

Postgraduate Certificate

Muscular and Metabolic
Physiology Related to Exercise
for Nursing





Postgraduate Certificate Muscular and Metabolic Physiology Related to Exercise for Nursing

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

Website: www.techtitute.com/us/nursing/postgraduate-certificate/muscular-metabolic-physiology-related-exercise-nursing

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01

Introduction

A report published by the World Health Organization reveals that physical inactivity is one of the main risk factors for mortality worldwide. This highlights that the practice of regular physical exercise is a fundamental pillar to prevent diseases such as obesity and optimize the overall well-being of people. In this context, Nursing professionals need to have a broad understanding of the Muscular and Metabolic Physiology Related to Exercise. Only then will experts be able to design effective interventions to promote active and healthy lifestyles among their patients. For this reason, TECH has developed a revolutionary fully online university program focused on the physiology of sports practice.





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Through this 100% online Postgraduate Certificate, you will design exercise programs adapted to the individual needs and capabilities of your patients, taking into account their health status”

Muscular and Metabolic Physiology related to physical activity constitutes a dynamic and multifaceted field that offers important implications for nursing practice. From disease prevention to rehabilitation and management of chronic conditions, Exercise triggers a range of both physiological and metabolic responses that affect the overall well-being of individuals. Faced with these circumstances, specialists need to be aware of the latest scientific postulates in this area in order to intervene earlier in the detection and prevention of health problems related to physical activity (such as muscle injuries, excessive fatigue or metabolic imbalances).

In view of this, TECH presents a complete and innovative Postgraduate Certificate in Muscular and Metabolic Physiology Related to Exercise for Nursing. Conceived by references in this subject, the syllabus will delve into the hormonal, ventilatory and cardiovascular adaptations related to sports practice. This will enable specialists to perform holistic assessments of their patients' clinical status. Likewise, the academic content will focus on aspects such as phosphagen metabolism, energy sources or amino acid oxidation. In this way, graduates will plan exercise programs tailored to the specific needs of users, bearing in mind both their current state of health and their goals. In addition, a prestigious International Guest Director will offer a thorough master class to provide the best strategies to advise users on the importance of Exercise to optimize their quality of life.

On the other hand, this university qualification will be taught 100% online, which will provide nurses with the ease of being able to do it comfortably wherever and whenever they want. In this sense, the only thing they need is to have an electronic device with an Internet connection (using their cellphone, *tablet* or computer) to access the Virtual Campus. There they will find both teaching materials and additional multimedia resources that will help them to strengthen their knowledge in a dynamic way.

This **Postgraduate Certificate in Muscular and Metabolic Physiology Related to Exercise for Nursing** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ The development of case studies 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 renowned International Guest Director will offer a comprehensive Masterclass that will help nurses optimize their clinical skills"

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You will delve into Carbohydrate Mobilization during physical activity and its benefits in facilitating patient recovery”

The program's teaching staff includes professionals from the field who bring to this program their work experience, in addition to recognized specialists of reference 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 explore the interaction between exercise and health, including the effects of sports practice in the management of chronic diseases such as Diabetes or Obesity.

You will access a learning system based on repetition, with natural and progressive learning throughout the program.



02 Objectives

Through this Postgraduate Certificate, nurses will have a mastery of the principles of Muscular and Metabolic Physiology related to Exercise. In this sense, specialists will be highly qualified to perform comprehensive evaluations to determine both the physical condition and athletic capacity of their patients.

In this way, professionals will incorporate advanced techniques to analyze the physiological response to sports practice (including stress tests or heart rate monitoring). In this way, experts will design individualized exercise programs that are adapted to the specific needs and objectives of users.





