

# Advanced Master's Degree Comprehensive Sports Nutrition

Endorsed by the NBA



**tech** technological  
university



## Advanced Master's Degree Comprehensive Sports Nutrition

- » Modality: online
- » Duration: 2 years
- » Certificate: TECH Technological University
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtitute.com/us/medicine/advanced-master-degree/advanced-master-degree-comprehensive-sports-nutrition](http://www.techtitute.com/us/medicine/advanced-master-degree/advanced-master-degree-comprehensive-sports-nutrition)

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# 01

# Introduction

A proper diet is essential in the field of sports, since food provides the necessary nutrients not only for energy, but also for the repair of muscle tissue. For this reason, doctors specialized in the treatment of athletes must have a broad qualification in this field, which will be essential to complement other types of treatments. With this need in mind, TECH has designed a high-level Advanced Master's Degree, thanks to which doctors will be able to develop the necessary skills to offer the nutritional advice demanded by patients and which must be adapted to their physical level, the intensity of the exercise and even the specific characteristics of certain special populations, who have also introduced the practice of sports as part of their routine.







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*Nutritional advice is essential in sports, as proper nutrition can help improve physical performance”*

Elite athletes make a great physical effort during their daily activity, so it is normal that they may suffer certain injuries that require medical attention. However, nowadays, the popularization of physical exercise has meant that many people have incorporated sports practice into their daily tasks, taking it to a level of effort to which they are not used to and which, therefore, may also entail some physical risk. For this reason, specialization in sports nutrition goes beyond the knowledge of sports doctors, and should be seen as an essential complement for any health professional, who may find in their usual practice patients who, preventively or due to an injury, require advice in this field.

This has led to an increasing number of healthcare professionals looking for high quality Advanced Master's Degree to improve their training in the field of nutritional counseling, which will allow them to offer more complete treatments that will facilitate their level of recovery. In this sense, TECH has decided to bet on this field, creating this Grand Master in Comprehensive Sports Nutrition, an Advanced Master's Degree developed by a team of highly qualified teachers, which integrates the latest concepts in nutrition and sports.

Specifically, this program's syllabus provides a global vision of sports nutrition, while focusing on the most important and innovative aspects: Invisible training or proper diet for athletes, and nutrition before, during and after exercise. Additionally, it includes information related to professionals with different personal situations and different sports activities, specifying in each case the best dietary recommendations, with the objective that the Doctor has a complete knowledge that allows them to adapt to each user during the development of their daily practice.

Thus, this Advanced Master's Degree will become an indispensable study material for all physicians who wish to acquire the necessary qualifications to work safely in this field of practice.

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

- ♦ The latest technology in e-learning software
- ♦ Intensely visual teaching system, supported by graphic and schematic contents that are easy to assimilate and understand
- ♦ Practical case studies presented by practising experts
- ♦ State-of-the-art interactive video systems
- ♦ Teaching supported by telepractice
- ♦ Continuous updating and recycling systems
- ♦ Self-regulated learning: full compatibility with other occupations
- ♦ Practical exercises for self-evaluation and learning verification
- ♦ Support groups and educational synergies: questions to the expert, debate and knowledge forums
- ♦ Communication with the teacher and individual reflection work
- ♦ Content that is accessible from any fixed or portable device with an Internet connection
- ♦ Supplementary documentation databases are permanently available, even after the program



*Sports physicians will find in this Advanced Master's Degree a unique opportunity to improve in the field of nutritional counseling"*

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*Become an expert in nutritional counseling and offer a more personalized attention to athletes who come to your medical office"*

The teaching staff for this program is composed of practicing professionals. This way, TECH can fulfill the objective of academic updating that it has set for itself. A multidisciplinary staff of experienced professionals from a variety of environments, who will develop theoretical knowledge in an efficient manner, but above all, will put at the service of the students, practical knowledge derived from their own experience.

This command of the subject is complemented by the effectiveness of the methodological design of this Grand Master. As such, it was developed by a multidisciplinary team of e-learning experts and integrates the latest advances in educational technology, allowing students to study with a range of convenient and versatile multimedia tools that will give them the operational skills they need for their training.

