Hybrid Professional Master's Degree

Strength Training in Sports Performance

Endorsed by the NBA

tech technological university

tech technological university

Hybrid Professional Master's Degree

Strength Training in Sports Performance

Modality: **Hybrid (Online + Clinical Internship)**
Duration: **12 months**
Certificate: **TECH Technological University**
Teaching Hours: **1,620 h.**
Website: **www.techtitute.com/us/physiotherapy/hybrid-professional-master-degree/hybrid-professional-master-degree-strength-training-sports-performance**

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01

Introduction

Strength training has become key tool to in sports Performance and injury prevention in athletes of all levels. From improving muscle strength and power to speeding recovery, Strength Training offers a wide range of benefits for athletes. this reason, this, it is essential that professionals Physiotherapist have specialized knowledge in Strength Training. Thus, this qualification was created to bring the professional up to date by means of a 100% online program, which includes an advanced a 100% online program, which includes an advanced syllabus and a 3-week practical stay in a prestigious clinical center. A unique up-to-date opportunity that only TECH can offer you.

A blended Master that will allow you in just 12 months to update your knowledge on injury prevention through Strength Training"

Strength Training in Sports Performance has become a key factor for athletes in their quest to improve their performance and prevent injuries. As a physiotherapist, having knowledge in this area has become increasingly important in order to help athletes achieve their goals safely and effectively.

In this sense, this academic institution has designed a unique program that encompasses the most exhaustive and current theoretical knowledge on the principles of biomechanics and exercise physiology, as well as periodization of training. and physiology of exercise, as well as the periodization of training, allows the physiotherapist to the physiotherapist to design specific and personalized training programs for each athlete, adapting them to their needs and objectives. All this, in addition to a first class didactic material based on video summaries of each topic, videos in detail, specialized readings and simulations of case studies that can be accessed comfortably, 24 hours a day, from an electronic device with an internet connection.

At the same time, this degree offers an eminently practical phase, where students will be able to apply the concepts addressed in a specialized clinical center, where they will be able to spend a 3-week internship.

A unique opportunity for those who seek to differentiate themselves and stand out in their professional practice through an academic option taught in a 100% online teaching mode in its theoretical phase, while complementing the process of updating through an eminently practical period and very useful for the professional performance of the physiotherapist.

Designs high quality strength training plans for athletic performance and incorporates the most effective strategies to avoid injury"

This **Hybrid Professional Master's Degree in Strength Training in Sports Performance** contains the most complete and up-to-date scientific program on the market. The most important features include:

- Development of more than 100 cases presented by nursing professionals with expertise in intensive care and university professors with extensive experience in the Sectors
- 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
- Successfully integrate strength training for the improvement of motor skills immersed in sport
- Comprehensive systematized action plans for the main pathologies in the Intensive Care Medicine Unit
- Presentation of practical workshops on procedures, diagnosis, and treatment techniques in critical patients
- An algorithm-based interactive learning system for decision-making in the clinical situations presented throughout the course
- Addressing the different injuries caused by overtraining
- With a special emphasis on evidence-based medicine and research methodologies in sports recovery of. lesions
- All this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- Content that is accessible from any fixed or portable device with an Internet connection
- Furthermore, you will be able to carry out a clinical internship in one of the best clinical and centers

Take a 3-week intensive stay in a prestigious center and update your knowledge in Strength Training applied to different sports"

This blended master's degree will immerse you in the most comprehensive content on exercise physiology and biochemistry.

Boost your skills to work with athletes in different sports and clinical situations.

In this proposal for a Master's Degree, of a professionalizing nature and blended learning modality, the program is aimed at updating physiotherapists who perform their functions in clinical centers and hospitals, and who require a high level of qualification. The contents are based on the latest scientific evidence, and oriented in an educational way to integrate theoretical knowledge into practice, and the theoretical-practical elements will facilitate knowledge update and decision-making in patient management.

Thanks to their multimedia content developed with the latest educational technology, they will allow the physiotherapy professional to obtain situated and contextual learning, i.e. a simulated environment that will provide immersive learning programmed to train in real situations. This program is designed around Problem-Based Learning, whereby the physician must try to solve the different professional practice situations that arise during the course. For this purpose, the students will be assisted by an innovative interactive video system created by renowned and experienced experts.

02

Why Study this Hybrid Professional Master's Degree?

This program offers a unique combination of theoretical and practical training, through a blended learning approach that allows the necessary flexibility to combine studies with other activities. In addition, practical training in a recognized clinical center allows students to apply the knowledge acquired in real sports training situations. In addition, the presence of expert tutors for 3 weeks provides an unparalleled opportunity to receive a quality and personalized update, which ensures the success of the participants' professional careers. career success.

TECH has selected specialized clinical centers, where you can get an effective update from the best experts"

1. Updating from the Latest Technology Available

In recent years, the use of advanced technology has been incorporated for monitoring performance and evaluating the physical condition of athletes, as well as the application of innovative Strength Training techniques. A field in which students who take this blended learning Master's Degree will be able to get involved, which will give them access to digital resources and interactive tools to complement their updating process.

2. Gaining In-depth Knowledge from the Experience of Top Specialists

In this academic itinerary, the physiotherapist professional will not be alone. You will have a specialized teacher who will answer any questions you may have about the content of this program. the content of this program and, on the other hand, you will be accompanied by a team of experts working in the clinical of experts working in the clinical space where you will do your practical stay. In this way will be able to integrate the most advanced methodologies and diagnostic and therapeutic procedures from the best specialists.

3. Entering First-Class Clinical Environments

TECH carefully selects all available centers for Internship Programs. Thanks to this, the specialist will have guaranteed access to a prestigious clinical environment in the field of general and digestive system surgery. In this way, you will be able to see the day-to-day work of a demanding, rigorous and exhaustive sector, always applying the latest theses and scientific postulates in its work methodology.

4. Combining the Best Theory with State-of-the-Art Practice

One of the elements that distinguishes this degree is its perfect combination of the theoretical framework with a practical stay in a distinguished space. All this, conceived from the outset to respond to the real needs of physiotherapists seeking to update their knowledge. In this way, the graduate will be able to be at the forefront of the most advanced procedures in the planning of training programs for the prevention of injuries in high performance athletes.

5. Expanding the Boundaries of Knowledge

This university degree will lead the graduate to broaden his or her field of action and possibilities of professional incursion in first level clinical areas. All this, thanks to the updating of your competences through an expert teaching staff with great experience in the sector and to the possibility of a practical training in a prestigious center.

You will have full practical immersion at the center of your choice"

03

Objectives

TECH has designed a blended program that offers students a complete update of their knowledge in just 12 months and with the most comprehensive curriculum on Strength Training in Sports Performance in the academic panorama. For this reason, with an integral vision, the graduate will be able to progress in his or her sector and differentiate himself or herself from other professionals. A unique opportunity , that only offer TECH, the largest online university in the world.

Get a complete update with the best teaching material on the current university scene"

General Objective

- The main objective of this university degree is to deepen the knowledge based on the latest scientific evidence and its applicability. knowledge based on the most current scientific evidence and its applicability in the practical field of strength in the practical field of strength training. With this program, students will be up to date with advanced methods in strength training, applying with certainty the most current training methods for the improvement of sports performance in terms of strength. In addition, students have access to innovative teaching material that can be accessed 24 hours a day , from any device Digital with an Internet connection

He applies the most innovative diagnostic procedures and plans state-of-the-art therapeutics for each sports pathology"

Specific Objectives

Module 1. Exercise Physiology and Physical Activity

- Specialize and interpret key aspects of biochemistry and thermodynamics
- Gain in-depth knowledge of the energy metabolic pathways and their exercise-mediated modifications and their role in human performance
- Specialize in key aspects of the neuromuscular system, motor control and its role in physical training
- In-depth knowledge of muscle physiology, the process of muscle contraction and the molecular basis of this process
- Delve into the functioning of the cardiovascular and respiratory systems and oxygen utilization during exercise
- Manage the general causes of fatigue and impact in different types and modalities of exercise
- Identify the different physiological breakthroughs and their practical application

Module 2. Strength Training for the Improvement of Movement Skills

- Gain an in-depth understanding of the relationship between strength and skills
- Identify the main skills in sports in order, to analyze them, understand them and then enhance them through training
- Organize and systematize the skill development process
- Link and relate field and gym work to enhance the skills

Module 3. Strength Training under the Paradigm of Complex Dynamic Systems

- Master specific knowledge about the theory of systems in sports training
- Analyze the different components that are interrelated in strength training and their application in situational sports
- Guide strength training methodologies towards a perspective that addresses the specific demands of sport
- Develop a critical view of the reality of strength training for athletic and non-athletic populations

Module 4. Strength Training Prescription and Scheduling

- Specialize and interpret the key aspects of strength training
- In-depth knowledge of the different components of the load
- Delve into key aspects of planning, periodization and load monitoring
- Gain in-depth knowledge of the different session set-up schemes
- Manage the most common prescribing, monitoring and adjustment models

Module 5. Strength Training Methodology

- Gain in-depth knowledge of the different methodological proposals of strength training and their applicability to the field of practice
- Select the most appropriate methods for specific needs
- Recognize and safely apply the different methods proposed in the literature

Module 6. Theory of Strength Training and Bases for Structural Training

- Master in depth the theoretical terms as far as Strength Training is concerned
- Master in depth the theoretical terms as far as Power Training is concerned
- Master the methodological aspects of training for hypertrophic purposes
- Master the Physiological aspects of training for hypertrophic purposes

Module 7. Strength Training to Improve Speed

- Know and interpret the key aspects of the techniques for speed and changing direction
- Compare and differentiate the speed of situational sport with respect to the track and field model
- Know in depth which are the mechanical aspects that can influence in the decrease of performance and in the mechanisms of injury production in sprinting
- Analytically apply the different means and methods of strength training to develop sprinting

Module 8. Sports Performance Assessment in Strength Training

- Specialize in the different types of assessment and their applicability to the field of practice
- Select the most appropriate tests/exercises for the client's specific needs
- Correctly and safely administer the protocols of the different tests and the interpretation of the data collected
- Delve into and apply different types of technologies currently used in the field of assessment, in the field of health and fitness performance at any level of demand

Module 9. Strength Training in Situational Sports

- Gain an in-depth understanding of the logic of movement-based training design
- Differentiate between means and methods for strength
- Detect priority movement patterns for applying force in the sport at hand
- Understand the functioning and application of technological means in the service of strength training

