

Postgraduate Diploma

Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport

Endorsed by the NBA





Postgraduate Diploma

Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport

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

Website: www.techtute.com/in/sports-science/postgraduate-diploma/postgraduate-diploma-application-electrotherapy-neurological-patient-physical-activity-sport

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01

Introduction

Electrotherapy is a branch of physiotherapy based on the application of electromagnetic fields for the treatment of different pathologies. Its application ranges from analgesic effects to the nerve fiber stimulation, including the modulation of the activity of different encephalic areas.





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This training will generate a sense of confidence when practicing medicine, which will help you grow personally and professionally”

Electromagnetic fields have been used as a therapeutic tool since ancient times. However, since the end of the last century, there have been notable advances in the use of different currents. This progress ran parallel to the ever-increasing knowledge of human physiology, which facilitated the design and development of different types of treatments based on the application of electromagnetic fields.

Electrotherapy has a wide range of applications, so it is essential to possess extensive knowledge of both the physiological functioning of the subject, as well as the most appropriate agent in each case. This content covers everything from muscular contraction mechanisms to somatosensory transmission mechanisms, which makes it essential for the therapist to know both the pathophysiological mechanisms of the subject and the physical/chemical principles of Electrotherapy.

In recent years, the number of research studies related to electrotherapy has increased, mainly those focused on invasive techniques. These include percutaneous analgesic techniques in which needles are used as electrodes as well as transcranial stimulation, either of an electrical nature or by using magnetic fields. Based on latter application, the field of action of Electrotherapy has been widened and can thereby be applied to various types of patients, ranging from subjects with chronic pain to neurological patients.

The objective of the Postgraduate Diploma is to present up-to-date applications of Electrotherapy in neuromusculoskeletal pathologies, always based on scientific evidence when selecting the most appropriate type of current in each case. To this end, the neurophysiological principles of each type of current are presented at the beginning of each module so that learning is complete. Each module is supported by practical applications of each type of current, in order to provide the professional with comprehensive knowledge of the pathology and how it can be treated.

Given the up-to-date content of the Postgraduate Diploma, its orientation is open to health professionals, in this way broadening the application of electrotherapy beyond the field of physiotherapy.

This **Postgraduate Diploma in Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ♦ Development of practical cases presented by experts in the application of electrotherapy in neurological patients
- ♦ The graphic, schematic, and practical contents with which they are created provide scientific and practical information on the disciplines that are essential for professional practice
- ♦ New developments in the application of electrotherapy in neurological patients.
- ♦ It contains practical exercises where the self-evaluation process can be carried out to improve learning
- ♦ With special emphasis on innovative methodologies in the application of electrotherapy in neurological patients
- ♦ All this will be complemented by 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



Update your knowledge through the Postgraduate Diploma in Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport"

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This Postgraduate Diploma may be the best investment you can make in the selection of a refresher program for two reasons: in addition to updating your knowledge in the application of electrotherapy in neurological patients, you will obtain a certificate as a university expert from TECH - Technological University"

Its teachers include professionals belonging to the field of the application of electrotherapy in neurological patients, who contribute their work experience to this training, as well as renowned specialists belonging to reference societies and prestigious universities.

Thanks to its multimedia content developed with the latest educational technology, they will allow the professional a situated and contextual learning, that is to say, a simulated environment that will provide an immersive learning programmed to prepare in real situations.

This program is designed around Problem-Based Learning, whereby the student must try to solve the different professional practice situations that arise during the course. For this, the student will be assisted by an innovative interactive video system created by recognized experts in the field of physiotherapy approach in the application of electrotherapy in neurological patients and with great teaching experience.

Increase your decision-making confidence by updating your knowledge through this specialist course.

Take the opportunity to learn about the latest advances in the application of electrotherapy in neurological patients and improve the care of your patients.



02

Objectives

The Postgraduate Diploma in Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport is oriented to facilitate the performance of the physical therapist in his daily practice related to musculoskeletal pathology and the application of electrotherapy.



