



Postgraduate Diploma

Application of Electrotherapy in the Neurological Patient

Course Modality: **Online** Duration: **6 months**.

Certificate: TECH Technological University

Official No of hours: 475 h.

We bsite: www.techtitute.com/in/physiotherapy/postgraduate-diploma/postgraduate-diploma-application-electrotherapy-neurological-patient

Index

 $\begin{array}{c|c} 01 & 02 \\ \hline & & \\ \hline &$

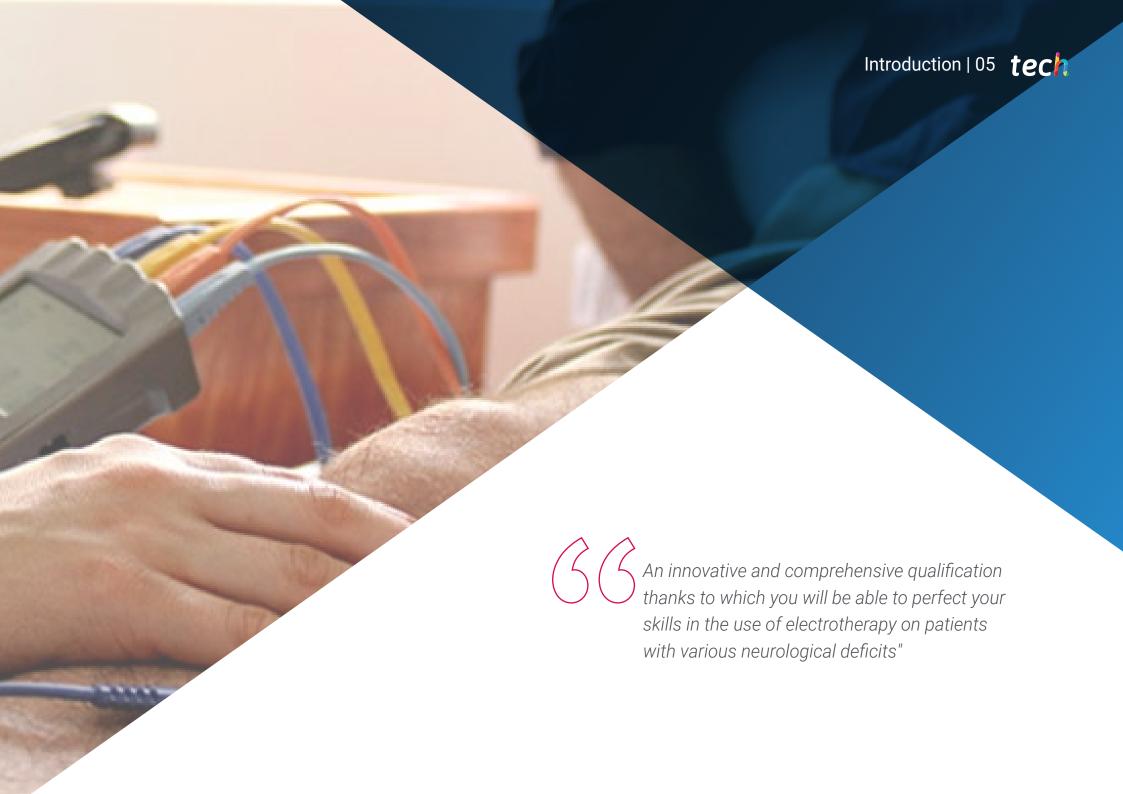
06

Certificate

p. 32







tech 06 | Introduction

The consequences of, for example, spinal cord injury have serious effects on the physical health of the patient. It is a condition that, like its counterparts, causes disability and atrophy, interfering with the ability to move, limiting muscle mass and promoting the development of associated comorbidities such as diabetes or cardiovascular disease. Despite the fact that, until relatively recently, this type of pathologies could not be treated due to the lack of knowledge in the neurological area, the truth is that the countless investigations that have been carried out in this regard have allowed the development of increasingly effective physiotherapeutic guidelines, as is the case of Electrotherapy.

