Postgraduate Diploma
Electrotherapy and Analgesia in Physical Activity and Sport

Endorsed by the NBA

tech technological university

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Postgraduate Diploma
Electrotherapy and Analgesia In Physical Activity And Sport

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

Website: www.techtitute.com/us/sports-science/postgraduate-diploma/postgraduate-diploma-electrotherapy-analgesia-physical-activity-sport

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01

Introduction

Electrotherapy is a widely used technique to eliminate or reduce muscle pain. Therefore, sports professionals should consider it a challenge to expand their knowledge in this field, since they can achieve great improvements in the recovery of the users they treat. In order for you to increase your training in this field, TECH has designed this complete program in electrotherapy and analgesia of high educational level.

Get to know the benefits that electrotherapy can bring to your daily practice and learn how to reduce the pain of athletes with this technique"

The objective of the Postgraduate Diploma in Electrotherapy and Analgesia in Physical Activity and Sport is to offer superior training to professionals in this field, who are faced every day with working with injured athletes who suffer severe pain and who can resort to this technique to improve their injury and quality of life.

The use of electromagnetic fields as a therapeutic tool has been used since ancient times, but it is since the end of the last century when it has experienced a great advance. 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.

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.

One of the main advantages of this program is that, since it is 100% online, it is the student who decides where and when to study. Without having to face any kind of limitation, either in terms of time or travel to a physical location. All this, with the intention of facilitating to the maximum the possibility of study for professionals who must combine their training with the rest of their daily obligations.

This **Postgraduate Diploma in Electrotherapy and Analgesia in Physical Activity and Sport** 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 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
- News on the role of the sports science professional in the application of electrotherapy
- Practical exercises where self-assessment can be used to improve learning
- Algorithm-based interactive learning system for decision-making in the situations that are presented to the student
- Its special emphasis on research methodologies on electrotherapy applied to sports sciences
- 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

Immerse yourself in the study of this high-level Postgraduate Diploma and improve your skills as a sports professional"

This Postgraduate Diploma is the best investment you can make in the selection of a refresher program for two reasons: in addition to updating your knowledge in electrotherapy, you will obtain a certificate from the leading online university in Spanish: TECH"

The Postgraduate Diploma offers training in simulated environments, which provides an immersive learning experience designed to train for real-life situations.

This 100% online Postgraduate Diploma will allow you to balance your studies with your professional work while expanding your knowledge in this field.

The teaching staff includes professionals from the field of sports science, who bring their experience to this training program, as well as renowned specialists from leading societies and prestigious universities.

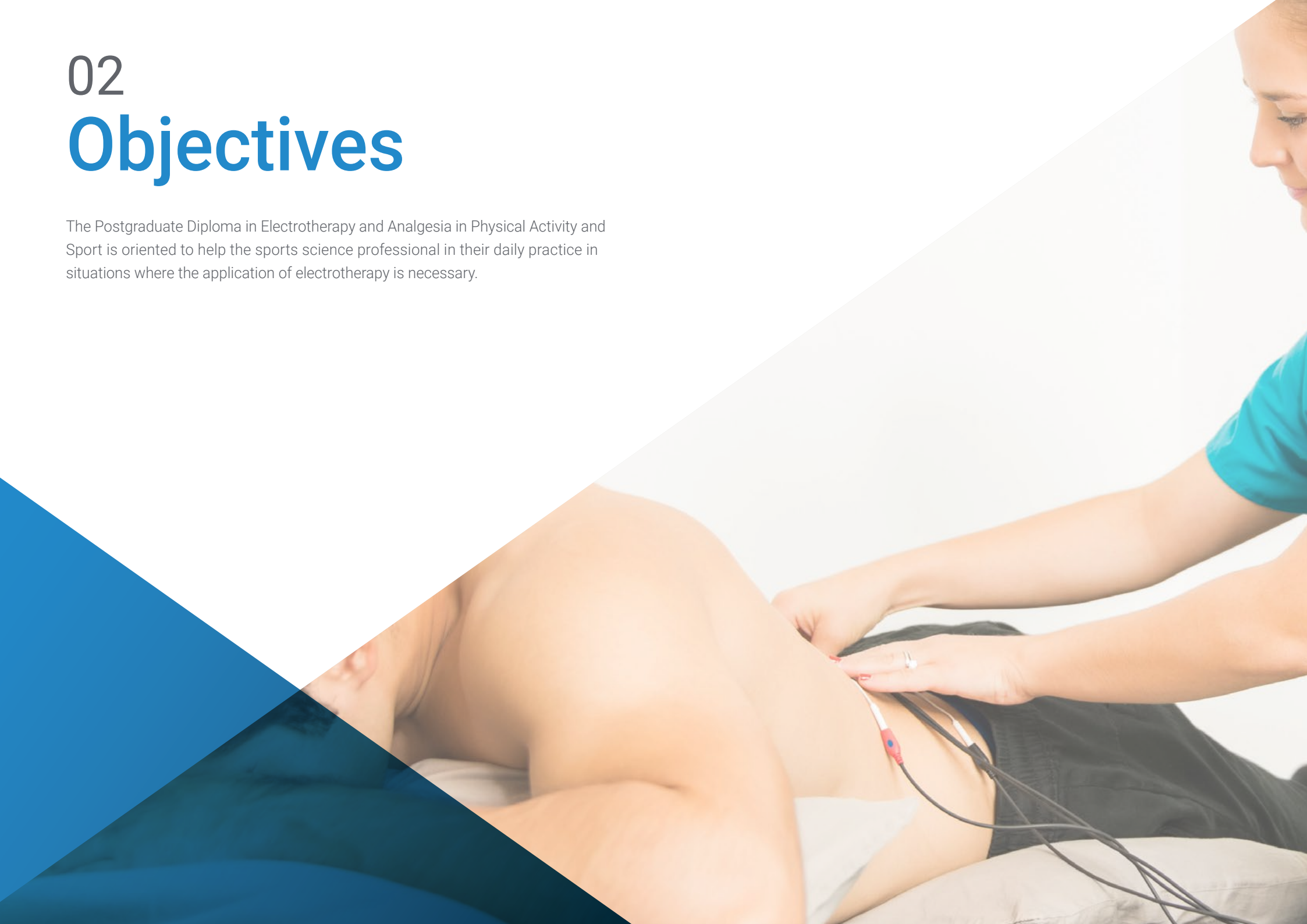
The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive education programmed to learn in real situations.

