

Lower Leg Lameness Bucked Shins, Splints, Strains (Tendonitis/"Bowed tendon"), Stocking Up, Salter Fxs,

Guide to Equine Clinics, Lameness Pasquini, 2nd ed.

Bucked shins

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METACARPUS/METATARSUS

Condition	Facts/Cause	Presentation/CS	Diagnosis
Dorsal metacarpal diz, "Bucked shins"; "Shin splints"; Stress fxs Mk 519, AL 596; IM 1193; M 90; W-J 101; C3T 143; TAH 35, 354, E 1110; EM&S 1410; VC-Dx 160; S-W 623; S-A1016; Pic219; X-1D 131; X-M 160; X-B 117; X-T 174; POP-H97, 278; POP-G232; PoP-J 150; POP-T 155; RA 170 ***** \$\$\$	<ul style="list-style-type: none"> • Periostitis & subperiosteal hematoma on dors. Mc3 • #1 lameness of 2 yr-old race horses in 1st training season <ul style="list-style-type: none"> - Up to 70% of horses in training • Forelimb (bilateral usually, but lt. limb worse [inside leg]) <ul style="list-style-type: none"> - Rear limbs infrequently • Dorsomedial usually - microfractures <ul style="list-style-type: none"> - Usually 2/3rds of way down cannon • Cause: <ul style="list-style-type: none"> - Concussion when bone not fully conditioned - Stress on dorsomed. surface - increase in thickness to compensate - If stress faster than repair ("too much too soon"): <ul style="list-style-type: none"> .. Microfxs & subperiosteal hemorrhage (fatigue or stress fxs) 	<ul style="list-style-type: none"> • Acutely lame (pointing) <ul style="list-style-type: none"> - Short stride - Incr. w/ exercise - Shuffling forelimb gait - Reluctance to stretch out - Variable depending on severity • Warm, painful swelling on dorsomed. surface of Mc3 <ul style="list-style-type: none"> - Subperiosteal hematoma, microfractures (stress fxs) • Resolved cases: new bone w/o pain 	<ul style="list-style-type: none"> • CS & Hx (age) • Palpation of dorsomed. cannon after strenuous exercise <ul style="list-style-type: none"> - Acutely painful - Swelling • Thermography • Radiology (DP, L, DMO, DLO) <ul style="list-style-type: none"> - DMO best view (highlights dorsomed. surface) - Acutely negative <ul style="list-style-type: none"> - W/ time - Subperiosteal lysis - Subperiosteal callus - Microfractures - dorsomed. cortex <ul style="list-style-type: none"> - Cortical fractures (tongue or saucer fxs) .. Repeat rads 7-10 day intervals for fxs (demineralization to be seen) • Bone scan (scintigraphy)

DDx:

- Fissure/saucer fxs of dors. cannon
- Condylar fxs of McIII
- Soft tissue injury

"too much too soon"



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Bucked shins continued



TREATMENT

• All cases

- **Rest** important for all (repair)
- **CEP** (controlled exercise program)
- **Ice** (cold therapy) if heat

• Mild cases 10-14 days rest

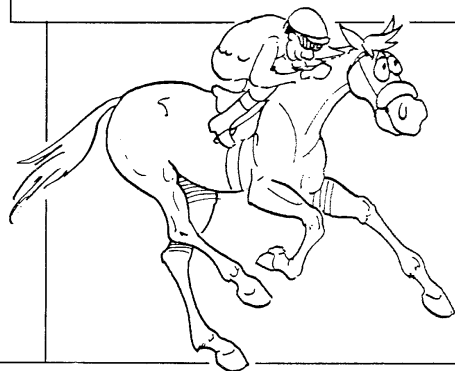
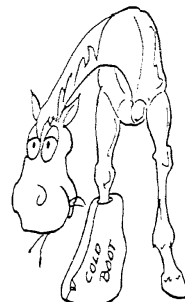
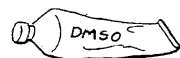
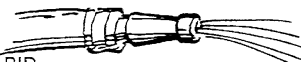
- **CEP** - hand walking, slow to moderate training (30-90 days) & training started back slowly
- **PBZ** (phenylbutazone)
- **Topical DMSO** painted on area SID or BID 5-10 days to reduce inflammation

• Severe

- Convalescence 1-3 months

• Other treatments

- Local hyperthermia
- Counterirritants & local corticosteroid injection contraindicated if assoc. w/ stress fxs



#1 lameness in 2-year-old racehorses

"Too much too soon", #1 - 2-yr-old lameness, Dorsomed.

CS: Pointing

Dx: Palpation, Rads, Bone scan

Tx: Rest, CEP, Ice



Prognosis:

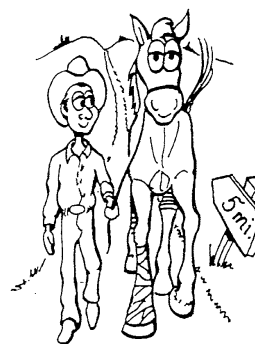
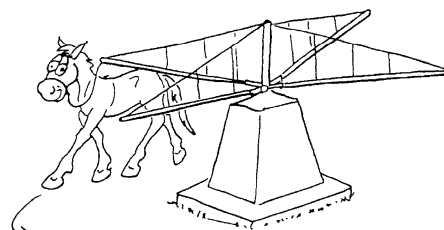
- **Mild** - good
- **Severe** - guarded, some never get better, others take a year or more to return to soundness



