



Musculoskeletal Health in Ageing: Osteoporosis, Sarcopenia and Fall Prevention

HCISR_HSCI350_01012026

HEALTH SCIENCES • PUBLIC HEALTH • NUTRITION

Credits

3

Contact Hours

40

Term

Summer

Course Description

Musculoskeletal health is a key determinant of mobility, independence, and quality of life in ageing populations. This interdisciplinary course examines osteoporosis and sarcopenia as major contributors to bone fragility, muscle loss, and increased fall risk in older adults. Students analyze the biological foundations of bone and muscle health, including bone metabolism, muscle physiology, and mechanisms underlying age-related musculoskeletal decline.

Core topics include risk factors, clinical assessment methods, nutritional influences on bone and muscle metabolism, and evidence-informed approaches to prevention and management. The course integrates perspectives from nutrition science, rehabilitation medicine, and public health.

Instruction combines lectures, applied workshops, and interdisciplinary teaching by course faculty specializing in nutrition science and musculoskeletal rehabilitation. Experiential learning includes supervised visits to rehabilitation settings, a multi-day thermal wellness field study exploring balneotherapy and mobility in ageing populations, and a field excursion examining Mediterranean lifestyle factors related to musculoskeletal health.

Course Requirements

Required Text

Digital access and/or copies will be provided at no cost to students.

Additional Readings and Resources

Course readings will be provided through curated academic articles, clinical guidelines, and instructor-selected digital resources related to musculoskeletal health, osteoporosis, sarcopenia, fall prevention, nutrition, and rehabilitation in ageing populations. Materials may include peer-reviewed journal articles, clinical assessment guidelines, and multimedia resources relevant to ageing and musculoskeletal care. All materials will be distributed digitally at no cost to students.

Assignments

Course Requirements	Percentages
Participation and Engagement	20%
Case Study Analysis	30%
Reflective Field-Based Assignment	25%
Final Case Analysis	25%
Total	100%

Assignment Descriptions

1

Participation & Engagement

Students are expected to actively participate in class discussions, seminars, workshops, and site visits. Participation includes preparation for class readings, contributions to discussions, and engagement during applied activities and observation visits.

2

Case Study Analysis

Students analyze a short case related to musculoskeletal health in ageing populations (e.g., osteoporosis, sarcopenia, or fall risk). The assignment focuses on identifying risk factors, interpreting assessment indicators, and discussing possible prevention or management approaches based on concepts discussed in class.

3

Reflective Field-Based Assignment

Following the rehabilitation site visit and field-based learning activities, students submit a short reflection connecting classroom concepts with real-world musculoskeletal care practices observed during the visit.

4

Final Case Analysis

Students complete a short written analysis examining a musculoskeletal health challenge related to ageing populations. Using course concepts, students identify contributing factors and propose practical strategies related to nutrition, physical activity, fall prevention, or rehabilitation.

Grading Scale

Grade	Percentage
A+	98-100
A	94-97
A-	91-93
B+	88-90
B	84-87
B-	81-83

Grade	Percentage
C+	78-80
C	74-77
C-	71-73
D	60-70
F	Below 60

Learning Outcomes and Assessment Measures

On completion of the course, students should be able to:

Learning Outcomes	Course Requirement(s) used to assess achievement
Analyze biological and physiological mechanisms contributing to osteoporosis and sarcopenia in ageing populations.	Case Study Analysis; Class Participation
Evaluate risk factors and assessment approaches used to identify musculoskeletal decline and fall risk in older adults.	Case Study Analysis; Applied Workshops
Apply evidence-informed strategies to support musculoskeletal health through nutrition, physical activity, and prevention approaches.	Applied Workshops; Final Case Analysis
Interpret musculoskeletal health practices observed in rehabilitation and clinical settings.	Reflective Field-Based Assignment

