

Summary of Concepts for Farriers

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Rules of Universal Understanding

- Communication with Veterinarian, trainer and client
- What is normal? What is normal for this horse?
- What is the pathogenesis?
 - Will shoeing or should shoeing change with disease progression
- What are the limits of Farriery?
- Can Farriery make an effective change?

Veterinary Terminology

- Medial: Relating to the middle or center
- Lateral: Relating to the outside
- Proximal: Towards the body
- Distal: Away from the body, closer to the ground
- Cranial: Towards the head
- Caudal: Towards the tail
- Dorsal: The front surface of the limb
- Palmar/Plantar: The back surface of the front/hind limb

Bone Pathology Descriptors

- Subluxation: Incomplete dislocation of a bone at a joint surface, although relationship is altered, contact between the joint surfaces remain.
- Osteophytes: A bony outgrowth produced as a result of stabilization.
- Osteoarthritis: Disorder affecting bones and joints. Degenerative joint disease characterized by erosion of articular cartilage, either primary or secondary to trauma or other conditions, which becomes soft, frayed and thinned with reduction of subchondral bone and outgrowths of marginal osteophytes. Pain and loss of function result. Primarily affects weight bearing joints.
- Sclerosis: A change in subchondral bone that becomes dense and hard. Appears "whiter" on radiographs. Typically Chronic in nature.
- Lysis or Lucency: Demineralization of bone. Appears darker on radiographs. Typically acute in nature.
- Bone Cysts: Fluid filled lytic areas with thin connective tissue layer where bone should be. Can be painful.
- Cartilage Defects
- Articular cartilage damage created genetically, nutritionally, environmentally or by trauma

Soft Tissue Pathology Descriptors

- Bursitis: Inflammation of the fluid filled synovial membrane that reduces friction where tendon passes over a bone
- Synovitis: Inflammation of the synovial lining of the joint capsule

- Desmitis: Inflammation of a Ligament
 - Tendonitis: Inflammation of a Tendon
 - Tenosynovitis: Inflammation of the tendon and its sheath
 - Enthesiopathy: Calcification of ligaments at the origin or insertion to bone
 - Hyperechoic: More than normal echogenicity, appears whiter on ultrasound images
 - Hypoechoic: Less than normal echogenicity, appears darker on ultrasound images
 - Focal: A specific localized area
 - Core Lesion: A focal lesion usually in a tendon or ligament
- Diffuse: A generalized unspecific area

Bone vs. Soft Tissue Rules Of Thumb

- Bone lesions take precedence over soft tissue when both are present
- Often, they require opposite modifications, hence need for specific diagnosis
- Most commercially available shoes and pads can be modified to assist most pathology
- Some alterations appear minor in detail but can significantly influence a successful outcome

Horseshoeing principles for soft tissue or bone injury

- Understand the anatomy
- Understand the function of the affected structure and possible reasons for failure
- Build the shoe to assist, support or relieve the structure. NOT the trim.
- Always consider other structures that may become compromised with the shoeing
- Address angle
- Appropriate break over
- Modify the GFR for the lesion

Principles of Ground Force Reaction

- Provide the affected anatomy with relief
- There MUST be a reactive surface, or there will not be an effect, other than normal concussion
- There MUST be an interaction between the lesion, the shoe and its modifications, and the ground surface
- A hard surface will not interact with any of the modifications you might make (except wedge shoes)

Questions of Ground Force Reaction

- What is the functional anatomy? How do bone and soft tissue work normally?
- Should the foot stay on the ground or let a part of it sink into the ground?
- Should it be the toe, the heel, the medial side, the lateral side or a combination?
- Does the horse have multiple issues?

***Dynamic Support Concepts**

- Elevation of Toe on hard surface has same effect as reduced surface of heels on sand
- Reverse shoe (wide surface) on sand has same effect as wedge (elevation) on hard ground
 - Coffin and Pastern Joint Flexion
 - Fetlock Extension
- Rolled toe or Facilitating Break over will decrease
 - Coffin joint extension at end of propulsion
 - Peak tendon load of DFT
 - Clinical manifestation of pain

• **Lesions of the DDFT/ALDDFT: Heels above ground**

• **Lesions of the SDFT/TIOM: Heels in the ground**

• **Asymmetrical Lesion: Asymmetrical Shoe**

- Bone: Narrow
- Soft Tissue: Wide
- Pads increase surface area and weight
- if lower pastern axis, less changes
- more effect on normal or upright pastern axis

***Soft Tissue Horseshoeing Principles**

• **Superficial Flexor Tendon and Suspensory Ligament**

- Heel goes into the ground
- Toe stays above the ground

• **Deep Digital Flexor Tendon and Check Ligament**

- Toe goes into the ground
- Heel stays above the ground

***Asymmetrical Shoeing Management**

- Support the side of the soft tissue lesion with a wider branch
- Reduce the ground reaction on the side of a bone lesion with a narrower branch
- Need progress follow Up with ultrasound to reduce lay up time
- Keep time in Therapeutic shoes to a minimum

Phases of Stride

- Swing Phase
 - There are no stresses on tendons, only vibration
- Stance Phase
 - 1st Phase
 - Contact & mid stance phase involves the Suspensory & SDFT
 - 2nd Phase
 - Loading involves the DDFT and PTA
 - 3rd Phase
 - Propulsion involves the DDFT and PTA

***The scientific validation of the dynamic support concepts are the work of Dr. Jean-Marie Denoix of Normandy, France. He is the mentor for the International Society of Equine Locomotor Pathology.**

Diagnostic Analgesia

- False positives occur because of reflux or additional ligaments analgesia
- False negative responses due to subchondral bone lesions
- Test right away

Rehab & Exercise Management

- On the right footing Sand or Hard ground
- Stall rest/ standing still has no biomechanical effect on lesion
- Have to shoe to continue work, not stand around
- With the right shoe
- Limit the time in shoes, get back to a normal open shoe
- For the right amount of time (5, 10, 20 minute increments)
- Strengthening and conditioning
- Doing the right exercises
 - Circles, to the left, to the right
 - Hill work, up, down
 - Footing, hard, medium, soft
 - Circles and turns are hard on asymmetrical lesions
- PROGRESS REPORTS necessary every 60-90 days

Loaded Limb Radiography

- Veterinarians Goal
 - Provide diagnostic information
- Farriers Goal
 - Trim or shoe to optimize mechanical function
- Benefit
 - Clinical efficiency=lower cost
- Standing Loaded Limb Radiography closely represents the athletic limb under load during use
- Horses do not typically suffer injury while standing

The Essentials

- A Specific Diagnosis
- Utilize Diagnostic Images
- Understand Ground Force Reaction
- Apply Functional Anatomy to Farriery
- Expect Progress Reports
- Trimming Principles are Important
- Bone Pathology and Soft Tissue Injury require different shoeing applications
- Experiment with loaded limb radiography