Prevention


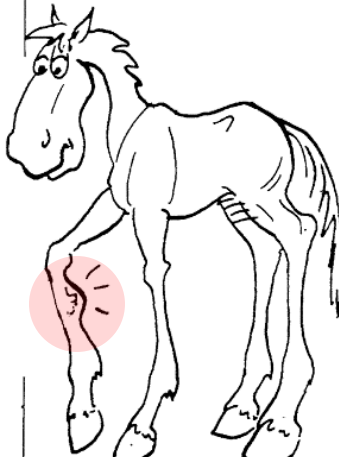

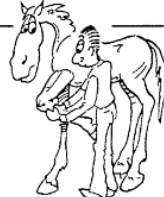


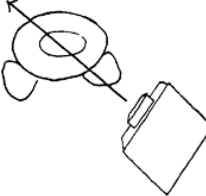
• Deliberate CEP (controlled exercise program)

- Condition slowly so dors. cannon remodels to take stress (thickens)
- **90 days of galloping** before speed work
- Adequate rest period betw. hard workouts (allow remodelling)
- Monitor dors. surface daily for pain (if + discontinue work until subsides)
- Soft ground (turf) better than wood-fiber which is better than dirt
- No toe grabs or lowered heel (delays break over)



Lower Leg Lameness

Bucked Shins, Splints, Strains (Tendonitis/"Bowed tendon"), Stocking Up, Salter Fxs,
 Guide to Equine Clinics, Lameness Pasquini, 2nd ed.

Splints		146	METACARPUS/METATARSUS	
Condition	Facts/Cause	Presentation/CS	Diagnosis	
Exostosis of Mc/Mt II & IV, "Splints" MK 521; AL 612; M 93; W-J 95; S-A 1022; E-1115; X-1D 133; X-B 121; X-T 174; X-M 160; S-Sx 60; Pic 219; POP-H 98, 281; POP-G 232; POP-J 147; POP-T 155; POP-S 160; RA p171 ★★★★ \$	<ul style="list-style-type: none">• Young horses (2 yr-olds) in heavy training• Forelimbs• Splint bones = Mc2 & Mc4• Med. side betw. Mc2 & Mc3<ul style="list-style-type: none">- Interosseous lig. connects splints to cannon bone• True splint<ul style="list-style-type: none">- Strain on interosseous lig. betw. cannon (Mc3) & med. splint (Mc2)<ul style="list-style-type: none">. Trauma from concussion, excessive exercise of young horses- Periostitis w/ new bone growth (exostosis) along splint• Predisposing factors<ul style="list-style-type: none">- Excessive exercise when young- Faulty conformation<ul style="list-style-type: none">. "Bench knees"- med. splint offset laterally, taking more weight. Base narrow, toe out (causes interference)- Improper shoeing = interference- Improper nutrition (overweight)• Pathophysiology:<ul style="list-style-type: none">- Lig. can get torn due to stress- Periosteal reaction (hard lumps of bone formed due to damage of lig.)- Medial splints due to stress, articulates w/ C2 & C3	 <p>2 yrs</p> <ul style="list-style-type: none">• Acute<ul style="list-style-type: none">- Variable lameness<ul style="list-style-type: none">. Lamé only when forming. Most pronounced after work- Swelling on med. side of metacarpus, acutely no swelling• Chronic - blemish<ul style="list-style-type: none">- More commonly see, never notice acute stage- Bony protruberance (cosmetic blemish)- Lameness disappears (stops painful movement) <p>Sequela:</p> <ul style="list-style-type: none">• Blind splint (swelling on inside [axial] of splint where can't see)• Suspensory desmitis: encroachment on suspensory lig. (rare)  	<ul style="list-style-type: none">• Acute<ul style="list-style-type: none">- Palpate pain by pressing w/ thumb. Deep palpation- Confirm w/ local block or deep branch of the lat. palmar nerve• Chronic<ul style="list-style-type: none">- No pain- Bony swelling 3" below carpus• Radiology:<ul style="list-style-type: none">- DLO view to look through interosseous space- Osteolysis betw. McII & McIII m/b- Osteoperostitis- Dystrophic mineralization of interosseous lig.- Check if<ul style="list-style-type: none">. Carpal joints involved. Palmar extension to effect suspensory lig.     <p>DLO</p>	

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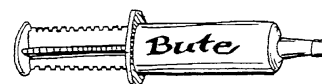
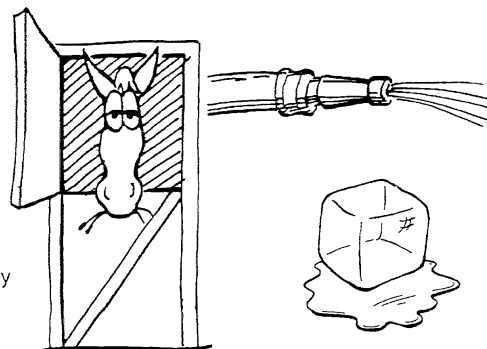
Splints continued

• Acute

- **Complete rest** 7-10 days
 - **Bandaging to decrease swelling**
 - Cold hosing
 - Steroid contraindicated (slows consolidation process)
 - **PBZ** (NSAIDs)
- NO firing & iodine-based blistering (counterirritants, common practice to speed ossification), does not improve end result - no place in therapy

