

# Master's Degree

## Neuroeducation and Physical Education

Endorsed by the NBA



**tech** global  
university





## Master's Degree Neuroeducation and Physical Education

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Global University
- » Credits: 60 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/physiotherapy/master-degree/master-neuroeducation-physical-education](http://www.techtitute.com/us/physiotherapy/master-degree/master-neuroeducation-physical-education)

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# 01

# Introduction

In recent times, neuroscience has become a revolutionary way of understanding almost all fields of human development. Its logic is indisputable: the brain, moderator, organizer and creator of every human development holds the keys to these processes. New scientific procedures for brain exploration have opened the door to a deeper understanding of all these cognitive processes.

With this high-level program you will specialize in Neuroeducation and Physical Education applied to the physiotherapeutic field, under the guidance of professionals with extensive experience in the sector.





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*Movement, as a tool for the development and enhancement of cognitive functions, is the key to the development and implementation of Neuroeducation in Physical Education. A new concept of enormous importance for the patient's quality of life"*

This program arises with the purpose of expanding the benefits offered by neuroeducation, from the perspective of sports performance and also in relation to personal development based on physical and emotional well-being. This is based on the new knowledge of brain science to focus, in a practical way, on how to implement it in the reality of physiotherapy.

It is necessary to prepare physiotherapists in neuropsychoeeducation, understanding the brain mechanisms underlying learning, memory, language, sensory and motor systems, attention, emotions and the influence of the environment on all of this.

Science has advanced in the study of the brain as a learning organ, with the aim of helping each person to develop their cognitive, intellectual and emotional potential to the fullest. Although current education aims at a comprehensive education, it is still focused on cognitive aspects, with little development in terms of emotional aspects; little and/or no management of one's own and others' emotions, scarce self-motivation, self-control and communication skills.

The prestigious professors of this program have contributed their specialized and advanced knowledge based on experience and rigorous scientific criteria in the development of this educational program of high scientific and academic rigor.

All the modules are accompanied by abundant iconography, with photos and videos of the authors, with which it is intended to illustrate, in a very practical, rigorous and useful way, advanced knowledge in Neuroeducation and Physical Education for Physical Therapists.

This **Master's Degree in Neuroeducation and Physical Education** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ◆ Development of case studies presented by experts in Neuroeducation and Physical Education
- ◆ 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
- ◆ It contains practical exercises where the self-evaluation process can be carried out to improve learning
- ◆ Its special emphasis on innovative methodologies in Neuroeducation and Physical Education
- ◆ All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments.
- ◆ Content that is accessible from any fixed or portable device with an Internet connection
- ◆ Complementary content available in multimedia format



*A highly effective Master's Degree that will provide you with the necessary tools to apply the neuroscience approach in Physical Education"*

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*The quality of a program designed to promote Physical Education with the reinforcement of Neuroeducation, giving it a place of relevance in the specialization of students"*

*Incorporate the neuroscience approach to your work, and bring the cognitive and emotional development goal of this new form of intervention to your objectives.*

*New advances and developments in neuroscience applied to teaching in the field of Physical Education, from an eminently practical approach.*

It includes, in its teaching staff, professionals belonging to the field of Neuroeducation and Physical Education, who bring to this Specialization the experience of their work, in addition to recognized specialists belonging to reference societies and prestigious universities.

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

The design of this program focuses on Problem-Based Learning, through which the educator must try to solve the different situations of professional practice that arise throughout the program. For this, the educator will be assisted by an innovative interactive video system, developed by recognized experts in the field of Neuroeducation and Physical Education with extensive teaching experience.



# 02 Objectives

This comprehensive program is aimed at facilitating the performance of the dedicated professional with the latest advances and most innovative treatments in the sector. Beyond its potential in physical terms, this Master's Degree will work on its protective capacity of the brain, its influence on brain function, emotions, motivation, perception, in short, learning.





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*Using the most developed online technology, this Master's Degree will offer you a specialization with which you will be able to include, in your work, the development of multiple intelligences through movement"*



## General Objectives

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- ◆ Know the basis and main elements of Neuroeducation
- ◆ Integrate the new contributions of brain science in the teaching-learning processes
- ◆ Discover how to enhance brain development through motor action
- ◆ Implement the innovations of Neuroeducation in the subject of Physical Education
- ◆ Achieve specialized education as a Neuroeducation professional in the field of motor action

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*Learn about the invisible education of brain development and motor learning and get up to date on intervention processes through La Neuroeducation and Physical Education"*





## Specific Objectives

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### Module 1. Basis of Neurosciences

- ◆ Describe the functioning of the nervous system
- ◆ Explain the basic anatomy of learning-related structures
- ◆ Define the basic physiology of learning-related structures
- ◆ Identify the main brain structures related to motor skills
- ◆ Define the plastic brain and neuroplasticity
- ◆ Explain the effects of environment on brain development
- ◆ Describe the changes in the infant's brain
- ◆ Explain the evolution of the adolescent brain
- ◆ Define the characteristics of the adult brain

### Module 2. Neuroeducation

- ◆ Define the principles of Neuroeducation
- ◆ Explain the main neuromyths
- ◆ Explain strategies for early stimulation and interventions
- ◆ Define the theory of attention
- ◆ Explain emotion from a neurological point of view
- ◆ Explain learning from a neurological point of view
- ◆ Explain memory from a neurological point of view

### Module 3. The Incidence of Emotions in Neuroeducational Processes from the Point of View of Motor Action

- ◆ Explain the emotional brain
- ◆ Describe the emotional process from a neuroscientific perspective
- ◆ Describe the main brain structures that make up the emotional process
- ◆ Define the role of emotion in the processes of learning and memory
- ◆ Describe the brain reward system
- ◆ Explain the basis of emotion education
- ◆ Describe emotional competencies
- ◆ Explain emotional chemistry in response to motor action.
- ◆ Define the role of motor action in emotional changes

### Module 4. The Social Brain in Motor Action from a Neuroscientific Perspective

- ◆ Describe mirror neurons
- ◆ Explain complex social functions
- ◆ Describe the role of motor action in the development of social health
- ◆ Explain the social relationship in personal wellbeing
- ◆ Explain the implication of mental health and interpersonal relationships
- ◆ Define the relevance of cooperation from a neuroeducational perspective
- ◆ Explain the importance of climate in learning environments

### Module 5. Impact of Motor Action on Brain Learning Processes and on Health Development

- ◆ Explain the main neurotransmitters and hormones related to motor practice and learning ability
- ◆ Apply strategies for disease prevention and improvement of quality of life in terms of cardiovascular and other risk diseases
- ◆ Describe the different motor practices that have an impact on brain development

### Module 6. Physical Neuroeducation and Learning

- ◆ Explain the relevance of body-brain language together with embodied cognition
- ◆ Establish the importance of mental health with exercise
- ◆ Explain the development of cognitive functions through the practice of physical exercise
- ◆ Know the positive influence of motor skills in students with learning difficulties

