

# Postgraduate Certificate Exercise Physiology

Endorsed by the NBA





## Postgraduate Certificate Exercise Physiology

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/physiotherapy/postgraduate-certificate/exercise-physiology](http://www.techtitute.com/us/physiotherapy/postgraduate-certificate/exercise-physiology)

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# 01

# Introduction

In order to achieve an adequate performance of the athletic horse, it is necessary to create a training routine appropriate to its physical capabilities. In this way, possible musculoskeletal injuries and the risk of fatigue and exhaustion will be avoided. If your objective is to specialize in this field, don't think twice and come study with us.





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*Physiotherapists specialized in Equine Rehabilitation will have more potential for success in their treatments with sport horses”*

With an adequate and individualized planning of the horse's training, it will be possible to achieve the maximum performance of the animal, as well as to reduce the appearance of possible pathologies. Before programming a training program, it is necessary to know what level of physical fitness a particular horse is starting from. To do this, a stress test must be designed according to the type of discipline in which the horse competes, selecting the parameters to be measured and interpreting the results. Based on these data, a training program can be designed more precisely, a reduced fitness level can be detected and the possible causes can be investigated before the appearance of pathologies with clinical manifestations, and the rider can be advised, helping to establish a competition strategy. In addition, controlling the training intensity reduces the risk of overtraining.

There are several pathologies linked to physical activity, such as heat stroke, rhabdomyolysis, exhaustion syndrome, water and electrolyte disorders, cardiac arrhythmias, synchronous diaphragmatic *flutter*. Therefore, it is important to know how to act in the face of exhaustion syndrome, not only with respect to treatment, but also to the establishment of effective preventive measures.

This Postgraduate Certificate provides students with specialized tools and skills to successfully develop their professional activity, work on key competencies such as knowledge of the reality and daily practice of the veterinary professional, and develop responsibility in the monitoring and supervision of their work, as well as communication skills within the essential teamwork.

In addition, as it is an online course, the student is not conditioned by fixed schedules or the need to move to another physical location, but can access the contents at any time of the day, balancing their work or personal life with their academic life.

This **Postgraduate Certificate in Exercise Physiology** contains the most complete and up to date educational program on the market. The most important features of the program include:

- ♦ Practical cases presented by experts in equine physiotherapy and rehabilitation
- ♦ The graphic, schematic, and practical contents with which they are created, provide scientific and practical information on the disciplines that are essential for professional development
- ♦ Practical exercises where the self assessment process can be carried out to improve learning
- ♦ Special emphasis on innovative methodologies in exercise physiology
- ♦ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Access to content from any fixed or portable device with an Internet connection



*Don't miss the opportunity to study this Postgraduate Certificate in Exercise Physiology. It's the perfect opportunity to advance in your career"*

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*This Postgraduate Certificate is the best investment you can make when choosing a refresher program to expand your existing knowledge in Exercise Physiology”*

Its teaching staff includes professionals from the field of physiotherapy, who bring to this program the experience of their work, 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 training programmed to train in real situations.

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

*This program comes with the best educational material, providing you with a contextual approach that will facilitate your learning.*

*This 100% online Postgraduate Certificate will allow you to combine your studies with your professional work while increasing your knowledge in this field.*



# 02 Objectives

The Postgraduate Certificate in Exercise Physiology is aimed at aiding the professional's performance with the latest advances and most innovative treatments in the sector.





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*Our goal is to provide quality training so that our students become the best in their profession"*



## General Objectives

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- Plan and time a training program according to the horse's fitness level, competitive objectives and the type of equestrian discipline
- Design a stress test according to the equestrian discipline in which the horse participates, deciding which parameters should be measured and their interpretation
- Establish the diagnostic protocol to be followed in the case of a horse with loss reduction lack of sporting performance
- Develop a protocol for the treatment and prevention of pathologies associated with physical exercise and training, including overtraining syndrome



*A comprehensive Postgraduate Certificate created for physiotherapy professionals, which will allow you to combine your studies with other professional responsibilities and access the course from any location with total flexibility"*





## Specific Objectives

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- ♦ Examine respiratory, cardiovascular and musculoskeletal changes in response to submaximal and maximal, short and long duration, and intermittent exercises
- ♦ Understand the importance of histological and biochemical muscle changes with training and their impact on aerobic capacity and the respiratory, cardiovascular and metabolic response to exercise
- ♦ Establish how heart rate and blood lactate monitoring is performed, as well as measurement of ventilatory volumes and VO<sub>2</sub> oxygen consumption
- ♦ Identify the mechanisms of thermoregulation of a horse in sport, the associated pathologies, their consequences and the protocol of action in case of thermoregulatory alterations
- ♦ Specify training strategies to develop oxidative potential, strength and anaerobic capacity
- ♦ Present strategies to reduce or delay the onset of fatigue during various types of exercises

03

# Course Management

The program includes in its teaching staff leading experts in Equine Physiotherapy and Rehabilitation who bring to this training the experience of their work. They are world renowned professionals from different countries with proven theoretical and practical professional experience.