For this reason, and in order that professionals in this field can learn in detail about its novelties, TECH, together with a team versed in Neurorehabilitation has developed a comprehensive program with which they can learn in detail the developments related to this technique in the high frequency modality, with special emphasis on the physical fundamentals involved in it, its effects, its contraindications and the possibilities of its application in the current clinical context. In addition, the program focuses on electrostimulation as an innovative strategy for muscle strengthening, taking as a reference the anatomy and currents to be applied in each part of the body. Finally, the graduates will be able to update their knowledge in non-invasive brain stimulation, allowing them to implement the most effective protocols in their physiotherapeutic practice, depending on the patient's characteristics.

This way, in only 6 months of 100% online academic experience, you will have the opportunity to work intensively on updating your knowledge through a multidisciplinary syllabus designed by professionals versed in Neurological Electrotherapy. In addition, you will have real clinical cases and diverse additional material to delve in a personalized way in the different sections of the content. This will provide you with a tailor-made academic experience with which you will be able to perfect your professional skills in only 475 hours.

This Postgraduate Diploma in Application of Electrotherapy in the Neurological Patient contains the most complete and up-to-date scientific program on the market. Its most notable features are:

- The development of practical cases presented by experts in Physiotherapy and Electrotherapy
- 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
- Practical exercises where the self-assessment process can be carried out 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



You will have access to 475 hours of diverse content: From the best syllabus to real clinical cases and multidisciplinary additional material of the highest quality"



An opportunity to update you on the contraindications of shortwave in different types of patients, as well as on its alternatives depending on the characteristics of the pathology"

The program's teaching staff includes professionals from sector who contribute their work experience to this 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 academic year. For this purpose, the student will be assisted by an innovative interactive video system created by renowned and experienced experts.

You will work intensively on a concrete and exhaustive update in relation to muscle contraction and the different structures: Sarcomere, of the motor plate, etc.







tech 10 | Objectives



General Objectives

- Delve into the novelties of electrotherapy in the current physiotherapeutic context, especially in relation to the clinical management of patients with neurological diseases and deficits
- Know in detail the indications and contraindications of the application of the different electrotherapy techniques according to the patient's characteristics



If one of your objectives is to get up to date with the recommendations for the best quality electromyography, this is the perfect option to achieve it"





Specific Objectives

Module 1. High Frequency Electrotherapy

- Update knowledge about electrotherapy in the field of rehabilitation of patients with neurological pathology
- Renew concepts about the physiology of electrotherapy in the neuromusculoskeletal patient

Module 2. Electrostimulation for Muscle Strengthening

- Broaden your knowledge of new applications of invasive electrotherapy for tissue regeneration
- Determine new high frequency applications in the rehabilitation of neuromusculoskeletal pathologies

Module 3. Non-Invasive Brain Stimulation

- Mastering stimulation protocols
- Understand the therapeutic applications of non-invasive brain stimulation







tech 14 | Course Management

Management



Ms. Sanz Sánchez, Marta

- Physiotherapy Supervisor at the Hospital Universitario 12 de Octubre
- Associate Professor at the Complutense University of Madric
- 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



Mr. Hernández, Leonardo

- Physiotherapy Supervisor at the Hospital Universitario 12 de Octubre
- · Physiotherapist at the University Hospital of Guadalajara
- · Collaborating Professor at the Complutense University of Madrid
- · Postgraduate Certificate in Physiotherapy from the European University of Madrid
- Degree in Physiotherapy from Comillas Pontifical University
- Professional Master's Degree in Osteopathy Escuela Universitaria Gimbernat



Dr. León Hernández, Jose Vicente

- Physiotherapis
- Doctorate in Physiotherapy from the Rey Juan Carlos University
- · Degree in Chemical Sciences from the Complutense University of Madrid, specializing in Biochemistry
- · Postgraduate Certificate in Physiotherapy from the Universidad Alfonso X El Sabio
- · Master's Degree in the Study and Treatment of Pain from the Rey Juan Carlos University