### Module 7. Motor practices that have an impact on brain development

- ◆ Know the importance of expressive and artistic activities and brain development from a socioemotional perspective
- ◆ Identify outdoor activities and brain development
- ◆ Establish the anaerobic and aerobic physical activities that promote brain development in young people





### **Module 8. Invisible Training in Brain Development**

- ◆ Understand the role of the main myokines in relation to exercise and health
- ◆ Identify new postulates for disease prevention and improvement of quality of life in cardiovascular risk diseases (obesity, diabetes or metabolic syndrome)
- ◆ Analyze the relevance of body posture from a neuroscientific point of view

### **Module 9. Pedagogical Models and Evaluation in Physical Neuroeducation**

- ◆ Know the conceptual approach of the terms related to methodology in Physical Education
- ◆ Carry out an assessment of the teaching- learning process in Physical Neuroeducation
- ◆ Learn about cooperative learning models and apply them in the sports field

### **Module 10. Methodologies, Methods, Tools and Didactic Strategies Favoring Physical Neuroeducation**

- ◆ Learn about new teaching methodologies through the Flipped Classroom
- ◆ Use gamification and ludification strategies to promote children's neurophysical learning
- ◆ Know other methods, tools and didactic strategies that would be promoted through Physical Neuroeducation

# 03 Competencies

After passing the evaluations of the Master's Degree in Neuroeducation and Physical Education in Sport, the professional will have acquired the necessary professional competences for a quality and up-to-date praxis based on the most innovative didactic methodology.





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*Join the new form of education, acquiring the necessary skills to apply the scientific bases of neuroscience to your work as a Physical Education instructor"*



## General Skills

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- ◆ Possess knowledge that provides a basis or opportunity to be original in the development and/or application of ideas, often in a research context
- ◆ Know how to apply acquired knowledge and problem-solving skills in new or unfamiliar environments within broader (or multidisciplinary) contexts related to the field of study
- ◆ Be able to 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
- ◆ Know how to communicate their conclusions and the ultimate knowledge and reasons 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

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- ◆ Describe the functioning of the nervous system
- ◆ Explain the basic anatomy of structures related to learning
- ◆ Define the basic physiology of learning-related structures
- ◆ Identify the main brain structures related to motor skills
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- ◆ Explain the effects of environment on brain development
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- ◆ Explain the evolution of the adolescent brain
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- ◆ Explain memory from a neurological point of view
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- ◆ Define the role of motor action in emotional changes
- ◆ Describe mirror neurons
- ◆ Explain complex social functions
- ◆ Describe the role of motor action in the development of social health
- ◆ Explain the social relationship in personal wellbeing
- ◆ Explain the implication of mental health and interpersonal relationships
- ◆ Define the relevance of cooperation from a neuroeducational perspective
- ◆ Explain the importance of climate in learning environments
- ◆ Explain the main neurotransmitters and hormones related to motor practice and learning ability
- ◆ Apply strategies for disease prevention and improvement of quality of life in terms of cardiovascular and other risk diseases
- ◆ Describe the different motor practices that have an impact on brain development

04

# Course Management

The design and development of this Master's Degree has been carried out by a multidisciplinary teaching staff of recognized competence. Aiming for excellence, the course program puts its expertise at your disposal to create learning situations that will make you become an expert in the field. With the support of the best specialists in Neuroeducation and Physical Education.





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*This comprehensive Master's Degree will allow you to learn from the experience of high-level teachers, experts in the fields of Physical Education and Neuroeducation, who will accompany you throughout your specialization with the most intensive online presence"*

## Management



### Ms. Pellicer Royo, Irene

- ◆ Master's Degree in Emotional Education and Well-being
- ◆ Postgraduate in Neuroeducation
- ◆ Certificate in Management and Administration of Sports Entities
- ◆ Degree in Physical Activity and Sports Science Master's Degree in Medical Sciences applied to Physical Activity and Sport

## Professors

### Dr. De la Serna, Juan Moisés

- ◆ Doctor in Psychology Master's Degree in Neurosciences and Behavioral Biology
- ◆ University Specialist in Clinical Hypnosis
- ◆ Director of the Open Chair in Psychology and Neurosciences
- ◆ Diploma in Didactic Methodology Expert in Project Management  
Occupational Trainer

### Dr. Navarro Ardoy, Daniel

- ◆ PhD. Exercise Physiology Applied to Health Physical activity and health program  
Faculty of Medicine
- ◆ Degree in Physical Activity and Sports Science

### Ms. Rodríguez Ruiz, Celia

- ◆ Specialization in clinical psychology and child psychotherapy
- ◆ Specialization in Cognitive Behavioral Therapy in Childhood and Adolescence
- ◆ Degree in Pedagogy
- ◆ Degree in Psychology



05

# Structure and Content

The structure of the contents has been created so that the student is able to acquire all the necessary knowledge in the field of neurosciences. Through a complete syllabus, the different fields of interest that the professional will need to master in the exercise of his profession will be developed.





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*This Master's Degree in Neuroeducation and Physical Education contains the most complete and up-to-date scientific program on the market”*

## Module 1. Basis of Neurosciences

- 1.1. The Nervous System
  - 1.1.1. Definition of the Nervous System
  - 1.1.2. Components of the Nervous System
  - 1.1.3. Classification of the Nervous Tissue
  - 1.1.4. Electrical Communication of the Neuron
  - 1.1.5. Chemical Communication of the Neuron
- 1.2. Basic Anatomy of Learning-Related Structures.
  - 1.2.1. Defining Learning
  - 1.2.2. Classification of the Brain
  - 1.2.3. Formation of the Brain
  - 1.2.4. The Role of the Brain in Learning
- 1.3. Psychological Processes Related to Learning.
  - 1.3.1. Defining Cognitive Processes
  - 1.3.2. The Cognitive Process of Sensation
  - 1.3.3. The Cognitive Process of Perception
  - 1.3.4. The Cognitive Process of Attention
  - 1.3.5. The Cognitive Process of Memory
  - 1.3.6. The Cognitive Process of Language
  - 1.3.7. The Cognitive Process of Emotion
  - 1.3.8. The Cognitive Process of Motivation
- 1.4. The Main Brain Structures Related to Motor Skills.
  - 1.4.1. Psychomotor Skills
  - 1.4.2. Neural Bases of Motor Skills
  - 1.4.3. Motor Problems in Development
  - 1.4.4. Acquired Motor Problems
- 1.5. The Plastic Brain and Neuroplasticity
  - 1.5.1. Neuronal Plasticity
  - 1.5.2. The Plastic Brain
  - 1.5.3. Neurogenesis
  - 1.5.4. The Plastic Brain and Learning







- 1.6. Epigenetics.
  - 1.6.1. The Role of Genetics in the Brain
  - 1.6.2. The Process of Gestation and the Brain
  - 1.6.3. Definition of Undifferentiated Neurons
  