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

02

Objectives

The Postgraduate Diploma in Electrotherapy and Analgesia in Physical Activity and Sport is oriented to help the sports science professional in their daily practice in situations where the application of electrotherapy is necessary.



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

General Objectives

- Update the knowledge of sports science professionals 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 audiovisual system, and the possibility of development through online simulation workshops and/or specific training
- Encourage professional stimulation through continuing education and research

Specific Objectives

- Update your knowledge of electrotherapy in the field of rehabilitation of patients with musculoskeletal pathology
- Update knowledge about electrotherapy in the field of rehabilitation of patients with neurological pathology
- Know in depth the neurological lesion and its rehabilitation by means of electrotherapeutic agents

The sports field requires prepared professionals and we give you the keys to position yourself among the professional elite"

03

Course Management

Our team of teachers, experts in electrotherapy, has a wide prestige in the profession and are professionals with years of teaching experience who have come together to help you give a boost to your profession. For this reason, they have developed this Postgraduate Diploma with recent updates on the subject that will allow you to train and increase your skills in this sector.

Learn from the best professionals and become a successful professional yourself"

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
- PhD Candidate in ARD

Professors

Mr. Suso Martí, Luis

- Degree in Physiotherapy
- Master's Degree in "Advanced Physiotherapy in Pain Management"
- Doctoral candidate

Dr. Cuenca Martínez, Ferrán

- Degree in Physiotherapy
- Master's Degree in "Advanced Physiotherapy in Pain Management"
- Doctoral candidate

Mr. Gurdiel Álvarez, Francisco.