The design of this program is based on Problem-Based Learning, an approach that conceives learning as a highly practical process. To achieve this remotely, TECH will use telepractice. Thanks to an innovative interactive video system and learning from an expert, students will be able to acquire the knowledge as if they were facing the scenario they are currently learning. A concept that will allow students to integrate and memorize what they have learnt in a more realistic and permanent way.

*In TECH you will be able to use an innovative teaching methodology that will be fundamental to facilitate learning.*

*Enroll in this Advanced Master's Degree and have unlimited access to all the of the program resources.*





# 02 Objectives

This TECH Advanced Master's Degree in Comprehensive Sports Nutrition is designed to improve the skills of medical professionals so that, when they have to work with high-level athletes, they will be able to advise them on nutritional matters with the maximum rigor and safety. In this way, the completion of this program will not only bring significant benefits to the training of doctors, but also to the health of the athletes they treat.







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*Immerse yourself in this Advanced Master's Degree and improve your skills in nutritional counseling to athletes”*



## General Objectives

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- ♦ Update the professional's knowledge of new trends in human nutrition
- ♦ Promote work strategies based on the practical knowledge of the new trends in nutrition and their application to athletes
- ♦ Encourage the acquisition of technical skills and abilities, through a powerful audiovisual system, and the possibility of development through online simulation workshops and/or specific training
- ♦ Encourage professional stimulation through continuing education and research
- ♦ Prepare the professional for research into patients with nutritional problems
- ♦ Handle advanced knowledge on nutritional planning in professional and non-professional athletes for the healthy performance of physical exercise
- ♦ Manage advanced knowledge on nutritional planning in professional athletes of various fields in order to achieve maximum sports performance
- ♦ Learn advanced knowledge about nutritional planning in professional athletes from team sports to achieve the highest sports performance
- ♦ Manage and consolidate the initiative and entrepreneurial spirit needed to launch projects related to nutrition in physical activity and sport
- ♦ Know how to incorporate the different scientific advances into one's own professional field
- ♦ Ability to work in a multidisciplinary environment
- ♦ Advanced understanding of the context in which their area of expertise is being developed
- ♦ Manage advanced skills in the detection of possible signs of nutritional changes associated with sports activities
- ♦ Manage the necessary skills through the teaching-learning process that will allow them to continue ways and learning in the field of sports nutrition, both through the contacts established with professors and professionals in the Master's well as on their own
- ♦ Specialize in the structure of muscle tissue and its role in sports
- ♦ Know the energetic and nutritional needs of athletes in different pathophysiological situations
- ♦ Specialize in the energetic and nutritional needs of athletes in the different situations specific to age and gender
- ♦ Become a specialist in the dietary strategies for the prevention and treatment of injured athletes
- ♦ Specialize in the energetic and nutritional needs of child athletes
- ♦ Specialize in the energetic and nutritional needs of Paralympic athletes



## Specific Objectives

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### Block 1 Nutrition in Physical Activity and Sport

