Master's Degree

High Performance in Sports

Accreditation/Membership

tech global university

tech global university

Master's Degree
High Performance in Sports

- Modality: **Online**
- Duration: **12 months.**
- Certificate: **TECH Global University**
- Accreditation: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Website: www.techtitute.com/us/sports-science/master-degree/master-high-performance-sports

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01

Introduction to the Program

High-Performance Sports is constantly evolving, driven by scientific, technological, and methodological advancements that optimize athletes' performance. Organizations such as the International Olympic Committee emphasize the importance of comprehensive preparation, combining physical, psychological, and nutritional factors to achieve competitive excellence. In an environment where the demands are at their peak, professionals must stay at the forefront of training strategies, recovery, and sports management. To meet this demand, TECH has developed an innovative and 100% online postgraduate program, designed to provide the most advanced tools for optimizing athletic performance. All of this is done through an evidence-based approach, tailored to the current demands of the industry.

A comprehensive and 100% online program, exclusive to TECH, with an international perspective supported by our membership with The Chartered Association of Sport and Exercise Sciences"

High Performance in Sports requires meticulous preparation and a deep understanding of the sciences applied to training. In this regard, optimizing athletic performance depends not only on talent or discipline but also on the application of evidence-based methodologies. Therefore, the constant evolution in areas such as physiology, biomechanics, nutrition, and sports psychology has transformed the way athletes achieve their full potential. All of this has created the need for specialists capable of integrating this knowledge, which is essential for excellence in the competitive realm.

For this reason, TECH has developed this comprehensive Postgraduate Master's Degree in High Performance in Sports. The program will be delivered 100% online, allowing access to cutting-edge content without the limitations of traditional learning. With a flexible methodology and innovative resources, it will be possible to combine training with other professional responsibilities, ensuring continuous access to updated materials and real-world case studies. Moreover, the ability to study from anywhere in the world removes geographical barriers and facilitates specialization in a dynamic environment tailored to the needs of the sports sector.

As such, TECH will offer an innovative academic proposal that addresses the current demands of high performance, preparing professionals to face the challenges of elite sports with the best available tools. Additionally, specialists will have exclusive access to 10 unique Masterclasses, delivered by a renowned International Guest Director.

Additionally, thanks to the membership in **The Chartered Association of Sport and Exercise Sciences (CASES)**, students will gain access to exclusive educational resources, discounts on events and specialized publications, and practical benefits such as professional insurance. They will also be able to join an active community, participate in committees, and obtain accreditations that enhance their development, visibility, and professional prospects in the field of sports and exercise science.

This **Master's Degree in High Performance in Sports** contains the most complete and up-to-date University program on the market. Its most notable features are:

- The development of practical cases presented by experts in Sports
- 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
- Practical exercises where the self-assessment process can be carried out to improve learning
- Special emphasis on innovative methodologies in Sports Preparation
- Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection work
- Content that is accessible from any fixed or portable device with an Internet connection

You will have access to updated content and benefit from exclusive Masterclasses led by a renowned International Guest Director"

You will learn to apply statistics in the analysis of athletic performance and make informed decisions. Make a difference in Sports!

You will perfect your knowledge in strength training and develop effective programs to improve athletes' physical conditioning.

You will specialize in speed training and design plans to maximize the explosiveness and agility of athletes. You will take training to the next level!

The program includes a faculty of professionals from the sports field, who bring their practical experience to the program, as well as recognized specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide an immersive learning experience designed to prepare for real-life situations.

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

02

Why Study at TECH?

TECH is the world's largest online university. With an impressive catalog of more than 14,000 university programs, available in 11 languages, it is positioned as a leader in employability, with a 99% job placement rate. In addition, it has a huge faculty of more than 6,000 professors of the highest international prestige.

Study at the largest online university in the world and ensure your professional success. The future begins at TECH”

The world's best online university, according to FORBES

The prestigious Forbes magazine, specialized in business and finance, has highlighted TECH as "the best online university in the world" This is what they have recently stated in an article in their digital edition in which they echo the success story of this institution, "thanks to the academic offer it provides, the selection of its teaching staff, and an innovative learning method oriented to form the professionals of the future".

The best top international faculty

TECH's faculty is made up of more than 6,000 professors of the highest international prestige. Professors, researchers and top executives of multinational companies, including Isaiah Covington, performance coach of the Boston Celtics; Magda Romanska, principal investigator at Harvard MetaLAB; Ignacio Wistumba, chairman of the department of translational molecular pathology at MD Anderson Cancer Center; and D.W. Pine, creative director of TIME magazine, among others.

The world's largest online university

TECH is the world's largest online university. We are the largest educational institution, with the best and widest digital educational catalog, one hundred percent online and covering most areas of knowledge. We offer the largest selection of our own degrees and accredited online undergraduate and postgraduate degrees. In total, more than 14,000 university programs, in ten different languages, making us the largest educational institution in the world.

The most complete syllabuses on the university scene

TECH offers the most complete syllabuses on the university scene, with programs that cover fundamental concepts and, at the same time, the main scientific advances in their specific scientific areas. In addition, these programs are continuously updated to guarantee students the academic vanguard and the most demanded professional skills. and the most in-demand professional competencies. In this way, the university's qualifications provide its graduates with a significant advantage to propel their careers to success.

A unique learning method

TECH is the first university to use Relearning in all its programs. This is the best online learning methodology, accredited with international teaching quality certifications, provided by prestigious educational agencies. In addition, this innovative academic model is complemented by the "Case Method", thereby configuring a unique online teaching strategy. Innovative teaching resources are also implemented, including detailed videos, infographics and interactive summaries.

The official online university of the NBA

TECH is the official online university of the NBA. Thanks to our agreement with the biggest league in basketball, we offer our students exclusive university programs, as well as a wide variety of educational resources focused on the business of the league and other areas of the sports industry. Each program is made up of a uniquely designed syllabus and features exceptional guest hosts: professionals with a distinguished sports background who will offer their expertise on the most relevant topics.

Leaders in employability

TECH has become the leading university in employability. Ninety-nine percent of its students obtain jobs in the academic field they have studied within one year of completing any of the university's programs. A similar number achieve immediate career enhancement. All this thanks to a study methodology that bases its effectiveness on the acquisition of practical skills, which are absolutely necessary for professional development.

Google Premier Partner

The American technology giant has awarded TECH the Google Premier Partner badge. This award, which is only available to 3% of the world's companies, highlights the efficient, flexible and tailored experience that this university provides to students. The recognition not only accredits the maximum rigor, performance and investment in TECH's digital infrastructures, but also places this university as one of the world's leading technology companies.

The top-rated university by its students

Students have positioned TECH as the world's top-rated university on the main review websites, with a highest rating of 4.9 out of 5, obtained from more than 1,000 reviews. These results consolidate TECH as the benchmark university institution at an international level, reflecting the excellence and positive impact of its educational model.

03

Syllabus

High Performance in Sports requires a comprehensive understanding that spans from training planning to recovery and injury prevention. In an increasingly competitive environment, the application of evidence-based strategies is key to maximizing performance and prolonging athletes' careers. Additionally, advancements in technology and Sports Science have transformed how physical and mental capabilities are optimized. Therefore, this syllabus will offer a multidisciplinary and innovative perspective, designed to train specialists capable of facing the current challenges in athletic performance.