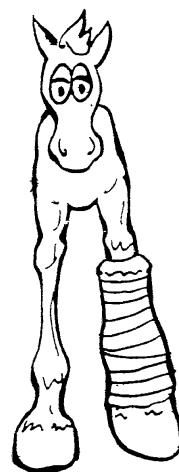
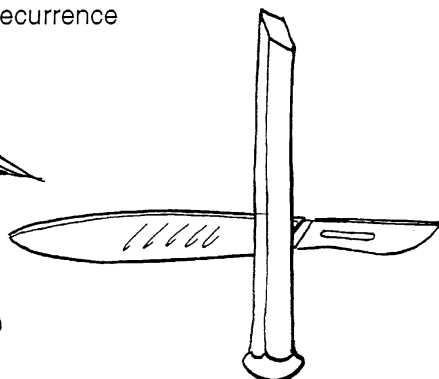
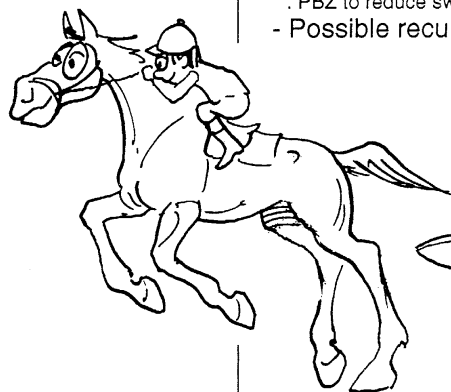
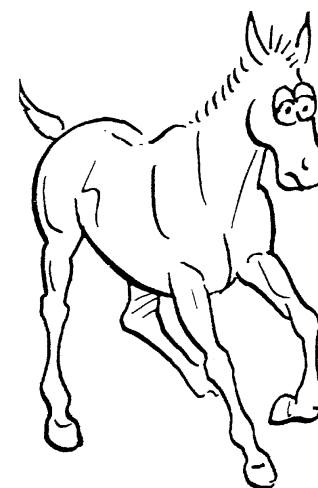
• Chronic

- **Bony prominence impinging on suspensory lig. or cosmetic**
- **Excise periosteum & bony growth**
 - . Pressure bandage 2 weeks after Sx
 - . Light bandage another 2 weeks
 - . PBZ to reduce swelling & new bone
- Possible recurrence



DDx:

- Splint fxs (rads to DDx)
- Periostitis (from interference)
- Suspensory lig. strain
- Soft tissue trauma to metacarpus



****Med. interosseous lig., Forelimbs
 CS: Swelling med. McIII
 Dx: Palpation, Rads
 Tx: Rest, Bandage, PBZ - \$



Prognosis:

- Good for athlete, cosmetic blemish
- Guarded if causes suspensory desmitis



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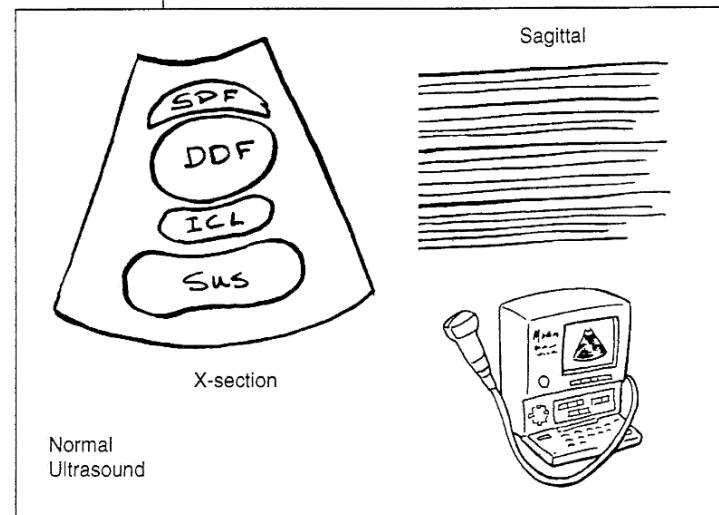
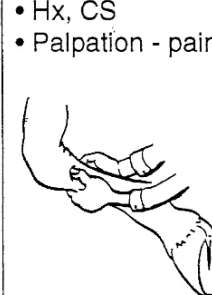
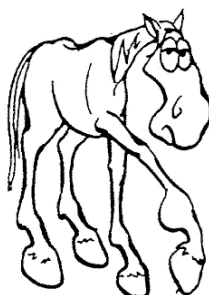
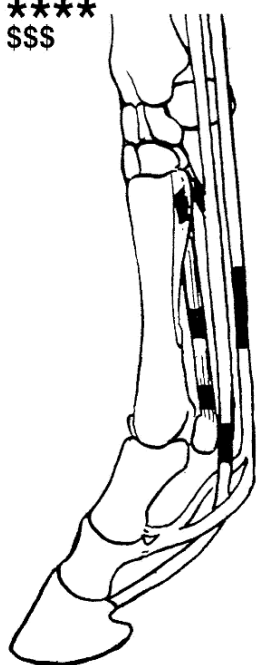
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Strain - Tendon/Ligament

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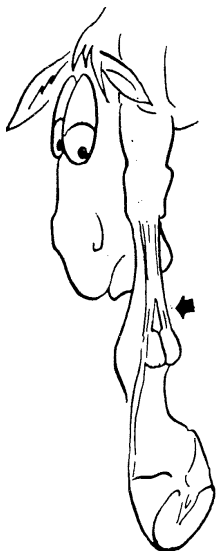
METACARPUS/METATARSUS

Condition	Facts/Cause	Presentation/CS	Diagnosis
Tendon/lig. strain, Tendinitis, Desmitis, "Bowed tendon" Mk 471; M 95; C3T 146; W-J 224; AL 463; H 791; IM 1185; EM&S 1416; E 1072; TAH 348; VC-T&L 323; S-T&M 147; POP-H 104, 167; POP-S 164; POP-G 218; RA p171 **** \$\$\$	<ul style="list-style-type: none"> Types of inflammatory conditions caused by strain <ul style="list-style-type: none"> Tendinitis - flexor tendons surrounded by paratenon (paratenon) Tenosynovitis - tendon assoc. w/ tendon sheath Desmitis - ligament, suspensory lig. (interosseous muscle is considered a ligament) No agreement on pathogenesis or treatment "Bowed tendon": lay term for tendinitis Incidence <ul style="list-style-type: none"> Flexor tendons of forelimbs > hind (7:1) SDF > DDF - forelimbs (26% > 8%) Suspensory lig. common in forelimb, Standardbreds often affected in hindlimbs Locations of injuries <ul style="list-style-type: none"> SDF <ul style="list-style-type: none"> Mid metacarpus #1 site At fetlock less common DDF - fetlock or below <ul style="list-style-type: none"> Check lig. of DDF - just below carpus or tarsus Suspensory ligament <ul style="list-style-type: none"> Branches or just prox. to branches Midbody Prox. attachment Predisposing factors: <ul style="list-style-type: none"> Racing (flat or steeplechase) Fast, hard track >> muddy track (surprising finding) Inadequate training, highest incidence in 1st 3-4 racing starts Muscle fatigue Bad conformation (excessive pastern slope) Long toes 	<ul style="list-style-type: none"> Acute: pain Chronic: firm, diffuse swelling (fibrosis) Recurrence common 	<ul style="list-style-type: none"> Hx, CS Palpation - pain