  - 1.6.4. The Process of Programmed Neuronal Death
- 1.7. Effects of the Environment on Brain Development.
  - 1.7.1. Brain and Environment
  - 1.7.2. Interneuronal Connectivity
  - 1.7.3. Inhibition of Connectivity
- 1.8. Changes in the Infant's Brain.
  - 1.8.1. The Formation of the Infant's Brain
  - 1.8.2. The Process of Myelogenesis
  - 1.8.3. Brain Development
  - 1.8.4. Development of Localization
  - 1.8.5. Development of Lateralization
- 1.9. Evolution of the Adolescent Brain
  - 1.9.1. Defining Adolescence
  - 1.9.2. The Adolescent Brain
  - 1.9.3. The Role of Hormones
  - 1.9.4. Functions of Neurohormones
- 1.10. The Adult Brain
  - 1.10.1. The Adult Brain
  - 1.10.2. Connections Between the Cerebral Hemispheres
  - 1.10.3. Language Processing and the Cerebral Hemispheres

## Module 2. Neuroeducation

- 2.1. Introduction to Neuroeducation
  - 2.1.1. Fundamentals of Psychological Processes in the Classroom
  - 2.1.2. Neuroeducation in the Classroom
- 2.2. Main Neuromyths
  - 2.2.1. Age of Learning
  - 2.2.2. Autism Brain
- 2.3. Attention
  - 2.3.1. Brain and Attention
  - 2.3.2. Attention in the Classroom
- 2.4. Emotion
  - 2.4.1. Brain a
  - 2.4.2. Emotion in the Classroom
- 2.5. Motivation
  - 2.5.1. Brain and Motivation
  - 2.5.2. Motivation in the Classroom
- 2.6. The Learning Process
  - 2.6.1. Motivation in the Classroom
  - 2.6.2. Learning in the Classroom
- 2.7. Memory
  - 2.7.1. Brain and Memory
  - 2.7.2. Memory in the Classroom
- 2.8. Stimulation and Early Interventions
  - 2.8.1. Social Influence on Learning
  - 2.8.2. Cooperative Learning
- 2.9. Importance of Creativity in Neuroeducation
  - 2.9.1. Defining Creativity
  - 2.9.2. Creativity in the Classroom
- 2.10. Methodologies that allow the Transformation of Education in Neuroeducation
  - 2.10.1. The Traditional Methodology in Education
  - 2.10.2. The New Methodology from Neuroeducation

## Module 3. The Incidence of Emotions in Neuroeducational Processes, from the Point of View of Motor Action

- 3.1. Concept of Emotion and Main Emotional Theories.
  - 3.1.1. The Need for Emotional Development
  - 3.1.2. Concept of Emotion
  - 3.1.3. Function and Characteristics of Emotions
  - 3.1.4. The Affective Value and the Intensity of Emotion
  - 3.1.5. Theory of Emotions
- 3.2. Education of Emotions
  - 3.2.1. The Emotional Competency Builder
  - 3.2.2. The GROPE Competency Model
  - 3.2.3. Emotional Maturity
- 3.3. Emotional Intelligence
  - 3.3.1. The Emotional Competence Builder
  - 3.3.2. The Model of Mayer and Salovey
  - 3.3.3. The Social-Emotional Model of Bar-On
  - 3.3.4. Goleman's Competency Model
- 3.4. The Role of Emotion in the Body and Motor Action
  - 3.4.1. The Learning Process
  - 3.4.2. Emotion in Learning Processes
  - 3.4.3. Emotions in Motor Action
- 3.5. The Emotional Brain
  - 3.5.1. The Emotional Brain or Limbic System
  - 3.5.2. The Socioemotional Brain
- 3.6. Emotional Processing in Brain Structures
  - 3.6.1. The Main Brain Structures Involved in Emotional Processes
  - 3.6.2. Emotional Intensity and Emotional Appraisal in the Brain Structures
  - 3.6.3. Particular Emotional Brains
- 3.7. Amygdala and Emotional Processes
  - 3.7.1. The Role of the Amygdala in Emotions
  - 3.7.2. The Conditioned Emotional Response
  - 3.7.3. Self-Control and Attention
  - 3.7.4. Self-Regulation and Exercise

- 3.8. Positive Emotions and the Brain's Reward System
  - 3.8.1. Classifications of Salient Emotions
  - 3.8.2. The Ability to Self-Generate Positive Emotions
  - 3.8.3. The Functioning of the Brain's Reward System
- 3.9. Emotional Chemistry in Response to Motor Action
  - 3.9.1. From Emotion to Action
  - 3.9.2. The Neurochemistry of Emotion
  - 3.9.3. Neurochemistry in Motor Action
  - 3.9.4. Epigenetics and Exercise
- 3.10. Emotional Health through Motor Action
  - 3.10.1. Psychoneuroimmunology
  - 3.10.2. Positive Emotions and Health
  - 3.10.3. Emotional Health from the Body

#### Module 4. The Social Brain in Motor Action from a Neuroscientific Perspective

- 4.1. The Human Being: A Social Being
  - 4.1.1. The Social Nature of the Human Being
  - 4.1.2. Evolution of Human Social Capabilities
  - 4.1.3. Why We Live in Society
  - 4.1.4. The Individual as Part of the Social Group
  - 4.1.5. Social Development: Socialization
  - 4.1.6. The Social and Affective Needs of the Human Being
  - 4.1.7. The Consequences of Social Deprivation
  - 4.1.8. The Development of Identity in Society
  - 4.1.9. Human Societies and Social Groups: Coexistence and Conflicts
- 4.2. The Social Brain
  - 4.2.1. A Brain Prepared for the Social
  - 4.2.2. How Does the Social Brain Work?
  - 4.2.3. The Autonomic Nervous System
  - 4.2.4. Oxytocin: An Essential Neurochemical Mediator
  - 4.2.5. The Antisocial Capacity: Serotonin and MAO Enzyme
  - 4.2.6. The Dorsal Vagus Nucleus: Responsible for Playful and Welcoming Social Interaction
  - 4.2.7. Face Perception
- 4.3. Mirror Neurons
  - 4.3.1. The Discovery of Mirror Neurons
  - 4.3.2. How do Mirror Neurons Work?
  - 4.3.3. Social Empathy and Mirror Neurons
  - 4.3.4. Identification with Others
  - 4.3.5. Theory of Mind: Representing the Mind of Others
  - 4.3.6. The Educational and Therapeutic Implication of Mirror Neurons
- 4.4. Complex Social Functions
  - 4.4.1. Social Functions
  - 4.4.2. Executive Functions
  - 4.4.3. Self-Control Function
  - 4.4.4. Social Emotions
  - 4.4.5. Altruism and Prosocial Behavior
  - 4.4.6. Conflict, Aggression and Violence
  - 4.4.7. Social relations
  - 4.4.8. Prejudice and Stereotypes
  - 4.4.9. Living Together
- 4.5. Integral Health from a Social Competence Perspective
  - 4.5.1. What is Integral Health?
  - 4.5.2. Health and Social Competence as a Component of Integral Health
  - 4.5.3. Adaptive Behaviors that Make Up Social Competence
  - 4.5.4. Maladaptive Behaviors
  - 4.5.5. The Effect of the Absence of Social Competence on Health
  - 4.5.6. How to Promote the Development of Social Competence
- 4.6. Role of Motor Action in the Development of Social Health.
  - 4.6.1. What is Meant by Social Health?
  - 4.6.2. Why is Social Health important?
  - 4.6.3. The Body as an Element of Social and Emotional Health
  - 4.6.4. The Motor Action and the Development of Health
  - 4.6.5. Promotion of the Social Health through the Motor Action
  - 4.6.6. Tools to Promote Motor Action and Social Health Development

