Hybrid Master's Degree

Strength Training for Sports Performance

Endorsed by the NBA

tech global university

Hybrid Master's Degree

Strength Training for Sports Performance

Modality: **Hybrid (Online + Internship)**
Duration: **12 months**
Certificate: **TECH Global University**
Credits: **60 + 4 ECTS**
Website: **www.techtitute.com/us/sports-science/hybrid-master-degree/hybrid-master-degree-strength-training-sports-performance**

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01

Introduction

Strength Training has become a fundamental tool in improving athletic performance in a variety of athletic disciplines. As research in this area continues to advance, it is crucial that professionals have a thorough understanding of the physiological effects and muscle adaptations induced by muscle conditioning, as well as their practical application in the sporting arena. Only then will experts be able to design the most appropriate programs to optimize athletic performance and prevent possible injuries. In response to this need, TECH launches a pioneering university degree focused on the physiology of exercise and physical activity.

Thanks to this Hybrid Master's Degree, you will design the most effective Strength Training programs to comprehensively meet the individual needs of athletes"

The World Health Organization highlights in a recent report the importance of regular physical exercise for the general health and well-being of the population. In this sense, the scientific community has demonstrated in multiple investigations that Strength Training has several significant benefits in the prevention of chronic diseases (such as Diabetes, cardiovascular conditions or Osteoporosis). In addition, in the field of sports, this conditioning plays a crucial role in optimizing Sports Performance in a variety of Athletic disciplines.

In this context, TECH launches an innovative Hybrid Master's Degree in Strength Training for Sports Performance, aimed at professionals who wish to keep abreast of the latest advances in this field. The academic itinerary will focus on aspects such as physical exercises aimed at improving Speed, Muscular Strength, Mobility, among others. Likewise, the syllabus will delve into the most avant-garde techniques for the evaluation of athletic performance through procedures such as laboratory and field tests. In addition, the program will analyze Nutrition applied to this field, addressing aspects such as energy metabolism, digestion or dietary supplements.

It should be noted that the degree has a first theoretical stage, which will be taught in a convenient 100% online format. During this period, students will acquire specialized knowledge about Strength Training and will nurture their practice with the most sophisticated procedures to promote optimal Sports Performance. All this under the Relearning system, developed by TECH, which guarantees a natural and progressive learning. On the other hand, the graduates will carry out a practical stay in a prestigious institution for 3 weeks, where they will be able to put into practice all their knowledge. There they will be supported by a team of specialists in this field, who will help them to optimize their skills.

This **Hybrid Master's Degree in Strength Training for 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 professionals in the field of Strength Training for Sports Performance
- 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
- Exercises where the self-assessment process can be carried out to improve learning
- All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- In addition, you will be able to do an internship in one of the best sports institutions in the world
- Algorithm-based interactive learning system for decision making
- Special emphasis on innovative methodologies in personal training
- 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

Give a quality boost to your professional career by incorporating the latest procedures in Strength and Speed Training into your daily practice".

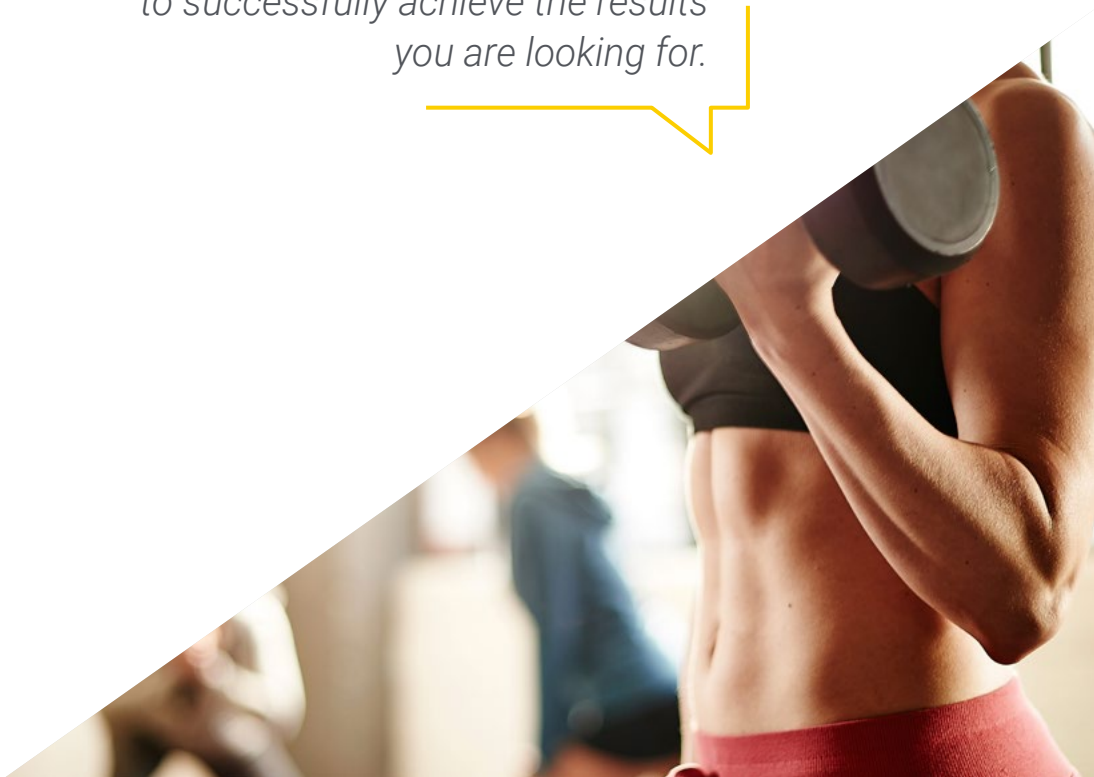
Take an intensive 3-week internship in a leading company and acquire all the knowledge you need to make a significant leap in professional quality"

This university program will allow you to exercise in simulated environments, which provide immersive learning programmed to train in real situations.

Thanks to the disruptive Relearning methodology, you will integrate all the knowledge in an optimal way to successfully achieve the results you are looking for.

In this proposal of Master's Degree, of professionalizing character and blended learning modality, the program is aimed at updating professionals of Strength Training for Sports Performance who develop their functions in professional sports clubs, training centers or gyms or rehabilitation centers, and who require a high level of qualification. The contents are based on the latest scientific evidence, and oriented in a didactic way to integrate theoretical knowledge in sports practice, and the theoretical-practical elements will facilitate the updating of knowledge.

Thanks to its multimedia content elaborated with the latest educational technology, they will allow the professional of Strength Training for Sports Performance to obtain a situated and contextual learning, that is to say, a simulated environment that will provide an immersive learning programmed to train in real situations. This program is designed around Problem-Based Learning, whereby the professional must try to solve the different professional practice situations that arise throughout the program. For this purpose, students will be assisted by an innovative interactive video system created by renowned and experienced experts.



02

Why Study this Hybrid Master's Degree?

The field of Strength Training for Sports Performance is booming, due to the growing interest in the practice of physical exercise. Given this, professionals need to acquire a theoretical and practical approach to perform their work with maximum efficiency and develop advanced skills for the management of the most advanced technological tools. This is why TECH has created this pioneering degree, which combines the most recent updates in areas such as Resistance Training or the Evolution of Sports Performance with a practical stay in a prestigious organization. In this way, graduates will obtain a complete vision of the most current panorama in this field and will be able to adapt to the needs of the labor market.

TECH gives you the opportunity to immerse yourself in a truly demanding work environment, to learn about recent innovations in Strength Training for Sports Performance"

1. Updating from the latest technology available

With technological evolution, the field of Strength Training for Sports Performance has been enriched by the introduction of advanced technological tools for performing various physical exercises. In addition, new methods have emerged to monitor the performance of athletes, adapt training programs and improve the overall effectiveness of the sport practiced. Therefore, in this Internship Program, TECH will provide graduates with the opportunity to immerse themselves in an innovative environment, where they will be able to experience first-hand the cutting-edge tools in this field.

2. Gaining in-depth knowledge from the experience of top specialists

During their on-site stay, graduates will join a multidisciplinary work team made up of experts in the field of sport and physical exercise. This is an endorsement for the students, who will benefit from the support of these specialists, who will help them to improve their practical skills and to design customized training programs according to the specific needs of the clients.