Professors

Dr. Cuenca Martínez, Ferrán

- Physiotherapist
- Doctorate in Physiotherapy
- Degree in Physiotherapy
- * Master's Degree in "Advanced Physiotherapy in Pain Management"

Mr. Gurdiel Álvarez, Francisco

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

Mr. Suso Martí, Luis

- Physiotherapist
- 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

tech 16 | Course Management

Ms. Merayo Fernández, Lucía

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

Mr. Izquierdo García, Juan

- Physiotherapist of the Cardiac Rehabilitation Unit at the Hospital Universitario 12 de Octubre in Madrid
- University Specialist in Heart Failure by the University of Murcia
- Associate Professor of the Department of Radiology, Rehabilitation and Physiotherapy of the Faculty of Nursing, Physiotherapy and Podiatry at the Complutense University of Madrid
- Postgraduate Certificate in Physiotherapy Universidad Rey Juan Carlos
- Professional Master's Degree in Health Care Management from Universidad Atlántico Medio
- Postgraduate Diploma in Manual Therapy in Muscular and Neuromeningeal Tissue by the Universidad Rey Juan Carlos

Mr. Román Moraleda, Carlos

- Physiotherapist at the 12 de Octubre University Hospital
- Physiotherapist at the Paseo Imperial Health Center and at the Primary Care Service of the Hospital Universitario La Paz
- * Specialist in the Lymphatic Drainage Unit at the Hospital Universitario La Paz.
- Physiotherapist at the "José Villarreal" Day Care Center, Madrid
- Associate Professor in the Faculty of Nursing, Physiotherapy and Podiatry. Complutense University of Madrid
- Professional Master's Degree in Osteopathy (Eur. Ost DO). Francisco de Vitoria University-School of Osteopathy. FBEO
- Postgraduate Diploma in Manual Lymphatic Drainage by the European University of Madrid



Structure and Content

The structure of this program is composed of 475 hours of theoretical, practical and additional content, the latter presented in a variety of ways: Detailed videos, dynamic summaries, research articles, supplementary readings, images and much more. All of this has been compacted in a convenient and flexible 100% online format thanks to which the graduates will be able to access the course of this program whenever they want and from anywhere, without limits or schedules during the 6 months in which this Postgraduate Diploma is distributed.



tech 20 | Structure and Content

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
 - 131 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
 - .5.3. Practical Applications of Shortwave: Pathology Phase and Protocols
- 1.6. Contraindications of Shortwave
 - 161 Absolute Contraindications
 - 1.6.2. Relative Contraindications
 - 1.6.3. Precautions and Safety Measures
- 1.7. Practical Applications of the Microwave
 - 1.7.1. Microwave Basics
 - 172 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 Contraindications
 - 1.8.2. Relative Contraindications
- 1.9. Fundamentals of Techartherapy
 - 1.9.1. Physiological Effects of Techarterapy
 - 1.9.2. Dosage of Techartherapy 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 Contraindications
 - 1.11.2. Relative Contraindications

Module 2. Electrostimulation in the Neurological Patient

- 2.1. Principles of Muscle Contraction
 - 2.1.1. Introduction to Muscle Contraction
 - 2.1.2. Types of Muscles
 - 2.1.3. Muscle Characteristics
 - 2.1.4. Muscle Functions
 - 2.1.5. Neuromuscular Electro Stimulation
- 2.2. Sarcomere Structure
 - 2.2.1. Introduction
 - 2.2.2. Sarcomere Functions
 - 2.2.3. Sarcomere Structure
 - 2.2.4. Sliding Filament Theory
- 2.3. Motor Plate Structure
 - 2.3.1. Motor Unit Concept
 - 2.3.2. Concept of Neuromuscular Junction and Motor Plate
 - 2.3.3. Structure of the Neuromuscular Junction
 - 2.3.4. Neuromuscular Transmission and Muscle Contraction



