REQUIREMENTS

Semmelweis University, Faculty of General Medicine – single, long-cycle medical training programme

Name of the host institution (and any contributing institutions):

Department of Pulmonology

Name of the subject: Cardiopulmonary Clinical Physiology and Rehabilitation - Practical Aspects

in English: Cardiopulmonary Clinical Physiology and Rehabilitation - Practical Aspects

in German: Kardiopulmonale klinische Physiologie und Rehabilitation - ein praktischer Ansatz

Credit value: 2

Semester: 5-10

Total number of classes per week: 4	**lectures: 2**	**practical lessons: 2**	**seminars: -**

Type of subject: **compulsory** **optional** **elective**

Academic year: 2023/2024

Language of instruction, for optional or elective subjects: English

Course code: AOSPUL989_1A

Course coordinator: Dr. Janos Tamas Varga

Place of work, phone number: Department of Pulmonology, +36208250248

Position: Associate Professor

Date and number of habilitation: 17/2017, University of Szeged

Objectives of the course and its place in the medical curriculum:

For today's physicians, knowledge of cardiopulmonary interactions is essential in their careers. Cardiopulmonary rehabilitation significantly improves the patient's cardiovascular status, metabolism, respiratory and peripheral muscles, as well as respiratory mechanics and chest kinematics. In the context of chest physiotherapy, the distribution and optimal use of air in the lungs can play a significant role, which ultimately can have a positive effect on the circulatory system in addition to the respiratory status. Chronic respiratory patients and heart failure patients also report improved physical performance and quality of life, and reduced dyspnoea as a result of rehabilitation. The basic aim of the course is to provide an opportunity for prospective doctors to acquire these competencies prior to graduation, to gain insight into cardiopulmonary interactions and to learn about methods and training programmes for measuring cardiopulmonary rehabilitation.

Accordingly, the subject:
- describes the types of cardiopulmonary experimental tests, their advantages and disadvantages of their application,
- the advantages, advantages, disadvantages, advantages and disadvantages of cardiopulmonary tests,
- provides basic competence in the design of cardiopulmonary rehabilitation elements,
- provides an insight into other methods associated with cardiopulmonary studies (e.g. questionnaire techniques).

The topics of the course are based on the experience of the lecturers of the course from the previous lectures at the PhD Summer School 2020-2021 at Semmelweis University.

Place of instruction (address of lecture hall or seminar room etc.):
Lectures at Semmelweis University, Pulmonology Clinic, Tömő utca 25-29.
Laboratory Exercises: Semmelweis University, Pulmonology Clinic, Training Room, Tömő u. 25-29.

Competencies acquired through the completion of the course:

Upon successful completion of the subject, the student will:
- will be able to participate in research projects based on experimental studies of cardiopulmonary interactions and rehabilitation (even as a TDK student!),
- be able to critically interpret the literature related to cardiopulmonary clinical trials,
- be familiar with the factors to be considered in the design and evaluation of cardiopulmonary clinical trials,
- knowledge of the factors affecting the validity of the conclusions of cardiopulmonary clinical trials,
- can perform simple cardiopulmonary tests.

Prerequisites for course registration and completion:

Medical Microbiology I., Medical Physiology II., Molecular Cell Biology II.
Open to medical students in years 3-5.

Conditions for concurrent course registration and permission thereof in the case of a multi-semester subject: -

Student headcount conditions for starting the course (minimum, maximum) and method of student selection:

Minimum number of students: 5
Maximum number of students: 60 (there are no selection criteria, the first 60 applicants can attend the course)

Detailed course description:

The lectures and exercises are divided into sections:

Session 1: **Rehabilitation of Interstitial Lung Patients (Dr. Zsuzsanna Kováts, Ádám Géczi**, Pulmonology Clinic), 2x45 min lecture, 2x45 min exercise
Chest physiotherapy and training techniques for the rehabilitation of interstitial lung diseases