3. Entering First-Class Sports Environments

In line with its commitment to providing top quality university degrees, TECH has carefully selected all the centers available for the completion of this Internship Program. This ensures that graduates have the security of being integrated into renowned institutions in the field of Strength Training for Sports Performance. In this way, they will be able to experience first-hand the day-to-day life of a demanding and rigorous work environment, always applying the latest techniques and methodologies available.

4. Combining the best theory with state-of-the-art practice

Why Study this Hybrid Master's Degree?

In the academic field, there are many university programs that are limited to the theoretical level of the different disciplines and require long hours of study. Faced with this situation, TECH offers an innovative and highly practical educational approach that allows students to quickly master the most advanced techniques in Strength Training for Sports Performance. In this way, the institution enables graduates to successfully enter the labor market.

5. Expanding the boundaries of knowledge

TECH offers graduates the possibility of carrying out their Internship Program in renowned centers, both nationally and internationally. Thanks to this, students will broaden their horizons and update their knowledge with renowned professionals specialized in Sports Science and related fields.

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

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Objectives

Through this Hybrid Master's Degree, graduates will stand out for their advanced knowledge of Strength Training for Sports Performance. At the same time, professionals will enhance their practical skills in the prescription, supervision and evaluation of physical exercises, as well as in the application of specific training session techniques. In line with this, specialists will handle the most advanced technology in this field, such as strength measurement systems and biomechanical analysis. In this way, they will improve both the precision and efficiency of sports practice.

You will handle the proper techniques of weightlifting, bodyweight exercises and other Strength Training methods, ensuring the safe execution of movements"

General Objective

- Thanks to this Hybrid Master's Degree in Strength Training for Sports Performance, professionals will have a comprehensive approach to the physiological, biomechanical and methodological fundamentals of strength exercises applied to athletic performance. Likewise, graduates will develop competencies to plan effective programs that optimize the sport efficiency of individuals, while reducing the risk of injuries

You will acquire leadership, communication and teamwork skills, as well as a solid understanding of the ethical considerations related to the practice of Strength Training"

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
- Learn 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
- Specialize in the functioning of the cardiovascular and respiratory systems and oxygen utilization during exercise
- Interpret the general causes of fatigue and impact in different types and modalities of exercise

Module 2. Strength Training for the Improvement of Movement Skills

- Develop the ability to analyze data collected in the laboratory and in the field through various assessment tools
- Describe the different types of statistical analysis and their application in various situations for the understanding of phenomena that occur during training
- Develop strategies for data exploration to determine the best models to describe them
- Establish the generalities of predictive models through regression analysis that favor the incorporation of different units of analysis in the training field
- 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 3. Strength Training under the Paradigm of Complex Dynamic Systems

- Correctly interpret all theoretical aspects defining strength and its components
- Master the most effective strength training methods
- Develop sufficient criteria to be able to support the choice of different training methods in their practical application
- Be able to objectify the strength needs of each athlete
- Master the theoretical– practical aspects that define power development
- Correctly apply strength training in the prevention and rehabilitation of injuries

Module 4. Strength Training Prescription and Scheduling

- Interpret the key aspects of speed and change of direction technique
- Compare and differentiate the Speed of situational sport with respect to the track and field model.
- Incorporate elements of judgment of technical observation that make it possible to discriminate errors in the mechanics of the race and the procedures for their correction

- Become familiar with the myoenergetic aspects of single and repeated sprinting and how they relate to training processes
- Differentiate the mechanical aspects that may influence performance impairment and the mechanisms of injury occurrence when sprinting
- Apply in an analytical way the different means and methods of training for the development of the different phases of speed

Module 5. Strength Training Methodology

- Study the different adaptations generated by aerobic Endurance
- Select the most appropriate tests to evaluate, monitor, tabulate and fractionate aerobic workloads
- Carry out the different methods to organize Training sessions
- Design Training sessions taking into account the sport

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

- Approach mobility as a basic physical capacity from a neurophysiological perspective
- Have a deep understanding of the neurophysiological principles that affect the development of mobility
- Apply stabilizing and mobilizing systems within the movement pattern
- Unravel and specify the basic concepts and objectives related to Mobility training
- Develop the ability to design tasks and plans for the development of Mobility manifestations
- Apply the different methods of performance optimization through recovery methods
- Develop the ability to carry out a functional and neuromuscular assessment of the athlete
- Recognize and address the effects produced by an injury at the neuromuscular level in the athlete

Module 7. Strength Training to Improve Speed

- Become familiar with different types of assessment and their applicability to the field of practice
- Select the most appropriate tests for your specific needs
- Correctly and safely administer the protocols of the different tests and the interpretation of the data collected
- Apply different types of technologies currently used in the field of exercise assessment, whether in the field of health and fitness performance at any level of demand

Module 8. Evaluation of Sports Performance in Strength Training

- Understand the internal logic of planning, such as its proposed core models
- Apply the Dose-Response concept in training
- Acquire the ability to design different planning models according to the work reality
- Apply the concepts learned in an annual and/or multi-year planning design

Module 9. Strength Training in Situational Sports

- Specialize in the principles of Biomechanics oriented to physical education and Sport
- Apply the basic knowledge and technologies of biomechanics as a function of physical education, sport, performance and daily life
- Value the importance of protocols and the different types of biomechanical evaluation as a fundamental factor in the process of sports development and assessment
- Develop critical and analytical thinking that will allow him/her to generate innovative protocols and procedures, with different types of technology

Module 10. Training in Medium and Long Duration Sports

- Learn the physiological and biochemical bases of energy metabolism during physical exertion
- Learn the processes and methods of nutritional evaluation of the athlete, as well as his body composition
- Learn the different options to assess the athlete's energy expenditure
- Learn all the variables regarding nutrition in sports disciplines of very different characteristics
- Familiarize yourself with the latest scientific evidence on sports supplementation
- Handle the nutritional aspects that are associated with eating disorders and sports injuries

Delve into the most relevant theory in this field, subsequently applying it in a real work environment"

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Skills

Upon completion of this Hybrid Master's Degree, graduates will be highly qualified to design Strength Training programs tailored to the needs of athletes (taking into account factors such as age, gender, physical condition or specific goals). Furthermore, specialists will master a variety of equipment and physical exercise methods. In addition, professionals will conduct performance tests to measure relevant parameters such as Strength, Power or Muscular Endurance.

Through this revolutionary university program, you will implement the most innovative Strength Training techniques optimally and safely"

General Skills

- Acquire knowledge based on the most current scientific evidence with full applicability in the practical field
- Master all the most advanced methods in Sports Performance evaluation

You will gain practical skills in the prescription, supervision and evaluation of Strength Training, as well as in the application of specific conditioning techniques"

Specific Skills

- Learn key aspects of the neuromuscular system, motor control and its role in physical training
- Describe the different types of statistical analysis and their application in various situations for the understanding of phenomena that occur during training
- Correctly interpret all theoretical aspects defining strength and its components
- Incorporate elements of judgment of technical observation that make it possible to discriminate errors in the mechanics of the race and the procedures for their correction
- Select the most appropriate tests to evaluate, monitor, tabulate and fractionate aerobic workloads
- Apply stabilizing and mobilizing systems within the movement pattern
- Unravel and specify the basic concepts and objectives related to Mobility training
- Correctly and safely administer the protocols of the different tests and the interpretation of the data collected
- Apply the basic knowledge and technologies of biomechanics as a function of physical education, sport, performance and daily life
- Handle the nutritional aspects that are associated with eating disorders and sports injuries

05

Course Management

TECH's philosophy is based on offering the most complete and renewed university degrees in the academic panorama, with the objective of promoting the professional careers of its graduates. For this reason, it follows a rigorous process to constitute its teaching staff. In this Hybrid Master's Degree, it brings together true professionals in the field of Strength Training for Sports Performance. These specialists have a wide professional background, where they have contributed to optimize the athletic performance of multiple athletes. Undoubtedly, a guarantee for the students, who will have access to an immersive experience that will significantly raise their employment horizons.