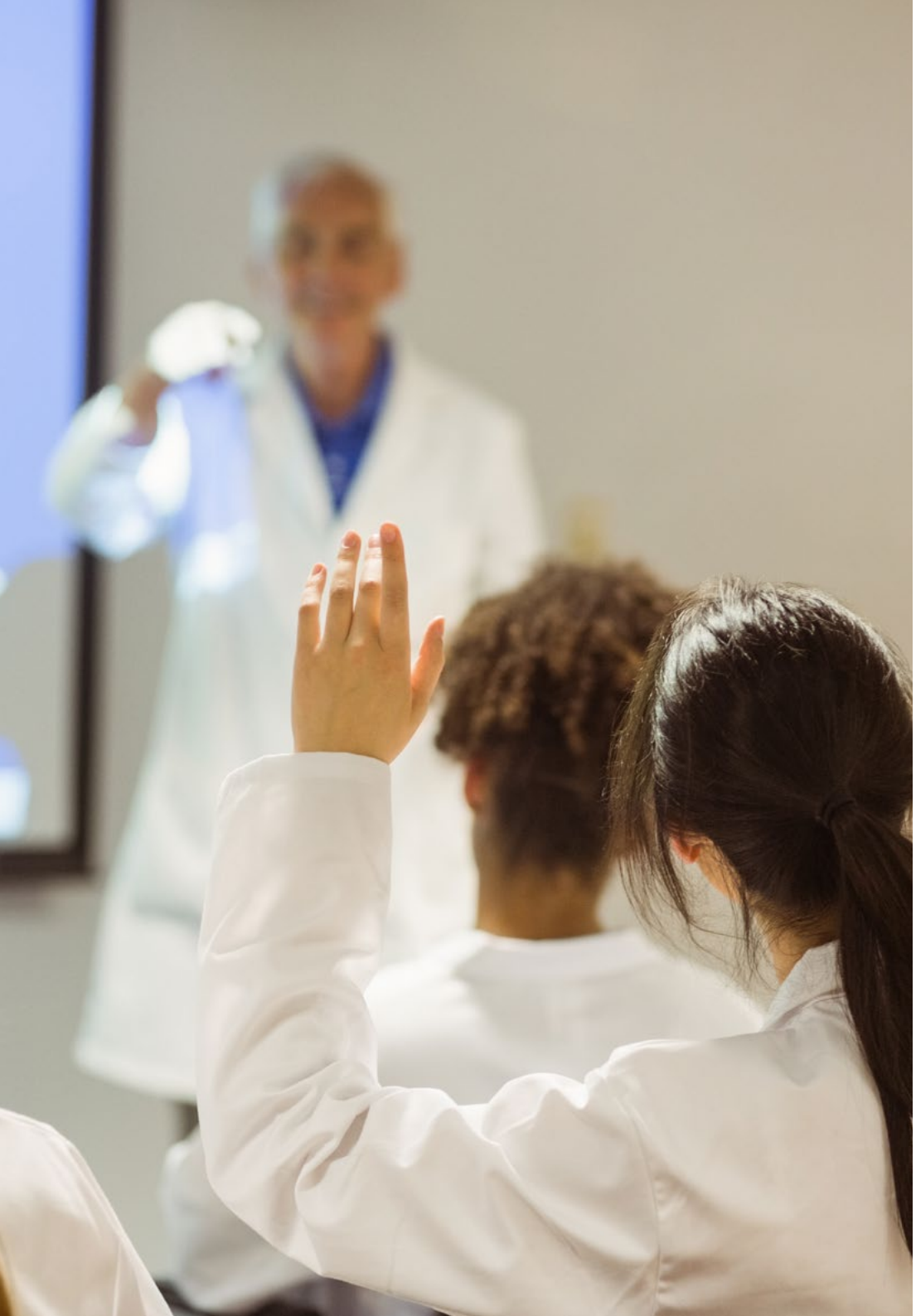
- Degree in Physiotherapy
- Postgraduate Diploma in Orthopedic Manual Therapy and Myofascial Pain Syndrome
- Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain Management

Ms. Merayo Fernández, Lucía.

- Degree in Physiotherapy
- Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal 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

