Professional Master's Degree

Electrotherapy in Physical Activity and Sport

Endorsed by the NBA

tech technological university

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Professional Master's Degree
Electrotherapy in Physical Activity and Sport

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Technological University**
- Dedication: **16h/week**
- Schedule: **at your own pace**
- Exams: **online**

Website: **www.techtitute.com/us/sports-science/professional-master-degree/master-electrotherapy-physical-activity-sport**

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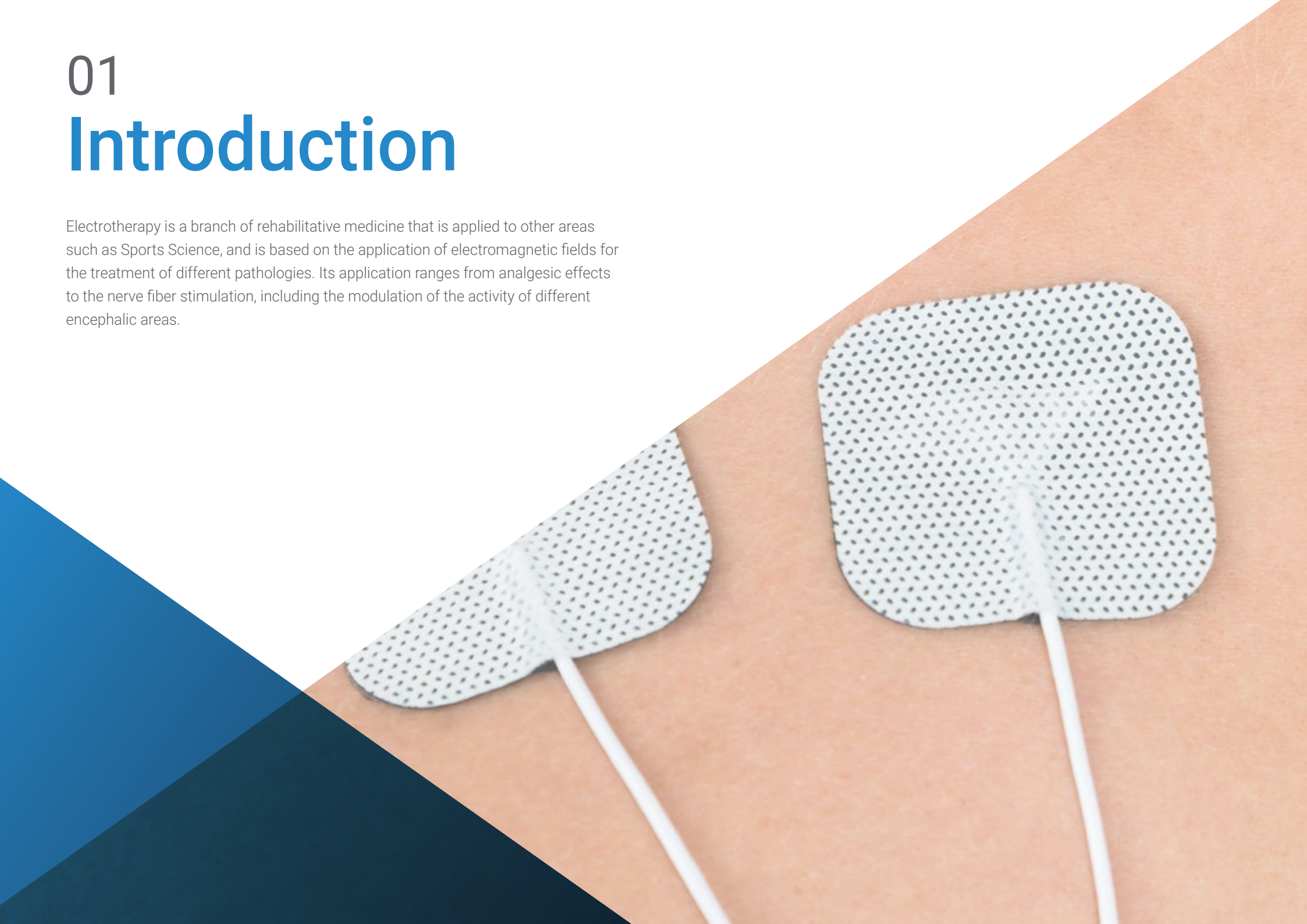
01

Introduction

Electrotherapy is a branch of rehabilitative medicine that is applied to other areas such as Sports Science, and is 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.



This program will generate a sense of security in the performance of the Sports Science specialist's daily practice that will help them grow personally and professionally"

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.

The field of application of electrotherapy is very wide, so it is necessary to have an extensive knowledge of both the physiological functioning of the subject, as well as the most appropriate agent in each case. This knowledge ranges from muscle contraction mechanisms to somatosensory transmission mechanisms, which makes it essential for the Sports Science professional to know both the pathophysiological mechanisms of the subject and the physical-chemical bases 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 Professional Master's Degree in Electrotherapy in Physical Activity and Sport is to present in an up-to-date way the 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 bases are always presented at the beginning of each module, so that learning is complete. Each module is supported by practical applications of each type of current, so that the integration of the knowledge of the pathology and its treatment is complete.

This **Professional Master's Degree in Electrotherapy 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 more than 75 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 Science
- 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 Professional Master's Degree and improve your skills as a sports science professional"

This Professional Master's Degree 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 Professional Master's Degree from TECH Technological University"

This Professional Master's Degree offers education in simulated environments, which provides an immersive learning experience designed to prepare for real-life situations.

This 100% online Professional Master's Degree will allow you to balance your studies with your professional work while increasing 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 during the educational year. For this purpose, the professional will be assisted by an innovative interactive video system developed by renowned and experienced experts in electrotherapy in physical activity and sports.

02

Objectives

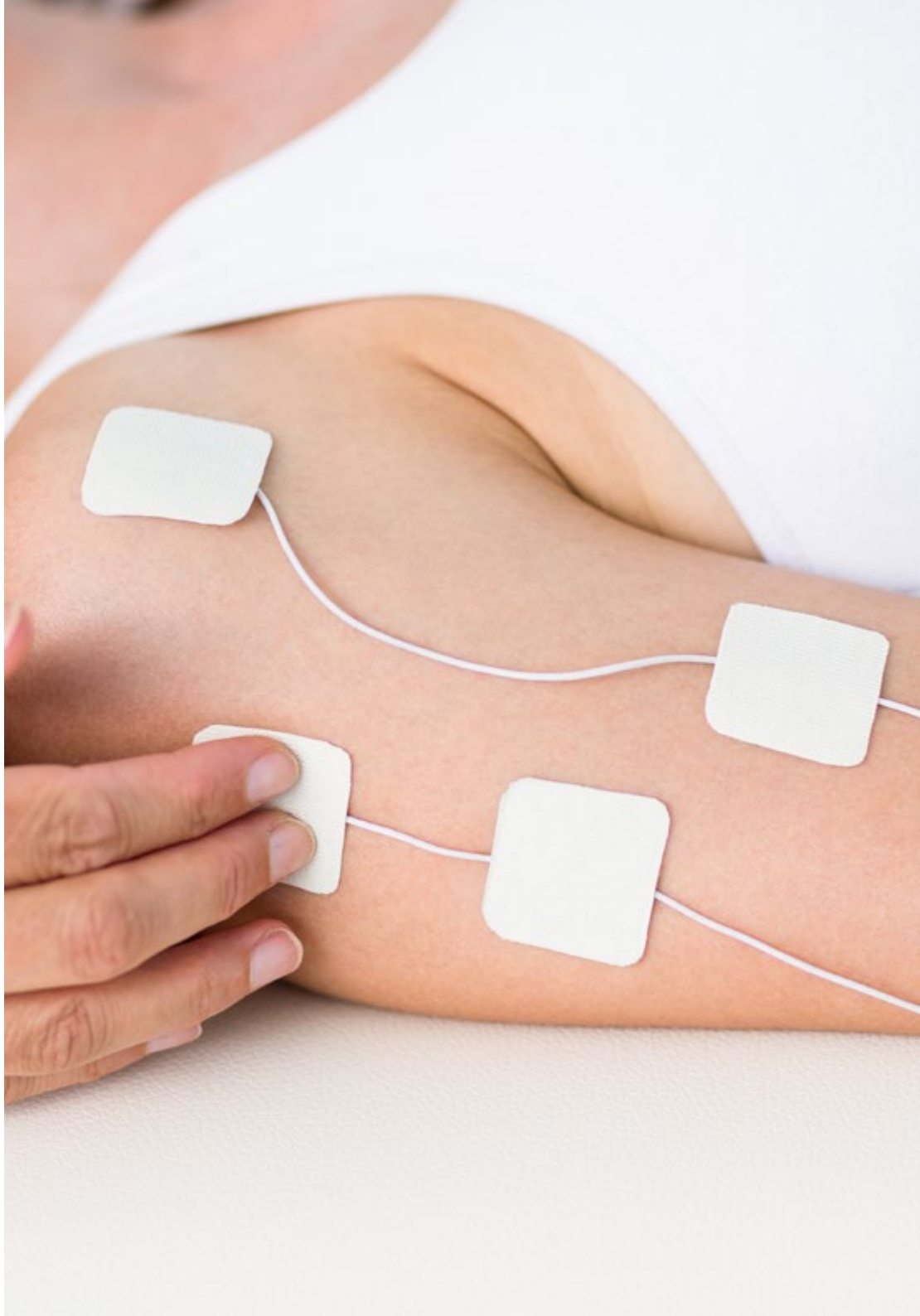
The program in Electrotherapy in Physical Activity and Sport is oriented to facilitate the professional's performance in their daily practice related to musculoskeletal pathology and the application of electrotherapy.

