



SPORT PHYSIOLOGY

9 CFU - 1° Semester

Teaching Staff

ROSARIO GIUFFRIDA - Module SPORT PHYSIOLOGY - BIO/09 - 6 CFU

Email: giuffros@unict.it

Office: Torre Biologica - Via S. Sofia, 97 - 95123 Catania

Phone: 095 4781310

Office Hours: Giovedì ore 10.00-13.00

MARIO MANIACI - Module Fitness - M-EDF/02 - 3 CFU

LEARNING OBJECTIVES

▪ SPORT PHYSIOLOGY

The course is intended to develop the student's ability to understand the principles of operation of the human body. The cellular mechanisms and integrated functions of the main organs and systems aimed at maintaining body homeostasis in the context of the different sport activities will be analyzed. The course provides a basic knowledge of fundamental and necessary for the subsequent disciplines applied to the physical exercise.

▪ Fitness

To provide students with the right tools and knowledge to work in the fitness industry. To teach the physio-sociological principles that govern the world of fitness and knowledge to create lessons and lesson formats that meet the need of the market and the needs of the members of fitness clubs in the new era. Understanding how to apply all the theory from the Sport Physiology to a workout.

COURSE STRUCTURE

▪ SPORT PHYSIOLOGY

Lectures and theoretical-practical exercises. Should teaching be carried out in mixed mode or remotely, it may be necessary to introduce changes. Learning assessment may also be carried out on line, should the conditions require it.

▪ Fitness

Students will mostly learn in class taking notes during the lessons. They also will understand how to apply the Physiology concepts teaching fitness classes. They will be asked to attend real fitness classes to feel and realize how to use the theory in real life.

DETAILED COURSE CONTENT

▪ **SPORT PHYSIOLOGY**

FUNCTIONAL ORGANIZATION OF MUSCLE. The sarcomere. The muscle cells. Motor units. Mode of contractions. Tension, length and speed in muscle contraction. EMG derivations.

MUSCULAR EXERCISE. Energetic bases of muscular work. Aerobiosis and anaerobiosis. The analysis of the motor patterns. Mechanical properties of the muscle. Acute fatigue. Chronic fatigue and overtraining. The training and its effects on the musculoskeletal system.

CARDIOVASCULAR SYSTEM. Cardiovascular adaptations to physical exercise. The effects of training on the cardiovascular apparatus. Methods for assessing the cardio-circulatory function.

RESPIRATORY FUNCTION. The breathing in normal conditions and in particular environments. Effects of diving on the respiratory system. Respiratory response to the muscular exercise. Methods for evaluating respiratory function. Artificial respiration.

THERMOREGULATION. Thermogenesis and heat dispersion. The central regulation of body temperature. The response to heat and cold. The adaptations to the heat and cold. The fever.

THE ENDOCRINE SYSTEM. The role of hormones in sport performance.

ALIMENTATION OF ATHLETE. The requirement of protein, lipid, carbohydrate, vitamins and minerals. Regulation of food intake. Influence of physical activity on digestion and absorption of food. Principles of dietary applied to sport.

▪ **Fitness**

FITNESS. Definition of Fitness according to OMG, History of Fitness from the 80s to today, analyzes the fitness market today and market trends, Inactivity and health, the Centre in response to disease prevention and health care, the pyramid of lifestyle-related move, The Fitness as job opportunities today, offers / requests of work in the fitness industry and professionals. Companies in the fitness market.

FITNESS & PERFORMANCE:. Five key elements to create a group fitness class and to reach a very high performance and a great connection to a class. Coaching and cueing - differences and peculiarities. Tips and tricks required for advanced stage., One-o-one Training experience and Group fitness class.

MUSCULAR EXERCISE. Energy systems and Fitness. Limiting factors. Create targeted training in order to stimulate an energy system. The anaerobic threshold, the relationship between energy systems and Fitness. Energy systems and effort, Debt oxygen

CROSSFIT Definition, Concept of power and intensity. Functional movements in Cross Fit. Fitness models in the Cross Fit. The interval training in Cross Fit. Theoretical framework for the program of Cross Fit, cyclization of the workout.

FUNCTIONAL TRAINING. Definition. The core, anatomical definition. Involvement in core fitness. Definition of muscle kinetic chains. Identification of the main kinetic chains. Formats lesson: Pilates,, TRX, Functional Training.

HIIT. Definition and results in terms of performance. The HIIT in training of team sports. Plyometric workouts, workouts boost strength and endurance.

POSTURAL WORK. Activation of kinetic chains in order to plan the postures. Mobility and stretching.

MOST IMPORTANT ISSUE TO THE COLUMN. Exercises to manage it.

ALIMENTATION OF ATHLETE. Myths feeding athlete. The Zone diet, and metabolic diet. Objectives and results in a correct and balanced.

TEXTBOOK INFORMATION

- **SPORT PHYSIOLOGY**

McArdle, Katch, Katch - Fisiologia applicata allo sport - Aspetti energetici, nutrizionali e performance - Casa Editrice Ambrosiana, Milano.

- **Fitness**

Slides and training material from all the lessons

A Scuola di Fitness - Pierluigi De Pascalis - Calzetti e Mariucci Ed.

Fitness, un approccio scientifico - Vivian H. Heyward - Edizioni Sporting Club Leonardo Da Vinci

Fisiologia applicata al Fitness - Davide Girola - Alea Edizioni
