

# Hybrid Professional Master's Degree

## Sports Nutrition in Special Populations



## Hybrid Professional Master's Degree Sports Nutrition in Special Populations

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.

Website: [www.techtute.com/pk/physiotherapy/hybrid-professional-master-degree/hybrid-professional-master-degree-sports-nutrition-special-populations](http://www.techtute.com/pk/physiotherapy/hybrid-professional-master-degree/hybrid-professional-master-degree-sports-nutrition-special-populations)

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# 01

# Introduction

Sports nutrition has evolved, growing in the attention of specific populations such as athletes with disabilities or diabetics, generating the need for university programs to provide professionals with the necessary tools and information. For this reason, TECH has created this program focused on Sports Nutrition in Special Populations, combining theory and practice. The theoretical program is complete and exhaustive, covering modules that delve into muscular and metabolic physiology, athlete assessment, extreme conditions, among others. In addition, the student will carry out a practical internship in a prestigious center, allowing the students to apply theoretical knowledge and gain invaluable experience. It is an excellent option for physical therapists who wish to update themselves in a constantly evolving field.



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*Discover how to optimize nutrition in athletes with special needs and take your knowledge to a higher level with this Hybrid Professional Master's Degree"*

The field of sports nutrition has experienced significant growth in recent years, especially with regard to specialization in specific populations, such as athletes with disabilities or diabetics, among others. This growth has generated the need for university programs that provide professionals with the necessary tools to address these populations efficiently and effectively.

In this context, TECH has created the Hybrid Professional Master's Degree in Sports Nutrition in Special Populations. The program focuses on the combination of theory and practice, with a complete and exhaustive theoretical section and a practical stay in a prestigious center for 3 weeks.

In the theoretical section, the program covers several modules that delve into muscle and metabolic physiology related to exercise, the assessment of the athlete at different times of the season, water sports, extreme conditions, vegetarianism and veganism, type 1 diabetic athletes, nutrition in para-sports, sports by weight category, different stages, or specific populations and the injury period.

It is important to emphasize that the combination of theory and practice is fundamental in the field of sports nutrition in special populations, since only through complete and up-to-date instruction can professionals offer a quality service adapted to the specific needs of athletes. In addition, the practical stay in a prestigious center will allow students to apply the theoretical knowledge acquired and gain invaluable experience in the field of sports nutrition.

Therefore, the Hybrid Professional Master's Degree in Sports Nutrition in Special Populations is an excellent option for physical therapists who wish to update their knowledge in this constantly evolving field. The 100% online format of the theoretical section makes it compatible with the most demanding responsibilities and can be combined with all kinds of schedules.

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

- ♦ Development of more than 100 case studies presented by physiotherapy and nutrition professionals with extensive experience in the care of special populations
- ♦ The graphic, schematic and practical contents with which they are conceived, gather essential information on those disciplines that are essential for professional practice
- ♦ All of this will be complemented by theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection assignments
- ♦ Content that is accessible from any fixed or portable device with an Internet connection
- ♦ In addition, you will be able to do an internship in one of the best companies



*Become an expert in sports nutrition and learn how to apply your knowledge to treat sports injuries and improve physical performance"*

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*Develop your skills in identifying nutritional needs in athletes with disabilities, the elderly and children and learn how to design personalized syllabus”*

In this Master's proposal, of a professionalizing nature and hybrid learning modality, the program is aimed at updating physiotherapy professionals who carry out sports nutrition plans, especially for special populations. The contents are based on the latest scientific evidence, and oriented in an educational way to integrate theoretical knowledge in physiotherapeutic practice, and the theoretical-practical elements will facilitate the updating of knowledge and will allow decision-making in patient management.

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

*Enhance your career as a physical therapist and acquire skills in sports nutrition to improve the physical well-being of your patients.*

*Expand your knowledge in sports nutrition and specialize in the treatment of special populations such as people with disabilities or diabetes.*



02

# Why Study this Hybrid Professional Master's Degree?

Study the Hybrid Professional Master's Degree in Sports Nutrition in Special Populations is an excellent option for physical therapists who wish to update their knowledge in this constantly evolving field. With the growth of specialization in specific populations in sports nutrition, an adequate, and up-to-date delve is needed to provide a quality service adapted to the specific needs of each athlete. This program offers a complete combination of theory and practice, with a comprehensive theoretical section and a practical stay in a prestigious center, allowing students to apply the knowledge acquired and gain invaluable experience in the field of sports nutrition.







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*The Hybrid Professional Master's Degree will prepare you to work in multidisciplinary settings, collaborating with physiotherapists, trainers, and other health professionals"*

### **1. Updating from the Latest Technology Available**

This Hybrid Professional Master's Degree in Sports Nutrition in Special Populations provides the opportunity to update the professional's knowledge in a constantly evolving field. The program focuses on the combination of theory and practice, with a complete and exhaustive theoretical section and a practical stay in a prestigious center for 3 weeks, which allows updating from the latest technology available.

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

The program has a faculty made up of the best specialists in sports nutrition for special populations. The student will have the opportunity to delve deeper into the knowledge from the experience of these prestigious professionals.

### **3. Entering first-class professional environments**

The practical stay in a prestigious center allows the student to enter a first-class professional environment and to apply the theoretical knowledge acquired in a real context. In addition, this will give you first-hand knowledge of the most advanced clinical practice in the field of Sports Nutrition in Special Populations.





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

The combination of theory and practice is fundamental in the field of sports nutrition in special populations, since only through complete and up-to-date instruction can professionals offer a quality service adapted to the specific needs of athletes. The program focuses on this combination, providing the best theory with the most advanced practice.