You will be trained in an innovative format, with flexible and up-to-date content that will allow you to learn at your own pace"

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 Processes 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 Transduction
- 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 (Heart Rate Variability)
- 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. Evaluation
- 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. Statistics Applied to Performance and Research

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, from Theory to Practice

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. Defining the Concept of Strength Deficit

3.2. Training Load
- 3.2.1. Defining the Concept of Strength Training Load
- 3.2.2. Defining 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
  - 3.3.4.1. Definition of Core
  - 3.3.4.2. 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 (SSC)
  - 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
  - 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 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. Post-Activation Potentiation (PAP)
3.5.4.6. Neuromuscular Reflex Mechanisms and Their Incidence
3.5.5. Theoretical Aspects for Understanding the Strength-Time Curve
3.5.5.1. Strength Impulse
3.5.5.2. Phases of the Strength-Time Curve
3.5.5.3. Phases of Acceleration in the Strength-Time Curve
3.5.5.4. Maximum Acceleration Area of the Strength-Time Curve
3.5.5.5. Deceleration Phase of the Strength-Time Curve
3.5.6. Theoretical Aspects for Understanding Power Curves
3.5.6.1. Energy-Time Curve
3.5.6.2. Energy-Displacement Curve
3.5.6.3. Optimal Workload for Maximum Energy 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. PAP
3.7.3.1. Definition
3.7.3.2. Application of the PAP prior to Power-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

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. Peneation 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. Speed Training, from Theory to Practice

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 PC
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 Training *Top Speed*
    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. Assessment 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. Endurance Training, from Theory to Practice

5.1. General Concepts
  5.1.1. General Definitions
    5.1.1.1. Training
    5.1.1.2. Trainability
    5.1.1.3. Sports Physical Preparation
  5.1.2. Objectives 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; Football, 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 Test; 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 Football, 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. Pre-Season Period
- 5.7.2. Competitive Period
- 5.7.3. Post-Season 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. Mobility: from Theory to Performance

6.1. Neuromuscular System
- 6.1.1. Neurophysiological Principles: Inhibition and Excitability
  - 6.1.1.1. Adaptations of the Nervous System
  - 6.1.1.2. Strategies to Modify Corticospinal Excitability
  - 6.1.1.3. Keys to Neuromuscular Activation
- 6.1.2. Somatosensory Information Systems
  - 6.1.2.1. Information Subsystems
  - 6.1.2.2. Types of Reflexes
    - 6.1.2.2.1. Monosynaptic Reflexes
    - 6.1.2.2.2. Polysynaptic Reflexes
    - 6.1.2.2.3. Muscle-Tendinous-Articular Reflexes
  - 6.1.2.3. Responses to Dynamic and Static Stretches

6.2. Motor Control and Movement
- 6.2.1. Stabilizing and Mobilising Systems
  - 6.2.1.1. Local System: Stabilizer System
  - 6.2.1.2. Global System: Mobilizing System
  - 6.2.1.3. Respiratory Pattern
- 6.2.2. Movement Pattern
  - 6.2.2.1. Co-Activation
  - 6.2.2.2. Joint by Joint Theory
  - 6.2.2.3. Primary Motion Complexes

6.3. Understanding Mobility
- 6.3.1. Key Concepts and Beliefs in Mobility
  - 6.3.1.1. Manifestations of Mobility in Sport
  - 6.3.1.2. Neurophysiological and Biomechanical Factors Influencing Mobility Development
  - 6.3.1.3. Impact of Mobility on Strength Development
- 6.3.2. Objectives of Training Mobility in Sport
  - 6.3.2.1. Mobility in the Training Session
  - 6.3.2.2. Benefits of Mobility Training
- 6.3.3. Mobility and Stability by Structures
  - 6.3.3.1. Foot-Ankle Complex
  - 6.3.3.2. Knee-Hip Complex
  - 6.3.3.3. Spine-Shoulder Complex

6.4. Training Mobility
- 6.4.1. Fundamental Block
  - 6.4.1.1. Strategies and Tools to Optimize Mobility
  - 6.4.1.2. Specific Pre-Exercise Scheme
  - 6.4.1.3. Specific Post-Exercise Scheme
- 6.4.2. Mobility and Stability in Basic Movements
  - 6.4.2.1. *Squat & Dead Lift*
  - 6.4.2.2. Acceleration and Multidirection

6.5. Methods of Recovery
- 6.5.1. Proposal for Effectiveness Based on Scientific Evidence

6.6. Methods for Training Mobility
- 6.6.1. Tissue-Centered Methods: Passive Tension and Active Tension Stretching
- 6.6.2. Methods Focused on Arthro-Coinematics: Isolated Stretching and Integrated Stretching
- 6.6.3. Eccentric Training

6.7. Mobility Training Programming
- 6.7.1. Effects of Stretching in the Short and Long Term
- 6.7.2. Optimal Timing for Applying Stretching

6.8. Athlete Assessment and Analysis
- 6.8.1. Functional and Neuromuscular Assessment
  - 6.8.1.1. Key Concepts in Assessment
  - 6.8.1.2. Evaluation Process
    - 6.8.1.2.1. Analyze the Movement Pattern
    - 6.8.1.2.2. Identify the Test
    - 6.8.1.2.3. Detect the Weak Links

6.8.2. Athlete Assessment Methodology
6.8.2.1. Types of Tests
6.8.2.1.1. Analytical Assessment Test
6.8.2.1.2. General Assessment Test
6.8.2.1.3. Specific-Dynamic Assessment Test
6.8.2.2. Assessment by Structures
6.8.2.2.1. Foot-Ankle Complex
6.8.2.2.2. Knee-Hip Complex
6.8.2.2.3. Spine-Shoulder Complex
6.9. Mobility in Injured Athletes
6.9.1. Pathophysiology of Injury: Effects on Mobility
6.9.1.1. Muscle Structure
6.9.1.2. Tendon Structure
6.9.1.3. Ligament Structure
6.9.2. Mobility and Preventiion of Injuries: Practical Case
6.9.2.1. Ruptured Ischialis in the Runner

Module 7. Sports Performance Assessment

7.1. Evaluation
7.1.1. Definitions: Test, Assessment, Measurement
7.1.2. Validity, Reliability
7.1.3. Purposes of the Evaluation
7.2. Types of Tests
7.2.1. Laboratory Test
7.2.1.1. Strengths and Limitations of Laboratory Tests
7.2.2. Field Tests
7.2.2.1. Strengths and Limitations of Field Tests
7.2.3. Direct Tests
7.2.3.1. Applications and Transfer to Training
7.2.4. Indirect Tests
7.2.4.1. Practical Considerations and Transfer to Training
7.3. Assessment of Body Composition
7.3.1. Bioimpedance
7.3.1.1. Considerations in Its Field Application
7.3.1.2. Limitations on the Validity of Its Data
7.3.2. Anthropometry
7.3.2.1. Tools for Its Implementation
7.3.2.2. Models of Analysis for Body Composition
7.3.3. Body Mass Index (IMC)
7.3.3.1. Restrictions on the data obtained for interpretation of body composition
7.4. Assessing Aerobic Fitness
7.4.1. Vo2max Test on the Treadmill
7.4.1.1. Astrand Test
7.4.1.2. Balke Test
7.4.1.3. ACSM Test
7.4.1.4. Bruce Test
7.4.1.5. Foster Test
7.4.1.6. Pollack Test
7.4.2. Cycloergometer VO2max Test
7.4.2.1. Astrand. Ryhming
7.4.2.2. Fox Test
7.4.3. Cycloergometer Power Test
7.4.3.1. Wingate Test
7.4.4. Vo2max Test in the Field
7.4.4.1. Leger Test
7.4.4.2. Montreal University Test
7.4.4.3. Mile Test
7.4.4.4. 12-Minute Test
7.4.4.5. 2.4Km Test
7.4.5. Field Test to Establish Training Areas
7.4.5.1. 30-15 IFT Test

7.4.6. UNca Test
7.4.7. Yo-Yo Test
7.4.7.1. Yo-Yo Endurance. YYET Level 1 and 2
7.4.7.2. Yo-Yo Intermittent Endurance. YYEIT Level 1 and 2
7.4.7.3. Yo-Yo Intermittent Recovery. YYERT Level 1 and 2