Module 10. Training in Medium and Long Duration Sports

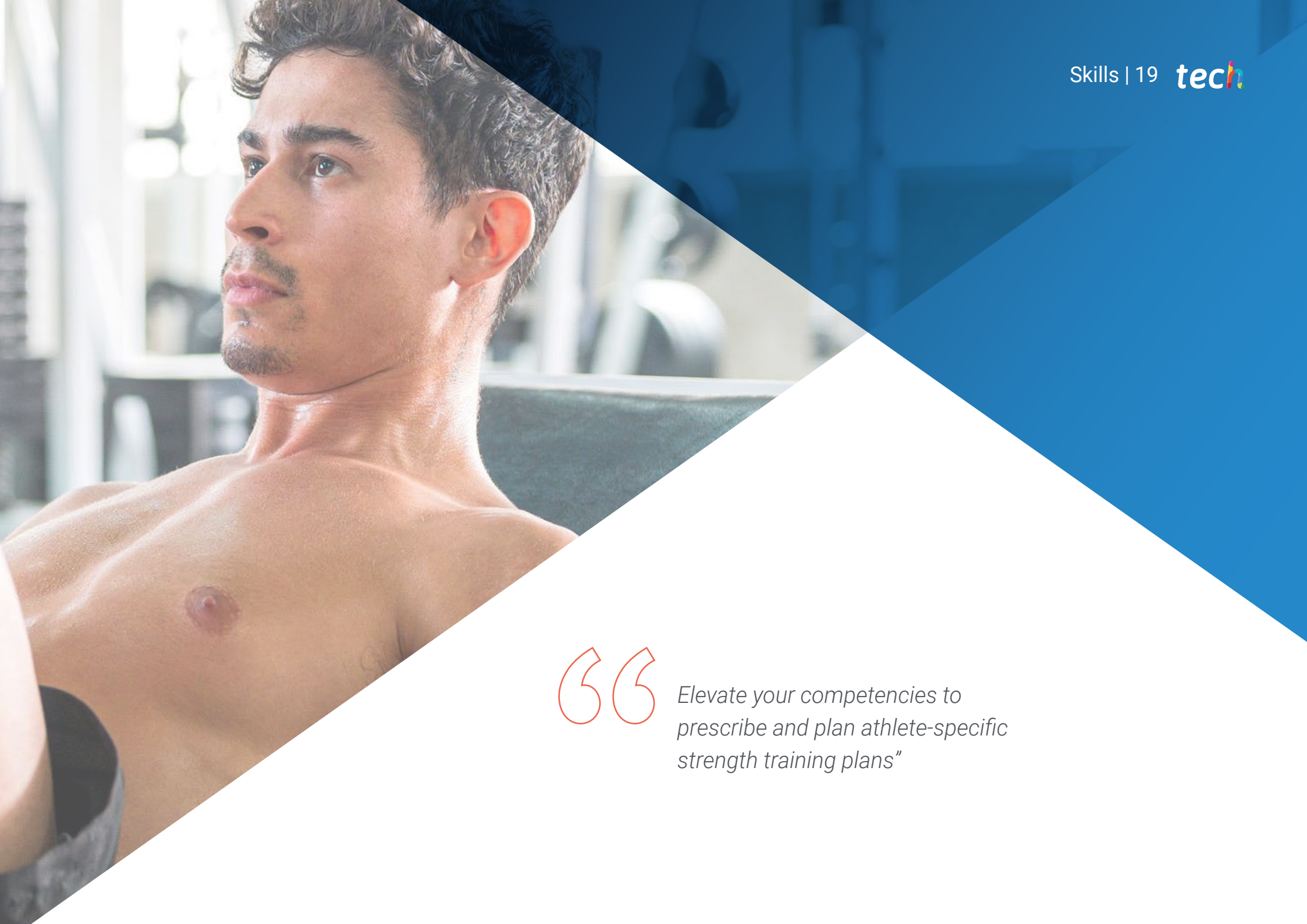
- Identify and analyze the mechanisms of force production in different endurance disciplines
- Gain in-depth knowledge of the different means and methods of strength training and their practical application
- Delve deeper into the effects of concurrent training and its responses on endurance
- Program and organize strength training

You will combine theory and professional practice through a demanding and rewarding educational approach"

04

Skills

Upon completion of this university degree, students will have enhanced their skills and competencies for the design of strength training plans adapted to the individual needs of each athlete, to apply and adapt the knowledge acquired in the program in a practical way or to work in a coordinated manner with interdisciplinary teams. All this, aided by case studies provided by the expert teaching staff and a practical phase in a first class environment.



Elevate your competencies to prescribe and plan athlete-specific strength training plans”

General Skills

- Successfully integrate strength training to improve sports skills
- Design personalized strength training plans for each athlete, taking into account their medical history and lesions
- Apply and adapt the knowledge acquired in the program in a practical way in different sports fields, from individual sports to team sports
- Work in an interdisciplinary team, coordinating with other health professionals, such as physicians and nutritionists, to obtain a comprehensive approach to improve the athlete's athletic performance
- Communicate clearly and effectively the training plans and the results obtained, both to the athlete and his or her technical team and to the athlete's family members

The case studies of this university degree offer you a much more direct and real insight into the methodology of Strength Training to improve movement"

Specific Skills

- Delve into the functioning of the cardiovascular and respiratory systems and oxygen utilization during exercise
- Organize and systematize the *skill* development process
- Analyze the different components that are interrelated in strength training and their application in situational sports
- Delve into key aspects of planning, periodization and load monitoring
- Master the theoretical terms as far as Strength Training is concerned
- Compare and differentiate the speed of situational sport with respect to the track and field model
- Correctly and safely administer the protocols of the different tests and the interpretation of the data collected
- Detect priority movement patterns for applying force in the sport at hand
- Identify and analyze the mechanisms of force production in different endurance disciplines

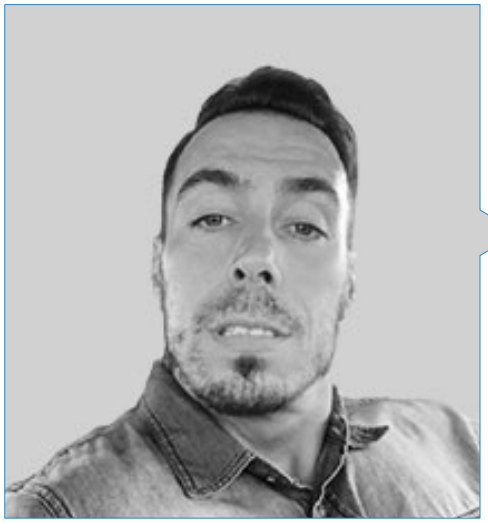
05

Course Management

The teaching team of the Blended Master in Strength Training in Sports Performance is composed of professionals with extensive experience in High Performance Sports, Strength Training and Physical Conditioning with professional athletes and high-level training centers. Their experience and trajectory in the sector allows them to transmit to the students a realistic and effective approach in the planning and execution of this training modality. In addition, thanks to their proximity, students will be able to resolve any doubts that may arise regarding the content of this program.

An excellent teaching team specialized in training at the highest level will guide you through this 1,620-hour refresher course"

Management



Dr. Rubina, Dardo

- Specialist in High Performance Sports
- CEO the Project Test and Training
- Physical Trainer at Moratalaz Sports School
- Teacher of Physical from Education in Football and Anatomy CENAFE Schools Carlet
- Coordinator of Field Hockey Physical Training at the Gimnasia y Esgrima Club in Buenos Aires
- Doctorate in High Performance Sports
- Diploma in Advanced Research Studies at the University of Castilla - La Mancha
- Master in High Performance Sports by the Autonomous University of Madrid
- Postgraduate in Physical Activity in Populations with Pathologies by the University of Barcelona
- Competitive Bodybuilding Technician by the Extremadura Federation of Bodybuilding and Fitness
- Expert in Sports Scouting and Quantification of Training Load Cone specialization in in Soccer Sciences Sports Sciences
- Advanced Bodybuilding Expert by the International Fitness and Bodybuilding Federation (IFBB)
- Advanced Nutrition Expert by the International Fitness and Bodybuilding Federation (IFBB)
- Specialist in Physiological Assessment and Interpretation of Physical Fitness
- Certification in Technologies for Weight Control and Physical Performance Arizona State University

Professors

Mr. Carbone, Leandro

- Strength Training and Fitness Teacher
- CEO of the LIFT project, a training and coaching company
- Head of the Department of Sports Evaluation and Exercise Physiology, WellMets - Sport & Medicine Institute in Chile
- CEO Manager at Complex I
- University Lecturer
- External Consultant for Speed4lift, a leading company in the area of Sports Technology
- Bachelor. In Physical Activity University Salvador
- Specialist in Exercise Physiology, Universidad Nacional de La Plata
- MSc. Strength and Conditioning at the University of Greenwich, U.K

Mr. Masse, Juan Manuel

- Fitness Trainer for High Performance Athletes
- Director of the Athlon Science Study Group
- Physical trainer for several professional soccer teams in South America

Mr. Gizzarelli, Matías Bruno

- Fitness Trainer for High Performance Athletes
- Specialized EXOS Performance Coach for Basketball Players
- Degree in Physical Education
- University Expert in Applied Neurosciences
- Author of the Book Basketball Training: Physical Preparation

Mr. Rossanigo, Horacio

- Strength & Conditioning Coach at FC Barcelona
- Sports Director of Activarte Sport Barcelona
- Co-founder of Build Academy
- Fitness Trainer at Acumen Sports
- Physical Education Teacher in Washington
- Rugby Coach at Uncas Rugby Club
- Professor of Physical Education at the Instituto de Educación Superior Tandil
- Degree in Physical Education and Physiology of Physical Work
- Master's Degree in Physical Preparation in Team Sports at INEFC Barcelona

Mr. Añon, Pablo

- Physical Trainer for the Women's National Volleyball Team for the Olympic Games
- Physical Trainer for volleyball teams of the Argentine Men's First Division
- Physical trainer of professional golfers Gustavo Rojas and Jorge Berendt
- Swimming trainer at Quilmes Atlético Club
- National Professor of Physical Education from the INEF of Avellaneda
- Postgraduate degree in Sports Medicine and Applied Sports Sciences from the National University of La Plata
- Master's Degree in Sports High Performance Universidad Católica San Antonio de Murcia
- Training courses oriented to the field of High Performance Sports

Mr. Vaccarini, Adrián Ricardo

- Physical Trainer Specializing in Top Level Soccer
- Head of the Applied Sciences Field of the Peruvian Football Federation
- Second Physical Trainer of the Peruvian Absolute National Soccer Team
- Physical Trainer of Peru's U-23 National Team
- Responsible for the Research and Performance Analysis Area of Quilmes Atlético Club
- Responsible for the Research and Performance Analysis Area of of Club Atlético Vélez
- Regular speaker at conferences on High Performance Sports
- Degree in Physical Education
- National Physical Education Teacher

Mr. Garzon Duarte, Mateo

- Independent Fitness Coach
- Assistant and Substitute Professor of Biochemistry and Training at Universidad del Salvador
- Physical Trainer and Coordinator at SportsLab, Centro de Alto Rendimiento Deportivo Especializado en Tennis
- MGD-Personalized Training as an S&C Coach
- PhD. In Physical Activity and Sport University Salvador
- Certified Strength and Conditioning Specialist(NSCA) NSCA
- Professional Massage Therapist by the Centro Médico Escuela

Mr. Tinti, Hugo

- Physical Trainer for Club Estudiantes de Mérida
- Former Physical Trainer at Oriente Petrolero Soccer Club
- Former Physical Trainer at Alianza Petrolera
- Former Physical Trainer of the Fourth Division of Club Arsenal
- Master's Degree in Sports Big Data Universidad Católica San Antonio de Murcia
- Degree in Physical Education from the National University Gral. San Martín