Session 2: **Exercise training for athletes (Prof. Dr. Veronika Müller, Arnold Szekeres, Gergő Szűcs, Dr. Balázs Csoma, Dr. Nóra Tóth**, Department of Pulmonology), 2x45 min lecture, 2x45 min exercise
Exercise training for athletes, airway provocation tests

Session 3: **Cardiopulmonary exercise testing (Dr. János Tamás Varga, Ádám Géczi** Pulmonology Clinic, **Péter Borka** ETK)
Walking tests to measure maximal exercise capacity, cardiopulmonary exercise testing, activity monitoring, assessment methods used in cardiopulmonary rehabilitation. 2x45 min lecture, 2x45 min exercise

Session 4: **Pathophysiology of the pulmonary circulation and therapeutic options for pulmonary hypertension (Dr. Kristóf Karlócai, Dr.Erik Palmer, Ádám Géczi**, Pulmonology Clinic)
Characterisation of the physiological and pathophysiological processes of the circulation of the small blood vessels. 2x45 min lecture, 2x45 min exercise

Session 5: **Cardiac comorbidities associated with chronic lung disease in cardiopulmonary rehabilitation. (Dr. Györgyi Csósza, Orsolya Kovács**, Pulmonology Clinic,)
Evaluation and therapy of cardiac comorbidities associated with chronic lung diseases during

cardiopulmonary rehabilitation, 2x45 lectures, 2x45 min. exercise.

Session 6: **Rehabilitation of heart failure (Dr. András Pap**, SE Cardiology Rehabilitation Department, **Orsolya Kovács**, Pulmonology Clinic)
Training programmes for heart failure. 2x45 min lecture, 2x45 min exercise.

Session 7: **Effects of respiratory pathological processes on respiratory technique and circulatory physiology (Dr. József Lukácsovits, Ádám Géczi**, Pulmonology Clinic)
Application of specific training programmes in pathological respiratory mechanics conditions. 2x45 min lecture, 2x45 min exercise

Week 8: **Test exam**

Related subjects due to interdisciplinary fields (both compulsory and elective) and potential overlaps between subjects:

Pulmonology (partial overlap)

Attendance requirements; conditions under which students can make up for absences and the method of absence justification:

Attendance is compulsory for 75% of the lectures and for all the exercises.
Make-ups will be provided several times during the semester.

Form of assessment in the study period:

You should come prepared for the exercises. Completion of the pre-assigned tasks for the exercises will be checked by the exercise leader.

Number and type of assignments for individual work and the deadline for submission: -

Requirements to obtain the teacher's signature:

Attendance is compulsory for 75% of the lectures and for all the exercises.

Type of assessment A practical exam (test).

Examination requirements:

Written practical examination (test) electronically via the university's e-learning (Moodle) system.
The exam is taken on the basis of the requirements for obtaining a signature.
The written test examination consists of problem-oriented test questions based on the course material (notes, practical notes and slides) compiled for the subject and available on-line, and on the knowledge acquired during the practical exercises. Sample test questions are provided for preparation.

The practical grade is awarded on the basis of the test results as follows:

90-100% - pass (5)
80 - 89% - good (4)
70 - 79% - average (3)
60 - 69% - satisfactory (2)
< 60% - unsatisfactory (1)

Method and type of grading:

Five practical grades based on a written practical test at the end of the semester.

List of course books, textbooks, study aids and literature facilitating the acquisition of knowledge to complete the course and included in the assessment, precisely indicating which requirement each item is related to (e.g., topic by topic) as well as a list of important technical and other applicable study aids:

Mandatory:
- Course material (notes, practical notes and slides) compiled for the subject and available on-line.

Recommended:
- Losonczy G, Müller V, Horváth G, Tamási L. Pulmonology Medicina 2020
- Varga JT, Szilasi M. Handbook of pulmonary rehabilitation Springmed 2018

Signature of habilitated instructor (course coordinator) announcing the course:

Signature of the director of the host institution:

Date of submission: 04.05.2023.