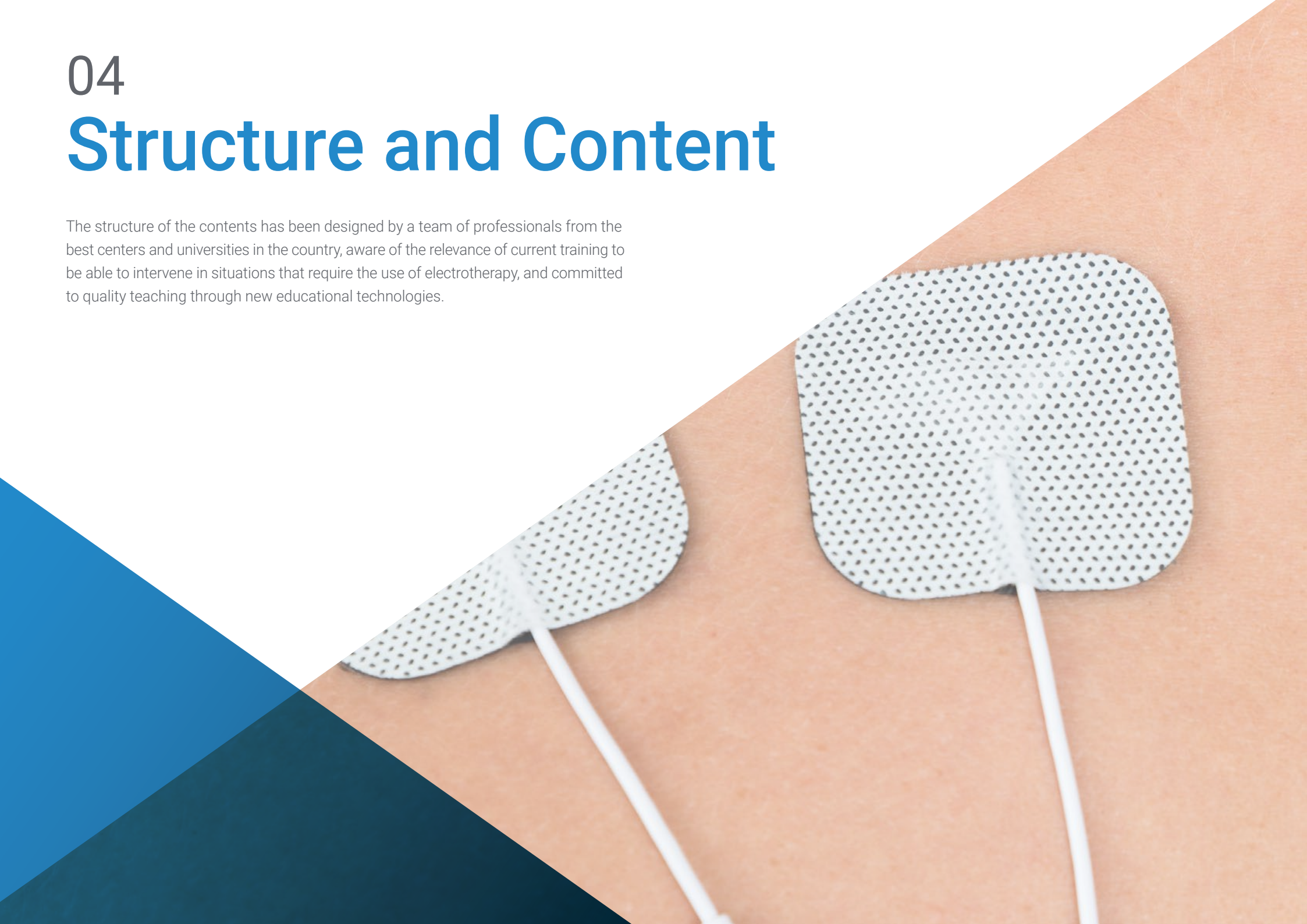


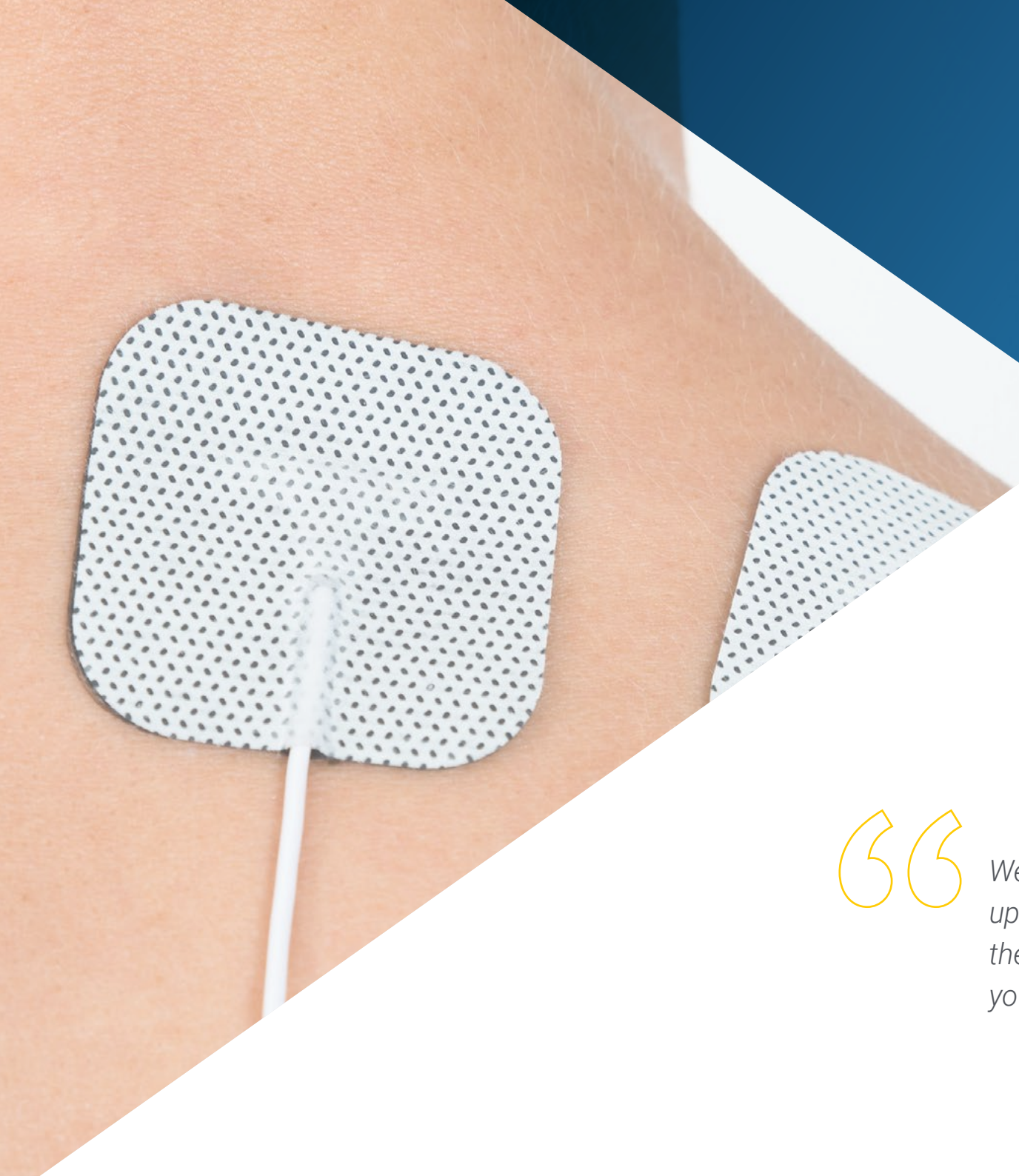
Our teaching team will provide you with all their knowledge so that you are up to date with the latest information on the subject"

