



Postgraduate Diploma

Movement, Dynamic Systems and Velocity in Strength Training

Course Modality: **Online** Duration: **6 months**.

Certificate: TECH - Technological University

18 ECTS Credits

Teaching Hours: 450 hours.

Website: www.techtitute.com/us/sports-science/postgraduate-diploma/postgraduate-diploma-movement-dynamic-systems-velocity-strength-training

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tech 06 | Introduction

The evolution of sports training is determined by a constant advance in science, methodologies and techniques, but also by the gradual incorporation of both individual and collective interactions. With this intensive program you will specialize in movements, dynamic systems and speed in strength training.

In recent years, strength training has burst with great impetus in the scientific community, covering multiple contexts ranging from sports performance in time and brand sports to situational sports, including the whole range of sports modalities.

This Postgraduate Certificate addresses the vital importance of strength in human performance in all its possible expressions with a unique level of theoretical depth and a level of descent to the practical totally different from what has been seen so far.

The student of this Postgraduate Diploma will have a differentiating training with respect to their professional colleagues, being able to perform in all areas of sport as a specialist in Strength Training.

The teaching team of this Postgraduate Diploma in Movement, Dynamic Systems and Speed in Strength Training has made a careful selection of each of the topics of this specialization in order to offer the student a study opportunity as complete as possible and always linked to current events.

Thus, at TECH we have set out to create contents of the highest teaching and educational quality that will turn our students into successful professionals, following the highest quality standards in teaching at an international level. Therefore, we show you this Postgraduate Diploma with a rich content that will help you reach the elite of physical training. In addition, as it is an online Postgraduate Diploma, the student is not conditioned by fixed schedules or the need to move to another physical location, but can access the contents at any time of the day, balancing their work or personal life with their academic life.

This Postgraduate Diploma in Movement, Dynamic Systems and Speed in Strength Training contains the most complete and up-to-date scientific program on the market. The most important features of the specialization are:

- The development of numerous case studies presented by specialists in personal training.
- The graphic, schematic, and eminently practical contents with which they are created contain information that is indispensable for professional practice.
- It contains exercises where the self-assessment process can be carried out to improve learning.
- 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.



Immerse yourself in the study of this Postgraduate Diploma of high scientific rigor and improve your skills in strength training for high performance sports"

Introduction | 07 tech



This Postgraduate Diploma is the best investment you can make in the selection of a refresher program for two reasons: in addition to updating your knowledge as a personal trainer, you will obtain a degree from TECH"

Specialize and stand out in a sector with high demand for professionals.

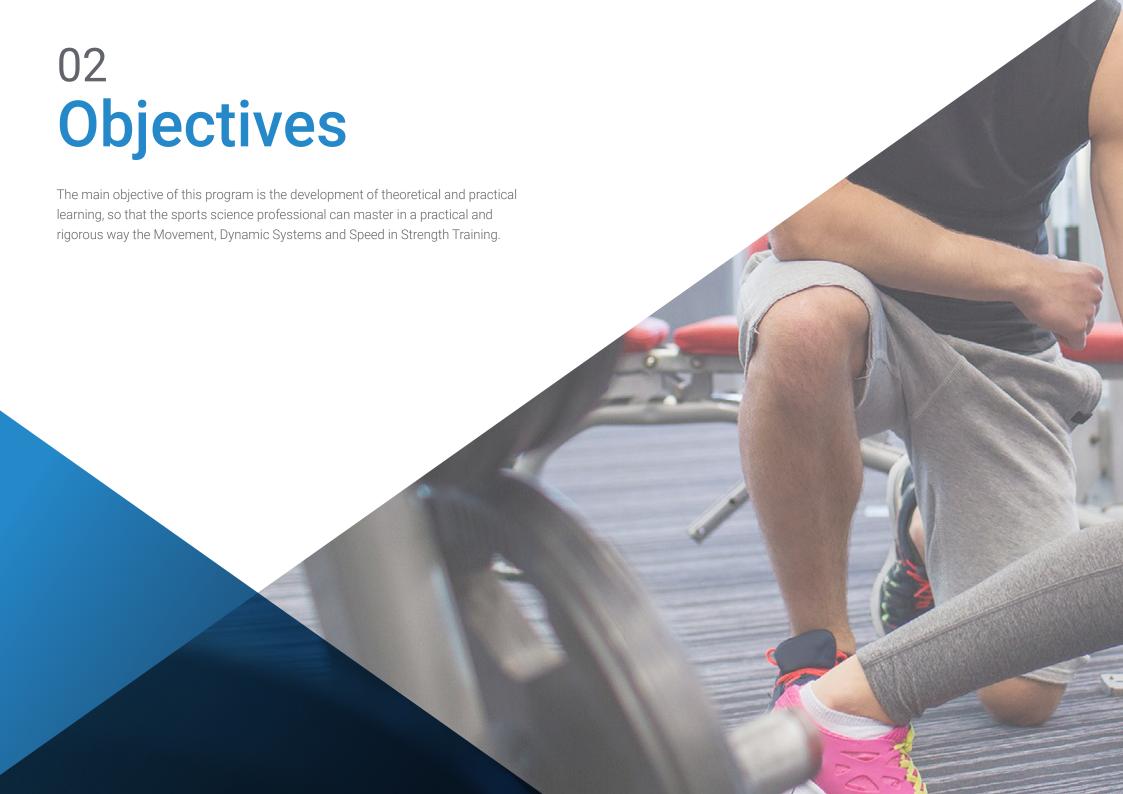
Increase your knowledge of Movement, Dynamic Systems and Speed in Strength Training with this high-level specialization.

