Course Unit	Exercise Physiology I			Field of study	Sport Sciences								
Bachelor in	Sports - Minor in Recreation and Leisure			School	School of Education								
Academic Year	2022/2023	Year of study	1	Level	1-1	ECTS credits	4.0						
Type	Semestral	Semester	2	Code	9563-625-1204-00-22								
Workload (hours)	108	Contact hours	T -	TP 36	PL -	TC -	S -	E -	OT 9	O -			

T - Lectures; TP - Lectures and problem-solving; PL - Problem-solving, project or laboratory; TC - Fieldwork; S - Seminar; E - Placement; OT - Tutorial; O - Other

Name(s) of lecturer(s): Pedro Miguel Queirós Pimenta Magalhaes

Learning outcomes and competences

At the end of the course unit the learner is expected to be able to:
1. Describe in an integrated way the organs and systems involved in maintaining the homeostasis of different body means, and the impact of exercise on changing this homeostasis.
2. Understand the operation and function of the fallowing systems: nervous, muscular, cardiovascular, renal, respiratory, endocrine and gastrointestinal.
3. Understand the principles of immunity and blood coagulation.

Prerequisites

Not applicable

Course contents

1. Functional organization of the human body and internal control; 2. Nervous system; 3. Histology and physiology of the muscle; 4. Physiology of the heart and vascular system; 5. Physiology of the kidneys and body fluids; 6. Blood cells, immunity and blood coagulation; 7. The respiratory system; 8. Gastrointestinal physiology; 9. The endocrine system.

Course contents (extended version)

1. Functional organization of the human body and internal control
   - Homeostasis mechanisms of the main functional systems
   - Protein synthesis and genetic control
2. Nervous system
   - Nerve histology and physiology
   - Sensory and motor neurophysiology
3. Histology and physiology of the muscle
   - General mechanism of muscle contraction
   - Excitation of skeletal muscle
   - Excitation of smooth muscle
4. Physiology of the heart and vascular system
   - The heart as a pump
   - The microcirculation and the lymphatic system
   - Neural and local regulation of the circulation
5. Physiology of the kidneys and body fluids
   - The renal mechanisms and blood volume
6. Blood cells, immunity and blood coagulation
   - Body's resistance to infections
7. The respiratory system
   - Ventilation and pulmonary circulation
   - Principles of gas exchange
8. Gastrointestinal physiology
   - General principles of gastrointestinal function
9. The endocrine system
   - Mechanisms of hormone action

Recommended reading

1. WIDMAIER, E; RAFF, H; STRANG, K (2013). Vander's human physiology: The mechanism of body function. (Thirteenth Edition). McGraw-Hill.
2. FOSS, ML; KETEYIAN, SJ (2000). Bases fisiológicas do exercício e do esporte. (6ª Edição). Editora Guanabara Koogan.
3. POWERS, SK ; HOWLEY, ET (2014). Fisiologia do exercício. Teoria e aplicação ao condicionamento e ao desempenho. (8ª Edição). Manole.
4. HALL, JE (2011). Guyton y Hall: Tratado de fisiologia médica (12 Edition). Elsevier.
5. WILMORE, SH; COSTILL, DL; KENNEY, WL (2015). Physiology of Sport and Exercise. (6th Edition). Human Kinetics.

Teaching and learning methods

Oral exposure and through multimedia. Labor research, analysis and interpretation of text/scientific articles. Worksheets. Development of learning situations.

Assessment methods

1. Continuous assessment - (Regular, Student Worker) (Final)
   - Intermediate Written Test - 75% (2 written tests (equal weight))
   - Practical Work - 25% (1 group work)
2. Final evaluation - (Regular, Student Worker) (Supplementary, Special)
   - Final Written Exam - 100% (1 written test)

Language of instruction

Portuguese

Electronic validation

Pedro Miguel Queirós Pimenta Magalhaes	Pedro Miguel Monteiro Rodrigues	Catarina Margarida Silva Vasques	Carlos Manuel Costa Teixeira
03-01-2023	19-01-2023	19-01-2023	20-01-2023