04

Structure and Content

The structure of the contents has been designed by a team of professionals from the best centers and universities in the country, aware of the relevance of current training to be able to intervene in situations that require the use of electrotherapy, and committed to quality teaching through new educational technologies.





We have the most complete and up-to-date scientific program on the market. We want to put at your disposal the best training"

Module 1. High Frequency Electrotherapy

1.1. Physical Fundamentals of High Frequency
- 1.1.1. Introduction
- 1.1.2. Physical Principles

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 Shortwave: Capacitive Application Mode.
- 1.4.2. Short Wave: Inductive Application Mode
- 1.4.3 Shortwave: 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 Contraindications

1.9. Fundamentals of Techartherapy
- 1.9.1. Physiological Effects of Techarterapy
- 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. Ultrasound Therapy in Physiotherapy

2.1. Physical Principles of Ultrasound Therapy
- 2.1.1. Definition of Ultrasound Therapy
- 2.1.2. Main Physical Principles of Ultrasound Therapy

2.2 Physiological Effects of Ultrasound Therapy
- 2.2.1. Mechanisms of Action of Therapeutic Ultrasound
- 2.2.2. Therapeutic Effects of Ultrasound Therapy

2.3. Main Parameters of Ultrasound Therapy
- 2.3.1. Introduction
- 2.3.2. Main Parameters

2.4. Practical Applications
- 2.4.1. Ultrasound Treatment Methodology
- 2.4.2. Practical Applications and Indications of Ultrasound Therapy
- 2.4.3. Ultrasound Therapy Research Studies

2.5. Ultrasonophoresis
- 2.5.1. Definition of Ultrasonophoresis
- 2.5.2. Mechanisms of Ultrasonophoresis
- 2.5.3. Factors on Which the Effectiveness of Ultrasonophoresis Depends
- 2.5.4. Ultrasonophoresis Considerations to Take into Account
- 2.5.5. Research Studies on Ultrasonophoresis

2.6. Contraindications to Ultrasound Therapy
- 2.6.1. Absolute Contra-indications
- 2.6.2. Relative Contra-indications
- 2.6.3. Precautions
- 2.6.4. Recommendations
- 2.6.5. Contraindications to Ultrasonophoresis

2.7. High Frequency Ultrasound Therapy. High Frequency Pressure Waves (HFPW)
- 2.7.1. Definition of HFPW Therapy
- 2.7.2. Parameters of HFPW Therapy and HIFU Therapy

2.8. Practical Applications of High Frequency Ultrasound Therapy
- 2.8.1. Indications for HFPW and HIFU Therapy
- 2.8.2. HFPW and HIFU Therapy Research Studies