Mr. Palarino, Matías

- Physical Trainer of the Professional Staff of Club Social y Deportivo Defensa y Justicia
- CEO at An&En Analysis and Training
- Physical Trainer of the Men's Reserve Soccer Team of Club Atlético Vélez Sarsfield
- Physical trainer in Professional Soccer
- Physical Trainer in Field Hockey
- Physical Trainer in Rugby
- Therapeutic Personal
- Graduate in High Performance Sports at the National University of Lomas in Zamora
- Upper Professor of Physical Education from the ISEF nº1
- Extensive teaching experience in physical preparation and load control courses

Mr. Varela, Mauricio Carlos

- Specialist in Integral Physical Training
- Physical Education Teacher
- Personal Trainer for Seniors
- Physical Trainer, Personal Trainer of Elite Cyclists at the Astronomy Cycling Circuit
- Degree in Physical Education
- Postgraduate Diploma in Exercise Programming and Assessment. Medical Postgraduate Course in by the Faculty of Education field Humanity and Sciences of the National University of La Plata
- ISAK Anthropometrist level 1
- Member of the International Society for the Advancement of Kineanthropometry (ISAK)

Mr. Trobadelo, Pablo Omar

- Physical Trainer of Peru's U-23 National Team
- Trainer and Consultant in " Movement, Strength and Performance"
- Technical Sports Coordinator at KI Gym Concept
- PROFESSIONAL MASTER'S DEGREE in Training and Development of Performance Sports at the National University of Lomas de Zamora

Mr. Vilariño, Leandro

- Fitness Trainer for High Performance Athletes
- Physical Trainer at The Strongest Bolivian Soccer Club
- Physical trainer for professional teams in the Argentine league
- Degree in Physical Activity and Sport

06

Educational Plan

Students taking this academic option will have at their disposal an advanced syllabus consisting of video summaries of each topic, detailed videos, specialized readings and case studies. A wealth of content that will allow you in a very short time to get an update on Strength Training in Sports Performance. In addition, thanks to the Relearning method, you will get away from the long hours of study to consolidate in a simple way the most important concepts addressed in this degree.

A study plan that incorporates a Virtual Library with a large amount of additional didactic material, accessible 24 hours a day"

Module 1. Exercise Physiology and Physical Activity

1.1. Thermodynamics and Bioenergetics
- 1.1.1. Definition
- 1.1.2. General concepts
  - 1.1.2.1. Organic Chemistry
  - 1.1.2.2. Functional Groups
  - 1.1.2.3. Enzymes
  - 1.1.2.4. Coenzymes
  - 1.1.2.5. Acids and Bases
  - 1.1.2.6. PH

1.2. Energy Systems
- 1.2.1. General Concepts
  - 1.2.1.1. Capacity and Power
  - 1.2.1.2. Cytoplasmic Vs. Mitochondrial Processes
- 1.2.2. Phosphagen Metabolism
  - 1.2.2.1. ATP - PC
  - 1.2.2.2. Pentose Pathway
  - 1.2.2.3. Nucleotide Metabolism
- 1.2.3. Carbohydrate Metabolism
  - 1.2.3.1. Glycolysis
  - 1.2.3.2. Glycogenogenesis
  - 1.2.3.3. Glycogenolysis
  - 1.2.3.4. Gluconeogenesis
- 1.2.4. Lipid Metabolism
  - 1.2.4.1. Bioactive Lipids
  - 1.2.4.2. Lipolysis
  - 1.2.4.3. Beta-oxidation
  - 1.2.4.4. De Novo Lipogenesis
- 1.2.5. Oxidative Phosphorylation
  - 1.2.5.1. Oxidative Decarboxylation of Pyruvate
  - 1.2.5.2. Krebs Cycle
  - 1.2.5.3. Electron Transport Chain
  - 1.2.5.4. ROS
  - 1.2.5.5. Mitocondrial Crosstalk

1.3. Signaling Pathways
- 1.3.1. Second Messengers
- 1.3.2. Steroid Hormones
- 1.3.3. AMPK
- 1.3.4. NAD+
- 1.3.5. PGC1

1.4. Skeletal Muscle
- 1.4.1. Structure and Function
- 1.4.2. Fibers
- 1.4.3. Innervation
- 1.4.4. Muscle Cytoarchitecture
- 1.4.5. Protein Synthesis and Breakdown
- 1.4.6. mTOR

1.5. Neuromuscular Adaptations
- 1.5.1. Motor Unit Recruitment
- 1.5.2. Synchronization
- 1.5.3. Neural Drive
- 1.5.4. Golgi Tendon Organ and Neuromuscular Spindle

1.6. Structural Adaptations
- 1.6.1. Hypertrophy
- 1.6.2. Signal Transduction Mechanism
- 1.6.3. Metabolic Stress
- 1.6.4. Muscle Damage and Inflammation
- 1.6.5. Changes in Muscular Architecture

1.7. Fatigue
- 1.7.1. Central Fatigue
- 1.7.2. Peripheral Fatigue
- 1.7.3. HRV
- 1.7.4. Bioenergetic Model
- 1.7.5. Cardiovascular Model
- 1.7.6. Thermoregulator Model
- 1.7.7. Psychological Model
- 1.7.8. Central Governor Model

1.8. Maximum Oxygen Consumption
- 1.8.1. Definition
- 1.8.2. Assessment
- 1.8.3. VO2 Kinetics
- 1.8.4. VAM
- 1.8.5. Running Economics

1.9. Thresholds
- 1.9.1. Lactate and Ventilatory Threshold
- 1.9.2. MLSS
- 1.9.3. Critical Power
- 1.9.4. HIIT and LIT
- 1.9.5. Anaerobic Speed Reserve

1.10. Extreme Physiological Conditions
- 1.10.1. Height
- 1.10.2. Temperature
- 1.10.3. Diving

Module 2. Strength Training for the Improvement of Movement Skills

2.1. Strength in Skill Development
- 2.1.1. The Importance of Strength in Developing Skills
- 2.1.2. Benefits ofSkills-based Strength Training
- 2.1.3. Types of Strength Present in Skills
- 2.1.4. Training Means Necessary for the Development of Srength in Skills

2.2. Skills in Team Sports
- 2.2.1. General concepts
- 2.2.2. Skills in Performance Development
- 2.2.3. Classification of Skills
  - 2.2.3.1. Locomotive Skills
  - 2.2.3.2. Manipulative Skills

2.3. Agility and Movements
- 2.3.1. Basic Concepts
- 2.3.2. The Importance of Sports
- 2.3.3. Agility Components
  - 2.3.3.1. Classification of Movement skills
  - 2.3.3.2. Physical Factors: Strength
  - 2.3.3.3. Anthropometric Factors
  - 2.3.3.4. Perceptual-Cognitive Components

2.4. Posture
- 2.4.1. The Importance of Posture in Skills
- 2.4.2. Posture and Mobility
- 2.4.3. Posture and CORE
- 2.4.4. Posture and Center of Pressure
- 2.4.5. Biomechanical Analysis of Efficient Posture
- 2.4.6. Methodological Resources

2.5. Linear Skills
- 2.5.1. Characteristics of Linear Skills
  - 2.5.1.1. Main Planes and Vectors
- 2.5.2. Classification
  - 2.5.2.1. Starting, Braking and Deceleration
    - 2.5.2.1.1. Definitions and Context of Use
    - 2.5.2.1.2. Biomechanical Analysis
    - 2.5.2.1.3. Methodological Resources
  - 2.5.2.2. Acceleration
    - 2.5.2.2.1. Definitions and Context of Use
    - 2.5.2.2.2. Biomechanical Analysis
    - 2.5.2.2.3. Methodological Resources
  - 2.5.2.3. Backpedal
    - 2.5.2.3.1. Definitions and Context of Use
    - 2.5.2.3.2. Biomechanical Analysis
    - 2.5.2.3.3. Methodological Resources

2.6. Multidirectional Skills: Shuffle
- 2.6.1. Classification of MultidirectionalSkills
- 2.6.2. Shuffle: Definitions and Context of Use
- 2.6.3. Biomechanical Analysis
- 2.6.4. Methodological Resources

2.7. Multi-Directional Skills: Crossover
- 2.7.1. Crossover as a Change of Direction
- 2.7.2. Crossover as a Transitional Movement
- 2.7.3. Definitions and Context of Use
- 2.7.4. Biomechanical Analysis
- 2.7.5. Methodological Resources

2.8. Jump Skills 1
- 2.8.1. The Importance of Jumps in Skills
- 2.8.2. Basic Concepts
  - 2.8.2.1. Biomechanics of Jumps
  - 2.8.2.2. CEA
  - 2.8.2.3. Stiffness
- 2.8.3. Jump Classification
- 2.8.4. Methodological Resources

2.9. Jump Skills 2
- 2.9.1. Methods
- 2.9.2. Acceleration and Jumps
- 2.9.3. Shuffle and Jumps
- 2.9.4. Crossover and Jumps
- 2.9.5. Methodological Resources

2.10. Programming Variables

Module 3. Strength Training under the Paradigm of Complex Dynamic Systems

3.1. Introduction to Complex Dynamical Systems
- 3.1.1. Models Applied to Physical Preparation
- 3.1.2. The Determination of Positive and Negative Interactions
- 3.1.3. Uncertainty in Complex Dynamical Systems

3.2. Motor Control and its Role in Performance
- 3.2.1. Introduction to Motor Control Theories
- 3.2.2. Movement and Function
- 3.2.3. Motor Learning
- 3.2.4. Motor Control Applied to Systems Theory

3.3. Communication Processes in the Theory of Systems
- 3.3.1. From Message to Movement
  - 3.3.1.1. The Efficient Communication Process
  - 3.3.1.2. The Stages of Learning
  - 3.3.1.3. The Role of Communication and Sport Development in Early Ages
- 3.3.2. VAKT Principles
- 3.3.3. Performance Knowledge Vs. Outcome Knowledge
- 3.3.4. Verbal feedback in System Interactions

3.4. Strength as an Essential Condition
- 3.4.1. Strength Training in Team Sports
- 3.4.2. Manifestations of Strength Within the System
- 3.4.3. The Strength-Speed Continuum. Systemic Review

3.5. Complex Dynamical Systems and Training Methods
- 3.5.1. Periodization. Historical Review
  - 3.5.1.1. Traditional Periodization
  - 3.5.1.2. Contemporary Periodization
- 3.5.2. Analysis of Periodization Models in Training Systems
- 3.5.3. Evolution of Strength Training Methods

3.6. Strength and Motor Divergence
- 3.6.1. Developing Strength at Early Ages
- 3.6.2. The Manifestations of Strength in Infantile-Juvenile Ages
- 3.6.3. Efficient Programming at Youth Ages

3.7. The Role of Decision-Making in Complex Dynamical Systems
- 3.7.1. The Decision-Making Process
- 3.7.2. Decisional Timing
- 3.7.3. The Development of Decision Making
- 3.7.4. Programming Training Based on Decision Making