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This Postgraduate Diploma is designed for you to update your knowledge in the application of electrotherapy in neurological patients, with the use of the latest educational technology, to contribute with quality and safety to decision making"



General Objective

- Update your knowledge of the rehabilitation professional in the field of electrotherapy
- Promote work strategies based on a comprehensive approach to the patient as a standard model for achieving excellent care
- Encourage the acquisition of technical skills and abilities, through a powerful audio-visual system, and the possibility of development through online simulation workshops and/or specific training
- Encourage professional stimulus through continuing education and research





Specific Objectives

- ♦ Update your knowledge of Electrotherapy in the field of rehabilitation of patients with musculoskeletal pathology
- ♦ Update your knowledge of muscular contraction and its rehabilitation by physical means, applying electrotherapy as the main agent
- ♦ Update your knowledge of current and developing therapeutic possibilities in the field of neuromusculoskeletal rehabilitation
- ♦ Broaden your knowledge of new applications of ultrasound therapy in the rehabilitation of neuromusculoskeletal pathologies



Take advantage of the opportunity and take the step to get up-to-date on the latest developments in the application of electrotherapy in the neurological patient"

03

Course Management

The program includes in its teaching staff specialists of reference in the application of electrotherapy in neurological patients, who contribute their work experience to this training. In addition, other specialists of recognized prestige participate in its design and elaboration, completing the program in an interdisciplinary manner.





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Learn from leading professionals the latest advances in the application of electrotherapy in neurological patients”

Guest Directors



Ms. Sanz Sánchez, Marta

- Physiotherapy supervisor at the 12 de Octubre Hospital
- Graduate in Physiotherapy from the School of Nursing and Physiotherapy of the University of Comillas (Madrid)
- Degree in Physiotherapy from the School of Nursing and Physiotherapy of the University of Alcalá de Henares.(Madrid)
- Octubre 94– June 97
- Course on Urinary Incontinence in Women (Alcalá de Henares). 20 Hours
- Sohler Method Specialist Technician Course (Toledo). 150 Hours
- Course on Palpatory Anatomy and Orthopedic Tests (Alcalá de Henares). 30 Hours
- Course of Physiotherapy in Myofascial Pain Syndrome (Toledo). 60 Hours
- Associate Professor at UCM from 2018 to present



Mr. Hernández, Elías

- Physiotherapy supervisor at the 12 de Octubre Hospital
- Diploma in Physiotherapy from the European University of Madrid, 2002
- Degree in Physiotherapy from thePonficia de Comillas University, 2012
- Master's Degree in Osteopathy from Gimbernat University School 2008
- Physiotherapist at Guadalajara University Hospital
- Physiotherapist at 12 de Octubre University Hospital
- Collaborating Professor at the Complutense University of Madrid, 2010
- First Conference on Electrotherapy Technology Update, Practical Application High Power Laser, High Intensity Electromagnetic Stimulation and Diathermy 2018



Management



Dr. León Hernández, Jose Vicente

- Doctorate in Physiotherapy from the Rey Juan Carlos University
- Degree in Chemical Sciences from the Complutense University of Madrid, specializing in Biochemistry
- Diploma in Physiotherapy from the Alfonso X el Sabio University
- Master's Degree in the Study and Treatment of Pain from the Rey Juan Carlos University

Coordinators

Mr. Cuenca Martínez, Ferrán

- ♦ Degree in Physiotherapy
- ♦ Master's Degree in "Advanced Physiotherapy in Pain Management"
- ♦ PhD

Mr. Gurdíel Álvarez, Francisco

- ♦ Degree in Physiotherapy
- ♦ Postgraduate Diploma in Orthopedic Manual Therapy and Myofascial Pain Syndrome
- ♦ Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain Management

Mr. Suso Martí, Luis

- ♦ Degree in Physiotherapy
- ♦ Master's Degree in "Advanced Physiotherapy in Pain Management"

Mr. Losana Ferrer, Alejandro

- ♦ Physiotherapist
- ♦ Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain Management
- ♦ Postgraduate Diploma in Neuro-Orthopedic Manual Therapy
- ♦ University Advanced Training in Therapeutic Exercise and Invasive Physiotherapy for Musculoskeletal Pain

Ms. Merayo Fernández, Lucía

- ♦ Degree in Physiotherapy
- ♦ Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain Management

