

Postgraduate Certificate

Muscular and Metabolic Physiology Related to Exercise





Postgraduate Certificate Muscular and Metabolic Physiology Related to Exercise

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Global University
- » Accreditation: 6 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: www.techtute.com/us/pharmacy/postgraduate-certificate/muscular-metabolic-physiology-related-exercise

Index

01

Introduction

p. 4

02

Objectives

p. 8

03

Course Management

p. 12

04

Structure and Content

p. 18

05

Methodology

p. 22

06

Certificate

p. 30

01

Introduction

The interaction between skeletal muscle, metabolism and physical exercise is an area of research in constant evolution. This is because this field has important implications in aspects such as the prevention and treatment of chronic diseases (among which Diabetes and obesity stand out). In this context, pharmacists need to delve into how physical activity modulates gene expression, muscle protein synthesis and energy metabolism. Only then will these professionals be able to identify or manage possible drug relationships that may affect the body's response to sports activity. To help them with this, TECH presents an innovative university program focused on this subject. In addition, it is delivered in a flexible online modality. In addition, it is taught in a flexible online mode.





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With this 100% online program, you will employ your knowledge of Muscular and Metabolic Physiology Related to Exercise to recommend Nutritional Supplements that optimize athletic performance”

Muscular and Metabolic Physiology Related to Exercise is a key factor in the field of pharmacology, as it plays a crucial role in the ability of specialists to understand and properly advise patients on the use of medications to improve their physical performance. For this reason, pharmacists require a holistic understanding of how sports activity affects muscle function and metabolism. In this way, experts will be able to ensure both the safety and efficacy of pharmacological treatments used in athletes with physical activity-related conditions.

In this scenario, TECH implements a cutting-edge program in Muscular and Metabolic Physiology Related to Exercise. The academic itinerary will delve into cardiovascular, ventilatory and hormonal adaptations related to sports practice. In relation to this, the syllabus will delve into the structure of muscles, the lactic threshold and Phosphagen Metabolism. In this way, graduates will gain skills to perform comprehensive muscle assessments in order to identify muscle imbalances that require the consumption of Nutritional Supplements. In addition, a distinguished International Guest Director will offer a master class where she will help pharmacists to significantly enhance their clinical competencies.

Regarding the format of the university program, it is based on the advanced teaching methodology of Relearning, of which TECH is a pioneer. This is based on the natural reiteration of key concepts, promoting a progressive and natural learning experience for specialists. In addition, in the Virtual Campus, pharmacists will have access to a library full of multimedia resources (including infographics, interactive summaries and case studies) to dynamically reinforce the most complex terms.

This **Tipo de Programa in Muscular and Metabolic Physiology Related to Exercise** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ The development of practical cases presented by experts in Nutrition and Dietetics
- ♦ The graphic, schematic and eminently practical contents with which it is conceived gather scientific and practical information on those disciplines that are indispensable for professional practice
- ♦ Practical exercises where self-assessment can be used to improve learning
- ♦ Its special emphasis on innovative methodologies
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection



A prestigious International Guest Director will give an enriching Masterclass to guarantee an excellent pharmaceutical practice"

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You will delve into Phosphagen Metabolism to advise your clients on how to take medications safely and effectively”

The program's teaching staff includes professionals from the sector who contribute their work experience to this specializing program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise during the course. For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.

You will be able to design and recommend to athletes adequate training plans that include nutrients to prevent injuries.

The Relearning methodology used in this university qualification will allow you to learn in an autonomous and progressive way. At your own pace!.



02 Objectives

Through this program, pharmacists will excel in their detailed knowledge of Muscular and Metabolic Physiology Related to Exercise. In this way, graduates will integrate this knowledge into their daily practice, especially with regard to recommendations for muscle recovery, injury management and the use of nutritional supplements. At the same time, professionals will enhance their communication skills to transmit complex scientific information clearly and effectively to their clients.