#### 5. Expanding the Boundaries of Knowledge

This Hybrid Professional Master's Degree in Sports Nutrition in Special Populations expands the frontiers of knowledge in the field of sports nutrition, delving into aspects related to muscle and metabolic physiology related to exercise, the assessment of the athlete at different times of the season, water sports, extreme conditions, vegetarianism and veganism, type 1 diabetic athletes, nutrition in para-sports, sports by weight category, different stages, or specific populations and the injury period.



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

# 03 Objectives

The objective of the Hybrid Professional Master's Degree in Sports Nutrition in Special Populations is to provide students with the theoretical and practical knowledge necessary to design specific nutritional plans for athletes with special needs. In this way, students will be prepared to address the specific nutritional needs of athletes with disabilities or illnesses.





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*At the end of the program you will have the necessary tools to apply the knowledge acquired in your daily practice and improve the quality of life of your patients"*



## General Objective

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- Students will be able to design specific nutritional plans for athletes with special needs, taking into account the patient's own physiotherapeutic reality. In addition, the program aims to delve deeper into nutrition in para-sport athletes, seeking that students enter into first-class professional environments and combine the best theory with the most advanced practice, expanding the frontiers of knowledge in the field of sports nutrition in special populations



*You will be able to combine your studies with your professional and personal activity, without renouncing to a quality university program"*





## Specific Objectives

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### Module 1. Muscle and Metabolic Physiology Associated with Exercise

- ◆ Gain an in-depth understanding of the structure of skeletal muscle
- ◆ Understand in depth the functioning of skeletal muscle
- ◆ Delve into the understanding of the most important changes that occur in athletes
- ◆ Delve into the mechanisms of energy production according to the type of exercise undertaken
- ◆ Further understanding of the interaction between the different energy systems that make up the muscle energy metabolism

### Module 2. Evaluation of the Athlete at Different Times of the Season

- ◆ Perform biochemical interpretation to detect nutritional deficits or overtraining states
- ◆ Perform the interpretation of the different methods of body composition, to optimize the weight and fat percentage appropriate to the sport practiced
- ◆ Perform the monitoring of the athlete throughout the season
- ◆ Plan the periods of the season according to their requirements

### Module 3. Watersports

- ◆ Delve into the most important characteristics of the main water sports
- ◆ Understand the demands and requirements associated with sports activities in aquatic environments
- ◆ Distinguish between the nutritional needs of different watersports

#### Module 4. Adverse Conditions

- ♦ Differentiate between the main performance limiting factors caused by climate
- ♦ Develop an acclimatization plan appropriate to the situation given
- ♦ Delve into the physiological adaptations due to altitude
- ♦ Establish the correct individual hydration guidelines according to the climate

#### Module 5. Vegetarianism and Veganism

- ♦ Differentiate between the different types of vegetarian athletes
- ♦ Gain an in-depth understanding of the main mistakes made
- ♦ Treat the notable nutritional deficiencies of sportsmen and sportswomen
- ♦ Manage skills to provide the athlete with the most effective tools to combine foods

#### Module 6. The Type 1 Diabetic Athlete

- ♦ Establish the physiological and biochemical mechanism of diabetes both at rest and during exercise
- ♦ Deepen the understanding of how the different insulins or medications used by diabetics work
- ♦ Assess the nutritional requirements for people with diabetes both in their daily life and in exercise, to improve their health
- ♦ Deepen the knowledge necessary to plan nutrition for athletes of different disciplines with diabetes, in order to improve their health and performance
- ♦ Establish the current state of evidence on Performance Enhancing Drugs in diabetics







### **Module 7. Parathletes**

- ◆ Deepen understanding of the differences between the different categories of para-athletes and their physiological-metabolic limitations
- ◆ Determine the nutritional requirements of the different para-sportsmen in order to establish a specific nutritional plan
- ◆ Further the knowledge necessary to establish interactions between the ingestion of pharmaceuticals in these athletes and nutrients, to avoid nutrient deficits
- ◆ Understand the body composition of para-athletes in different sport categories
- ◆ Apply current scientific evidence on nutritional ergogenic aids

### **Module 8. Sports by Weight Category**

- ◆ Establish the different characteristics and needs within sports by weight category
- ◆ Understand in depth the different nutritional strategies for preparing the athlete for competition
- ◆ Optimize the improvement of body composition through nutritional approach

### **Module 9. Different Stages or Specific Population Groups**

- ◆ Explain the specific physiological characteristics to be taken into account in the nutritional approach of different groups
- ◆ Understand in depth the external and internal factors that influence the nutritional approach to these groups

### **Module 10. The Injury Period**

- ◆ Determine the different phases of the injury
- ◆ Help in the prevention of injuries
- ◆ Improve the prognosis of the injury
- ◆ Develop a nutritional strategy to meet the changing nutritional requirements during the injury period

# 04 Competencies

The Hybrid Professional Master's Degree in Sports Nutrition in Special Populations has been designed to provide students with the necessary competencies to practice in the field of sports nutrition in an effective and professional manner. The program provides advanced theoretical and practical knowledge in areas such as muscle and metabolic physiology, athlete assessment, nutrition in athletes with disabilities, or diabetic athletes, among others.