This program 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 education
- Encourage professional stimulation through continuous education and research

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



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. Ultrasound Therapy in Physiotherapy

- Identify current and developing therapeutic possibilities in the field of neuromusculoskeletal rehabilitation
- Update your knowledge of nociceptive transmission, as well as its modulation mechanisms by physical means

Module 3. Other Electromagnetic Fields

- Know the muscular contraction and its rehabilitation by physical means, applying Electrotherapy as the main agent
- Master the rehabilitation of neurological injury and its rehabilitation via electrotherapeutic agents

Module 4. General Principles of Electrotherapy

- Learn about new applications of electromagnetic agents in the rehabilitation of neurological patients
- Understand the scope of new invasive electrotherapy applications for pain modulation

Module 5. 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 6. Electrostimulation in the Neurological Patient

- Broaden your knowledge of new applications of Ultrasound Therapy in the rehabilitation of neuromusculoskeletal pathologies
- Identify new applications of electromagnetic laser radiation in the rehabilitation of neuromusculoskeletal pathologies

Module 7. Electrotherapy and Analgesia

- Broaden the knowledge of new applications of electrotherapy in the rehabilitation of urogynecological pathologies
- Delve into electrotherapy in the field of rehabilitation of patients with musculoskeletal pathology

Module 8. Transcutaneous Electrical Nerve Stimulation (TENS)

- Analyze the Transcutaneous Electrical Nerve Stimulation (TENS)
- Know the analgesic effects of high frequency TENS

Module 9. Interferential Currents

- Identify the main effects of high frequency
- Discover the latest high frequency applications

Module 10. Invasive Treatment in Electrotherapy

- Describe the dry needling technique
- Understand the importance of post-puncture effects

Module 11. Magnetotherapy in Physiotherapy

- Explore in depth the therapeutic effects of magnetotherapy
- Identify the clinical applications of Magnetotherapy

Module 12. Non-Invasive Brain Stimulation

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

03

Skills

After passing the evaluations of the Professional Master's Degree in Electrotherapy in Physical Activity and Sport, the professional will have acquired the necessary skills for a quality and up-to-date practice based on the most innovative teaching methodology.

This program will help you acquire the skills you need to excel in your daily work”

General Skills

- Possess and understand knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context
- Apply acquired knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study
- Integrate knowledge and face the complexity of making judgments based on incomplete or limited information, including reflections on the social and ethical responsibilities linked to the application of their knowledge and judgments
- Communicate their conclusions and the ultimate knowledge and rationale behind them to specialized and non-specialized audiences in a clear and unambiguous manner
- Acquire the learning skills that will enable them to continue studying in a manner that will be largely self-directed or autonomous

Specific Skills

- Know the physical bases of the different types of electrotherapy used in rehabilitation
- Understand the physiological fundamentals of each type of current
- Know the therapeutic effects of each type of current
- Perform the practical application of each type of current in different pathologies
- Refresh the main concepts of each type of current
- Incorporate new technologies into daily practice, knowing their advances, limitations and future potential

Increase your skills with our high quality program and give your career a boost"

04

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. To this end, they have developed this Master's Degree with the latest developments in the field that will allow you to train and increase your skills in this sector.

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

Guest Directors

Ms. Sanz Sánchez, Marta

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

Mr. Hernández, Elías

- Supervisor of the Rehabilitation Service Unit of the 12 de Octubre University Hospital
- Physiotherapist at the University Hospital of Guadalajara
- Postgraduate Certificate in Physiotherapy from the European University of Madrid
- Degree in Physiotherapy from Comillas Pontifical University
- Master's Degree in Osteopathy by Gimbernat University School

Management

Dr. León Hernández, Jose Vicente Physiotherapist expert in the Study and Treatment of Pain and Manual Therapy

- Doctorate in Physiotherapy from the Rey Juan Carlos University
- Master's Degree in the Study and Treatment of Pain 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
- Member and training coordinator at the Institute of Neuroscience and Movement Sciences

Professors

Dr. Gurdiel Álvarez, Francisco

- Physiotherapist at Fisad Clinic
- Physiotherapist for Ponferradina Sports Society
- D. in Health Sciences from the Rey Juan Carlos University
- Degree in Physiotherapy by the University of Leon
- Degree in Psychology from UNED
- Master in Advanced Physiotherapy in the Treatment of Musculoskeletal Pain by the Autonomous University of Madrid
- Expert in Orthopedic Manual Therapy and Myofascial Pain Syndrome by the European University

Mr. Losana Ferrer, Alejandro

- Clinical Physiotherapist and Trainer in New Technologies for Rehabilitation at Rebiotex
- Treatment of Motor Imagery and the Observation of Actions
- Physiotherapist in CEMTRO Clinic
- Professional Master's Degree in Advanced Physiotherapy in Musculoskeletal Pain Management
- Expert in Neuroorthopedic Manual Therapy
- University Advanced Training in Therapeutic Exercise and Invasive Physiotherapy for Musculoskeletal Pain
- Graduate in Physiotherapy in La Salle

Mr. Suso Martí, Luis

- Physiotherapist
- Researcher at the Institute for Neurosciences and Movement Sciences
- Contributor to the popular science magazine NeuroRhab News
- Physiotherapy Degree: University of Valencia
- Doctorate, Autonomous University of Madrid
- Degree in Psychology Open University of Catalonia
- Master's Degree in "Advanced Physiotherapy in Pain Management"

Dr. Cuenca - Martínez, Ferrán

- Physiotherapist Expert in Pain Management
- Physiotherapist at FisioCranioClinic
- Physiotherapist at the Institute of Functional Rehabilitation La Salle
- Researcher at the Center for Higher University Studies (CSEU La Salle)
- Researcher at EXINH Research Group
- Researcher in the Motion in Brans Research Group of the Institute of Neuroscience and Movement Sciences (INCIMOV)
- Chief editor of The Journal of Move and Therapeutic Science
- Editor and publisher of NeuroRehab News magazine
- Author of several scientific articles in national and international journals
- PhD in Medicine and Surgery from the Autonomous University of Madrid
- Graduate in Physiotherapy from the University of Valencia
- Master's Degree in Advanced Physiotherapy in Pain Treatment by the UAM