The leading experts in Strength Training for Sports Performance have come together in this program to share with you their solid knowledge in this highly demanded field"

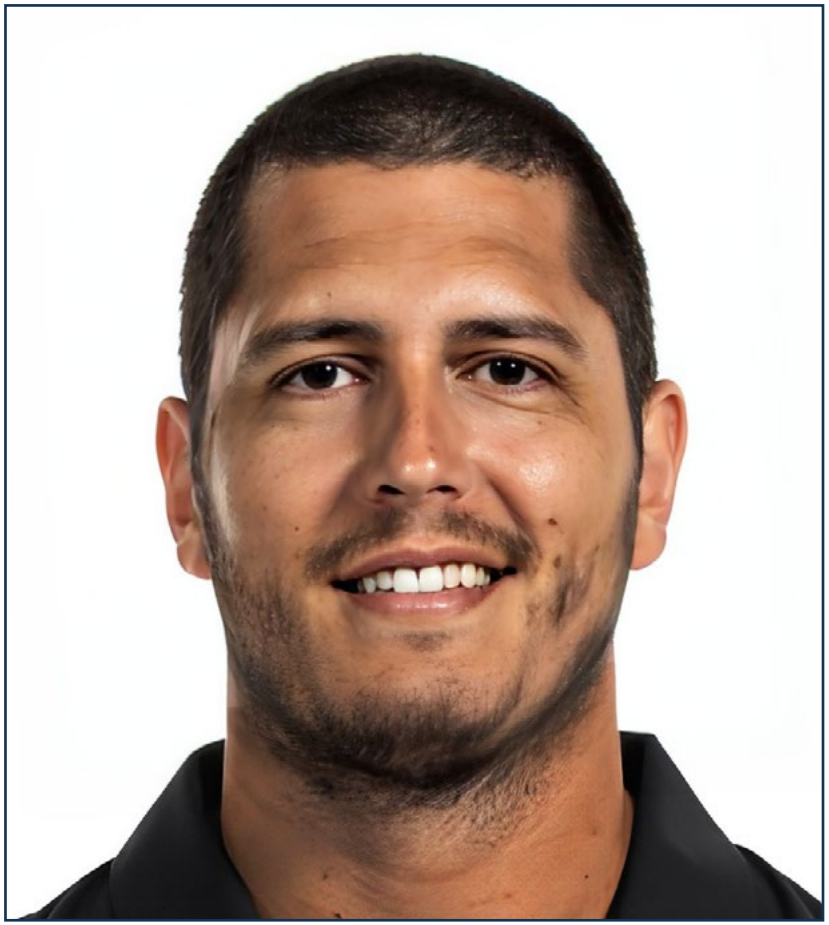
International Guest Director

Tyler Friedrich, Ph.D. is a leading figure in the international field of **Sports Performance** and **Applied Sports Science.** With a strong academic background, he has demonstrated an exceptional commitment to excellence and innovation, and has contributed to the success of numerous elite athletes internationally.

Throughout his career, Tyler Friedrich has deployed his expertise in a wide range of sporting disciplines, from **soccer to swimming, volleyball to field hockey**. His work in **performance data analysis, especially through the Catapult athlete GPS system,** and his integration of **sports technology** into performance programs, has established him as a leader in **athletic performance**optimization.

As **Director of Sports Performance and Applied Sports Science,** Dr. Friedrich has led strength and conditioning training, as well as the implementation of specific programs for several **Olympic sports,** including volleyball, rowing and gymnastics.bol, remo y gimnasia. Here, he has been responsible for integrating equipment services, sports performance in soccer and sports performance in Olympic sports. In addition, incorporating **DAPER sports nutrition within an athlete** performance team.

Also, certified by **USA Weightlifting**and the **National Strength and Conditioning Association,** he is recognized for his ability to combine theoretical and practical knowledge in the development of **high performance athletes.** In this way, Dr. Tyler Friedrich has left an indelible mark on the world of **Sports Performance,** being an outstanding leader and a driving force of innovation in his field.



Dr. Friedrich, Tyler

- Director of Sports Performance and Applied Sports Science at Stanford, Palo Alto USA
- Sports Performance Specialist
- Associate Director of Athletics and Applied Performance at Stanford University
- Director of Olympic Sports Performance at Stanford University
- Sports Performance Coach at Stanford University
- Ph.D. in Philosophy, Health and Human Performance from Concordia University Chicago
- Master's Degree of Science in Exercise Science from the University of Dayton
- Bachelor of Science, Exercise Physiology from the University of Dayton

Thanks to TECH you will be able to learn with the best professionals in the world"

Management

Dr. Rubina, Dardo

- Specialist in High Performance Sports
- CEO of the Test and Training project
- 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's Degree 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 Extremeña Federation of Bodybuilding and Fitness
- Expert in Sports Scouting and Quantification of Training Load Cone specialization in Soccer and Sports Sciences by the University of Melilla
- 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 by the Arizona State University

Professors

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 coach at Quilmes Athletic 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. 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 Professor
- External Consultant for Speed4lift, a leading company in the area of Sports Technology
- Bachelor's Degree in Physical Activity from the University of Salvador
- Specialist in Exercise Physiology from the National University of La Plata
- MSc. Strength and Conditioning at the University of Greenwich, U.K.

Mr. Vaccarini, Adrián Ricardo

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

Mr. Jareño Díaz, Juan

- Physical Preparation and Sports Specialist
- Coordinator of the education and physical preparation area at the Moratalaz Sports School
- University Professor
- Personal Trainer and Sports Coach at 9.8 Gravity Training Studio
- Graduate in Physical Activity and Sport Sciences from the University of Castilla - la Mancha
- Master's Degree in University Law and Bioethics from the University of Castilla-La Mancha
- Postgraduate in Therapeutic Personal from University of Castilla – La Mancha

Dr. Del Rosso, Sebastián

- Expert researcher in Sports Biochemistry
- Postdoctoral Researcher at the Clinical Biochemistry and Immunology Research Center
- Researcher in the Lifestyles and Oxidative Stress Research Group
- Co-author of numerous scientific publications
- Director of the Editorial Board of PubliCE Standard magazine.
- Director of the Editorial Department of G-SE
- Doctorate in Health Sciences from the National University of Cordoba
- Graduate in Physical Education from the National University of Catamarca
- Master's Degree in Physical Education from the Catholic University of Brasilia

Dr. César García, Gastón

- Expert Hockey and Rugby Fitness Trainer
- Physical Trainer of the professional field hockey player Sol Alias
- Carmen Tennis Club Hockey Team Physical Trainer
- Personal Trainer for Rugby and Hockey Athletes
- Physical Trainer for U18 Rugby Clubs
- Infant Physical Education Teacher
- Co-author of the book Strategies for evaluation of physical condition of children and teenagers
- Graduate in Physical Education from the National University of Catamarca
- National Professor of Physical Education from the ESEF of San Rafael
- Level 1 and 2 Anthropometry Technician

Dr. Represas Lobeto, Gustavo Daniel

- Physical trainer and researcher oriented to High Performance Sports
- Responsible for the Laboratory of Sports Biomechanics of the National Center of High Performance Sports of Argentina
- Responsible for the Laboratory of Biomechanics, Functional Analysis of Movement and Human Performance at the National University of San Martín
- Physical trainer and Scientific Advisor of the Olympic Taekwondo team for the Sydney Olympic Games
- Physical trainer for clubs and professional rugby players
- Teacher in university studies
- Doctor in High Performance Sports by the University of Castilla-La Mancha
- Graduate in Physical Education and Sports from the Interamerican Open University
- Master's Degree in High Performance Sports by the Autonomous University of Madrid
- National Physical Education Teacher

Mr. Masse, Juan Manuel

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

Ms. González Cano, Henar

- Sports Nutritionist
- Nutritionist and Anthropometrist at GYM SPARTA
- Nutritionist and Anthropometrist at Promentium Center
- Nutritionist of Male Soccer teams
- Lecturer in courses related to Strength and Physical Conditioning
- Speaker at training events on Sports Nutrition
- Graduate in Human Nutrition and Dietetics from the University of Valladolid
- Master's Degree in Nutrition in Physical Activity and Sports by the San Antonio Catholic University in Murcia
- Nutrition course and Dietetics Applied to Physical Exercise by the University of Vich

An experienced teaching team will guide you throughout the learning process, resolving any doubts you may have"

06

Educational Plan

The didactic materials that make up this Hybrid Master's Degree have been designed by a teaching staff made up of professionals in the field of Strength Training for Sports Performance. In this way, they have created a syllabus that stands out for its high quality and full applicability to the demands of today's labor market. In addition, the syllabus includes the latest techniques in subjects such as Power Training, Speed or Mobility. As a result, students will develop advanced competencies to implement strength conditioning methods effectively and safely.