- 4.7. Social Relationship in Personal Well-Being.
  - 4.7.1. Social Interactions
  - 4.7.2. Why do Human Beings Need Relationships?
  - 4.7.3. Social Relationships and Individual Needs
  - 4.7.4. The Power of Healthy and Satisfactory Relationships
  - 4.7.5. The Social Role
  - 4.7.6. The Social Relationship and Well-Being
  - 4.7.7. Lack of Relationships and Their Consequences
  - 4.7.8. Social Isolation
- 4.8. Mental Health and Interpersonal Relationships.
  - 4.8.1. Interpersonal Relationships and Their Role
  - 4.8.2. Affective Needs
  - 4.8.3. Social Expectations and Beliefs
  - 4.8.4. The Role of Stereotypes and our Mental Health
  - 4.8.5. The Importance of Social Support for Mental Health (Perceived and Real)
  - 4.8.6. Interpersonal Relationships as a Basis for Well-Being
  - 4.8.7. The Quality of Interpersonal Relationships
  - 4.8.8. The Consequences on Mental Health of the Lack of Relationships
- 4.9. Relevance of Cooperation from a Neuroeducational Perspective.
  - 4.9.1. What is Cooperation?
  - 4.9.2. The Brain that Learns in a Group
  - 4.9.3. The Role of Cooperation for Development
  - 4.9.4. Oxytocin, the Chemical Element of Cooperation
  - 4.9.5. Reward Processes and Cooperation
  - 4.9.6. Why is Cooperation Important?
- 4.10. Climate in Learning Environments.
  - 4.10.1. Climate and Learning.
  - 4.10.2. Positive and Negative Climates
  - 4.10.3. Factors that Determine the Type of Climate
  - 4.10.4. The Influence of Climate on the Learning Environment
  - 4.10.5. Elements of a Climate that Favors the Learning Environment
  - 4.10.6. Recognizing Climates in Learning Environments
  - 4.10.7. The Role of the Teacher as a Promoter of a Favorable Climate
  - 4.10.8. Tools to Create Positive and Favorable Climates



## Module 5. Impact of Motor Action on Brain Learning Processes and on Health Development

- 5.1. Impact of Motor Action on Learning Processes.
  - 5.1.1. Concepts Related to Motor Action and Learning
  - 5.1.2. Motor Learning: Phases and Factors
  - 5.1.3. The Information Processing Model: Perception, Decision, Execution, Movement Control and Feedback.
  - 5.1.4. Benefits of Motor Action on Brain Learning Processes.
- 5.2. Motor Action and Neurophilic Factors. BDNF.
  - 5.2.1. Neurogenesis and Neuroplasticity
  - 5.2.2. Neurotrophin or Neurotrophic Factors What Are They and What are They For?
  - 5.2.3. Prominent Role and Benefits of Motor Action on BDNF
- 5.3. Motor Action, Neurotransmitters and Hormones.
  - 5.3.1. The Main Neurotransmitters and Hormones Related to Motor Practice and Learning Abilities
  - 5.3.2. Endorphins
  - 5.3.3. Serotonin
  - 5.3.4. Oxytocin
  - 5.3.5. Dopamine
  - 5.3.6. Adrenaline and Noradrenaline
  - 5.3.7. Glucocorticoids
- 5.4. The Importance of the Cerebellum in Coordination and Cognitive Processes.
  - 5.4.1. Structure of the Cerebellum
  - 5.4.2. Functions of the Cerebellum and its Importance in Motor Action
  - 5.4.3. Importance of the Cerebellum in Cognitive Processes
- 5.5. Impact of Motor Action on Memory Processes.
  - 5.5.1. What is Memory and How is it Divided?
  - 5.5.2. In What Part of the Brain is Memory Located?
  - 5.5.3. Prominent Role of the Hippocampus in Memory
  - 5.5.4. Impact of Motor Action on Memory

- 5.6. The Prefrontal Cortex, Seat of the Brain's Executive Functions.
  - 5.6.1. Executive Functions of the Brain
  - 5.6.2. The Four Lobes of Each Cerebral Hemisphere
  - 5.6.3. Frontal Lobe: Executive Director of the Brain
  - 5.6.4. The Prefrontal Cortex: The Orchestra Conductor
  - 5.6.5. Cerebral Structures Connected to the Frontal Lobe
- 5.7. Impact of Motor Action with Executive Processes: Decision-Making.
  - 5.7.1. Somatic Markers
  - 5.7.2. Brain Structures Involved in Decision-Making
  - 5.7.3. The Development of Somatic States
  - 5.7.4. Decision-Making in Sports Practice
- 5.8. Impact of Motor Action with Executive Processes: Pause and Reflection Response
  - 5.8.1. Regulating Emotions
  - 5.8.2. Conflicts, Inconsistencies and the Prefrontal Cortex
  - 5.8.3. The Relevance of Heart Rate
- 5.9. Motor Action and Predisposition to Learning
  - 5.9.1. Motor Action and Learning
  - 5.9.2. How Does Motor Action Predispose to Learning?
  - 5.9.3. How Can the Benefits of Motor Action be Enhanced?
- 5.10. Impact of Motor Action on Neuroprotective Processes
  - 5.10.1. Conceptualization of Neuroprotection
  - 5.10.2. Effects of Exercise on Brain Protection

## Module 6. Physical Neuroeducation and Learning

- 6.1. Body- Brain Language and Embodied Cognition
  - 6.1.1. Conceptualization of Embodied Cognition
  - 6.1.2. Intelligent Behavior Based on Body-Brain-Environment Interaction
- 6.2. Mental Health and Exercise
  - 6.2.1. What is Meant by Mental Health in this Context?
  - 6.2.2. The Evolutionary Purpose of Motor Action
  - 6.2.3. What if Movement Improved Brain Functioning?