Lower Leg Lameness

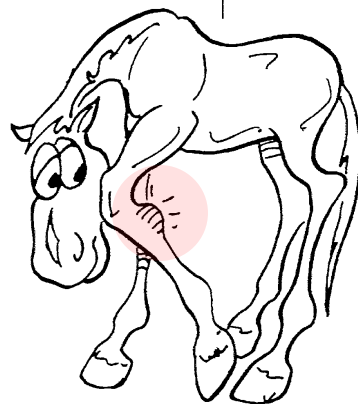
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Pathophysiology:

- Controversy: single episode or multiple episodes weakening tendon
- Tendons & lig. are elastic due to Type 1 collagen bundles arranged in longitudinal pattern w/ a crimped (wavy) configuration
 - Normal strain straightens out crimping, when strain stopped crimp bounces back
- Abnormal strain - **tears fibers apart (partial rupture)**
 - Exudate & inflam. (edema) & hemorrhage into lig. or tendon further separates fibers
 - Release of hydrolytic enzymes further weakens tendon
 - **Collagen type 3** scar (granulation tissue) replaces type I cartilage:
 - . Not crimped, **nor as strong**
 - Further strain - damage - vicious cycle
- Rest to stop cycle of tear, fluid & enzymes
 - Slow healing due to low blood supply
 - Stress to align collagen fibers & heal properly
 - Adhesions problem
 - Ultrasound monitoring to initiate & evaluate controlled exercise program (CEP)

Always more prone to further break down!
48% of SDF rebow, 75% in same limb



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**** Tearing of collagen fibers

Tendon - tendinitis; Lig. - desmitis

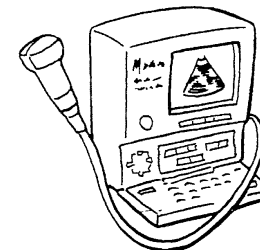
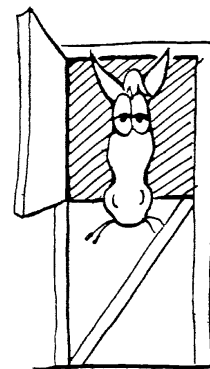
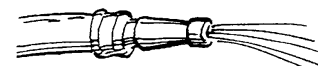
CS: Pain, Swelling

Dx: Hx, CS, US

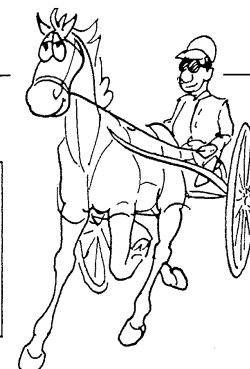
Tx: Ice, PBZ, Bandage, Rest, US monitor

Treatment

- **No agreement on treatment**
- Reduce swelling
 - Ice 48-72 hours
 - PBZ 7-14 days
- Tissue support
 - Bandage both lower limbs
- **Stall rest:** minimum of 4 months
- Monitor healing w/ ultrasound
- Prox. check lig. desmotomy for SDF tendinitis



Prognosis: ★
• Guarded, commonly rebow



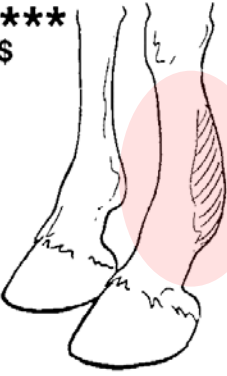

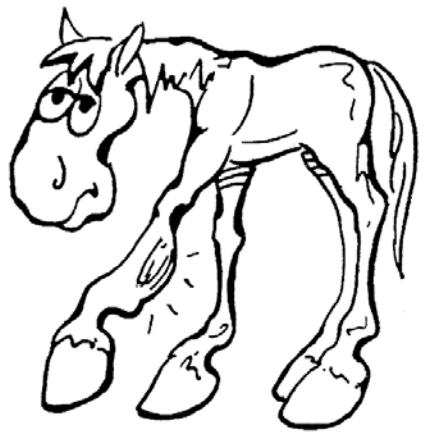
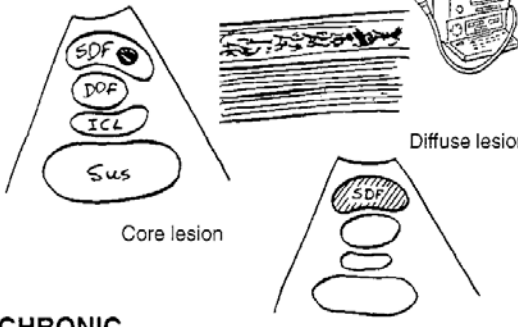
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Bowed Tendon

