

A close-up, low-angle shot of a horse's lower legs and hooves. The horse is standing on a dark, textured surface, possibly a stable floor. The background is a light-colored, slightly out-of-focus wall or partition. The lighting is dramatic, highlighting the musculature and texture of the legs.

THE MUSCULOSKELETAL AND NERVOUS SYSTEMS

ANIMAL AROMATHERAPY SPECIALIST CERTIFICATION LEVEL 2 TRAINING

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THE MUSCULOSKELETAL AND NERVOUS SYSTEMS - AGENDA



INTRODUCTION



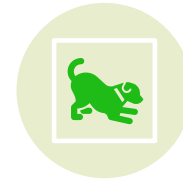
OVERVIEW OF
MUSCULOSKELETAL
DISORDERS



LAMENESS



JOINT DISORDERS



BACK CONDITIONS



DYSPLASIA AND DJD



NEOPLASIA



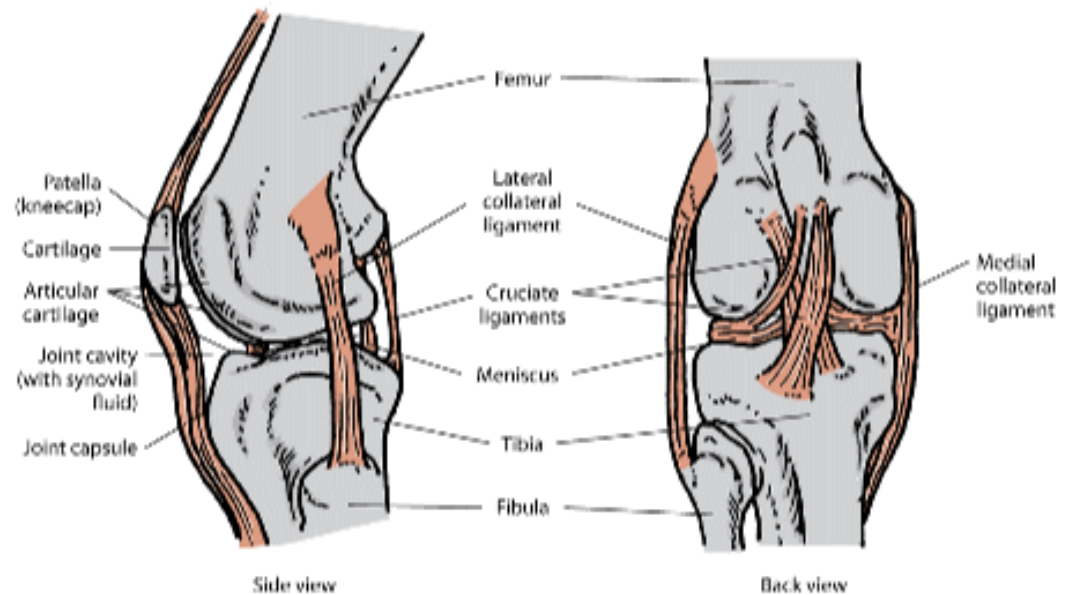
NERVOUS SYSTEM
DISORDERS



QUESTIONS?

THE MUSCULOSKELETAL SYSTEM - INTRODUCTION

- Consists of bones, cartilage, muscles, ligaments & Tendons
- Functions: support body, provision of motion, protection of vital organs, storage system for calcium & phosphorus & contains critical components of the hematopoietic system.
- Interrelated with nervous, vascular and integumentary systems



MUSCLES

- The structural and functional unit of muscle (skeletal muscle) is the motor unit.
 - Ventral Motor Neuron in the spinal cord and its peripheral axon
 - Neuromuscular junction
 - Muscle fibers innervated by that neuron
 - Thousands of muscle fibers activated = Muscle contraction or relaxation
- Paralysis, paresis, ataxia
 - Infectious, toxic or congenital origin – but usually attributed to the nervous system
- Muscle membrane disorders are typically deficiency related (Vit E, Selenium, hypothyroidism, hypokalemia)
- Trauma is very common. External injury or intense athletics – may result in muscle tears and ruptures, bruises
 - Marjoram, Cypress (swelling), Peppermint, Wintergreen, Siberian Fir or White Fir, Roman Chamomile, Lavender
- Myositis: inflammation in the muscle
 - Analgesic & Anti-inflammatory: Frankincense, Copaiba, Turmeric, Lavender, Lemongrass, Helichrysum
- Cramping: Hydration, and Lemongrass, Peppermint, Marjoram, Rosemary, Lavender, Roman Chamomile, Cypress, Basil, Siberian Fir
- Tremors: See nervous system – calming oils often helpful

