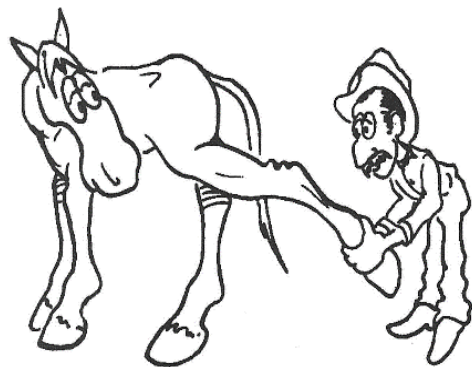
### \*\*Uncommon

- Angular limb deformity (tarsal valgus) 249
- Calcanean fx 241
- Cunean bursitis 236
- Stringhalt 244
- Thoroughpin 245

### \*Rare

- Displaced DDF 234
- Immaturity of tarsal bones 248
- Luxation of SDF 233
- Luxation of tarsus 233
- Tarsal fxs other than calcanean fxs 240





## Crus

### \*\*\*Common

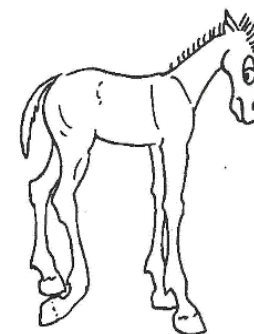
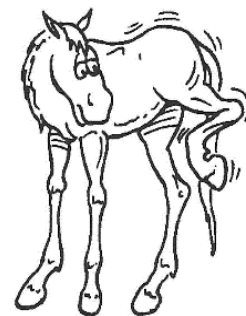
### \*\*Uncommon

- Peroneal nerve paralysis 262
- Peroneus tertius rupture 257
- Stringhalt 258
- Tibial fx 260

### \*Rare

- Achilles' tendon rupture 257
- Australian stringhalt 259
- Discontinuous fibula 259
- Gastrocnemius rupture 257
- Peroneus tertius flexural deformity 257
- SDF rupture 257
- Shivering 259
- Tibial nerve paralysis 262

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## Stifle - Palpation

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## DX - PALPATION



### 10. Stifle palpation & inspection

#### 10-A. Observe

- Swelling or atrophy of surrounding muscles & swelling
- Check for a scar, over **med. patellar lig.**, of a former desmotomy to correct patellar lock

#### 10-B. Palpate patellar ligaments:

- Procedure:
  - Locate indentation of tibial tuberosity (site of attachment of intermediate (middle) patellar lig.
  - Palpate up intermediate (middle) patellar lig.
  - Move medially & feel V-shaped space between intermediate & medial patellar lig.
  - Move laterally & imagine separation of lat. & middle patellar ligg.
- Patellar lig. desmitis (pain)
- Locate pouches & patella

#### 10-C. Femoropatellar joint pouch:

- Visualize from the side for swelling
- **Palpate for distention of pouches on either side of intermediate (middle) patellar lig.**
- Any abnormalities indicate problems in femoropatellar pouch or med. femorotibial pouch (they communicate)
- Check against opposite limb (actively training horses normally have mild capsulitis & distention)
  - Gonitis (capsulitis - stifle)
  - Excessive pathology assoc. w/ distention
  - Rupture of cran. cruciate lig.
  - Sprained med. collateral lig.
  - Meniscal damage
  - DJD (degenerative joint dz)
  - Intra-articular fracture
  - OCD (osteochondritis dissecans) of lat. trochlea

