Guía Docente 2018/2019

Strength Training and Conditioning in the Elderly

El acondicionamiento físico en la tercera edad

Master's in High Performance Sport: Strength and Conditioning

Mode: Semi-presencial

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Strength Training and Conditioning in the Elderly

Module: **VIII**.

Subject matter: **Strength Training and Conditioning in the Elderly.**

Requisite: **Mandatory.**

Nº of credits: **4.5.**

Academic term: **2nd semester**

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Brief Description

The contents included in this subject are the following: conditional assessment of the elderly, changes in the organs and systems anatomy and physiology during the ageing process, assessment of risk factors for coronary heart disease, other diseases and lifestyle, psychological aspects of ageing, physical activity and its relationship to old age diseases, walking biomechanics, new methods of sciences-based training and considerations for program design with seniors.

Breve descripción del módulo

En esta materia los contenidos que se incluyen son los siguientes: la evaluación condicional de la tercera edad. Cambios en la anatomía y fisiología de los órganos y sistemas durante el proceso de envejecimiento. Evaluación de los factores de riesgo de enfermedad coronaria, otras enfermedades y estilo de vida. Aspectos psicológicos del envejecimiento. Actividad física y su relación con las enfermedades de la tercera edad. La biomecánica de la marcha. Nuevos métodos de entrenamiento con base científica. Consideraciones para el diseño de programas con grupos de tercera edad.

Pre-requisites

None.

Objectives

1. To study the physical, physiological and psychological changes that occurs later in life and their relationship to disease and lifestyle.
2. To practice specific battery of tests for evaluating physical fitness and function in the elderly.
3. To learn new scientifically-based training methods and considerations when designing an exercise program for seniors.

Competencies and Learning Outcomes

MECES1: Students will know how to apply the acquired knowledge and have the capacity to problem solve in new or unfamiliar settings within broader (or multidisciplinary) contexts related to their field of study.

MECES2: Students will be able to integrate knowledge and handle the complexity of formulating judgment based on information that may be incomplete or limited, including reflections on social and ethical responsibilities linked to the application of their knowledge and judgment.

MECES3: Students will know how to communicate their conclusions (and the knowledge and rationale underpinning them) to the public (specialists and non-specialists) in a clear and unambiguous manner.

MECES4: Students will possess learning skills that will allow them to continue studying in a way that is largely self-directed or autonomous.

MECES5: To have and understand knowledge that will provide them the foundation or opportunity to be original in the development and/or application of ideas, often within the research context.

G1: To acquire skills through the teaching-learning process that allows them to continue learning in the field of sports training and conditioning not only with established contacts with Master's Degree professors and professionals but also autonomously.

G2: To acquire and to consolidate the initiative, the entrepreneurial spirit to start up projects related to sports training and conditioning.

T1: Capacity for analysis and synthesis.

T2: Capacity for organization and planning.

T4: Decision making.

T5: Teamwork.

T7: Skill in interpersonal relationships.

T8: Critical thinking.

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T9: Ethical commitment.

T10: Study autonomously.

T11: Adapting to new situations.

T15: Capacity for reflection.

T16: Problem solving.

U1: Consider the principles of Christian humanism as core values in the development of professional practice.

U2: Being able to project the acquired knowledge and skills to promote a society based on the values of freedom, justice, equality and pluralism.

S1: Be able to acquire advanced and applied scientific training for Sports Performance and Conditioning.

S6: Be able to analyze the consistency and adequacy of the criteria of quality used in the evaluation in Sports Performance and Conditioning, on the bases of the objectives raised.

S7: Recognize the necessary criteria to develop proper program design and periodization of strength training in the field of performance and conditioning in different stages of maturational development.

S9: To know the aspects of the aging process that affect physical fitness and conditioning.

E7: Be able to design programs for injury prevention or for promotion of physical activity practice in today's society.

E8: Apply assessment techniques, monitoring and control for quantitative and qualitative research of physical activity related to sports performance and fitness.

E10: Students will be able to propose concrete measures in various groups and institutions in order to improve the health of people that form them.

E11: To perform tests that measure strength, endurance, flexibility and balance in older people based on their medical history.

C7: To be able to design a research project for older adults (60+ years of age), evaluating individual differences that characterize this heterogeneous group of people.

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Methodology

Methodology	Hours	Work hours Required attendance	Work hours no attendance
Theoretical exposition	11,25	22.5 hours (20%)	
Discussion groups, seminars	4,5		
Evaluation	2,25		
Tutorial	4,5		
Personal study	45		90 hours (80%)
Preparation of work and exposition	27		
Analysis of scientific articles	9		
Literature search	9		
TOTAL	112.5	22.5	90

Syllabus

Theoretical Teaching Program

Topic 1. Changes in the anatomy and physiology of organs and systems during the aging process.

Topic 2. Psychological aspects of aging.

Topic 3. Evaluation of risk factors for coronary disease, other illnesses and poor lifestyle.

Topic 4. Biomechanics of walking.

Topic 5. Conditional evaluation of the elderly.

Topic 6. New scientifically-based training methods and considerations for program design in older adults.

Topic 7. Physical activity and its relation with disease/illness in the elderly.