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*You will learn to identify and assess the nutritional needs of your patients and design customized plans for each particular case”*



## General Skills

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- Apply to their patients the new trends in Sports Nutrition in Special Groups
- Apply the new trends in nutrition depending on the adult's pathologies
- Investigate the nutritional problems of your patients

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*You will be able to apply the knowledge acquired in the Hybrid Professional Master's Degree in your own professional practice, which will allow you to differentiate yourself and offer a unique added value"*





## Specific Skills

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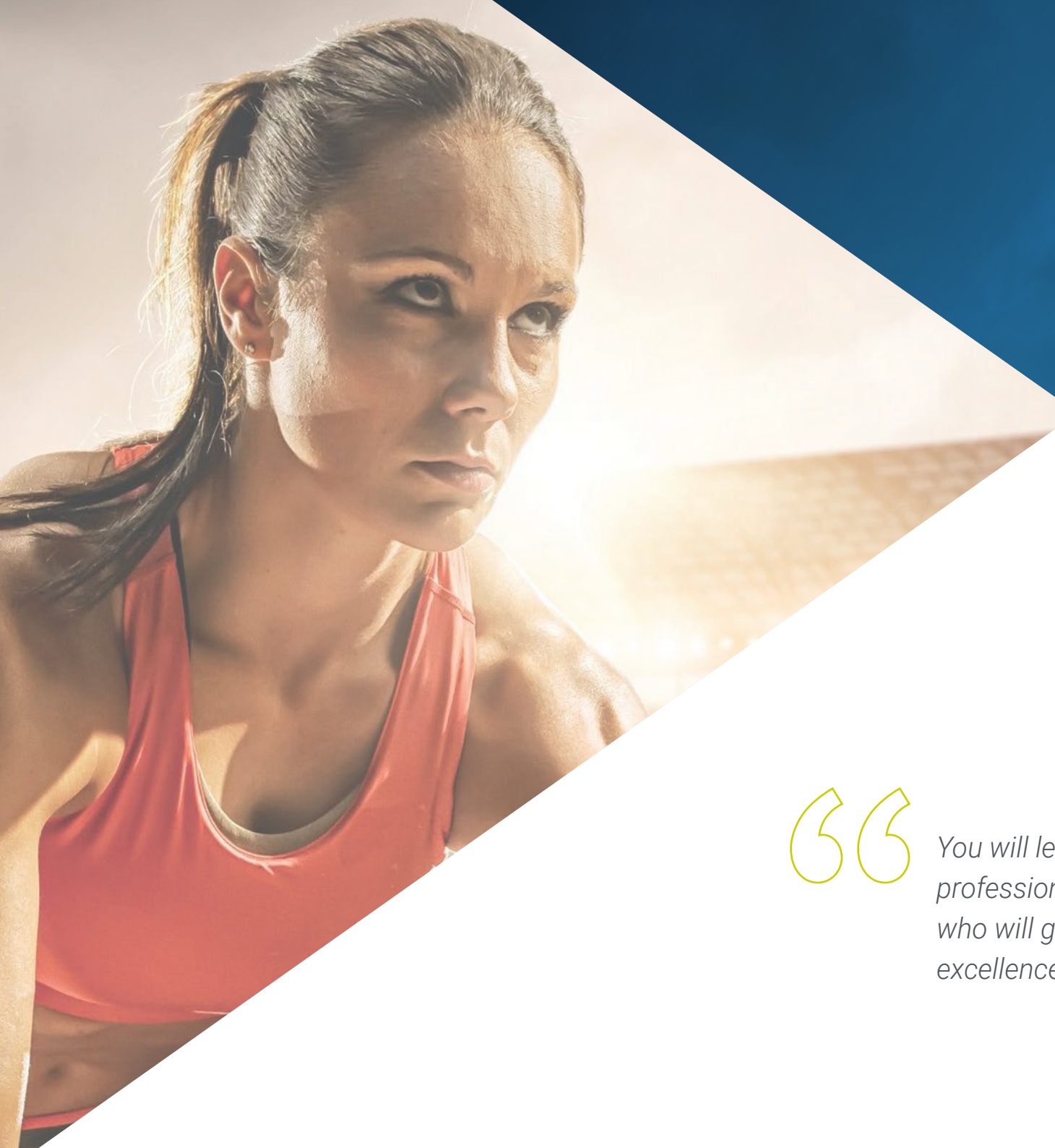
- ♦ Manage and consolidate the initiative and entrepreneurial spirit needed to launch projects related to nutrition in physical activity and sport
- ♦ Manage advanced skills in the detection of possible signs of nutritional changes associated with sports activities
- ♦ Specialize in the structure of muscle tissue and its role in sports
- ♦ Gain knowledge about the energetic and nutritional needs of athletes in different pathophysiological situations
- ♦ Specialize in the energetic and nutritional needs of child athletes
- ♦ Specialize in the energetic and nutritional needs of Paralympic athletes

05

# Course Management

The faculty of the Hybrid Professional Master's Degree in Sports Nutrition in Special Populations is composed of experts in this field, with extensive experience in both research and clinical practice. These professionals have contributed their knowledge and experience in the creation of the program contents, ensuring that they are up-to-date and relevant to the needs of the current clinical reality.





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*You will learn from the best professionals in the industry, who will guide you on the path to excellence in sports nutrition”*

## Management



### Dr. Marhuenda Hernández, Javier

- ◆ Nutritionist in professional Soccer Clubs
- ◆ Responsible for the Sports Nutrition Area Albacete Soccer Club SAD
- ◆ Responsible for the Sports Nutrition Area Catholic University of Murcia, UCAM Murcia Soccer Club
- ◆ Scientific Advisor Nutrium
- ◆ Nutritional Advisor Impulse Center
- ◆ Teacher and Coordinator of Postgraduate Studies
- ◆ Doctor in Nutrition and Food Safety San Antonio Murcia Catholic University
- ◆ Degree in Human Nutrition and Dietetics San Antonio Murcia Catholic University
- ◆ Master's Degree in Clinical Nutrition. San Antonio Murcia Catholic University
- ◆ Academic Spanish Academy of Nutrition and Dietetics (AEND)