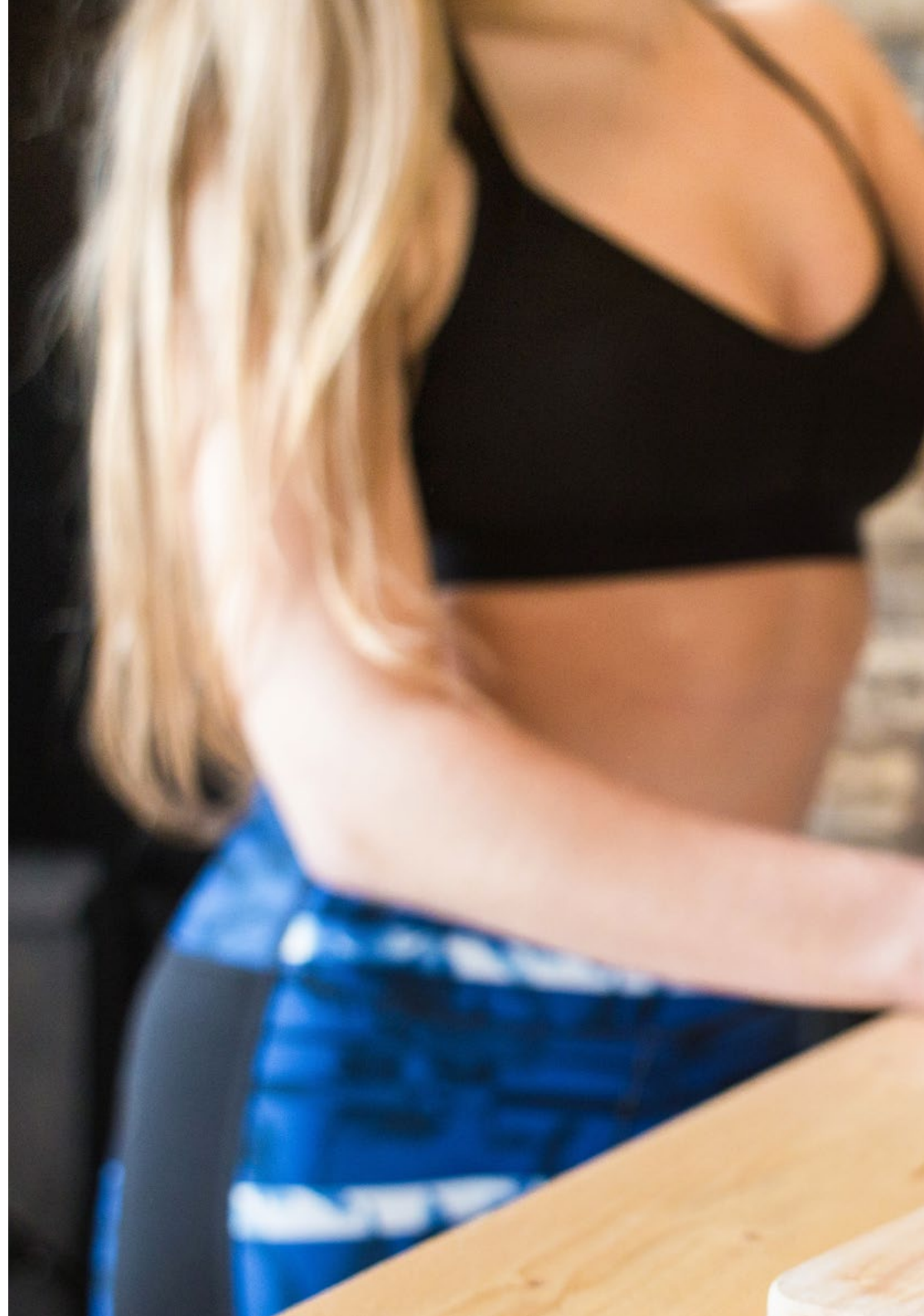
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You will acquire advanced skills to assess patients' functional capacity and exercise tolerance, as well as to design physical activity programs tailored to their individual needs”



General Objectives

- ♦ Manage 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 and 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
- ♦ Specialize in the energy and nutritional needs of paralympic athletes





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
- ♦ Delve into the integration of the different energy systems that make up the muscle energy metabolism

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You will update your knowledge in a dynamic way, through the study of real clinical cases and the resolution of complex situations in simulated learning environments”

03

Course Management

TECH's priority is to make available to anyone the most complete and renewed university programs on the educational market, which is why it carries out a meticulous process to form its teaching staff. For this Postgraduate Certificate, it brings together references in the field of Nutrition and Dietetics, who have extensive experience in this field. In their commitment to provide excellent services, these professionals keep abreast of all the advances in this field. As a result, students will have access to an immersive experience that will enhance their clinical performance and broaden their career prospects.