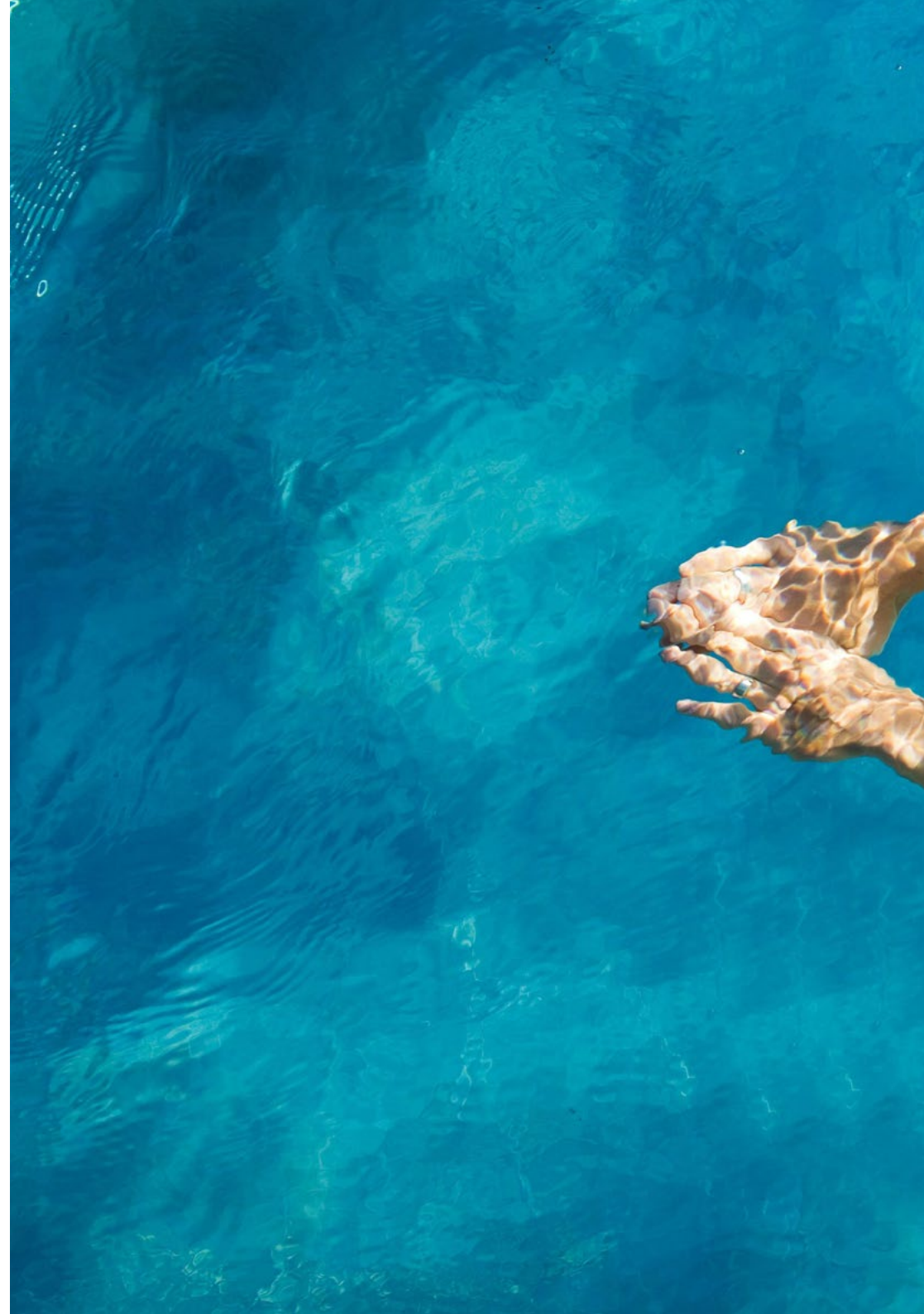
- ♦ Analyze the different methods for assessing nutritional status
- ♦ Interpret and integrate anthropometric, clinical, biochemical, hematological, immunological, and pharmacological data in the patient's nutritional assessment and dietary-nutritional treatment
- ♦ Early detection and evaluation of quantitative and qualitative deviations from the nutritional balance due to excess or deficiency
- ♦ Describe the composition and utilities of new foods
- ♦ Explain the different techniques and products of basic and advanced nutritional support related to the athlete's nutrition
- ♦ Explain the correct use of ergogenic aids
- ♦ Explain the current anti-doping regulations.
- ♦ Identify psychological disorders related to the practice of sport and nutrition

### Block 2 Nutrition for Special Populations in Physical Activity and Sport

- ♦ 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



- ♦ Interpretation of biochemical factors to detect nutritional deficits or over training states
- ♦ Interpretation of the different types of body composition in order to optimize the appropriate weight and fat percentage for the sport being practiced
- ♦ Monitoring of the athlete throughout the season
- ♦ Planning of seasonal schedules according to individual requirements
- ♦ 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
- ♦ 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
- ♦ 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
- ♦ 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
- ◆ 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 performance enhancing drugs
- ◆ 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
- ◆ 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
- ◆ 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