3.8. Perceptual Abilities in Sports
- 3.8.1. Visual Abilities
  - 3.8.1.1. Visual Recognition
  - 3.8.1.2. Central and Peripheral Vision
- 3.8.2. Motor Experience
- 3.8.3. Attentional Focus
- 3.8.4. The Tactical Component

3.9. Systemic Vision of Programming
- 3.9.1. The Influence of Identity on Programming
- 3.9.2. The System as a Path to Long-Term Development
- 3.9.3. Long-Term Development Program

3.10. Global Programming: from System to Need
- 3.10.1. Program Design
- 3.10.2. Practical System Assessment Workshop

Module 4. Strength Training Prescription and Scheduling

4.1. Introduction and Definition of Concepts
- 4.1.1. General concepts
  - 4.1.1.1. Planning, Periodization, Prescription
  - 4.1.1.2. Qualities, Methods, Objectives
  - 4.1.1.3. Complexity, Risk and Uncertainty
  - 4.1.1.4. Complementary Pairs

4.2. Exercises
- 4.2.1. General Vs. Specific
- 4.2.2. Simple Vs. Complexity
- 4.2.3. Push Vs. Ballistic
- 4.2.4. Kinetics and Kinematics
- 4.2.5. Basic Patterns
- 4.2.6. Order, Emphasis, Importance

4.3. Programming Variables
- 4.3.1. Intensity
- 4.3.2. Effort
- 4.3.3. Intension
- 4.3.4. Volume
- 4.3.5. Density
- 4.3.6. Weight
- 4.3.7. Dose

4.4. Periodization Structures
- 4.4.1. Microcycle
- 4.4.2. Mesocycle
- 4.4.3. Macrocycle
- 4.4.4. Olympic Cycles

4.5. Session Structures
- 4.5.1. Hemispheres
- 4.5.2. Entries
- 4.5.3. Weider
- 4.5.4. Patterns
- 4.5.5. Muscle

4.6. Prescription
- 4.6.1. Load-Effort Tables
- 4.6.2. Based on %
- 4.6.3. Based on Subjective Variables
- 4.6.4. Based on Speed (VBT)
- 4.6.5. Others

4.7. Prediction and Monitoring
- 4.7.1. Speed-Based Training
- 4.7.2. Areas of Repetition
- 4.7.3. Load Areas
- 4.7.4. Time and Reps

4.8. Education
- 4.8.1. Series– Repetition Schemes
  - 4.8.1.1. Plateau
  - 4.8.1.2. Step
  - 4.8.1.3. Waves
  - 4.8.1.4. Steps
  - 4.8.1.5. Pyramids
  - 4.8.1.6. Light-Heavy
  - 4.8.1.7. Cluster
  - 4.8.1.8. Rest-Pause
- 4.8.2. Vertical Planning
- 4.8.3. Horizontal Planning
- 4.8.4. Classifications and Models
  - 4.8.4.1. Constant
  - 4.8.4.2. Lineal
  - 4.8.4.3. Reverse Linear
  - 4.8.4.4. Blocks
  - 4.8.4.5. Accumulation
  - 4.8.4.6. Undulating
  - 4.8.4.7. Reverse Undulating
  - 4.8.4.8. Volume-Intensity

4.9. Adaptation
- 4.9.1. Dose-Response Model
- 4.9.2. Robust-Optimal
- 4.9.3. Fitness– Fatigue
- 4.9.4. Micro Doses

4.10. Assessments and Adjustments
- 4.10.1. Self-Regulated Load
- 4.10.2. Adjustments Based on VBT
- 4.10.3. Based on RIR and RPE
- 4.10.4. Based on Percentages
- 4.10.5. Negative Pathway

Module 5. Strength Training Methodology

5.1. Methods of Training From Powerlifting
- 5.1.1. Functional Isometrics
- 5.1.2. Forced Repetitions
- 5.1.3. Eccentrics in Competition Exercises
- 5.1.4. Main Characteristics of the Most Commonly Used Methods in Powerlifting

5.2. Training Methods from Weightlifting
- 5.2.1. Bulgarian Method
- 5.2.2. Russian Method
- 5.2.3. Origin of the Popular Methodologies in the School of Olympic Lifting
- 5.2.4. Differences Between the Bulgarian and Russian Concepts

5.3. Zatsiorsky Methods
- 5.3.1. Maximum Effort Method (ME)
- 5.3.2. Repeated Effort Method (RE)
- 5.3.3. Dynamic Effort Method (DE)
- 5.3.4. Load Components and Main Characteristics of Zatsiorsky's Methods
- 5.3.5. Interpretation and Differences of Mechanical Variables (Force, Power and Speed) Revealed Between ME, RE and DE and Their Internal Response (PSE)

5.4. Pyramidal Methods
- 5.4.1. Classic Ascending
- 5.4.2. Classic Descending
- 5.4.3. Double
- 5.4.4. Skewed Pyramid
- 5.4.5. Truncated Pyramid
- 5.4.6. Flat or Stable Pyramid
- 5.4.7. Load Components (Volume and Intensity) of the Different Proposals of the Pyramidal Method

5.5. Training Methods Derived from Bodybuilding
- 5.5.1. Superseries
- 5.5.2. Triseries
- 5.5.3. Compound Series
- 5.5.4. Giant Series
- 5.5.5. Congestive Series
- 5.5.6. Wave-Like Loading

5.5.7. ACT (Anti-Catabolic Training)
5.5.8. Bulk
5.5.9. Cluster
5.5.10. 10x10 Zatziorsky
5.5.11. Heavy Duty
5.5.12. Ladder
5.5.13. Characteristics and Load Components of the Different Methodological Proposals of Training Systems Coming From Bodybuilding
5.6. Methods from Sports Training
5.6.1. Plyometry
5.6.2. Circuit Training
5.6.3. Cluster Training
5.6.4. Contrast
5.6.5. Main Characteristics of Strength Training Methods Derived from Sports Training
5.7. Methods From Non-Conventional and CROSSFIT Training
5.7.1. EMOM (Every Minute on the Minute)
5.7.2. Tabata
5.7.3. AMRAP (As Many Reps as Possible)
5.7.4. For Time
5.7.5. Main Characteristics of Strength Training Methods Derived from Crossfit Training
5.8. Speed-Based Training (VBT)
5.8.1. Theoretical Foundation
5.8.2. Practical Considerations
5.8.3. Own Data
5.9. The Isometric Method
5.9.1. Concepts and Physiological Fundamentals of Isometric Stresses
5.9.2. Proposal of Yuri Verkhoshansky
5.10. Methodology of Repeat Power Ability (RPA) From Alex Natera
5.10.1. Theoretical Foundation
5.10.2. Practical Applications
5.10.3. Continuous Vs. Own Data
5.11. Training Methodology Proposed by Fran Bosch
5.11.1. Theoretical Foundation
5.11.2. Practical Applications
5.11.3. Published Data vs Own Data
5.12. Cal Dietz and Matt Van Dyke's Three-Phase Methodology
5.12.1. Theoretical Foundation
5.12.2. Practical Applications
5.13. New Trends in Quasi-Isometric Eccentric Training
5.13.1. Neurophysiological Rationale and Analysis of Mechanical Responses Using Position Transducers and Force Platforms for Each Strength Training Approach

Module 6. Theory of Strength Training and Bases for Structural Training

6.1. Strength, its Conceptualization and Terminology
6.1.1. Strength from Mechanics
6.1.2. Strength from Physiology
6.1.3. Concept Strength Deficit
6.1.4. Concept of Applied Strength
6.1.5. Concept of Useful Strength
6.1.6. Terminology of Strength Training
6.1.6.1. Maximum Strength
6.1.6.2. Explosive Strength
6.1.6.3. Elastic Explosive Strength
6.1.6.4. Reflective Elastic Explosive Strength
6.1.6.5. Ballistic Strength
6.1.6.6. Rapid Force
6.1.6.7. Explosive Power
6.1.6.8. Speed Strength
6.1.6.9. Resistance Training
6.2. Concepts Connected to Power 1
6.2.1. Definition of Power
6.2.1.1. Conceptual Aspects of Power
6.2.1.2. The Importance of Power in a Context of Sport Performance
6.2.1.3. Clarification of Power Terminology
6.2.2. Factors Contributing Peak Power Development

6.2.3. Structural Aspects Conditioning Power Production
6.2.3.1. Muscle Hypertrophy
6.2.3.2. Muscle Structure
6.2.3.3. Ratio of Fast and Slow Fibers in a Cross Section
6.2.3.4. Muscle Length and its Effect on Muscle Contraction
6.2.3.5. Quantity and Characteristics of Elastic Components
6.2.4. Neural Aspects Conditioning Power Production
6.2.4.1. Action Potential
6.2.4.2. Speed of Motor Unit Recruitment
6.2.4.3. Muscle Coordination
6.2.4.4. Intermuscular Coordination
6.2.4.5. Prior Muscle Status (PAP)
6.2.4.6. Neuromuscular Reflex Mechanisms and Their Incidence
6.3. Concepts Connected to Power 2
6.3.1. Theoretical Aspects for Understanding the Strength–Time Curve
6.3.1.1. Strength Impulse
6.3.1.2. Phases of the Strength–Time Curve
6.3.1.3. Phases of Acceleration in the Strength–Time Curve
6.3.1.4. Maximum Acceleration Area of the Strength–Time Curve
6.3.1.5. Deceleration Phase of the Strength–Time Curve
6.3.2. Theoretical Aspects for Understanding Power Curves
6.3.2.1. Power–Time Curve
6.3.2.2. Power–Displacement Curve
6.3.2.3. Optimal Workload for Maximum Power Development
6.4. Relating Concepts of Strength and their Connection to Sports Performance
6.4.1. Objective of Strength Training
6.4.2. Relationship of Power to the Training Cycle or Phase
6.4.3. Connection of Maximum Force and Power
6.4.4. Connection Between Power and the Improvement of Athletic Performance
6.4.5. Relationship Between Strength and Sports Performance
6.4.6. Connection between Strength and Speed
6.4.7. Connection Between Strength and Jump
6.4.8. Connection between Strength and Changes in Direction
6.4.9. Connection Between Strength and Other Aspects of Athletic Performance
6.4.9.1. Maximum Strength and Its Effects on Training
6.5. Neuromuscular System (Hypertrophic Training)*
6.5.1. Structure and Function
6.5.2. Motor Unit
6.5.3. Sliding Theory
6.5.4. Types of Fiber
6.5.5. Types of Contraction
6.6. Responses and Their Adaptation to the Neuromuscular System (Hypertrophic Training)
6.6.1. Nerve Impulse Adaptations
6.6.2. Muscle Activation Adaptations
6.6.3. Motor unit Synchronization Adaptations
6.6.4. Adaptations in Antagonist Coactivation
6.6.5. Adaptations in Doublets
6.6.6. Muscle Preactivation
6.6.7. Muscle Stiffness
6.6.8. Reflexes
6.6.9. Internal Models of Motor Engrams
6.6.10. Muscle Tone
6.6.11. Action Potential Speed
6.7. Hypertrophy
6.7.1. Introduction
6.7.1.1. Parallel and Serial Hypertrophy
6.7.1.2. Sarcoplasmic Hypertrophy
6.7.2. Satellite Cells
6.7.3. Hyperplasia
6.8. Mechanisms that Induce Hypertrophy*
6.8.1. Mechanism that Induces Hypertrophy: Mechanical Stress
6.8.2. Mechanism that Induces Hypertrophy: Metabolic Stress
6.8.3. Mechanism that Induces Hypertrophy: Muscle Damage
6.9. Variables for Hypertrophy Training Programming*
6.9.1. Volume
6.9.2. Intensity
6.9.3. Frequency (F)
6.9.4. Weight
6.9.5. Density
6.9.6. Selecting Exercises
6.9.7. Order in the Execution of Exercises

