



**AUSTRALIAN AND NEW ZEALAND
COLLEGE OF VETERINARY SCIENTISTS**

MEMBERSHIP GUIDELINES

Veterinary Sports Medicine and Rehabilitation (Equine)

INTRODUCTION

These Membership Guidelines should be read in conjunction with the *Membership Candidate Handbook*.

ELIGIBILITY:

Refer to the *Membership Candidate Handbook*.

OBJECTIVES

The Veterinary Sports Medicine and Rehabilitation (VSMR) Chapter of the Australian and New Zealand College of Veterinary Scientists encompasses veterinary practice on both canine and equine athletes, but **Membership is species specific**.

Membership of the College is an official recognition of a veterinarian's knowledge and experience in VSMR. The key objective of Membership in this subject is to demonstrate that the candidate has the ability to integrate technical and academic knowledge into an advanced level of clinical diagnostic ability and practical acumen. Membership is an indication to the profession and the general public of an advanced practitioner, representing a middle-tier of knowledge, competence and experience in VSMR.

As such, the candidates will have sufficient knowledge of, and experience in, the veterinary management of the athletic animal as well as physical rehabilitation of all patients in their chosen species, and the ability to appropriately advise or undertake procedures on behalf of veterinary colleagues, not similarly qualified, on the subject of VSMR.

LEARNING OUTCOMES

Veterinary Sports Medicine and Rehabilitation requires the application of knowledge drawn from a broad base across body systems and traditional disciplines. The emphasis is placed on a logical, problem-based approach to accurately diagnose and manage the impairments.

A patient may have multiple problems and it is the veterinarian's responsibility to prioritise and deliver the care.

Knowledge of the traditional disciplines of internal medicine, surgery, orthopaedics, clinical pathology, pharmacology, pain management, nutrition, exercise physiology, and diagnostic imaging must all be used to diagnose and treat the problems. An understanding of complementary disciplines including acupuncture, manual therapies and rehabilitation is also important.

The fundamental knowledge component of the examination (Paper 1) covers basic foundation principles of veterinary sports medicine and rehabilitation. The species-specific components of the examination (Paper 2 and the oral examination) cover applied knowledge specific to equine patients.

The following description of topics serves as a guide to the expected level and breadth of knowledge and skill. Both fundamental knowledge and species-specific (equine) knowledge can be obtained from the reading list below. It is the aim of the VSMR Chapter that members are able to successfully pass both the fundamental and species-specific sections of their examination by studying only within their chosen species.

FUNDAMENTAL LEARNING OUTCOMES

1. Tissue-based pathophysiology

1.1. The candidate will have **sound**¹ knowledge of:

1.1.1. Connective tissue biomechanics:

1.1.1.1. Muscle

1.1.1.2. Tendon

1.1.1.3. Ligament

1.1.1.4. Bone

1.1.2. Mechanisms of injury and principles of injury and tissue healing for the following specific tissues and systems:

1.1.2.1. Cardiovascular

1.1.2.2. Respiratory

1.1.2.3. Connective tissue

1.1.2.4. Musculoskeletal:

1.1.2.4.1. Muscle

1.1.2.4.2. Tendon

1.1.2.4.3. Ligament

1.1.2.4.4. Bone

1.1.2.4.5. Tissues of the joint

1.1.2.4.6. Nervous

¹ Knowledge Levels:

Sound knowledge – candidates must know all of the principles of the topic and some of the finer detail and be able to identify areas where opinions may diverge. A middle level of knowledge.

Basic knowledge – candidates must know the main points of the topic and the major literature.

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2. Kinesiology

2.1 The candidate will have **sound** knowledge of the following:

- 2.1.1 Physical examination
- 2.1.2 Gait analysis
- 2.1.3 Biomechanics
- 2.1.4 Lameness evaluations

3. Exercise physiology

3.1 The candidate will have **sound** knowledge of the following related to exercise and performance across species:

- 3.1.1 General conditioning and training principles
- 3.1.2 Energetics
- 3.1.3 Thermoregulation
- 3.1.4 Electrolytes
- 3.1.5 Fluid balance
- 3.1.6 Cardiorespiratory function
- 3.1.7 Nutrition

4. Diagnostic imaging

4.1 The candidate will have **basic** knowledge of the principles and applications of the following as they apply to the VSMR patient:

- 4.1.1 Radiology
- 4.1.2 Ultrasonography
- 4.1.3 Nuclear scintigraphy
- 4.1.4 Computed tomography (CT)
- 4.1.5 Magnetic resonance imaging (MRI)
- 4.1.6 Thermography

5. Diagnostic methods

5.1 The candidate will have **sound** knowledge of:

- 5.1.1 Clinical and laboratory measures of musculoskeletal function and dysfunction through the use of:
 - Diagnostic local analgesia
 - Clinical pathology
 - Diagnostic imaging
 - Electromyography
 - Goniometry
 - Girthometry
 - Pain scales
 - Motion analysis
 - Gait analysis systems:
 - 5.1.1.1 Force plate
 - 5.1.1.2 Pressure mat
 - Inertial sensors