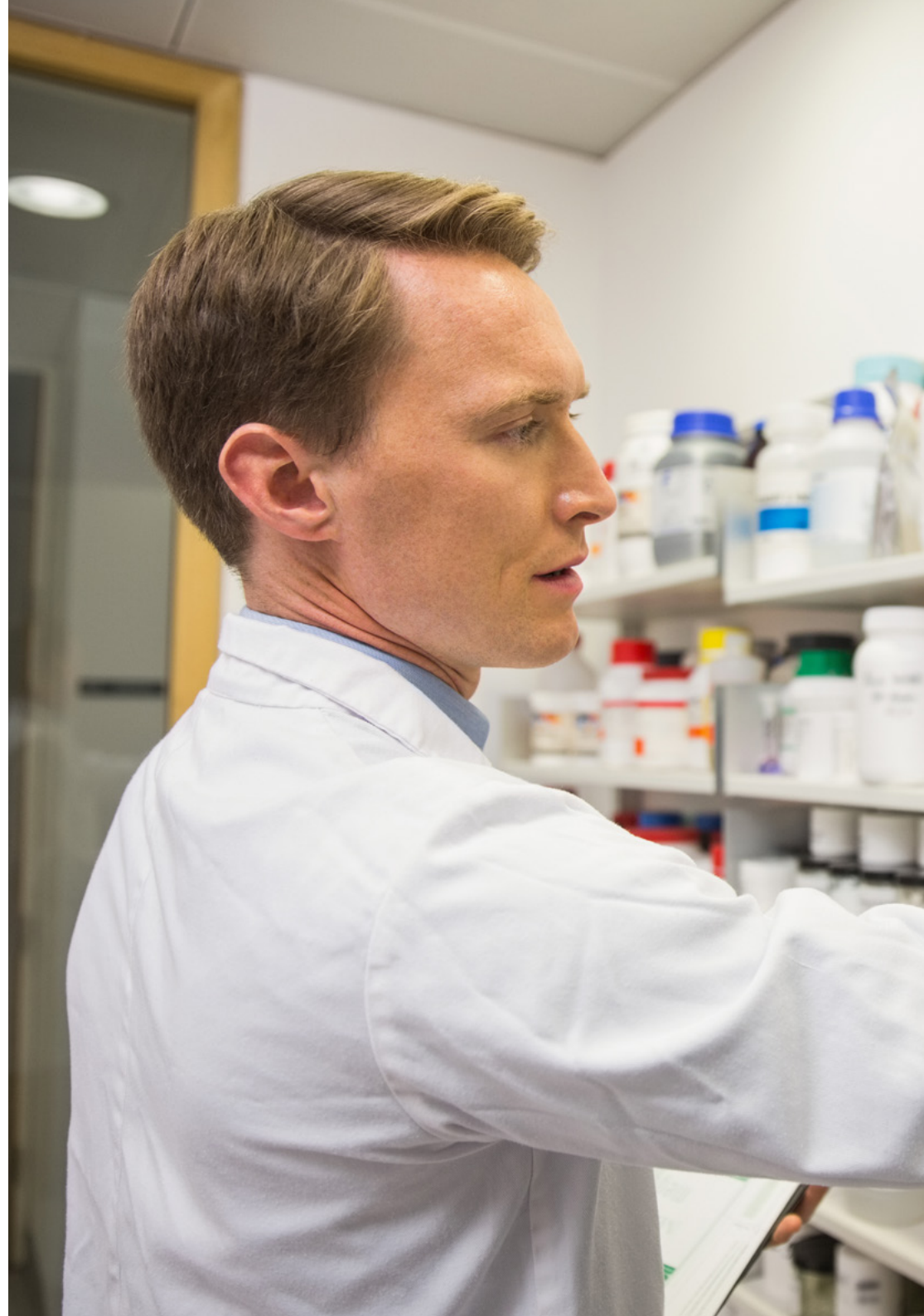
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You will provide the most effective recommendations on Nutritional Supplements to boost recovery from sports injuries”



General Objectives

- ◆ Handle advanced knowledge on nutritional planning in professional and non-professional athletes for the healthy performance of physical exercise
- ◆ Manage advanced knowledge on nutritional planning in professional athletes of various fields in order to achieve maximum sports performance
- ◆ Learn advanced knowledge about nutritional planning in professional athletes from team sports to achieve the highest sports performance
- ◆ Manage and consolidate the initiative, entrepreneurial spirit to implement projects related to nutrition in physical activity and sport
- ◆ Know how to incorporate the different scientific advances into one's own professional field
- ◆ Develop the ability to work in a multidisciplinary environment





Specific Objectives

- ◆ Gain an in-depth understanding of the structure of skeletal muscle
- ◆ Understand in depth the functioning of skeletal muscle
- ◆ Delve into the mechanisms of energy production according to the type of exercise undertaken
- ◆ Further understanding of the interaction between the different energy systems that make up the muscle energy metabolism

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You will learn valuable lessons through real cases in simulated learning environments. You'll enjoy dynamic and immersive learning!”