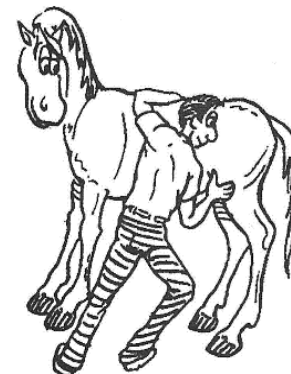


#### 10-D. Patella: palpate for displacement

- Fractures - feel for crepitation

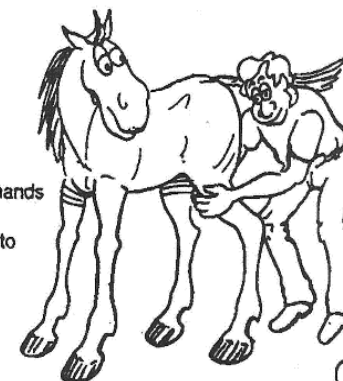
#### 10-E. Patellar displacement test:

- Upward fixation of patella
- Push patella upward & outward trying to hook med. patellar lig. over med. patellar ridge
  - Watch for objective kicking! (Grasp tail & pull weight onto the limb being manipulated to prevent kicking)
  - If the patella can be locked, walk off & observe
  - Complete lock prevents flexion (limb dragged in extension)
  - Partial upward fixation suspected if the patella is easily pushed upward, but doesn't lock. In this case crepitation can be felt w/ distention of the femoropatellar joint & the toe is worn



#### 10-F. Cruciate test:

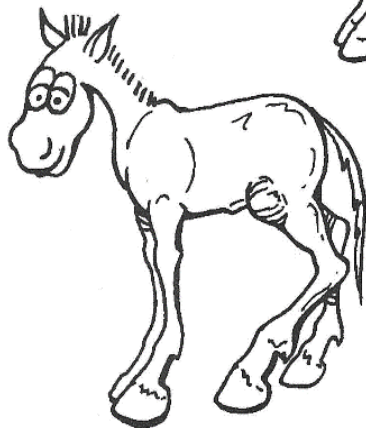
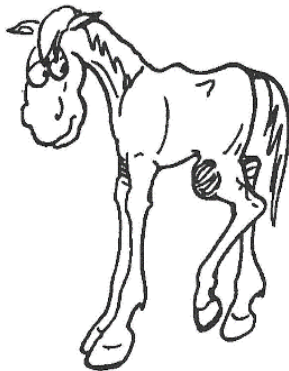
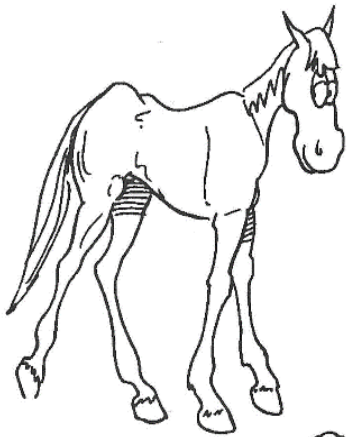
- Cruciate lig. damage
  - Place your knee behind the calcaneus & your toe between the bulbs of heel to stabilize the limb & avoid being kicked
  - Grasp the front of the prox. tibia w/ both hands
  - Strongly pull the tibia caudally & release
  - Cruciate ligg. damage will allow the leg to rebound cranially
  - Note looseness & crepitation
  - Compare to opposite limb
  - Only do if cruciate damage suspected



#### 10-G. Medial collateral lig. test

- Procedure: Press your shoulder into the stifle & pull dist. limb laterally
- Findings: pain causing horse to fall away indicates:
  - Med. lig. ruptured or
  - Sprain - repeatedly abduct limb & trot off (look for exacerbation of the lameness)