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You will be supported by a faculty of distinguished professionals in Muscular and Metabolic Physiology Related to Exercise”

International Guest Director

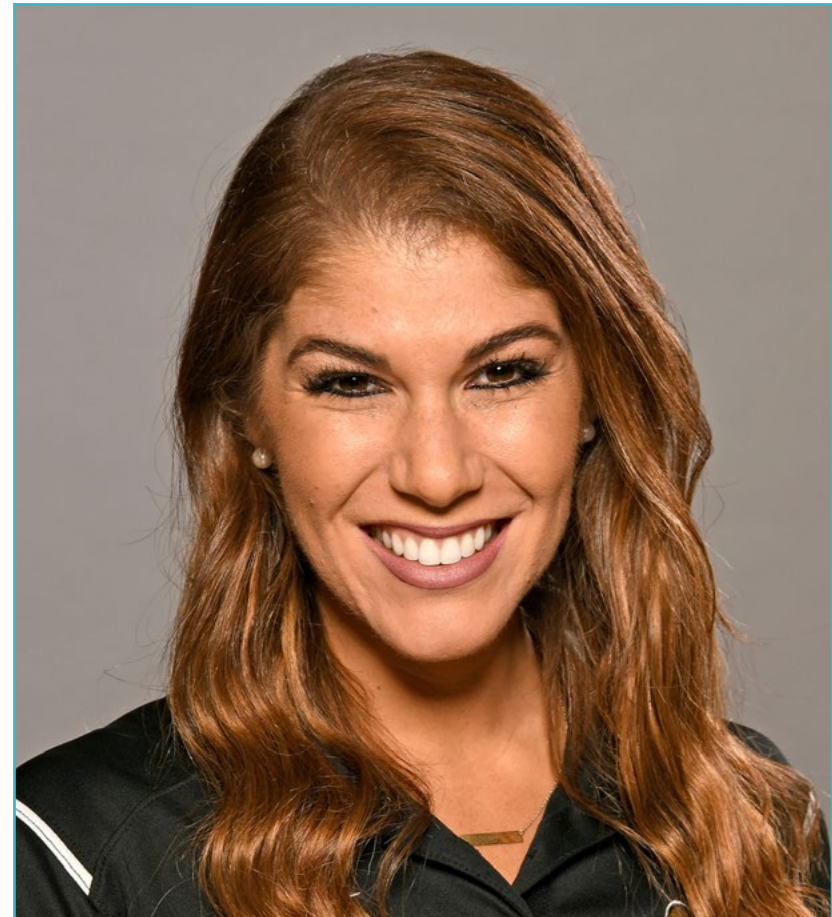
Jamie Meeks has demonstrated throughout her career her dedication to Sports Nutrition. After graduating from Louisiana State University with a degree in Sports Nutrition, she quickly rose to prominence. Her talent and commitment were recognized when she received the prestigious Young Dietitian of the 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 New Orleans Saints of the NFL**. 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, United States
- 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 Collegiate and Professional Sports Dietitians and Cardiovascular Sports Nutrition and Wellness Dietetic Practice Group

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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. Albacete Balompie SAD Club
- ♦ 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



04

Structure and Content

With this program, nurses will have a solid understanding of Muscular and Metabolic Physiology related to Exercise. The program will analyze cardiovascular, ventilatory and hormonal adaptations related to sports practice. In this way, graduates will perform more holistic and accurate assessments of the physical condition of patients. In addition, the syllabus will delve into issues such as the lactic threshold, carbohydrate metabolism or mixed bioenergetics of muscle fibers. In this way, graduates will develop competencies in the design of personalized exercise programs to improve the health and physical function of users.





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You will integrate Exercise as an integral part of the holistic care of your patients, recognizing its importance in the prevention and management of muscle disorders”

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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6 weeks of stimulating learning that will take you to the next level in the approach to Muscular and Metabolic Physiology Related to Exercise. Enroll now!”

05

Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.



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TECH will prepare you to face new challenges in uncertain environments and achieve success in your career”

