

American College of Veterinary Sports Medicine and Rehabilitation

Topic Rubric for the 2021 Canine-specific Board-certification Examination

The following table provides a detailed outline of the topics and estimated percentage distribution of material to be covered in the 2021 Canine Species-specific Examination.

Percentage Distribution	CANINE SPORTS MEDICINE AND REHABILITATION EXAMINATION
23%-27%	<p>1. Foundational Material Addresses the general working knowledge needed for daily canine sports medicine and rehabilitation practice including foundational biomechanical and biological concepts</p> <ul style="list-style-type: none"> • Physical examination, gait analysis and lameness evaluation • Basic biomechanical and biological features of sports medicine and rehabilitation • Nociception and pain physiology, pain management, and pharmacology • Exercise physiology, energetics and thermoregulation • Nutrition and nutraceuticals • Fundamentals of canine physical conditioning • Training equipment (e.g., harnesses, agility obstacles, jumps)
21%-26%	<p>2. Neuromusculoskeletal System Addresses common neurologic, muscular, and orthopaedic disorders and canine sport-specific injuries Topics address biomechanics, mechanisms of injury, pathophysiology, principles of tissue healing and repair, and geriatric issues Includes general surgical indications, post-operative care, and prognosis for return to sport following injury associated with common orthopaedic and neurologic disorders</p> <ul style="list-style-type: none"> • Axial skeletal (head, neck, trunk, pelvis) • Thoracic limb • Pelvic limb
9%-13%	<p>3. Medical Issues of the Canine Athlete Addresses the anatomy, physiology, pathophysiology, medical diagnosis and management, and rehabilitation of common cardiac, respiratory, and gastrointestinal disorders Includes general surgical indications, post-operative care, and prognosis for return to sport associated with cardiovascular, respiratory and gastrointestinal disorders in canine athletes</p> <ul style="list-style-type: none"> • Special senses (sight, smell), vestibular, balance, and coordination • Cardiovascular • Respiratory

	<ul style="list-style-type: none"> • Gastrointestinal • Endocrine, metabolic and hereditary
11%-14%	<p>4. Diagnostic Imaging Topics specific to diagnostic imaging of the canine sports medicine and rehabilitation patient</p> <ul style="list-style-type: none"> • Radiology • Computed tomography • Ultrasonography • Nuclear scintigraphy • Magnetic resonance imaging • Thermography
20%-27%	<p>5. Physical Rehabilitation Topics specific to rehabilitation and optimized performance of the canine athlete and conservative management of common medical and surgical disorders</p> <ul style="list-style-type: none"> • Manual therapies (massage, stretching, mobilization) • Physical modalities (thermal, mechanical, electromagnetic, photic) • Therapeutic exercise (proprioception, motor control, strength) • Application and use of assistive devices (orthotics, prosthetics, carts)
5%-8%	<p>6. Biological Therapies Topics specific to canine gene therapy, stem cell therapy, platelet-rich plasma (PRP), and interleukin-1 receptor antagonist protein (IRAP)</p>
1%-2%	<p>7. Ethics, Regulatory and Legal Issues Address ethical issues and possible drug regulations in canine sports medicine and athletic competitions</p>
1%-3%	<p>8. Feline Focused: Feline focused rehabilitation issues covering physical examination and lameness evaluation, nociception/ pain physiology and management, nutrition, neurological issues, medical issues that interfere with biomechanics, normal gait and /or increase pain, diagnostic imaging, rehabilitation and biological therapies.</p>

Reading List for the 2021 Canine-specific Board-certification Examination

Please note that this is a guideline for a reading list of textbooks and journals suggested for preparation for the 2021 board-certification examination with the American College of Veterinary Sports Medicine and Rehabilitation.

Disclaimer: Due to the very diverse knowledge base required of sports medicine and rehabilitation, this reading list is suggested, but not all inclusive. Candidates should use the American College of Veterinary Sports Medicine and Rehabilitation examination rubric for identification of examination topics and the percentage distribution of examination questions within in each topic area as the basis for preparation for the respective examinations.