Professors

Mr. Izquierdo García, Juan

- ♦ Postgraduate Certificate in Physiotherapy Universidad Rey Juan Carlos. 2004
- ♦ Expert in Manual Therapy in Muscular and Neuromeningeal Tissue. 60 ECTS Rey Juan Carlos University. Alcorcón- Madrid. 2005
- ♦ University Specialist in Heart Failure, 30 ECTS. Murcia University. 2018
- ♦ Master's Degree in Healthcare Management. Mid-Atlantic University. 2019
- ♦ 12 de Octubre University Hospital of Madrid, Physiotherapist of the Cardiac Rehabilitation Unit
- ♦ Complutense de Madrid University, Associate Professor of the Department of Radiology, Rehabilitation and Physiotherapy of the Faculty of Nursing, Physiotherapy and Podiatry

Mr. Román Moraleda, Carlos

- ♦ 12 de Octubre University Hospital, permanent statutory staff since May 2015 Paseo Imperial health center, primary care (SERMAS). From October 2009 to May 2015
- ♦ La Paz University Hospital, lymphatic drainage unit, from January 2008 to September 2009
- ♦ José Villarreal Day Care Center, Madrid City Council, from October 2007 to January 2008
- ♦ Postgraduate Certificate in Physiotherapy from the University Alfonso X El Sabio. 1999 / 2002
- ♦ Postgraduate Diploma in Manual Lymphatic Drainage from the European University of Madrid. Course of 08/ 09. 200 hrs
- ♦ Professional Master's Degree in Osteopathy (Eur. Ost DO). Francisco de Vitoria University- School of Osteopathy FBEO. 1500 hrs 2010-2015
- ♦ Associate Professor in the Faculty of Nursing, Physiotherapy and Podiatry. Complutense University of Madrid. Since December from 2020

04

Structure and Content

The structure of the contents has been designed by a team of professionals from the best educational centers, universities, and companies in the national territory, aware of the relevance of current specialization in order to intervene in the training and support of students, and committed to quality teaching through New Educational Technologies



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The Postgraduate Diploma in Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport contains the most complete and up-to-date scientific program on the market"

Module 1. High Frequency Electrotherapy

- 1.1. Physical Fundamentals of High Frequency.
- 1.2. Physiological Effects of High Frequency.
 - 1.2.1. Athermal Effects
 - 1.2.2. Thermal Effects
- 1.3. Therapeutic Effects of High Frequency.
 - 1.3.1. Athermal Effects
 - 1.3.2. Thermal Effects
- 1.4. Shortwave Fundamentals
 - 1.4.1. Short Wave: Capacitive Application Mode.
 - 1.4.2. Short Wave: Inductive Application Mode.
 - 1.4.3. Short Wave: Pulsed Emission Mode.
- 1.5. Practical Applications of Shortwave.
 - 1.5.1. Practical Applications of Continuous Shortwave.
 - 1.5.2. Practical Applications of Pulsed Shortwave.
 - 1.5.3. Practical Applications of Shortwave: Pathology Phase and Protocols.
- 1.6. Contraindications of Shortwave.
 - 1.6.1. Absolute Contra-indications
 - 1.6.2. Relative Contra-indications
 - 1.6.3. Precautions and Safety Measures.
- 1.7. Practical Applications of the Microwave.
 - 1.7.1. Microwave Basics
 - 1.7.2. Practical Microwave Considerations.
 - 1.7.3. Practical Applications of Continuous Microwave.
 - 1.7.4. Practical Applications of Pulsed Microwave.
 - 1.7.5. Microwave Treatment Protocols.
- 1.8. Contraindications of the Microwave.
 - 1.8.1. Absolute Contra-indications
 - 1.8.2. Relative Contra-indications
- 1.9. Fundamentals of Techartherapy.
 - 1.9.1. Physiological Effects of Techartherapy.
 - 1.9.2. Dosage of Tecartherapy Treatment.