Ms. Merayo Fernández, Lucía

- Physiotherapist Expert in Pain Management
- Physiotherapist in the Navarra Health Service
- Physiotherapist. Doctor San Martin Ambulatory
- Degree in Physiotherapy

Mr. Izquierdo García, Juan

- Physiotherapist at the Cardiac Rehabilitation Unit of the 12 de Octubre University Hospital
- Diploma in Physiotherapy from the Rey Juan Carlos University
- University Specialist in Heart Failure by the University of Murcia
- Master's Degree in Health Care Management from the University of the Mid-Atlantic
- Postgraduate Diploma in Manual Therapy in Muscular and Neuromeningeal Tissue by the Universidad Rey Juan Carlos
- Member of: Multidisciplinary Cardiac Rehabilitation Unit of the 12 de Octubre University Hospital

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
- Postgraduate Diploma in Manual Lymphatic Drainage by the European University of Madrid
- Professional Master's Degree in Osteopathy (Eur. Ost DO). Francisco de Vitoria University-School of Osteopathy. FBEO

05

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 provide you with the best training"

Module 1. High Frequency Electrotherapy

1.1. Physical Fundamentals of High Frequency
- 1.1.1. Introduction
- 1.1.2. Basic 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. 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 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. Main Contraindications

Module 3. Other Electromagnetic Fields

3.1. Laser. Physical principles |
- 3.1.1. Laser. Definition
- 3.1.2. Laser Parameters
- 3.1.3. Laser. Classification
- 3.1.4. Laser. Physical principles |

3.2. Laser. Physiological Effects
- 3.2.1. Interrelationship between Laser and Living Tissues
- 3.2.2. Biological Effects of Low and Medium Power Lasers
- 3.2.3. Direct Effects of Laser Application
  - 3.2.3.1. Photothermal Effect
  - 3.2.3.2. Photochemical Effect
  - 3.2.3.3. Photoelectric Stimulus
- 3.2.4. Indirect Effects of Laser Application
  - 3.2.4.1. Microcirculation Stimulation
  - 3.2.4.2. Trophism Stimulus and Repair

3.3. Laser. Therapeutic Effects
- 3.3.1. Analgesia
- 3.3.2. Inflammation and Edema
- 3.3.3. Reparation
- 3.3.4. Dosimetry
  - 3.3.4.1. Recommended Treatment Dose in Low Level Laser Application according to WALT

3.4. Laser. Clinical Applications
- 3.4.1. Laser Therapy in Osteoarthritis
- 3.4.2. Laser Therapy in Chronic Low Back Pain
- 3.4.3. Laser Therapy in Epicondylitis
- 3.4.4. Laser Therapy in Rotator Cuff Tendinopathy
- 3.4.5. Laser Therapy in Cervicalgias
- 3.4.6. Laser Therapy in Musculoskeletal Disorders
- 3.4.7. Other Practical Laser Applications
- 3.4.8. Conclusions

3.5. Laser. Contraindications
- 3.5.1. Precautions
- 3.5.2. Contraindications
  - 3.5.2.1. Conclusions

3.6. Infrared Radiation. Physical principles |
- 3.6.1. Introduction
  - 3.6.1.1. Definition
  - 3.6.1.2. Classification
- 3.6.2. Infrared Radiation Generation
  - 3.6.2.1. Luminous Emitters
  - 3.6.2.2. Non-Luminous Emitters
- 3.6.3. Physical Properties

3.7. Infrared Physiological Effects
- 3.7.1. Physiological Effects Produced on the Skin
- 3.7.2. Infrared and Chromophores in Mitochondria
- 3.7.3. Radiation Absorption in Water Molecules
- 3.7.4. Infrared at the Cell Membrane
- 3.7.5. Conclusions

3.8. Therapeutic Effects of Infrared
- 3.8.1. Introduction
- 3.8.2. Local Effects of Infrared
  - 3.8.2.1. Erythematous
  - 3.8.2.2. Anti-inflammatory
  - 3.8.2.3. Scarring
  - 3.8.2.4. Sweating
  - 3.8.2.5. Relaxation
  - 3.8.2.6. Analgesia
- 3.8.3. Systemic Infrared Effects
  - 3.8.3.1. Cardiovascular System Benefits
  - 3.8.3.2. Systemic Muscle Relaxation
- 3.8.4. Dosimetry and Infrared Application
  - 3.8.4.1. Infrared Lamps
  - 3.8.4.2. Non-Luminous Lamps
  - 3.8.4.3. Luminous Lamps
  - 3.8.4.4. Monochromatic Infrared Energy (MIRE)
- 3.8.5. Conclusions

3.9. Practical Applications
- 3.9.1. Introduction
- 3.9.2. Clinical Applications
  - 3.9.2.1. Osteoarthritis and Infrared Radiation
  - 3.9.2.2. Lumbago and Infrared Radiation
  - 3.9.2.3. Fibromyalgia and Infrared
  - 3.9.2.4. Infrared Saunas in Cardiopathies
- 3.9.3. Conclusions

3.10. Infrared Contraindications
- 3.10.1. Precautions/Adverse Effects
  - 3.10.1.1. Introduction
  - 3.10.1.2. Consequences of Poor Infrared Dosing
  - 3.10.1.3. Precautions
  - 3.10.1.4. Formal Contraindications
- 3.10.2. Conclusions

Module 4. General Principles of Electrotherapy

4.1. Physical Basis of Electric Current
- 4.1.1. Brief Historical Recollection
- 4.1.2. Definition and Physical Basis of Electrotherapy
  - 4.1.2.1. Potential Concepts

4.2. Main Parameters of the Electric Current
- 4.2.1. Pharmacology / Electrotherapy Parallelism
- 4.2.2. Main Parameters of the Waves: Waveform, Frequency, Intensity, and Pulse Width
- 4.2.3. Other Concepts: Voltage, Current and Resistance

4.3. Frequency-Dependent Classification of Currents
- 4.3.1. Classification according to Frequency: High, Medium and Low
- 4.3.2. Properties of Each Type of Frequency
- 4.3.3. Choice of the Most Suitable Current in Each Case

4.4. Waveform-Dependent Current Classification
- 4.4.1. General Classification: Direct and Alternating or Variable currents
- 4.4.2. Classification of the Variable Currents: Interrupted and Uninterrupted
- 4.4.3. Spectrum Concept

4.5. Current Transmission: Electrodes
- 4.5.1. General Information on Electrodes
- 4.5.2. Importance of Tissue Impedance
- 4.5.3. General Precautions

4.6. Types of Electrodes
- 4.6.1. Brief Recollection of the Historical Evolution of Electrodes
- 4.6.2. Considerations on Maintenance and Use of Electrodes
- 4.6.3. Main Types of Electrodes
- 4.6.4. Electrophoretic Application

4.7. Bipolar Application
- 4.7.1. Bipolar Application Overview
- 4.7.2. Electrode Size and Area to be Treated
- 4.7.3. Application of More Than Two Electrodes

4.8. Four-pole Application
- 4.8.1. Possibility of Combinations
- 4.8.2. Application in Electrostimulation
- 4.8.3. Tetrapolar Application in Interferential Currents
- 4.8.4. General Conclusions

4.9. Importance of Polarity Alternation
- 4.9.1. Brief Introduction to Galvanism
- 4.9.2. Risks Derived from Load Accumulation
- 4.9.3. Polar Behavior of Electromagnetic Radiation