Its teaching staff includes professionals belonging to the field of sports sciences, who bring to this training the experience of their work, as well as recognized specialists from leading companies and prestigious universities.

Its multimedia content, developed with the latest educational technology, will allow the professional a situated and contextual learning, that is, a simulated environment that will provide an immersive training programmed to train in real situations.

The design of this program focuses on Problem-Based Learning, by means of which the professional must try to solve the different professional practice situations that arise during the course of the expert. For this, the professional will be assisted by an innovative interactive video system created by renowned and experienced experts in Movement, Dynamic Systems and Speed in Strength Training.







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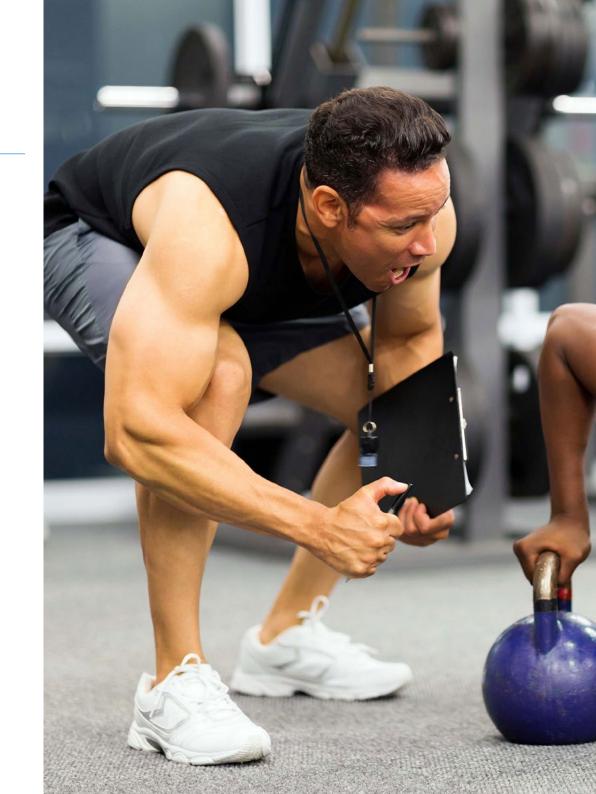


General Objectives

- Delve into the knowledge based on the most current scientific evidence with full applicability in the practical field of strength training.
- Master all the most advanced methods of strength training.
- Apply with certainty the most current training methods to improve sports performance regarding strength.
- Effectively master strength training for performance enhancement in time and mark sports as well as situational sports.
- Master the principles governing Exercise Physiology, as well as Biochemistry
- Delve into the principles that govern the Theory of Complex Dynamic Systems as they relate to strength training.
- Successfully integrate strength training for the improvement of Motor Skills immersed in sport.
- Successfully master all the knowledge acquired in the different modules in real practice.



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





Objectives | 11 tech



Specific Objectives

- Gain an in-depth understanding of the relationship between strength and skills
- Identify the main skills in sports in order, to analyze them, understand them and then enhance them through training
- Organize and systematize the skill development process
- Linking and relating field and gym work to enhance the skills
- 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.
- Learn and 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
- Gain in-depth knowledge of the mechanical aspects that may influence performance impairment and the mechanisms of injury occurrence when sprinting.
- Analytically apply the different means and methods of strength training to develop sprinting.





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Management



Rubina, Dardo

- CEO of Test and Training
- EDM Physical Training Coordinator
- Physical trainer of the EDM First Team
- Master's Degree in ARD COE
- EXOS CERTIFICATION
- Specialist in Strength Training for the Prevention of Injuries, Functional and Physical-Sports Rehabilitation
- Specialist in Strength Training Applied to Physical and Sports Performance
- Specialist in Applied Biomechanics and Functional Evaluation.
- Certification in Weight Management and Physical Performance Technologies
- Postgraduate course in Physical Activity in Populations with Pathologies
- Postgraduate diploma in Injury Prevention and Rehabilitation.
- Functional Assessment and Corrective Exercise Certificate.
- Certificate in Functional Neurology
- Diploma in Advanced Studies (DEA) University of Castilla la Mancha
- PhD Candidate in ARD

Professors

Añon, Pablo

- Degree in Physical Activity and Sport
- Postgraduate diploma in Sports Medicine and Sciences Applied to Sport.
- Physical trainer of the National Volleyball team that will attend the next Olympic Games
- Certified Strength and Conditioning Specialist, NSCA certification
- NSCA National Conference.