- 1.10. Practical Applications of Techartherapy.
 - 1.10.1. Arthrosis
 - 1.10.2. Myalgia
 - 1.10.3. Muscle Fibrillar Rupture.
 - 1.10.4. Post-puncture Pain of Myofascial Trigger Points.
 - 1.10.5. Tendinopathy
 - 1.10.6. Tendon Rupture (Post-Surgical Period).
 - 1.10.7. Wound Healing
 - 1.10.8. Keloid Scars
 - 1.10.9. Edema Drainage
 - 1.10.10. Post-Exercise Recovery.
- 1.11. Contraindications of Techartherapy.
 - 1.11.1. Absolute Contra-indications
 - 1.11.2. Relative Contra-indications

Module 2. Electrostimulation in the Neurological Patient

- 2.1. Assessment of Nerve Injury. Principles of Muscle Innervation.
- 2.2. Intensity/Time (I/T) and Amplitude/Time (A/T) Curves.
- 2.3. Main Trends in Neurological Rehabilitation.
- 2.4. Electrotherapy for Motor Rehabilitation in the Neurological Patient.
- 2.5. Electrotherapy for Somatosensory Rehabilitation in the Neurologic Patient.
- 2.6. Practical Applications.
- 2.7. Contraindications.



Module 3. General Principles of Electrotherapy

- 3.1. Physical Basis of Electric Current.
 - 3.1.1. Brief Historical Recollection.
 - 3.1.2. Definition and Physical Basis of Electrotherapy.
 - 3.1.2.1. Potential Concepts
- 3.2. Main Parameters of the Electric Current.
 - 3.2.1. Pharmacology / Electrotherapy Parallelism.
 - 3.2.2. Main Parameters of the Waves: Waveform, Frequency, Intensity, and Pulse Width..
 - 3.2.3. Other Concepts: Voltage, Current and Resistance.
- 3.3. Frequency-Dependent Classification of Currents.
 - 3.3.1. Classification according to Frequency: High, Medium and Low.
 - 3.3.2. Properties of Each Type of Frequency.
 - 3.3.3. Choice of the Most Suitable Current in Each Case.
- 3.4. Waveform-Dependent Current Classification.
 - 3.4.1. General Classification: Direct and Alternating or Variable currents.
 - 3.4.2. Classification of the Variable Currents: Interrupted and Uninterrupted.
 - 3.4.3. Spectrum Concept
- 3.5. Current Transmission: Electrodes.
 - 3.5.1. General Information on Electrodes.
 - 3.5.2. Importance of Tissue Impedance.
 - 3.5.3. General Precautions
- 3.6. Types of Electrodes.
 - 3.6.1. Brief Recollection of the Historical Evolution of Electrodes.
 - 3.6.2. Considerations on Maintenance and Use of Electrodes.
 - 3.6.3. Main Types of Electrodes.
 - 3.6.4. Electrophoretic Application.
- 3.7. Bipolar Application.
 - 3.7.1. Bipolar Application Overview.
 - 3.7.2. Electrode Size and Area to be Treated.
 - 3.7.3. Application of More Than Two Electrodes.

- 3.8. Four-pole Application
 - 3.8.1. Possibility of Combinations
 - 3.8.2. Application in Electrostimulation
 - 3.8.3. Tetrapolar Application in Interferential Currents
 - 3.8.4. General Conclusions
- 3.9. Importance of Polarity Alternation
 - 3.9.1. Brief Introduction to Galvanism
 - 3.9.2. Risks Derived from Load Accumulation
 - 3.9.3. Polar Behavior of Electromagnetic Radiation

Module 4. Non-Invasive Brain Stimulation

- 4.1. Introduction to Transcranial Neuromodulation
 - 4.1.1. Neurophysiological Principles
 - 4.1.2. General Information of Non-Invasive Brain Stimulation
- 4.2. Transcranial Magnetic Stimulation
 - 4.2.1. Introduction to Transcranial Magnetic Stimulation
 - 4.2.2. Mechanisms of Action
- 4.3. Stimulation Protocols
 - 4.3.1. Safety
 - 4.3.2. Applications
- 4.4. Transcranial Direct Current
 - 4.4.1. Introduction to Transcranial Direct Current
 - 4.4.2. Mechanism of Action
 - 4.4.3. Safety
- 4.5. Procedures
 - 4.5.1. General Aspects
 - 4.5.2. Evidence
 - 4.5.3. Applications



- 4.6. Other Forms of Transcranial Electrical Stimulation
 - 4.6.1. General Aspects
 - 4.6.2. Updating of Applications
- 4.7. Transcranial Neuromodulation Combined with other Therapeutic Interventions
 - 4.7.1. Combination Types
 - 4.7.2. Applications
 - 4.7.3. Precautions

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A unique, key, and decisive educational experience to boost your professional development”



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"

Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

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At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"



You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.



