

Discipline **MCP5838**
**Advanced Topics on the Role of Physical Exercise in Cardiovascular
Physiopathology**

Subject Area: 5131

Created: 10/03/2016

Active since: 10/03/2016

Number of credits: 2

Hours:

| Theoretical (per week) | Practical (per week) | Self-study (per week) | Duration | Total |
|-----------------------------------|---------------------------------|----------------------------------|-----------------|--------------|
| 6 | 5 | 4 | 2 weeks | 30 hours |

Faculty Members Responsible:

Carlos Eduardo Negrão

Maria Urbana Pinto Brandão Rondon

Objectives:

1- To transmit to the students advanced knowledge about the cellular, morphological and functional adaptations brought by physical exercise to the cardiovascular system; 2 - To develop in students a critical view of the role of exercise in cardiovascular diseases; 3- To provide students with a favorable environment for future studies in the area of cardiology and exercise physiology

Background:

Evidence accumulated over the last decades shows that physical exercise causes remarkable adaptations in the cardiovascular system, which results in a more efficient functioning of this system. More recently, we have learned that physical exercise is an important behavior in the prevention and treatment of cardiovascular diseases. Therefore, knowing the benefits of physical exercise in the cardiovascular system and, above all, its therapeutic role are findings of great relevance to those seeking training in cardiovascular physiology and in sports and exercise cardiology. In this discipline, in-depth knowledge about the effects of exercise on cardiovascular physiology in an integrative context will be transmitted. That is, from the cell to the clinical state of the patient, on an absolutely translational principle. Emphasis will be given to patients with metabolic syndrome, hypertension, coronary insufficiency and heart failure. The effects of the exercise applied to cancer patients who develop cardiovascular disease as a result of cancer treatment will also be presented and discussed; this is a new modality of patient that represents a new and great challenge in the context of cardio / oncology. Finally, with the objective of bringing together theoretical to practical learnings, laboratory lessons will be given on techniques to evaluate some of the knowledge acquired in theoretical lessons.

Content:

Theoretical: • Physical Exercise in Primary Prevention and Treatment of Cardiovascular Diseases → Physiological hypertrophy caused by physical training: Molecular bases • Physiological limits of cardiovascular adaptations in athletes → Obesity and metabolic syndrome as triggers for autonomic and cardiovascular abnormalities: Correction by physical exercise and hypocaloric diet → Physical exercise in the treatment of hypertension: Role of miRNAs → Autonomic and hemodynamic changes caused by acute coronary syndrome: Benefits of exercise → Physical exercise and cardiac resynchronization therapy in neurovascular control and peripheral vasoconstriction in patients with heart failure → Effects of exercise physical activity in skeletal myopathy caused by heart failure → Exercise in cancer patient with cardiovascular disease Practical: • Evaluation of sympathetic nervous and peripheral circulation at rest and during exercise • Evaluation of cardiac function during exercise • Study of skeletal myocyte through the biopsy technique

Assessment Method:

Written and oral presentation of research project concerning the topics discussed in class.

Observation:**Bibliography:**

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