## Professors

### Dr. Martínez Noguera, Francisco Javier

- ◆ Sports nutritionist at CIARD-UCAM
- ◆ Sports nutritionist at Jorge Lledó Physiotherapy Clinic
- ◆ Research assistant at CIARD-UCAM
- ◆ Sports nutritionist at UCAM Murcia Football Club
- ◆ Nutritionist at SANO Center
- ◆ Sports nutritionist at UCAM Murcia Basketball Club
- ◆ PhD in Sports Science from the Catholic University San Antonio de Murcia
- ◆ Graduate in Human Nutrition and Dietetics from the Catholic University San Antonio of Murcia
- ◆ Master's Degree in Nutrition and Food Safety from the Catholic University San Antonio of Murcia





**Dr. Ramírez Munuera, Marta**

- ◆ Sports Nutritionist expert in Strength Sports
- ◆ Nutritionist. M10 Health and Fitness Health and Sports Center
- ◆ Nutritionist Mario Ortiz Nutrition
- ◆ Trainer in courses and workshops on Sports Nutrition
- ◆ Speaker at Conferences and Seminars on Sports Nutrition
- ◆ Degree in Human Nutrition and Dietetics San Antonio Murcia Catholic University
- ◆ Master in Nutrition in Physical Activity and Sport San Antonio Murcia Catholic University

**Dr. Arcusa Saura, Raúl**

- ◆ Nutritionist Castellón Sports Club
- ◆ Nutritionist in several semi-professional clubs in Castellón
- ◆ Researcher San Antonio Murcia Catholic University
- ◆ Undergraduate and Postgraduate Teacher
- ◆ Graduate in Human Nutrition and Dietetics
- ◆ Master's Degree in Nutrition in Physical Activity and Sport

**Dr. Montoya Castaño, Johana**

- ◆ Sports Nutritionist
- ◆ Nutritionist Ministry of Sports of Colombia (Mindeportes)
- ◆ Scientific Advisor Bionutrition (Medellín)
- ◆ Undergraduate Sports Nutrition Teacher
- ◆ Nutritionist Dietitian University of Antioquia
- ◆ Master in Nutrition in Physical Activity and Sport. San Antonio Murcia Catholic University

# 06

## Educational Plan

The planning of the teaching in the Hybrid Professional Master's Degree in Sports Nutrition in Special Populations is based on an innovative and rigorous methodology. The contents of the program draw on a variety of sources, such as complementary readings, in-depth videos and simulated case studies, to provide students with a complete and up-to-date view of the field of sports nutrition. In addition, the continuous interaction between the students and the faculty encourages active participation and collaborative learning, allowing students to acquire practical skills and apply the knowledge acquired in real situations.





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*Learn from working professionals, with experience in the field of sports nutrition and specialized in special populations”*

## Module 1. Muscle and Metabolic Physiology Associated with Exercise

- 1.1. Cardiovascular Adaptations Related to Exercise
  - 1.1.1. Increased Systolic Volume
  - 1.1.2. Decreased Heart Rate
- 1.2. Ventilatory Adaptations Related to Exercise
  - 1.2.1. Changes in the Ventilatory Volume
  - 1.2.2. Changes in Oxygen Consumption
- 1.3. Hormonal Adaptations Related to Exercise
  - 1.3.1. Cortisol
  - 1.3.2. Testosterone
- 1.4. Muscle Structure and Types of Muscle Fibers
  - 1.4.1. Muscle Fiber
  - 1.4.2. Type I Muscle Fiber
  - 1.4.3. Type II Muscle Fibers
- 1.5. The Concept of Lactic Threshold
- 1.6. ATP and Phosphagen Metabolism
  - 1.6.1. Metabolic Pathways for ATP Resynthesis during Exercise
  - 1.6.2. Phosphagen Metabolism
- 1.7. Carbohydrate Metabolism
  - 1.7.1. Carbohydrate Mobilization during Exercise
  - 1.7.2. Types of Glycolysis
- 1.8. Lipid Metabolism
  - 1.8.1. Lipolysis
  - 1.8.2. Fat Oxidation during Exercise
  - 1.8.3. Ketone Bodies
- 1.9. Protein Metabolism
  - 1.9.1. Ammonium Metabolism
  - 1.9.2. Amino Acid Oxidation
- 1.10. Mixed Bioenergetics of Muscle Fibers
  - 1.10.1. Energy Sources and their Relation to Exercise
  - 1.10.2. Factors Determining the Use of One or Another Energy Source during Exercise



**Module 2.** Evaluation of the Athlete at Different Times of the Season

- 2.1. Biochemical Evaluation
  - 2.1.1. Blood Count
  - 2.1.2. Overtraining Markers
- 2.2. Anthropometric Assessment
  - 2.2.1. Body composition
  - 2.2.2. ISAK Profile
- 2.3. Preseason
  - 2.3.1. High Workload
  - 2.3.2. Assuring Caloric and Protein Intake
- 2.4. Competitive Season
  - 2.4.1. Sports Performance
  - 2.4.2. Recovery between Games
- 2.5. Transition Period
  - 2.5.1. Vacation Period
  - 2.5.2. Changes in Body Composition
- 2.6. Travel
  - 2.6.1. Tournaments during the Season
  - 2.6.2. Off-Season Tournaments (World Cups, European Cups and JJ.OO.)
- 2.7. Athlete Monitoring
  - 2.7.1. Basal Athlete Status
  - 2.7.2. Evolution during the Season
- 2.8. Sweat Rate Calculation
  - 2.8.1. Hydric Losses
  - 2.8.2. Calculation Protocol
- 2.9. Multidisciplinary Work
  - 2.9.1. The Role of the Nutritionist in the Athlete's Environment
  - 2.9.2. Communication with the Rest of the Areas
- 2.10. Doping
  - 2.10.1. WADA List
  - 2.10.2. Anti-doping Tests