Bruno Gizzarelli, Matías

- Degree in Physical Education
- Training in Applied Neurosciences,
- EXOS Performance Specialist
- * Author of the Book "Basketball Training: Physical Preparation

Carbone, Leandro

- Degree in Physical Education
- Specialist in exercise physiology
- Msc Strength and Conditioning
- CSCS-NASCA, CISSN-ISSN
- Currently at Club The Strongest
- Collaborator with olympic athletes.

Garzon Duarte, Mateo

- Degree in Physical Activity and Sport
- MGD -Customized Training. S&C Coach
- Researcher and author of Papers.

Masse, Juan

- Degree in Physical Education
- Director of the Athlos study group
- Physical trainer for several professional soccer teams in South America, experienced teacher.

Palarino, Matías

- Degree in Physical Activity and Sport
- Physical trainer in Professional Soccer
- Physical Trainer in Field Hockey
- Physical Trainer in Rugby
- Extensive teaching experience in physical preparation and load control courses.

Trobadelo, Pablo Omar

- Strength and Physical Performance Coach, general and specific physical preparation of amateur athletes of different disciplines for national and international competitions. Handball, Tennis, Soccer, Taekwondo, Motocross Enduro, Jiu Jitsu, Wrestling, Street Racing and Ultra Endurance, etc.
- Personal Physical Trainer for all types of population in search of sports performance goals, general physical conditioning, health, aesthetics and functional rehabilitation of injuries and movement reeducation.
- Degree in High Performance in Sports. National University of Lomas de Zamora
- Physical Education Professor at Higher Physical Education Institute N°1 "Dr. Enrique Romero Brest" (CeNARD -National Center of High Performance in Sports)

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Tinti, Hugo

- Degree in Physical Activity and Sport
- Master's Degree in Big Data
- Specialist in Technologies and Injury Prevention in Soccer
- Specialist in load management.

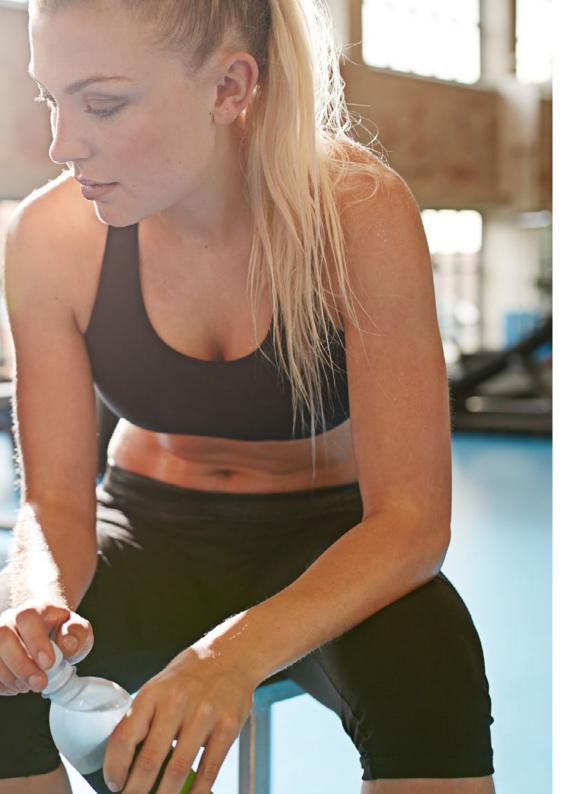
Rossanigo, Horacio

- * BUILD Academy-Academic Services in Physical Training
- CEO, Jaguares-Rugby Union Argentina,
- Degree in Physical Education and Physiology of Physical Work, FMS 1&2.
- Lecturer in courses on sports performance

Vaccarini, Adrián

- Degree in sports medicine
- Head of the Applied Sciences Department of the Peruvian soccer federation
- Physical trainer of the Peruvian National Soccer Team (present in the last World Cup).