- 5.1.2 Clinical and laboratory measures of neurological function and dysfunction through the use of:
- Clinical pathology
 - Diagnostic imaging
 - Electromyography
 - Pain scales
 - Motion analysis
 - Inertial sensors

6. Nociception and pain mechanisms, pharmacology

6.1 The candidate will have **sound** knowledge of:

- 6.1.1 Neurophysiology of nociception
- 6.1.2 Pathophysiology of pain
- 6.1.3 Acute pain management:
 - Using pharmacologic methods
 - Using non-pharmacologic methods:
 - 6.1.3.2.1. Nutraceuticals
 - 6.1.3.2.2. Physical modalities
- 6.1.4. Chronic pain management:
 - 6.1.4.1 Using pharmacologic methods
 - 6.1.4.2 Using non-pharmacologic methods:
 - 6.1.4.2.1 Nutraceuticals
 - 6.1.4.2.2 Physical modalities
 - 6.1.4.2.3 Hydrotherapy

7. Physical rehabilitation

7.1 The candidate will have **sound** knowledge of:

- 7.1.1 Manual therapy, including:
 - Manual assessment
 - Massage
 - Stretching
 - Mobilization
- 7.1.2 Physical modalities:
 - Thermal
 - Mechanical
 - Electromagnetic
 - Photic
- 7.1.3 Therapeutic exercises for:
 - Flexibility
 - Proprioception
 - Motor control
 - Strength
 - Endurance

8. Intra-articular and biologic therapies

8.1 The candidate will have **sound** knowledge of:

8.1.1 Intra-articular medications, including:

- Hyaluronic acid
- Corticosteroids

8.1.2 Biologic therapies and their application in VSMR:

- Gene therapy
- Stem cell therapy
- Platelet rich plasma (PRP)

9. Surgical considerations in VSMR

9.1 The candidate will have **basic** knowledge of surgical principles and the biological and biomechanical aspects of general, orthopaedic, and neurologic surgery, specifically including:

9.1.1 General principles of fracture fixation

9.1.2 Arthrotomy and arthroscopy

9.1.3 Wound management and soft tissue repair

9.1.4 Biological and physiological features and outcomes of surgery of the spine and peripheral nerves

10. Integrative veterinary medicine

10.1 The candidate will have **basic** knowledge of the principles and practice of these fields as they relate to VSMR:

10.1.1 Acupuncture

10.1.2 Chiropractic

10.1.3 Botanicals

11. Clinical assessment and communication

11.1 The candidate will be able to with a **sound**² level of expertise:

11.1.1 Integrate these skills to provide high quality care for patients with the most efficient use of resources in a manner that is responsive to the owner's needs and wishes

11.1.2 Communicate effectively with clients and peers

11.1.3 Recognise when referral to a specialist for additional diagnostic investigations is indicated

² **Skill levels:**

Sound expertise — the candidate must be able to perform the technique with a moderate degree of skill and have moderate experience in its application. A middle level of proficiency.

Basic expertise — the candidate must be able to perform the technique competently in uncomplicated circumstances

Equine Specific Sports Medicine and Rehabilitation Learning outcomes

12 Foundational Material

- 12.1 The candidate will have **sound** knowledge of the skills required for daily equine sports medicine and rehabilitation practice including the following:
 - 12.1.1 Physical examination, gait analysis, lameness evaluation and diagnostic analgesia
 - 12.1.2 Exercise physiology and thermoregulation
 - 12.1.3 Nociception and pain physiology, pain management, and pharmacology
 - 12.1.4 Nutrition and nutraceuticals
 - 12.1.5 Farriery
 - 12.1.6 Saddlery and training equipment
 - 12.1.7 Fundamentals of equine physical conditioning for racing and equestrian sports.

13 Musculoskeletal System

- 13.1 The candidate will have **sound** knowledge of the common musculoskeletal disorders in racing and equestrian sports.
- 13.2 Topics address biomechanics, mechanisms of injury, pathophysiology, principles of tissue healing and repair.
- 13.3 An understanding of surgical and non-surgical treatment, and prognosis for return to sport following injury is required within the following anatomical regions:
 - 13.3.1 Axial skeletal (head, neck, trunk, pelvis)
 - 13.3.2 Thoracic limb
 - 13.3.3 Pelvic limb

14 Medical and Surgical Issues of the Equine Athlete

- 14.1 The candidate will have **sound** knowledge of anatomy, physiology, pathophysiology, diagnosis and management of commonly seen medical and surgical disorders of the equine athlete in relation to the following body systems;
 - 14.1.1 Neurological
 - 14.1.2 Cardiovascular
 - 14.1.2 Respiratory
 - 14.1.3 Gastrointestinal