### Module 3. Watersports

- 3.1. History of Watersports
  - 3.1.1. Olympics and Major Tournaments
  - 3.1.2. Watersports Today
- 3.2. Performance Limitations
  - 3.2.1. Water Sports in the Water (Swimming, Water Polo...)
  - 3.2.2. Water Sports on the Water (Surfing, Sailing, Canoeing, Canoeing...)
- 3.3. The Basic Characteristics of Water Sports
  - 3.3.1. Water Sports in the Water (Swimming, Water Polo...)
  - 3.3.2. Water Sports on the Water (Surfing, Sailing, Canoeing, Canoeing...)
- 3.4. Physiology in Aquatic Sports
  - 3.4.1. Energy Metabolism
  - 3.4.2. Athlete Biotype
- 3.5. Education
  - 3.5.1. Strength
  - 3.5.2. Resistance
- 3.6. Body composition
  - 3.6.1. Swimming
  - 3.6.2. Water polo
- 3.7. Pre-competition
  - 3.7.1. 3 Hours Before
  - 3.7.2. 1 Hour Before
- 3.8. Pre-competition
  - 3.8.1. Carbohydrates
  - 3.8.2. Hydration
- 3.9. After the Competition
  - 3.9.1. Hydration
  - 3.9.2. Protein
- 3.10. Ergogenic Aids
  - 3.10.1. Creatine
  - 3.10.2. Caffeine

### Module 4. Adverse Conditions

- 4.1. The History of Sport in Extreme Conditions
  - 4.1.1. Winter Competitions throughout History
  - 4.1.2. Competitions in Hot Environments Today
- 4.2. Performance Limitations in Hot Climates
  - 4.2.1. Dehydration
  - 4.2.2. Fatigue
- 4.3. Basic Characteristics in Hot Climates
  - 4.3.1. High Temperature and Humidity
  - 4.3.2. Acclimatization
- 4.4. Nutrition and Hydration in Hot Climates
  - 4.4.1. Hydration and Electrolytes
  - 4.4.2. Carbohydrates
- 4.5. Performance Limitations in Cold Climates
  - 4.5.1. Fatigue
  - 4.5.2. Bulky Clothing
- 4.6. Basic Characteristics in Cold Climates
  - 4.6.1. Extreme Cold
  - 4.6.2. Reduced VO2 Max
- 4.7. Nutrition and Hydration in Cold Climates
  - 4.7.1. Hydration
  - 4.7.2. Carbohydrates

### Module 5. Vegetarianism and Veganism

- 5.1. Vegetarianism and Veganism in the History of Sport
  - 5.1.1. The Beginnings of Veganism in Sport
  - 5.1.2. Vegetarian Athletes Today
- 5.2. Different Types of Vegan Food
  - 5.2.1. The Vegan Athlete
  - 5.2.2. The Vegetarian Athlete

- 5.3. Common Errors in the Vegan Athlete
  - 5.3.1. Energy Balance
  - 5.3.2. Protein Consumption
- 5.4. Vitamin B12
  - 5.4.1. B12 Supplementation
  - 5.4.2. Bioavailability of Spirulina Algae
- 5.5. Protein Sources in the Vegan/Vegetarian Diet
  - 5.5.1. Protein Quality
  - 5.5.2. Environmental Sustainability
- 5.6. Other Key Nutrients in Vegans
  - 5.6.1. Conversion of ALA to EPA/DHA
  - 5.6.2. Fe, Ca, Vit-D and Zn
- 5.7. Biochemical Evaluation/Nutritional Shortcomings
  - 5.7.1. Anaemia
  - 5.7.2. Sarcopenia
- 5.8. Vegan vs. Omnivorous Food
  - 5.8.1. Evolutionary Food
  - 5.8.2. Current Food
- 5.9. Ergogenic Aids
  - 5.9.1. Creatine
  - 5.9.2. Vegetable Protein
- 5.10. Factors that Decrease Nutrient Absorption
  - 5.10.1. High Fiber Intake
  - 5.10.2. Oxalates
- 6.3. Exercise in People with Type 1 Diabetes
  - 6.3.1. Exercise in People with Type 1 Diabetes
  - 6.3.2. Exercise Duration and Carbohydrate Intake
- 6.4. Exercise in People with Type 2 Diabetes. Blood Sugar Control
  - 6.4.1. Risks of Physical Activity in People with Type 2 Diabetes
  - 6.4.2. Benefits of Exercise in People with Type 2 Diabetes
- 6.5. Exercise in Children and Adolescents with Diabetes
  - 6.5.1. Metabolic Effects of Exercise
  - 6.5.2. Precautions during Exercise
- 6.6. Insulin Therapy and Exercise
  - 6.6.1. Insulin Infusion Pump
  - 6.6.2. Types of Insulins
- 6.7. Nutritional Strategies during Sport and Exercise in Type 1 Diabetes
  - 6.7.1. From Theory to Practice
  - 6.7.2. Carbohydrate Intake Before, During and After Physical Exercise
  - 6.7.3. Hydration Before, During and After Physical Exercise
- 6.8. Nutritional Planning in Endurance Sports
  - 6.8.1. Marathon
  - 6.8.2. Cycling
- 6.9. Nutritional Planning in Team Sports
  - 6.9.1. Soccer
  - 6.9.2. Rugby
- 6.10. Sports Supplements and Diabetes
  - 6.10.1. Potentially Beneficial Supplements for Athletes with Diabetes

## Module 6. The Type 1 Diabetic Athlete

- 6.1. Knowing about Diabetes and its Pathology
  - 6.1.1. The Incidence of Diabetes
  - 6.1.2. Pathophysiology of Diabetes
  - 6.1.3. The Consequences of Diabetes
- 6.2. Exercise Physiology in People with Diabetes
  - 6.2.1. Maximal, Submaximal Exercise and Muscle Metabolism during Exercise
  - 6.2.2. Differences in the Metabolic Level during Exercise in People with Diabetes