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METACARPUS/METATARSUS

Condition	Facts/Cause	Presentation	Diagnosis
SDF tendinitis, "Bowed tendon" Tendon Strain Mk 471; M 95; AL 463; C3T 146, 796; 798; H 791; IM 1185; E 1072; EM&S 1416; TAH303; VC-T&L 409, 425; VC-US 177; S-T&M 147; S-W 441; POP-H 104, 167; POP-G 298; POP-J 146; POP-T 149; POP-S 164; RA p170 	<ul style="list-style-type: none"> • SDF (superficial digital flexor) • Excessive strain to flexor tendon (trauma or overload) • Thoroughbreds <ul style="list-style-type: none"> - Fore > hindlimbs (more wt. bearing) - LF > RF - High frequency in 1st 3-4 racing starts - Hard, fast tracks > muddy tracks (surprising) • Standardbreds also occasional in hindlimbs • Location - classification <ul style="list-style-type: none"> - #1 Middle 1/3 of metacarpus/metatarsus - SDF - Palmar/ plantar fetlock . Involves synovial sheath • Pathophysiology - controversial <ul style="list-style-type: none"> - Stretching & rupture of fiber bundles - single episode or additive cycles of damage - Edema, hemorrhage disrupt fiber bundles - Ischemia - necrosis - Classic "bowed" tendon: inflammation swelling & fibrosis - Cycle only broken by rest • Predisposing factors <ul style="list-style-type: none"> - Smallest cross sectional area of SDF in midcannon - Poor blood supply to midmetacarpal region of tendon • Uneven, tight bandages may cause a bow 	<ul style="list-style-type: none"> • Acute: mid-metacarpus <ul style="list-style-type: none"> - Pain, consistent - Swelling (m/b un-noticeable) - Heat - Lameness variable, none to severe • At fetlock: tendosynovitis <ul style="list-style-type: none"> - Swelling of synovial sheath - Notching by annular lig • Chronic <ul style="list-style-type: none"> - Firm, diffuse swelling on palmar/plantar aspect - M/b sound at walk or trot - Lameness after workout • Reinjury common (48% rebow, w/ 75% in same leg) 	<ul style="list-style-type: none"> • ACUTE <ul style="list-style-type: none"> - Palpation: flex carpus to loosen tendons . Pain only consistent finding, m/ require firm pressure . Normally thin edge to SDF . Should be able to separate SDF & DDF • Ultrasound (US) (necessary for Tx & Px) <ul style="list-style-type: none"> . Swelling or thickening of digital tendons . Cross sectional area > 1.5 cm² for Thoroughbreds indicates a bow, doesn't hold for Standardbreds . Transverse US - look for disruption of parallel fibers . Core lesion: anechoic area (black area) . Diffuse lesion (worse) • CHRONIC <ul style="list-style-type: none"> - Firm, diffuse swelling (scar tissue) - Pressure causes pain 

*** Thoroughbreds, Forelimb; Recurs
 CS: Swelling ± lame
 Dx: CS, Palpation, Ultrasound
 Tx: Ice, Wrap, Rest, CEP, Check lig. desmotomy

10% of all racing injuries

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Bowed tendon continued

Treatment; none attains goal of repair with maximum strength and adequate elasticity

• Acutely - emergency: stop swelling

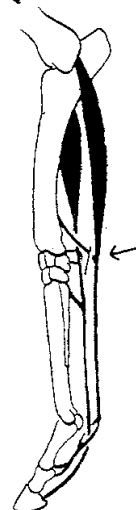
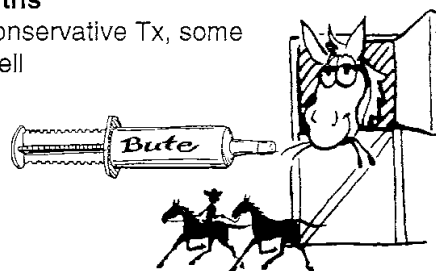
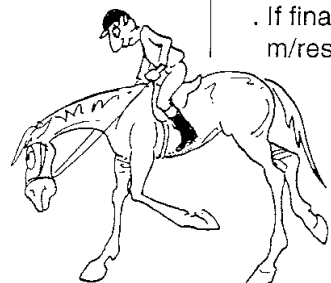
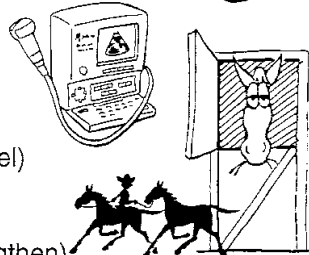
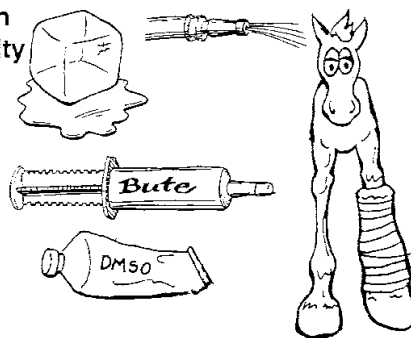
- Stop training - rest to break cycle
- Ice packs/cold hosing:
- 30 min -1 hr TID-QID 3-5 days
- Tight, padded pressure wrap
- . Board splint to prevent further injury
- PBZ
- DMSO (reduce edema)

• Mild to moderate tendinitis: conservative Tx

- 6 month rehab program
- . Stall rest - 1 month (stop inflam. & remodeling starts)
- . CEP 3 months (controlled exercise program)
 - .. Controlled walking/swimming (collagen remodel)
 - .. Do not put out to pasture
 - .. PBZ
 - . Further 3-4 months light ridden exercise (strengthen)
- . Regular ultrasound monitoring important for initiating & evaluating training (if anechoic area - no training)

• Moderate w/ obvious swelling - Surgical Tx

- SDF check lig. desmotomy + rest + PBZ
- . Rest, CEP, PBZ (as above)
- . Some can train in 3 months
- . If financial constraints: conservative Tx, some m/respond reasonably well



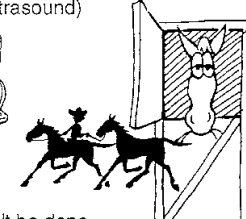
• Severe or bilateral lesion

- Prox. (SDF) check lig. desmotomy
- 1 year rest & CEP (controlled exercise program)

• Discrete core lesion

- Tendon stab Sx + check desmotomy sooner done the better (improves tendon fiber organization), not for diffuse lesion

- Emphasize importance of 3-12 months rest for healing & strength, after a period horse seem sound & trainer wants to start training (check healing w/ ultrasound)



