

Muscular Strength for Health and Performance 7.5 credits

Muskulär styrka för hälsa och prestation 7.5 hp

Second cycle

Main field: Exercise Biomedicine, Second cycle, has only first-cycle course/s as entry requirements (AIN)

Syllabus is adopted by the Research and Education Board (2024-03-05) and is valid for students admitted for the autumn semester 2024.

Placement in the Academic System

The course is included in the Master's Programme (60 credits) in Exercise Biomedicine - Health and Performance and is given as single subject course.

Prerequisites and Conditions of Admission

Bachelor's degree within the main field of study in biomedicine, physiotherapy, sports science or equivalent, of which 15 credits anatomy and physiology, 7.5 credits exercise training and at least 15 credits scientific degree project. The degree must be equivalent to a Swedish kandidatexamen and must have been awarded from an internationally recognised university. English 6. Exemption of the requirement in Swedish is granted.

Course Objectives

The course aim is to develop the students' knowledge of physiological effects and neuromuscular adaptations to strength- and power training and the effects of strength training and power training on muscle function, physical ability, and health. The course further aims to develop the students' ability to independently assess and evaluate scientific research results in the field.

Following successful completion of the course the student should be able to:

Knowledge and understanding

- describe and discuss physiological adaptations of muscles and the nervous system to strength and power training from an integrative physiological perspective
- present effective strength & power training programs for healthy populations with respect to type of exercise, dosage, and individual variation
- explain how strength and power training can slow down the effects of aging, inactivity, and disease on neuromuscular function

Skills and ability

- use literature databases to search and, after critical reading, select relevant research studies in the subject of muscular strength for health and performance
- demonstrate the ability to orally present research results within the field of muscular strength & power training for health and performance
- demonstrate the ability to critically discuss research results from different perspectives within the subject muscular strength for health and performance
- present customized exercise programs for specific populations

Judgement and approach

- judge and evaluate the scientific evidence concerning effects of strength & power training during health, physical inactivity, disease and aging
- conduct a scientific discussion orally and in writing as a respondent and opponent at seminars within the subject of strength & power training for health and performance
- reflect on how the links between muscular strength, health and disease are marked by gender equality and the equal value of all humans

Primary Contents

The main course content is theoretical but the course also includes practical laboratory exercises which are aimed at building on and illuminating the theoretical content in an applied setting. The course illustrates how strength and power training can contribute or lead to increased neuromuscular performance e.g. enhanced muscular strength and power, and how strength and power training can act as health promotion, disease prevention and recovery intervention. Furthermore, it deals with relevant methods of evaluating strength and power training in these situations. The course is based on study and discussion of the most recent research on the relevant subject: muscular strength for health and performance.

Teaching Formats

The teaching primarily consists of lectures, laboratory exercises and seminars. The students are expected to mainly independently undertake the required reading including research studies on the subject. Some of the teaching may take place via information and communication technology. The language of instruction is English.

Examination

The overall grades of Fail, Pass or Pass with distinction will be awarded for the course.

The examination consists of individual written examination and an oral seminar devoted to specific study questions and research topics related to the contents of the course. The students are expected to actively participate in answering and discussing the study questions, research topics and research results at the seminars.

In order to receive a grade of pass with distinction on the entire course, a grade of pass with distinction on the exam is required.

Name of the test		Grading
Written Examination	5 credits	U/G/VG
Seminars	2,5 credits	U/G

If there are special reasons, the examiner may make exceptions from the specified examination format and allow a student to be examined in another way. Special reasons can e.g. be a decision on learning support.

For elite sports students according to Riktlinjer för kombinationen studier och elitidrott vid Högskolan i Halmstad, DNR: L 2018/177, the examiner has the right to decide on an adapted examination component or let the student complete the examination in an alternative way.

Course Evaluation

Course evaluation is part of the course. This evaluation should offer guidance in the future development and planning of the course. Course evaluations should be documented and made available to the students.

Course Literature and Other Study Resources

Cardinale, M., Newton, R., & Nosaka, K. *Strength and Conditioning: Biological Principles and Practical Applications*. Wiley Blackwell, 2011

Various research articles and review articles of relevance to the subject.

Reference literature

Farrell, P., Joyner, M., Caiozzo, V. *ACSM's Advanced Exercise Physiology*. 2nd Edition. Lippincott Williams & Wilkins, 2011

Gardiner, P. *Advanced Neuromuscular Exercise Physiology*. 1st Edition. Human Kinetics, 2011

MacDougall, D., Sale, D. *The Physiology of Training for High Performance*. Oxford University Press, 2014.

McArdle, W., Katch, F., Katch, V. *Exercise Physiology*. 8th Edition. Lippincott Williams & Wilkins, 2015