## Module 7. Parathletes

- 7.1. Classification and Categories in Parathletes
  - 7.1.1. What is a Parathlete?
  - 7.1.2. How are Parathletes Classified?
- 7.2. Sports Science in Parathletes
  - 7.2.1. Metabolism and Physiology
  - 7.2.2. Biomechanics
  - 7.2.3. Psychology

- 7.3. Energy Requirements and Hydration in Parathletes
  - 7.3.1. Optimal Energy Demands for Training
  - 7.3.2. Hydration Planning before, during and after Training and Competitions
- 7.4. Nutritional Problems in the Different Categories of Para Athletes According to Pathology or Anomaly
  - 7.4.1. Spinal Cord Injuries
  - 7.4.2. Cerebral Palsy and Acquired Brain Injuries
  - 7.4.3. Amputees
  - 7.4.4. Vision and Hearing Impairment
  - 7.4.5. Intellectual Impairments
- 7.5. Nutritional Planning in Parathletes With Spinal Cord Injury, Cerebral Palsy and Acquired Brain Injuries
  - 7.5.1. Nutritional Requirements (Macro and Micronutrients)
  - 7.5.2. Sweating and Fluid Replacement during Exercise
- 7.6. Nutritional Planning in Amputee Parathletes
  - 7.6.1. Energy Requirements
  - 7.6.2. Macronutrients
  - 7.6.3. Thermoregulation and Hydration
  - 7.6.4. Nutritional Issues Related to Prosthetics
- 7.7. Planning and Nutritional Problems in Para Athletes with Vision-Hearing Impairment and Intellectual Impairment
  - 7.7.1. Sports Nutrition Problems With Vision Impairment: Retinitis Pigmentosa, Diabetic Retinopathy, Albinism, Stargardt's Disease and Hearing Pathologies
  - 7.7.2. Sports Nutrition Problems With Intellectual Deficiencies: Down Syndrome, Autism, Asperger and Phenylketonuria
- 7.8. Body Composition in Parathletes
  - 7.8.1. Measurement Techniques
  - 7.8.2. Factors Influencing the Reliability of Different Measurement Methods
- 7.9. Pharmacology and Nutrient Interactions
  - 7.9.1. Different Types of Drugs Taken by Parathletes
  - 7.9.2. Micronutrient Deficiencies in Parathletes

- 7.10. Ergogenic Aids
  - 7.10.1. Potentially Beneficial Supplements for Parathletes
  - 7.10.2. Negative Health Consequences, Contamination and Doping Problems Due To the Intake of Ergogenic Aids

## Module 8. Sports by Weight Category

- 8.1. Characteristics of the Main Sports by Weight Category
  - 8.1.1. Regulation
  - 8.1.2. Categories
- 8.2. Programming of the Season
  - 8.2.1. Competitions
  - 8.2.2. Macrocycle
- 8.3. Body composition
  - 8.3.1. Combat Sports
  - 8.3.2. Weightlifting
- 8.4. Stages of Muscle Mass Gain
  - 8.4.1. % Body Fat
  - 8.4.2. Programming
- 8.5. Definition Stages
  - 8.5.1. Carbohydrates
  - 8.5.2. Protein
- 8.6. Pre-competition
  - 8.6.1. *Peak Weak*
  - 8.6.2. Before Weighing
- 8.7. Pre-competition
  - 8.7.1. Practical Applications
  - 8.7.2. *Timing*
- 8.8. After the Competition
  - 8.8.1. Hydration
  - 8.8.2. Protein



- 8.9. Ergogenic Aids
  - 8.9.1. Creatine
  - 8.9.2. Whey Protein

## Module 9. Different Stages or Specific Population Groups

- 9.1. Nutrition in the Female Athlete
  - 9.1.1. Limiting Factors
  - 9.1.2. Requirements
- 9.2. Menstrual Cycle
  - 9.2.1. Luteal Phase
  - 9.2.2. Follicular Phase
- 9.3. Triad
  - 9.3.1. Amenorrhea
  - 9.3.2. Osteoporosis
- 9.4. Nutrition in the Pregnant Female Athlete
  - 9.4.1. Energy Requirements
  - 9.4.2. Micronutrients
- 9.5. The Effects of Physical Exercise on the Child Athlete
  - 9.5.1. Strength Training
  - 9.5.2. Endurance Training
- 9.6. Nutritional Education in the Child Athlete
  - 9.6.1. Sugar
  - 9.6.2. Eating Disorders
- 9.7. Nutritional Requirements in the Child Athlete
  - 9.7.1. Carbohydrates
  - 9.7.2. Proteins
- 9.8. Changes Associated with Aging
  - 9.8.1. % Body Fat
  - 9.8.2. Muscle Mass
- 9.9. Main Problems in the Older Athlete
  - 9.9.1. Joints
  - 9.9.2. Cardiovascular Health

- 9.10. Interesting Supplements for Older Athletes
  - 9.10.1. Whey Protein
  - 9.10.2. Creatine

## Module 10. The Injury Period

- 10.1. Introduction
- 10.2. Prevention of Injuries in Athletes
  - 10.2.1. Relative Energy Availability in Sport
  - 10.2.2. Oral Health and Injury Implications
  - 10.2.3. Fatigue, Nutrition and Injuries
  - 10.2.4. Sleep, Nutrition and Injuries
- 10.3. Phases of Injury
  - 10.3.1. Immobilization Phase. Inflammation and Changes Occurring during this Phase
  - 10.3.2. Return of Activity Phase
- 10.4. Energy Intake during the Period of Injury
- 10.5. Macronutrient Intake during the Period of Injury
  - 10.5.1. Carbohydrate Intake
  - 10.5.2. Fat Intake
  - 10.5.3. Protein Intake
- 10.6. Intake of Micronutrients of Special Interest during Injury
- 10.7. Sports Supplements with Evidence during the Period of Injury
  - 10.7.1. Creatine
  - 10.7.2. Omega 3
  - 10.7.3. Others
- 10.8. Tendon and Ligament Injuries
  - 10.8.1. Introduction to Tendon and Ligament Injuries. Tendon Structure
  - 10.8.2. Collagen, Gelatin and Vitamin C. Can they Help?
  - 10.8.3. Other Nutrients Involved in Collagen Synthesis
- 10.9. The Return to Competition
  - 10.9.1. Nutritional Considerations in the Return to Competition
- 10.10. Interesting Case Studies in Scientific Injury Literature