- 6.3. Brain Development Through Physical Exercise
  - 6.3.1. Hippocampus and Basal Ganglia in Relation to Exercise
  - 6.3.2. The Development of the Prefrontal Cortex and Other Brain Structures due to Physical Exercise
- 6.4. Executive Attention and Exercise.
  - 6.4.1. The Cognitive Function of Attention
  - 6.4.2. Relationship Between Attention and Exercise
  - 6.4.3. Enhancing Attention
- 6.5. Working Memory in Motor Action.
  - 6.5.1. The Cognitive Function of Memory
  - 6.5.2. Working Memory
  - 6.5.3. Relationship Between Memory and Motor Action
  - 6.5.4. Enhancing Memory
- 6.6. Improvement of Cognitive Performance derived from Motor Action.
  - 6.6.1. Motor Action-Behavior Relationship
  - 6.6.2. Motor Action-Brain Health Relationship
- 6.7. Academic Results and their Relationship to Physical Practice.
  - 6.7.1. Academic Improvements as a Consequence of Motor Action
  - 6.7.2. Specific Interventions
  - 6.7.3. Prolonged Interventions
  - 6.7.4. Conclusions
- 6.8. Positive Influence of Motor Skills on Students with Learning Difficulties
  - 6.8.1. The Brain in Special Educational Needs
  - 6.8.2. Attention Deficit Hyperactivity Disorder and Motor Action
  - 6.8.3. Specific Proposals for Motor Action
- 6.9. Pleasure, a Fundamental Element in Physical Neuroeducation
  - 6.9.1. Pleasure Systems in the Brain
  - 6.9.2. Relationship Between Pleasure and Learning
- 6.10. General Recommendations for the Implementation of Didactic Proposals
  - 6.10.1. The Coherence of Action-Research
  - 6.10.2. Concrete Example of an Action-Research Proposal in Physical Neuroeducation
  - 6.10.3. Phases of the Working Process
  - 6.10.4. Criteria, Techniques and Strategies for the Collection of Information
  - 6.10.5. Approximate Schedule of the Planned Phases

## Module 7. Motor Practices that Have an Impact on Brain Development

- 7.1. Body Wisdom
  - 7.1.1. The Body as a Starting Point
  - 7.1.2. The Languages of the Body
  - 7.1.3. Body Intelligence
- 7.2. Aerobic Exercise
  - 7.2.1. The Impact of Aerobic Exercise on the Brain
  - 7.2.2. Practical Suggestions of Aerobic Exercise for Brain Development
- 7.3. Anaerobic Exercise
  - 7.3.1. How Does Anaerobic Exercise Affect the Brain?
  - 7.3.2. Practical Proposals for the Classroom
- 7.4. Play
  - 7.4.1. Playing as an Act Connatural to the Human Being
  - 7.4.2. What Happens in the Brain While We Play?
  - 7.4.3. Playing and Learning
  - 7.4.4. Practical Proposals for the Classroom
- 7.5. Muscular Strength
  - 7.5.1. Muscular Strength and its Relationship with the Brain
  - 7.5.2. Practical Proposals for the Classroom
- 7.6. Coordination Activities
  - 7.6.1. The Role of the Cerebellum in Motor Action
  - 7.6.2. Practical Coordinative Proposals for Brain Development
- 7.7. Relaxation and Meditation Activities
  - 7.7.1. Effects of Meditative Activities on the Brain
  - 7.7.2. Practical Proposals of Relaxation and Meditation for Brain Development.
- 7.8. Expressive and Artistic Activities and Brain Development from a Social-Emotional Perspective
  - 7.8.1. Effects of Expressive and Artistic Activities on the Brain
  - 7.8.2. Practical Expressive and Artistic Proposals for Brain Development
- 7.9. Natural Environment Activities and Brain Development
  - 7.9.1. The "Natural " Brain
  - 7.9.2. Effect of the Activities in the Natural Environment on the Brain
  - 7.9.3. Practical Proposals to Promote the Practice of Physical Activity in the Natural Environment

- 7.10. Global Proposals for Physical Neuroeducation
  - 7.10.1. Methodological Principles
  - 7.10.2. Proposal of Aerobic Exercise and Corporal and Artistic Expression
  - 7.10.3. Strength and Coordination Proposal
  - 7.10.4. Proposal of Activities in the Natural Environment and Meditation

## Module 8. Invisible Training in Brain Development

- 8.1. Invisible Training Concept
  - 8.1.1. Invisible Training
  - 8.1.2. The Relevance of Invisible Training for Performance Enhancement
  - 8.1.3. Basic Attitudes of Everyday Life
  - 8.1.4. Sports Hygiene
  - 8.1.5. Positive Mental Disposition
  - 8.1.6. The Principle of Supercompensation
  - 8.1.7. Key Factors Invisible Training      Discipline to Promote Invisible Training
  - 8.1.8. The Role of Key Myokines in Relation to Exercise and Health
- 8.2. The Role of Main Myokines in Relation to Exercise and Health
  - 8.2.1. What are Myokines? How Important are They?
  - 8.2.2. Physical Inactivity, Inflammation and Metabolic Syndrome
  - 8.2.3. Main Myokines and Their Role
  - 8.2.4. Conclusions Myokines
- 8.3. Nutrition
- 8.4. Relevance of Sleep in Learning
  - 8.4.1. The Functions of Sleep
  - 8.4.2. What is the Anatomical Substratum of Sleep?
  - 8.4.3. What is the Role of Sleep in Learning and Memory?
  - 8.4.4. Phases of Sleep and Memory Consolidation
  - 8.4.5. Sleep Favors Insight or Creative Thinking
  - 8.4.6. Sleep Hygiene
  - 8.4.7. The Consequences of Not Sleeping Well
  - 8.4.8. Sleep and Harmful Substances
- 8.5. Active Breaks.
  - 8.5.1. What is Active Rest?
  - 8.5.2. Difference Between Active Rest and Passive Rest
  - 8.5.3. The Importance of Active Rest for Muscle Recovery
  - 8.5.4. Maintaining the Blood Flow to Recover Earlier
  - 8.5.5. Decreasing Intensity
  - 8.5.6. Active Rest as Part of the Exercise Routine
  - 8.5.7. Ways to Practice Active Rest
  - 8.5.8. Advantages of Active Rest
- 8.6. Prevention of Harmful Habits.
  - 8.6.1. Habits that Are Harmful to Health
  - 8.6.2. The Importance of Prevention
  - 8.6.3. The Development of Healthy Habits
  - 8.6.4. Physical Hygiene
  - 8.6.5. Positive Mental Attitude
  - 8.6.6. Routine Healthy Habits
  - 8.6.7. Preventing Unhealthy Habits
  - 8.6.8. Technological Allies
- 8.7. Body Posture from a Neuroscientific Perspective.
  - 8.7.1. Our Body Posture
  - 8.7.2. The Brain Arranges our Body Posture
  - 8.7.3. Our Body Posture Influences the Way We Feel and Think
  - 8.7.4. Body Posture and Performance
  - 8.7.5. Tools for Proper Body Posture
- 8.8. Prevention of Diseases and Improvement of Quality of Life
  - 8.8.1. Relationship of Physical Action and Mental Health
  - 8.8.2. Physical Condition as a Factor in the Prevention of Mental Illness
  - 8.8.3. How Does Physical Fitness Improve Our Cognitive Quality?
  - 8.8.4. Programs and Tools to Prevent Mental Illness through Physical Activity