• Other Tx reported

- Injection of hyaluronate around tendon
- Carbon fiber implants - re-injury common
- Firing used in past, absolutely no merit, shouldn't be done
- Ultrasound therapy

Prognosis:

- Poorer Px if tendon remains enlarged after aggressive Tx
- Better Px if becomes normal or near normal size
- Depends on severity & treatment for return to athletics
 - Good: mild to moderate w/ 6 months rest
 - Guarded: moderate bow w/ Sx & 3 months rest
 - Guarded: severe or bilat. w/ Sx & 12 months rest
- Prox. check lig desmotomy
 - 83% raced w/o recurrence after 3 races
 - 50% recurrence w/o Sx
 - 17% recurrence w/ Sx
- Poor: multiple lytic (US) lesions & swelling
- Better: Standardbreds w/ desmotomy (89% raced) than Thoroughbreds bec. of even gait & symmetrical weight distribution



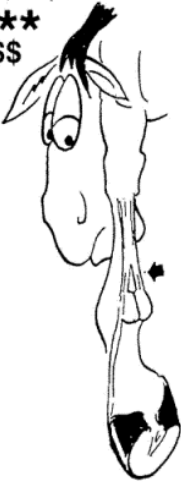
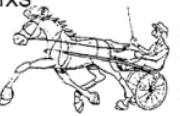

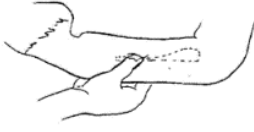










Lower Leg Lameness

Bucked Shins, Splints, Strains (Tendonitis/"Bowed tendon"), Stocking Up, Salter Fxs,
Guide to Equine Clinics, Lameness Pasquini, 2nd ed.

Suspensory Desmitis

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METACARPUS/METATARSUS

Condition	Facts/Cause	Presentation/CS	Diagnosis	Treatment
Suspensory desmitis, Sprain of SUS M 94; W-J 92; AL 469; C3T 140, 796; H 797; IM 1186; E 1085; EM&S 1418; TAH 307, 351; VC-US 206; S-W 448; POP-H 286; POP-G 228; POP-S 176; RA p172 *** \$\$\$ 	<ul style="list-style-type: none"> Desmitis - Strain of suspensory lig. (interosseous m.) Standardbred (harness) >> Thoroughbreds due to longer cran. phase of stride - support phase of suspensory lig Forelimbs > hindlimbs (Standardbred often affected in hindlimbs) Associated w/ <ul style="list-style-type: none"> - Periostitis &/or fxs of splint bone - Sesamoiditis Locations: <ul style="list-style-type: none"> - #1 both suspensory branches, medial branch > lateral - End of splint bones m/ break off when suspensory ligament snaps against it - Body of ligament <ul style="list-style-type: none"> - 2° to "splints" or fx of splint bones - Proximal attachment to McIII/MtIII much less common (see below) - Due to excessive stress or trauma <ul style="list-style-type: none"> - "Splints" m/ encroach on suspensory ligament - Chronic irritation  	<ul style="list-style-type: none"> Acute <ul style="list-style-type: none"> - Usually presented for swelling w/ heat & pain - ± lameness - Usually low grade - Stand upright to take weight off heels Chronic <ul style="list-style-type: none"> - Hard swelling - M/b sound at walk or trot - Lamé after workout - M/ sink at fetlock Sequelae: <ul style="list-style-type: none"> - Sesamoiditis: 2° involvement of prox. sesamoid bones due to tearing of insertion of suspensory ligament branches - Often fxs of MtII - Suspensory apparatus rupture: if disruption of both branches of suspensory lig. 	<ul style="list-style-type: none"> Hx, CS Visualization - swelling Palpation (lift limb to loosen tendons) swelling, heat & pain - Most normal horses sensitive to firm palpation of suspensory lig.   <ul style="list-style-type: none"> Ultrasound (US) - define extent of damage & Px  <ul style="list-style-type: none"> Radiology necessary <ul style="list-style-type: none"> - Assess splint - Sesamoiditis - Mineralization w/in tendon - Avulsion of prox. attachment - Sesamoid fx (joint effusion usually present) 	<ul style="list-style-type: none"> Acute - emergency to stop swelling - Ice packs, ice boots, hydrotherapy (minimize inflam., limit hemorrhage & edema) - Tight, padded pressure wrap on leg betw. ice packs (control swelling) - PBZ 10-14 days PO, reduce swelling & pain - DMSO (reduce edema) Extended rest - 6-10 months - Stall rest 1 month then: - Bandaging & CEP (controlled exercise) 6-10 wks <ul style="list-style-type: none"> - Passive manipulation/swimming (align) - Roll of tape (heel support) - tension off lig. - Monitor healing w/ ultrasound (US) - 6-10 months rest usually (minimum 4 mos for mild) Will appear sound, but convince owner not to work, US for resolution 1st       <ul style="list-style-type: none"> Acute desmitis not surgical candidates Other Tx reported <ul style="list-style-type: none"> - Ultrasound therapeutically (massage) - Injection of corticosteroids, hyaluronic acid, sclerosing agents - Ligament splitting, percutaneous ligament splitting, carbon fiber implants Sx removal of dist. splint fx if causing trauma to suspensory lig. Sx removal of exuberant exostosis of "splints" <p>Prognosis:</p> <ul style="list-style-type: none"> Better than flexor tendon tendinitis Good/guarded - branch desmitis Poor - complete rupture - salvage 

***** Standardbred, Branches (SUS)**

CS: Swelling, ± Lamé

Dx: CS, Palpation, US, Rads

Tx: Ice, Wrap, Rest, CEP

DDx:

- Splints
- DDF strain ("Bow")
- Sesamoiditis
- Fx of splint bones
- Fetlock strain
- Rupture of suspensory apparatus
- Prox. sesamoid fxs