07

# Clinical Internship

The Hybrid Professional Master's Degree in Sports Nutrition in Special Populations offers an invaluable hands-on experience in a prestigious center for 3 weeks. Students will have the opportunity to apply the theoretical knowledge acquired alongside highly trained professionals, which will allow them to gain valuable practical experience in the field of sports nutrition in special populations.



“

*Broaden your perspective on nutrition and sport, and learn about the latest trends and advances in the field”*

Internships in a real-world environment are an essential part of the program, as they provide a unique opportunity for students to apply their skills and acquire additional knowledge and skills in the real world.

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

The procedures described below will be the basis of the practical part of the training, and their implementation will be subject to the center's own availability and workload, the proposed activities being the following:





Module	Practical Activity
Nutritional Assessment	Perform a complete nutritional assessment of a special population athlete
	Calculate the basal and total energy expenditure of an athlete in a special population
	Interpret the results of a body composition assessment of an athlete from a special population
Diet design for athletes of special populations	Design an appropriate diet for an athlete in a special population based on energy expenditure, sporting objectives and dietary restrictions
	Develop a customized nutritional supplementation plan for athletes from a special population based on their sporting needs and objectives
	Develop a balanced weekly menu adapted to the nutritional needs of an athlete in a special population
Implementation and monitoring of nutritional programs	Oversee the implementation of a customized dietary plan for a special population athlete
	Regularly monitor the nutritional and athletic progress of athletes from a special population, and adapt their diet plan accordingly
	Identify and troubleshoot a special population athlete's adherence to their dietary plan
Research and analysis of cases	Investigate and analyze a success story in the field of sports nutrition in special populations, and present the results and conclusions in the form of a report
	Analyze a case of failure in the field of sports nutrition in special populations, identifying the causes and proposing possible solutions
	Critically evaluate a scientific study on sports nutrition in special populations and present the results in the form of a report

“*Develop communication and leadership skills to work effectively in teams, both with other health professionals and with athletes and their families*”

## Civil Liability Insurance

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

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

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



## General Conditions for Practical Training

The general terms and conditions of the internship program agreement shall be as follows:

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

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

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

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

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

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

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

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

# 08

## Where Can I Do the Clinical Internship?

The prestigious centers where the internships of the Hybrid Professional Master's Degree in Sports Nutrition in Special Populations will take place have been carefully selected to offer students the opportunity to work with highly trained and experienced professionals in the field of sports nutrition. Work at these prestigious centers will allow students to learn about the latest trends and technologies in the field of sports nutrition and learn from the best specialists, which will allow them to broaden their professional horizons and develop unique skills to improve their daily practice.





A city skyline at sunset, with tall buildings and a colorful sky transitioning from orange to blue. The image is split diagonally into a white lower-right section and a blue upper-left section.


“

*Participate in a program oriented to the application of the acquired knowledge, which will allow you to put into practice what you have learned from the first day”*

## tech 42 | Where Can I Do the Clinical Internship?



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



**Policlínico HM Moraleja**

Country	City
Spain	Madrid

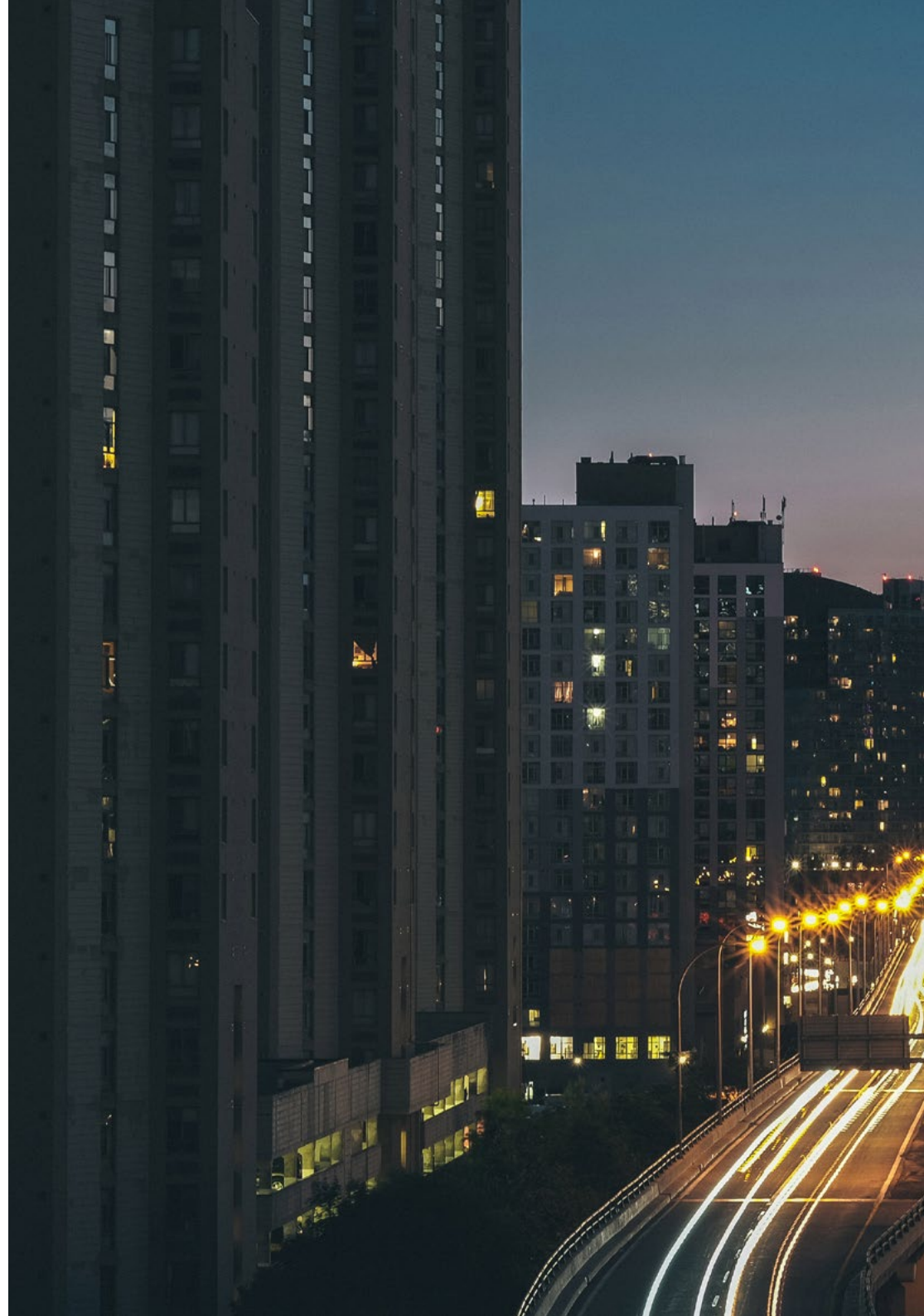
Address: P.º de Alcobendas, 10, 28109, Alcobendas, Madrid