# 03 Skills

After completing this Advanced Master's Degree in Comprehensive Sports Nutrition, doctors will have acquired the necessary competencies to safely attend to sports patients who come to the clinic and who, as part of their treatment, need to improve their dietary routines to ensure that food provides them with the nutrients they need to improve their physical performance. In this way, professionals will provide a plus of quality in their work practice.





fruits  
vegetables

15%  
grain group  
bread

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*This Advanced Master's Degree will allow you to acquire the necessary knowledge to prescribe diets appropriate to the needs of the athletes who come to your office"*



## General Skills

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- Apply new trends in nutrition in physical activity and sport to their patients
- Apply new trends in nutrition according to the individual's characteristics
- Investigate the nutritional problems of your patients

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*Expand your training in the field of sports nutrition and offer better advice to your patients”*







## Specific Skills

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### Block 1 Nutrition in Physical Activity and Sport

- ◆ Assess the athlete's nutritional status
- ◆ Identify users' nutritional problems and apply the most accurate treatments and diets in each case
- ◆ Know food compositions, identify their utilities and add them to diets
- ◆ Know the anti-doping rules BORRAR
- ◆ Seek help for patients with psychological disorders related to nutrition and the practice of sports
- ◆ Be up to date on food safety and be aware of potential food hazards
- ◆ Identify the benefits of the Mediterranean diet
- ◆ Identify athletes' energy needs and provide them with appropriate diets

### Block 2 Nutrition for Special Populations in Physical Activity and Sport

- ◆ 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
- ◆ Know 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



# 04

# Course Management

TECH offers students the best program on Comprehensive Sports Nutrition in the market, which has been developed by a team of highly experienced teachers. These teachers, aware of the need for quality specialization of health professionals in this field, have joined forces to improve the training of doctors through a completely updated syllabus and with the possibility of carrying out a multitude of practical cases developed to show, firsthand, the main situations that can be found in their consultations.





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*The faculty of this program has extensive sector experience"*

## Management



### Dr. Marhuenda Hernández, Javier

- ♦ Fellow of the Spanish Academy of Human Nutrition and Dietetics
- ♦ Professor and researcher at UCAM
- ♦ Ph.D. in Nutrition
- ♦ Master's Degree in Clinical Nutrition
- ♦ Graduate in Nutrition

## Professors

### Mr. Martínez-Noguera, Javier

- ♦ Professional career associated from the beginning with nutrition in high performance sports (soccer, tennis, athletics, karate, etc.) and research
- ♦ He currently provides consultations in several sports centers and multidisciplinary clinics in Murcia and Alicante
- ♦ He carries out professional activities with high performance athletes at the Research Center for High Performance Sports (UCAM)
- ♦ He belongs to the OPENRED-UCAM research group, where he has carried out all his scientific production
- ♦ Collaboration with the Spanish Research Network on Cycling and Women

### Mr. Arcusa, Raúl

- ♦ Nutritionist in the C.D. Castellón
- ♦ Possesses experience in different soccer teams in the Valencian community, as well as extensive experience in face-to-face clinical consultation
- ♦ Graduate in Human Nutrition and Dietetics
- ♦ Professional Master's Degree in Nutrition in Physical Activity and Sport
- ♦ Anthropometrist ISAK level 1
- ♦ Currently a Doctoral student in the Department of Pharmacy of the UCAM, researching Nutrition and Oxidative Stress





### **Mr. Mata, Fernando**

- ◆ Scientific Advisor of the field of Nutrition for Cádiz Club de Fútbol
- ◆ Nutritionist for elite athletes
- ◆ General Manager of NutriScience Spain
- ◆ Trainer in several masters and postgraduate courses on a national and international level
- ◆ Degree in Dietetics and Nutrition
- ◆ Master's Degree in Sports and Clinical Nutrition
- ◆ Master's Degree in Integrative Physiology (ongoing)
- ◆ Certified and member of the International Society of Sports Nutrition
- ◆ Author of two books on sports nutrition and more than 50 articles and book chapters on the subject