You will be able to perform physical evaluations and performance tests to measure parameters such as strength, power or muscular endurance of athletes"

Module 1. Exercise Physiology and Physical Activity

1.1. Thermodynamics and Bioenergetics
- 1.1.1. Definition
- 1.1.2. General Concepts
- 1.1.3. Organic Chemistry
- 1.1.4. Functional Groups
- 1.1.5. Enzymes
- 1.1.6. Coenzymes
- 1.1.7. Acids and Bases
- 1.1.8. 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. Mitochondrial Cross-talk

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. Mecano Signal Translation
- 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. Governor Center 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. Notions of Probability
- 2.1.1. Simple Probability
- 2.1.2. Conditional Probability
- 2.1.3. Bayes' Theorem

2.2. Probability Distributions
- 2.2.1. Binomial Distribution
- 2.2.2. Poisson distribution
- 2.2.3. Normal Distribution

2.3. Statistical Inference
- 2.3.1. Population Parameters
- 2.3.2. Estimation of Population Parameters
- 2.3.3. Sampling Distributions Associated with the Normal Distribution
- 2.3.4. Distribution of the Sample Mean
- 2.3.5. Point Estimators
- 2.3.6. Properties of Estimators
- 2.3.7. Estimator Comparison Criteria
- 2.3.8. Estimators by Confidence Regions
- 2.3.9. Method of Obtaining Confidence Intervals
- 2.3.10 Confidence Intervals Associated With Normal Distribution
- 2.3.11 Central Limit Theorem

2.4. Hypothesis Test
- 2.4.1. P-Value
- 2.4.2. Statistical Power

2.5. Exploratory Analysis and Descriptive Statistics
- 2.5.1. Graphs and Tables
- 2.5.2. Chi-Square Test
- 2.5.3. Relative Risk
- 2.5.4. Odds Ratio

2.6. The T-Test
- 2.6.1. One-Sample T-Test
- 2.6.2. T-Test for Two Independent Samples
- 2.6.3. T-Test for Paired Samples

2.7. Correlation Analysis

2.8. Simple Linear Regression Analysis
- 2.8.1. The Regression Line and its Coefficients
- 2.8.2. Residuals
- 2.8.3. Regression Assessment Using Residuals
- 2.8.4. Coefficient of Determination

2.9. Variance and Analysis of Variance (ANOVA)
- 2.9.1. One-Way ANOVA
- 2.9.2. Two-Way ANOVA
- 2.9.3. ANOVA for Repeated Measures
- 2.9.4. Factorial ANOVA

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

3.1. Strength: Conceptualization
- 3.1.1. Strength Defined from a Mechanical Point of View
- 3.1.2. Strength Defined from a Physiology Point of View
- 3.1.3. Define the Concept of Applied Strength
- 3.1.4. Time-Strength Curve
  - 3.1.4.1. Interpretation
- 3.1.5. Define the Concept of Maximum Strength
- 3.1.6. Define the Concept of RFD
- 3.1.7. Define the Concept of Useful Strength
- 3.1.8. Strength- Speed-Power Curves
  - 3.1.8.1. Interpretation
- 3.1.9. Define the Concept of Strength Deficit

3.2. Training Load
- 3.2.1. Define the Concept of Strength Training Load
- 3.2.2. Define the Concept of Load
- 3.2.3. Load Concept: Volume
  - 3.2.3.1. Definition and Applicability in Practice
- 3.2.4. Load Concept: Intensity
  - 3.2.4.1. Definition and Applicability in Practice
- 3.2.5. Load Concept: Density
  - 3.2.5.1. Definition and Applicability in Practice
- 3.2.6. Define the Concept of Effort Character
  - 3.2.6.1. Definition and Applicability in Practice

3.3. Strength Training in the Prevention and Rehabilitation of Injuries
- 3.3.1. Conceptual and Operational Framework in Injury Prevention and Rehabilitation
  - 3.3.1.1. Terminology
  - 3.3.1.2. Concepts
- 3.3.2. Strength Training and Injury Prevention and Rehabilitation Under Scientific Evidence
- 3.3.3. Methodological Process of Strength Training in Injury Prevention and Functional Recovery
  - 3.3.3.1. Defining the Method
  - 3.3.3.2. Applying the Method in Practice
- 3.3.4. Role of Core Stability (CORE) in Injury Prevention
- 3.3.5. Definition of CORE
- 3.3.6. CORE Training

3.4. Plyometric Method
- 3.4.1. Physiological Mechanisms
  - 3.4.1.1. Specific General Information
- 3.4.2. Muscle Actions in Plyometric Exercises
- 3.4.3. The Stretch - Shortening Cycle (CEA)
  - 3.4.3.1. Use of Energy or Elastic Capacity
  - 3.4.3.2. Reflex Involvement Series and Parallel Elastic Energy Accumulation
- 3.4.4. Classification of CEA
  - 3.4.4.1. Short CEA
  - 3.4.4.2. Long CEA
- 3.4.5. Properties of the Muscle and Tendon
- 3.4.6. Central Nervous System
  - 3.4.6.1. Recruitment
  - 3.4.6.2. Frequency (F)
  - 3.4.6.3. Synchronization
- 3.4.7. Practical Considerations

3.5. Power Training
- 3.5.1. Definition of Power
  - 3.5.1.1. Conceptual Aspects of Power
  - 3.5.1.2. The Importance of Power in a Context of Sport Performance
  - 3.5.1.3. Clarification of Power Terminology
- 3.5.2. Factors Contributing to Peak Power Development

3.5.3. Structural Aspects Conditioning Power Production
3.5.3.1. Muscle Hypertrophy
3.5.3.2. Muscle Structure
3.5.3.3. Ratio of Fast and Slow Fibers in a Cross Section
3.5.3.4. Muscle Length and its Effect on Muscle Contraction
3.5.3.5. Quantity and Characteristics of Elastic Components
3.5.4. Neural Aspects Conditioning Power Production
3.5.4.1. Action Potential
3.5.4.2. Speed of Motor Unit Recruitment
3.5.4.3. Muscle Coordination
3.5.4.4. Intermuscular Coordination
3.5.4.5. Prior Muscle Status (PAP)
3.5.4.6. Neuromuscular Reflex Mechanisms and Their Incidence
3.5.5. Theoretical Aspects for Understanding the Force-Time Curve
3.5.5.1. Strength Impulse
3.5.5.2. Phases of the Force-Time Curve
3.5.5.3. Acceleration Phases of the Force-Time Curve
3.5.5.4. Maximum Acceleration Area of the Force–Time Curve
3.5.5.5. Slowing Phase of the Force-Time Curve
3.5.6. Theoretical Aspects for Understanding Power Curves
3.5.6.1. Power-Time Curve
3.5.6.2. Power-Displacement Curve
3.5.6.3. Optimal Workload for Maximum Power Development
3.5.7. Practical Considerations
3.6. Vector Strength Training
3.6.1. Definition of Force Vector
3.6.1.1. Axial Vector
3.6.1.2. Horizontal Vector
3.6.1.3. Rotational Vector
3.6.2. Benefits of Using this Terminology
3.6.3. Definition of Basic Vectors in Training
3.6.3.1. Analysis of the Main Sporting Actions
3.6.3.2. Analysis of the Main Overload Exercises
3.6.3.3. Analysis of the Main Training Exercises
3.6.4. Practical Considerations
3.7. Main Methods for Strength Training
3.7.1. Own Body Weight
3.7.2. Free Exercises
3.7.3. P.A.P.
3.7.3.1. Definition
3.7.3.2. Application of PAP Prior to Energy-Related Sports Disciplines
3.7.4. Exercises with Machines
3.7.5. Complex Training
3.7.6. Exercises and Their Transfer
3.7.7. Contrasts
3.7.8. Cluster Training
3.7.9. Practical Considerations
3.8. VBT
3.8.1. Conceptualization of the Application of VBT
3.8.1.1. Degree of Stability of Execution Speed with Each Percentage of 1MR
3.8.2. Difference Between Scheduled Load and Actual Load
3.8.2.1. Definition of the Concept
3.8.2.2. Variables Involved in the Difference Between Programmed Load and Actual Training Load
3.8.3. VBT as a Solution to the Problem of Using 1MR and nMR to Program Loads
3.8.4. VBT and Degree of Fatigue
3.8.4.1. Connection to Lactate
3.8.4.2. Connection to Ammonium
3.8.5. VBT in Relation to the Loss of Speed and Percentage of Repetitions Performed
3.8.5.1. Define the Different Degrees of Effort in the Same Series
3.8.5.2. Different Adaptations According to the Degree of Speed Loss in the Series