- 8.9. Disease Prevention and Improvement of the Quality of Life in terms of Cardiovascular Risk Diseases (Obesity, Diabetes or Metabolic Syndrome).
  - 8.9.1. Physical Condition as a First Order Prevention Factor
  - 8.9.2. Effect of Physical Fitness on Cardiovascular Disease and the Brain.
  - 8.9.3. Programs to Increase the Level of Physical Activity and Reduce the Risk of Cardiovascular Disease in Children and Adolescents
- 8.10. Prevention and Amelioration of Carcinogenic Processes due to Motor Action.
  - 8.10.1. Motor Action as a Health Factor
  - 8.10.2. Physical Condition as an Element in the Prevention of Cancerous Processes
  - 8.10.3. Physical Fitness and the Improvement of Carcinogenic Processes
  - 8.10.4. Physical Fitness, the Immune System and its Effects on Health
  - 8.10.5. Programs for Physical Activity in People with Cancer Processes

### Module 9. Pedagogical Models and Evaluation in Physical Neuroeducation

- 9.1. Conceptual Approach of the Terms Related to Methodology in Physical Education
  - 9.1.1. Teaching and Learning
  - 9.1.2. Didactic Intervention
  - 9.1.3. Teaching Technique and Style
  - 9.1.4. Teaching-Learning Based on Direct Instruction
  - 9.1.5. Teaching-Learning Based on Inquiry or Searching
  - 9.1.6. Strategy in Practice
  - 9.1.7. Pedagogical Methods and Models
- 9.2. Assessment of the Teaching- Learning Process in Physical Neuroeducation.
  - 9.2.1. Conceptual Clarification of the Terms Related to the Assessment.
  - 9.2.2. Evaluation Techniques, Procedures and Instruments
  - 9.2.3. Types of Assessment in Physical Education
  - 9.2.4. Moments of Physical Education Assessment
  - 9.2.5. Evaluation-Research Binomial
  - 9.2.6. Neuroevaluation in Physical Education
- 9.3. Assessment of Student Learning with a focus on Physical Neuroeducation.
  - 9.3.1. Competency Assessment
  - 9.3.2. Educational Assessment
  - 9.3.3. Personalized Assessment
  - 9.3.4. Practical Proposals for Assessment in Physical Education from a Neurodidactic Perspective

- 9.4. Cooperative Learning
  - 9.4.1. Description of the Model
  - 9.4.2. Practical Proposals
  - 9.4.3. Recommendations for Implementation
- 9.5. Sports Education Model (SEM)
  - 9.5.1. Description of the Model
  - 9.5.2. Practical Proposals
  - 9.5.3. Recommendations for Implementation
- 9.6. Personal and Social Responsibility Model.
  - 9.6.1. Description of the Model
  - 9.6.2. Practical Proposals
  - 9.6.3. Recommendations for Implementation
- 9.7. Compressive Model of Sport Initiation (TGfU)
  - 9.7.1. Description of the Model
  - 9.7.2. Practical Proposals
  - 9.7.3. Recommendations for Implementation
- 9.8. Ludotechnical Model
  - 9.8.1. Description of the Model
  - 9.8.2. Practical Proposals
  - 9.8.3. Recommendations for Implementation
- 9.9. Adventure Education Model
  - 9.9.1. Description of the Model
  - 9.9.2. Practical Proposals
  - 9.9.3. Recommendations for Implementation
- 9.10. Other Models.
  - 9.10.1. Motor Literacy
  - 9.10.2. Attitudinal Model
  - 9.10.3. Self-Construction of Materials
  - 9.10.4. Health Education
  - 9.10.5. Hybridization of Models



## Module 10. Methodologies, Methods, Tools and Didactic Strategies Favoring Physical Neuroeducation

- 10.1. *Flipped Classroom* or Inverted Classroom.
  - 10.1.1. Description
  - 10.1.2. Practical Proposals
  - 10.1.3. Recommendations for Implementation
- 10.2. Problem and Challenge Based Learning
  - 10.2.1. Description
  - 10.2.2. Practical Proposals
  - 10.2.3. Recommendations for Implementation
- 10.3. Project-Based Learning
  - 10.3.1. Description
  - 10.3.2. Practical Proposals
  - 10.3.3. Recommendations for Implementation
- 10.4. Case Method and Service Learning
- 10.5. Learning Environments
  - 10.5.1. Description
  - 10.5.2. Practical Proposals
  - 10.5.3. Recommendations for Implementation
- 10.6. Motor Creativity or Corporal Synectics
  - 10.6.1. Description
  - 10.6.2. Practical Proposals
  - 10.6.3. Recommendations for Implementation
- 10.7. Game-Based Learning.
  - 10.7.1. Description
  - 10.7.2. Practical Proposals
  - 10.7.3. Recommendations for Implementation
- 10.8. Ludification or Gamification.
  - 10.8.1. Description
  - 10.8.2. Practical Proposals
  - 10.8.3. Recommendations for Implementation
- 10.9. Other Methods, Tools and Didactic Strategies Favoring Physical Neuroeducation.
  - 10.9.1. Case Method
  - 10.9.2. Didactic Contract
  - 10.9.3. Corner Work
  - 10.9.4. Aronson's Puzzle
  - 10.9.5. Interactive Methodology
  - 10.9.6. Technologies for Learning and Knowledge (TAC)
  - 10.9.7. Portfolio
- 10.10. Methodological Guidelines and Recommendations for the Design of Programs, Units and Sessions Based on Physical Neuroeducation
  - 10.10.1. Methodological Orientations According to Physical Neuro-Education
  - 10.10.2. Recommendations for the Design of Programs, Didactic Units and Sessions based on Physical Neuroeducation
  - 10.10.3. Examples of Units and Sessions Based on Physical Neuroeducation



*Boost your professional development with a unique education in the teaching market"*

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.





