



Australian Government

ACMFAR401 Apply knowledge of equine musculoskeletal system, biomechanics and pathology for effective hoof care

Release: 1

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Modification History

Release	Comments
Release 1	This version released with ACM Animal Care and Management Training Package Version 2.0.

Application

This unit of competency describes the skills and knowledge required to identify characteristics and functions of the equine musculoskeletal system and biomechanics with a focus on the distal limb and hoof capsule and associated pathologies related to hoof care.

The unit applies to individuals who require specialised knowledge to manage equine hoof care and communicate information to others.

Workplace health and safety and animal welfare legislation relevant to interacting with horses applies to workers in this industry. Requirements vary between industry sectors and state/territory jurisdictions. Users are advised to check with the relevant authority for specific requirements.

No licensing or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Unit Sector

Farriery (FAR)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Identify main structural characteristics of the equine musculoskeletal system	1.1 Identify and explain, using accurate anatomical terminology, the main musculoskeletal features and planes of the equine body 1.2 Outline the basic biomechanics of the equine musculoskeletal

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	system in relation to body stability, movement, power and stamina 1.3 Relate features of conformation to various equine disciplines and work activities 1.4 Identify and explain the function of features of the equine fore and hind limbs
2. Determine characteristics of the equine distal limb	2.1 Identify features and relationships between bones and joints, and soft tissues, ligaments and tendons of the distal limb 2.2 Explain changes to bone and soft tissues of the distal limb due to age, exercise, ailments and injury 2.3 Determine significance of the distal limb to horse movement and welfare
3. Relate hoof structure and conditions to equine health and welfare	3.1 Explain how the hoof capsule integrates with the internal hoof structures 3.2 Identify relationships between the hoof and the digit bones and the digit bones with the upper limbs and body 3.3 Investigate relationships between diet and nutrition, age, environment and movement on hoof pathologies 3.4 Investigate the relationship between equine conformation and movement on hoof pathologies
4. Recognise features of equine lameness and related pathologies	4.1 Investigate features, symptoms and causes of equine lameness and related pathologies 4.2 Observe equine stance and movement in different gaits to assess lameness and impact of different forces on the limbs and hoof capsule 4.3 Examine equine using manipulative and palpation techniques to feel for heat, swelling and sensitivity to pressure indicating pain 4.4 Review radiographs or other medical imaging in consultation with veterinarians to supplement knowledge of equine condition or pathology
5. Review common strategies used to address a range of equine pathologies	5.1 Investigate possible preventions, interventions and strategies to address common symptoms of equine lameness and pathologies related to the distal limb 5.2 Identify common conditions and pathologies to be referred to a registered veterinarian 5.3 Communicate information about equine conditions and

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	pathologies clearly to veterinarians and clients using accurate terminology and concepts

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	Critically analyse complex anatomical diagrams and texts relevant to equine musculoskeletal system, distal limb and hoof capsule from a variety of sources, and consolidate information
Interact with others	Liaise collaboratively with veterinarians, colleagues or other equine professionals to discuss issues, veterinary diagnoses and potential foot care plans
Get the work done	Use problem-solving techniques to analyse equine movement and musculoskeletal features to identify pathologies and determine foot care needs

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ACMFAR401 Apply knowledge of equine musculoskeletal system, biomechanics and pathology for effective hoof care	Not applicable	New unit	No equivalent unit

Links

Companion Volumes, including Implementation Guides, are available at VETNet: -
<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b75f4b23-54c9-4cc9-a5db-d3502d154103>

Assessment Requirements for ACMFAR401 Apply knowledge of equine musculoskeletal system, biomechanics and pathology for effective hoof care

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Performance Evidence

An individual demonstrating competency must satisfy all of the elements and performance criteria in this unit. There must be evidence that the individual has:

- accurately identified key anatomical features (normal and abnormal) of the equine distal limb and hoof capsule on:
 - a live equine
 - a cadaver leg
 - a radiograph
- determined possible causes of common pathologies relating to young, mature, old, shod and unshod/barefoot equines by analysing:
 - the movement and examining/palpating the limbs of at least three live equines
 - at least three realistic case studies addressing common equine pathologies not covered by the range of live equines in the point above
- explained musculoskeletal structures, conformation and features, both normal and abnormal, to others using accurate anatomical and industry terminology.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- overview of equine anatomy and musculoskeletal structures, including:
 - key features, actions, location and orientation of the musculoskeletal system including thoracic and pelvic limbs
 - changes in equine musculoskeletal structure related to age, growth, performance, ailments and injury
 - major blood vessels, circulation, nerves and lymphatic system relevant to the distal limb

- structure, function, actions, names and location of equine distal limb bones, joints, ligaments and tendons
- basic principles of equine movement and biomechanics of the limbs and hoof to enable movement and passive stance
- conformational characteristics that may impact on equine musculoskeletal structure stability, including:
 - correct conformation of common breeds, according to breed standards, and how to access information on less common breeds
 - desirable and undesirable conformation features
 - congenital and acquired conformation faults
 - effect of common conformation faults on equine action and hoof
 - principles of static and dynamic foot balance
- key features and functions of all parts of the equine limb and hoof capsule, including:
 - dorsal wall
 - medial and lateral wall
 - heels and buttresses
 - bulbs of foot
 - sole
 - white line
 - bars
 - frog
 - suspensory apparatus of the distal phalanx
 - periople and perioplic corium
 - laminae and laminar corium
 - coronary corium
 - corium of sole
 - corium of frog
 - corium of bars
 - digital cushion
 - distal phalanx cartilages
 - joints - hock, knee, fetlock, pastern, pedal
 - bones - navicular bone and surrounding structures, pedal bone, long and short pastern, carpus and tarsus, metacarpals and metatarsals
 - tendons, their insertion and position
 - muscles and points of origin and insertion
 - blood supply of the distal limb
 - nerve supply of the distal limb
 - ligaments of the distal limb
 - all palpable structures of the distal limb
 - skin and hair
 - dermal/epidermal laminae attachments (suspensory apparatus of PIII)

- signs and causes of lameness, including pain related to orthopaedic, metabolic, circulatory and infectious causes
- pathology and symptomology of conditions and injuries related to the distal limb, including:
 - interference injuries - brushing, speedy cutting, forging, over-reaching
 - minor conditions - puncture wounds, thin soles, hoof wall cracks, hoof capsule distortion, white line thrush and seedy toe
 - moderate to severe conditions - laminitis, navicular disease, palmar/plantar hoof pain, hoof crack and hoof wall avulsion, flexural deformities (contracted tendons)
- soft tissue injuries, including to:
 - co-lateral ligament
 - flexor/extensor tendon
 - suspensory ligament lesions
- degenerative joint disease - spavin, high/low ringbone
- relationship between type of work and environment, including topography surfaces and diet and nutrition, to equine conditions and pathologies
- approaches to dissecting cadaver legs
- basic features of medical diagnostic imaging, including:
 - radiographs / x-rays
 - computed tomography (contrast CT) using radiocontrast agents
 - magnetic resonance imaging (MRI)
- relevant regulations, codes of practice and workplace procedures to relating to interacting with equines, including:
 - workplace health and safety and safe work practices
 - animal welfare principles, practices and ethics.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
 - a workplace or an environment that accurately represents workplace conditions
- resources, equipment and materials:
 - various live equines to examine and/or observe movement
 - equine cadaver legs and radiographs of distal limb
 - case studies or simulations (models, videos or DVDs) to supplement information not available to directly observe or examine on horses
 - access to information about equine musculoskeletal structures, biomechanics and pathologies.

Training and assessment strategies must show evidence of the use of guidance provided in the *Companion Volume: User Guide: Safety in Equine Training*.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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