### **Ms. Ramírez, Marta**

- ◆ Extensive professional experience, both in the Clinical and Sports field, where she works with athletes in Triathlon, Athletics, Bodybuilding, CrossFit, Powerlifting, among others, specializing in strength sports
- ◆ Experience as an instructor and speaker giving seminars, courses, workshops and conferences on Sports Nutrition for Dietitians-Nutritionists, Students of Health Sciences and the general population, in addition to a continual training in nutrition and sport in international congresses, courses and conferences
- ◆ Graduate in Human Nutrition and Dietetics
- ◆ Professional Master's Degree in Nutrition in Physical Activity and Sport
- ◆ Anthropometrist ISAK level 1.7

05

# Structure and Content

The structure of the content of this Advanced Master's Degree in Comprehensive Sports Nutrition has been designed to achieve a deep and contextual learning about this field of knowledge that is fundamental in the medical field. Therefore, the syllabus delves into all those aspects that the health professional must know to be able to prescribe diets appropriate to the physical exercise practiced by the patient and their nutritional needs, providing a more personalized attention.

A photograph of a diet plan form. The form is white with a grid. The title "Diet plan" is written in green. The columns are labeled "Breakfast" and "Lunch". The rows are labeled "Monday" and "Tuesday". A hand is holding a blue pen at the bottom of the form. A slice of kiwi fruit is visible in the top right corner.

Diet plan

Breakfast

Lunch

Monday

Tuesday



Dinner

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*This program will allow you to understand the importance of proper nutrition for athletes”*



## Block 1 Nutrition in Physical Activity and Sport

### Module 1. New Developments in Food

- 1.1. Molecular Foundations of Nutrition
- 1.2. Update on Food Composition
- 1.3. Food Composition Tables and Nutritional Databases
- 1.4. Phytochemicals and Non-Nutritive Compounds
- 1.5. New Food
  - 1.5.1. Functional Nutrients and Bioactive Compounds
  - 1.5.2. Probiotics, Prebiotics, and Synbiotics
  - 1.5.3. Quality and Design
- 1.6. Organic food
- 1.7. Transgenic Foods
- 1.8. Water as a Nutrient
- 1.9. Food Safety
  - 1.9.1. Physical Hazards
  - 1.9.2. Chemical Hazards
  - 1.9.3. Microbiological Hazards
- 1.10. New labelling and consumer information BORRAR
- 1.11. Phytotherapy Applied to Nutritional Pathologies

### Module 2. Current Trends in Nutrition

- 2.1. Nutrigenetics
- 2.2. Nutrigenomics
  - 2.2.1. Fundamentals
  - 2.2.2. Methods
- 2.3. Immunonutrition
  - 2.3.1. Nutrition-Immunity Interactions
  - 2.3.2. Antioxidants and Immune Function
- 2.4. Physiological Regulation of Feeding, Appetite and Satiety
- 2.5. Psychology and Nutrition
- 2.6. Nutrition and Sleep
- 2.7. Update on Nutritional Objectives and Recommended Intakes
- 2.8. New Evidence on the Mediterranean Diet

### Module 3. Assessment of Nutritional Status and Diet. Practical Application

- 3.1. Bioenergy and Nutrition
  - 3.1.1. Energy Needs
  - 3.1.2. Methods of Assessing Energy Expenditure
- 3.2. Assessment of Nutritional Status
  - 3.2.1. Body Composition Analysis
  - 3.2.2. Clinical Diagnosis. Symptoms and Signs
  - 3.2.3. Biochemical, Hematological and Immunological Methods
- 3.3. Intake Assessment
  - 3.3.1. Methods for Analyzing Food and Nutrient Intake
  - 3.3.2. Direct and Indirect Methods
- 3.4. Update on Nutritional Requirements and Recommended Intakes
- 3.5. Nutrition in a Healthy Adult. Objectives and Guidelines. Mediterranean Diet
- 3.6. Nutrition in Menopause
- 3.7. Nutrition in the Elderly