Structure and Content | 21 tech

- 2.4. Type of Muscle Contraction
 - 2.4.1. Concept of Muscle Contraction
 - 2.4.2. Types of Contraction
 - 2.4.3. Isotonic Muscle Contraction
 - 2.4.4. Isometric Muscle Contraction
 - 2.4.5. Relationship between Strength and Endurance in Contractions.
 - 2.4.6. Auxotonic and Isokinetic Contractions
- 2.5. Types of Muscle Fibers
 - 2.5.1. Types of Muscle Fibers
 - 2.5.2. Slow-Twitch Fibers or Type I Fibers
 - 2.5.3. Fast-Twitch Fibers or Type II Fibers
- 2.6. Main Neuromuscular Injuries
 - 2.6.1. Neuromuscular Disease Concept
 - 2.6.2. Etiology of Neuromuscular Diseases
 - 2.6.3. Neuromuscular Junction Injury and NMD
 - 2.6.4. Major Neuromuscular Injuries or Diseases
- 2.7. Principles of Electromyography
 - 2.7.1. Electromyography Concept
 - 2.7.2. Development of Electromyography
 - 2.7.3. Electromyographic Study Protocol
 - 2.7.4. Electromyography Methods
- 2.8. Main Excitomotor Currents. Neo-Faradic Currents
 - 2.8.1. Definition of Excitomotor Current and Main Types of Excitomotor Currents
 - 2.8.2. Factors Influencing the Neuromuscular Response
 - 2.8.3. Exitomotor Currents Most Commonly Used Neo-Faradic Currents
- 2.9. Excitomotor Interferential Currents. Kotz Currents
 - 2.9.1. Kotz Currents or Russian Currents
 - 2.9.2. Most Relevant Parameters in Kotz Currents
 - 2.9.3. Strengthening Protocol Described with Russian Current
 - 2.9.4. Differences between Low Frequency and Medium Frequency Electrostimulation

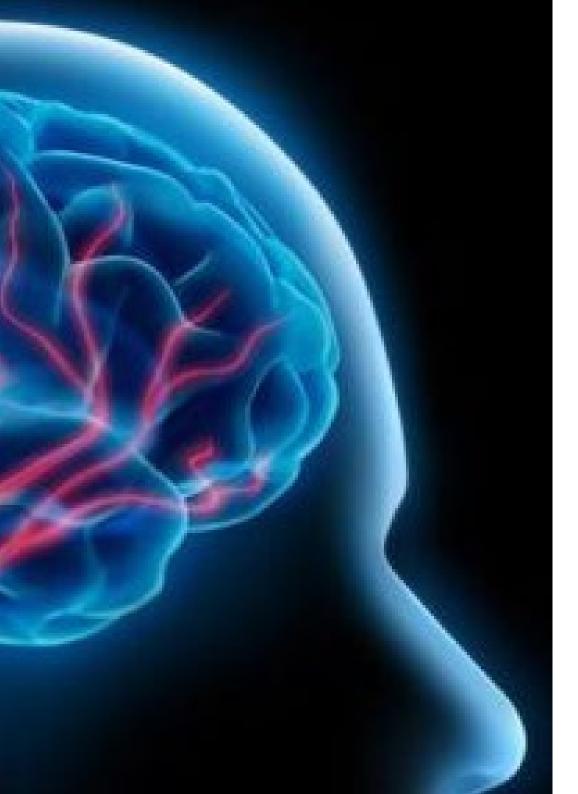
tech 22 | Structure and Content

- 2.10. Electrostimulation Applications in Uro-Gynecologic
 - 2.10.1. Electrostimulation and Urogynecology
 - 2.10.2. Types of Electrostimulation in Urogynecology
 - 2.10.3. Placement of Electrodes
 - 2.10.4. Mechanism of Action
- 2.11. Practical Applications
 - 2.11.1. Recommendations for the Application of Excitomotor currents
 - 2.11.2. Techniques of Application of Excitomorphic Currents
 - 2.11.3. Examples of Work Protocols Described in Scientific Literature
- 2.12. Contraindications
 - 2.12.1. Contraindications for the Use of Electrostimulation for Muscle Strengthening
 - 2.12.2. Recommendations for Safe Electrostimulation Practice