## Stifle - DDx

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### \*\*\*Common

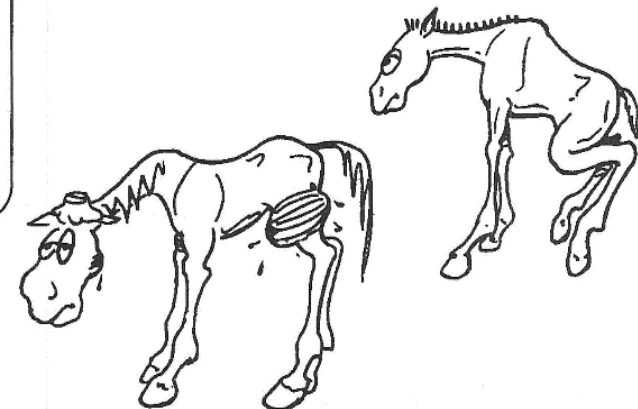
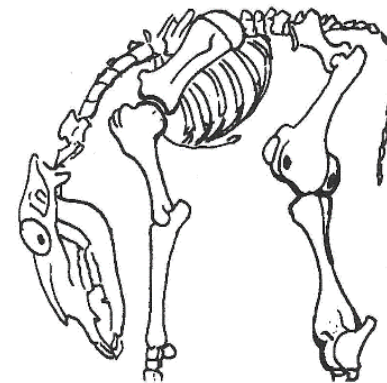
• Collateral lig. sprain	274
• DJD (osteoarthritis)	279
• Gonitis (stifle lameness)	269
• Infectious arthritis	279
• Osteochondrosis dessicans (OCD)	270
• Soft tissue damage	276
• Upward fixation of patella	272

### \*\*Uncommon

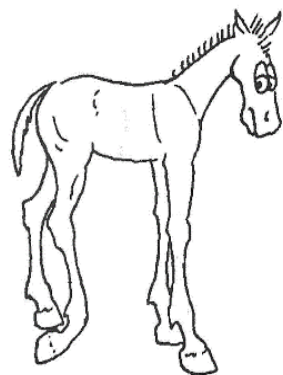
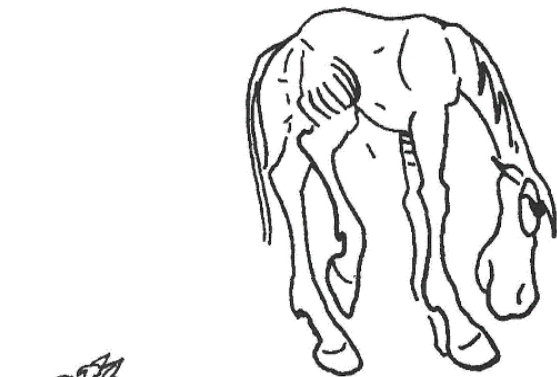
• Cruciate/collateral lig failure	275
• Humeral physeal fx	277
• Subchondral bone cyst	271
• Tibial physeal fx	277

### \*Rare

• Calcinosis constricta	276
• Chondromalasia of patella	278
• Cruciate & collateral ligg. failure	275
• Joint capsule injuries	274
• Meniscal injuries	275
• Patellar fx	278
• Patellar subluxation	274







## Thigh, Hip & Pelvis - DDx

### \*\*\*Common

- Muscle strain 329
- Rhabdomyolysis 320

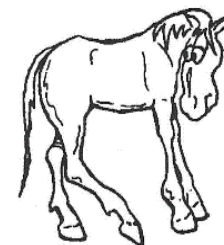
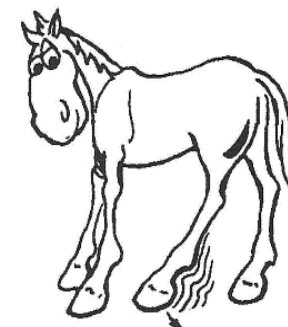
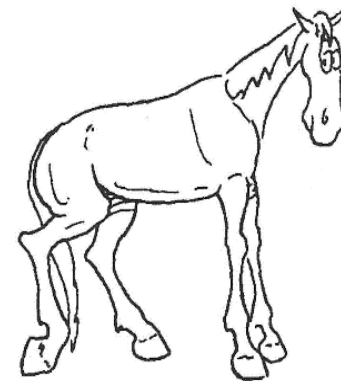
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### \*\*Uncommon

- Femoral fx 286
- Hypercalemic periodic paralysis 326
- Pelvic fx 289
- Physeal fx, femur 287
- Subluxation of sacroiliac joint 306, 291