03

Course Management

TECH's philosophy is to offer university programs with the greatest applicability to the demands of the market, as well as to provide students with the most complete and up-to-date syllabi. For this reason, a rigorous process is used to select the members of its teaching staff. Thanks to this, the present program has the participation of references in the Nutrition and Dietetics sector. These specialists have an extensive work experience, accumulating excellent results in optimizing the welfare of numerous athletes. Undoubtedly, an experience that will allow graduates to significantly enrich their practice.





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A high intensity program that, in only 6 weeks, will allow you to make a quality leap in your career as a Pharmacist"

International Guest Director

Jamie Meeks has demonstrated throughout her career her dedication to **Sports Nutrition**. After graduating from Louisiana State University with a degree in Sports Nutrition, she quickly rose to prominence. Her talent and commitment were recognized when she received the prestigious **Young Dietitian of the Year** award from the Louisiana Dietetic Association, an achievement that marked the beginning of a successful career.

After completing her undergraduate degree, Jamie Meeks continued her education at the University of Arkansas, where she completed her internship in **Dietetics**. She then went on to earn a Master's Degree in Kinesiology with a specialization in **Exercise Physiology** from Louisiana State University. Her passion for helping athletes reach their full potential and her tireless commitment to excellence make her a leading figure in the sports and nutrition community.

Her deep knowledge in this area led her to become the first **Director of Sports Nutrition** in the history of Louisiana State University's athletic department. There, she developed innovative programs to meet the dietary needs of athletes and educate them on the importance of **proper nutrition for optimal performance**.

Subsequently, she has held the position of **Director of Sports Nutrition** for the NFL's **New Orleans Saints**. In this role, she is dedicated to ensuring that professional players receive the best nutritional care possible, working closely with coaches, trainers, physical trainers and medical staff to optimize individual performance and health.

As such, Jamie Meeks is considered a true leader in her field, being an active member of several professional associations and participating in the advancement of **Sports Nutrition** on a national level.

In this regard, she is also a member of the **Academy of Nutrition and Dietetics** and the **Association of Chartered and Professional Sports Dietitians**.



Ms. Meeks, Jamie

- Director of Sports Nutrition for the New Orleans Saints of the NFL, Louisiana, U.S.A.
- Sports Nutrition Coordinator at Louisiana State University, Louisiana
- Registered Dietitian by the Academy of Nutrition and Dietetics
- Certified Specialist in Sports Dietetics
- Master's Degree in Kinesiology with specialization in Exercise Physiology from the Louisiana State University
- Graduate in Dietetics from Louisiana State University
- Member of: Louisiana Dietetic Association, Association of Dietitians Collegiate and Professional, and Dietetic Practice Group of Cardiovascular Sports Nutrition and Wellness



Thanks to TECH you will be able to learn with the best professionals in the world"

Management



Dr. Marhuenda Hernández, Javier

- ♦ Professional soccer clubs Nutritionist
- ♦ Head of Sports Nutrition. Club Albacete Balompie SAD
- ♦ Head of Sports Nutrition. Catholic University of Murcia, UCAM Murcia Football Club.
- ♦ Scientific Advisor. Nutrium
- ♦ Nutritional Advisor. Impulse Center
- ♦ Teacher and Coordinator of Postgraduate Studies.
- ♦ PhD in Nutrition and Food Safety. San Antonio Murcia Catholic University
- ♦ Degree in Human Nutrition and Dietetics. San Antonio Murcia Catholic University
- ♦ Master's Degree in Clinical Nutrition. San Antonio Murcia Catholic University
- ♦ Academic Spanish Academy of Nutrition and Dietetics (AEND)

Professors

Dr. Arcusa Saura, Raúl

- ♦ Nutritionist. Sport Club Castellón
- ♦ Nutritionist in several semi-professional clubs in Castellón.
- ♦ Researcher. San Antonio Murcia Catholic University
- ♦ Undergraduate and Graduate Faculty
- ♦ Graduate in Human Nutrition and Dietetics
- ♦ Master's Degree in Nutrition in Physical Activity and Sport



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Take the opportunity to learn about the latest advances in this field in order to apply it to your daily practice"

04

Structure and Content

Thanks to this university program, pharmacists will have a comprehensive knowledge of Muscular and Metabolic Physiology related to Exercise. The academic itinerary will delve into cardiovascular, ventilatory and even hormonal adaptations related to physical activity. The teaching materials will also analyze aspects such as the lactic threshold, lipid metabolism or the mixed bioenergetics of muscle fibers. This will allow graduates to identify problems related to athletic performance and recovery, in order to subsequently advise athletes on the most effective supplementation to optimize their condition.