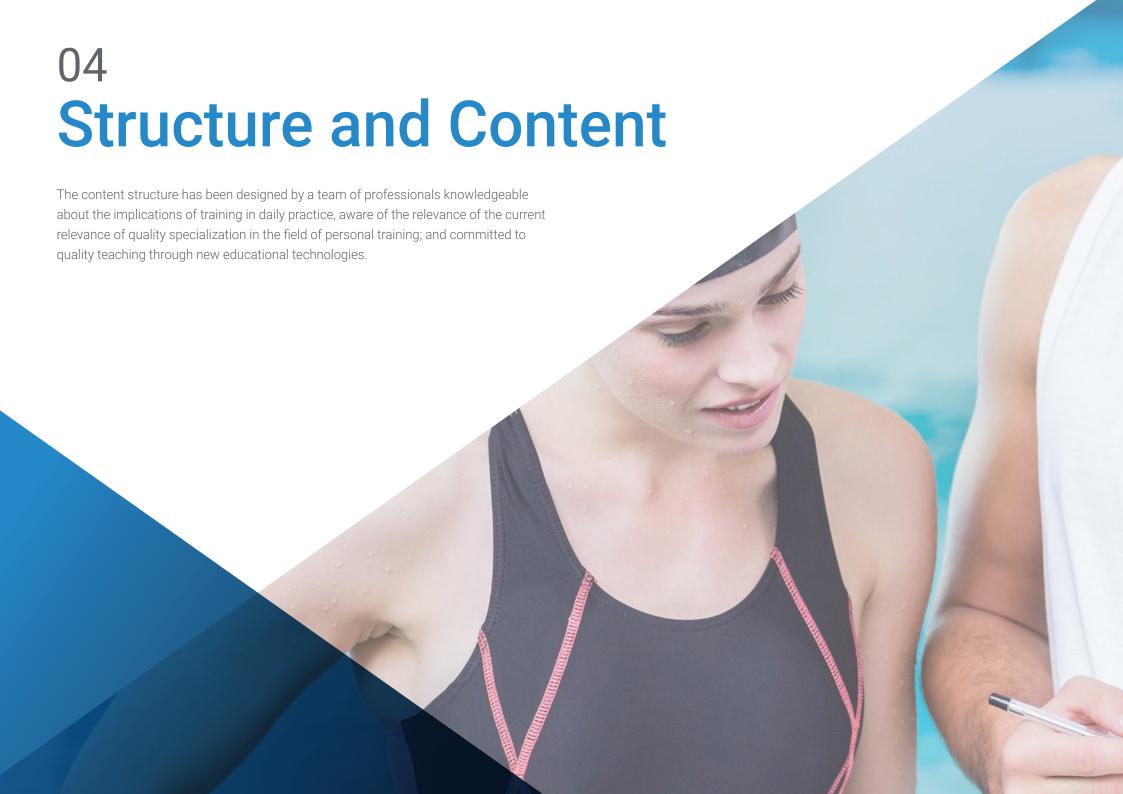
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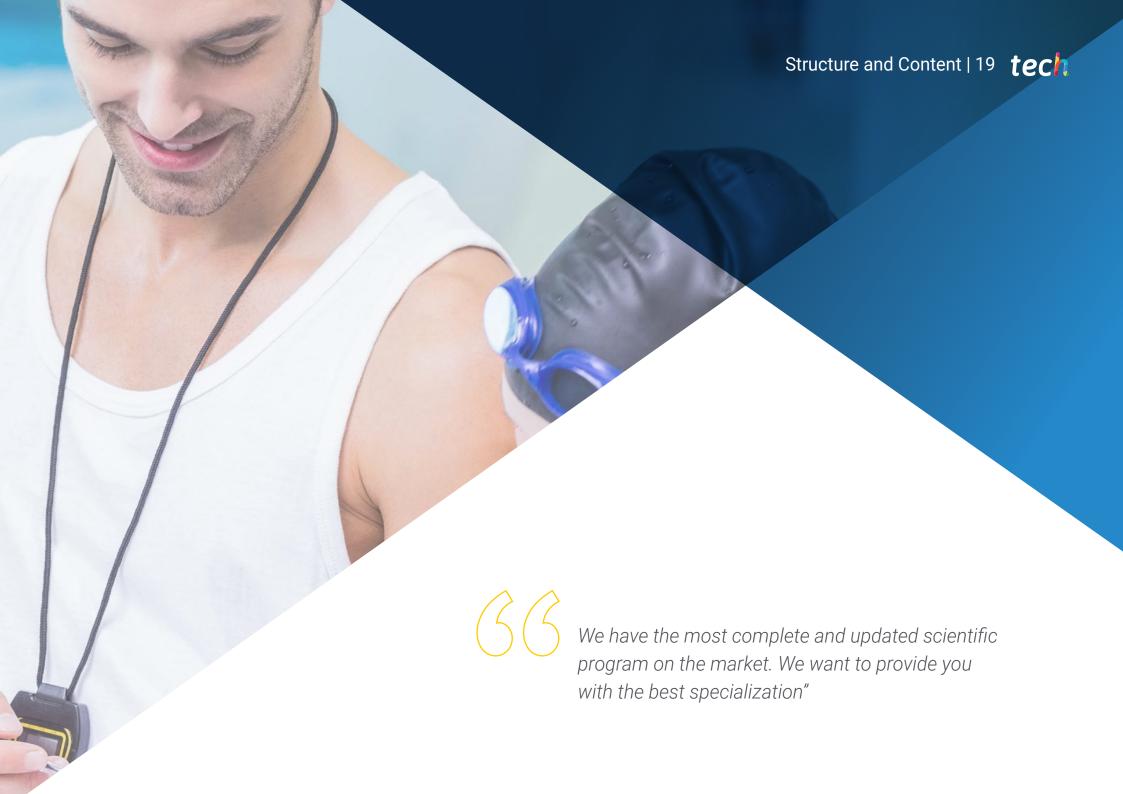
Varela, Mauricio Carlos