Module 5. Electrostimulation for Muscle Strengthening

5.1. Principles of Muscle Contraction
- 5.1.1. Introduction to Muscle Contraction
- 5.1.2. Types of Muscles
- 5.1.3. Muscle Characteristics
- 5.1.4. Muscle Functions
- 5.1.5. Neuromuscular Electro Stimulation

5.2. Sarcomere Structure
- 5.2.1. Introduction
- 5.2.2. Sarcomere Functions
- 5.2.3. Sarcomere Structure
- 5.2.4. Sliding Filament Theory

5.3. Motor Plate Structure
- 5.3.1. Motor Unit Concept
- 5.3.2. Concept of Neuromuscular Junction and Motor Plate
- 5.3.3. Structure of the Neuromuscular Junction
- 5.3.4. Neuromuscular Transmission and Muscle Contraction

5.4. Type of Muscle Contraction
- 5.4.1. Concept of Muscle Contraction
- 5.4.2. Types of Contraction
- 5.4.3. Isotonic Muscle Contraction
- 5.4.4. Isometric Muscle Contraction
- 5.4.5. Relationship between Strength and Endurance in Contractions
- 5.4.6. Auxotonic and Isokinetic Contractions

5.5. Types of Muscle Fibers
- 5.5.1. Types of Muscle Fibers
- 5.5.2. Slow-Twitch Fibers or Type I Fibers
- 5.5.3. Fast-Twitch Fibers or Type II Fibers

5.6. Main Neuromuscular Injuries
- 5.6.1. Neuromuscular Disease Concept
- 5.6.2. Etiology of Neuromuscular Diseases
- 5.6.3. Neuromuscular Junction Injury and NMD
- 5.6.4. Major Neuromuscular Injuries or Diseases

5.7. Principles of Electromyography
- 5.7.1. Electromyography Concept
- 5.7.2. Development of Electromyography
- 5.7.3. Electromyographic Study Protocol
- 5.7.4. Electromyography Methods

5.8. Main Excitomotor Currents. Neo-Faradic Currents
- 5.8.1. Definition of Excitomotor Current and Main Types of Excitomotor Currents
- 5.8.2. Factors Influencing the Neuromuscular Response
- 5.8.3. Exitomotor Currents Most Commonly Used Neo-Faradic Currents

5.9. Excitomotor Interferential Currents. Kotz Currents
- 5.9.1. Kotz Currents or Russian Currents
- 5.9.2. Most Relevant Parameters in Kotz Currents
- 5.9.3. Strengthening Protocol Described with Russian Current
- 5.9.4. Differences between Low Frequency and Medium Frequency Electrostimulation

5.10. Electrostimulation Applications in Uro-Gynecologic
- 5.10.1. Electrostimulation and Urogynecology
- 5.10.2. Types of Electrostimulation in Urogynecology
- 5.10.3. Placement of Electrodes
- 5.10.4. Mechanism of Action

5.11. Practical Applications
- 5.11.1. Recommendations for the Application of Excitomotor currents
- 5.11.2. Techniques of Application of Excitomorphic Currents
- 5.11.3. Examples of Work Protocols Described in Scientific Literature

5.12. Contraindications
- 5.12.1. Contraindications for the Use of Electrostimulation for Muscle Strengthening
- 5.12.2. Recommendations for Safe Electrostimulation Practice

Module 6. Electrostimulation in the Neurological Patient

6.1. Assessment of Nerve Injury. Principles of Muscle Innervation
- 6.1.1. Assessment of Nerve Injury
- 6.1.2. Principles of Muscle Innervation

6.2. Intensity/Time (I/T) and Amplitude/Time (A/T) Curves
- 6.2.1. Intensity/Tme Curves
- 6.2.2. Amplitude /Time Curves

6.3. Main Trends in Neurological Rehabilitation
- 6.3.1. Introduction to Neurological Rehabilitation
- 6.3.2. Main Currents

6.4. Electrotherapy for Motor Rehabilitation in the Neurological Patient
- 6.4.1. Neurological Patient
- 6.4.2. Electrotherapy for Motor Rehabilitation in this Patient

6.5. Electrotherapy for Somatosensory Rehabilitation in the Neurologic Patient
- 6.5.1. Introduction to Somatosensory Rehabilitation
- 6.5.2. Electrotherapy for Somatosensory Rehabilitation in the Neurologic Patient

6.6. Practical Applications
- 6.6.1. Case Studies

6.7. Contraindications
- 6.7.1. Adverse Effects

Module 7. Electrotherapy and Analgesia

7.1. Definition of Pain. Concept of Nociception
- 7.1.1. Definition of Pain
  - 7.1.1.1. Characteristics of Pain
  - 7.1.1.2. Other Concepts and Definitions Related to Pain
  - 7.1.1.3. Types of Pain
- 7.1.2. Concept of Nociception
  - 7.1.2.1. Peripheral Part Nociceptive System
  - 7.1.2.2. Central Part Nociceptive System

7.2. Main Nociceptive Receptors
- 7.2.1. Nociceptor Classification
  - 7.2.1.1. According to Driving Speed
  - 7.2.1.2. According to Location
  - 7.2.1.3. According to Stimulation Modality
- 7.2.2. Nociceptor Functioning

7.3. Main Nociceptive Pathways
- 7.3.1. Basic Structure of the Nervous System
- 7.3.2. Ascending Spinal Pathways
  - 7.3.2.1. Spinothalamic Tract (TET)
  - 7.3.2.2. Spinoreticular Tract (SRT)
  - 7.3.2.3. Spinomesencephalic Tract (SRT)
- 7.3.3. Trigeminal Ascending Pathways
  - 7.3.3.1. Trigeminothalamic Tract or Trigeminal Lemniscus
- 7.3.4. Sensitivity and Nerve Pathways
  - 7.3.4.1. Exteroceptive Sensitivity
  - 7.3.4.2. Proprioceptive Sensitivity
  - 7.3.4.3. Interoceptive Sensitivity
  - 7.3.4.4. Other Fascicles Related to Sensory Pathways

7.4. Transmitter Mechanisms of Nociceptive Regulation
- 7.4.1. Transmission at the Spinal Cord Level (PHSC)
- 7.4.2. APME Neuron Characteristics
- 7.4.3. Redex Lamination
- 7.4.4. Biochemistry of Transmission at the PHSC Level
  - 7.4.4.1. Presynaptic and Postsynaptic Channels and Receptors
  - 7.4.4.2. Transmission at the Level of Ascending Spinal Tract
  - 7.4.4.3. Spinothalamic Tract (STT)
  - 7.4.4.4. Transmission at the Level of the Thalamus
  - 7.4.4.5. Ventral Posterior Nucleus (VPN)
  - 7.4.4.6. Medial Dorsal Nucleus (MDN)
  - 7.4.4.7. Intralaminar Nuclei
  - 7.4.4.8. Posterior Region
  - 7.4.4.9. Transmission at the Level of the Cerebral Cortex
  - 7.4.4.10. Primary Somatosensory Area (S1)
  - 7.4.4.11. Secondary Somatosensory or Association Area (S2)

7.4.5. Gate Control
7.4.5.1. Modulation Segmental Level
7.4.5.2. Suprasegmental Modulation
7.4.5.3. Considerations
7.4.5.4. Control Gate Theory Review
7.4.6. Descending Routes
7.4.6.1. Brainstem Modulatory Centers
7.4.6.2. Diffuse Noxious Inhibitory Control (DNIC)
7.5. Modulatory Effects of Electrotherapy
7.5.1. Pain Modulation Levels
7.5.2. Neuronal Plasticity
7.5.3. Sensory Pathway Theory of Pain
7.5.4. Electrotherapy Models
7.6. High Frequency and Analgesia
7.6.1. Heat and Temperature
7.6.2. Effects
7.6.3. Application Techniques
7.6.4. Dosage
7.7. Low Frequency and Analgesia
7.7.1. Selective Stimulation
7.7.2. TENS and Control Gate
7.7.3. Post-Excitatory Depression of Orthosympathetic Nervous System
7.7.4. Theory of Endorphin Release
7.7.5. TENS Dosage
7.8. Other Parameters Related to Analgesia
7.8.1. Electrotherapy Effects
7.8.2. Dosage in Electrotherapy

