THE UNIVERSITY OF BRITISH COLUMBIA

Land Acknowledgement

We respectfully acknowledge the Syilx Okanagan Nation and their peoples, in whose traditional, ancestral, unceded territory UBC Okanagan is situated.

Health & Exercise Sciences 453 001 (3 credits)
Clinical Exercise Physiology Applications in Chronic Conditions: Musculoskeletal and Neurological Disorders
2026/27 W1

Instructor: Dr. Gregory duManoir PhD
Office: ART 138
Office Hours: TBD
email: greg.dumanoir@ubc.ca

Class times:	**Lecture**	M	15:30 – 17:00	LIB 303
		W	15:30 – 17:00	LIB 303

Academic Calendar Entry

HES 453: Clinical Exercise Physiology Applications in Chronic Conditions: Musculoskeletal and Neurological Disorders

Clinical considerations of musculoskeletal and neurological diseases/disorders including treatment for safe and effective implementation of exercise programs for people with musculoskeletal and neurological conditions. Critical review of evidence, standards and recommendations in exercise management for musculoskeletal and neurological diseases/disorders. [3-0-0]

Prerequisite: HES 351 and registration limited to students in the Clinical Exercise Physiology concentration of the H.E.S program.

Course Format

The course uses a lecture-based format to achieve the learning objectives, in conjunction with case-study assignments, group-based discussion and in-class writing activities.

Course Overview, Content, and Objectives

HES 453 uses functional anatomy, movement systems reasoning, and clinical exercise physiology principles to support safe, effective exercise assessment and prescription for people living with musculoskeletal and neurological conditions. Students will learn to interpret impairments, identify exercise-related risks, adapt assessments, design progressive interventions, and communicate the role of the CEP within an interdisciplinary care team.

The learning objectives are to:

- Facilitate an in-depth understanding of neurophysiologic and musculoskeletal basis of movement, in health, performance and disease states, including the acute and chronic effects of exercise on these systems.
- Guide students in understanding the pathophysiology involved in key chronic conditions of the nervous and musculoskeletal systems.
- Support student learning of the guidelines, recommendations and evidence to support exercise in the prevention, management and treatment of neurological and musculoskeletal disorders and apply this understanding to design safe and effective exercise prescriptions for individuals living with these conditions.
- Facilitate the exploration of the exercise physiologist's role as a member of the integrative health team in the clinical care of these populations.

Learning Outcomes

By the end of this course successful students will be able to:

1. Describe key characteristics of musculoskeletal and neurological diseases and disorders (e.g., Arthritis, Osteoporosis, low back pain, SCI, MS, CP, Stroke, Parkinson's) including etiology, prevalence, pathophysiological basis, common symptoms, comorbidities, and disease progression.
2. Demonstrate understanding of common disease-specific diagnostic tests, treatments and interventions, functional limitations, contraindications to exercise and patient care plans in this population and how each of these affect exercise prescription in this population
3. Develop safe and effective clinical exercise assessment strategies, and evaluate, analyze and communicate relevant test results for key stakeholders
4. Design a safe and effective exercise prescription, based on relevant assessments results, and describe an appropriate implementation of this prescription in individuals with, or at risk of musculoskeletal and neurological diseases and disorders, including consideration of risks, equipment, environmental needs, emergency management and effective monitoring strategies.
5. Examine current standards, guidelines and the role of the clinical exercise physiologist within the integrated care team of this patient population and critically appraise health and exercise research in musculoskeletal and neurological diseases and disorders.

Evaluation Criteria and Grading

	Description	Date	Value
Knowledge-Focus			**55%**
Participation	Small stakes quizzes on Canvas 60-minute time limit	Due Tuesdays prior to the start of class See Canvas for details	**5%** (best 5 of 8)
Midterm Examination 1 [LO1-LO4]	Functional Anatomy for CEP Movement Systems Impairment Syndromes MC/Short answer/long answer questions	Wednesday, October 15	**25%**
Final Examination [LO1-LO5]	Oral Examination [L01-L05] Guiding questions towards clinical reasoning	Final Exam Period 30 min, individually scheduled	**25%**
Application-Focus			**45%**
Case Study 1 [LO1-LO5]	Movement Systems Impairment Syndromes Identification, Assessment and Exercise Therapy Plan	Wednesday, October 7	**20%**
Case Study 2 [LO1-LO5]	Neurological Disorder Identification, Assessment and Exercise Therapy Plan	Monday, December 7 Wednesday, December 9	**25%**

Required Readings and Videos

Ehrman et al. (2019). Clinical Exercise Physiology. 4th Ed. [earlier editions accepted]. Human Kinetics Publishing, Champaign, IL.