- Physical Education Teacher. Faculty of Humanities and Educational Sciences. National University of La Plata.
- Teacher of physical activity classes in a personalized way for older adults.
- Physical Trainer, Personal Trainer of Elite cyclists of the Astronomía cycling circuit.
- Physical education trainer EES 62, EES 32, EET 5, EES56, EES 31.
- Specialization in Exercise Programming and Evaluation (Postgraduate course, FaHCE-UNLP). Cohort
- ISAK Anthropometrist level 1.

Vilariño, Leandro

- Degree in Physical Activity and Sport
- Teacher at the Peruvian Federation of Soccer
- Teacher of the Postgraduate Diploma in Sports Medicine
- Physical trainer in professional soccer in the Argentine and Bolivian leagues.

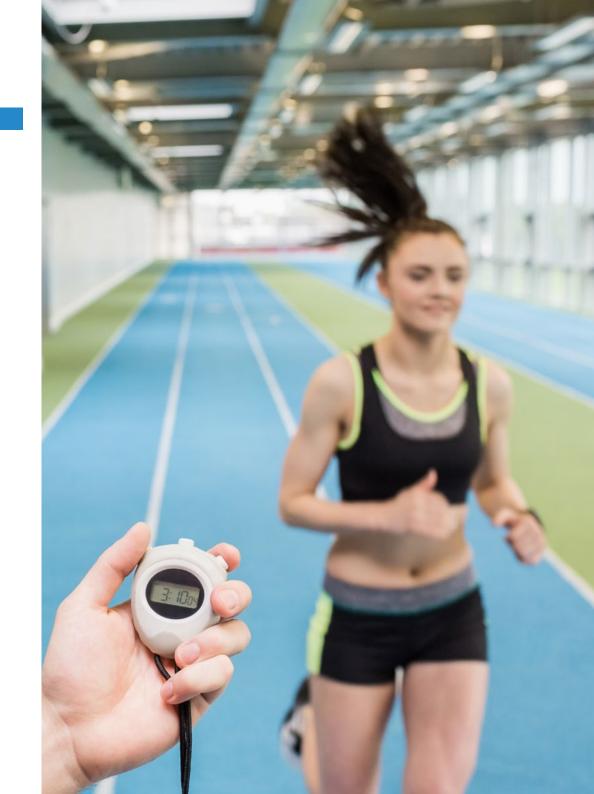




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Module 1. Strength Training for the Improvement of Movement Skills

- 1.1. Strength in Skill Development
 - 1.1.1. The Importance of Strength in Developing Skills
 - 1.1.2. Benefits of Skills-based strength training
 - 1.1.3. Types of strength present in Skills
 - 1.1.4. Training Means Necessary for the Development of Srength in Skills
- 1.2. Skills in Team Sports
 - 1.2.1. General concepts
 - 1.2.2. Skills in Performance Development
 - 1.2.3. Classifying Skills
 - 1.2.3.1. Locomotive Skills
 - 1.2.3.2. Manipulative Skills
- 1.3. Agility and Movements
 - 1.3.1. Basic Concepts
 - 1.3.2. The Importance of Sports
 - 1.3.3. Agility Components
 - 1.3.3.1. Classification of Movement skills
 - 1.3.3.2. Physical Factors: Strength
 - 1.3.3.3. Anthropometric Factors
 - 1.3.3.4. Perceptual-Cognitive Components
- 1.4. Posture
 - 1.4.1. The Importance of Posture in Skills
 - 1.4.2. Posture and Mobility
 - 1.4.3. Posture and CORE
 - 1.4.4. Posture and Center of Pressure
 - 1.4.5. Biomechanical Analysis of Efficient Posture
 - 1.4.6. Methodological Resources
- 1.5. Linear Skills (Linear Abilities)
 - 1.5.1. Features of Linear Skills