The student will learn to solve complex situations in real business environments through collaborative activities and real cases.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

“ *Our program prepares you to face new challenges in uncertain environments and achieve success in your career”*

The case method is the most widely used learning system in the best faculties in the world. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question we face in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH, you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



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.

With this methodology, we have trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, markets, and financial instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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.

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.



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 highly 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.



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.



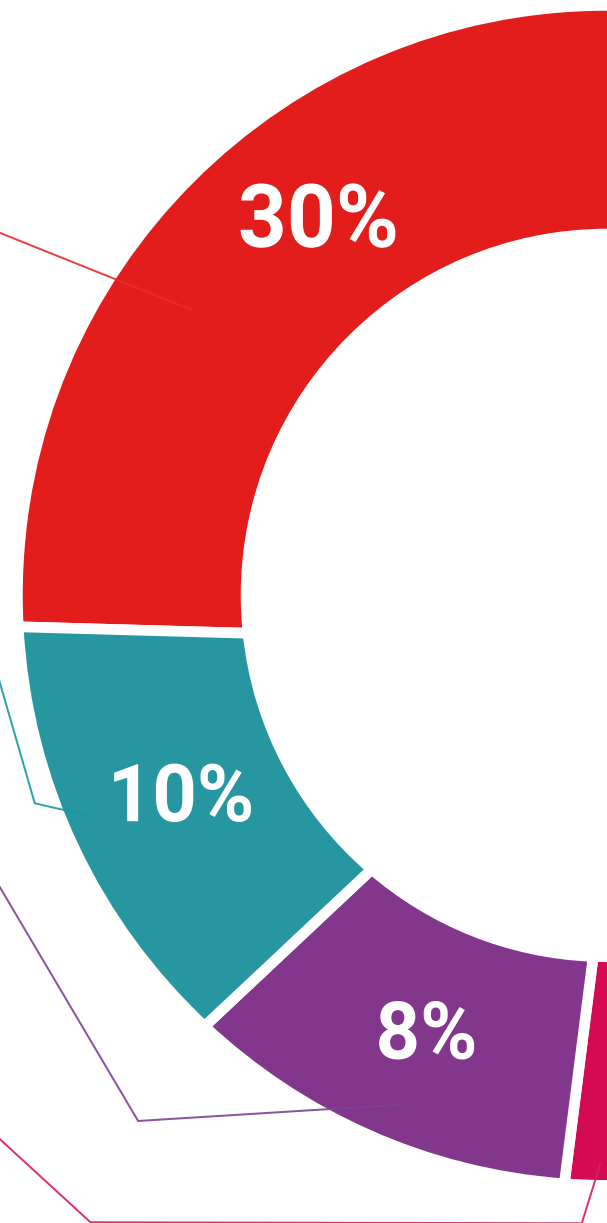
Practising Skills and Abilities

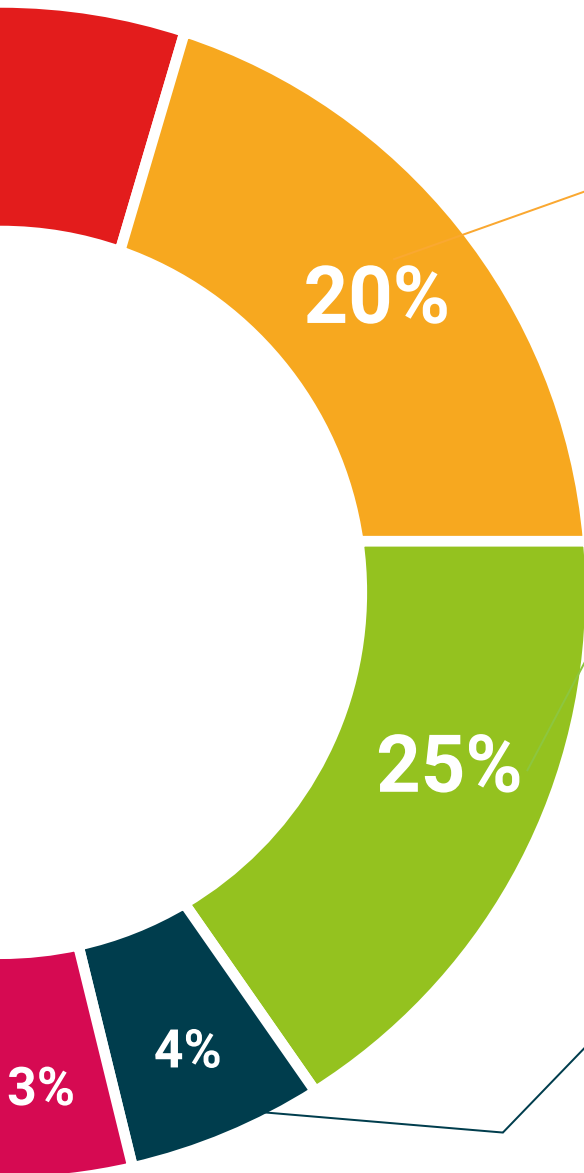
They will carry out activities to develop specific competencies and skills in each thematic area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.