7.5. Neuromuscular Fitness Evaluation
7.5.1. Submaximal Repetition Test
7.5.1.1. Practical Applications for its Assessment
7.5.1.2. Validated Estimation Formulas for the Different Training Exercises
7.5.2. 1 RM Test
7.5.2.1. Protocol for its Performance
7.5.2.2. Limitations of 1 RM Assessment
7.5.3. Horizontal Jump Test
7.5.3.1. Assessment Protocols
7.5.4. Speed Test (5m,10m,15m, Etc.)
7.5.4.1. Considerations on the Data Obtained in Time/Distance Assessments
7.5.5. Maximum/Submaximum Incremental Progressive Tests
7.5.5.1. Validated Protocols
7.5.5.2. Practical Applications
7.5.6. Vertical Jump Test
7.5.6.1. SJ Jump
7.5.6.2. CMJ Jump
7.5.6.3. ABK Jump
7.5.6.4. DJ Test
7.5.6.5. Continuous Jump Test
7.5.7. Strength/Speed Vertical/Horizontal Profiles
7.5.7.1. Morin and Samozino Assessment Protocols
7.5.7.2. Practical Applications from a Strength/Speed Profile
7.5.8. Isometric Tests With Load Cell
7.5.8.1. Voluntary Isometric Maximal Strength Test (IMS)
7.5.8.2. Bilateral Deficit Isometry Test (%BLD)
7.5.8.3. Lateral Deficit (%LD)
7.5.8.4. Hamstring/Quadriceps Ratio Test

7.6. Assessment and Monitoring Tools
7.6.1. Heart Rate Monitors
7.6.1.1. Device Characteristics
7.6.1.2. Training Areas by Heart Rate
7.6.2. Lactate Analyzers
7.6.2.1. Device Types, Performance and Characteristics
7.6.2.2. Training Zones According to the Lactate Threshold Limit (LT)
7.6.3. Gas Analyzers
7.6.3.1. Laboratory vs Portable Devices
7.6.4. GPS
7.6.4.1. GPS Types, Characteristics, Strengths and Limitations
7.6.4.2. Metrics Established to Interpret the External Load
7.6.5. Accelerometers
7.6.5.1. Types of Accelerometers and Characteristics
7.6.5.2. Practical Applications of Data Obtained From an Accelerometer
7.6.6. Position Transducers
7.6.6.1. Types of Transducers for Vertical and Horizontal Movements
7.6.6.2. Variables Measured and Estimated by of a Position Transducer
7.6.6.3. Data Obtained from a Position Transducer and its Applications to Training Programming
7.6.7. Strength Platforms
7.6.7.1. Types and Characteristics.of Strength Platforms
7.6.7.2. Variables Measured and Estimated by Means of a Strength Platform
7.6.7.3. Practical Approach to Training Programming
7.6.8. Load Cells
7.6.8.1. Cell Types, Characteristics and Performance
7.6.8.2. Uses and Applications for Sports Performance and Health
7.6.9. Photoelectric Cells
7.6.9.1. Characteristics and Limitations of the Devices
7.6.9.2. Practical Uses and Applicability
7.6.10. Movile Applications
7.6.10.1. Description of the Most Used Apps on the Market: My Jump, PowerLift, Runmatic, Nordic

7.7. Internal and External Load
- 7.7.1. Objective Means of Assessment
  - 7.7.1.1. Speed of Execution
  - 7.7.1.2. Average Mechanical Power
  - 7.7.1.3. GPS Device Metrics
- 7.7.2. Subjective Means of Assessment
  - 7.7.2.1. PSE
  - 7.7.2.2. sPSE
  - 7.7.2.3. Chronic/Acute Load Ratio

7.8. Fatigue
- 7.8.1. General Concepts of Fatigue and Recovery
- 7.8.2. Assessments
  - 7.8.2.1. Laboratory Objectives: CK, Urea, Cortisol, Etc.
  - 7.8.2.2. Field Objectives: CMJ, Isometric Tests, etc.
  - 7.8.2.3. Subjective: Wellness Scales, TQR, etc.
- 7.8.3. Recovery Strategies: Cold-Water Immersion, Nutritional Strategies, Self-Massage, Sleep

7.9. Considerations for Practical Applications
- 7.9.1. Vertical Jump Test. Practical Applications
- 7.9.2. Maximum/Submaximum Incremental Progressive Test. Practical Applications
- 7.9.3. Vertical Strength-Speed Profile. Practical Applications

Module 8. Planning Applied to High Performance in Sports

8.1. Basic Fundamentals
- 8.1.1. Adaptation Criteria
  - 8.1.1.1. General Adaptation Syndrome
  - 8.1.1.2. Current Performance Capability, Training Requirement
- 8.1.2. Fatigue, Performance, Conditioning as Tools
- 8.1.3. Dose-Response Concept and its Application

8.2. Basic Concepts and Applications
- 8.2.1. Concept and Application of the Plan
- 8.2.2. Concept and Application of Periodization
- 8.2.3. Concept and Application of Programming
- 8.2.4. Concept and Application of Load Control

8.3. Conceptual Development of Planning and its Different Models
- 8.3.1. First Historical Planning Records
- 8.3.2. First Proposals, Analyzing the Bases
- 8.3.3. Classic Models
  - 8.3.3.1. Traditional
  - 8.3.3.2. Pendulum
  - 8.3.3.3. High Loads

8.4. Models Focused on Individuality and/or Load Concentration
- 8.4.1. Blocks
- 8.4.2. Integrated Macrocycle
- 8.4.3. Integrated Model
- 8.4.4. ATR
- 8.4.5. Keeping in Shape
- 8.4.6. By Objectives
- 8.4.7. Structural Bells
- 8.4.8. Self-Regulation (APRE)

8.5. Models Focused on Specificity and/or Movement Capacity
- 8.5.1. Cognitive (or Structured Microcycle)
- 8.5.2. Tactical Periodization
- 8.5.3. Conditional Development by Movement Capacity

8.6. Criteria for Correct Programming and Periodization
- 8.6.1. Criteria for Programming and Periodization in Strength Training
- 8.6.2. Criteria for Programming and Periodization in Endurance Training
- 8.6.3. Criteria for Programming and Periodization in Speed Training
- 8.6.4. "Interference" Criteria in Scheduling and Periodization in Concurrent Training

8.7. Planning Through Load Control With a GNSS Device (GPS)
- 8.7.1. Basis of Session Saving for Appropriate Control
  - 8.7.1.1. Calculation of the Average Group Session for a Correct Load Analysis
  - 8.7.1.2. Common Errors in Saving and Their Impact on Plannning
- 8.7.2. Relativization of the Load, a Function of Competence
- 8.7.3. Load Control by Volume or Density, Range and Limitations

8.8. Integrating Thematic Unit 1 (Practical Application)
- 8.8.1. Construction of a Real Model of Short-Term Planning
  - 8.8.1.1. Selecting and Applying the Periodization Model
  - 8.8.1.2. Designing the Corresponding Planning

8.9. Integrating Thematic Unit 2 (Practical Application)
- 8.9.1. Producing a Pluri-Annual Plannification
- 8.9.2. Producing an Annual Plannification

Module 9. Biomechanics Applied to High Performance in Sports

9.1. Introduction to Biomechanics
- 9.1.1. Biomechanics, Concept, Introduction and Purpose of Biomechanics
  - 9.1.1.1. Its Connection to Functional Anatomy
- 9.1.2. Biomechanics and Performance
  - 9.1.2.1. Its Application to Physical Education and Sport
  - 9.1.2.2. Parts of Biomechanics, Generalities
  - 9.1.2.3. Measuring Tools
- 9.1.3. Kinematics: Basic Concepts and Practical Applications