1.5.1.1. Main Planes and Vectors

1.5.2. Classification

- 1.5.2.1. Starting, Braking and Deceleration
 - 1.5.2.1.1. Definitions and Context of Use
 - 1.5.2.1.2. Biomechanical Analysis
 - 1.5.2.1.3. Methodological Resources
- 1.5.2.2. Acceleration
 - 1.5.2.2.1. Definitions and Context of Use
 - 1.5.2.2.2. Biomechanical Analysis
 - 1.5.2.2.3. Methodological Resources
- 1.5.2.3. Backpedal
 - 1.5.2.3.1. Definitions and Context of Use
 - 1.5.2.3.2. Biomechanical Analysis
 - 1.5.2.3.3. Methodological Resources

1.6. Multidirectional Skills: Shuffle

- 1.6.1. Classification of Multidirectional Skills
- 1.6.2. Shuffle Definitions and Context of Use
- 1.6.3. Biomechanical Analysis
- 1.6.4. Methodological Resources
- 1.7. Multidirectional Skills: Crossover
 - 1.7.1. Crossover as a Change of Direction
 - 1.7.2. Crossover as a Transitional Movement
 - 1.7.3. Definitions and Context of Use
 - 1.7.4. Biomechanical Analysis
 - 1.7.5. Methodological Resources
- 1.8. Jump Skills 1
 - 1.8.1. The Importance of Jumps in Skills

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- 1.8.2. Basic Concepts
 - 1.8.2.1. Biomechanics of Jumps
 - 1.8.2.2. CEA
 - 1.8.2.3. Stiffness
- 1.8.3. Jump Classification
- 1.8.4. Methodological Resources
- 1.9. Jump Skills 2
 - 1.9.1. Methods
 - 1.9.2. Acceleration and Jumps
 - 1.9.3. Shuffle and Jumps
 - 1.9.4. Crossover and Jumps
 - 1.9.5. Methodological Resources
- 1.10. Programming Variables

Module 2. Strength Training Under the Paradigm of Complex Dynamic Systems

- 2.1. Introduction to Complex Dynamical Systems
 - 2.1.1. Models Applied to Physical Preparation
 - 2.1.2. Determination of Positive and Negative Interactions
 - 2.1.3. Uncertainty in Complex Dynamical Systems
- 2.2. Motor Control and its Role in Performance
 - 2.2.1. Introduction to Motor Control Theories
 - 2.2.2. Movement and Function
 - 2.2.3. Motor Learning
 - 2.2.4. Motor Control Applied to Systems Theory
- 2.3. Communication Processes in the Theory of Systems
 - 2.3.1. From Message to Movement
 - 2.3.1.1. The Efficient Communication Process
 - 2.3.1.2. The Stages of Learning
 - 2.3.1.3. The Role of Communication and Sport Development in Early Ages
 - 2.3.2. V.A.K.T. Principle
 - 2.3.3. Performance Knowledge vs. Outcome Knowledge
 - 2.3.4. Verbal feedback in System Interactions

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2.4.	Strength as an Essential Condition	
	2.4.1.	Strength Training in Team Sports
	2.4.2.	Manifestations of Strength Within the System
	2.4.3.	The Strength-Speed Continuum. Systemic Review
2.5.	Complex Dynamical Systems and Training Methods	
	2.5.1.	Periodization. Historical Review
		2.5.1.1. Traditional Periodization
		2.5.1.2. Contemporary Periodization
	2.5.2.	Analysis of Periodization Models in Training Systems
	2.5.3.	Evolution of Strength Training Methods
2.6.	Strength and Motor Divergence	
	2.6.1.	Developing Strength at Early Ages
	2.6.2.	The Manifestations of Strength in Infantile-Juvenile Ages
	2.6.3.	Efficient Programming at Youth Ages
2.7.	The Role of Decision-Making in Complex Dynamical Systems	
	2.7.1.	The Decision-Making Process
	2.7.2.	Decisional Timing
	2.7.3.	The Development of Decision Making
	2.7.4.	Programming Training Based on Decision Making
2.8.	Perceptual Abilities in Sports	
	2.8.1 Visual Capabilities	
		2.8.1.1. Visual Recognition
		2.8.1.2. Central and Peripheral Vision
	2.8.2.	Motor Experience
	2.8.3.	Attentional Focus
	2.8.4.	The Tactical Component
2.9.	Systemic Vision of Programming	
	2.9.1.	The Influence of Identity on Programming
	2.9.2.	The System as a Path to Long-Term Development.
	2.9.3.	Long-Term Development Program
2.10.	Global scheduling: From the system to the need	
	2.10.1.	Program Design
	2.10.2.	Practical System Assessment Workshop