### \*Rare

- Femoral nerve paralysis 292
- Fibrotic ossifying myopathy 285
- Degenerative joint disease (DJD) 291
- Gluteal nerve paralysis 292
- Hip dislocation 290
- Hip dysplasia 291
- Obturator nerve paralysis 293
- Rupture of round lig of hip joint 290
- Sciatic nerve paralysis 293
- Trochanteric bursitis (Whorlbone) 288





## Back - Palpation

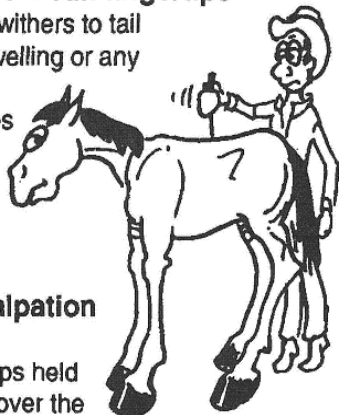
## DX - PALPATION

### 12. Back - palpation

#### 12-A. Light palpation: run fingertips

down the back from withers to tail

- Feel for atrophy, swelling or any asymmetry
- Tickles some horses



#### 12-B. Firm back palpation

##### • Flexion tests:

- Firmly run finger tips held together or a pen over the back & croup using firm pressure
- Look for signs of pain w/ repeated palpation
- Assess reluctance to move the thoracolumbar spine (resist ventroflexion, dorsiflexion & lateral flexion)

Soft tissue or bony lesions will cause horse to resist moving spine by tightening muscles & stabilizing the spine. Selective digital pressure may isolate problem, but sometimes radiographs are needed

#### 12-C. Thoracolumbar region

##### • Ventroflexion test:

- Pinch the thoracolumbar region
- "Dipping" : most horses will normally react to 1st firm palpation by ventroflexing the back
- Tightening (muscle spasms) of back muscles: attempting to fix spinal column indicates pain

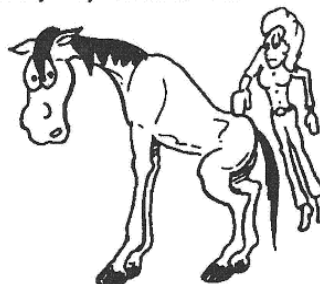
#### 12-D. Caudal sacral region

##### • Dorsiflexion test:

- Pinch or run a blunt instrument over croup
- Normally the horse lowers croup & thus dorsiflexes the back (arches back), w/ repeated palpation this ventroflexion or arching decreases
- If it doesn't decrease apply firmer palpation w/ each repeated palpation
- If ventroflexion still doesn't lessen, suspect a back problem

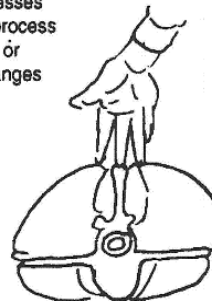
#### 12-E. Lateral flexion test:

- Run a blunt instrument over the lateral side of the back muscles on both sides
- Normally flexes back laterally away from the stimulus
- Back problems: will fix back & avoid movement



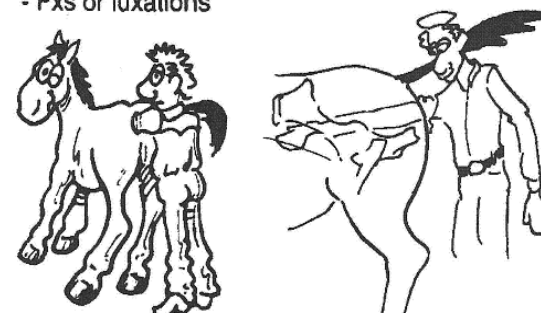
#### 12-F. Axial alignment palpation:

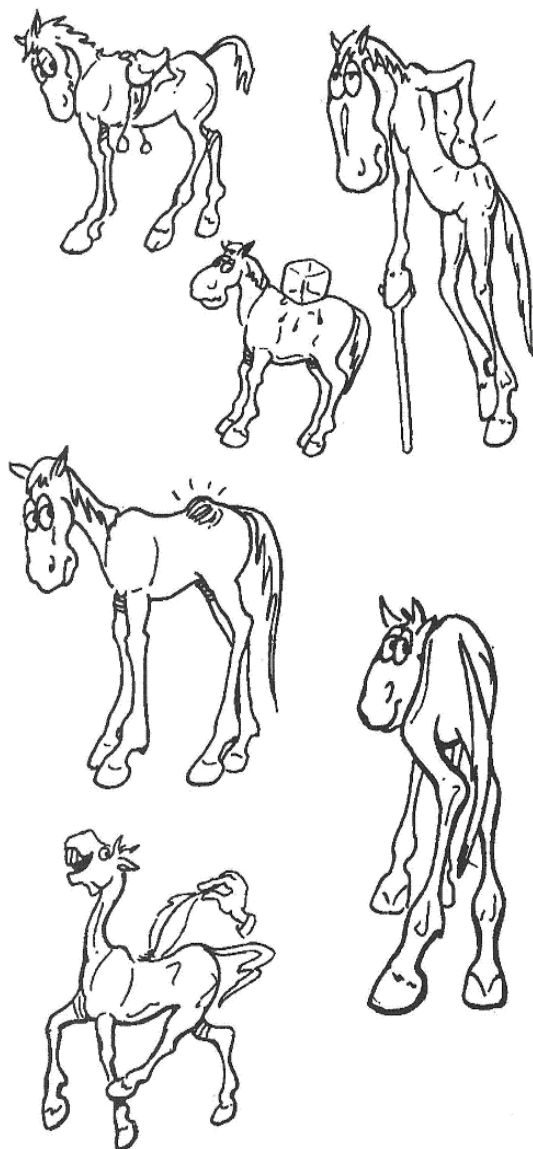
- Palpate tips of spinous processes w/ 3 fingers
- Middle finger down the spinous processes
- 2 adjacent fingers either side of the process
- Look for malalignment or depressions or protrusion of spinous processes & changes in the interspinous distances
- Luxation/Subluxation (impossible without fracture)
- Fractures



#### 12-G. Rectal palpation:

- Upper hind limb or back involvement
- Eliminate or confirm fractures of the pelvis or luxation, subluxation or fxs of sacrum
- Examine from cran. to caud.
- **12-G-1. Pressure on iliopsoas m.:** press against the iliopsoas m. in front of the pelvis
  - Pain results in a splinting position caused by tightening of muscles to avoid moving the bones of the area
  - Fxs of lumbar vertebrae or local myopathy
- **12-G-2. Palpate aorta & branches:**
  - Palpate aorta against ventr. surface of lumbar vertebrae
  - Palpate external iliac a. along body of ilium
  - Thrombosis suspected w/ weak iliac pulse
- **12-G-3. Sublumbar lymph nodes:**
  - Palpated around termination of aorta for asymmetry
  - Asymmetry consistent w/ metastasis of a tumor (esp. in light pigmented horses)
- **12-G-5. Sacrum:** palpate its ventral surface for displacement into or away from the pelvic cavity indicative
  - Fxs or luxations





## Back - DDx

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### \*\*\*Common

- Ill fitting saddle, poor riding 299
- Skin lesion 310
- Temperament 299

### \*\*Uncommon

- Muscle/ligament strain 302
- Overriding spinous processes 304
- Subluxation of sacroiliac joint 306
- Thoracolumbar problems 300

### \*Rare

- Aortic thrombosis 311
- Infective spondylitis 309
- Intervertebral discs 310
- Kyphosis 310
- Lordosis 310
- Nerve pinching 310
- Ossifying spondylosis 309
- Scoliosis 310
- Spinous process fxs 308
- Spondylosis deformans 309
- Tumors of back 310
- Vertebral fxs 308