### Module 4. Sports Nutrition

- 4.1. Physiology of Exercise
- 4.2. Physiological Adaptation to Different Types of Exercise
- 4.3. Metabolic Adaptation to Exercise. Regulation and Control
- 4.4. Assessing Athletes' Energy Needs and Nutritional Status
- 4.5. Assessing Athletes' Physical Ability
- 4.6. Nutrition in the Different Phases of Sports Practice
  - 4.6.1. Pre-Competition
  - 4.6.2. During
  - 4.6.3. Post-Competition
- 4.7. Hydration
  - 4.7.1. Regulation and Needs
  - 4.7.2. Types of Beverages
- 4.8. Dietary Planning Adapted to Different Sports
- 4.9. Ergogenic Aids and Current Anti-Doping Regulations BORRAR
  - 4.9.1. AMA and AEPSAD Recommendations BORRAR
- 4.10. Nutrition in Sports Injury Recovery



- 4.11. Psychological Disorders Related to Practising Sport
  - 4.11.1. Eating Disorders: Bigorexia, Orthorexia, Anorexia
  - 4.11.2. Fatigue Caused by Overtraining
  - 4.11.3. The Female Athlete Triad
- 4.12. The Role of the Coach in Sports Performance

## **Block 2 Nutrition for Special Populations in Physical Activity and Sport**

### **Module 5. Muscle and Metabolic Physiology Associated with Exercise**

- 5.1. Cardiovascular Adaptations Related to Exercise
  - 5.1.1. Increased Systolic Volume
  - 5.1.2. Decreased Heart Rate
- 5.2. Ventilatory Adaptations Related to Exercise
  - 5.2.1. Changes in the Ventilatory Volume
  - 5.2.2. Changes in Oxygen Consumption
- 5.3. Hormonal Adaptations Related to Exercise
  - 5.3.1. Cortisol
  - 5.3.2. Testosterone
- 5.4. Muscle Structure and Types of Muscle Fibers
  - 5.4.1. Muscle Fiber
  - 5.4.2. Type I Muscle Fiber
  - 5.4.3. Type II Muscle Fibers
- 5.5. The Concept of Lactic Threshold
- 5.6. ATP and Phosphagen Metabolism
  - 5.6.1. Metabolic Pathways for ATP Resynthesis during Exercise
  - 5.6.2. Phosphagen Metabolism
- 5.7. Carbohydrate Metabolism
  - 5.7.1. Carbohydrate Mobilization during Exercise
  - 5.7.2. Types of Glycolysis
- 5.8. Lipid Metabolism
  - 5.8.1. Lipolysis
  - 5.8.2. Fat Oxidation during Exercise
  - 5.8.3. Ketone Bodies

- 5.9. Protein Metabolism
  - 5.9.1. Ammonium Metabolism
  - 5.9.2. Amino Acid Oxidation
- 5.10. Mixed Bioenergetics of Muscle Fibers
  - 5.10.1. Energy Sources and their Relation to Exercise
  - 5.10.2. Factors Determining the Use of One or Another Energy Source during Exercise

## Module 6. Evaluation of the Athlete at Different Times of the Season

- 6.1. Biochemical Evaluation
  - 6.1.1. Blood Count:
  - 6.1.2. Overtraining Markers
- 6.2. Anthropometric Evaluation
  - 6.2.1. Body Composition
  - 6.2.2. ISAK Profile
- 6.3. Preseason
  - 6.3.1. High Workload
  - 6.3.2. Assuring Caloric and Protein Intake
- 6.4. Competitive Season
  - 6.4.1. Sports Performance
  - 6.4.2. Recovery between Games
- 6.5. Transition Period
  - 6.5.1. Vacation Period
  - 6.5.2. Changes in Body Composition
- 6.6. Travel
  - 6.6.1. Tournaments during the Season
  - 6.6.2. Off-season Tournaments (World Cups, European Cups and The Olympic Games)
- 6.7. Athlete Monitoring
  - 6.7.1. Basal Athlete Status
  - 6.7.2. Evolution during the Season
- 6.8. Sweat Rate Calculation
  - 6.8.1. Hydric Losses
  - 6.8.2. Calculation Protocol

