

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