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*We have the most complete and successful teaching team in the educational scene"*

## Management



### Dr. Hernández Fernández, Tatiana

- ♦ PhD in Veterinary Medicine from the UCM
- ♦ Diploma in Physiotherapy at the URJC
- ♦ Degree in Veterinary Medicine from the UCM
- ♦ Professor at the Complutense University of Madrid of: Expert in Equine Physiotherapy and Rehabilitation, Expert in Bases of Animal Rehabilitation and Physiotherapy, Expert in Physiotherapy and Rehabilitation of Small Animals, Training Diploma in Podiatry and Shoeing
- ♦ Resident in the area of Equidae at the Clinical Veterinary Hospital of the UCM
- ♦ Practical experience of more than 500 hours in hospitals, sports centers, primary care centers and human physical therapy clinics
- ♦ More than 10 years working as a specialist in rehabilitation and physiotherapy

## Professors

### Dr. Muñoz Juzgado, Ana

- ♦ PhD in Veterinary Medicine from the University of Córdoba
- ♦ Degree in Veterinary Medicine from the University of Córdoba
- ♦ Professor in the Department of Animal Medicine and Surgery. Faculty of Veterinary Medicine of the University of Cordoba"



# 04

# Structure and Content

The structure of the content has been designed by the best professionals in the Equine Physiotherapy and Rehabilitation sector, with extensive experience and recognized prestige in the profession, backed by the volume of cases reviewed, studied, and diagnosed, and with extensive knowledge of new technologies applied.







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*We have the most complete and up to date academic program in the market. We strive for excellence and for you to achieve it too”*

## Module 1. Exercise Physiology and Training

- 1.1. Systemic Adaptations to Physical Exercises of Different Intensity and Duration
  - 1.1.1. Introduction to Exercise Physiology and Comparative Exercise Physiology: What Makes the Horse the Ultimate Athlete and What Consequences for the Horse?
  - 1.1.2. Respiratory Adaptations to Exercise
    - 1.1.2.1. Airway Mechanics
    - 1.1.2.2. Physiological Adjustments During Exercise
  - 1.1.3. Cardiovascular Adaptations to Exercise
    - 1.1.3.1. Importance of the Cardiovascular System in Aerobic Capacity
    - 1.1.3.2. Interpretation of Heart Rate in Exercises of Different Intensity
  - 1.1.4. Metabolic Response to Exercise
  - 1.1.5. Thermoregulation During and After Exercise
- 1.2. Systemic Adaptations to Training
  - 1.2.1. Response of Respiratory Function to Training
  - 1.2.2. Cardiovascular Changes Associated with Training and their Consequences
  - 1.2.3. Metabolic Responses to Training and Mechanisms Associated With Intervention of Training-Associated Muscle Modification
  - 1.2.4. Adaptive Response of Thermoregulatory Mechanisms to Training and Implications for the Equine Athlete
  - 1.2.5. Adaptations of Musculoskeletal Tissues to Training: Tendons, Ligaments, Bones, Joints
- 1.3. Design of an Exercise Test or Stress Test to Assess Physical Fitness Level
  - 1.3.1. Types of Stress Tests
    - 1.3.1.1. Treadmill and Field Stress Tests
    - 1.3.1.2. Maximum and Submaximal Intensity Tests
  - 1.3.2. Variables to Consider in the Design of a Stress Test
  - 1.3.3. Characteristics of Stress Tests for Speed, Jumping, Dressage and Endurance Horses
- 1.4. Physiological Parameters to Be Monitored During and After a Stress Test and Interpretation
  - 1.4.1. Respiratory Measures
    - 1.4.1.1. Ventilatory Measures: Minute Ventilation, Tidal Volume
    - 1.4.1.2. Measurements of Pulmonary Mechanics
    - 1.4.1.3. Arterial Blood Gas Concentration
    - 1.4.1.4. Oxygen Consumption (VO<sub>2</sub>), Peak Consumption and Peak Consumption
  - 1.4.2. Cardiovascular Measures
    - 1.4.2.1. Heart Rate
    - 1.4.2.2. ECG
  - 1.4.3. Metabolic Measurements
  - 1.4.4. Gait Analysis
  - 1.4.5. Calculation and Interpretation of Functionality Indices Derived from Heart Rate and Lactate Response to Stress Testing: V<sub>2</sub>, V<sub>4</sub>, HR<sub>2</sub>, HR<sub>4</sub>, V<sub>150</sub>, V<sub>200</sub>
- 1.5. Diagnostic Approach to Loss/Lack of Performance. Use of Stress Tests for the Diagnosis of Reduced Performance
  - 1.5.1. Factors Limiting Sports Performance According to Competition
  - 1.5.2. Diagnostic Approach to the Horse with Loss of Performance: Evaluation at Rest
  - 1.5.3. Diagnostic Approach to the Horse with Loss of Performance: Evaluation During Exercise
  - 1.5.4. Stress Tests for the Diagnosis of Loss of Performance
  - 1.5.5. Usefulness of Serial Stress Testing and Calculation of Functional Indices for Early Diagnosis of Performance Loss
- 1.6. General Basis of Training Training of the Three Essential Capacities: Endurance, Speed and Strength
  - 1.6.1. Basic Principles of Sports Training
  - 1.6.2. Capacity Training
    - 1.6.2.1. Resistance Training
    - 1.6.2.2. Speed Training
    - 1.6.2.3. Strength Training
  - 1.6.3. Periodization of Training. Programming From Data Obtained in a Stress Test
- 1.7. Specific Training for Dressage, Show Jumping and Eventing
  - 1.7.1. Dressage
    - 1.7.1.1. Systemic Adaptations to Exercise during Dressage Testing
    - 1.7.1.2. Stress Tests Specific to the Dressage Horse
    - 1.7.1.3. Training for Dressage Horses