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Practical teaching program

Seminar 1. Evaluation of physical fitness with the Senior Fitness Test.

Seminar 2. Individualized regression calculation of the RM.

Seminar 3. Analysis and interpretation of physical fitness levels in non-institutionalized older adults.

Relationship with other subjects of the curriculum

This material is related to: Exercise Physiology and Program Design of Sports training, adapted to older adults.

Evaluation System

February/June/September Call:

The evaluation system of the acquisition of learning outcomes of each of the modules' compulsory subjects will be based, in general, with the following grade distribution:

- 20% for written tests, in which evaluate the topic contents presented through theoretical-practical presentation, reading and analysis of documents provided in the module.
- 20% for assessment on workshops, presentations and classroom discussions.
- 60% for assessment of dynamic course work developed in seminars and workshops

The weighting range established in the evaluation system is 5%, and it will be determined based on the type of evaluations given in the module.

The module will have 2 calls for turning in assigned work: a regular call (set at the end of the module) and an extraordinary call (set prior to the first call the final Master's Thesis work).

The scoring system will be as follows, set by R.D. 1.125/2003 of September 5th: Fail: 0-4,9; Pass: 5-6,9; Notable: 7-8,9; Outstanding: 9-10. The honorable mention of Distinction (Matrícula de honor) will be awarded by the professor to the student. Based on the number of students enrolled, only 5% will be eligible for this honorable mention, except for when the enrollment is under 20 in which case only one student will be granted this honor.

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To have a passing grade for this module, one must obtain at least half of the total score for each of the instruments of evaluation.

Bibliography

Basic Bibliography

- Carrascal, E. (2009). Bases biológicas del envejecimiento. Master en gerontología. Universidad de Salamanca.
- Earle, R. W., & Baeche, T. R. (2004). *NSCA's Essentials of Personal Training*. Champaign, Illinois: Human Kinetics.
- Nelson, M.E., Rejeski, W.J., Blair, S.N., Duncan P.W., Judge, J.O., King, A.C., Macera C.A., Castanneda C. (2007). Physical activity and public health in older adults. Recommendations for the American College of Sport Medicine and the American Health Association. Circulation. DOI:10.1161/CIRCULATIONAHA.107.185650
- Shephard, R. J. (2000). Cambios fisiológicos con el paso de los años. In American College of Sports Medicine (Ed.), *Manual de consulta para el control y la prescripción del ejercicio* (pp. 575). Barcelona: Editorial Paidotribo.

  Wilmore, J. H., & Costill, D. L. (2004). *Fisiología del esfuerzo y del deporte* (5ª ed.). Barcelona: Editorial Paidotribo.

Complementary bibliography

- Rikli, R. E. (2005). Movement and mobility influence on successful aging: addressing the issue of low physical activity. *National Association for Kinesiology and Physical Education in Higher Education., 57*, 46-66.
- Soto, F., & Toledano, J. (2001). *En forma después de los 50. Guía práctica de ejercicio y salud para adultos y mayores. Madrid: Gymnos Editorial Deportiva.*
- Greaves, L. C., & Turnbull, D. M. (2009). Mitochondrial DNA mutation and ageing. *Biochimica et Biophysica Acta, 1970*, 1015-1020.

Related websites

Facultad de Ciencias de la Actividad Física y del Deporte de la UCAM

http://www.ucam.edu/estudios/grados/cafd

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CCD - Cultura, Ciencia y Deporte. Revista del Departamento de Ciencias de la Actividad Física y del Deporte.

http://www.ucam.edu/ccd

Master's in High Performance Sport: Strength and Conditioning (UCAM)

http://www.ucam.edu/estudios/postgrados/rendimiento-deportivo-semipresencial

Recursos variados sobre actividad física y deporte

http://www.sportsci.org/

http://www.nsca-lift.org/

Study tips

- Pay attention to what the professor has to share with you at the start of the course. The professor will present the syllabus, bibliography and assignments, methodological approaches to follow, as well as other relevant material of interest that will help the learning process of the subject.
- Attend classes and actively participate in the classroom
- Orient the effort and study on the argumentative reasoning of the course contents.
- Previous reading of documentation provided prior to the start of class.
- Complete and turn-in assignments by scheduled deadlines.
- Stay current on study materials, as new knowledge and new tasks are built upon work presented on previous weeks
- Refer to recommended literature for each topic and do not limit yourself to solely studying off of notes taken in class.
- Utilize office hours, Campus Virtual or email of the professor to help clarify or resolve any questions or doubts you may have regarding the course or course material.
- Attend at least one personal tutoring session to assist in completing work(s) assigned and to become more familiar with the content.

Educational materials

Educational materials used in the course to facilitate the acquisition of skills are:

- PowerPoint presentations that professors' use will serve as an outline or guide of the content presented in class (and not as detailed notes on the subject). Students will make their own notes using all the educational materials described herein.

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- Scientific articles, shared through Campus Virtual, will be related to specific content taught in class. Forum and social networks (Twitter) will be used to raise questions that would require some critical thought and to provide practical application for each article.
- Supporting documents will be shared also through Campus Virtual or will be sought by students through information technology and communication. These documents should also be related to specific content presented in class.
- Conceptual maps and discussion reports for each one of the content topics.

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