The student: the priority of all TECH programs

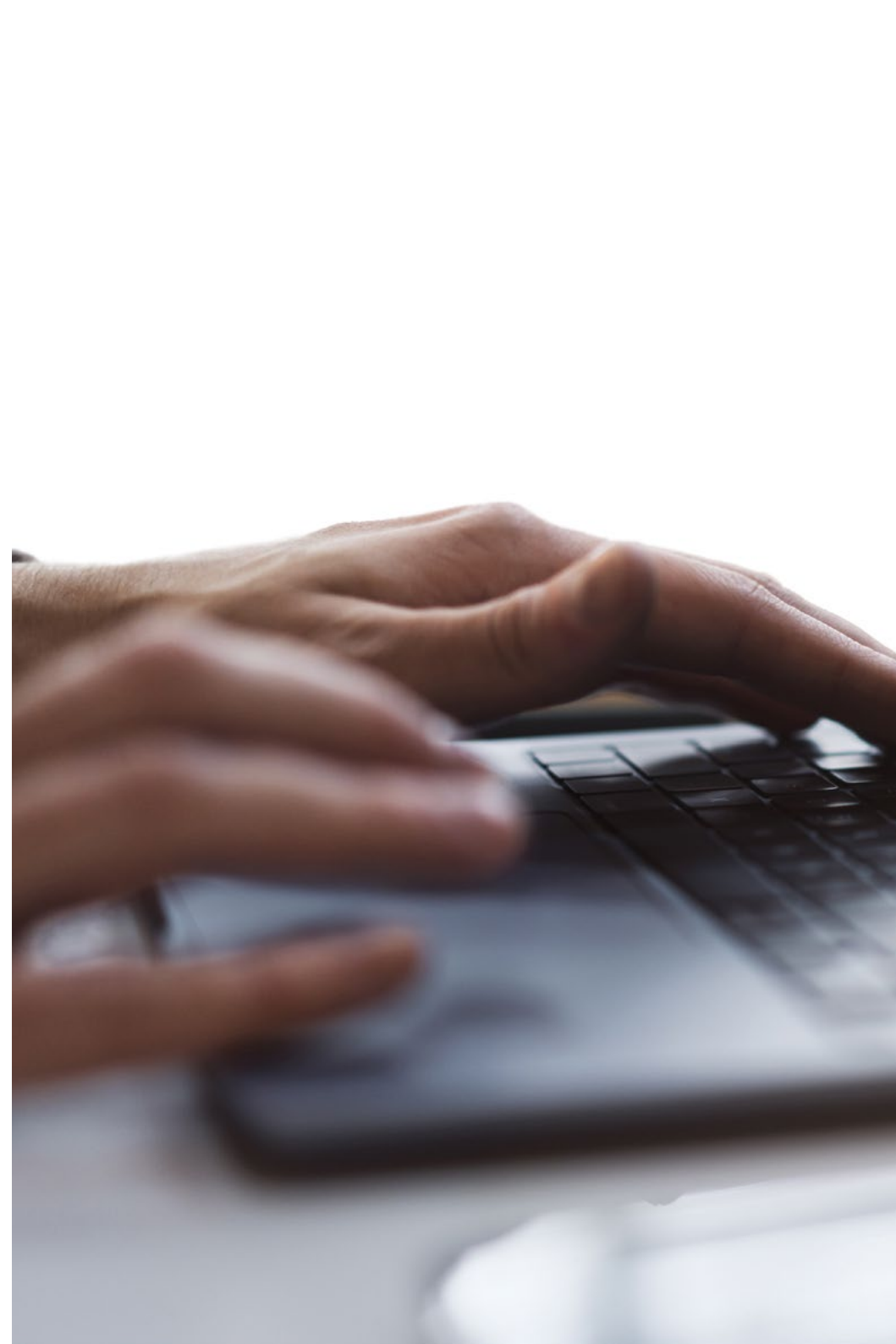
In TECH's study methodology, the student is the main protagonist.

The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

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*At TECH you will NOT have live classes
(which you might not be able to attend)”*



The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

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TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want”

Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.



Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

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.



A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.



The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule”

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

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student to better integrate into the real world.
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.

The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the quality of teaching, quality of materials, course structure and objectives is excellent. Not surprisingly, the institution became the best rated university by its students on the Trustpilot review platform, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.



As such, the best educational materials, thoroughly prepared, will be available in this program:



Study Material

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

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.



Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.