9.2. Movement in One Dimension
- 9.2.1. Speed
  - 9.2.1.1. Concept of Speed
  - 9.2.1.2. Average speed
  - 9.2.1.3. Instant Speed
  - 9.2.1.4. Constant Speed
  - 9.2.1.5. Variable Speed
  - 9.2.1.6. Equations and Units
  - 9.2.1.7. Interpretation of Space-Time and Speed-Distance Graphs
  - 9.2.1.8. Examples in Sport
- 9.2.2. Acceleration
  - 9.2.2.1. Concept of Acceleration
  - 9.2.2.2. Average Acceleration
  - 9.2.2.3. Instant Acceleration
  - 9.2.2.4. Constant Acceleration
  - 9.2.2.5. Variable Acceleration
  - 9.2.2.6. Connection With the Speed at Constant Acceleration
  - 9.2.2.7. Equations and Units
  - 9.2.2.8. Interpretation of Acceleration-Distance Graphs, Connection With Speed-Time Graphs
  - 9.2.2.9. Examples in Sport
- 9.2.3. Free Fall
  - 9.2.3.1. Acceleration of Gravity
  - 9.2.3.2. Ideal Conditions
  - 9.2.3.3. Variations of Gravity
  - 9.2.3.4. Equations
- 9.2.4. Graphical Surroundings
  - 9.2.4.1. Accelerations and Speeds in Free Fall

9.3. Movement in a Plane
- 9.3.1. Speed
  - 9.3.1.1. Concept Through its Vectorial Components
  - 9.3.1.2. Interpreting Graphs Examples in Sport
- 9.3.2. Acceleration
  - 9.3.2.1. Concept Through its Vectorial Components
  - 9.3.2.2. Interpreting Graphs
  - 9.3.2.3. Examples in Sport
- 9.3.3. Projectile Movement
  - 9.3.3.1. Fundamental Components
  - 9.3.3.2. Initial Speed
  - 9.3.3.3. Initial Angle
  - 9.3.3.4. Ideal Conditions Initial Angle for Maximum Reach
  - 9.3.3.5. Equations Interpreting Graphs
  - 9.3.3.6. Examples Applied to Jumps and Throws

9.4. Kinematics of Rotations
- 9.4.1. Angular Speed
  - 9.4.1.1. Angular Movement
  - 9.4.1.2. Average Angular Speed
  - 9.4.1.3. Instant Angular Speed
  - 9.4.1.4. Equations and Units
  - 9.4.1.5. Interpretation and Examples in Sport

9.4.2. Angular Acceleration
9.4.2.1. Average and Instantaneous Angular Acceleration
9.4.2.2. Equations and Units
9.4.2.3. Interpretation and Examples in Sport Constant Angular Acceleration

9.5. Dynamics
9.5.1. First Law of Newton
9.5.1.1. Interpretation
9.5.1.2. Concept of Mass
9.5.1.3. Equations and Units
9.5.1.4. Examples in Sport
9.5.2. Second Law of Newton
9.5.2.1. Interpretation
9.5.2.2. Concept of Weight and Deference to Mass
9.5.2.3. Equations and Units Examples in Sport
9.5.3. Third Law of Newton
9.5.3.1. Interpretation
9.5.3.2. Equations
9.5.3.3. Centripetal and Centrifugal Force
9.5.3.4. Examples in Sport
9.5.4. Work, Power and Energy
9.5.4.1. Concept of Work
9.5.4.2. Equations, Units, Interpretation and Examples
9.5.5. Power
9.5.5.1. Equations, Units, Interpretation and Examples
9.5.6. Generalities on the Concept of Energy
9.5.6.1. Types of Energy, Units and Conversion
9.5.7. Kinetic Energy
9.5.7.1. Concept and Equations
9.5.8. Potential Elastic Energy
9.5.8.1. Concept and Equations
9.5.8.2. The Work and Energy Theorem
9.5.8.3. Interpretation from Examples in Sport
9.5.9. Amount of Movement and Collisions Interpretation
9.5.9.1. Equations Center of Mass and Movement of the Center of Mass
9.5.9.2. Collisions, Types, Equations and Graphs
9.5.9.3. Examples in Athletism
9.5.9.4. Impulsive Forces Calculation of the Initial Speed in a Jump That is Considered as a Collision

9.6. Dynamics of Rotations
9.6.1. Moment of Inertia
9.6.1.1. Moment of a Force, Concept and Units
9.6.1.2. Lever Arm
9.6.2. Kinetic Energy of Rotation
9.6.2.1. Moment of Inertia, Concept and Units
9.6.2.2. Summary of Equations
9.6.2.3. Interpretation. Examples in Sport

9.7. Statics-Mechanical Balance
9.7.1. Vectorial Algebra
9.7.1.1. Operations Between Vectors Using Graphical Methods
9.7.1.2. Addition and Subtraction
9.7.1.3. Calculating Momentum
9.7.2. Center of Gravity: Concept, Properties, Interpretation of Equations
9.7.2.1. Examples in Sport Rigid Bodies Human Body Model

9.8. Biomechanical Analysis
9.8.1. Analysis of Normal Gait and Running
9.8.1.1. Center of Mass Phases and Fundamental Equations
9.8.1.2. Types of Kinematic and Dynamometric Records
9.8.1.3. Related Graphs
9.8.1.4. Connections of Graphs With Speed
9.8.2. Jumps in Sport
9.8.2.1. Decomposing Movement
9.8.2.2. Center of Gravity
9.8.2.3. Phases
9.8.2.4. Distances and Component Heights

9.9. Video Analysis
- 9.9.1. Different Variables Measured Through Video Analysis
- 9.9.2. Technological Options for Video Analysis
- 9.9.3. Practical Examples

9.10. Case Studies
- 9.10.1. Biomechanical Analysis of Acceleration
- 9.10.2. Biomechanical Analysis of Sprinting
- 9.10.3. Biomechanical Analysis of Deceleration

Module 10. Nutrition Applied to High Performance in Sports

10.1. Energy Metabolism of Physical Effort
- 10.1.1. Matter and Energy: Introduction to Thermodynamics
- 10.1.2. Physicochemical Characteristics of Macronutrients
- 10.1.3. Digestion and Metabolism of Carbohydrates
- 10.1.4. Digestion and Metabolism of Lipids
- 10.1.5. Digestion and Metabolism of Proteins
- 10.1.6. Phosphagen System
- 10.1.7. Glycolytic System
- 10.1.8. Oxidative System
- 10.1.9. Metabolic Integration
- 10.1.10. Classification of Physical Effort

10.2. Assessing Nutritional Status and Body Composition
- 10.2.1. Retrospective and Prospective Methods
- 10.2.2. ABCDE Model
- 10.2.3. Clinical Assessment
- 10.2.4. Body Composition
- 10.2.5. Indirect Methods
- 10.2.6. Double Indirect Methods
- 10.2.7. Dual X-ray Absorptiometry
- 10.2.8. Vector Analysis of Electrical Bioimpedance
- 10.2.9. Cineanthropometry
- 10.2.10. Data Analysis in Kinanthropometry

10.3. Assessing Energy Expenditure
- 10.3.1. Components of Total Daily Energy Expenditure
- 10.3.2. Basal Metabolic Rate and Resting Energy Expenditure
- 10.3.3. Thermal Effect of Food
- 10.3.4. NEAT and Energy Expenditure Due to Physical Exertion
- 10.3.5. Technologies for Quantifying Energy Expenditure
- 10.3.6. Indirect Calorimetry
- 10.3.7. Estimation of Energy Expenditure
- 10.3.8. Ex-Post Calculations
- 10.3.9. Practical Recommendations

10.4. Bodybuilding Nutrition and Body Recomposition
- 10.4.1. Characteristics of Bodybuilding
- 10.4.2. Nutrition for *Bulking*
- 10.4.3. Nutrition for Preparation
- 10.4.4. Post-Competition Nutrition
- 10.4.5. Effective Supplements
- 10.4.6. Body Recomposition
- 10.4.7. Nutritional Strategies
- 10.4.8. Macronutrient Distribution
- 10.4.9. *Diet Breaks*, *Refeeds* and Intermittent Restrictions
- 10.4.10. Principles and Dangers of Pharmacology