6.9.8. Type of Muscle Action
6.9.9. Duration of Rest Intervals
6.9.10. Duration of Repetitions
6.9.11. Range of Movement
6.10. Main Factors Affecting Hypertrophic Development at the Highest Level
6.10.1. Genetics
6.10.2. Age
6.10.3. Sex
6.10.4. Training Status

Module 7. Strength Training to Improve Speed

7.1. Strength
7.1.1. Definition
7.1.2. General concepts
7.1.2.1. Manifestations of Strength
7.1.2.2. Factors that Determine Performance
7.1.2.3. Strength Requirements for Sprint Improvement
Connection Between Force Manifestations and Sprint
7.1.2.4. Strength-Speed Curve
7.1.2.5. Relationship of the S-S and Power Curve and its Application to Sprint Phases
7.1.2.6. Development of Muscular Strength and Power
7.2. Dynamics and Mechanics of Linear Sprint (100m Model)
7.2.1. Kinematic Analysis of the Take-off
7.2.2. Dynamics and Strength Application During Take-off
7.2.3. Kinematic Analysis of the Acceleration Phase
7.2.4. Dynamics and Strength Application During Acceleration
7.2.5. Kinematic Analysis of Running at Maximum Speed
7.2.6. Dynamics and Strength Application During Maximum Speed
7.3. Analysis of Acceleration Technique and Maximum Speed in Team Sports
7.3.1. Description of the Technique in Team Sports
7.3.2. Comparison of Sprinting Technique in Team Sports Vs. Athletic Events
7.3.3. Timing and Motion Analysis of Speed Events in Team Sports
7.4. Exercises as Basic and Special Means of Strength Development for Sprint Improvement
7.4.1. Basic Movement Patterns
7.4.1.1. Description of Patterns with Emphasis on Lower Limb Exercises
7.4.1.2. Mechanical Demand of the Exercises
7.4.1.3. Exercises Derived from Olympic Weightlifting
7.4.1.4. Ballistic Exercises
7.4.1.5. S-S Curve of the Exercises
7.4.1.6. Strength Production Vector
7.5. Special Methods of Strength Training Applied to Sprinting
7.5.1. Maximum Effort Method
7.5.2. Dynamic Effort Method
7.5.3. Repeated Effort Method
7.5.4. French Complex and Contrast Method
7.5.5. Speed-Based Training
7.5.6. Strength Training as a Means of Injury Risk Reduction
7.6. Means and Methods of Strength Training for Speed Development
7.6.1. Means and Methods of Strength Training for the Development of the Acceleration Phase
7.6.1.1. Connection of Force to Acceleration
7.6.1.2. Sledding and Racing Against Resistance
7.6.1.3. Slopes
7.6.1.4. Jumpability
7.6.1.4.1. Building the Vertical Jump
7.6.1.4.2. Building the Horizontal Jump
7.6.2. Means and Methods for Top Speed Training
7.6.2.1. Plyometry
7.6.2.1.1. Concept of the Shock Method
7.6.2.1.2. Historical Perspective
7.6.2.1.3. Shock Method Methodology for Speed Improvement
7.6.2.1.4. Scientific Evidence
7.7. Means and Methods of Strength Training Applied to Agility and Change of Direction
7.7.1. Determinants of Agility and COD
7.7.2. Multidirectional Jumps
7.7.3. Eccentric Strength
7.8. Assessment and Control of Strength Training
7.8.1. Strength-Speed Profile
7.8.2. Load-Speed Profile
7.8.3. Progressive Loads
7.9. Integration
7.9.1. Case Study

Module 8. Sports Performance Assessment in Strength Training

8.1. Assessment
- 8.1.1. General Concepts on Assessment, Test and Measuring
- 8.1.2. Test Characteristics
- 8.1.3. Types of Tests
- 8.1.4. Assessment Objectives

8.2. Technology and Neuromuscular Assessments
- 8.2.1. Contact Mat
- 8.2.2. Strength Platforms
- 8.2.3. Load Cell
- 8.2.4. Accelerometers
- 8.2.5. Position Transducers
- 8.2.6. Cellular Applications for Neuromuscular Evaluation

8.3. Submaximal Repetition Test
- 8.3.1. Protocol for its Assessment
- 8.3.2. Validated Estimation Formulas for the Different Training Exercises
- 8.3.3. Mechanical and Internal Load Responses During a Submaximal Repetition Test

8.4. Progressive Maximum Incremental Exercise Test (IETmax)
- 8.4.1. Naclerio and Figueroa Protocol 2004
- 8.4.2. Mechanical (Linear Encoder) and Internal Load (PSE) Responses During a Max TPI
- 8.4.3. Determining the Optimal Zone for Power Training

8.5. Horizontal Jump Test
- 8.5.1. Assessmen Without Using Technology
- 8.5.2. Assessment Using Technology (Horizontal Encoder and Force Platform)

8.6. Simple Vertical Jump Test
- 8.6.1. Squat Jump Assessment
- 8.6.2. Counter Movement Jump Assessment
- 8.6.3. Assessment of an Abalakov Salto (ABK)
- 8.6.4. Drop Jump Assessment

8.7. Repeated Vertical Jump Test (Rebound Jump)
- 8.7.1. 5-second Repeated Jump Test
- 8.7.2. 15-second Repeated Jump Test
- 8.7.3. 30-second Repeated Jump Test
- 8.7.4. Fast Strength Endurance Index (Bosco)
- 8.7.5. Effort Exercise Index in the Rebound Jump Test

8.8. Mechanical responses (Strength, Power and Speed/Time) During Single and Repeated Jumps Tests
- 8.8.1. Strength/Time in Simple and Repeated Jumps
- 8.8.2. Speed/Time in Single and Repeated Jumps
- 8.8.3. Power/Time in Simple and Repeated Jumps

8.9. Strength/Speed Profiles in Horizontal Vectors
- 8.9.1. Theoretical Basis of an S/S Profile
- 8.9.2. Morin and Samozino Assessment Protocols
- 8.9.3. Practical Applications
- 8.9.4. Contact Carpet, Linear Encoder and Force Platform Evaluation of Forces

8.10. Strength/Speed Profiles in Vertical Vectors
- 8.10.1. Theoretical Basis of an S/S Profile
- 8.10.2. Morin and Samozino Assessment Protocols
- 8.10.3. Practical Applications
- 8.10.4. Contact Carpet, Linear Encoder and Force Platform Evaluation of Forces

8.11. Isometric Tests
- 8.11.1. McCall Test
  - 8.11.1.1. Evaluation Protocol and Values Recorded With a Force Platform
- 8.11.2. Mid-Thigh Pull Test
  - 8.11.2.1. Evaluation Protocol and Values Recorded With a Force Platform

Module 9. Strength Training in Situational Sports

9.1. Basic Fundamentals
- 9.1.1. Functional and Structural Adaptations
  - 9.1.1.1. Functional Adaptations
  - 9.1.1.2. Load-Pause Ratio (Density) as a Criterion for Adaptation
  - 9.1.1.3. Strength as a Base Quality
  - 9.1.1.4. Mechanisms or Indicators for Structural Adjustments
  - 9.1.1.5. Utilization, Conceptualization of the Muscular Adaptations Provoked, as an Adaptive Mechanism of the Imposed Load (Mechanical Stress, Metabolic Stress, Muscle Damage)
- 9.1.2. Motor Unit Recruitment
  - 9.1.2.1. Recruitment Order, Central Nervous System Regulatory Mechanisms, Peripheral Adaptations, Central Adaptations Using Tension, Speed or Fatigue as a Tool for Neural Adaptation
  - 9.1.2.2. Order of Recruitment and Fatigue During Maximum Effort
  - 9.1.2.3. Recruitment Order and Fatigue During Sub-Maximum Efforts
  - 9.1.2.4. Fibrillar Recovery

9.2. Specific Fundamentals
- 9.2.1. Movement as a Starting Point
- 9.2.2. Quality of Movement as a General Objective for Motor Control, Motor Pattern and Motor Programming
- 9.2.3. Priority Horizontal Movements
  - 9.2.3.1. Accelerating, Braking, Change of Direction With Inside Leg and Outside Leg, Maximum Absolute Speed and/or Sub-Maximum Speed Technique, Correction and Application According to the Specific Movements in Competition
- 9.2.4. Priority Vertical Movements
  - 9.2.4.1. Jumps, Hops, Bounds Technique, Correction and Application According to the Specific Movements in Competition

9.3. Technological Means for the Assessment of Strength Training and External Load Control
- 9.3.1. Introduction to Technology and Sport
- 9.3.2. Technology for Strength and Power Training Assessment and Control
  - 9.3.2.1. Rotary Encoder (Operation, Interpretation Variables, Intervention Protocols, Application)
  - 9.3.2.2. Load Cell (Operation, Interpretation Variables, Intervention Protocols, Application)
  - 9.3.2.3. Strength Platforms (Operation, Interpretation Variables, Intervention Protocols, Application)
  - 9.3.2.4. Electric Photocells (Operation, Interpretation Variables, Intervention Protocols, Application)
  - 9.3.2.5. Contact Mat (Operation, Interpretation Variables, Intervention Protocols, Application)
  - 9.3.2.6. Accelerometer (Operation, Interpretation Variables, Intervention Protocols, Application)
  - 9.3.2.7. Applications for Mobile Devices (Operation, Interpretation Variables, Intervention Protocols, Application)
- 9.3.3. Intervention Protocols for the Assessment and Control of Training

9.4. Internal Load Control
- 9.4.1. Subjective Load Perception by Rating the Perceived Exertion
  - 9.4.1.1. Subjective Perception of Load to Estimate Relative Load (% 1MR)
- 9.4.2. Scope
  - 9.4.2.1. As Exercise Control
    - 9.4.2.1.1. Repetitions and PRE
    - 9.4.2.1.2. Repetitions in Reserve
    - 9.4.2.1.3. Scale of Speed
  - 9.4.2.2. Controlling the Overall Effect of a Session
  - 9.4.2.3. As a Tool for Periodization
    - 9.4.2.3.1. Use of (APRE) Autoregulatory progressive resistance exercise, Interpretation of the Data and its Relation to the Correct Dosage of the Load in the Session
- 9.4.3. Recovery Quality Scale, Interpretation and Practical Application in the Session (TQR 0-10)
- 9.4.4. As a Tool for Daily Practice
- 9.4.5. Application
- 9.4.6. Recommendations