- 6.9. Multidisciplinary Work
  - 6.9.1. The Role of the Nutritionist in the Athlete's Environment
  - 6.9.2. Communication with the Rest of the Areas
- 6.10. Doping
  - 6.10.1. WADA List
  - 6.10.2. Anti-doping Tests

## Module 7. Watersports

- 7.1. History of Watersports
  - 7.1.1. Olympics and Major Tournaments
  - 7.1.2. Watersports Today
- 7.2. Performance Limitations
  - 7.2.1. Aquatic Sports in the Water (Swimming, Water polo.)
  - 7.2.2. Aquatic Sports on the Water (Surfing, Sailing, Canoeing...)
- 7.3. The Basic Characteristics of Water Sports
  - 7.3.1. Water Sports in the Water (Swimming, Water Polo...)
  - 7.3.2. Water Sports on the Water (Surfing, Sailing, Canoeing, Canoeing...)
- 7.4. Aquatic Sports Physiology
  - 7.4.1. Energy Metabolism
  - 7.4.2. Athlete Biotype
- 7.5. Education
  - 7.5.1. Strength
  - 7.5.2. Resistance
- 7.6. Body Composition
  - 7.6.1. Swimming
  - 7.6.2. Water polo
- 7.7. Pre-competition
  - 7.7.1. 3 Hours Before
  - 7.7.2. 1 Hour Before
- 7.8. Per Competition
  - 7.8.1. Carbohydrates
  - 7.8.2. Hydration



- 7.9. After the Competition
  - 7.9.1. Hydration
  - 7.9.2. Protein
- 7.10. Ergogenic Aids
  - 7.10.1. Creatine
  - 7.10.2. Caffeine

## Module 8. Adverse Conditions

- 8.1. The History of Sport in Extreme Conditions
  - 8.1.1. Winter Competitions throughout History
  - 8.1.2. Competitions in Hot Environments Today
- 8.2. Performance Limitations in Hot Climates
  - 8.2.1. Dehydration
  - 8.2.2. Fatigue
- 8.3. Basic Characteristics in Hot Climates
  - 8.3.1. High Temperature and Humidity
  - 8.3.2. Acclimatization
- 8.4. Nutrition and Hydration in Hot Climates
  - 8.4.1. Hydration and Electrolytes
  - 8.4.2. Carbohydrates
- 8.5. Performance Limitations in Cold Climates
  - 8.5.1. Fatigue
  - 8.5.2. Bulky Clothing
- 8.6. Basic Characteristics in Cold Climates
  - 8.6.1. Extreme Cold
  - 8.6.2. Reduced V<sub>O</sub>max
- 8.7. Nutrition and Hydration in Cold Climates
  - 8.7.1. Hydration
  - 8.7.2. Carbohydrates

## Module 9. Vegetarianism and Veganism

- 9.1. Vegetarianism and Veganism in the History of Sport
  - 9.1.1. The Beginnings of Veganism in Sport
  - 9.1.2. Vegetarian Athletes Today
- 9.2. Different Types of Vegan Food
  - 9.2.1. The Vegan Athlete
  - 9.2.2. The Vegetarian Athlete
- 9.3. Common Errors in the Vegan Athlete
  - 9.3.1. Energy Balance
  - 9.3.2. Protein Consumption
- 9.4. Vitamin B12
  - 9.4.1. B12 Supplementation
  - 9.4.2. Bioavailability of Spirulina Algae
- 9.5. Protein Sources in the Vegan/Vegetarian Diet
  - 9.5.1. Protein Quality
  - 9.5.2. Environmental Sustainability
- 9.6. Other Key Nutrients in Vegans
  - 9.6.1. Conversion of ALA to EPA/DHA
  - 9.6.2. Fe, Ca, Vit-D and Zn
- 9.7. Biochemical Assessment/Nutritional Deficiencies
  - 9.7.1. Anaemia
  - 9.7.2. Sarcopenia
- 9.8. Vegan vs. Omnivorous Food
  - 9.8.1. Evolutionary Food
  - 9.8.2. Current Food
- 9.9. Ergogenic Aids
  - 9.9.1. Creatine
  - 9.9.2. Vegetable Protein
- 9.10. Factors that Decrease Nutrient Absorption
  - 9.10.1. High Fiber Intake
  - 9.10.2. Oxalates