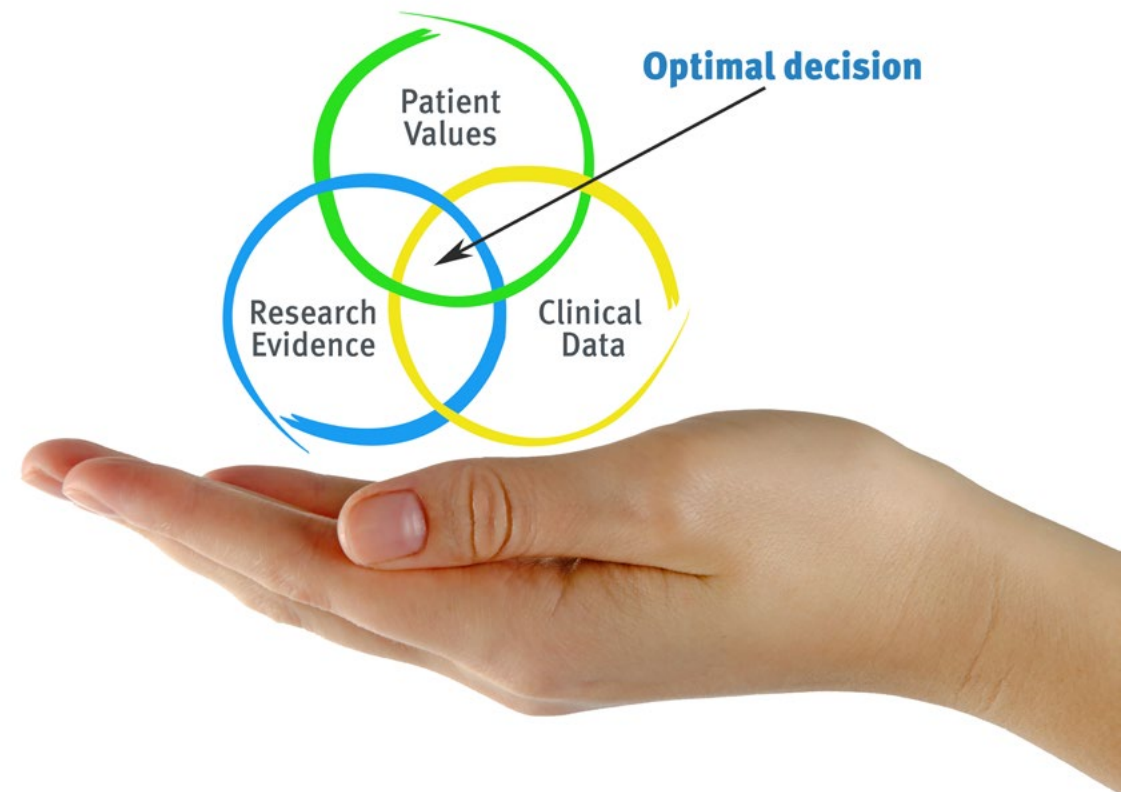
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*Discover Relearning, a system that abandons conventional linear learning, to take you through cyclical teaching systems: a way of learning that has proven to be extremely effective, especially in subjects that require memorization"*

## At TECH we use the Case Method

What should a professional do in a given situation? Throughout the program, students will face multiple simulated clinical cases, based on real patients, in which they will have to do research, establish hypotheses, and ultimately resolve the situation. There is an abundance of scientific evidence on the effectiveness of the method. Physiotherapists/kinesiologists learn better, faster, and more sustainably over time.

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



According to Dr. Gérvas, the clinical case is the annotated presentation of a patient, or group of patients, which becomes a "case", an example or model that illustrates some peculiar clinical component, either because of its teaching power or because of its uniqueness or rarity. It is essential that the case is based on current professional life, trying to recreate the real conditions of professional physiotherapy practice.

“

*Did you know that this method was developed in 1912, at Harvard, for law students? The case method consisted of presenting students with real-life, complex situations for them to make decisions and justify their decisions on how to solve them. In 1924, Harvard adopted it as a standard teaching method”*

The effectiveness of the method is justified by four fundamental achievements:

1. Physiotherapists/kinesiologists who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the physiotherapist/kinesiologist to better integrate into the real world.
3. Ideas and concepts are understood more efficiently, given that the example situations are based on real-life.
4. Students like to feel that the effort they put into their studies is worthwhile. This then translates into a greater interest in learning and more time dedicated to working on the course.



## Relearning Methodology

At TECH we enhance the case method with the best 100% online teaching methodology available: Relearning.

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



*The physiotherapist/kinesiologist will learn through real cases and by solving complex situations in simulated learning environments. These simulations are developed using state-of-the-art software to facilitate immersive learning.*

At the forefront of world teaching, the Relearning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best online university (Columbia University).

With this methodology we trained more than 65,000 physiotherapists/kinesiologists with unprecedented success in all clinical specialties, regardless of the workload. Our pedagogical methodology is developed in a highly competitive environment, with a university student body with a strong socioeconomic profile and an average age of 43.5 years old.

*Relearning will allow you to learn with less effort and better performance, involving you more in your training, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation for success.*

In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically.

The overall score obtained by our learning system is 8.01, according to the highest international standards.



This program offers the best educational material, prepared with professionals in mind:



#### Study Material

All teaching material is produced by the specialists who teach the course, specifically for the course, so that the teaching content is really specific and precise.

These contents are then applied to the audiovisual format, to create the TECH online working method. All this, with the latest techniques that offer high quality pieces in each and every one of the materials that are made available to the student.



#### Physiotherapy Techniques and Procedures on Video

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



#### Interactive Summaries

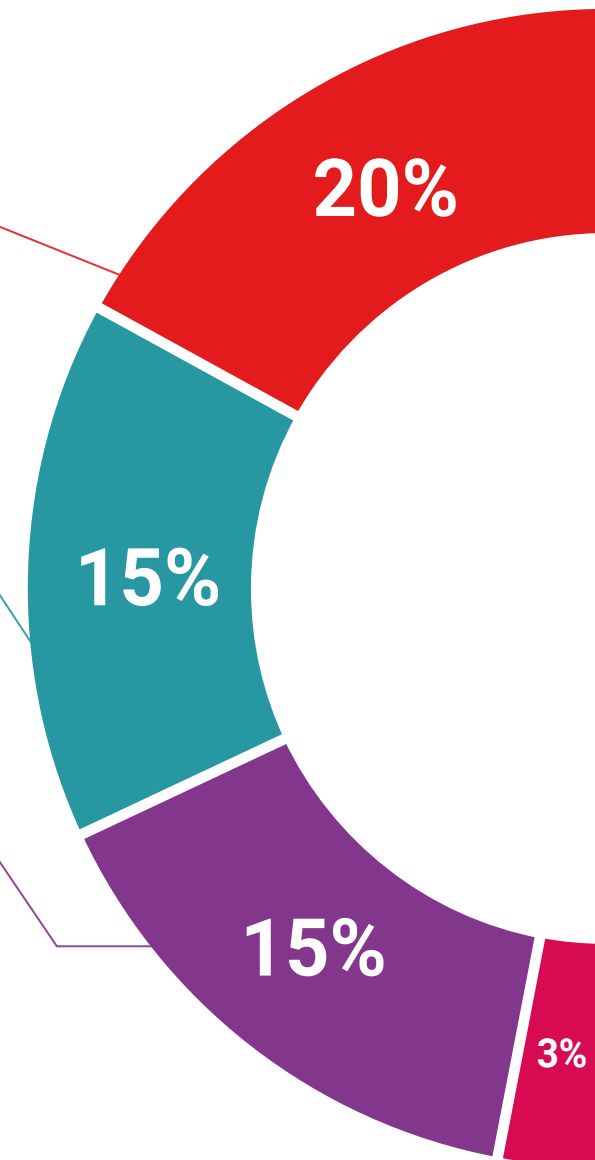
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

This unique multimedia content presentation training system was awarded by Microsoft as a "European Success Story".