9.5. Means for Strength Training
- 9.5.1. Role of the Means in Designing a Method
- 9.5.2. Means at the Service of a Method and in Function of a Central Sporting Objective
- 9.5.3. Types of Means
- 9.5.4. Movement Patterns and Activations as a Central Axis for Media Selection and Method Implementation

9.6. Building a Method
- 9.6.1. Defining the Types of Exercises
  - 9.6.1.1. Cross-Connectors as a Guide to the Movement Target
- 9.6.2. Exercise Evolution
  - 9.6.2.1. Modification of the Rotational Component and the Number of Supports According to the Plane of Motion
- 9.6.3. Exercise Organization
  - 9.6.3.1. Relationship With Priority Horizontal and Vertical Movements (2.3. and 2.4)

9.7. Practical Implementation of a Method (Programming)
- 9.7.1. Logical Implementation of the Plan
- 9.7.2. Implementation of a Group Session
- 9.7.3. Individual Programming in a Group Context
- 9.7.4. Strength in Context Applied to the Game
- 9.7.5. Periodization Proposal

9.8. ITU 1 (Integrating Thematic Unit)
- 9.8.1. Training Construction for Functional and Structural Adaptations and Recruitment Order
- 9.8.2. Constructing a Training Monitoring and/or Assessment System
- 9.8.3. Movement-Based Training Construction for the Implementation of Fundamentals, Means and External and Internal Load Control

9.9. ITU 2 (Integrating Thematic Unit)
- 9.9.1. Construction of a Group Training Session
- 9.9.2. Construction of a Group Training Session in Context Applied to the Game
- 9.9.3. Construction of a Periodization of Analytical and Specific Loads

Module 10. Training in Medium and Long Duration Sports

10.1. Strength
- 10.1.1. Definition and Concept
- 10.1.2. Continuum of Conditional Abilities
- 10.1.3. Strength Requirements for Endurance Sports. Scientific Evidence
- 10.1.4. Strength Manifestations and Their Relationship to Neuromuscular Adaptations in Endurance Sports

10.2. Scientific Evidence on the Adaptations of Strength Training and its Influence on Medium and Long Duration Endurance Tests
- 10.2.1. Neuromuscular Adaptations
- 10.2.2. Metabolic and Endocrine Adaptations
- 10.2.3. Adaptations When Performing Specific Tests

10.3. Principle of Dynamic Correspondence Applied to Endurance Sports
- 10.3.1. Biomechanical Analysis of Force Production in Different Gestures: Running, Cycling, Swimming, Rowing, Cross-Country Skiing
- 10.3.2. Parameters of Muscle Groups Involved and Muscle Activation
- 10.3.3. Angular Kinematics
- 10.3.4. Rate and Duration of Force Production
- 10.3.5. Stress Dynamics
- 10.3.6. Amplitude and Direction of Movement

10.4. Concurrent Strength and Endurance Training
- 10.4.1. Historical Perspective
- 10.4.2. Interference Phenomenon
  - 10.4.2.1. Molecular Aspects
  - 10.4.2.2. Sports Performance
- 10.4.3. Effects of Strength Training on Endurance
- 10.4.4. Effects of Resistance Training on Strength Demonstrations
- 10.4.5. Types and Modes of Load Organization and Their Adaptive Responses
- 10.4.6. Concurrent Training. Evidence on Different Sports

10.5. Strength Training
- 10.5.1. Means and Methods for Maximum Strength Development
- 10.5.2. Means and Methods for Explosive Strength Development
- 10.5.3. Means and Methods for Reactive Strength Development
- 10.5.4. Compensatory and Injury Risk Reduction Training
- 10.5.5. Plyometric Training and Jumping Development as an Important Part of Improving Running Economy

10.6. Exercises and Special Means of Strength Training for Medium and Long Endurance Sports
- 10.6.1. Movement Patterns
- 10.6.2. Basic Exercises
- 10.6.3. Ballistic Exercises
- 10.6.4. Dynamic Exercises
- 10.6.5. Resisted and Assisted Strength Exercises
- 10.6.6. Core Exercises

10.7. Strength Training Programming Based on the Microcycle Structure
- 10.7.1. Selection and Order of Exercises
- 10.7.2. Weekly Frequency of Strength Training
- 10.7.3. Volume and Intensity According to the Objective
- 10.7.4. Recovery Times

10.8. Strength Training Aimed at Different Cyclic Disciplines
- 10.8.1. Strength Training for Middle-Distance and Long-Distance Runners
- 10.8.2. Strength Training for Cycling
- 10.8.3. Strength Training for Swimming
- 10.8.4. Strength Training for Rowing
- 10.8.5. Strength Training for Cross-Country Skiing

10.9. Controlling the Training Process
- 10.9.1. Load Speed Profile
- 10.9.2. Progressive Load Test

Successfully integrate strength training for the improvement of Motor Skills immersed in sport"

07

Clinical Internship

Once the theoretical phase is completed, students will enter a period of practical training in a clinical center that has been selected by TECH, based on quality criteria. An environment that will lead the graduate to become involved in actions that involve the use of the most current therapeutic techniques and all those resources necessary for the care of sportsmen and women.

Do your clinical practice in a space where you will be tutored by the best experts in physiotherapy and rehabilitation of athletes"

The Practical Training period is designed to allow graduates a hands-on experience that will allow them to apply the theoretical knowledge acquired in the program in a real practice environment, working alongside specialists with extensive experience in the field of Strength Training. In this way, they will be able to integrate into their daily practice the competencies necessary to provide clinical care in an effective manner, in a safe environment for the athlete and with high professional performance.

The main objective of this training proposal is the development and improvement of the necessary skills for the exercise of the activity in the field of Strength Training in Sports Performance. The practical activities are aimed at updating the technical skills and abilities to treat injured patients or those looking for an adequate training planning. 3 weeks long period that will take the students to work together with a team of professionals of reference in the area of Strength Training, which will allow them to be up to date with the best practices in the field. will allow them to be up to date with the best practices in the field.

As in medicine, learning in the field of Strength Training is a continuous process that requires constant updating of knowledge and skills. This program allows graduates to develop their ability to apply the most advanced Strength Training methods and their application in the sports field, which will allow them to be leaders in the field of Strength Training in Sports Performance.

The practical education will be carried out with the active participation of the student performing the activities and procedures of each area of competence (learning to learn and learning to do), with the accompaniment and guidance of teachers and other fellow trainees that facilitate teamwork and multidisciplinary integration as transversal competencies for PHYSIOTHERAPY practice (learning to be and learning to relate).

The procedures described below will form the basis of the practical part of the internship, and their implementation is subject to both the suitability of the patients and the availability of the center and its workload, with the proposed activities being as follows:

You are looking at an innovative academic program that seamlessly combines a comprehensive theoretical framework with best clinical practice”

Module	Practical Activity
Training in Medium and Long Duration Sports	Design training plans for middle and long distance runners
	Supervise training sessions on the track or in sports centers
	Accompany athletes in high intensity training sessions
	Recording and analyzing running times to measure athlete progress
Strength Training in Situational Sports	To help coaches design Strength Training plans adapted to the sports situation adapted to situational sports
	Conduct Strength Training sessions on the field or in the gym, focused on improving sport-specific skills
	Use Strength Training techniques with implements, such as medicine balls or elastic bands, to improve the athlete's strength and power
	Evaluate the athlete's progress in his or her ability to apply force in game situations. in game situations
Strength Training Methodology	Review existing Strength Training plans and make recommendations for and make recommendations for improvement
	To research and present updated information on the most advanced methods methods in Strength Training
	Coordinate work with other professionals to apply the most current Strength Training methodologies
	Assist in the preparation of teaching materials for future Strength Training courses
Sports Performance Assessment in Strength Training	Evaluate the athlete's strength capacity through specific tests, such as the 1RM test
	Use advanced technology, such as force platforms, to measure an athlete's the athlete's power
	Analyze the athlete's movement in relation to the application of force during sport
	Use evaluation and data analysis tools to interpret test results and present recommendations for sports performance improvement
Strength Training Prescription and Scheduling	Elaborate personalized strength training plans for each athlete, taking into account their medical history and sporting objectives
	Establish an effective Strength Training program that combines high intensity training sessions with periods of rest and recovery
	Schedule strength training sessions according to the athlete's sport calendar
	Adjust Strength Training plans as the athlete progresses and strength capacity increases

Civil Liability Insurance

This institution's main concern is to guarantee the safety of the trainees and other collaborating agents involved in the internship process at the company. Among the measures dedicated to achieve this is the response to any incident that may occur during the entire teaching-learning process.

To this end, this entity commits to purchasing a civil liability insurance policy to cover any eventuality that may arise during the course of the internship at the center.

This liability policy for interns will have broad coverage and will be taken out prior to the start of the practical training period. That way professionals will not have to worry in case of having to face an unexpected situation and will be covered until the end of the internship program at the center.

General Conditions of the Internship Program

The general terms and conditions of the internship agreement for the program are as follows:

1. TUTOR: During the Hybrid Professional Master's Degree, students will be assigned with two tutors who will accompany them throughout the process, answering any doubts and questions that may arise. On the one hand, there will be a professional tutor belonging to the internship center who will have the purpose of guiding and supporting the student at all times. On the other hand, they will also be assigned with an academic tutor whose mission will be to coordinate and help the students during the whole process, solving doubts and facilitating everything they may need. In this way, the student will be accompanied and will be able to discuss any doubts that may arise, both clinical and academic.

2. DURATION: The internship program will have a duration of three continuous weeks, in 8-hour days, 5 days a week. The days of attendance and the schedule will be the responsibility of the center and the professional will be informed well in advance so that they can make the appropriate arrangements.

3. ABSENCE: If the students does not show up on the start date of the Hybrid Professional Master's Degree, they will lose the right to it, without the possibility of reimbursement or change of dates. Absence for more than two days from the internship, without justification or a medical reason, will result in the professional's withdrawal from the internship, therefore, automatic termination of the internship. Any problems that may arise during the course of the internship must be urgently reported to the academic tutor.

4. CERTIFICATION: Professionals who pass the Hybrid Professional Master's Degree will receive a certificate accrediting their stay at the center.

5. EMPLOYMENT RELATIONSHIP: the Hybrid Professional Master's Degree shall not constitute an employment relationship of any kind.

6. PRIOR EDUCATION: Some centers may require a certificate of prior education for the Hybrid Professional Master's Degree. In these cases, it will be necessary to submit it to the TECH internship department so that the assignment of the chosen center can be confirmed.