10.5. Nutrition in Strength-Based Sports
- 10.5.1. Characteristics of Collective Sports
- 10.5.2. Energy Requirements
- 10.5.3. Protein Requirements
- 10.5.4. Distribution of Carbohydrates and Fats
- 10.5.5. Nutrition for Olympic Lifting
- 10.5.6. Nutrition for Sprint Racing
- 10.5.7. Nutrition for *Powerlifting*
- 10.5.8. Nutrition in Jumping and Throwing Sports
- 10.5.9. Nutrition in Combat-Based Sports
- 10.5.10. Morphological Characteristics of the Athlete

10.6. Nutrition in Team Sports
- 10.6.1. Characteristics of Collective Sports
- 10.6.2. Energy Requirements
- 10.6.3. Preseason Nutrition
- 10.6.4. Competitive Nutrition
- 10.6.5. Nutrition Before, During and After the Match
- 10.6.6. Fluid Replenishment
- 10.6.7. Recommendations for Lower Divisions
- 10.6.8. Nutrition in Football, Basketball and Volleyball
- 10.6.9. Nutrition in Rugby, Hockey and Baseball
- 10.6.10. Morphological Characteristics of the Athlete

10.7. Nutrition in Endurance-Based Sports
- 10.7.1. Characteristics of Endurance Sports
- 10.7.2. Energy Requirements
- 10.7.3. Glycogen Overcompensation
- 10.7.4. Energy Replenishment During Competition
- 10.7.5. Fluid Replenishment
- 10.7.6. Beverages and Sports Confectionery
- 10.7.7. Nutrition for Cycling
- 10.7.8. Nutrition for Running and Marathon
- 10.7.9. Nutrition for Triathlon
- 10.7.10. Nutrition for Other Olympic Sports

10.8. Nutritional Ergogenic Aids
- 10.8.1. Classification Systems
- 10.8.2. Creatine
- 10.8.3. Caffeine
- 10.8.4. Nitrates
- 10.8.5. β-alanin

10.8.6. Bicarbonate and Sodium Phosphate
10.8.7. Protein Supplements
10.8.8. Modified Carbohydrates
10.8.9. Herbal Extracts
10.8.10. Contaminant Supplementation
10.9. Eating Disorders and Sports Injuries
10.9.1. Anorexia
10.9.2. Bulimia Nervosa
10.9.3. Orthorexia and bigorexia
10.9.4. Binge Eating and Purging Disorder
10.9.5. Relative Energy Deficiency Syndrome
10.9.6. Micronutrient Deficiency
10.9.7. Nutrition Education and Prevention
10.9.8. Sports Injuries
10.9.9. Nutrition During Physical Rehabilitation
10.10. Advances and Research in Sports Nutrition
10.10.1. Nutrigenetics
10.10.2. Nutrigenomics
10.10.3. Modulation of the Microbiota
10.10.4. Probiotics and Prebiotics in Sport
10.10.5. Emerging Products
10.10.6. Systems Biology
10.10.7. Non-Experimental Designs
10.10.8. Experimental Designs
10.10.9. Systematic Reviews and Meta-Analyses

04

Teaching Objectives

This university program's main goal is to provide advanced and specialized knowledge in high-performance sports, combining the latest scientific advances with practical application. To achieve this, the program will cover the analysis of training, optimization of physical performance, and injury prevention from a multidisciplinary perspective. Additionally, it will foster the development of strategic skills for management and planning in elite environments. Thanks to an innovative methodology, these concepts will be effectively integrated, enabling professionals in the field to expand their competencies and contribute to enhancing performance in the sports sector.

You will delve into sports biomechanics and improve movement efficiency to prevent injuries and enhance performance"

General Objectives

- Develop in-depth and up-to-date knowledge on the sciences applied to high-performance sports, including physiology, biomechanics, nutrition, and advanced sports psychology
- Analyze in detail the most advanced and effective training methodologies for optimizing performance in high-level competitive athletes
- Apply evidence-based strategies for the planning, execution, and evaluation of sports performance in various elite disciplines
- Incorporate innovative technological and scientific tools in monitoring, controlling, and analyzing sports training to improve results
- Design physical preparation and comprehensive recovery programs tailored to the specific needs of each sport and athlete profile
- Implement innovative and personalized techniques in injury prevention, treatment, and rehabilitation within the context of professional high-performance sports
- Understand the psychological and emotional factors influencing sports performance and their direct impact on competitiveness and athlete stability
- Encourage critical thinking and strategic decision-making within multidisciplinary teams working in international high-performance sports
- Evaluate the impact of sports nutrition and its relationship with performance improvement, muscle recovery, and the prevention of complex sports injuries
- Continuously update knowledge to adapt to new trends, technological advances, and emerging methodologies in professional sports

Specific Objectives

Module 1. Exercise Physiology and Physical Activity

- Explain the physiological principles that regulate the functioning of the body during physical activity and intense exercise
- Analyze the physiological adaptations that occur in different systems of the body in response to various types of training
- Relate the effects of exercise to the prevention and treatment of pathologies in the context of high-performance sports
- Apply physiological knowledge to optimize performance and recovery in athletes from different sports disciplines

Module 2. Statistics Applied to Performance and Research

- Interpret statistical data in the analysis of athletic performance and evidence-based decision-making
- Use statistical tools to evaluate the effectiveness of training methods and their impact on performance
- Design research studies applied to sports to improve the understanding of the factors influencing performance
- Apply statistical methods in evaluating athletes and teams to optimize physical preparation strategies

Module 3. Strength Training, from Theory to Practice

- Understand the scientific foundations of strength training and its impact on sports performance
- Design strength training programs adapted to the specific needs of each discipline and athlete
- Apply advanced techniques for developing maximum strength, explosive strength, and endurance in different sports contexts
- Evaluate the effects of strength training on injury prevention and performance improvement

Module 4. Speed Training, from Theory to Practice

- Analyze the physiological and biomechanical factors that influence the development of speed in sports
- Design specific training strategies to improve speed across different sports disciplines
- Apply innovative methods to optimize acceleration, change of direction, and maximum speed in elite athletes
- Evaluate the impact of speed training on overall athlete performance and its transfer to competition

Module 5. Endurance Training, from Theory to Practice

- Understand the physiological and methodological principles of endurance training in high-performance sports
- Design specific programs for developing aerobic and anaerobic endurance according to the demands of each discipline
- Apply advanced methods to optimize endurance capacity and its impact on recovery and fatigue prevention
- Evaluate the effectiveness of different endurance training strategies using scientific and technological tools

Module 6: Mobility: from Theory to Performance

- Analyze the importance of joint mobility in optimizing performance and preventing sports injuries
- Design specific mobility programs to improve functionality and range of motion in different sports contexts
- Apply innovative mobility and motor control strategies to enhance biomechanical efficiency in sports movements
- Evaluate the relationship between mobility, stability, and performance in different disciplines and athlete profiles

Module 7. Sports Performance Assessment

- Identify the main methods and tools for performance evaluation in high-level athletes
- Apply specific tests and measurements to analyze the physical, technical, and tactical capacity of athletes
- Interpret the data obtained in performance evaluations to design individualized optimization strategies
- Integrate performance evaluation into a training plan focused on the continuous improvement of the athlete

Module 8. Planning Applied to High Performance in Sports

- Understand the principles of training planning in the context of high-performance sports.
- Design structured training plans for the short, medium, and long term according to the needs of each discipline
- Apply periodization strategies to optimize athlete preparation and achieve peak performance in competition
- Evaluate the effectiveness of planning programs by analyzing performance indicators and physiological adaptation

Module 9. Biomechanics Applied to High Performance in Sports

- Analyze the biomechanical principles governing human movement in the context of high-performance sports
- Apply biomechanical analysis tools to improve sports technique and reduce the risk of injury
- Design strategies to optimize technical movements based on the study of movement and mechanical efficiency
- Evaluate the impact of biomechanics on performance improvement and the prevention of muscle overloads

Module 10. Nutrition Applied to High Performance in Sports

- Understand the relationship between nutrition and sports performance in different disciplines and competition contexts
- Design nutritional strategies tailored to the energy and metabolic needs of high-performance athletes
- Apply principles of supplementation and nutritional periodization to optimize recovery and physical performance
- Evaluate the impact of diet on injury prevention, training adaptation, and athletic longevity

Explore new trends in sports nutrition and adapt diet to enhance recovery and athletic performance"

05

Career Opportunities

High Performance in Sports will offer a wide range of career opportunities in a constantly evolving field.