Selected Canine Sports Medicine and Rehabilitation Textbooks

Each of the selected textbooks contains chapters with material pertinent to the field of canine sports medicine and rehabilitation. The applicant will be responsible for material within relevant (or included) chapters related to the basic science and clinical practice of canine sports medicine and rehabilitation. In addition, questions on the species specific exams may draw from any references on the Core Reading List.

1. Hand MS, Thatcher CD, Remillard RL, Roudebush P and Novotny BJ. Small Animal Clinical Nutrition. 2010, 5th edition. Mark Morris Institute. ISBN: 978-0615297019.
2. McGowan C, Goff L. Animal Physiotherapy - Assessment, Treatment and Rehabilitation of Animals 2016, 2nd Ed. 2016. Blackwell Publishing. ISBN: 978-1-118-85232-3
3. Miller's Anatomy of the Dog. Evans HE and de Lahunta A. 2013, 4th edition, Elsevier Saunders. ISBN-13: 978-1437708127.
4. Millis D, Levine D. Canine Rehabilitation and Physical Therapy. 2014, 2nd edition. Elsevier Saunders. ISBN: 978-1437703092.
5. Tobias KM, Johnston SA. Veterinary Surgery: Small Animal. 2018 2nd edition. Saunders, ISBN: 978-1437707458

INCLUDING the following chapters: 1-4, 26-34, 38-39, 41-62, 64-64, 68-74, 118.

6. Zink CM and Van Dyke JB. Canine Sports Medicine and Rehabilitation. 2018. 2nd edition John Wiley and Sons. ISBN: 978-1-119-38062-7.
7. Canine Lameness Felix Duerr editor ISBN: 978-1-119-47405-0 December 2019 Wiley-Blackwell

Selected Canine Sports Medicine and Rehabilitation Journals

The veterinary journals listed below contain articles relevant to the field of canine sports medicine and rehabilitation. Within the listed journals, the majority of examination questions will originate from literature published within the last five years. For the 2020 American College of Veterinary Sports Medicine and Rehabilitation board-certification examination, questions will be created from literature published between **January 1, 2015** and **June 30, 2020**.

Exam questions may also originate from information in older journal articles (prior to January 2014) if they are considered essential or foundational to the development and practice of canine sports medicine and rehabilitation. The applicant is responsible for material as it relates to the basic science and clinical practice of canine sports medicine and rehabilitation.

- American Journal of Veterinary Research
- Canadian Veterinary Journal
- Frontiers in Veterinary Medicine
- Journal of Small Animal Practice
- Journal of the American Animal Hospital Association
- Journal of the American Veterinary Medical Association
- Journal of Veterinary Internal Medicine
- Veterinary and Comparative Orthopaedics and Traumatology
- Veterinary Radiology and Ultrasound
- Veterinary Record
- Veterinary Surgery
- PLOS one – veterinary medicine

https://journals.plos.org/plosone/browse/veterinary_medicine

- ACVSMR Diplomat publications:
<https://vsmr.org/diplomate-publications/>
- Canine Journal Club presentations - The following specific journal articles from the monthly ACVSMR resident journal club review :
 - Alves JC, Dos Santos AM, Fernandes ÂD. Evaluation of the effect of mesotherapy in the management of back pain in police working dog. *Vet Anaesth Analg*. 2018 Jan;45(1):123-128. doi: 10.1016/j.vaa.2017.07.006. Epub 2017 Aug 19. PMID: 29222031.
 - Aulakh KS, Dongaonkar KR, Barnes K, Gines AJ, Bordelon JT, Hulse D, Aulakh HK, Liu CC. Influence of orthopedic examination on lameness scores and interobserver and intraobserver agreement in dogs with naturally occurring elbow osteoarthritis. *Vet Surg*. 2020 Apr;49(3):455-462. doi: 10.1111/vsu.13390. Epub 2020 Feb 5. PMID: 32022284.
 - Castilla A, Knotek B, Vitt M, Gordon-Evans W. Carpal Extension Angles in Agility Dogs Exiting the A-Frame and Hurdle Jumps. *Vet Comp Orthop Traumatol*. 2020 Mar;33(2):142-146. doi: 10.1055/s-0039-3400484. Epub 2020 Jan 8. PMID: 31914476.