Module 3. Strength Training to Improve Speed

- 3.1. Strength
 - 3.1.1. Definition
 - 3.1.2. General concepts
 - 3.1.2.1. Manifestations of Strength
 - 3.1.2.2. Factors that Determine Performance
 - 3.1.2.3. Strength Requirements for Sprint Improvement. Connection Between Force Manifestations and Sprint
 - 3.1.2.4. Strength-Speed Curve
 - 3.1.2.5. Relationship of the S-S and Power Curve and its Application to Sprint Phases $\,$
 - 3.1.2.6. Developing Muscle Strength and Power
- 3.2. Dynamics and Mechanics of Linear Sprint (100m Model)
 - 3.2.1. Kinematic Analysis of the Take-off
 - 3.2.2. Dynamics and Strength Application During Take-off
 - 3.2.3. Kinematic Analysis of the Acceleration Phase
 - 3.2.4. Dynamics and Strength Application During Acceleration
 - 3.2.5. Kinematic Analysis of Running at Maximum Speed
 - 3.2.6. Dynamics and Strength Application During Maximum Speed
- 3.3. Analysis of Acceleration Technique and Maximum Speed in Team Sports
 - 3.3.1. Description of the Technique in Team Sports
 - 3.3.2. Comparison of Sprinting Technique in Team Sports vs. Athletic Events
 - 3.3.3. Timing and Motion Analysis of Speed Events in Team Sports
- 3.4. Exercises as Basic and Special Means of Strength Development for Sprint Improvement
 - 3.4.1. Basic Movement Patterns
 - 3.4.1.1. Description of Patterns with Emphasis on Lower Limb Exercises
 - 3.4.1.2. Mechanical Demand of the Exercises
 - 3.4.1.3. Exercises Derived from Olympic Weightlifting

3.4.1.4. Ballistic Exercises

3.4.1.5. S-S Curve of the Exercises

3.4.1.6. Strength Production Vector

3.5. Special Methods of Strength Training Applied to Sprinting

3.5.1. Maximum Effort Method

3.5.2. Dynamic Effort Method

3.5.3. Repeated Effort Method

3.5.4. French Complex and Contrast Method

3.5.5. Speed-Based Training

3.5.6. Strength Training as a Means of Injury Risk Reduction

3.6. Means and Methods of Strength Training for Speed Development

3.6.1. Means and Methods of Strength Training for the Development of the Acceleration Phase

3.6.1.1. Connection of Force to Acceleration

3.6.1.2. Sledding and Racing Against Resistance

3.6.1.3. Slopes

3.6.1.4. Jumpability

3.6.1.4.1. Building the Vertical Jump

3.6.1.4.2. Building the Horizontal Jump

3.6.2. Means and Methods for Top Speed Training

3.6.2.1. Plyometry

3.6.2.1.1. Concept of the Shock Method

3.6.2.1.2. Historical Perspective

3.6.2.1.3. Shock Method Methodology for Speed Improvement

3.6.2.1.4. Scientific Evidence

3.7. Means and Methods of Strength Training Applied to Agility and Change of Direction

3.7.1. Determinants of Agility and COD

3.7.2. Multidirectional Jumps

3.7.3. Eccentric Strength

3.8. Assessment and Control of Strength Training

3.8.1. Strength-Speed Profile

3.8.2. LoadSpeed Profile

3.8.3. Progressive Loads

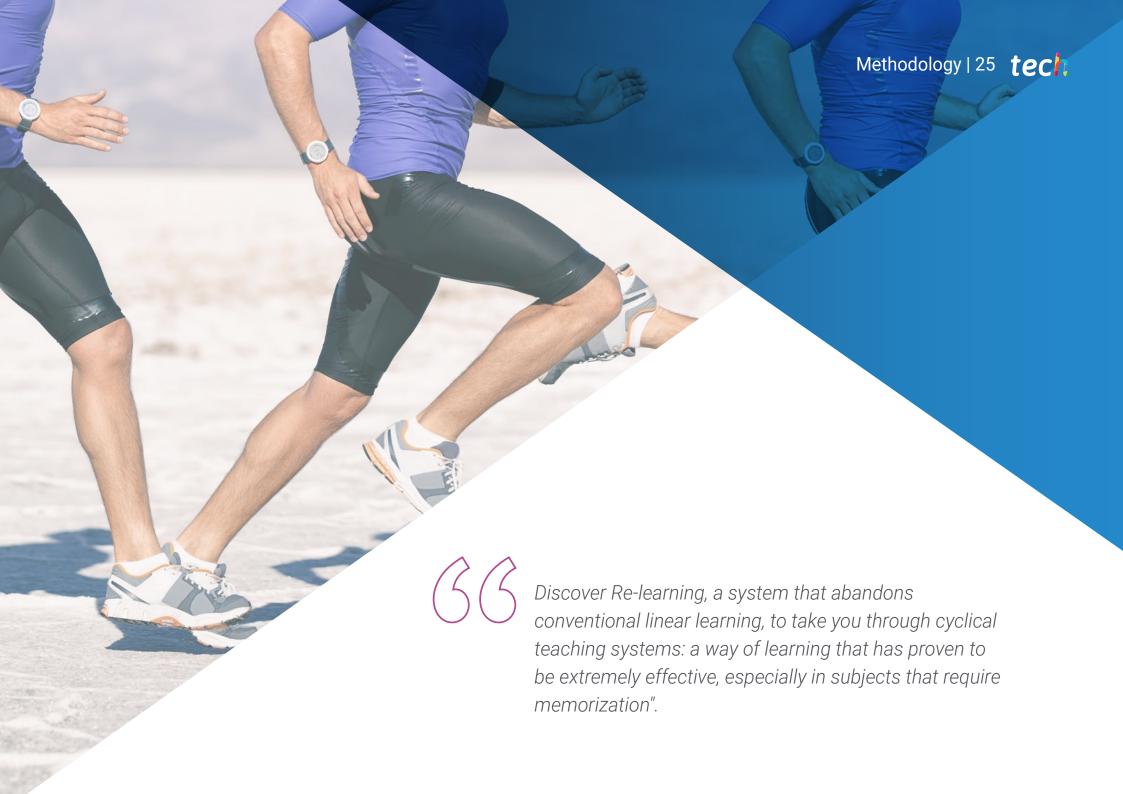
3.9. Integration.