The growing demand for experts in physiology, training, biomechanics, nutrition, and sports psychology has opened new opportunities in professional clubs, federations, and international sports organizations. Additionally, the integration of advanced technologies and the importance of holistic health in athletes have created spaces for performance analysis, injury prevention, and the optimization of training strategies. As such, graduates will stand out in managing high-level teams, sports clinics, and providing personalized advice for elite athletes.

Thanks to this academic path, you will become an expert in performance evaluation and use advanced tools to measure and improve physical capacities"

Graduate Profile

Graduates will be characterized by a solid theoretical and practical foundation in key areas of High Performance in Sports. With a deep understanding of physiology, biomechanics, and sports nutrition, they will be capable of designing and executing highly specialized training strategies. Furthermore, their profile will be complemented by skills in performance evaluation and advanced planning, enabling them to optimize athlete results across various disciplines. Ultimately, they will be prepared to face the challenges of technological innovation in sports, contributing significantly to the advancement of the sector.

You will have access to opportunities in sports consulting, high-performance centers, and international organizations.

- **Problem-Solving:** Identify challenges in sports performance and propose practical and effective solutions.
- **Effective Communication:** Communicate technical and scientific information clearly and precisely to different audiences, including athletes and multidisciplinary teams.
- **Decision-Making:** Enhance the ability to make informed decisions based on data and evidence to improve sports performance.
- **Leadership:** Lead teams, manage high-performance projects, and motivate athletes to reach their full potential.

After completing the university program, you will be able to apply your knowledge and skills in the following positions:

1. **Physical Trainer:** Responsible for designing and leading training programs focused on improving athletes' physical abilities, tailored to the specific needs of each sport.
2. **Personal Trainer:** In charge of planning and applying personalized training programs for individuals seeking to improve their performance or physical condition, with a holistic approach.
3. **Sports Nutritionist:** Responsible for planning diets and nutritional strategies that optimize physical performance, recovery, and the health of athletes.
4. **Sports Physiotherapist:** Responsible for the prevention, treatment, and rehabilitation of sports injuries, with a preventive and therapeutic focus.
5. **Sports Biomechanist:** An analyst responsible for optimizing human movement, helping athletes improve their biomechanical efficiency and reduce the risk of injury.
6. **Sports Performance Consultant:** Advisor to athletes and teams on optimizing their performance, using advanced evaluation and planning tools.
7. **Sports Data Analyst:** Responsible for using technological tools to collect and analyze data on athletes' performance, facilitating strategic decision-making.
8. **Sports Team Coordinator:** Manager of logistics, organization, and planning of training sessions and competitions, ensuring the collective performance of teams across various disciplines.

06

Study Methodology

TECH is the world's first university to combine the **case study** methodology with **Relearning**, a 100% online learning system based on guided repetition.

This disruptive pedagogical strategy has been conceived to offer professionals the opportunity to update their knowledge and develop their skills in an intensive and rigorous way. A learning model that places students at the center of the educational process giving them the leading role, adapting to their needs and leaving aside more conventional methodologies.

TECH will prepare you to face new challenges in uncertain environments and achieve success in your career"

The student: the priority of all TECH programs

In TECH's study methodology, the student is the main protagonist.
The teaching tools of each program have been selected taking into account the demands of time, availability and academic rigor that, today, not only students demand but also the most competitive positions in the market.

With TECH's asynchronous educational model, it is students who choose the time they dedicate to study, how they decide to establish their routines, and all this from the comfort of the electronic device of their choice. The student will not have to participate in live classes, which in many cases they will not be able to attend. The learning activities will be done when it is convenient for them. They can always decide when and from where they want to study.

"At TECH you will NOT have live classes (which you might not be able to attend)"

The most comprehensive study plans at the international level

TECH is distinguished by offering the most complete academic itineraries on the university scene. This comprehensiveness is achieved through the creation of syllabi that not only cover the essential knowledge, but also the most recent innovations in each area.

By being constantly up to date, these programs allow students to keep up with market changes and acquire the skills most valued by employers. In this way, those who complete their studies at TECH receive a comprehensive education that provides them with a notable competitive advantage to further their careers.

And what's more, they will be able to do so from any device, pc, tablet or smartphone.

> *TECH's model is asynchronous, so it allows you to study with your pc, tablet or your smartphone wherever you want, whenever you want and for as long as you want"*

Case Studies and Case Method

The case method has been the learning system most used by the world's best business schools. Developed in 1912 so that law students would not only learn the law based on theoretical content, its function was also to present them with real complex situations. In this way, they could make informed decisions and value judgments about how to resolve them. In 1924, Harvard adopted it as a standard teaching method.

With this teaching model, it is students themselves who build their professional competence through strategies such as Learning by Doing or Design Thinking, used by other renowned institutions such as Yale or Stanford.

This action-oriented method will be applied throughout the entire academic itinerary that the student undertakes with TECH. Students will be confronted with multiple real-life situations and will have to integrate knowledge, research, discuss and defend their ideas and decisions. All this with the premise of answering the question of how they would act when facing specific events of complexity in their daily work.

Relearning Methodology

At TECH, case studies are enhanced with the best 100% online teaching method: Relearning.

This method breaks with traditional teaching techniques to put the student at the center of the equation, providing the best content in different formats. In this way, it manages to review and reiterate the key concepts of each subject and learn to apply them in a real context.

In the same line, and according to multiple scientific researches, reiteration is the best way to learn. For this reason, TECH offers between 8 and 16 repetitions of each key concept within the same lesson, presented in a different way, with the objective of ensuring that the knowledge is completely consolidated during the study process.

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

A 100% online Virtual Campus with the best teaching resources

In order to apply its methodology effectively, TECH focuses on providing graduates with teaching materials in different formats: texts, interactive videos, illustrations and knowledge maps, among others. All of them are designed by qualified teachers who focus their work on combining real cases with the resolution of complex situations through simulation, the study of contexts applied to each professional career and learning based on repetition, through audios, presentations, animations, images, etc.

The latest scientific evidence in the field of Neuroscience points to the importance of taking into account the place and context where the content is accessed before starting a new learning process. Being able to adjust these variables in a personalized way helps people to remember and store knowledge in the hippocampus to retain it in the long term. This is a model called Neurocognitive context-dependent e-learning that is consciously applied in this university qualification.

In order to facilitate tutor-student contact as much as possible, you will have a wide range of communication possibilities, both in real time and delayed (internal messaging, telephone answering service, email contact with the technical secretary, chat and videoconferences).

Likewise, this very complete Virtual Campus will allow TECH students to organize their study schedules according to their personal availability or work obligations. In this way, they will have global control of the academic content and teaching tools, based on their fast-paced professional update.

The online study mode of this program will allow you to organize your time and learning pace, adapting it to your schedule"

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

1. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that assess real situations and the application of knowledge.
2. Learning is solidly translated into practical skills that allow the student 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.