TENDONS & LIGAMENTS

- Tendons attach muscle to bone.
- Ligaments attach bone to bone.
- Long and prone to injury
 - Superficial Digital Flexor Tendon (SDFT) in horses – partial tearing leads to tendinitis (inflammation of the tendon) aka a “bowed tendon”
 - Ligament tears may require surgery for full tears (Cruciate) and often require longer healing time than tendons
- Healing of tendons and ligaments is prolonged – often less elastic due to scar tissue compared to a healthy tendon.
- NEED STRICT KENNEL OR STALL REST
- Oils to help tendons and Ligaments: Lemongrass, marjoram (tendons), lavender, Helichrysum, Siberian Fir

BONE

- Bone disease are generally congenital or hereditary, nutritional, or traumatic
- Nutritional – very common in exotic pets or reptiles – poor quality or inappropriate food, lack of vitamins A & D, or deficient in calcium and phosphorus
- Traumatic injury is most common
 - Fractures, fissures, periosteal reactions, sequestrum, etc.
 - Results in lack of weight bearing, reduced motion, instability, pain, heat, or swelling
 - Oils to help: Wintergreen, Birch, Peppermint, Juniper Berry, Lemongrass, Marjoram, Lavender, Sandalwood, Cypress



JOINTS

- Synarthrodial vs. diarthrodial
- Opposing bone ends covered by hyaline cartilage separated by a joint cavity that is filled with synovial fluid
- Distributes weight bearing forces and minimizes friction between bones during movement. Lubrication & nourishment to cartilage.
- Trauma
 - Luxation, subluxation, fracture, or instability.
 - Puncture into the joint capsule very dangerous and can lead to septic arthritis

THE NERVOUS SYSTEM - INTRODUCTION

- Composed of billions of neurons that form complex integrated electrochemical circuits throughout the body – this is how animals experience sensations and respond appropriately. Neurons all have Dendrites (neuronal processes that transmit electrical signals to the cell body), a cell body, an axon, and release neurotransmitters.
- Peripheral Nervous System: Neurons of cranial and spinal nerves. Groups of neurons in the PNS are called ganglia.
- Central Nervous System: Neurons of the spinal cord, brain stem, cerebellum and cerebrum. Groups of neurons in the CNS are called nuclei and make up the “Gray Matter”
- PNS neurons carry information such as nociception (pain), proprioception, touch, temperature, taste, hearing, Balance/Equilibrium, vision, and olfaction to the spinal cord and brain stem. CNS neurons carry information to the cerebellum, Brain stem, and cerebrum for further interpretation.
- The Autonomic nervous system is divided into sympathetic and parasympathetic portions and controls cardiac and smooth muscles and glands. Neurons travel to the thalamus and hypothalamus.
- Diseases of the nervous system may be congenital, infections or inflammatory, toxic, metabolic, nutritional, traumatic, vascular, degenerative, neoplastic or idiopathic.

LAMENESS

- Lameness = pain (exception: mechanical lameness)
- Abnormal stance or gait change by a problem in one or more limbs, neck, hindquarters, or back
- Not a specific disease process but often points to the musculoskeletal system
- Essential Oils that may help
 - Analgesics for pain: Roman Chamomile, Lavender, Marjoram, Rosemary, Peppermint, Cedarwood, Lemongrass, Birch, Wintergreen, Black Pepper, Ylang Ylang
 - Anti-inflammatory for swelling / inflammation: Lavender, Frankincense, Copaiba, Turmeric, Helichrysum, Yarrow, Ginger, Lemongrass, Bergamot, Roman Chamomile, Clary Sage



JOINT DISORDERS

- Osteoarthritis
- Bursitis
- Luxation (patellar)
- Trauma
 - Ligament tears, joint fractures
- Dislocation
- Many joint disorders require surgery
- Oils focus on Analgesia and Inflammation
 - Wintergreen, Lemongrass, Peppermint, Roman Chamomile, Lavender, Frankincense, Copaiba, Turmeric, etc.