3.8.6. Methodological Proposals According to Different Authors
3.8.7. Practical Considerations
3.9. Strength in Connection to Hypertrophy
3.9.1. Hypertrophy-Inducing Mechanism: Mechanical Stress
3.9.2. Hypertrophy-Inducing Mechanism: Metabolic Stress
3.9.3. Hypertrophy-Inducing Mechanism: Muscle Damage
3.9.4. Hypertrophy Programming Variables
3.9.4.1. Frequency (F)
3.9.4.2. Volume
3.9.4.3. Intensity
3.9.4.4. Cadence
3.9.4.5. Series and Repetitions
3.9.4.6. Density
3.9.4.7. Order in the Execution of Exercises
3.9.5. Training Variables and Their Different Structural Effects
3.9.5.1. Effect on Different Types of Fiber
3.9.5.2. Effects on the Tendon
3.9.5.3. Bundle Length
3.9.5.4. Penneation Angle
3.9.6. Practical Considerations
3.10. Eccentric Strength Training
3.10.1. Conceptual Framework
3.10.1.1. Definition of Eccentric Training
3.10.1.2. Different Types of Eccentric Training
3.10.2. Eccentric Training and Performance
3.10.3. Eccentric Training in the Prevention and Rehabilitation of Injuries
3.10.4. Technology Applied to Eccentric Training
3.10.4.1. Conical Pulleys
3.10.4.2. Isoinertial Devices
3.10.5. Practical Considerations

Module 4. Strength Training Prescription and Scheduling

4.1. Speed
- 4.1.1. Definition
- 4.1.2. General Concepts
  - 4.1.2.1. Manifestations of Speed
  - 4.1.2.2. Factors that Determine Performance
  - 4.1.2.3. Difference Between Speed and Quickness
  - 4.1.2.4. Segmental Speed
  - 4.1.2.5. Angular Speed
  - 4.1.2.6. Reaction Time

4.2. Dynamics and Mechanics of Linear Sprint (100m Model)
- 4.2.1. Kinematic Analysis of the Take-off
- 4.2.2. Dynamics and Strength Application During Take-off
- 4.2.3. Kinematic Analysis of the Acceleration Phase
- 4.2.4. Dynamics and Strength Application During Acceleration
- 4.2.5. Kinematic Analysis of Running at Maximum Speed
- 4.2.6. Dynamics and Strength Application During Maximum Speed

4.3. Phases of Sprinting (Technique Analysis)
- 4.3.1. Technical Description of the Take-off
- 4.3.2. Technical Description of the Race During the Acceleration Phase
  - 4.3.2.1. Technical Model of the Kinogram for the Acceleration Phase
- 4.3.3. Technical Description of the Race During the Maximum Speed Phase
  - 4.3.3.1. Technical Kinogram Model (ALTIS) for Technique Analysis
- 4.3.4. Speed Endurance

4.4. Speed Bioenergetics
- 4.4.1. Bioenergetics of Single Sprints
  - 4.4.1.1. Myoenergetics of Single Sprints
  - 4.4.1.2. ATP-PC System
  - 4.4.1.3. Glycolytic System
  - 4.4.1.4. Adenylate Kinase Reaction

4.4.2. Bioenergetics of Repeated Sprints
4.4.2.1. Energy Comparison Between Single and Repeated Sprints
4.4.2.2. Behavior of Energy Production Systems During Repeated Sprints
4.4.2.3. Recovery of PC
4.4.2.4. Connection Between Aerobic Power and Recovery Processes of CP
4.4.2.5. Determinants of Performance in Repeated Sprints
4.5. Analysis of Acceleration Technique and Maximum Speed in Team Sports
4.5.1. Description of the Technique in Team Sports
4.5.2. Comparison of Sprinting Technique in Team Sports Vs. Athletic Events
4.5.3. Timing and Motion Analysis of Speed Events in Team Sports
4.6. Methodological Approach to Teaching the Technique
4.6.1. Technical Teaching of the Different Phases of the Race
4.6.2. Common Errors and Ways to Correct Them
4.7. Means and Methods for Speed Development
4.7.1. Means and Methods for Acceleration Phase Training
4.7.1.1. Connection of Force to Acceleration
4.7.1.2. Sled
4.7.1.3. Slopes
4.7.1.4. Jumpability
4.7.1.4.1. Building the Vertical Jump
4.7.1.4.2. Building the Horizontal Jump
4.7.1.5. Training the ATP/PC System
4.7.2. Means and Methods for Top Speed Training
4.7.2.1. Plyometry
4.7.2.2. Overspeed
4.7.2.3. Interval-Intensive Methods
4.7.3. Means and Methods for Speed Endurance Development
4.7.3.1. Interval-Intensive Methods
4.7.3.2. Repetition Method
4.8. Agility and Change of Direction
4.8.1. Definition of Agility
4.8.2. Definition of Change of Direction
4.8.3. Determinants of Agility and COD
4.8.4. Change of Direction Technique
4.8.4.1. Shuffle
4.8.4.2. Crossover
4.8.4.3. Agility and COD Training Drills
4.9. Evaluation and Control of Speed Training
4.9.1. Strength-Speed Profile
4.9.2. Test With Photocells and Variants With Other Control Devices
4.9.3. RSA
4.10. Programming Speed Training

Module 5. Strength TrainingMethodology

5.1. General Concepts
5.1.1. General Definitions
5.1.1.1. Education
5.1.1.2. Trainability
5.1.1.3. Sports Physical Preparation
5.1.2. Objectives of Endurance Training
5.1.3. General Principles of Training
5.1.3.1. Principles of Load
5.1.3.2. Principles of Organization
5.1.3.3. Principles of Specialization
5.2. Physiology of Aerobic Training
5.2.1. Physiological Response to Aerobic Endurance Training
5.2.1.1. Responses to Continuous Stress
5.2.1.2. Responses to Intervallic Stress
5.2.1.3. Responses to Intermittent Stress
5.2.1.4. Responses to Stress in Small-Space Games

5.2.2. Factors Related to Aerobic Endurance Performance
5.2.2.1. Aerobic Power
5.2.2.2. Anaerobic Threshold
5.2.2.3. Maximum Aerobic Speed
5.2.2.4. Economy of Effort
5.2.2.5. Use of Substrates
5.2.2.6. Characteristics of Muscle Fibers
5.2.3. Physiological Adaptations to Aerobic Endurance
5.2.3.1. Adaptations to Continuous Stress
5.2.3.2. Adaptations to Intervallic Stress
5.2.3.3. Adaptations to Intermittent Stress
5.2.3.4. Adaptations to Stress in Small-Space Games
5.3. Situational Sports and Their Relation to Aerobic Endurance
5.3.1. Group I Situational Sport Demands; Soccer, Rugby and Hockey
5.3.2. Group II Situational Sport Demands; Basketball, Handball, Futsal
5.3.3. Group III Situational Sport Demands; Tennis and Volleyball
5.4. Monitoring and Assessment of Aerobic Endurance
5.4.1. Direct Treadmill Versus Field Evaluation
5.4.1.1. VO2max Treadmill Versus Field
5.4.1.2. VAM Treadmill Versus Field
5.4.1.3. VAM versus VFA
5.4.1.4. Time Limit (VAM)
5.4.2. Continuous Indirect Tests
5.4.2.1. Time Limit (VFA)
5.4.2.2. 1,000m Test
5.4.2.3. 5 Minute Test
5.4.3. Incremental and Maximum Indirect Tests
5.4.3.1. UMTT, UMTT-Brue, VAMEVAL and T-Bordeaux
5.4.3.2. UNCa Test; Hexagon, Track, Hare
5.4.4. Indirect Back-and-Forth and Intermittent Tests
5.4.4.1. 20m Shuttle Run Test (Course Navette)
5.4.4.2. YoYo Test
5.4.4.3. Intermittent Tests; 30-15 IFT, Carminatti, 45-15 Test
5.4.5. Specific Tests With Ball
5.4.5.1. Hoff Test
5.4.6. Proposal Based on the VFA
5.4.6.1. VFA Contact Points for Soccer, Rugby and Hockey
5.4.6.2. FSR Contact Points for Basketball, Futsal and Handball
5.5. Planning Aerobic Exercise
5.5.1. Exercise Model
5.5.2. Training Frequency
5.5.3. Duration of the Exercise
5.5.4. Training Intensity
5.5.5. Density
5.6. Methods to Develop Aerobic Endurance
5.6.1. Continuous Training
5.6.2. Interval Training
5.6.3. Intermittent Training
5.6.4. SSG Training (Small-Space Games)
5.6.5. Mixed Training (Circuits)
5.7. Program Design
5.7.1. Preseason Period
5.7.2. Competitive Period
5.7.3. Postseason Period
5.8. Special Aspects Related to Training
5.8.1. Concurrent Training
5.8.2. Strategies to Design Concurrent Training
5.8.3. Adaptations Generated by Concurrent Training
5.8.4. Differences Between Genders
5.8.5. De-Training
5.9. Aerobic Training in Children and Youth
5.9.1. General Concepts
5.9.1.1 Growth, Development and Maturation
5.9.2. Evaluation of VO2max and VAM
5.9.2.1. Indirect Measurement
5.9.2.2. Indirect Field Measurement