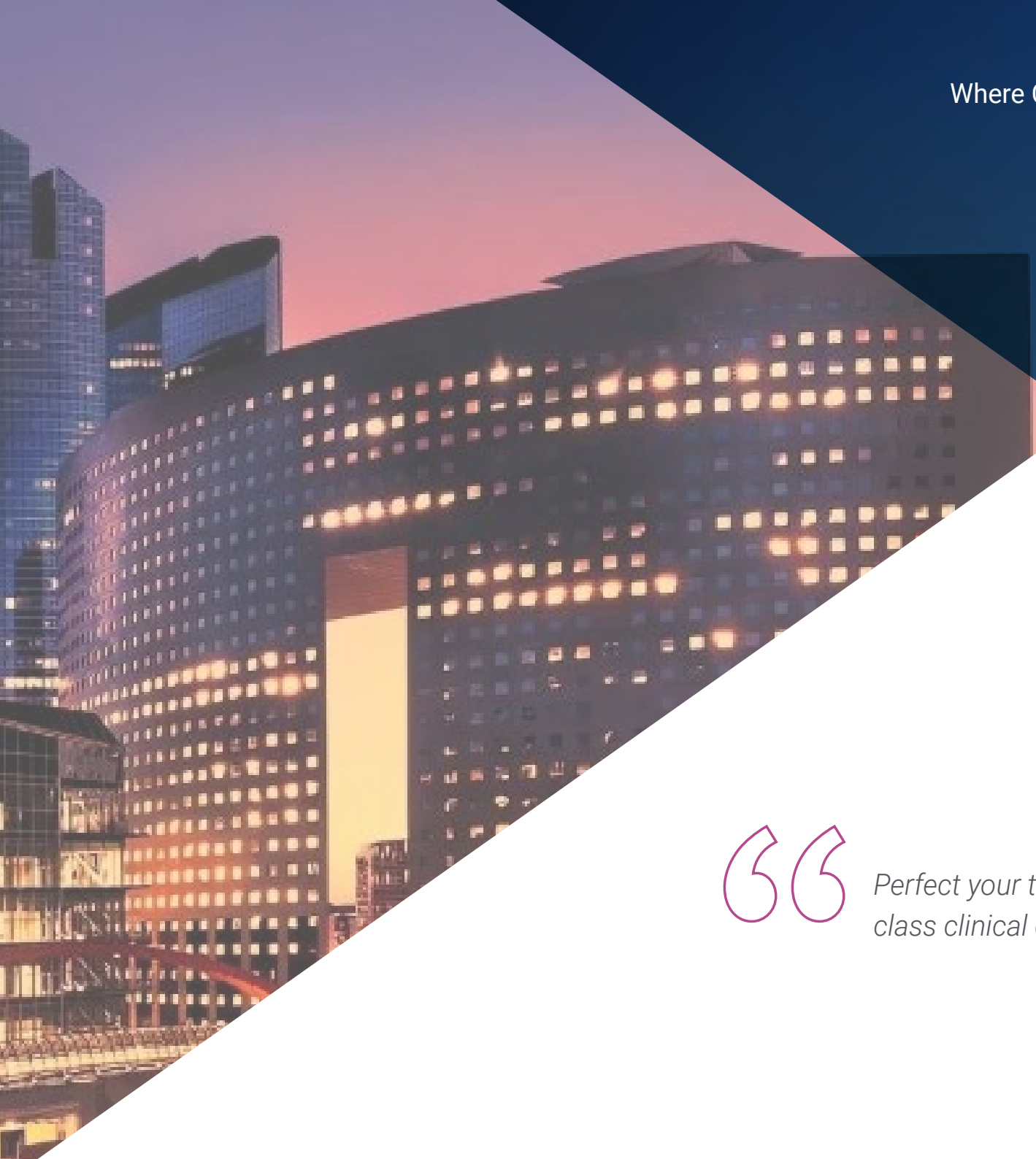
7. DOES NOT INCLUDE: The Hybrid Professional Master's Degree will not include any element not described in the present conditions. Therefore, it does not include accommodation, transportation to the city where the internship takes place, visas or any other items not listed

However, students may consult with their academic tutor for any questions or recommendations in this regard. The academic tutor will provide the student with all the necessary information to facilitate the procedures in any case.

08

Where Can I Do the Clinical Internship?

This blended Master's program includes in its itinerary a practical stay in reference centers in the field of care for sports patients who require highly qualified physiotherapy services. For this reason, TECH has carried out a rigorous selection process to offer students a practical experience that meets their real needs and at the same time allows them to progress surrounded by the best experts.



Perfect your therapeutic skills in a first class clinical center"

The student will be able to complete the practical part of this Hybrid Professional Master's Degree at the following centers:

Physiotherapy

Policlínico HM Moraleja

Country: Spain
City: Madrid

Address: P.º de Alcobendas, 10, 28109, Alcobendas, Madrid

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

Related internship programs:
- Rehabilitation Medicine in Acquired Brain Injury Management

Physiotherapy

Policlínico HM Matogrande

Country: Spain
City: La Coruña

Address: R. Enrique Mariñas Romero, 32G, 2º, 15009, A Coruña

Network of private clinics, hospitals and specialized centers distributed throughout Spain.

Related internship programs:
Sports Physiotherapy
Neurodegenerative Diseases

Physiotherapy

Exactfitness Vigo

Country: Spain
City: Pontevedra

Address: Rúa de María Berdiales, 39, 36203 Vigo, Pontevedra

Exactfitness is a personal training of personal training

Related internship programs:
- Strength Training in Sports Performance

Physiotherapy

Premium global health care Madrid

Country: Spain
City: Madrid

Address: C. de Víctor de la Serna, 4, 28016 Madrid

Rehabilitation, readaptation and personal training: these are the pillars of the Physiotherapy clinic in Chamartín.

Related internship programs:
- MBA in Digital Marketing
Project Management

Physiotherapy

Premium global health care Fuenlabrada

Country: Spain
City: Madrid

Address: Paseo de Roma, 1, 28943 Fuenlabrada, Madrid

Rehabilitation, readaptation and personal training: these are the pillars of the Physiotherapy clinic in Fuenlabrada.

Related internship programs:
- MBA in Digital Marketing
Project Management

Physiotherapy

Premium global health care Pozuelo

Country: Spain
City: Madrid

Address: Centro Comercial Monteclaro, Local 59.4, s/n, Av. de Monteclaro, d, 28223 Pozuelo de Alarcón, Madrid

Rehabilitation, readaptation and personal training: these are the pillars of the Physiotherapy clinic in Pozuelo.

Related internship programs:
- MBA in Digital Marketing
Project Management

Make the most of this opportunity to surround yourself with expert professionals and learn from their work methodology"

09

Methodology

This academic program offers students a different way of learning. Our methodology uses a cyclical learning approach: **Relearning.**

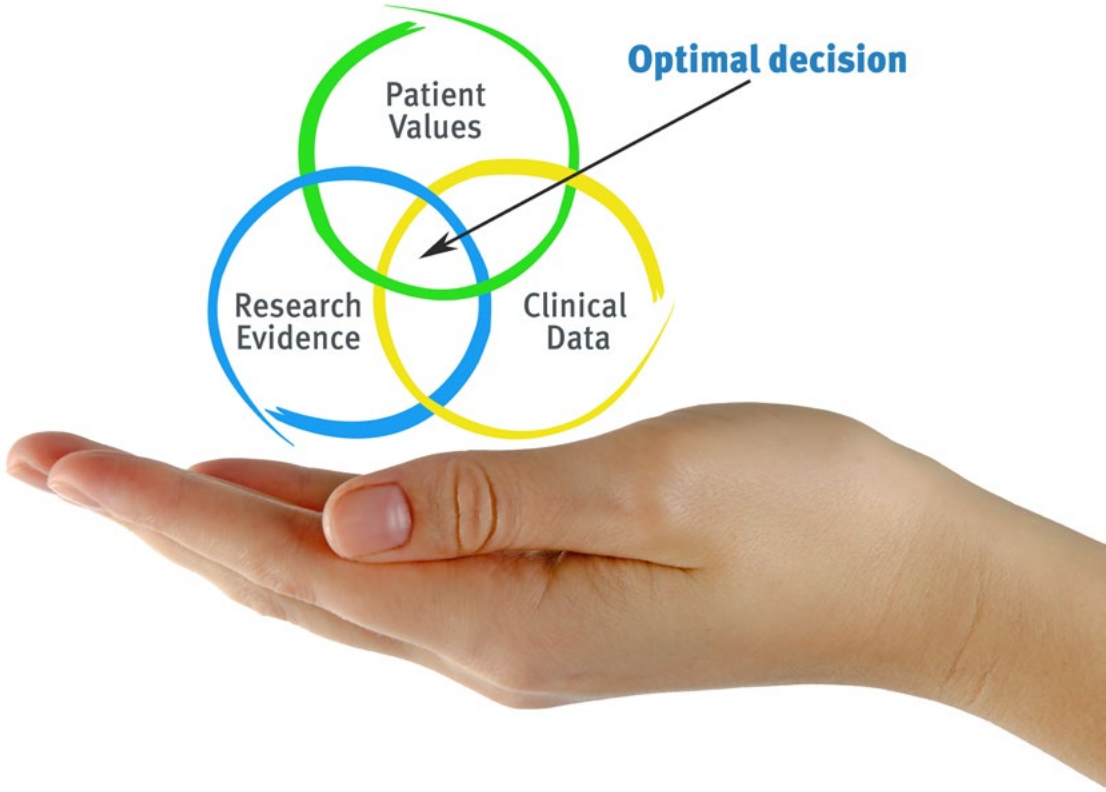
This teaching system is used, for example, in the most prestigious medical schools in the world, and major publications such as the **New England Journal of Medicine** have considered it to be one of the most effective.

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"

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:

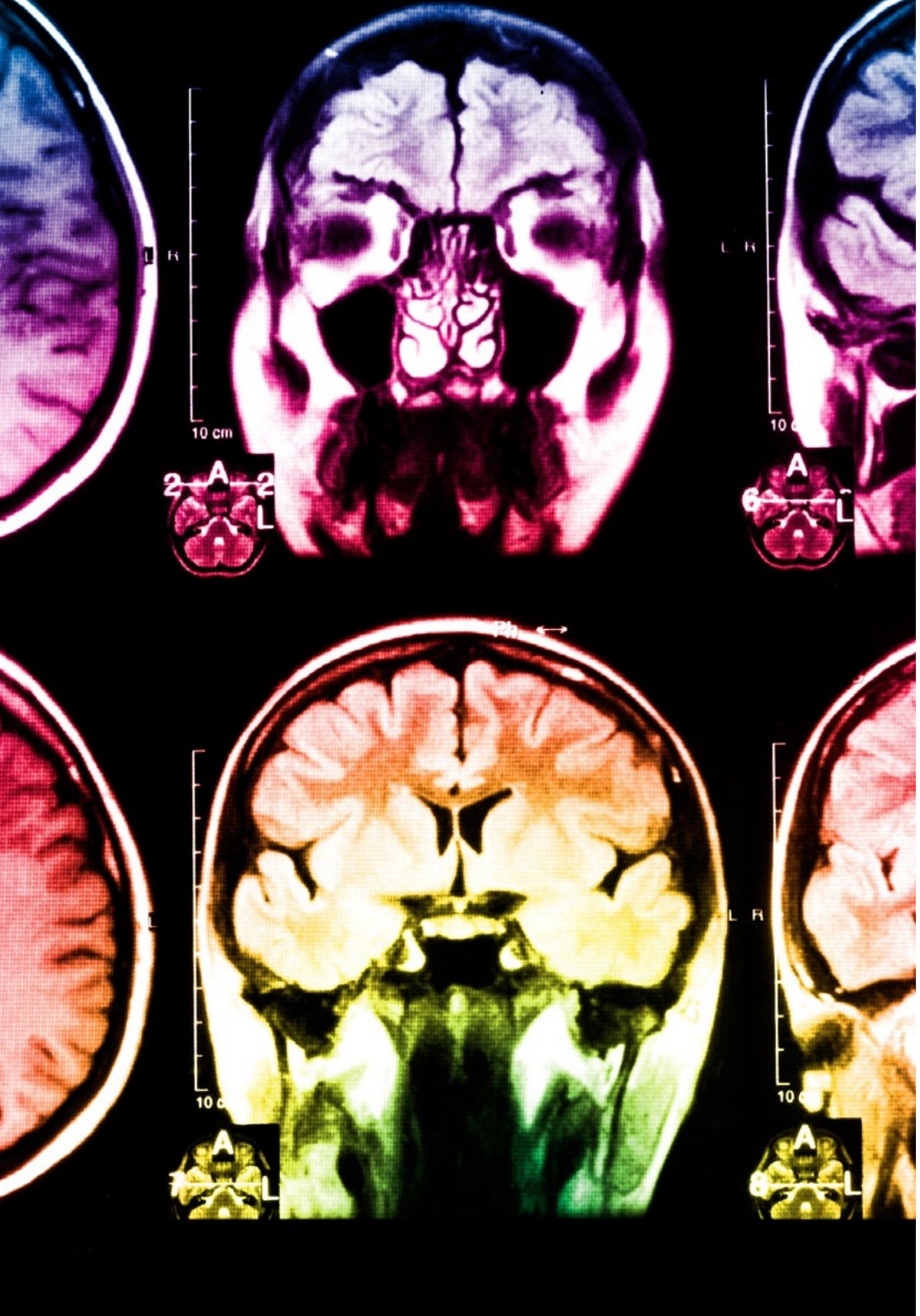
1. Physiotherapists/kinesiologists who follow this method not only grasp concepts, but also develop their mental capacity, by evaluating real situations and applying their knowledge.
2. The learning process has a clear focus on practical skills that allow the physiotherapist/kinesiologist to better integrate 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.

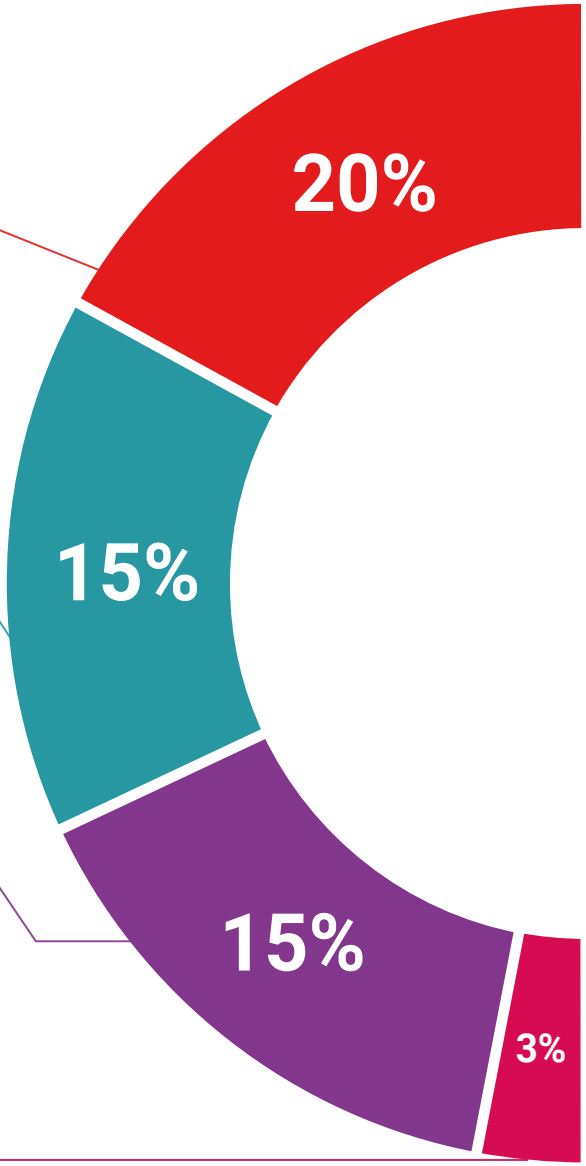
Interactive Summaries

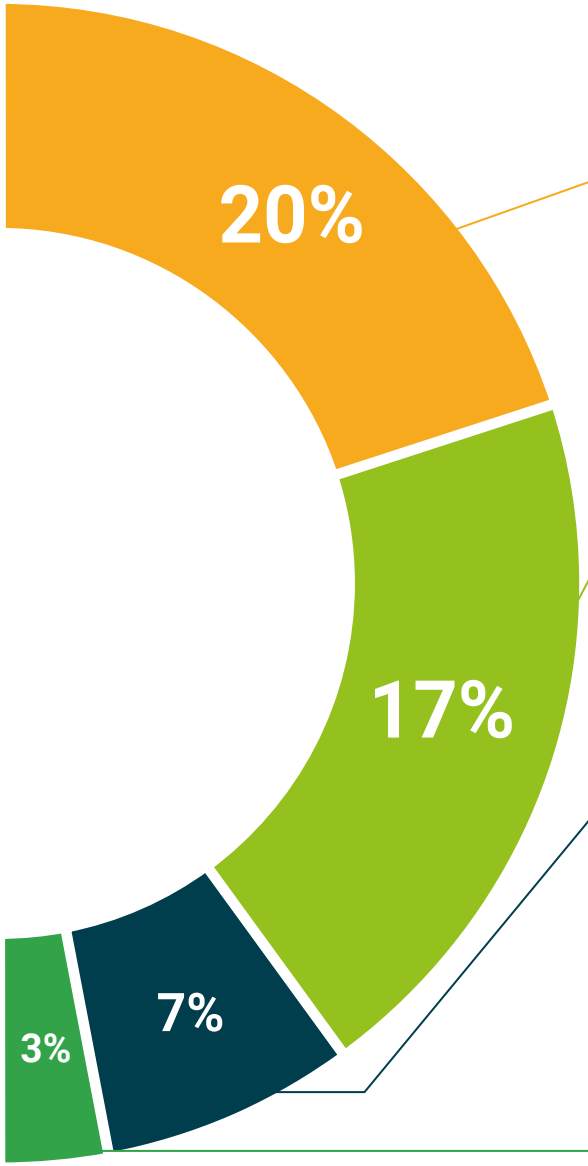
The TECH team presents the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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.

10

Certificate

This Hybrid Professional Master's Degree in Strength Training in Sports Performance guarantees students, in addition to the most rigorous and up-to-date education, access to a Hybrid 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 **Hybrid Professional Master's Degree in Strength Training in Sports Performance** contains the most complete and up-to-date program on the professional and educational field.

After the student has passed the assessments, they will receive their corresponding Hybrid Professional Master's Degree diploma issued by TECH Technological University via tracked delivery*.

In addition to the diploma, students will be able to obtain an academic transcript, as well as a certificate outlining the contents of the program. In order to do so, students should contact their academic advisor, who will provide them with all the necessary information.

Title: **Hybrid Professional Master's Degree in Strength Training in Sports Performance**

Modality: **Hybrid (Online + Clinical Internship)**

Duration: **12 months**

Certificate: **TECH Technological University**

Teaching Hours: **1,620 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

HYBRID PROFESSIONAL MASTER'S DEGREE

in

Strength Training in Sports Performance

This is a qualification awarded by this University, equivalent to 1,620 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.

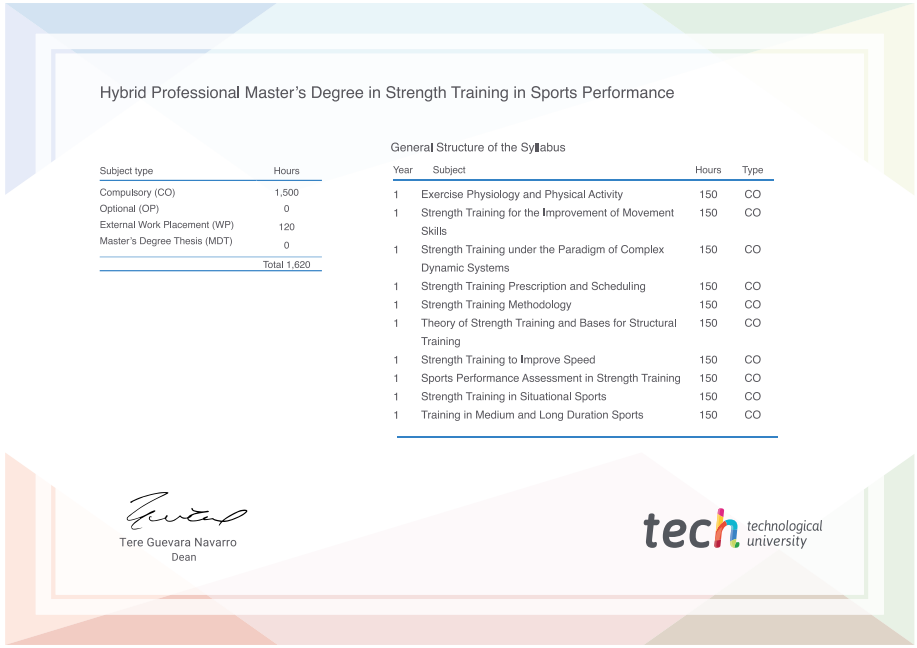
June 17, 2020

Tere Guevara Navarro
Dean

The Official Online University of the NBA

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country.

Unique TECH Code: AFWORD23S techtitute.com/certificates



Hybrid Professional Master's Degree in Strength Training in Sports Performance

Subject type	Hours
Compulsory (CO)	1,500
Optional (OP)	0
External Work Placement (WP)	120
Master's Degree Thesis (MDT)	0
	Total 1,620

General Structure of the Syllabus

Year	Subject	Hours	Type
1	Exercise Physiology and Physical Activity	150	CO
1	Strength Training for the Improvement of Movement Skills	150	CO
1	Strength Training under the Paradigm of Complex Dynamic Systems	150	CO
1	Strength Training Prescription and Scheduling	150	CO
1	Strength Training Methodology	150	CO
1	Theory of Strength Training and Bases for Structural Training	150	CO
1	Strength Training to Improve Speed	150	CO
1	Sports Performance Assessment in Strength Training	150	CO
1	Strength Training in Situational Sports	150	CO
1	Training in Medium and Long Duration Sports	150	CO

Tere Guevara Navarro
Dean

tech technological university

*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

Hybrid Professional Master's Degree

Strength Training in Sports Performance

Modality: **Hybrid (Online + Clinical Internship)**
Duration: **12 months**
Certificate: **TECH Technological University**
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Hybrid Professional Master's Degree

Strength Training in Sports Performance

Endorsed by the NBA

tech technological university