The university methodology top-rated by its students

The results of this innovative teaching model can be seen in the overall satisfaction levels of TECH graduates.

The students' assessment of the teaching quality, the quality of the materials, the structure of the program and its objectives is excellent. Not surprisingly, the institution became the top-rated university by its students according to the global score index, obtaining a 4.9 out of 5.

Access the study contents from any device with an Internet connection (computer, tablet, smartphone) thanks to the fact that TECH is at the forefront of technology and teaching.

You will be able to learn with the advantages that come with having access to simulated learning environments and the learning by observation approach, that is, Learning from an expert.

As such, the best educational materials, thoroughly prepared, will be available in this program:

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.

This content is then adapted in an audiovisual format that will create our way of working online, with the latest techniques that allow us to offer you high quality in all of the material that we provide you with.

Practicing Skills and Abilities

You will carry out activities to develop specific competencies and skills in each thematic field. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop within the framework of the globalization we live in.

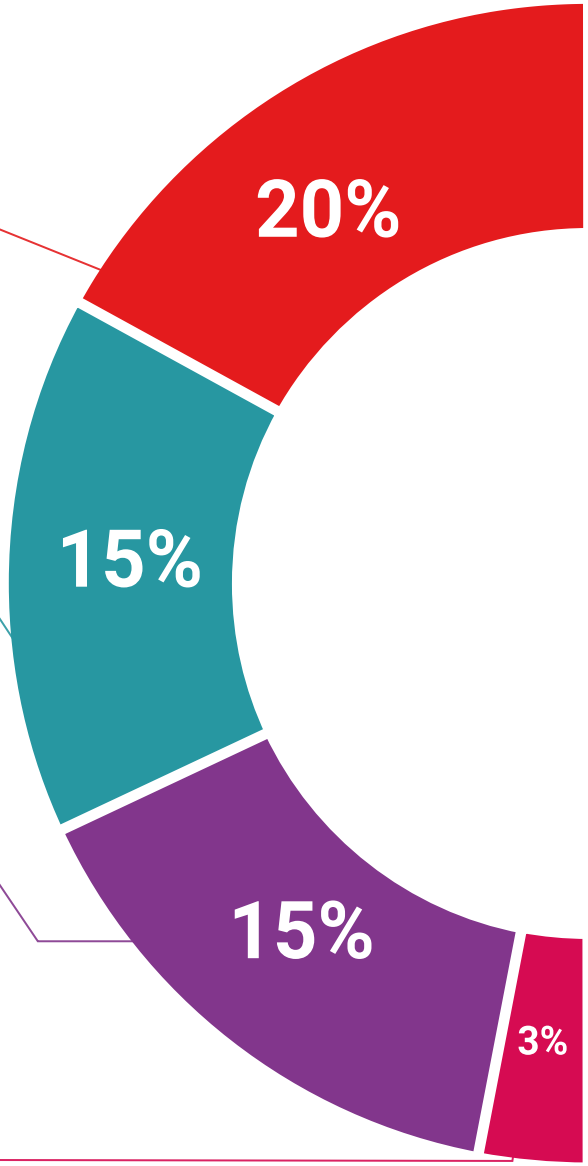
Interactive Summaries

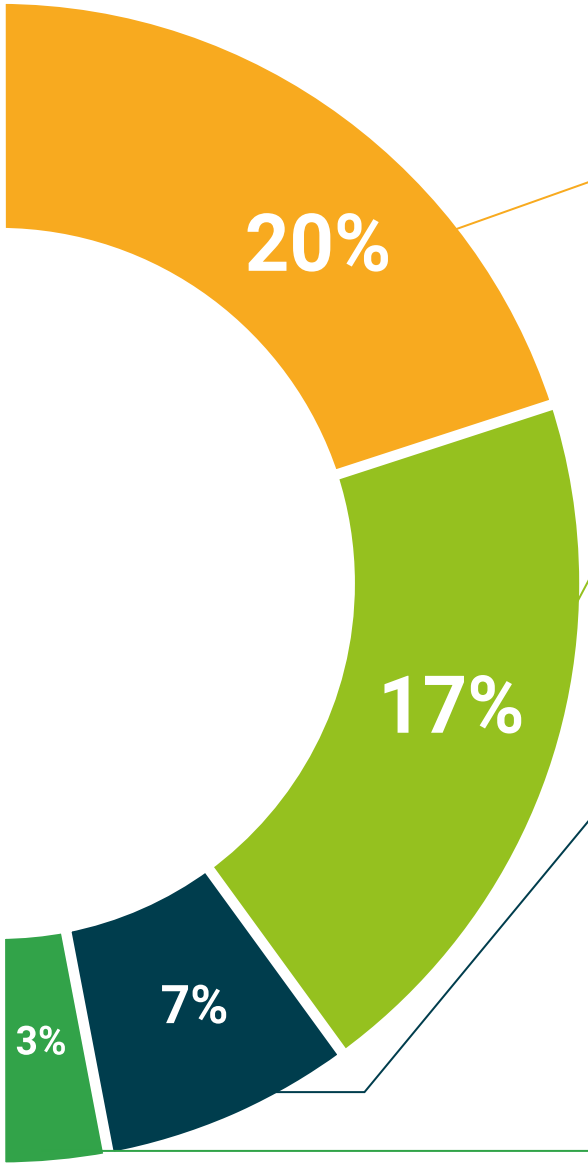
We present the contents attractively and dynamically in multimedia lessons that include audio, videos, images, diagrams, and concept maps in order to reinforce knowledge.

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

Additional Reading

Recent articles, consensus documents, international guides... In our virtual library you will have access to everything you need to complete your education.





Case Studies

Students will complete a selection of the best case studies in the field. Cases that are presented, analyzed, and supervised by the best specialists in the world.

Testing & Retesting

We periodically assess and re-assess your knowledge throughout the program. We do this on 3 of the 4 levels of Miller's Pyramid.

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 for future difficult decisions.

Quick Action Guides

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

07

Teaching Staff

The faculty of this Master's Degree is composed of professionals with extensive experience in High Performance in Sports. In fact, experts in physiology, biomechanics, nutrition, and training planning will provide a comprehensive and up-to-date perspective of the sector. Additionally, their experience in professional clubs, national teams, and research centers will allow them to offer a practical and applied approach. Thanks to their involvement in sports innovation, they will ensure a learning experience based on evidence and the latest trends. All of this will contribute to graduates acquiring cutting-edge knowledge and developing key skills for their professional growth in this field.

TECH will not only provide you with the most relevant methodologies in the sector but will also offer the guidance of instructors with extensive experience in High Performance in Sports"