5.9.3. Physiological Adaptations in Children and Youth
5.9.3.1. VO2máx and VAM Adaptations
5.9.4. Design of Aerobic Training
5.9.4.1. Intermittent Method
5.9.4.2. Adherence and Motivation
5.9.4.3. Games in Small Spaces

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. Muscular 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. Satellite Cells
6.7.2. 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 Improving Sprinting Relationship Between Strength and Sprinting
7.1.2.4. Force-Velocity 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. Force-Velocity 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. Assessment 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) Self-Regulated 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

07

Clinical Internship

Once the online theoretical phase has been passed, the Hybrid Master's Degree includes a period of Internship Program in a leading sports center. The graduates there will enjoy the guidance of an experienced tutor, who will accompany them throughout the process to ensure an enriching practical stay.

You will do your internship in one of the best institutions in the field of Strength Training for Sports Performance"

The Internship Program period of this program in Strength Training for Sports Performance consists of a practical stay in a prestigious institution linked to the sports sector. Likewise, the itinerary will have a duration of 3 weeks from Monday to Friday with 8 consecutive hours of Internship Program with an assistant specialist. Thanks to this, graduates will be able to perform their work in a real work scenario, in top-quality facilities equipped with the necessary tools to carry out different exercises. In this sense, students will be supported by a team of reference professionals, who will help them to optimize their skills.

In this training proposal, completely practical in nature, the activities are aimed at the development and improvement of the competencies necessary for the provision of Strength Training services for Sports Performance and conditions that require a high level of qualification, and that are oriented to the specific training for the exercise of the activity, in a safe environment for the users and a high professional performance.

Undoubtedly, this is an ideal opportunity for graduates to gain experience in an entity of excellence. In this way, they will be able to put into practice everything assimilated during the theoretical stage and design specific training programs to meet the individual needs of the athletes.

The practical part 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 training partners that facilitate teamwork and multidisciplinary integration as transversal competencies for the praxis of Strength Training for Sports Performance (learning to be and learning to relate).

The procedures described below will form the basis of the practical part of the internship, and its 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:

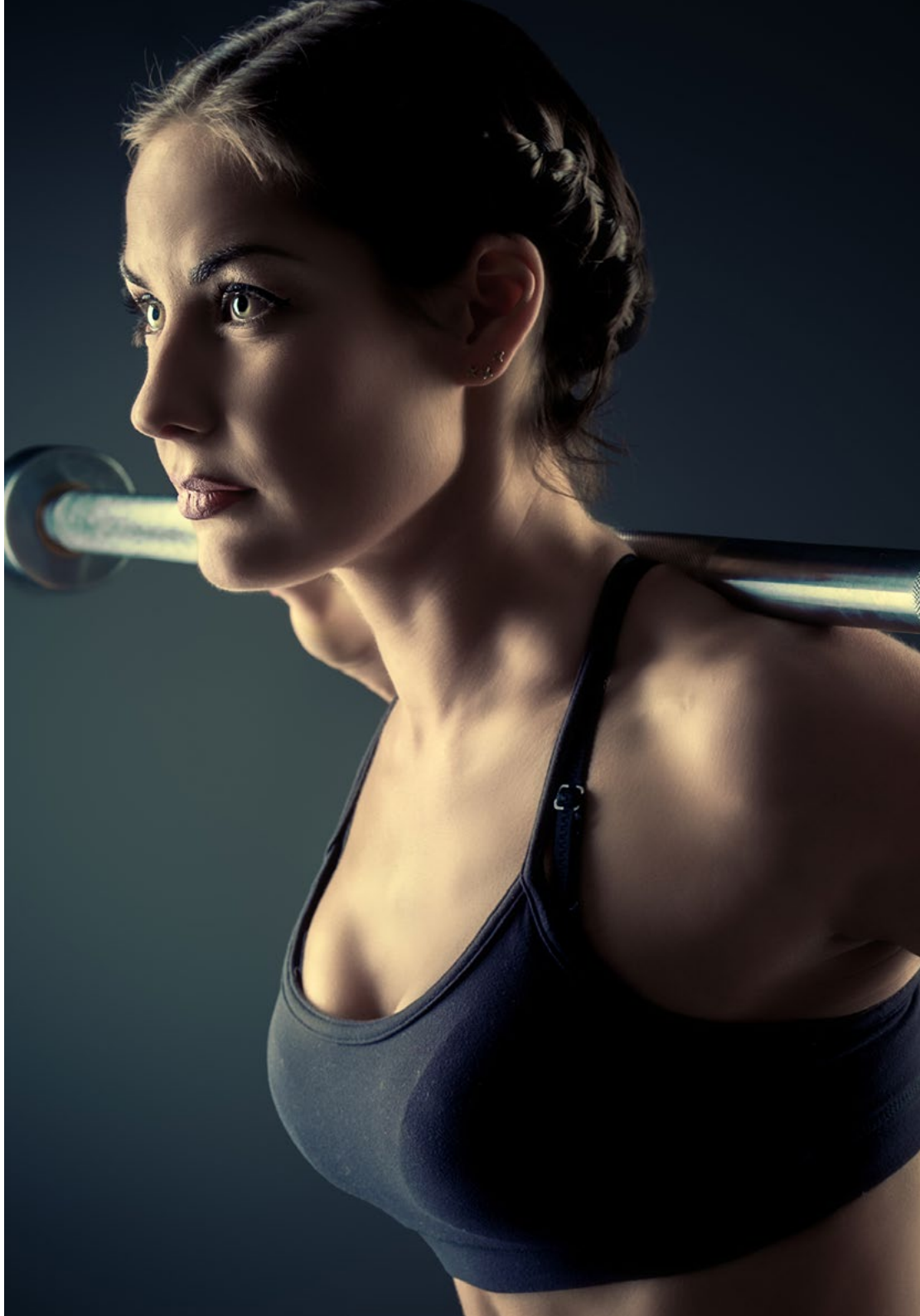
Module	Practical Activity
Development of motor skills through strength training	Perform basic movements such as push-ups, pull-ups, squats and sit-ups to improve functional strength
	Use elastic bands or resistance tubing to perform push, pull and extension exercises
	Use free weights to improve coordination and movement technique
	Perform box jumps and other similar plyometric exercises to optimize neuromuscular responsiveness
Complex Dynamic Systems	Incorporate exercises such as medicine ball throws against the wall and shooting from a squat position
	Use side steps or stair runs in order to improve coordination and agility
	Do leg lifts and movements on a balance board
	Perform training sessions on varying uneven terrain (such as running on the beach or walking on rocky terrain)
Techniques aimed at improving Speed	Perform short, high-intensity sprints and sprints with directional changes
	Use weighted vests during exercises such as strides to develop explosive strength and speed
	Perform sprints from a static position or starting from a squat position
	Perform jumping jacks to optimize reaction ability and speed of movement in different directions
Conditioning for Sports Endurance	Perform long-duration cardiovascular training sessions at a steady, moderate pace to improve the ability of the heart and lungs to transport oxygen to the muscles
	Perform exercises that mimic the conditions of a race (including terrain, duration and intensity)
	Include meditation or concentration practices in order to develop mental endurance and maintain motivation during prolonged activities
	Maintain optimal nutrition and hydration before, during, and after prolonged activities in order to maintain energy levels

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 Internship Program 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 program agreement shall be as follows:

1. TUTOR: During the Hybrid 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 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 Master's Degree will receive a certificate accrediting their stay at the center.

5. EMPLOYMENT RELATIONSHIP: the Hybrid 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 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 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 Internship?