2.9. Contraindications to High Frequency Ultrasound Therapy
- 2.9.1. Introduction
- 2.9.2. Different Contraindications

Module 3. Electrotherapy and Analgesia

3.1. Definition of Pain. Concept of Nociception
- 3.1.1. Definition of Pain
  - 3.1.1.1. Characteristics of Pain
  - 3.1.1.2. Other Concepts and Definitions Related to Pain
  - 3.1.1.3. Types of Pain
- 3.1.2. Concept of Nociception
  - 3.1.2.1. Peripheral Part Nociceptive System
  - 3.1.2.2. Central Part Nociceptive System

3.2. Main Nociceptive Receptors
- 3.2.1. Nociceptor Classification
  - 3.2.1.1. According to Driving Speed
  - 3.2.1.2. According to Location
  - 3.2.1.3. According to Stimulation Modality
- 3.2.2. Nociceptor Functioning

3.3. Main Nociceptive Pathways
- 3.3.1. Basic Structure of the Nervous System
- 3.3.2. Ascending Spinal Pathways
  - 3.3.2.1. Spinothalamic Tract (TET)
  - 3.3.2.2. Spinoreticular Tract (SRT)
  - 3.3.2.3. Spinomesencephalic Tract (SRT)
- 3.3.3. Trigeminal Ascending Pathways
  - 3.3.3.1. Trigeminothalamic Tract or Trigeminal Lemniscus
- 3.3.4. Sensitivity and Nerve Pathways
  - 3.3.4.1. Exteroceptive Sensitivity
  - 3.3.4.2. Proprioceptive Sensitivity
  - 3.3.4.3. Interoceptive Sensitivity
  - 3.3.4.4. Other Fascicles Related to Sensory Pathways

3.4. Transmitter Mechanisms of Nociceptive Regulation
- 3.4.1. Transmission at the Spinal Cord Level (PHSC)
- 3.4.2. APME Neuron Characteristics
- 3.4.3. Redex Lamination
- 3.4.4. Biochemistry of Transmission at the PHSC Level.
  - 3.4.4.1. Presynaptic and Postsynaptic Channels and Receptors
  - 3.4.4.2. Transmission at the Level of Ascending Spinal Tract
  - 3.4.4.3. Spinothalamic Tract (STT)
  - 3.4.4.4. Transmission at the Level of the Thalamus
  - 3.4.4.5. Ventral Posterior Nucleus (VPN)
  - 3.4.4.6. Medial Dorsal Nucleus (MDN)
  - 3.4.4.7. Intralaminar Nuclei
  - 3.4.4.8. Posterior Region
  - 3.4.4.9. Transmission at the Level of the Cerebral Cortex
  - 3.4.4.10. Primary Somatosensory Area (S1)
  - 3.4.4.11. Secondary Somatosensory or Association Area (S2)

3.4.5. Gate Control
3.4.5.1. Modulation Segmental Level
3.4.5.2. Suprasegmental Modulation
3.4.5.3. Considerations
3.4.5.4. Control Gate Theory Review
3.4.6. Descending Routes
3.4.6.1. Brainstem Modulatory Centers
3.4.6.2. Diffuse Noxious Inhibitory Control (DNIC)
3.5. Modulatory Effects of Electrotherapy
3.5.1. Pain Modulation Levels
3.5.2. Neuronal Plasticity
3.5.3. Sensory Pathway Theory of Pain
3.5.4. Electrotherapy Models
3.6. High Frequency and Analgesia
3.6.1. Heat and Temperature
3.6.2. Effects
3.6.3. Application Techniques
3.6.4. Dosage
3.7. Low Frequency and Analgesia
3.7.1. Selective Stimulation
3.7.2. TENS and Control Gate
3.7.3. Post-Excitatory Depression of Orthosympathetic Nervous System
3.7.4. Theory of Endorphin Release
3.7.5. TENS Dosage
3.8. Other Parameters Related to Analgesia
3.8.1. Electrotherapy Effects
3.8.2. Dosage in Electrotherapy

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.

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.

