Appendix III A

Curriculum for core knowledge of veterinary sports medicine and rehabilitation to be tested in first examination

*Functional anatomy, physiology and pathology of the systems*

*Muscle*
- Muscle structure & development
- Muscle physiology
  - Functional anatomy
  - Muscle fiber types
  - Response to exercise
- Response to conditioning
- Response to aging
- Injury
- Repair
- Pain mechanisms

*Tendon*
- Tendon structure & development
- Tendon physiology
  - Functional anatomy
  - Tendon types
  - Response to exercise
- Response to conditioning
- Response to aging
- Injury
- Repair

*Bone*
- Bone structure & development
- Bone physiology
  - Functional anatomy
  - Bone types
  - Response to exercise
- Response to conditioning
  - Response to aging
- Injury
Repair

*Ligaments*
Ligament functional anatomy
Ligament development
Ligament physiology
  - Ligament types
  - Adaptations to exercise
Response to aging
Injury
Repair

*Connective tissues and fascia*
Connective tissues
Functional anatomy
Development
Physiology
Connective tissue types
Adaptations to exercise
Effects of immobilization
Injury
Repair

*Articulations*
Functional anatomy of joints
Articular physiology
Types of joints
Adaptations to exercise
Response to aging
Injury
  - Effects of immobilization
Repair

*Cartilage*
Cartilage development
Cartilage physiology
  - Cartilage types
  - Functional anatomy
  - Adaptations to exercise
  - Response to aging
Injury
Repair

Synovium
Synovium structure & development
Synovial physiology
  Adaptations to exercise
  Response to aging
Injury
Repair

Nervous system
Nervous system
Functional anatomy
Development
Response to conditioning
Motor control of locomotion
Reflexes
Receptors – nociception, vibration, temperature, pressure
Proprioception
Neural pathologies (UMN vs LMN)
Neural repair & rehabilitation
Pain mechanisms

Lymphatic system
Lymphatic structure & development
Lymphatic physiology
Pathology
Injury
Repair

Cardiovascular system
Cardiovascular structure & development
Cardiovascular physiology
Response to exercise
Response to conditioning
Response to aging
Determinants of athletic ability
Cardiovascular pathology
Respiratory
Respiratory structure & development
Respiratory physiology
Response to exercise
Response to conditioning
Response to aging

Exercise physiology
This section is concerned with maintaining metabolic integrity of the body systems during exercise.
Energy production
Metabolic
Energy systems
RBC functions
Energy substrates
Waste products
Response to exercise

Nutrition
Nutrients
Ration formulation and feeding schedules
  Sport specific dietary requirements
Changes with exercise
Changes during rehabilitation
Nutraceuticals and nutritional supplements

Thermoregulation
Heat production during exercise
Thermodynamic mechanisms
Environmental effects
Thermoregulatory problems
  Exhaustion syndrome
  Heat stroke
  Anhydrosis

Fluid & electrolyte balance
Fluid and electrolyte physiology
Dehydration
  Physiology
  Clinical signs
  Fluid replacement
Principles of conditioning
Tissue adaptation in response to exercise
Designing a conditioning program
Periodicity
Volume of exercise
Warm up and cool down
Cardiovascular fitness
  Sprinting sports
  Endurance sports
  Adaptation to high altitude
  Overtraining syndromes
  Deconditioning effects
Peaking and tapering strategies
Strength training
  Methods of strength training
  Volume and frequency
  Deconditioning effects
  Delayed onset muscle soreness
Flexibility training
  Stretch reflexes
  Effects of stretching
  Types of flexibility exercises
Deconditioning

Pharmacology
General principles of sports pharmacology
Drugs commonly in sporting animals
NSAIDs, ergogenic drugs, anabolic steroids, growth hormones, corticosteroids
Principles of drug testing

Diagnostic tools
This section covers basic principles of using and interpreting diagnostic technologies in sporting animals. Species specific use and interpretation in the horse and dog will be covered in their respective sections.
Clinical pathology
Radiographs
Ultrasonography
Thermography
Nuclear scintigraphy
Magnetic resonance imaging
Computed tomography
Electrodiagnostics
   Nerve conduction velocities

*Kinesiology*
Basic locomotor patterns and gaits
Principles of gait analysis
   Methods of kinetic and kinematic analysis
Motion analysis systems
Force plate
Pressure mats
Electromyography
Goniometry

*Rehabilitation and physical therapy*
Pain management
Pain scales
Pressure algometry
Non-pharmaceutical approaches
Manual therapies
Therapeutic modalities
Therapeutic exercise

*Complementary medicine*
Chiropractic
Acupuncture
Botanicals
Homeopathy

*Knowledge of sports*
Types of athletic activities
Endurance
Strength
Agility
Speed
Special senses – sight, hearing, smell

Activity specific – hunting, search and rescue, swimming, etc.

Fitness requirements

Sports psychology and behavior

Sports equipment and tack
Harnesses, muzzles, leashes, restraint devices, training aids
Saddle, bridle, bit, restraint devices, training aids

Role of track or event regulatory veterinarians versus private veterinarian

Ethics and legal issues