BACK CONDITIONS

- Fractures
- Kissing spine
- Muscle and ligament strain
- IVDD
- Spondylosis Deformans
- Degenerative Diseases (nervous system)

- EO Sessions: Focus on decreasing pain, may not be able to apply directly, so internally may be indicated. Degenerative diseases often not associated with pain, so stimulation may be necessary
- Frankincense, Copaiba, Turmeric, Peppermint, Wintergreen, Ginger, Helichrysum, Yarrow (for acute injuries), etc.

DYSPLASIA AND DJD

- Several joints can be dysplastic, but the most common is hip dysplasia in large dogs.
 - Abnormal joint development resulting in a loose joint and concurrent DJD (degenerative joint disease, aka: Arthritis)
 - “Bunny hopping” gait
 - Worse after exercise
- Degenerative joint Disease (DJD) | Arthritis | Osteoarthritis
 - Wear and tear on joints over time resulting in thinning of cartilage, fluid build up in the joint, bone spurs, inflammation of the joint membrane, pain, and abnormal joint function.
- If necessary, recommend weight loss for overweight animals that suffer or are pre-disposed to these conditions!
- Review the Webinar on Arthritis and inflammation in the membership group!
- Lavender, Cypress, Basil, Marjoram, Roman Chamomile. Peppermint, Frankincense, Copaiba, Turmeric, Siberian Fir, Lemongrass

NEOPLASIA

- Osteosarcoma
- Fibrosarcoma
- Chondrosarcoma
- Hemangiosarcoma
- Muscle tumors: rhabdomyoma or rhabdomyosarcoma
 - Usually secondary tumors from lymphosarcoma, hemangiosarcoma, and adenocarcinomas
 - Local tumors (MCT, Fibrosarcoma, OSA) can invade muscle tissue as well
- Joint: Synovial Cell Sarcoma
- Multi-modal treatment often necessary
- Palliative care
- Amputation if limb affected
- Essential Oils: Anti-Cancer/ Anti-Tumoral oils; Anti-inflammatory oils; Analgesia (pain relief) oils

NERVOUS SYSTEM DISORDERS

- Congenital
- Degenerative Diseases (Laryngeal Paralysis aka Lar-Par), Stringhalt, Facial Paralysis, DM, IVDD
 - Nervines / Stimulating if not painful
- Metabolic disorders – Diabetic or hypothyroid neuropathies
- Neoplasia – Nerve Sheath tumors, paraneoplastic neuropathy
 - Anti-Cancer/ Anti-tumoral and Antioxidant oils
- Toxins – Botulisms, OP poisoning, Tick Paralysis
- Trauma
 - Anti-inflammatory and Analgesic and Wound healing oils
- Inflammatory or Infectious diseases – Viral (EHV, FIP, Fe Leuk, Rabies), rickettsial (RMSF), Fungal diseases (histioplasm, Blasto, Aspergillus), Protozoal (Toxoplasmosis, EPM)
 - EOs for inflammation and infection – often heavy-hitters with these! Oregano, Thyme, Basil, Cinnamon, Clove, etc.

NERVOUS SYSTEM ESSENTIAL OILS

- Anti-convulsive for seizures: Lavender, Frankincense, Copaiba
- Adaptogens: Bergamot, Frankincense, Rose, Geranium, Lemon, Ylang Ylang, Jasmine
- Peppermint – soothes and strengthens damaged nerves
- Basil – stimulates nerves
- Lavender – soothes and calms painful nerves
- Lemon/ Grapefruit/ Bergamot – Decreases pain response
- Frankincense – Neuro protective
- Lemongrass – nerve damage
- Marjoram – soothing
- Geranium – regenerates nerves
- Roman Chamomile – Nerve pain
- Helichrysum – nerve pain
- Vetiver – calms nerves
- Siberian Fir – pain relief

QUESTIONS?