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

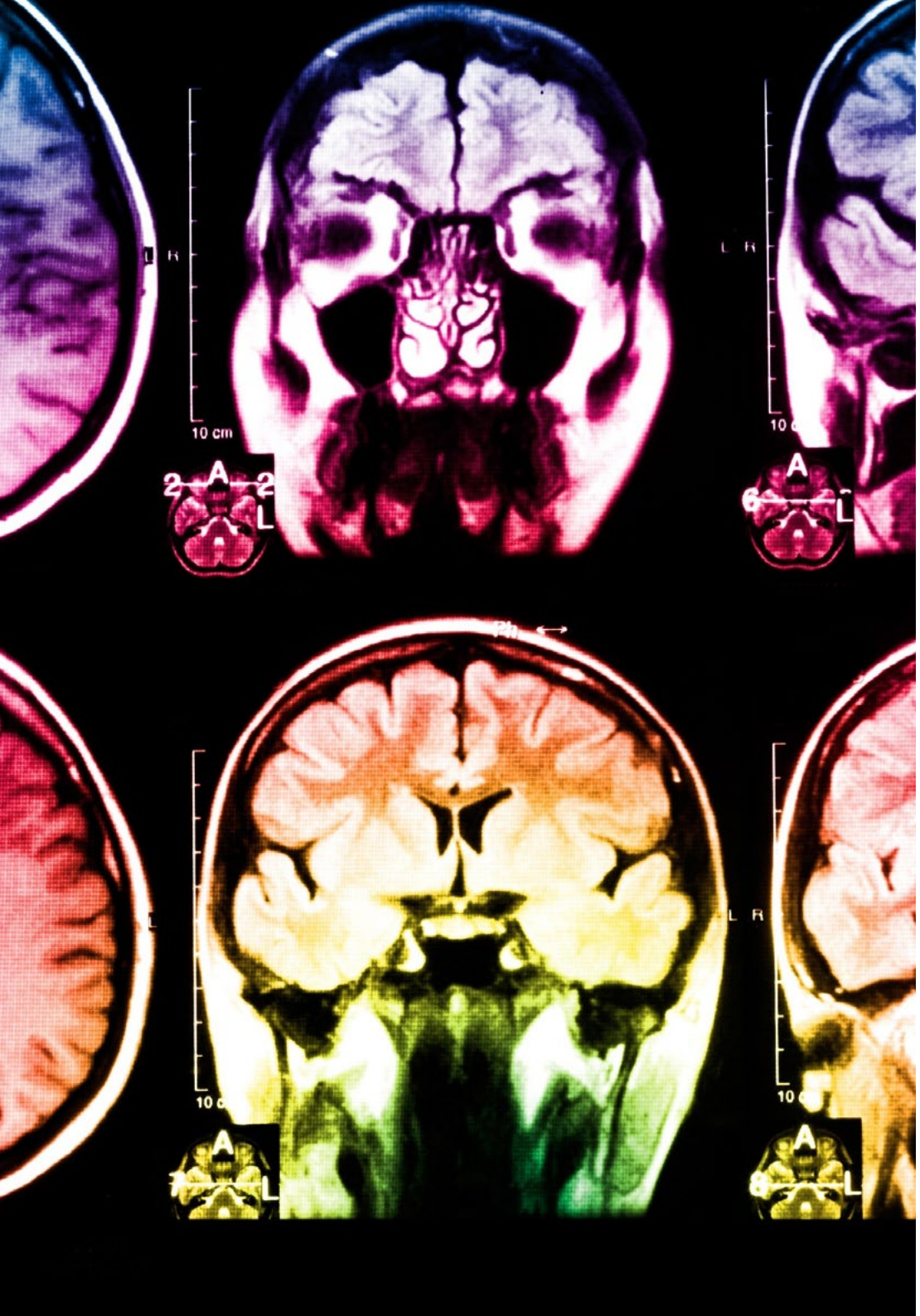
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

