

American College of Veterinary Sports Medicine and Rehabilitation

Topic Rubric for the 2024 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 2024 Canine Species-specific Examination.

| Percentage Distribution | CANINE SPORTS MEDICINE AND REHABILITATION EXAMINATION |
|-------------------------|---|
| 20-24% | 1. Foundational Material Addresses the general working knowledge needed for daily canine sports medicine and rehabilitation practice including foundational biomechanical and biological concepts |
| | <ul style="list-style-type: none"> Physical examination, gait analysis and lameness evaluation |
| | <ul style="list-style-type: none"> Basic biomechanical and biological features of sports medicine and rehabilitation |
| | <ul style="list-style-type: none"> Nociception and pain physiology, pain management, and pharmacology |
| | <ul style="list-style-type: none"> Exercise physiology, energetics and thermoregulation |
| | <ul style="list-style-type: none"> Nutrition and nutraceuticals |
| | <ul style="list-style-type: none"> Fundamentals of canine physical conditioning |
| | <ul style="list-style-type: none"> Training equipment (e.g., harnesses, agility obstacles, jumps) |
| 18-22% | 2. Neuromusculoskeletal System Addresses common neurologic, muscular, and orthopedic 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 orthopedic and neurologic disorders |
| | <ul style="list-style-type: none"> Axial skeletal (head, neck, trunk, pelvis) |
| | <ul style="list-style-type: none"> Thoracic limb |
| | <ul style="list-style-type: none"> Pelvic limb |
| 8-12% | 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 |
| | <ul style="list-style-type: none"> Special senses (sight, smell), vestibular, balance, and coordination |
| | <ul style="list-style-type: none"> Cardiovascular |
| | <ul style="list-style-type: none"> Respiratory |

| | |
|--------|--|
| | <ul style="list-style-type: none"> • Gastrointestinal • Endocrine, metabolic and hereditary |
| 13-17% | 4. Diagnostic Imaging Topics specific to diagnostic imaging of the canine sports medicine and rehabilitation patient |
| | <ul style="list-style-type: none"> • Radiology • Computed tomography • Ultrasonography • Nuclear medicine imaging • Magnetic resonance imaging • Thermography |
| 23-27% | 5. Physical Rehabilitation Topics specific to rehabilitation and optimized performance of the canine athlete and conservative management of common medical and surgical disorders |
| | <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) |
| 5-9% | 6. Biological Therapies Topics specific to canine gene therapy, stromal vascular fraction (SVF), mesenchymal stem/stromal cells (MSC) therapy, platelet-rich plasma (PRP), Autologous Protein Solution (APS), and interleukin-1 receptor antagonist protein (IRAP) |
| 0-2% | 7. Ethics, Regulatory and Legal Issues Address ethical issues and possible drug regulations in canine sports medicine and athletic competitions |

Reading List for the 2024 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 2024 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 candidate 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) McGowan C, Goff L. **Animal Physiotherapy - Assessment, Treatment and Rehabilitation of Animals**. 2nd Ed, 2016, Blackwell Publishing. ISBN: 978-1-118-85232-3
- 2) Hermanson J and de Lahunta A. **Miller's Anatomy of the Dog**. 5th edition, 2019, Elsevier Saunders. ISBN-13: 97-80323676687.
- 3) Millis D, Levine D. **Canine Rehabilitation and Physical Therapy**. 2nd edition, 2014, Elsevier Saunders. ISBN: 978-1437703092.
- 4) Tobias KM, Johnston SA. **Veterinary Surgery: Small Animal**. 2nd edition, 2018, Saunders. ISBN: 9780323320658
 - a) Section 1 (Chapters: 1-4)
 - b) Section 3 (Chapters 26-34)
 - c) Section 4 (Chapters: 38-62, 68-74)
- 5) Zink CM and Van Dyke JB. **Canine Sports Medicine and Rehabilitation**. 2nd edition, 2018, Wiley. ISBN: 978-1-119-38062-7.
- 6) Felix Duerr. **Canine Lameness**. 2020, Wiley. ISBN: 978-1-119-47405-0
- 7) Ettinger SJ and Feldman EC. **Textbook of Veterinary Internal Medicine**. 8th edition, 2017, Elsevier Saunders. ISBN: 9780323312110

- a) Section 15 (Chapters 240, 241, 242)
- b) Section 16 (Chapters 248)
- c) Section 17 (Chapters 258-260, 264-269)
- d) Section 26 (Chapters 353-356)
- e) Section 27 (Chapter 359)

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, most examination questions will originate from literature published in print or electronically. For the 2024 American College of Veterinary Sports Medicine and Rehabilitation board-certification examination, questions will be created from literature published in print or electronically between **January 1, 2018 and June 30, 2023**.

Exam questions may also originate from information in older journal articles (prior to January 2018) 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.