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

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**Related internship programs:**

- Rehabilitation Medicine in Acquired Brain Injury Management





### Policlínico HM Matogrande

Country	City
Spain	La Coruña

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

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

**Related internship programs:**

- Sports Physiotherapy
- Neurodegenerative Diseases



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

09

# Methodology

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

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





“

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

## At TECH we use the Case Method

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

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



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

“

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

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

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



## Relearning Methodology

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

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



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



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

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

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

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

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



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



#### Study Material

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

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



#### Physiotherapy Techniques and Procedures on Video

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



#### Interactive Summaries

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

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



#### Additional Reading

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





**Expert-Led Case Studies and Case Analysis**

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



**Testing & Retesting**

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



**Classes**

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



**Quick Action Guides**

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



# 10 Certificate

This Hybrid Professional Master's Degree in Sports Nutrition in Special Populations guarantees students, in addition to the most rigorous and up-to-date education, access to a Hybrid Professional Master's Degree diploma issued by TECH Technological University.



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

This **Hybrid Professional Master's Degree in Sports Nutrition in Special Populations** contains the most complete and up-to-date program on the professional and educational field.

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

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

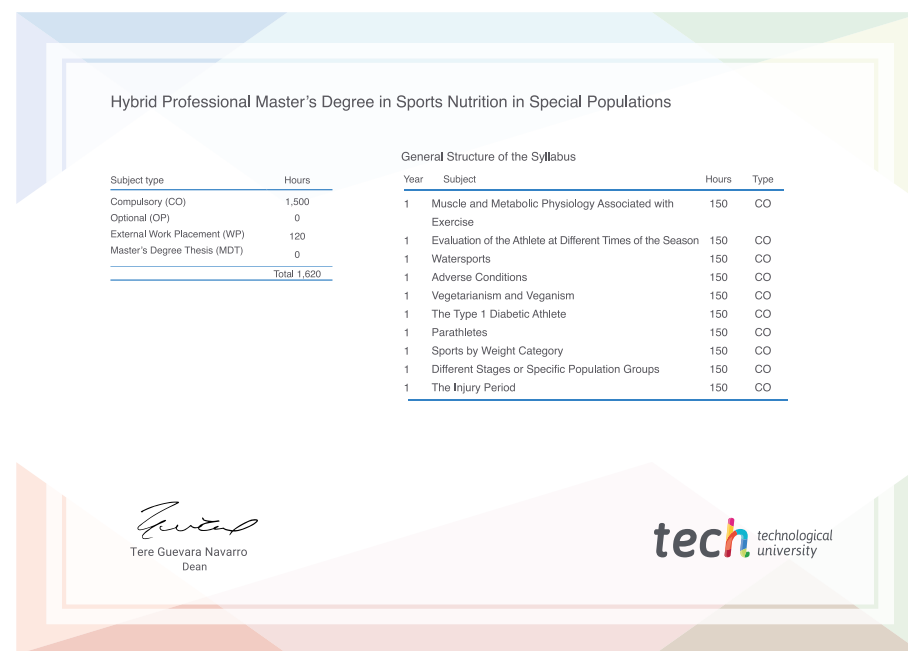
Title: **Hybrid Professional Master's Degree in Sports Nutrition in Special Populations**

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

Duration: **12 months**

Certificate: **TECH Technological University**

Teaching Hours: **1,620 h.**



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

future

health confidence people

education information tutors

guarantee accreditation teaching

institutions technology learning

community commitment

personalized service innovation

knowledge pre quality

online training

development

virtual classro



## Hybrid Professional Master's Degree Sports Nutrition in Special Populations

Modality: Hybrid (Online + Clinical Internship)

Duration: 12 months

Certificate: TECH Technological University

Teaching Hours: 1,620 h.

# Hybrid Professional Master's Degree Sports Nutrition in Special Populations