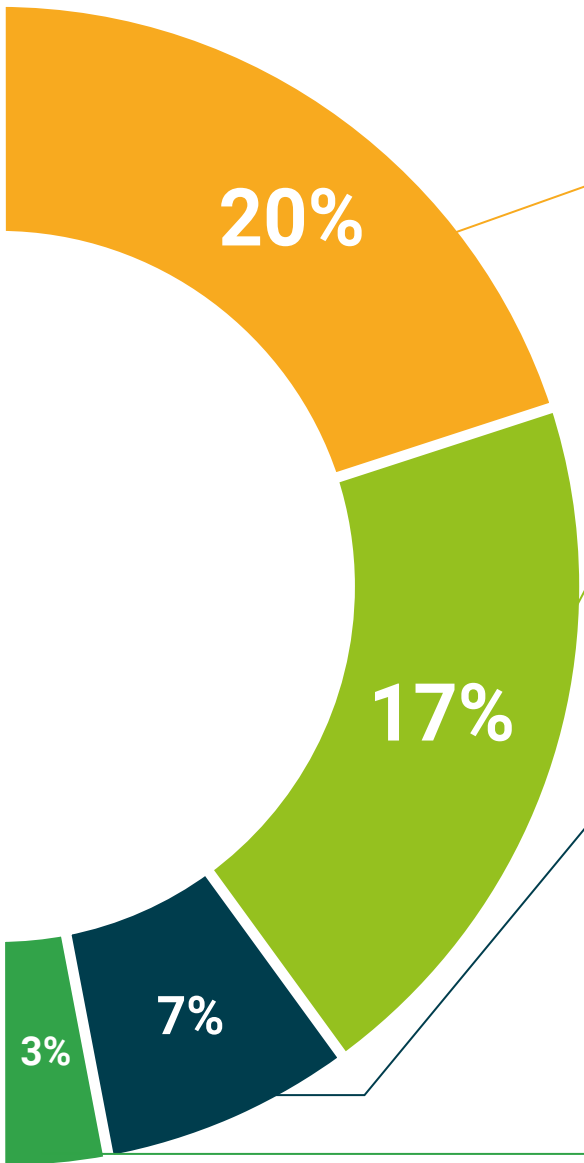


#### Additional Reading

Recent articles, consensus documents and international guidelines, among others. In TECH's virtual library, students will have access to everything they need to complete their course.







#### Expert-Led Case Studies and Case Analysis

Effective learning ought to be contextual. Therefore, TECH presents real cases in which the expert will guide students, focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



#### Testing & Retesting

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



#### Classes

There is scientific evidence on the usefulness of learning by observing experts. The system known as Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.



#### Quick Action Guides

TECH offers the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help students progress in their learning.



# 07 Certificate

The Master's Degree in Neuroeducation and Physical Education guarantees students, in addition to the most rigorous and up-to-date education, access to a Master's Degree issued by TECH Global University.



“

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

This private qualification will allow you to obtain a **Master's Degree diploma in Neuroeducation and Physical Education** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra (*official bulletin*). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

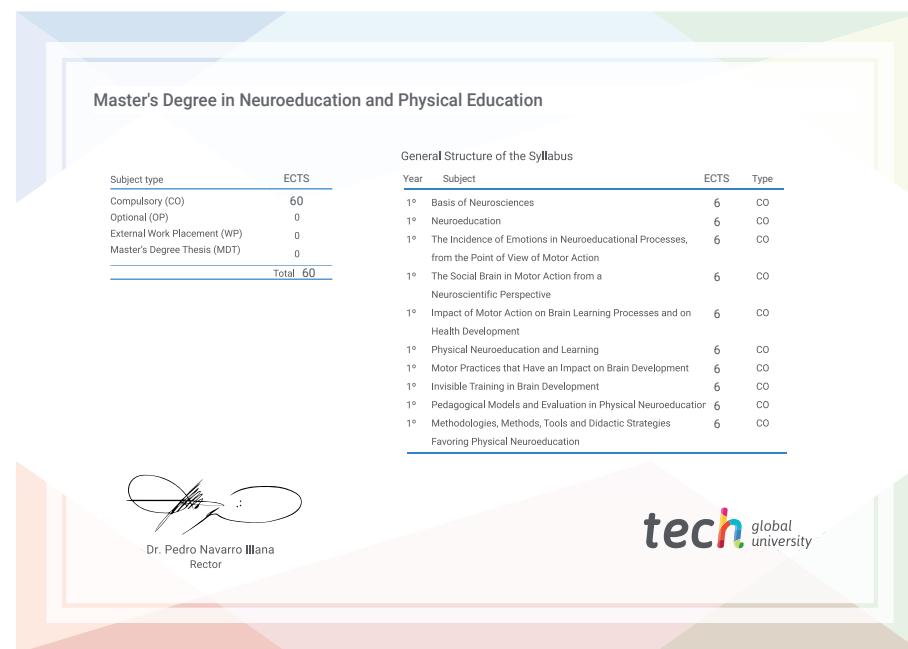
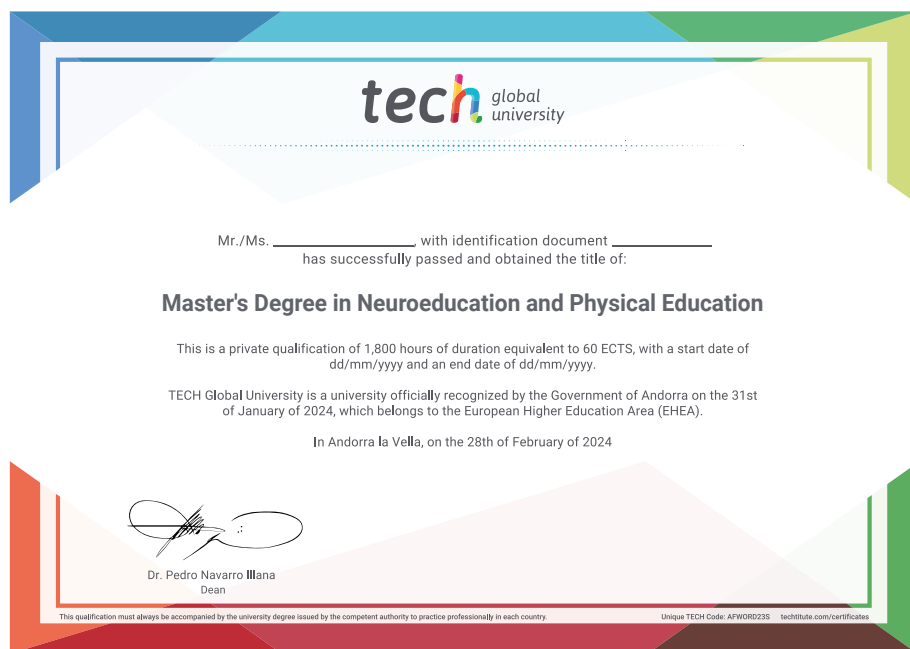
This **TECH Global University** private qualification is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Master's Degree in Neuroeducation and Physical Education**

Modality: **online**

Duration: **12 months**

Accreditation: **60 ECTS**



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

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community commitment  
personalized service innovation  
knowledge presentation  
online training  
development languages  
virtual classroom



**Master's Degree**  
Neuroeducation and  
Physical Education

- » Modality: online
- » Duration: 12 months
- » Certificate: TECH Global University
- » Credits: 60 ECTS
- » Schedule: at your own pace
- » Exams: online

# Master's Degree

## Neuroeducation and Physical Education

Endorsed by the NBA