- 1.7.2. Show Jumping
  - 1.7.2.1. Systemic Adaptations to Exercise during Show Jumping Trials
  - 1.7.2.2. Specific Stress Tests for Dressage Horses
  - 1.7.2.3. Training for Show Jumping Horses
- 1.7.3. Complete Horseback Riding Competition
  - 1.7.3.1. Systemic Adaptations to Exercise During a Full Competition
  - 1.7.3.2. Specific Stress Tests for the All-Round Horse
  - 1.7.3.3. Training for All-Round Horses
- 1.8. Specific Training for Endurance and Speed
  - 1.8.1. Resistance and Endurance
    - 1.8.1.1. Systemic Adaptations to Exercise during Endurance Tests of Different Durations
    - 1.8.1.2. Specific Stress Tests for Resistance Horses
    - 1.8.1.3. Training for Resistance Horses
  - 1.8.2. Training for Race Horses
    - 1.8.2.1. Systemic Adaptations to Exercise During Speed Testing
    - 1.8.2.2. Specific Stress Tests for Race Horses
    - 1.8.2.3. Training for Race Horses
- 1.9. Overtraining Syndrome
  - 1.9.1. Definition and Types of Overtraining Syndrome
  - 1.9.2. Etiology and Pathophysiology
  - 1.9.3. Hematological, Endocrine, Muscular and Behavioral Changes Compatible with Overtraining
- 1.10. Excessive Fatigue or Exhaustion. Diagnosis, Treatment and Prevention. Pathologies Associated with Physical Exercise
  - 1.10.1. Definition of Exhaustion vs. Fatigue. Pathophysiology of the Exhaustion and Post-Exhaustion Syndrome
  - 1.10.2. Pathophysiological Mechanisms Associated With Water-Electrolyte Imbalances and Energy Substrate Depletion
  - 1.10.3. Specific Pathologies Within the Exhaustion Syndrome: Exercise-Induced Hyperthermia/Heat Stroke, *Flutter* or Synchronous Diaphragmatic Flutter, Colic, Diarrhea, Laminitis, Metabolic Encephelopathy, Renal Failure
  - 1.10.4. Medical Management of the Exhausted Horse
  - 1.10.5. Exhaustion Prevention Strategies: Before, During and After Competition

# 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 we use the Case Method

What should a professional do in a given situation? 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. Physiotherapists/kinesiologists learn better, faster, and more sustainably over time.

*With TECH you will experience a way of learning that is shaking the foundations of traditional universities around the world.*



According to Dr. Gérvas, 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, trying to recreate the real conditions of professional physiotherapy 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. Physiotherapists/kinesiologists 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 physiotherapist/kinesiologist 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.



## 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 the study of clinical cases with a 100% online learning system based on repetition, combining a minimum of 8 different elements in each lesson, a real revolution with respect to the mere study and analysis of cases.



*The physiotherapist/kinesiologist 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 trained more than 65,000 physiotherapists/kinesiologists with unprecedented success in all clinical specialties, regardless of the 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 training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for 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 our 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 applied to the 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.



#### Physiotherapy Techniques and Procedures on Video

TECH brings students closer to the latest techniques, the latest educational advances and to the forefront of current Physiotherapy techniques and procedures. 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 unique multimedia content presentation training system 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

We periodically evaluate and re-evaluate students' knowledge throughout the program, through assessment and self-assessment activities and exercises, so that they can see how they are achieving their goals.



#### Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as 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 Exercise Physiology guarantees students, in addition to the most rigorous and up to date education, access to a Postgraduate Certificate issued by TECH Technological University.



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

This **Postgraduate Certificate in Exercise Physiology** contains the most complete and up to date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Certificate** issued by **TECH Technological University** via tracked delivery\*.

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations and professional career evaluation committees.

Title: **Postgraduate Certificate in Exercise Physiology**

Official N° of hours: **150 h.**

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\*Apostille Convention. In the event that the student wishes to have their paper diploma issued with an apostille, TECH EDUCATION will make the necessary arrangements to obtain it, at an additional cost.

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



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**tech** technological  
university