Module 3. Non-Invasive Brain Stimulation

- 3.1. Non-Invasive Brain Stimulation: Introduction
 - 3.1.1. Introduction to Non-Invasive Brain Stimulation
 - 3.1.2. Transcranial Magnetic Stimulation
 - 3.1.2.1. Introduction to Transcranial Magnetic Stimulation
 - 3.1.2.2. Mechanisms of action
 - 3.1.2.3. Stimulation Protocols
 - 3.1.2.3.1. Transcranial Magnetic Stimulation with Single and Paired Pulses
 - 3.1.2.3.2. Location of the Stimulation Site "Hot Spot"
 - 3.1.2.3.3. Repetitive Transcranial Magnetic Stimulation
 - 3.1.2.3.4. Simple Repetitive Pattern Stimulation
 - 3.1.2.3.5. Theta-Burst Stimulation (TBS)
 - 3.1.2.3.6. Quadripulse Stimulation (QPS)
 - 3.1.2.3.7. Paired Associative Stimulation (PAS)
 - 3.1.2.4. Security/Safety
 - 3.1.2.5. Therapeutic Applications
 - 3.1.3. Conclusions
 - 3.1.4. Bibliography





Structure and Content | 23 tech

- 3.2. Transcranial Direct Current
 - 3.2.1. Transcranial Direct Current
 - 3.2.1.1. Introduction to Transcranial Direct Current
 - 3.2.1.2. Mechanism of Action
 - 3.2.1.3. Security/Safety
 - 3.2.1.4. Procedures
 - 3.2.1.5. Applications
 - 3.2.1.6. Other Forms of Transcranial Electrical Stimulation
 - 3.2.2. Transcranial Neuromodulation Combined with other Therapeutic Interventions
 - 3.2.3. Conclusions
 - 3.2.4. Bibliography