- Gallaher HM, Butler JR, Wills RW, Priddy LB, Elder SH, Heller SM, Brinkman E, Baumgartner W. Effects of short- and long-term administration of nonsteroidal anti-inflammatory drugs on osteotomy healing in dogs. *Vet Surg*. 2019 Oct;48(7):1318-1329. doi: 10.1111/vsu.13282. Epub 2019 Jul 10. PMID: 31291009.
- James H. K., McDonnell F., Lewis Thomas W. Effectiveness of Canine Hip Dysplasia and Elbow Dysplasia Improvement Programs in Six UK Pedigree Breeds. *Frontiers in Veterinary Science* 6 PAGES=490, 2020 URL=<https://www.frontiersin.org/article/10.3389/fvets.2019.00490> DOI=10.3389/fvets.2019.00490
- Kirkby Shaw K, Alvarez L, Foster SA, Tomlinson JE, Shaw AJ, Pozzi A. Fundamental principles of rehabilitation and musculoskeletal tissue healing. *Vet Surg*. 2020 Jan;49(1):22-32. doi: 10.1111/vsu.13270. Epub 2019 Jul 4. PMID: 31271225; PMCID: PMC6973127.
- Lafuente P, Whyte C. A Retrospective Survey of Injuries Occurring in Dogs and Handlers Participating in Canicross. *Vet Comp Orthop Traumatol*. 2018 Sep;31(5):332-338. doi: 10.1055/s-0038-1661390. Epub 2018 Aug 23. PMID: 30138953.
- Marsolais GS, McLean S, Derrick T, Conzemius MG. Kinematic analysis of the hind limb during swimming and walking in healthy dogs and dogs with surgically corrected cranial cruciate ligament rupture. *J Am Vet Med Assoc*. 2003 Mar 15;222(6):739-43. doi: 10.2460/javma.2003.222.739. PMID: 12675295.
- Miller B, Hamilton K, Boushel R, Williamson K, Laner V, Gnaiger E, Davis M. Mitochondrial respiration in highly aerobic canines in the non-raced state and after a 1600-km sled dog race. *PLoS One*. 2017 Apr 26;12(4):e0174874. doi: 10.1371/journal.pone.0174874. PMID: 28445477; PMCID: PMC5405936.
- Miller LA, Torraca DG, De Taboada L. Retrospective Observational Study and Analysis of Two Different Photobiomodulation Therapy Protocols Combined with Rehabilitation Therapy as Therapeutic Interventions for Canine Degenerative Myelopathy. *Photobiomodul Photomed Laser Surg*. 2020 Apr;38(4):195-205. doi: 10.1089/photob.2019.4723. PMID: 32301669; PMCID: PMC7187977.
- Moore SA, Early PJ, Hettlich BF. Practice patterns in the management of acute intervertebral disc herniation in dogs. *J Small Anim Pract*. 2016 Aug;57(8):409-15. doi: 10.1111/jsap.12496. Epub 2016 Jun 2. PMID: 27256593.
- Repac, Jennifer; Alvarez, Leilani X.; Lamb, Ken; et al., Evaluation of Thermographic Imaging in Canine Hindlimb Muscles After 6 Min of Walking-A Pilot Study *FRONTIERS IN VETERINARY SCIENCE* Volume: 7 Article Number: 224 Published: APR 30 2020
- Sievert C, Richter H, Gascho D, Kircher PR, Carrera I. 3 Tesla magnetic resonance imaging study of the normal canine femoral and sciatic nerves. *Vet Radiol Ultrasound*. 2017 Sep;58(5):598-606. doi: 10.1111/vru.12511. Epub 2017 Apr 25. PMID: 28444825.
- Tomlinson JE, Manfredi JM. Return to Sport after Injury: A Web-Based Survey of Owners and Handlers of Agility Dogs. *Vet Comp Orthop Traumatol*. 2018 Nov;31(6):473-478. doi: 10.1055/s-0038-1670676. Epub 2018 Oct 22. PMID: 30347413.
- von Pfeil DJF, Zellner E, Fritz MC, Langohr I, Griffiths C, Stanley BJ. Congenital laryngeal paralysis in Alaskan Huskies: 25 cases (2009-2014). *J Am Vet Med Assoc*. 2018 Oct 15;253(8):1057-1065. doi: 10.2460/javma.253.8.1057. PMID: 30272513.