



# Syllabus: Management of athletes with structural heart disease



## SYLLABUS

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## TOPICS

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☰ Coronary artery disease.

≡ **Cardiomyopathies, myocarditis, and pericarditis.**

≡ **Valvular heart diseases and arthropathy.**

≡ **Congenital heart diseases: simple and complex.**

≡ **Other causes of structural heart disease: doping substances and side effects.**

## Description

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Sports cardiology is the field of knowledge that focuses on the detection of cardiovascular diseases that could potentially cause sudden death in athletes, and provides sports and medical counseling of athletes diagnosed with cardiovascular diseases. Over the last two decades, this subspecialty has exponentially grown, with five times more publications in that period. The increasing interest in this field of cardiology stems from several factors:

1

High training volumes have been associated with the development of atrial fibrillation and pathological remodeling of the right ventricle in genetically predisposed athletes. Understanding the factors that contribute to the development of this pathological remodeling of the atria and/or ventricles is essential for preventing -or at least slowing down- its occurrence.

2

Exercise-induced structural and electrical remodeling can simulate characteristics of heart diseases in

which high-intensity exercise can cause sudden death. Over the past two decades, there has been growing development in cardiac imaging techniques, which has provided new tools in the field of sports cardiology for differential diagnosis between an athlete's heart and a cardiomyopathy. Furthermore, the rapid evolution of technology currently allows us to monitor the heart rate and even assess electrocardiograms during sports activities, greatly improving our ability to diagnose and manage arrhythmias in elite and recreational athletes.

3

Physical training provides countless benefits to cardiovascular health in both healthy individuals and patients with cardiovascular pathology. The prescription of physical exercise in appropriate quantities allows for obtaining cardiovascular benefits associated with physical training while safeguarding the health of patients with cardiopathies. Being clear about the "dose" of physical exercise has medical, social, and political implications, which is why this is a priority in international policies. Moreover, the economic implications are numerous, from cost reduction in cardiovascular healthcare resulting from physical exercise to the growing investment in technology associated with this field of cardiology.

Regarding the existing training options, we are not aware of any certification in sports cardiology that matches the characteristics we are discussing. Annually, national and international scientific societies organize courses focused on sports cardiology that last 1 or 2 days. Additionally, different expert centers in sports cardiology offer a one-year clinical and research training program to become a sports cardiologist. The number of available positions is typically one or two people depending on the center, and the theoretical content is indirect (derived from daily clinical practice with athletes). The European Society of Cardiology is currently developing an international examination to certify sports cardiologists internationally. This examination will be accompanied by a training program for preparation. The exam will be available in April/May 2023, but the training program is still under development. Although this certification will not be officially associated with the European Society of Cardiology, it could serve as a basis for preparing for the examination, especially for Spanish-speaking professionals.

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# Objectives

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By establishing objectives, we give ourselves a clear idea of what we want to achieve once the teaching and learning process of this course has finished. But our aims are even more specific: we also want to establish what you will need to accomplish in order for this new knowledge to contribute to your educational goals.

To achieve these objectives, you must complete the entire process laid out in the different stages of the course.

Thus, if you work in the way suggested, you will be well-positioned to meet the following objectives:

## General objective

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Acquire the necessary knowledge to safeguard the cardiovascular health of both healthy athletes and those affected by cardiac pathology.

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# Skills

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This certificate is intended for professionals in the sports field with a special interest in cardiology, such as sports physicians, graduates in Sports Sciences and Physical Education, sports physiotherapists, or those specialized in cardiac rehabilitation. Additionally, it is intended for cardiologists who wish to receive training in this field. This program is relevant for all these professionals involved in both elite and recreational sports, as well as for cardiac patients who want to engage in sports activities.

The skills we hope you will develop throughout this course are:

## **General skills**

1

**Group and collaborative work:** the ability to work with colleagues in order to accomplish shared goals and to achieve the synergy typical of a high performance group.

2

**The capacity of analysis/reflection:** the capacity to methodically examine the different aspects of a certain reality or situation and to carry out an assessment of that situation.

3

**Creativity and innovative, knowledge-based solutions:** the capacity to find alternative solutions to existing problems based on formal knowledge.

## Specific skills

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- Learn the causes of sudden death in athletes and the current diagnosis strategies for early detection.
- Understand the differences between adaptive remodeling induced by physical training and pathological remodeling underlying cardiac pathology.
- Understand the peculiarities of diagnosing and managing structural or electrical heart disease in an athlete.
- Know how to prescribe the appropriate exercise volume for a recreational or elite athlete affected by cardiac pathology

Upon completing this program, the student will have incorporated extensive knowledge about the causes of sudden death associated with sports practice and the various strategies currently available for early diagnosis of such conditions. They will be able to distinguish adaptive remodeling induced by exercise from pathological remodeling underlying structural or electrical cardiac pathology. Additionally, the student will have the ability to guide athletes with cardiovascular pathology (structural and/or electrical) on the most appropriate treatment for their case and on the sports implications of their condition. Finally, the program will provide the student with the necessary tools to guide exercise prescription for cardiovascular patients who wish to participate in recreational and/or competitive sports.

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Lesson 4 of 11

## Expert instructor

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Maria Sanz de la Garza

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## Bibliography

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Cardiologist at the Hospital Clinic of Barcelona, in charge of the cardiovascular assessment prior to sports practice for Futbol Club Barcelona and the Blume Residence (sports high-performance center). Also, responsible for the cardiac rehabilitation program at said center. Collaborator of the European Association for Cardiovascular Prevention (EAPC) where she is part of the core of the Sports Cardiology section.

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# Criteria for participation and approval

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## Participation criteria

During the month of course, the student is expected to:

- Browse the multimedia contents of each of the modules that make up the course.
- Solve the evaluations assigned in each module.
- Carry out the proposed activities, whether group or individual.
- Take the final exam.

## Approval criteria

For the approval of the course, the student is required to complete the (4) proposed activities in the course and pass the final exam. The student must obtain a final score of 70% or more. This grade will be the average between the activities and the final exam.

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## Coronary artery disease.

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# Cardiomyopathies, myocarditis, and pericarditis.

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Lesson 9 of 11

## Valvular heart diseases and arthropathy.

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# Congenital heart diseases: simple and complex.

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## Other causes of structural heart disease: doping substances and side effects.

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