Module 8. Transcutaneous Electrical Nerve Stimulation (TENS)

8.1. Fundamentals of Current Type used in TENS
8.1.1. Introduction
8.1.1.1. Theoretical Framework: Neurophysiology of Pain
8.1.1.1.1. Introduction and Classification of Nociceptive Fibers
8.1.1.1.2. Characteristics of Nociceptive Fibers
8.1.1.1.3. Stages of the Nociceptive Process
8.1.2. Anti-Nociceptive System: Gate Theory
8.1.2.1. Introduction to Current Type used in TENS
8.1.2.2. Basic Characteristics of TENS Type of Current (Pulse Shape, Duration, Frequency and Intensity)
8.2. Classification of Current Type used in TENS
8.2.1. Introduction
8.2.1.1. Types of Electrical Current Classification
8.2.1.2. According to Frequency (Number of Pulses Emitted per Second)
8.2.2. Classification of Current Type used in TENS
8.2.2.1. Conventional TENS
8.2.2.2. TENS-Acupuncture
8.2.2.3. Low-Rate Burst TENS
8.2.2.4. Brief or Intense TENS
8.2.3. Mechanisms of Action of the TENS Current Type
8.3. Transcutaneous Electrical Nerve Stimulation (TENS)
8.4. Analgesic Effects of High-Frequency TENS
8.4.1. Introduction
8.4.1.1. Main Reasons for the Wide Clinical Application of Conventional TENS
8.4.2. Hypoalgesia Derived from Conventional/High Frequency TENS
8.4.2.1. Mechanism of Action
8.4.3. Neurophysiology of Conventional TENS
8.4.3.1. Gate Control
8.4.3.2. The Metaphor
8.4.4. Failure to Achieve Analgesic Effects
8.4.4.1. Main Mistakes
8.4.4.2. Main Problem of Hypoalgesia by Conventional TENS

8.5. Analgesic Effects of Low-Frequency TENS
- 8.5.1. Introduction
- 8.5.2. Mechanisms of Action of TENS-mediated Hypoalgesia Acupuncture: Endogenous Opioid System
- 8.5.3. Mechanism of Action
- 8.5.4. High-Intensity and Low-Frequency
  - 8.5.4.1. Parameters
  - 8.5.4.2. Fundamental Differences from Conventional TENS Current

8.6. Analgesic Effects of "Burst-Type TENS"
- 8.6.1. Introduction
- 8.6.2. Description
  - 8.6.2.1. Burst-Type TENS Current Details
  - 8.6.2.2. Physical Parameters
  - 8.6.2.3. Sjölund and Eriksson
- 8.6.3. Summary so far of the Physiological Mechanisms of both Central and Peripheral Analgesia

8.7. Importance of Pulse Width
- 8.7.1. Introduction
  - 8.7.1.1. Physical Characteristics of Waves
    - 8.7.1.1.1. Definition of a Wave
    - 8.7.1.1.2. Other General Characteristics and Properties of a Wave
- 8.7.2. Impulse Shape

8.8. Electrodes. Types and Application
- 8.8.1. Introduction
  - 8.8.1.1. The TENS Current Device
- 8.8.2. Electrodes
  - 8.8.2.1. General Characteristics
  - 8.8.2.2. Skin Care
  - 8.8.2.3. Other Types of Electrodes

8.9. Practical Applications
- 8.9.1. TENS Applications
- 8.9.2. Impulse Duration
- 8.9.3. Impulse Shape
- 8.9.4. Intensity
- 8.9.5. Frequency (F)
- 8.9.6. Electrode Type and Placement

8.10. Contraindications
- 8.10.1. Contraindications to the use of TENS Therapy
- 8.10.2. Recommendations for Safe TENS Practice

Module 9. Interferential Currents

9.1. Fundamentals of Interferential Currents
- 9.1.1. Interferential Current Concept
- 9.1.2. Main Properties of Interferential Currents
- 9.1.3. Characteristics and Effects of Interferential Currents

9.2. Main Parameters of Interferential Currents
- 9.2.1. Introduction to the Different Parameters
- 9.2.2. Types of Frequencies and Effects Produced
- 9.2.3. Relevance of Application Time
- 9.2.4. Types of Applications and Parameters

9.3. Effects of High Frequency
- 9.3.1. Concept of High Frequency in Interferential Streams
- 9.3.2. Main Effects of High Frequency
- 9.3.3. Application of High Frequency

9.4. Concept of Accommodation. Importance and Adjustment of the Frequency Spectrum
- 9.4.1. Low-Frequency Concept in Interferential Currents
- 9.4.2. Main Effects of Low Frequency
- 9.4.3. Low-Frequency Application

9.5. Electrodes. Types and Application
- 9.5.1. Main Types of Electrodes in Interferential Currents
- 9.5.2. Relevance of Electrode Types in Interferential Currents
- 9.5.3. Application of Different Types of Electrodes

9.6. Practical Applications
- 9.6.1. Recommendations for the Application of Interferential Currents
- 9.6.2. Techniques for the Application of Interferential Currents

9.7. Contraindications
- 9.7.1. Contraindications to the Use of Interferential Currents
- 9.7.2. Recommendations for Safe Practice Using Interferential Currents

Module 10. Invasive Treatment in Electrotherapy

10.1. Invasive Treatment in Physical Therapy for Analgesic Purposes
- 10.1.1. General Aspects
- 10.1.2. Types of Invasive Treatment
- 10.1.3. Infiltration Versus Puncture

10.2. Fundamentals of Dry Needling
- 10.2.1. Myofascial Pain Syndrome
- 10.2.2. Myofascial Trigger Points
- 10.2.3. Neurophysiology of Myofascial Pain Syndrome and Trigger Points

10.3. Post-puncture Treatments
- 10.3.1. Adverse Effects of Dry Needling
- 10.3.2. Post-puncture Treatments
- 10.3.3. Combination of Dry Needling and TENS

10.4. Electrotherapy as an Adjunct to Dry Needling
- 10.4.1. Non-Invasive Approach
- 10.4.2. Invasive Approach
- 10.4.3. Types of Electropuncture

10.5. Percutaneous Electrical Nerve Stimulation: PENS
- 10.5.1. Neurophysiological Fundamentals of PENS Application
- 10.5.2. Scientific Evidence for the Application of PENS
- 10.5.3. General Considerations for PENS Implementation

10.6. Advantages of PENS Over TENS
- 10.6.1. Current Status of PENS Implementation
- 10.6.2. Application of PENS in Lower Back Pain
- 10.6.3. Application of PENS in Other Regions and Pathologies

10.7. Use of Electrodes
- 10.7.1. General Information on the Application of Electrodes
- 10.7.2. Variants in the Application of Electrodes
- 10.7.3. Multipole Application

10.8. Practical Applications
- 10.8.1. Justification for the Implementation of the PENS
- 10.8.2. Applications in Lower Back Pain
- 10.8.3. Upper Quadrant and Lower Limb Applications

10.9. Contraindications
- 10.9.1. Contraindications Derived from TENS
- 10.9.2. Contraindications Derived from Dry Needling
- 10.9.3. General Considerations

10.10. Invasive Treatments for Regenerative Purposes
- 10.10.1. Introduction
  - 10.10.1.1. Electrolysis Concept
- 10.10.2. Intratissue Percutaneous Electrolysis
  - 10.10.2.1. Concept
  - 10.10.2.2. Effects
  - 10.10.2.3. State-of-the-Art Review
  - 10.10.2.4. Combination with Eccentric Exercises