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.





Case Studies

Students will complete a selection of the best case studies chosen specifically for this situation. Cases that are presented, analyzed, and supervised by the best specialists in the world.



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".



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.



06 Certificate

The Postgraduate Diploma in Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma 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 Diploma in Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport** contains the most complete and up-to-date scientific on the market.

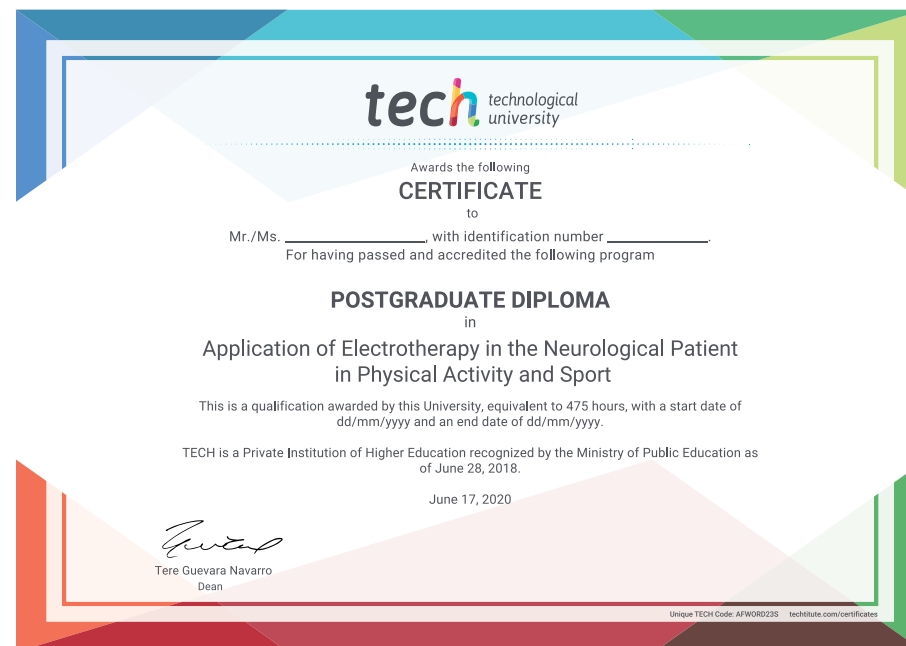
After the student has passed the assessments, they will receive their corresponding **Postgraduate Diploma** issued by **TECH Technological University** via tracked delivery*.

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

Title: **Postgraduate Diploma in Application of Electrotherapy in the Neurological Patient in Physical Activity and Sport**

Official N° of Hours: **475 h.**

Endorsed by the NBA



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

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university

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