American College of Sports Medicine (2018) ACSM's Guidelines for Exercise Testing and Prescription, 7th Ed. [earlier editions accepted], Lippincott Williams & Wilkins, Baltimore

Recommended Readings

Additional resources will be provided throughout the term

Other Course Policies:

UBC Values

UBC creates an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada, and the world. UBC's core values are excellence, integrity, respect, academic freedom, and accountability.

Policies and Regulations

Visit UBC Okanagan's Academic Calendar for a list of campus-wide regulations and policies, as well as term dates and deadlines.

Resources to Support Student Success

Visit the Student Support and Resources page to find one-on-one help or explore resources to support your experience at UBC Okanagan, as well as many other campus services available to all students.

A statement on academic integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating usually result in a failing grade or mark of zero on the assignment or in the course. Careful records are kept to monitor and prevent recidivism.

A more detailed description of academic integrity, including the University's policies and procedures, may be found in the Academic Calendar.

A statement on academic misconduct

The academic enterprise is founded on honesty, civility, and integrity. Violations of academic integrity (i.e., academic misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred for consideration for academic discipline. Careful records are kept to monitor and prevent recurrences. Any instance of cheating or taking credit for someone else's work, whether intentionally or unintentionally, can and often will result in at minimum a grade of zero for the assignment, and these cases will be reported to the Head of the Department and Associate Dean Academic of the Faculty.

Student Service Resources:

Use of generative artificial intelligence (AI): Students are permitted to use artificial intelligence tools, including generative AI, to gather information, review concepts or to help produce assignments. However, students are ultimately accountable for the work they submit, and any content generated or supported by an artificial intelligence tool must be cited appropriately. Use of AI tools is not permitted during midterm exams and final exams in this course. Learn more through the Generative AI website.

Resources to Support Student Success:

UBC Okanagan Disability Resource Centre
The DRC facilitates disability-related accommodations and programming initiatives to remove barriers for students with disabilities and ongoing medical conditions. If you require academic accommodations to achieve the objectives of a course please contact the DRC at:
Email: drc.questions@ubc.ca
Web: www.students.ok.ubc.ca/drc

UBC Okanagan Equity and Inclusion Office
Through leadership, vision, and collaborative action, the Equity & Inclusion Office (EIO) develops action strategies in support of efforts to embed equity and inclusion in the daily operations across the campus. The EIO provides education and training from cultivating respectful, inclusive spaces and communities to understanding unconscious/implicit bias and its operation within in campus environments. UBC Policy 3 prohibits discrimination and harassment on the basis of BC's Human Rights Code. If you require assistance related to an issue of equity, educational programs, discrimination or harassment please contact the EIO.
Email: equity.ubco@ubc.ca
Web: www.equity.ok.ubc.ca

Student Wellness
At UBC Okanagan health services to students are provided by Student Wellness. Nurses, physicians and counsellors provide health care and counselling related to physical health, emotional/mental health and sexual/reproductive health concerns. As well, health promotion, education and research activities are provided to the campus community. If you require assistance with your health, please contact Student Wellness for more information or to book an appointment.
Email: healthwellness.okanagan@ubc.ca
Web: www.students.ok.ubc.ca/health-wellness

Office of the Ombudperson
The Office of the Ombudsperson for Students is an independent, confidential and impartial resource to ensure students are treated fairly. The Ombuds Office helps students navigate campus-related fairness concerns. They work with UBC community members individually and at the systemic level to ensure students are treated fairly and can learn, work and live in a fair, equitable and respectful environment. Ombuds helps students gain clarity on UBC policies and procedures, explore options, identify next steps, recommend resources, plan strategies and receive objective feedback to promote constructive problem solving. If you require assistance, please feel free to reach out for more information or to arrange an appointment.
Email: ombuds.office.ok@ubc.ca
Web: www.ombudsoffice.ubc.ca

Student Learning Hub

The Student Learning Hub is your go-to resource for free math, science, writing, and language learning support. The Hub welcomes undergraduate students from all disciplines and year levels to access a range of supports that include **tutoring in math, sciences, languages, and writing, as well as help with study skills and learning strategies**. Students are encouraged to visit often and early to build the skills, strategies and behaviors that are essential to being a confident and independent learner. For more information, please visit the Hub's website.

Email: learning.hub@ubc.ca
Web: www.students.ok.ubc.ca/slh

The Global Engagement Office

The Global Engagement Office provides advising and resources to assist International students in navigating immigration, health insurance, and settlement matters, as well as opportunities for intercultural learning, and resources for Go Global experiences available to all UBC Okanagan students, and more.

Email: ubco.global@ubc.ca
Web: www.students.ok.ubc.ca/global-engagement-office/

Safewalk

Don't want to walk alone? Not too sure how to get somewhere on campus? Call Safewalk at **250-807-8076**. Web: www.security.ok.ubc.ca