- 1) Agility Dog Health Network <https://labs.wsu.edu/agility-dog-health/research-publications/>
 - a) Injuries and Medical Problems
 - b) Exercise Science
- 2) American Journal of Veterinary Research
- 3) BMC Veterinary Research
- 4) Frontiers in Veterinary Medicine
- 5) Journal of the American Animal Hospital Association
- 6) Journal of the American Veterinary Medical Association
- 7) Journal of Small Animal Practice
- 8) Journal of Veterinary Internal Medicine
- 9) PLOS one – veterinary medicine https://journals.plos.org/plosone/browse/veterinary_medicine_
- 10) Vet Clinics of N America, Small Animal Practice:
 - a) Forelimb Lameness; 2021, Vol 51, Issue 2
 - b) Small animal orthopedic medicine. 2022; Vol 52, Issue 4
- 11) Veterinary and Comparative Orthopaedics and Traumatology
- 12) Veterinary Journal Special Issue: Pain- From Recognition to Resolution
<https://www.sciencedirect.com/journal/the-veterinary-journal/special-issue/10D5PLVM6JQ>
- 13) Veterinary Radiology and Ultrasound
- 14) Veterinary Surgery

Required landmark papers:

1. Bockstahler B.A. Prickler B. Lewy E. et al. Hind limb kinematics during therapeutic exercises in dogs with osteoarthritis of the hip joints. *Am J Vet Res.* 2012; 73: 1371-1376
2. Franklin SP, Garner BC, Cook JL. Characteristics of canine platelet-rich plasma prepared with five commercially available systems. *Am J Vet Res.* 2015 Sep;76(9):822-7.
3. Greene, L. M., Marcellin-Little, D. J., & Lascelles, B. D. X. Associations among exercise duration, lameness severity, and hip joint range of motion in Labrador Retrievers with hip dysplasia. *J Am Vet Med Assoc.* 2013; 242(11): 1528-1533.
4. Hogg, S. M., Worley, D. R., Jarvis, S. L., Hill, A. E., Reiser, R. F., & Haussler, K. K. Kinematic and kinetic analysis of dogs during trotting after amputation of a pelvic limb. *Am J Vet Res.* 2013; 74(9), 1164-1171.
5. Holler et al. Kinematic motion analysis of the joints of the forelimbs and hindlimbs of dogs during walking exercise regimens. *Am J Vet Res.* 2010; 71(7):734-740.
6. Innes, Clayton, Lascelles. Review of safety and efficacy of long-term NSAID use in treatment of canine OA. *Vet Rec.* 2010; 166(8):226-30.
7. Jarvis, S. L., Worley, D. R., Hogg, S. M., Hill, A. E., Haussler, K. K., & Reiser, R. F. Kinematic and kinetic analysis of dogs during trotting after amputation of a thoracic limb. *Am J Vet Res.* 2013; 74(9), 1155-1163.
8. Kealy RD, Lawler DF, Ballam JM, et al. Effects of diet restriction on life span and age-related changes in dogs. *J Am Vet Med Assoc.* 2002 May 1;220(9):1315-20.
9. Lascelles BD, Gaynor JS, Smith ES, Roe SC, Marcellin-Little DJ, Davidson G, Boland E, Carr J. Amantadine in a multimodal analgesic regimen for alleviation of refractory osteoarthritis pain in dogs. *J Vet Intern Med.* 2008 Jan-Feb; 22(1):53-9.
10. Marshall et al. The effect of weight loss on lameness in obese dogs with osteoarthritis. *Vet Res Commun.* 2010; 34(3):241-253.
11. Wakshlag and Shmalberg. Nutrition for working and service dogs. *Vet Clin North Am Small Anim Pract.* 2014 Jul;44(4):719-740
12. Wucherer, K. L., Conzemius, M. G., Evans, R., & Wilke, V. L. (2013). Short-term and long-term outcomes for overweight dogs with cranial cruciate ligament rupture treated surgically or nonsurgically. *J Am Vet Med Assoc.* 242(10): 1364-1372.
13. Shelton. Routine and specialized laboratory testing for the diagnosis of neuromuscular diseases in dogs and cats. *Vet Clin Pathol.* 2010; 39(3): 278–295
14. Bauer. Therapeutic use of fish oils in companion animals. *J Am Vet Med Assoc.* 2011; 239(11): December 1, Vet Med Today: Timely Topics in Nutrition
15. Frye, C.W., Shmalberg, J.W. and Wakshlag, J.J. Obesity, exercise and orthopedic disease. *Veterinary Clinics: Small Animal Practice.* 2016; 46(5): 831-841.
16. Santarossa, A., Parr, J.M. and Verbrugghe, A. The importance of assessing body composition of dogs and cats and methods available for use in clinical practice. *J Am Vet Med Assoc.* 2017; 251(5), pp.521-529.
17. Shelton, G.D., 2007. From dog to man: the broad spectrum of inflammatory myopathies. *Neuromuscular disorders.* 2007; 17(9-10): 663-670.
18. Shelton, G.D. and Engvall, E. Muscular dystrophies and other inherited myopathies. *Vet Clin North Am Small Anim Pract.* 2002; 32(1): 103-124.

19. Dennis, M.M., Nelson, S.N., Cantor, G.H., Mosier, D.A., Blake, J.E. and Basaraba, R.J. Assessment of necropsy findings in sled dogs that died during Iditarod Trail sled dog races: 23 cases (1994–2006). *J Am Vet Med Assoc.* 2008; 232(4): 564-573.
20. Vandeweerd, J-M., et al. "Systematic review of efficacy of nutraceuticals to alleviate clinical signs of osteoarthritis." *J Vet Intern Med.* 2008; 26(3): 448-456.
21. Barbeau-Grégoire, M., Otis, et al. A 2022 Systematic Review and Meta-Analysis of Enriched Therapeutic Diets and Nutraceuticals in Canine and Feline Osteoarthritis. *International J Molecular Sciences.* 2002; 23(18): 10384.