Course Outline

Session	Topic	Planned Activities & Field Components
Module 1	Biological Foundations & Clinical Assessment of Musculoskeletal Health	
Session 1	Introduction to Musculoskeletal Health	Introductory seminar; course overview discussion
Session 2	Bone Biology and Osteoporosis	Lecture on pathophysiology and risk factors
Session 3	Muscle Physiology and Sarcopenia	Case-based discussion on muscle loss
Session 4	Clinical Assessment Tools	Demonstration of assessment scales and cards
Module 2	Prevention Strategies & The Mediterranean Lifestyle	
Session 5	Mediterranean Nutrition	Cooking workshop; diet and bone metabolism
Session 6	Medical & Pharmacological Management	Lecture on pharmacology and medical care
Session 7	Physiology of Exercise	Applied workshop on therapeutic exercise mechanisms
Session 8	Fall Risk & Prevention Strategies	Discussion on ergonomics and fall prevention
Module 3	Applied Rehabilitation, Falls Prevention & Integrative Care	
Session 9	Rehabilitation Settings	Field visit preparation; clinical indicators
Session 10	Site Visit: Rehabilitation Center	Observation of multidisciplinary care in practice
Session 11	Field Study: Thermal Wellness	Experiential activity on balneotherapy and mobility
Session 12	Course Synthesis & Final Evaluation	Student case presentations; Course wrap-up

Other Policies

Expectations

The HCISR academic community encourages civility, respect for the rights and opinions of others, and academic integrity. Students are required to comply with principles of academic integrity and bear responsibility for their academic work. All submitted academic work must represent the student's original work and appropriately cite all sources used. Any act of academic misconduct, including fabrication, forgery, plagiarism, cheating, or facilitating academic dishonesty, will result in disciplinary action.

Attendance/Participation

The academic program is organized around classroom instruction and structured experiential learning. Attendance is therefore crucial to academic success. Prompt attendance, full preparation, and active participation in all class sessions, applied workshops, and supervised site visits are required. There are no unexcused absences. Repeated absences will negatively affect the student's grade.

In the case of illness, students must notify the course coordinator by SMS or WhatsApp at +30 697 483 1229 at least 30 minutes prior to the start of class.

Course Policies

For official course communications, students must use their Arcadia University email account. Students are responsible for any information provided by email or through the designated learning management system. This syllabus is subject to change, and any updates will be communicated through official course channels.

Academic Integrity & Student Policies

Plagiarism

Representation of another's work or ideas as one's own in academic submissions is plagiarism, and is cause for disciplinary action. Cheating is actual or attempted use of resources not authorized by the instructor(s) for academic submissions. Students caught cheating in this course will receive a failing grade. Fabrication is the falsification or creation of data, research or resources to support academic submissions, and cause for disciplinary action.

Late or Missed Assignments

Late or missed assignments will not be accepted for grading unless prior arrangements have been approved by the instructor due to documented extenuating circumstances.

Students with Disabilities

Persons with documented disabilities requiring accommodations to meet the expectations of this course should disclose this information during program enrollment and prior to the start of term so that appropriate academic arrangements may be made.

Incident Reporting and Compliance with Sexual Harassment and Misconduct Policies

The Hellenic Center for Interdisciplinary Studies and Research (HCISR) serves as the on-site academic and operational provider for this course. Students experiencing any incident impacting their safety, well-being, or academic participation—including, but not limited to, reports of possible crime, behavioral issues, discrimination or harassment, sexual misconduct, hospitalization, other health concerns, or issues prompting early program departure ("Incidents")—are encouraged to immediately contact HCISR staff for local support and guidance.

Arcadia University, as the School of Record, is committed to supporting students abroad who are affected by such incidents. This may include academic and classroom supportive measures. While Title IX does not extend to classes off U.S. soil, Arcadia University complies, where applicable, with its [University's Policy Prohibiting Discrimination and Harassment](#) and relevant laws for all programs operating under its auspices. Information regarding formal reporting procedures and available student support resources is provided in the [Arcadia Student Handbook](#).

Prerequisites

No specific prerequisites are required. The course is open to undergraduate students with an interest in health sciences, nutrition, rehabilitation, public health, or related fields.

Country and Program Connection

This course is delivered within the **Ascle+ Athens Experience**, an interdisciplinary academic program based in Athens, Greece, offered by the **Hellenic Center for Interdisciplinary Studies and Research (HCISR)**. The program integrates health sciences, prevention, and community-based learning through structured academic coursework and experiential field activities.

Using Greece as a contemporary public health and lifestyle context, the course explores musculoskeletal health in ageing populations through perspectives from nutrition science, rehabilitation, and preventive medicine. Greece provides a particularly relevant setting for examining lifestyle factors associated with healthy ageing, including Mediterranean dietary patterns, physical activity practices, and community-based health care approaches.

Students engage with site-based learning through rehabilitation center visits and field-based activities that connect course concepts with real-world musculoskeletal health practices. The course complements the program's broader interdisciplinary focus on health, prevention, and applied health sciences within the Athens-based curriculum.

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