15 Diagnostic Imaging

- 15.1 The candidate will be able to, with a sound level of expertise, interpret diagnostic imaging of the equine athlete across the following modalities
 - 15.1.1 Radiology
 - 15.1.2 Ultrasonography (including echocardiography)
 - 15.1.3 Nuclear scintigraphy
 - 15.1.4 Computed tomography
 - 15.1.5 Magnetic resonance imaging
 - 15.1.6 Endoscopy
 - 15.1.7 Thermography

16 Physical Rehabilitation

16.1 The candidate will have **basic** knowledge of rehabilitation, methods of optimising performance and conservative management of common medical and surgical disorders in the equine athlete using the following forms of physical therapy:

16.1.1 Manual therapies (massage, stretching, mobilisation)

16.1.2 Physical modalities (thermal, mechanical, electromagnetic, photic)

16.1.3 Therapeutic exercise (proprioception, motor control, strength, flexibility)

17 Biologic Therapies

17.1 The candidate will have **basic** knowledge of the following biological therapies as they specifically pertain to the equine athlete.

17.1.1 equine gene therapy,

17.1.2 stem cell therapy,

17.1.3 platelet-rich plasma,

17.1.4 interleukin-1 receptor antagonist protein

18 Ethics, Regulatory and Legal Issues

18.1 The candidate will have **sound** knowledge the rules and regulations, recognise and address ethical issues, know how to apply medication rules and understand the effect of illegal activity within racing and equestrian sport, with specific knowledge of the following:

18.1.1 Veterinary aspects of the Australian Rules of Racing and the New Zealand Rules of Racing

18.1.2 Veterinary Regulations of the Federation Equestre Internationale

19. Equine sports medicine

19.1.1 The candidate will have **sound** knowledge of physiological demands, common injuries and their management encountered in equestrian sports and racing disciplines.

EXAMINATIONS

The Membership examination has **two separate components**:

1. Written Examination (*Component 1*)

Written Paper 1 (Two hours): Principles of Veterinary Sports Medicine and Rehabilitation - This is a common paper for both Canine and Equine candidates

Written Paper 2 (Two hours): Applied Veterinary Sports Medicine and Rehabilitation – Equine specific paper

2. Oral Examination (*Component 2*)

Oral (1 hour): Equine specific exam

The written examination will comprise of two, separate two-hour written papers completed on the same day. There will be an additional 15 minutes perusal time for each paper, during which no writing in answer booklets is permitted. Each written paper will contain twenty (20) multiple choice questions (1 mark per question) and the balance in short answer questions worth 100 marks for a total of 120 marks. Marks allocated to each question and to each subsection of each question will be clearly indicated on the written paper.

Written Paper 1:

This paper will assess the core principles of VSMR.

Written Paper 2:

This paper will be specific for equine VSMR to test the candidate's familiarity with the current practices and issues that arise from activities within this discipline in Australia and New Zealand.

Oral Examination – Equine Specific:

This examination further tests the candidate's achievement of the learning outcomes during a face-to-face assessment with the Examiners (or, in the event of pandemic associated restrictions, online zoom assessment). The duration of the examination is approximately 45-60 minutes. Images, video clips, radiographs, ultrasound images or clips, clinical pathology results and relevant material are likely to be used during this examination. The aim of the examination is to assess the candidate's diagnostic ability, communication skills, problem solving skills and capability to apply the principles of veterinary practice to clinical scenarios.

Four (4) cases will be presented with supporting questions asked verbally. The oral examination is worth a total of 120 marks with each case allocated 30 marks. The oral examination will be **species specific** for equine

Recommended reading list

The candidate is expected to read widely within the discipline, paying particular attention to areas not part of their normal work experiences. This list of books is intended to guide the candidate to some core references and other source material. Candidates also should be guided by their mentors. Due to the broad nature of this examination, it is not expected that the candidate has covered the entire content of these textbooks but should understand the common conditions described therein. *The list is not comprehensive and is not intended as an indicator of the content of the examination.*

Recommended textbooks³

1. Hinchcliff K, Kaneps A, Geor R. **Equine Sports Medicine and Surgery**. 2nd edition, 2014.
2. Ross M, Dyson S. **Diagnosis and Management of Lameness in the Horse**, 2nd edition, 2010. – (old but justifiable as an essential foundation textbook)

Additional references

- 1 McIlwraith, C, Frisbie, D. Kawcak C, van Weeren P. **Joint Disease in the Horse**, 2nd edition, 2016.
- 2 Back W, Clayton H. **Equine Locomotion**, 2nd edition, 2013.
- 3 McGowan C, Goff L. **Animal Physiotherapy - Assessment, Treatment and Rehabilitation of Animals** 2016, 2nd edition, 2016.

FURTHER INFORMATION

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³ Textbook Definitions:

Recommended textbook – candidates should own or have ready access to a copy of the book and have a sound knowledge of the contents.

Additional references – candidates should have access to the book and have a basic knowledge of the contents

Additional Reading Materials - These are conference proceedings, other non-refereed publications and other journals that would offer some information in the subject area including differing points of view, but are not required reading.

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