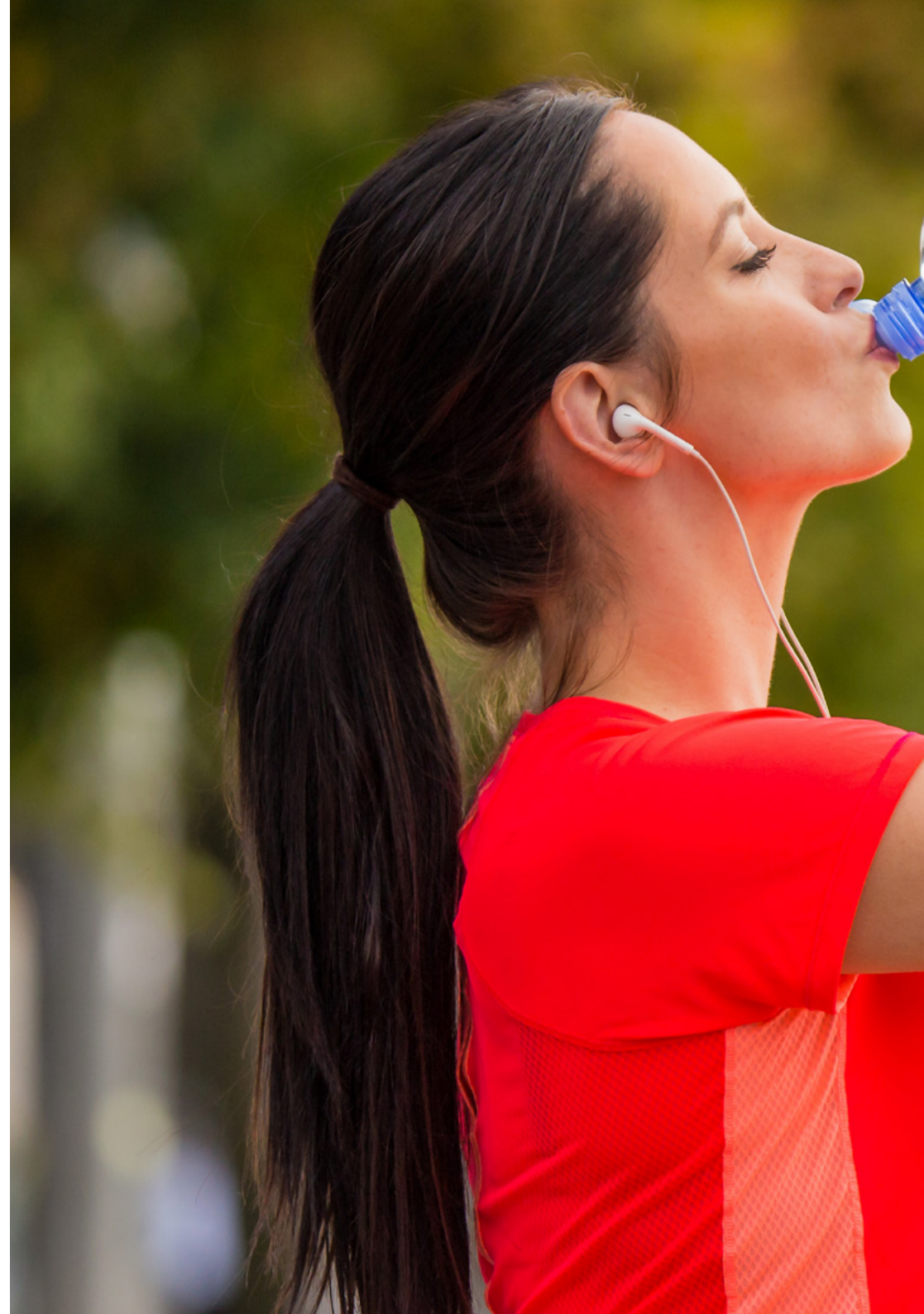


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You will efficiently solve problems related to physical performance and recovery from a pharmacological perspective”