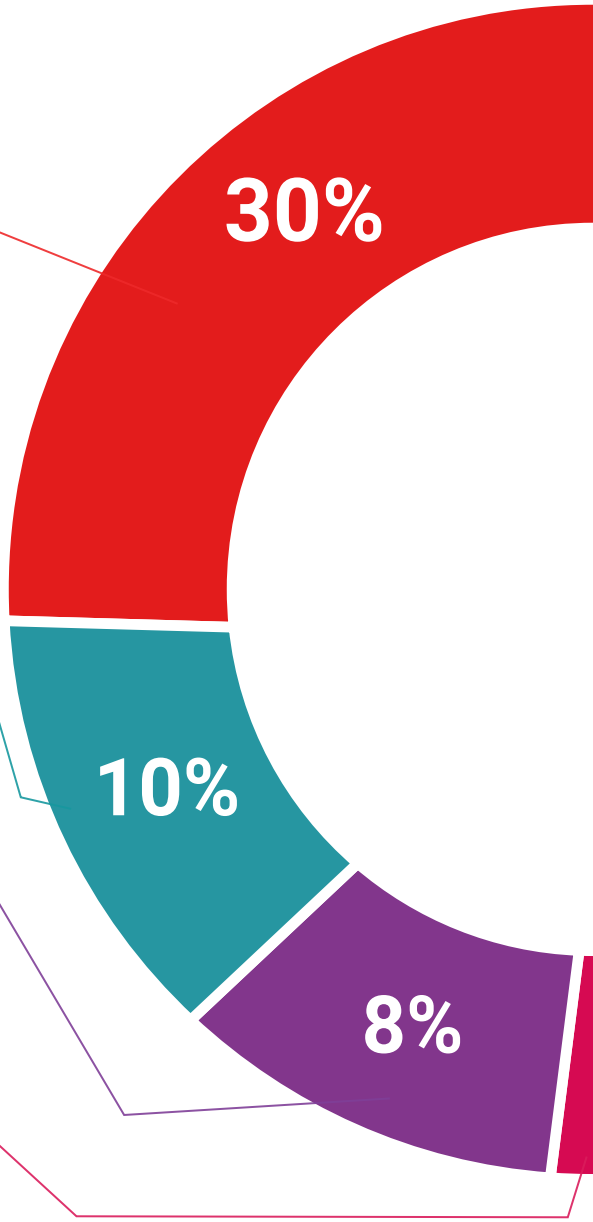
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

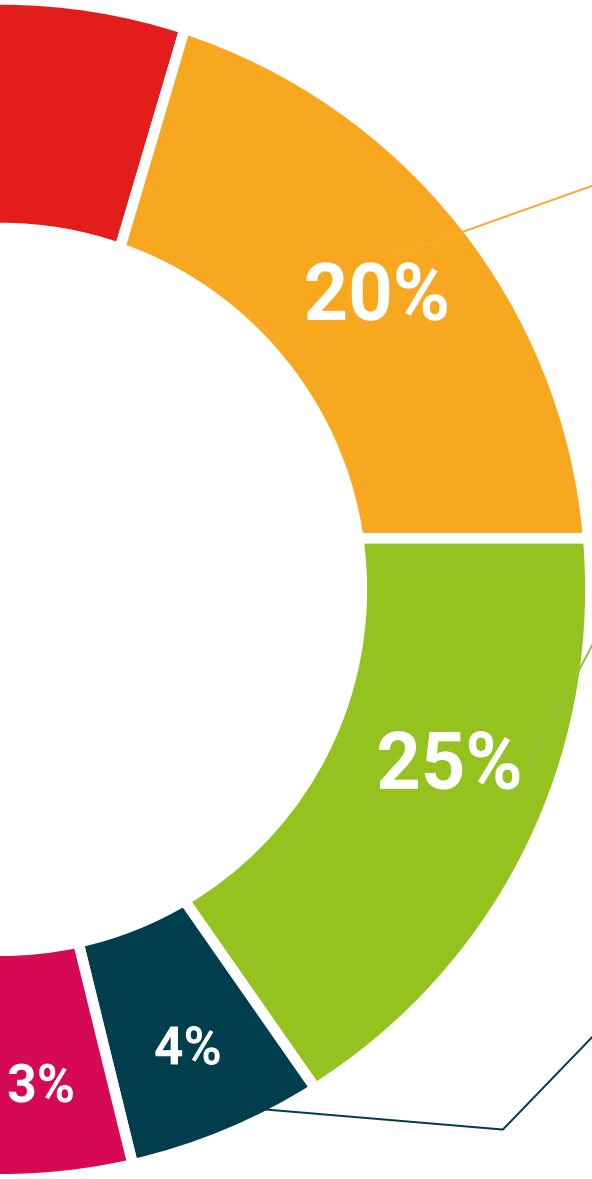
Practising Skills and Abilities

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 university Postgraduate Diploma in Electrotherapy and Analgesia 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.

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

This **Postgraduate Diploma in Electrotherapy and Analgesia 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 diploma 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 Electrotherapy and Analgesia in Physical Activity and Sport**

Official Nº of Hours: **400 h**.

Endorsed by the NBA


tech technological university

Awards the following

DIPLOMA

to

Mr./Ms. _____, with identification number _____.

For having passed and accredited the following program

POSTGRADUATE DIPLOMA

in

Electrotherapy and Analgesia in Physical Activity and Sport

This is a qualification awarded by this University, equivalent to 450 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

Tere Guevara Navarro

Dean

Unique TECH Code: AFWORD23S techtitute.com/certificates

*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.

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