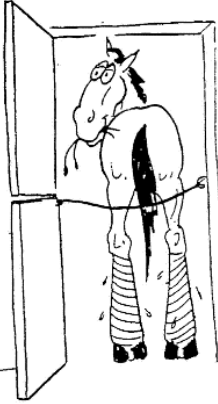

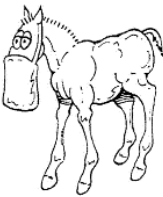

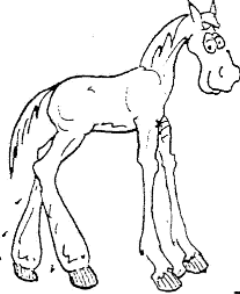

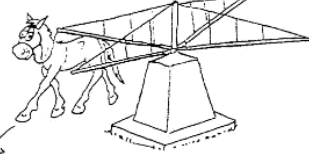
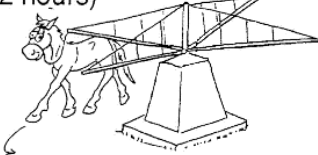
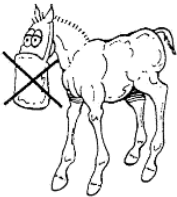



Lower Leg Lameness

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Leg Swelling

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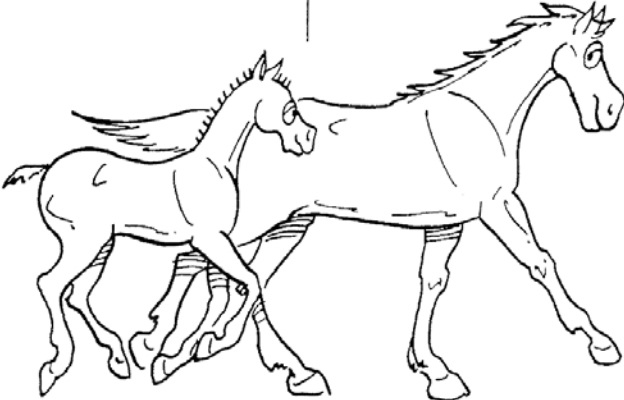
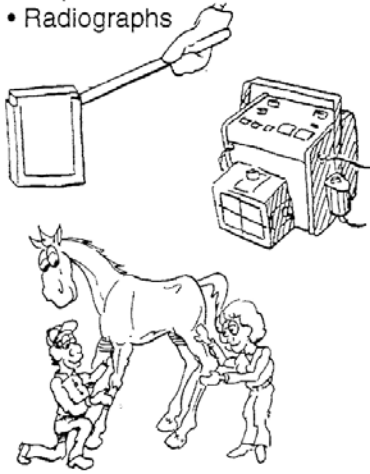
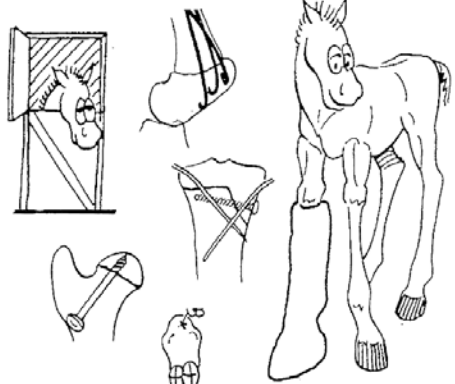
METACARPUS/METATARSUS

Condition	Facts/Cause	Presentation/CS	Diagnosis	Treatment
<p>"Stocking up", "Fat legs", "Humor" in legs</p> <p>AL 840, 178; EM&S 1672, 1843; POP-H 287; POP-G 188; POP-T 156; RA p173</p> <p>*** \$</p> 	<ul style="list-style-type: none"> • Common response to stall confinement after strenuous exercise • Not a pathological condition • Often just hind legs <ul style="list-style-type: none"> - All four in cutting horses • Pathophysiology - circulatory stasis <ul style="list-style-type: none"> - Horse in wild constantly moving even when grazing - Heart pumps blood to distal limbs - Pressure of walking on frog (pump, other 4 "hearts") pumps blood & lymph away from distal limb - Domesticated horse often confined - Confinement causes pressure to build up in capillaries & fluid to leak out into tissues • Variation in tendency to stock up • Predisposition <ul style="list-style-type: none"> - Overweight horses - Pregnant mares that don't exercise - Lamé horses - Shipping long distances - Excessive protein in diet  	<ul style="list-style-type: none"> • Swelling of both hind legs or all 4 limbs • Tear drop shaped (indistinct borders) • No lameness - Stiffness m/b  <ul style="list-style-type: none"> • Sequelae - confinement due to injury <ul style="list-style-type: none"> - Laminitis - Navicular diz 	<ul style="list-style-type: none"> • Swelling back legs or all 4 <ul style="list-style-type: none"> - Cool - Painless - Pitting edema (soft, pits on pressure) - Only below hock or carpus  <p>Stove pipe shape to leg</p> <ul style="list-style-type: none"> • Swelling resolves with exercise  <p>Exercise</p>	<ul style="list-style-type: none"> • Rub leg w/ liniment vigorously before riding • Warm up period <ul style="list-style-type: none"> - Walking under saddle 15-30 min before riding • Swelling should go down w/ exercise (30 min-2 hours)  <p>Prevention:</p> <ul style="list-style-type: none"> • Cool down period after exercise (light exercise - walker, hand walking) • Brace or tightener after exercise m/b • Reduce concentrates in diet, incr. roughage, especially when not in training • Support bandages if confinement anticipated (long trailer ride) <ul style="list-style-type: none"> - Correctly applied to avoid tendon damage, so save as a last resort  <p>Prognosis:</p> <ul style="list-style-type: none"> • Excellent  
<p>*** Response to exercise & stall confinement, Exercise resolves</p> <p>CS: Swollen legs</p> <p>Dx: Hx, Palpation</p> <p>Tx: Linaments, Warm up - \$</p> <p>Prevention: Cool down, Brace or tightener, Diet</p> 				