10.11. Physical Principles of Galvanism
- 10.11.1. Introduction
  - 10.11.1.1. Physical Characteristics of Direct Current
- 10.11.2. Galvanic Current
  - 10.11.2.1. Physical Characteristics of Galvanic Current
  - 10.11.2.2. Chemical Phenomena of Galvanic Current
  - 10.11.2.3. Structure. BORRAR
- 10.11.3. Iontophoresis
  - 10.11.3.1. Leduc's Experiment
  - 10.11.3.2. Physical Properties of Iontophoresis

10.12. Physiological Effects of Galvanic Current
- 10.12.1. Physiological Effects of Galvanic Current
- 10.12.2. Electrochemical Effects
  - 10.12.2.1. Chemical Behavior
- 10.12.3. Electrothermal Effects
- 10.12.4. Electrophysical Effects

10.13. Therapeutic Effects of Galvanic Current
- 10.13.1. Clinical Application of Galvanic Current
  - 10.13.1.1. Vasomotor Action
    - 10.13.1.1.1. Effect on the Nervous System
- 10.13.2. Therapeutic Effects of Iontophoresis
  - 10.13.2.1. Penetration and Elimination of Cations and Anions
  - 10.13.2.2. Drugs and Indications

10.13.3. Therapeutic Effects of Intratissue Percutaneous Electrolysis
10.14. Types of Percutaneous Application of Galvanic Currents
10.14.1. Introduction to Application Techniques
10.14.1.1. Classification According to Electrode Placement
10.14.1.1.1. Direct Galvanizing
10.14.2. Indirect Galvanizing
10.14.3. Classification According to the Technique Applied
10.14.3.1. Intratissue Percutaneous Electrolysis
10.14.3.2. Iontophoresis
10.14.3.3. Galvanic Bath
10.15. Application Protocols
10.15.1. Galvanic Current Application Protocols
10.15.2. Intratissue Percutaneous Electrolysis Application Protocols
10.15.2.1. Procedure
10.15.3. Iontophoresis Application Protocols
10.15.3.1. Procedure
10.16. Contraindications
10.16.1. Contraindications of Galvanic Current
10.16.2. Contraindications, Complications and Precautions of Galvanic Current

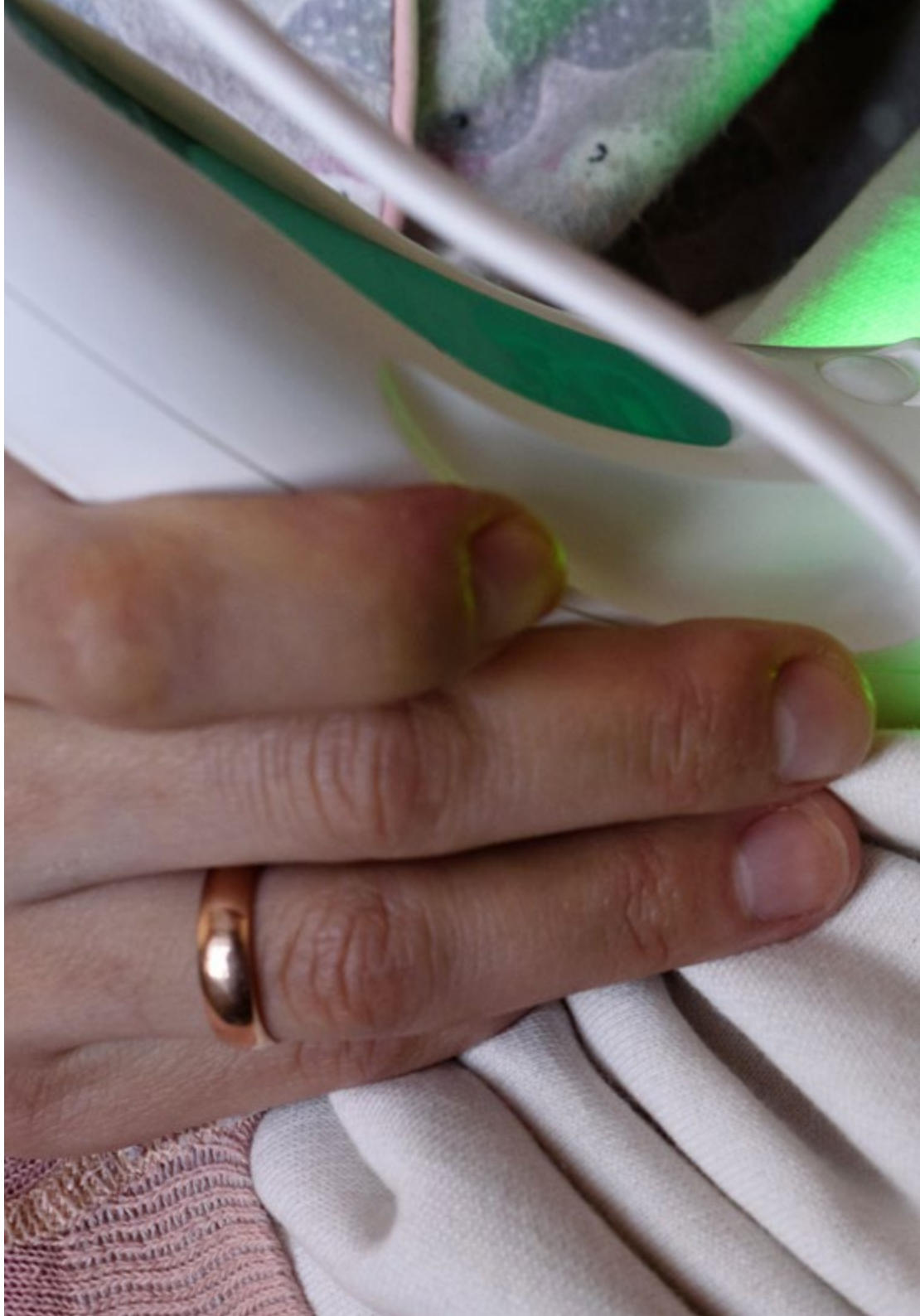
Module 11. Magnetotherapy in Physiotherapy

11.1. Physical Principles of Magnetotherapy
11.1.1. Introduction
11.1.2. History of Magnetotherapy
11.1.3. Definition
11.1.4. Principles of Magnetotherapy
11.1.4.1. Magnetic Fields on Earth
11.1.4.2. Physical Principles
11.1.5. Biophysical Interactions with Magnetic Fields
11.2. Physiological Effects of Magnetotherapy
11.2.1. Effects of Magnetotherapy on Biological Systems
11.2.1.1. Biochemical Effects
11.2.1.2. Cellular Effect
11.2.1.2.1. Effects on Lymphocytes and Macrophages
11.2.1.2.2. Effects on Cell Membrane
11.2.1.2.3. Effects on the Cytoskeleton
11.2.1.2.4. Effects on the Cytoplasm
11.2.1.3. Conclusion On the Effect on the Cell
11.2.1.4. Effect on Bone Tissue
11.3. Therapeutic Effects of Magnetotherapy
11.3.1. Introduction
11.3.2. Inflammation
11.3.3. Vasodilatation
11.3.4. Analgesia
11.3.5. Increased Calcium and Collagen Metabolism
11.3.6. Reparation
11.3.7. Muscle Relaxation
11.4. Main Magnetic Field Parameters
11.4.1. Introduction
11.4.2. Magnetic Field Parameters
11.4.2.1. Intensity
11.4.2.2. Frequency (F)
11.4.3. Dosimetry of Magnetic Fields
11.4.3.1. Frequency of Application
11.4.3.2.Application Time
11.5. Types of Electrodes and their Application
11.5.1. Introduction
11.5.2. Electromagnetic Fields
11.5.2.1. Total Body or Global Application
11.5.2.2. Regional Application
11.5.3. Local Magnetic Fields Induced with Magnets
11.5.3.1. Conclusions
11.6. Magnetotherapy. Clinical Applications
11.6.1. Introduction
11.6.2. Arthrosis
11.6.2.1. Electromagnetic Fields and Chondrocyte Apoptosis
11.6.2.2. Early-Stage Knee Osteoarthritis