In line with its commitment to offer a high quality academic experience accessible to all people, TECH has carried out an exhaustive process to select the institutions where students will carry out their Internship Program in Strength Training for Sports Performance. As a result, it has established agreements with recognized organizations in the sports field at an international level. This opportunity gives graduates the chance to broaden their knowledge and skills under the guidance of experts in this field.

You will carry out your Internship Program in an entity of reference in the sports field, composed of an experienced team of professionals"

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

Selected Trainers Granada Centro

Country
Spain

City
Granada

Address: Avenida Pablo Picasso 27, Local Izquierdo, 18006 Granada (España)

The team of professionals at Selected Trainers designs customized workouts for aesthetic and health purposes.

Related internship programs:
- High Performance in Sports
-Therapeutic Personal Training

Selected Trainers Centro O2 Granada

Country
Spain

City
Granada

Address: Calle Neptuno, s/n, Ronda, 18004 Granada (España)

The team of professionals at Selected Trainers designs customized workouts for aesthetic and health purposes.

Related internship programs:
- High Performance in Sports
-Therapeutic Personal Training

Selected Trainers Centro O2 Huelva

Country
Spain

City
Huelva

Address: Calle San Sebastián, S/N, 21004 Huelva (España)

The team of professionals at Selected Trainers designs customized workouts for aesthetic and health purposes.

Related internship programs:
- High Performance in Sports
-Therapeutic Personal Training

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"

Case Study to contextualize all content

Our program offers a revolutionary approach to developing skills and knowledge. Our goal is to strengthen skills in a changing, competitive, and highly demanding environment.

At TECH, you will experience a learning methodology that is shaking the foundations of traditional universities around the world"

You will have access to a learning system based on repetition, with natural and progressive teaching throughout the entire syllabus.

The student will learn to solve complex situations in real business environments through collaborative activities and real cases.

A learning method that is different and innovative

This TECH program is an intensive educational program, created from scratch, which presents the most demanding challenges and decisions in this field, both nationally and internationally. This methodology promotes personal and professional growth, representing a significant step towards success. The case method, a technique that lays the foundation for this content, ensures that the most current economic, social and professional reality is taken into account.

> *Our program prepares you to face new challenges in uncertain environments and achieve success in your career"*

The case method is the most widely used learning system in the best faculties in the world. The case method was developed in 1912 so that law students would not only learn the law based on theoretical content. It consisted of presenting students with real-life, complex situations for them to make informed decisions and value judgments on how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

What should a professional do in a given situation? This is the question we face in the case method, an action-oriented learning method. Throughout the program, the studies will be presented with multiple real cases. They will have to combine all their knowledge and research, and argue and defend their ideas and decisions.

Relearning Methodology

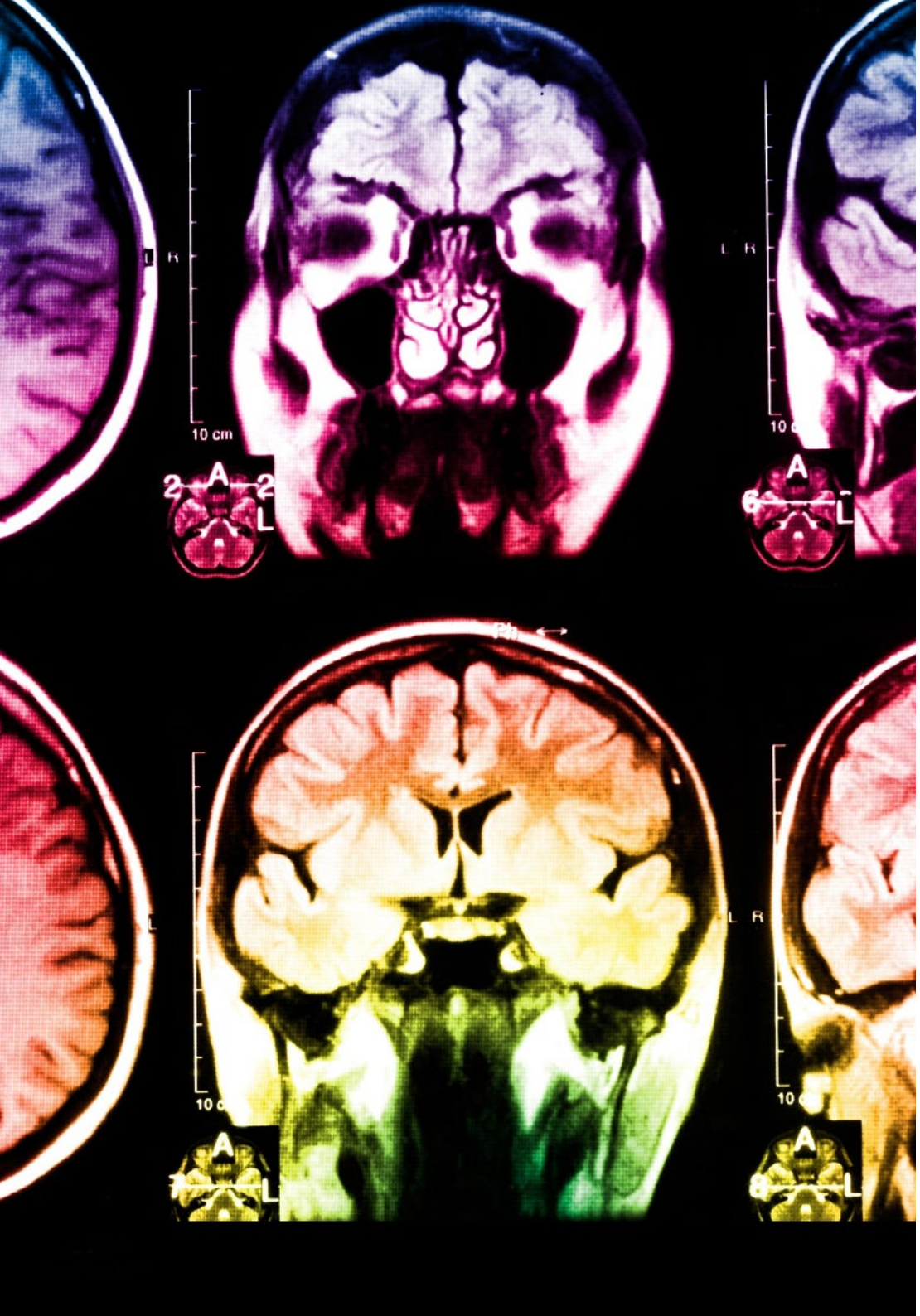
TECH effectively combines the Case Study methodology with a 100% online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance the Case Study with the best 100% online teaching method: Relearning.

In 2019, we obtained the best learning results of all online universities in the world.

At TECH, you will learn using a cutting-edge methodology designed to train the executives of the future. This method, at the forefront of international teaching, is called Relearning.

Our university is the only one in the world authorized to employ this successful method. In 2019, we managed to improve our students' overall satisfaction levels (teaching quality, quality of materials, course structure, objectives...) based on the best online university indicators.



In our program, learning is not a linear process, but rather a spiral (learn, unlearn, forget, and re-learn). Therefore, we combine each of these elements concentrically. With this methodology, we have trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, markets, and financial instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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

From the latest scientific evidence in the field of neuroscience, not only do we know how to organize information, ideas, images and memories, but we know that the place and context where we have learned something is fundamental for us to be able to remember it and store it in the hippocampus, to retain it in our long-term memory.

In this way, and in what is called neurocognitive context-dependent e-learning, the different elements in our program are connected to the context where the individual carries out their professional activity.

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

Study Material

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

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

Classes

There is scientific evidence suggesting that observing third-party experts can be useful.