Lower Leg Lameness

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Physeal Fxs		352	BONE - GENERAL	
Condition	Facts/Cause	Presentation/CS	Diagnosis	Treatment
Physeal fxs, Salter fxs AL 297; H 840; C3T 791; EM&S 1211, 1246; W-J 205; TAH 275; VC-O 307; X-T 108; POP-G241; RA p365 ***	<ul style="list-style-type: none"> • Fxs through growth plate (physis) • 21% of all long bone fxs • Closed fxs (94%) • < 2 years of age (mean age 6 months) • More females referred, but probably reflects breeding value • Types of epiphyses & fractures <ul style="list-style-type: none"> - Pressure epiphysis (69% of physeal fxs) <ul style="list-style-type: none"> . Adjacent to joint . Bears weight . Contributes to longitudinal growth of bone - Traction epiphysis (31% of physeal fxs) <ul style="list-style-type: none"> . Insertion of muscle, lig. or tendon . Under tension . Not adjacent to joint . Doesn't contribute to longitudinal growth of bone • Physis composition from epiphysis to metaphysis <ul style="list-style-type: none"> - Zone of resting cartilage - Proliferating cartilage - Hypertrophic/maturing cartilage (weakest area) - Zone of calcification 	<ul style="list-style-type: none"> • Lameness • Displacement  <ul style="list-style-type: none"> • Sequela: <ul style="list-style-type: none"> - Failure of implant (45%) - Angular limb deformity if implant left too long 	<ul style="list-style-type: none"> • Hx, CS • Some obvious w/ displacement • Palpation • Radiographs 	<ul style="list-style-type: none"> • Heal rapidly • Prompt reduction (easier w/ less chance of 2° DJD in type 3 & 4 fxs) <ul style="list-style-type: none"> - Avoid further trauma - Slight misalignment acceptable in Salter 1, 2, 5 & 6 - Perfect alignment of joint surfaces required in Salter 3 & 4 fxs to avoid DJD • Stall rest • Serial radiographs every 10-14 days to see when healing complete • Remove implants when healed so don't cause angular limb deformity  Prognosis: <ul style="list-style-type: none"> • Poor: 51% dead, 19% sound, 16% unknown; n=70 • Poor w/ Tx: 25% sound n=52 • Better for < 4.5 months old than > 4.5 months old (due to less weight) • Open poorer Px, fortunately rare (6%)

Foals - Growth plate
 CS: Lane
 Dx: Rads
 Tx: Reduce



Lower Leg Lameness Bucked Shins, Splints, Strains (Tendonitis/"Bowed tendon"), Stocking Up, Salter Fxs, Guide to Equine Clinics, Lameness Pasquini, 2nd ed.

Salter Fractures continued

Salter 1 fx

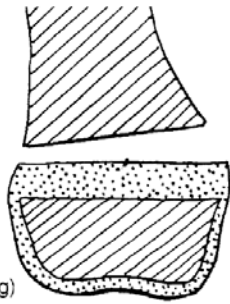
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- 20% of all physeal fxs
- Complete physeal separation w/o osseous fx
 - Fx through hypertrophic zone
- 2-4 months old
- Cause: trauma (falling or catching leg)
- Examples
 - Femoral capital physis
 - Olecranon physis

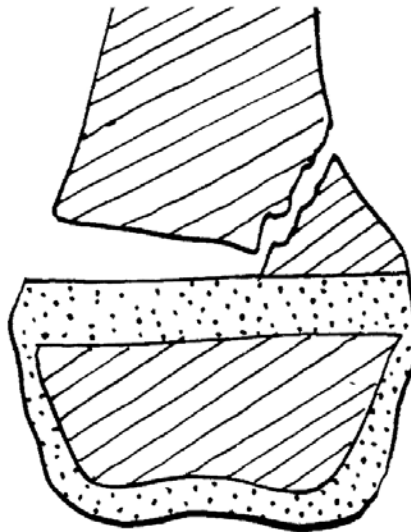
Tx:

- Sx: reposition epiphysis
 - Femoral capital physis
 - Steinman pins or dynamic hipscrew
 - Olecranon: tension band or traction fx

Px: good



Salter 2



- Most common (63%)
- Fx through physis that breaks out through the metaphysis
 - Triangular fragment of metaphysis stays w/ epiphysis (Thyrston Holland sign)
- Cause: trauma from side
 - Causes physis to separate opposite blow
 - Periosteum on side of blow usually intact
- Proximal tibial physis most common
- Dist. femoral physis

TX

- Sx: lag screw, plating or K-E apparatus
- Dist. humerus: lag screw fixation of blade plate

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Salter 4

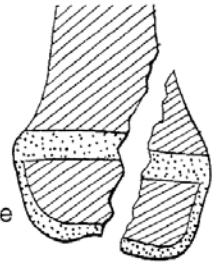
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- Uncommon: 9%
- Fx through articular epiphysis & across physis
- Cause: trauma - shearing force (stepped on)
- Prox. physis of middle phalanx most commonly

Tx

- Sx: open reduction & lag screw fixation (often fragment not big enough)
- Cast 6-8 wks

Px: guarded to poor

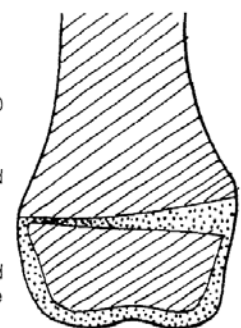


Salter 5

*

- Rare (none reported in this study of 70 fxs)
- Compression of physis
 - Damages proliferative zone & its blood supply
 - Growth usually altered
 - Limb deformities
- Dx difficult bec. epiphysis not displaced
- Look for fragmentation at physeal line

Px: poor



Salter 6: have been described but were not mentioned in Salter's most recent publication