11.6.2.3. Advanced Stage Osteoarthritis
11.6.2.4. Conclusion on Osteoarthritis and Pulsed Electromagnetic Fields
11.6.3. Bone Consolidation
11.6.3.1. Review of Literature on Bone Consolidation
11.6.3.2. Bone Consolidation in Long Bone Fractures
11.6.3.3. Bone Consolidation in Short Bone Fractures
11.6.4. Shoulder Pathology
11.6.4.1. Shoulder Impingement
11.6.4.2. Rotator Cuff Tendinopathy
11.6.4.2.1. Rheumatoid Arthritis
11.6.4.2.2. Conclusions
11.7. Magnetotherapy. Contraindications
11.7.1. Introduction
11.7.2. Possible Adverse Effects Studied
11.7.3. Precautions
11.7.4. Formal Contraindications
11.7.5. Conclusions

Module 12. Non-Invasive Brain Stimulation

12.1. Non-Invasive Brain Stimulation: Introduction
12.1.1. Introduction to Non-Invasive Brain Stimulation
12.1.2. Transcranial Magnetic Stimulation
12.1.2.1. Introduction to Transcranial Magnetic Stimulation
12.1.2.2. Mechanisms of action
12.1.2.3. Stimulation Protocols
12.1.2.3.1. Transcranial Magnetic Stimulation with Single and Paired Pulses
12.1.2.3.2. Location of the Stimulation Site "*Hot Spot*"
12.1.2.3.3. Repetitive Transcranial Magnetic Stimulation
12.1.2.3.4. Simple Repetitive Pattern Stimulation
12.1.2.3.5. Theta-Burst Stimulation (TBS)
12.1.2.3.6. Quadripulse Stimulation (QPS)
12.1.2.3.7. Paired Associative Stimulation (PAS)



12.1.2.4. Security/Safety
12.1.2.5. Therapeutic Applications
12.1.3. Conclusions
12.1.4. Bibliography
12.2. Transcranial Direct Current
12.2.1. Transcranial Direct Current
12.2.1.1. Introduction to Transcranial Direct Current
12.2.1.2. Mechanism of Action
12.2.1.3. Security/Safety
12.2.1.4. Procedures
12.2.1.5. Applications
12.2.1.6. Other Forms of Transcranial Electrical Stimulation
12.2.2. Transcranial Neuromodulation Combined with other Therapeutic Interventions
12.2.3. Conclusions
12.2.4. Bibliography

The teaching materials of this program, elaborated by these specialists, have contents that are completely applicable to your professional experiences"

06

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

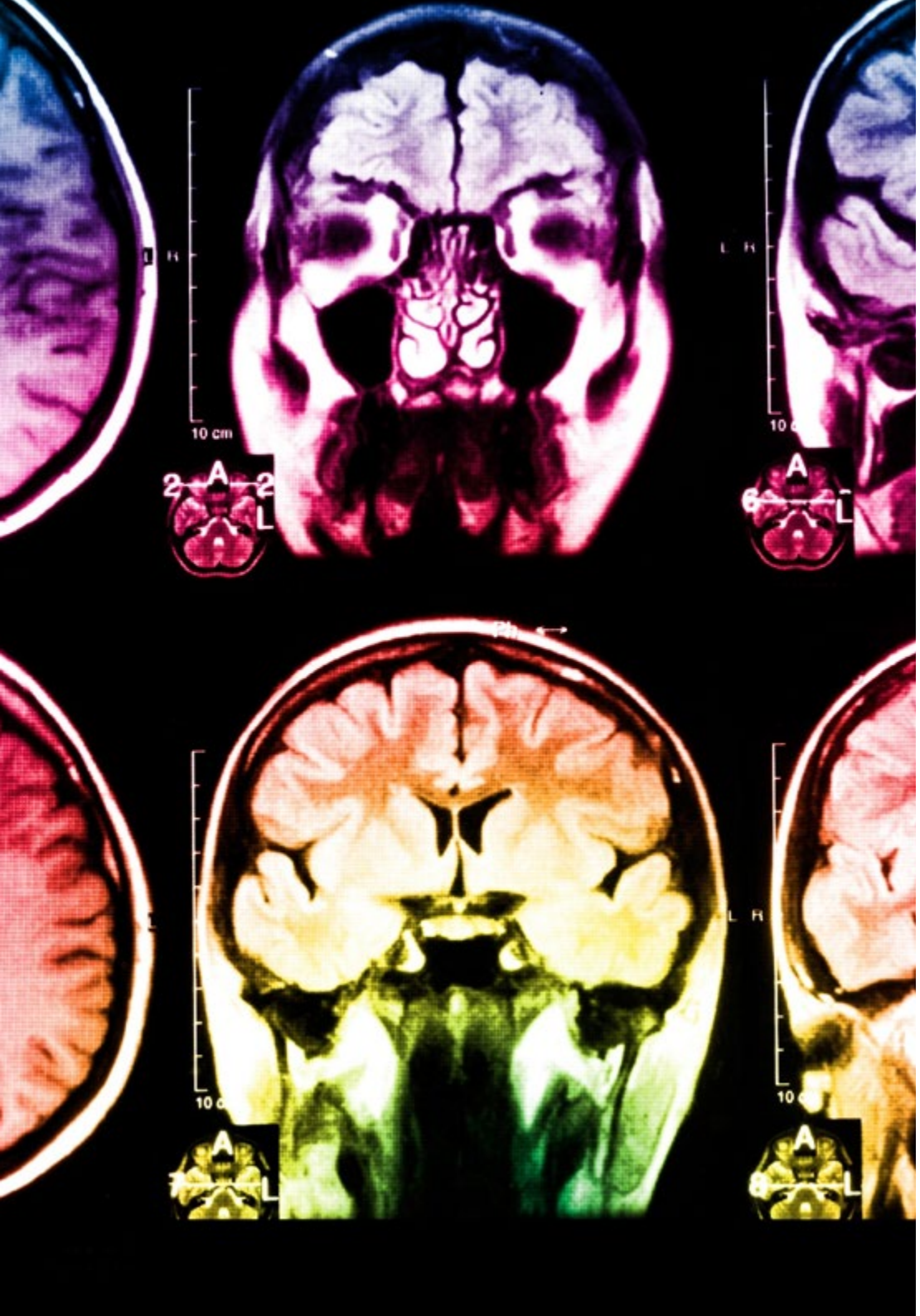
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

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.