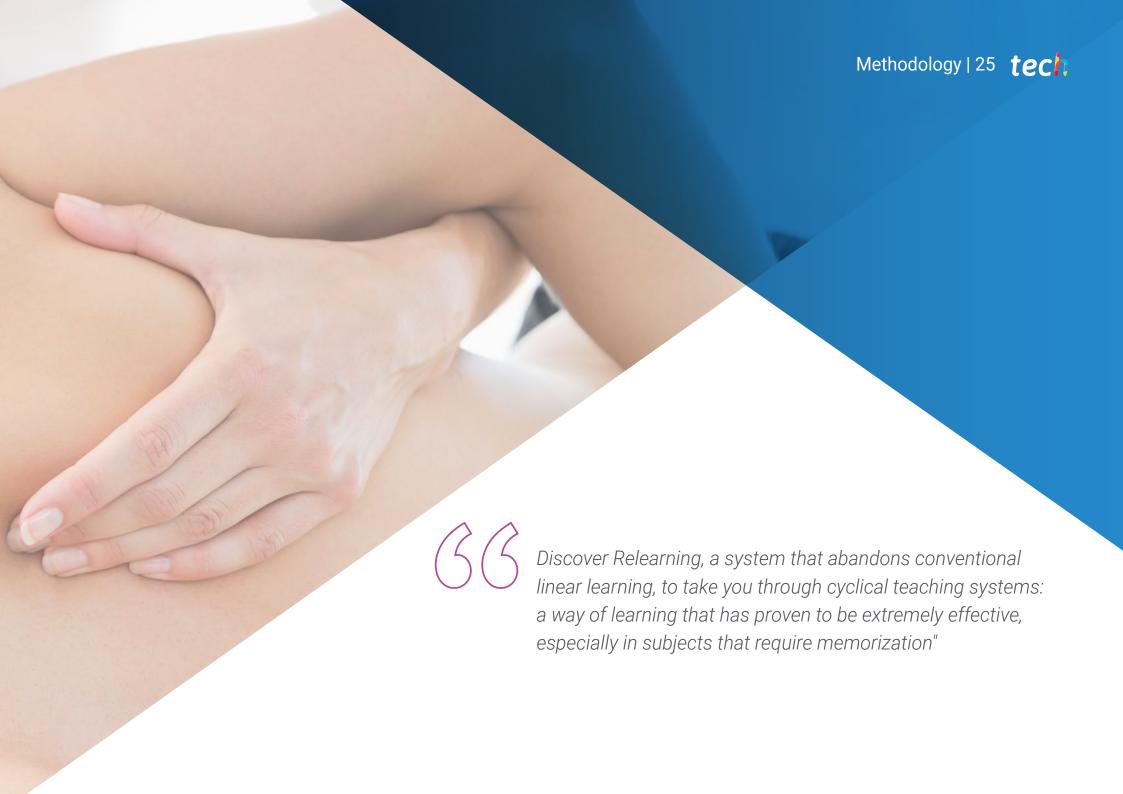


The time has come to make a decision. Bet on this program and take a decisive step towards physiotherapeutic innovation through a program adapted to the demands of the profession and the market"



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.

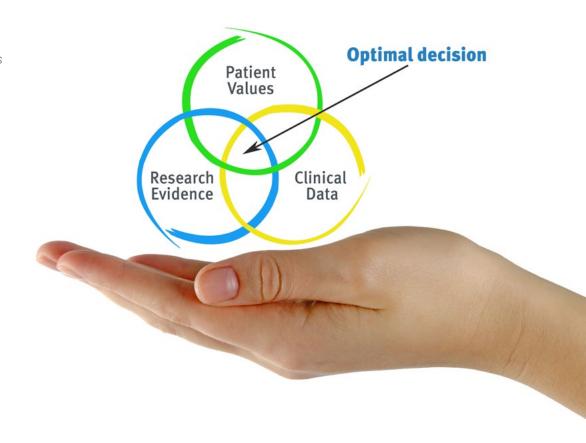


tech 26 | Methodology

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.



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.



Methodology | 29 tech

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

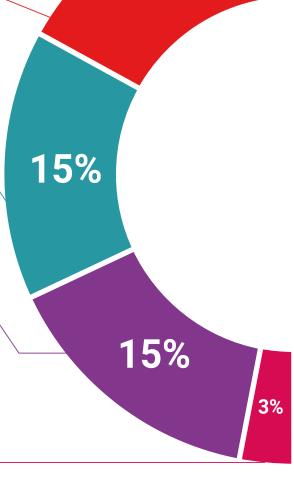
TECH brings students closer to the latest techniques, the latest educational advances and to the forefront of current Physiotherapy techniques and procedures. All of this in direct contact with students and explained in detail so as to aid their assimilation and understanding. And best of all, you can 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.

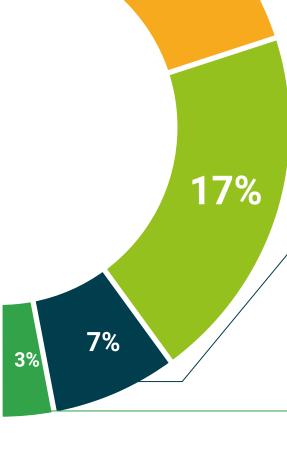
The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



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.





20%





tech 34 | Certificate

This Postgraduate Diploma in Electrotherapy in Application of Electrotherapy in Neurological Patients 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 Diploma issued by **TECH Technological University** via tracked delivery*.

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

Title: Postgraduate Diploma in the Application of Electrotherapy in Neurological Patients

Official N° of Hours: 475 h.



^{*}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.

health confidence people
education information tutors
guarantee accreditation teaching
institutions technology learning
community commitment



Postgraduate Diploma

Application of Electrotherapy in the Neurological Patient

Course Modality: Online Duration: 6 months.

Certificate: TECH Technological University

Official No of hours: 475 h.