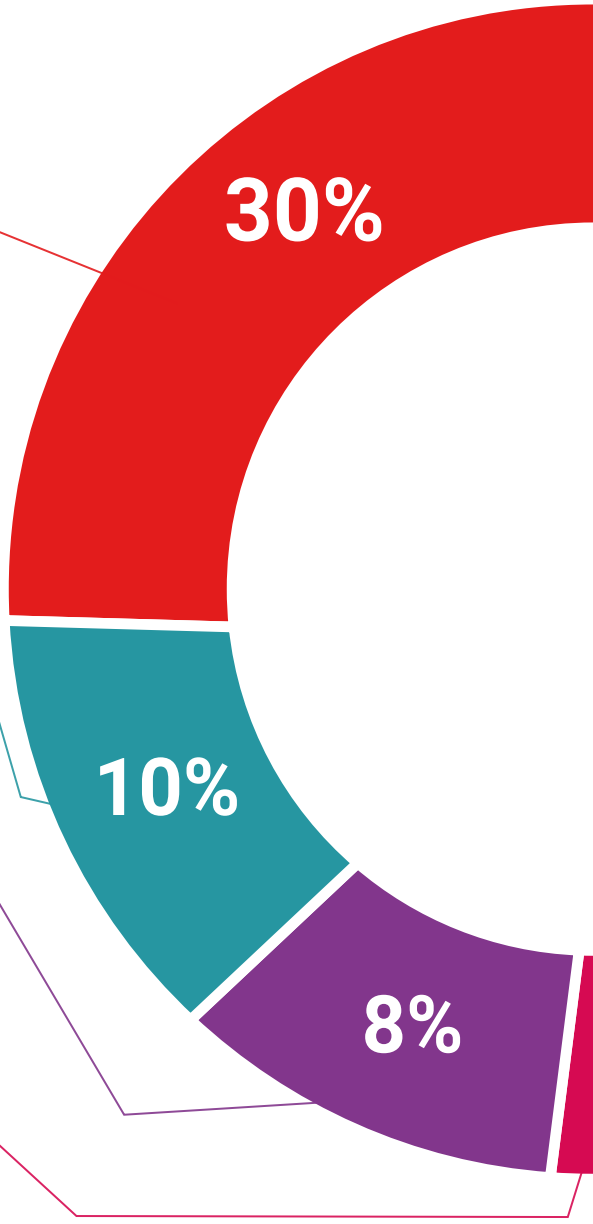
Learning from an Expert strengthens knowledge and memory, and generates confidence in future difficult decisions.

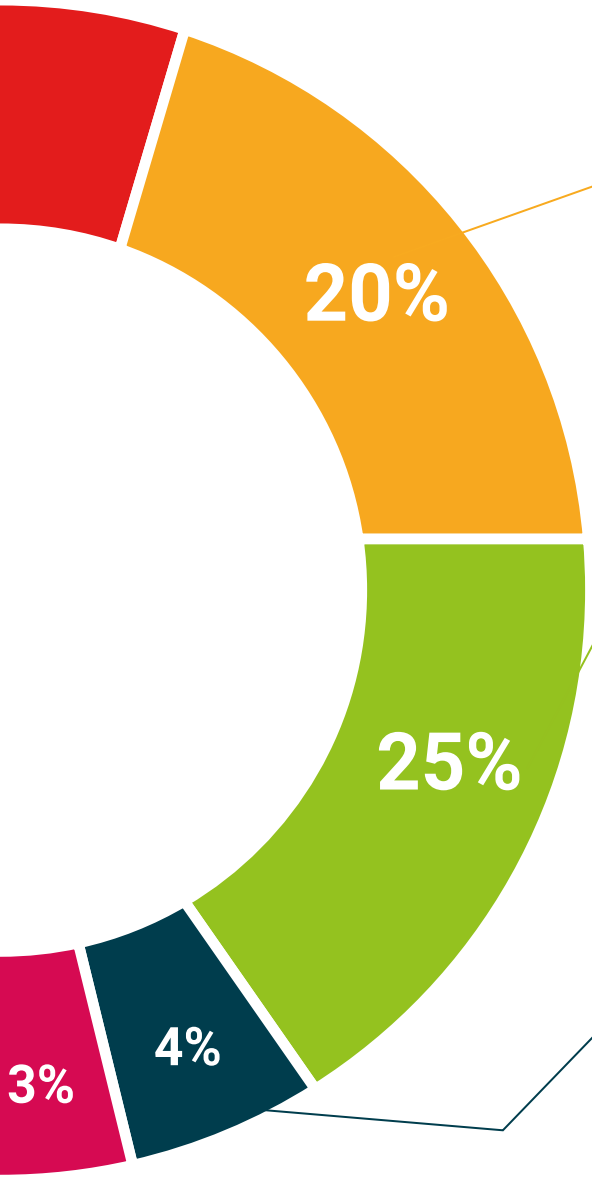
Practising Skills and Abilities

They will carry out activities to develop specific competencies and skills in each thematic area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization that we are experiencing.

Additional Reading

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





Case Studies

Students will complete a selection of the best case studies chosen specifically for this situation. Cases that are presented, analyzed, and supervised by the best specialists in the world.

Interactive Summaries

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

This exclusive educational system for presenting multimedia content was awarded by Microsoft as a "European Success Story".

Testing & Retesting

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

10

Certificate

The Hybrid Master's Degree in Strength Training for Sports Performance guarantees students, in addition to the most rigorous and up-to-date education, access to a Hybrid 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 **Hybrid Master's Degree in Strength Training for Sports Performance** 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: **Hybrid Master's Degree in Strength Training for Sports Performance**

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

Duration: **12 months**

Accreditation: **64 ECTS**

tech global university

Mr./Ms. _____, with identification document _____
has successfully passed and obtained the title of:

Hybrid Master's Degree in Strength Training for Sports Performance

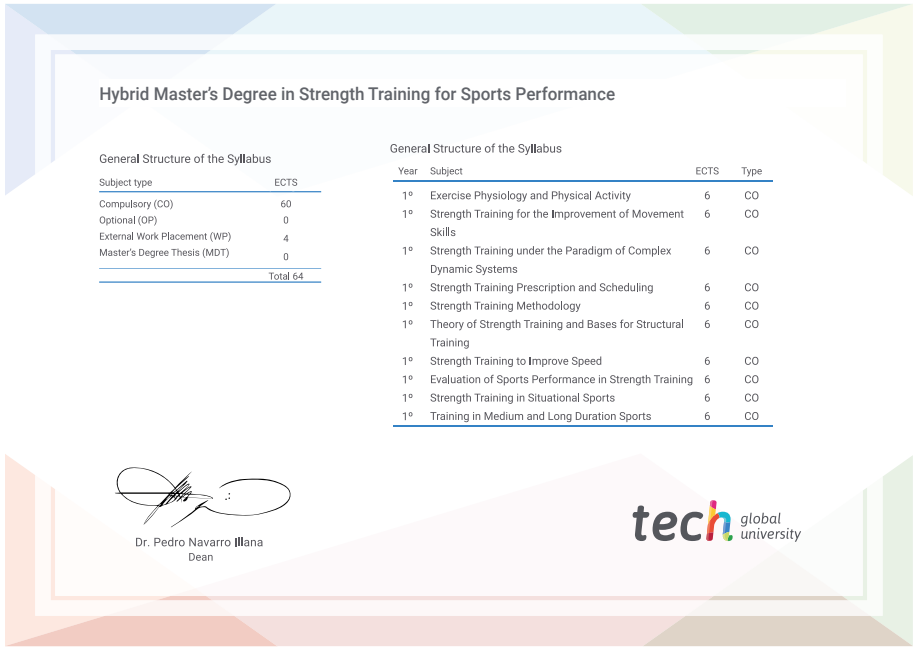
This is a private qualification of 1,920 hours of duration equivalent to 64 ECTS, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH Global University is a university officially recognized by the Government of Andorra on the 31st of January of 2024, which belongs to the European Higher Education Area (EHEA).

In Andorra la Vella, on the 28th of February of 2024

Dr. Pedro Navarro Illana
Dean

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 Master's Degree in Strength Training for Sports Performance

General Structure of the Syllabus

Subject type	ECTS
Compulsory (CO)	60
Optional (OP)	0
External Work Placement (WP)	4
Master's Degree Thesis (MDT)	0
	Total 64

General Structure of the Syllabus

Year	Subject	ECTS	Type
1º	Exercise Physiology and Physical Activity	6	CO
1º	Strength Training for the Improvement of Movement Skills	6	CO
1º	Strength Training under the Paradigm of Complex Dynamic Systems	6	CO
1º	Strength Training Prescription and Scheduling	6	CO
1º	Strength Training Methodology	6	CO
1º	Theory of Strength Training and Bases for Structural Training	6	CO
1º	Strength Training to Improve Speed	6	CO
1º	Evaluation of Sports Performance in Strength Training	6	CO
1º	Strength Training in Situational Sports	6	CO
1º	Training in Medium and Long Duration Sports	6	CO

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*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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Hybrid Master's Degree

Strength Training for Sports Performance

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

Duration: **12 months**

Certificate: **TECH Global University**

Credits: **60 + 4 ECTS**

Hybrid Master's Degree

Strength Training for Sports Performance

Endorsed by the NBA

tech global university