Interactive Summaries

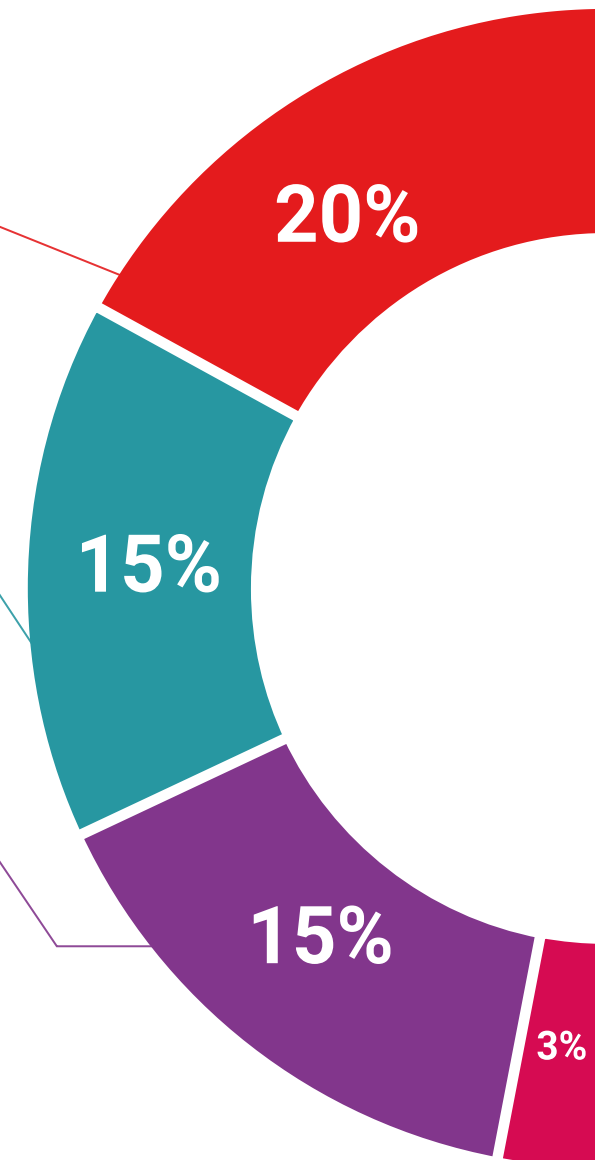
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

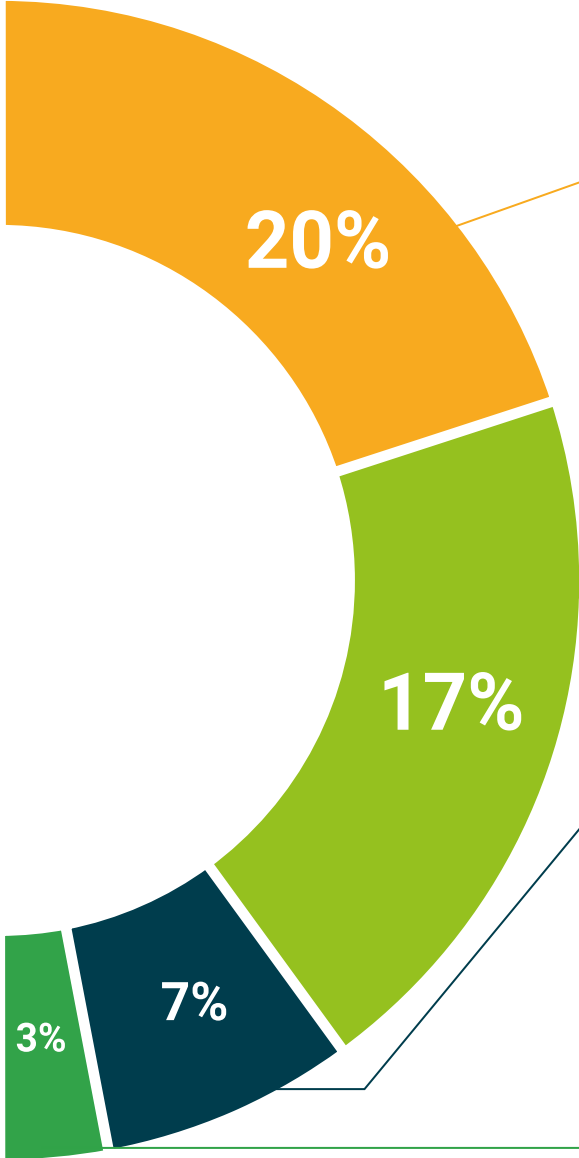
This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".



Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.





Case Studies

Students will complete a selection of the best case studies in the field. Cases that are presented, analyzed, and supervised by the best specialists in the world.



Testing & Retesting

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.



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 for 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 for Nursing guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Certificate issued by TECH Global University.



A photograph of two black graduation caps (mortarboards) against a bright blue sky with scattered white clouds. The caps are positioned diagonally, with one in the foreground and another slightly behind it. The image is partially overlaid by a large white triangle on the right side, which contains text.

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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 **Muscular and Metabolic Physiology Related to Exercise for Nursing** 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 Related to Exercise**

Modality: **online**

Duration: **6 weeks**

Accreditation: **6 ECTS**





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Postgraduate Certificate

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Physiology Related to
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