Module 1. Muscle and Metabolic Physiology Related to Exercise

- 1.1. Cardiovascular Adaptations Related to Exercise
 - 1.1.1. Increased Systolic Volume
 - 1.1.2. Decreased Heart Rate
- 1.2. Ventilatory Adaptations Related to Exercise
 - 1.2.1. Changes in the Ventilatory Volume
 - 1.2.2. Changes in Oxygen Consumption
- 1.3. Hormonal Adaptations Related to Exercise
 - 1.3.1. Cortisol
 - 1.3.2. Testosterone
- 1.4. Muscle Structure and Types of Muscle Fibers
 - 1.4.1. Muscle Fiber
 - 1.4.2. Type I Muscle Fiber
 - 1.4.3. Type II Muscle Fibers
- 1.5. The Concept of Lactic Threshold
- 1.6. ATP and Phosphagen Metabolism
 - 1.6.1. Metabolic Pathways for ATP Resynthesis during Exercise
 - 1.6.2. Phosphagen Metabolism
- 1.7. Carbohydrate Metabolism
 - 1.7.1. Carbohydrate Mobilization during Exercise
 - 1.7.2. Types of Glycolysis
- 1.8. Lipid Metabolism
 - 1.8.1. Lipolysis
 - 1.8.2. Fat Oxidation during Exercise
 - 1.8.3. Ketone Bodies
- 1.9. Protein Metabolism
 - 1.9.1. Ammonium Metabolism
 - 1.9.2. Amino Acid Oxidation
- 1.10. Mixed Bioenergetics of Muscle Fibers
 - 1.10.1. Energy Sources and their Relation to Exercise
 - 1.10.2. Factors Determining the Use of One or Another Energy Source during Exercise





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You'll have the full support of the world's largest online academic institution: TECH, with the latest educational technology at your disposal. Enroll now!”

05

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning**.

This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.





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Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"

At TECH Nursing School we use the Case Method

In a given situation, what should a professional do? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Nurses learn better, faster, and more sustainably over time.

With TECH, nurses can experience a learning methodology that is shaking the foundations of traditional universities around the world.



According to Dr. Gervas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, in an attempt to recreate the real conditions in professional nursing practice.

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Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”

The effectiveness of the method is justified by four fundamental achievements:

1. Nurses who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the nursing professional to better integrate knowledge acquisition into the hospital setting or primary care.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

This university is the first in the world to combine case studies with a 100% online learning system based on repetition combining a minimum of 8 different elements in each lesson, which is a real revolution compared to the simple study and analysis of cases.



The nurse will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we have trained more than 175,000 nurses with unprecedented success in all specialties regardless of practical workload. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

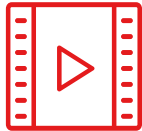
Relearning will allow you to learn with less effort and better performance, involving you more in your specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to success.

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by TECH's learning system is 8.01, according to the highest international standards.



This program offers the best educational material, prepared with professionals in mind:



Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is really specific and precise.

These contents are then adapted in audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high-quality pieces in each and every one of the materials that are made available to the student.



Nursing Techniques and Procedures on Video

We introduce you to the latest techniques, to the latest educational advances, to the forefront of current medical techniques. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can watch them as many times as you want.