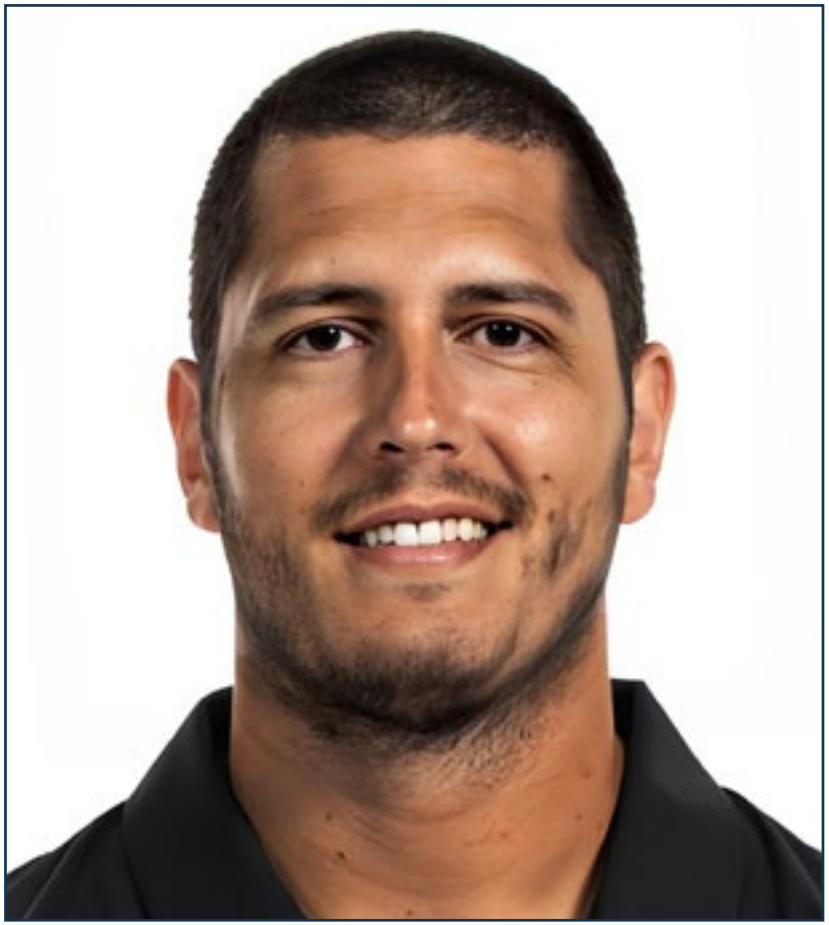
International Guest Director

Dr. Tyler Friedrich 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, Dr. 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.** 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 United States
- 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
- Doctorate 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

- CEO of the Test and Training project
- Doctor in High Performance in Sports
- Coordinator of Field Hockey Physical Training at the Gimnasia y Esgrima Club in Buenos Aires
- Physical Trainer at Moratalaz Sports School
- Specialist in High-Performance Sports
- Specialist in Physiological Assessment and Interpretation and of Physical Fitness
- Master's Degree in High-Performance Sports from the Autonomous University of Madrid
- Postgraduate in Physical Activity in Populations with Pathologies from the University of Barcelona
- Diploma in Advanced Research Studies at the University of Castilla - La Mancha
- Competitive Bodybuilding Technician by the Extremeña Federation of Bodybuilding and Fitness
- Expert in Sports Scouting and Quantification of Training Load with specialization in Football and Sports Sciences from the University of Melilla
- Expert in Advanced Bodybuilding by the International Fitness and Bodybuilding Federation
- Expert in Advanced Nutrition by the International Fitness and Bodybuilding Federation
- Certification in Technologies for Weight Control and Physical Performance from the Arizona State University

Teachers

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. Masse, Juan Manuel

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

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 Sports 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 the journal *PubliCE Standard*
- 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

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

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
- Physical Education Teacher for Children
- Co-author of the book *Strategies for the Evaluation of Physical Condition in Children and Adolescents*
- 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 from the Autonomous University of Madrid
- National Physical Education Teacher

Ms. González Cano, Henar

- Sports Nutritionist
- Nutritionist and Anthropometrist at GYM SPARTA
- Nutritionist and Anthropometrist at Promentium Center
- Nutritionist of male football 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 from the San Antonio Catholic University in Murcia
- Course in Nutrition and Dietetics Applied to Physical Exercise by the University of Vich

08

Certificate

The Master's Degree in High Performance in Sports guarantees students, in addition to the most rigorous and up-to-date education, access to a diploma for the Master's Degree issued by TECH Global University.

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

This private qualification will allow you to obtain a **Master's Degree in High Performance in Sports** 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.

TECH is a member of the distinguished professional organization **The Chartered Association of Sport and Exercise Sciences (CASES)**. This membership reaffirms its commitment to excellence in management and specialized training in the sports field.

Accreditation/Membership

CASES The Chartered Association of Sport and Exercise Sciences

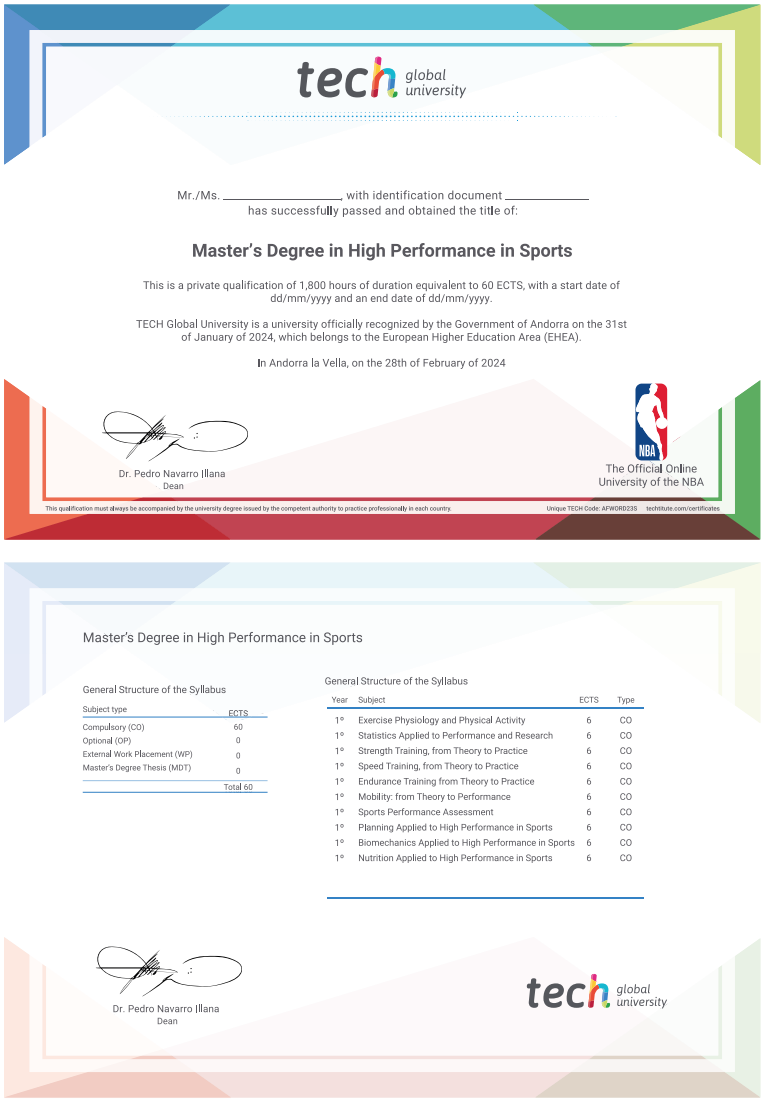
NBA

Title: **Master's Degree in High Performance in Sports**

Modality: **online**

Duration: **12 months.**

Accreditation: **60 ECTS**



tech global university

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

Master's Degree in High Performance in Sports

This is a private qualification of 1,800 hours of duration equivalent to 60 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

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

Master's Degree in High Performance in Sports

General Structure of the Syllabus

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

General Structure of the Syllabus

Year	Subject	ECTS	Type
1°	Exercise Physiology and Physical Activity	6	CO
1°	Statistics Applied to Performance and Research	6	CO
1°	Strength Training, from Theory to Practice	6	CO
1°	Speed Training, from Theory to Practice	6	CO
1°	Endurance Training from Theory to Practice	6	CO
1°	Mobility: from Theory to Performance	6	CO
1°	Sports Performance Assessment	6	CO
1°	Planning Applied to High Performance in Sports	6	CO
1°	Biomechanics Applied to High Performance in Sports	6	CO
1°	Nutrition Applied to High Performance in Sports	6	CO

Dr. Pedro Navarro Illana
Dean

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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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Master's Degree

High Performance in Sports

- Modality: **Online**
- Duration: **12 months.**
- Certificate: **TECH Global University**
- Accreditation: **60 ECTS**
- Schedule: **at your own pace**
- Exams: **online**

Master's Degree

High Performance in Sports

Accreditation/Membership

tech global university