3.9.1. Case Study



A unique specialization experience, key and decisive to boost your professional development"





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At TECH we use the Case Method

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



With TECH you can experience a way of learning that is shaking the foundations of traditional universities around the world"



Our University is the first in the world to combine Harvard Business School case studies with a 100%-online learning system based on repetition.



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

A learning method that is different and innovative.

This Sports Science program at TECH Technological University is an intensive program that prepares you to face all the challenges in this field, both nationally and internationally. We are committed to promoting your personal and professional growth, the best way to strive for success, that is why at TECH you will use Harvard case studies, with which we have a strategic agreement that allows us to offer you material from the best university in the world.



We are the only online university that offers Harvard materials as teaching materials on its courses"

The case method is the most widely used learning system by 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.

In a given situation, what would you do? This is the question that you are presented with in the case method, an action-oriented learning method. Throughout the course, you will be presented with multiple real cases. You will have to combine all your knowledge, and research, argue, and defend your ideas and decisions.

Re-Learning Methodology

Our University is the first in the world to combine Harvard University case studies with a 100%-online learning system based on repetition, which combines 8 different teaching elements in each lesson.

We enhance Harvard case studies with the best 100% online teaching method: Re-learning.

In 2019 we obtained the best learning results of all Spanish-language 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 Re-learning.

Our University is the only one in Spanish-speaking countries licensed to incorporate 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 Spanish online university indicators.



Metodology | 29 tech

In our program, learning is not a linear process, but rather a spiral (we 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.

Re-learning 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 to success.

Based on the latest evidence in neuroscience, not only do we know how to organize information, ideas, images, memories, but we also know that the place and context where we have learned something is crucial for us to be able to remember it and store it in the hippocampus, and 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.

In this program you will have access to the best educational material, prepared with you 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.

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.



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 our future difficult decisions.



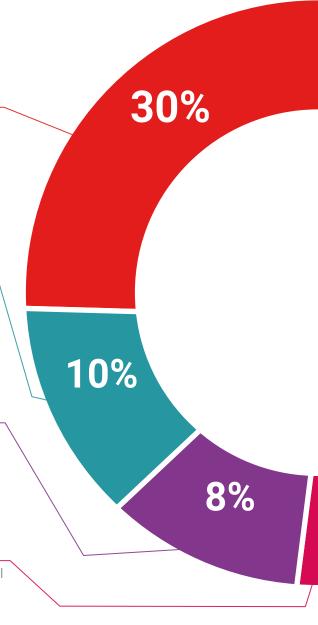
Practising Skills and Abilities

You will carry out activities to develop specific skills and abilities in each subject area. Exercises and activities to acquire and develop the skills and abilities that a specialist needs to develop in the context of the globalization we live in.



Additional Reading

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



20%

Case Studies

You will complete a selection of the best case studies in the field used at Harvard. Cases that are presented, analyzed, and supervised by the best senior management specialists in Latin America.



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



4%

3%

Testing & Re-testing

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







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This **Postgraduate Diploma in Movement, Dynamic Systems and Speed in Strength Training** contains the most complete and up-to-date scientific program on the market.

After the student has passed the assessments, they will receive their corresponding **Postgraduate Diploma** issued by **TECH - Technological University via tracked delivery.**

This degree contributes to the academic development of the professional and adds a high university curricular value to their training. It is 100% valid in all competitive examinations, labour exchanges and professional career evaluation committees.

Title: Postgraduate Diploma in Movement, Dynamic Systems and Speed in Strength Training

ECTS: 18

Official Number of Hours: 450

Endorsed by the NBA





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



Postgraduate Diploma

Movement, Dynamic Systems and Speed in Strength Training

Course Modality: Online

Duration: 6 months.

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