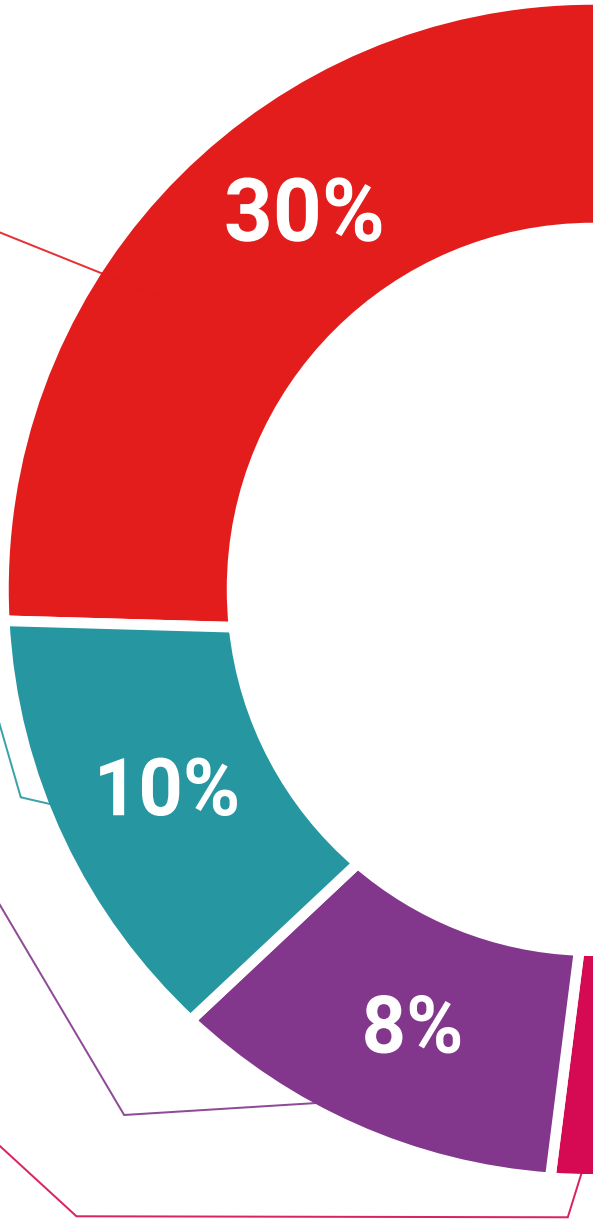
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

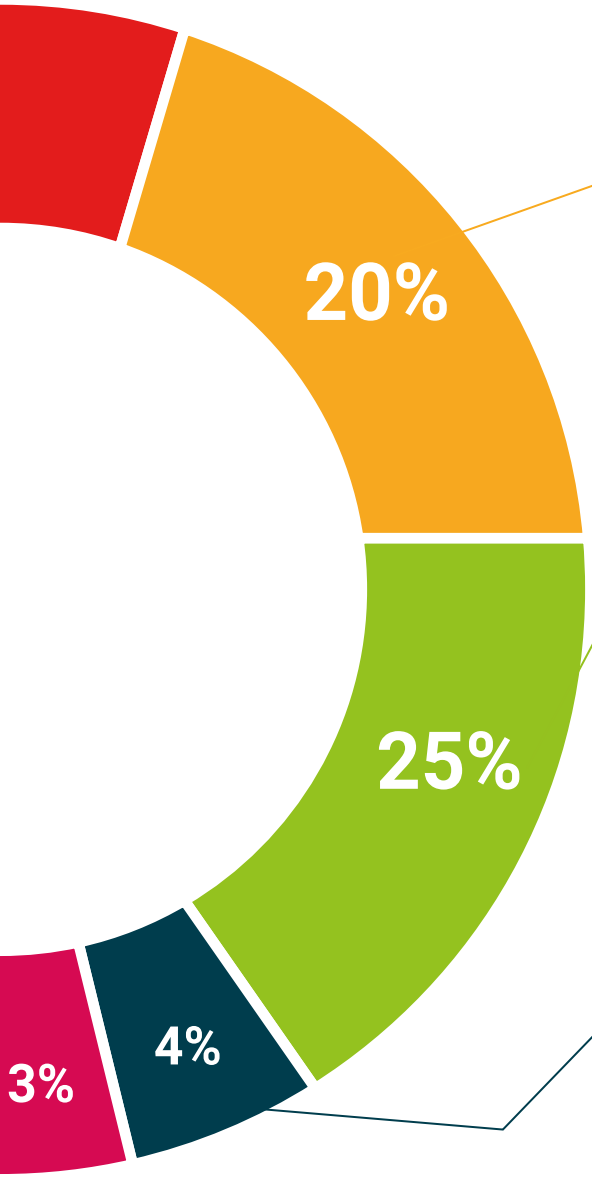
Practising Skills and Abilities

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.

07

Certificate

The Professional Master's Degree in Electrotherapy in Physical Activity and Sport guarantees students, in addition to the most rigorous and up-to-date education, access to a Professional Master's Degree 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 **Professional Master's Degree in Electrotherapy 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 **Professional Master's Degree** issued by **TECH Technological University** via tracked delivery*.

The diploma issued by **TECH University** will reflect the qualification obtained in the Professional Master's Degree, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Professional Master's Degree in Electrotherapy in Physical Activity and Sport**

Official Nº of Hours: **1,500 h.**

Endorsed by the NBA


tech technological university

Awards the following

DIPLOMA

to

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

For having successfully passed and accredited the following program

PROFESSIONAL MASTER'S DEGREE

in

Electrotherapy in Physical Activity and Sport

This is a qualification awarded by this University, equivalent to 1,500 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

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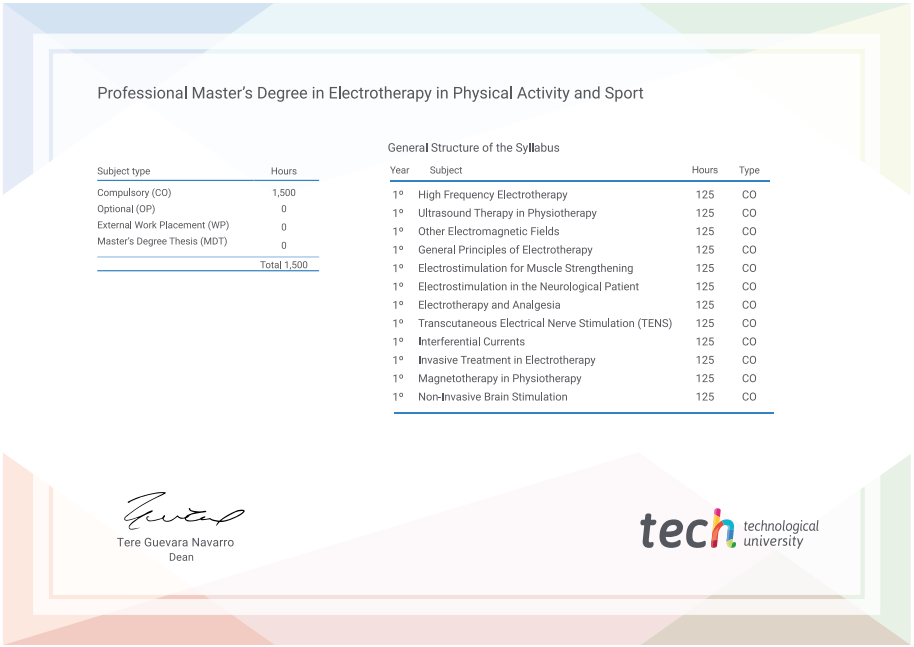
Professional Master's Degree in Electrotherapy in Physical Activity and Sport

Subject type	Hours
Compulsory (CO)	1,500
Optional (OP)	0
External Work Placement (WP)	0
Master's Degree Thesis (MDT)	0
	Total 1,500

General Structure of the Syllabus

Year	Subject	Hours	Type
1º	High Frequency Electrotherapy	125	CO
1º	Ultrasound Therapy in Physiotherapy	125	CO
1º	Other Electromagnetic Fields	125	CO
1º	General Principles of Electrotherapy	125	CO
1º	Electrostimulation for Muscle Strengthening	125	CO
1º	Electrostimulation in the Neurological Patient	125	CO
1º	Electrotherapy and Analgesia	125	CO
1º	Transcutaneous Electrical Nerve Stimulation (TENS)	125	CO
1º	Interferential Currents	125	CO
1º	Invasive Treatment in Electrotherapy	125	CO
1º	Magnetotherapy in Physiotherapy	125	CO
1º	Non-Invasive Brain Stimulation	125	CO

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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.

tech technological university

Professional Master's Degree

Electrotherapy in Physical Activity and Sport

- Modality: **online**
- Duration: **12 months**
- Certificate: **TECH Technological University**
- Dedication: **16h/week**
- Schedule: **at your own pace**
- Exams: **online**

Professional Master's Degree

Electrotherapy in Physical Activity and Sport

Endorsed by the NBA

tech technological university