Interactive Summaries

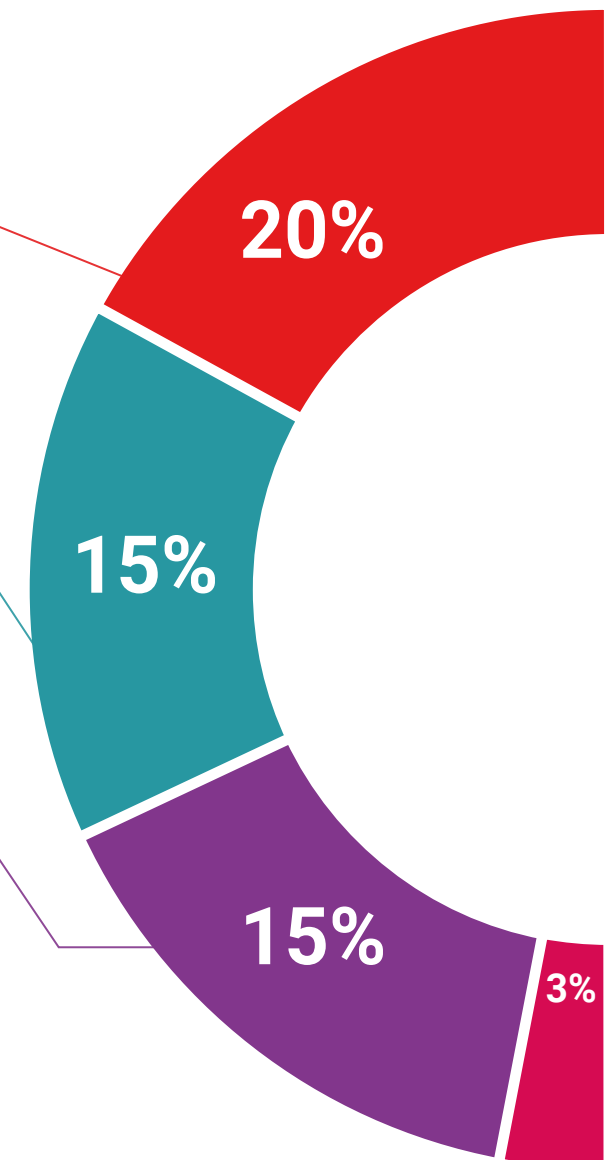
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

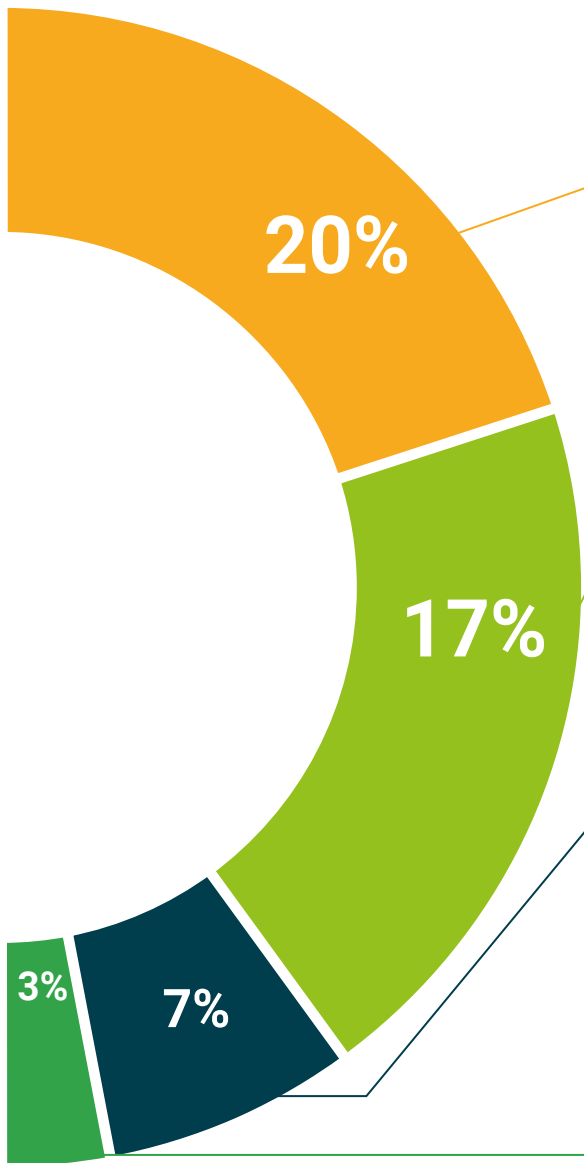
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.





Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



Testing & Retesting

The student's knowledge is periodically assessed and re-assessed throughout the program, through evaluative and self-evaluative activities and exercises: in this way, students can check how they are doing in terms of achieving their goals.



Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical and effective way to help students progress in their learning.



06

Certificate

The Postgraduate Certificate in Muscular and Metabolic Physiology Related to Exercise guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



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Successfully complete this program and receive your university qualification without having to travel or fill out laborious paperwork”

This private qualification will allow you to obtain a **Postgraduate Certificate in Muscular and Metabolic Physiology Related to Exercise** endorsed by **TECH Global University**, the world's largest online university.

TECH Global University is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

This **TECH Global University** private qualification is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Certificate in Muscular and Metabolic Physiology Related to Exercise**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**



future
health confidence people
education information tutors
guarantee accreditation teaching
institutions technology learning
community commitment
personalized service innovation
knowledge presentation
online training
development languages
virtual classroom



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