## Module 10. The Type 1 Diabetic Athlete

- 10.1. Knowing about Diabetes and its Pathology
  - 10.1.1. The Incidence of Diabetes
  - 10.1.2. Pathophysiology of Diabetes
  - 10.1.3. The Consequences of Diabetes
- 10.2. Exercise Physiology in People with Diabetes
  - 10.2.1. Maximal, Submaximal Exercise and Muscle Metabolism during Exercise
  - 10.2.2. Differences in the Metabolic Level during Exercise in People with Diabetes
- 10.3. Exercise in People with Type 1 Diabetes
  - 10.3.1. Exercise in People with Type 1 Diabetes
  - 10.3.2. Exercise Duration and Carbohydrate Intake
- 10.4. Exercise in People with Type 2 Diabetes. Blood Sugar Control
  - 10.4.1. Risks of Physical Activity in People with Type 2 Diabetes
  - 10.4.2. Benefits of Exercise in People with Type 2 Diabetes
- 10.5. Exercise in Children and Adolescents with Diabetes
  - 10.5.1. Metabolic Effects of Exercise
  - 10.5.2. Precautions during Exercise
- 10.6. Insulin Therapy and Exercise
  - 10.6.1. Insulin Infusion Pump
  - 10.6.2. Types of Insulins
- 10.7. Nutritional Strategies during Sport and Exercise in Type 1 Diabetes
  - 10.7.1. From Theory to Practice
  - 10.7.2. Carbohydrate Intake Before, During and After Physical Exercise
  - 10.7.3. Hydration Before, During and After Physical Exercise
- 10.8. Nutritional Planning in Endurance Sports
  - 10.8.1. Marathon
  - 10.8.2. Cycling
- 10.9. Nutritional Planning in Team Sports
  - 10.9.1. Soccer
  - 10.9.2. Rugby
- 10.10. Sports Supplements and Diabetes
  - 10.10.1. Potentially Beneficial Supplements for Athletes with Diabetes

## Module 11. Para-Athletes

- 11.1. Classification and Categories in Para-Athletes
  - 11.1.1. What is a Para Athlete?
  - 11.1.2. How are Para Athletes Classified?
- 11.2. Sports Science in Para Athletes
  - 11.2.1. Metabolism and Physiology
  - 11.2.2. Biomechanics
  - 11.2.3. Psychology
- 11.3. Energy Requirements and Hydration in Para-Athletes
  - 11.3.1. Optimal Energy Demands for Training
  - 11.3.2. Hydration Planning before, during and after Training and Competitions
- 11.4. Nutritional Problems in the Different Categories of Para Athletes According to Pathology or Anomaly
  - 11.4.1. Spinal Cord Injuries
  - 11.4.2. Cerebral Palsy and Acquired Brain Injuries
  - 11.4.3. Amputees
  - 11.4.4. Vision and Hearing Impairment
  - 11.4.5. Intellectual Impairments
- 11.5. Nutritional Planning in Para Athletes with Spinal Cord Injury and Cerebral Palsy and Acquired Brain Injuries
  - 11.5.1. Nutritional Requirements (Macro and Micronutrients)
  - 11.5.2. Sweating and Fluid Replacement during Exercise
- 11.6. Nutritional Planning in Amputee Para Athletes
  - 11.6.1. Energy Requirements
  - 11.6.2. Macronutrients
  - 11.6.3. Thermoregulation and Hydration
  - 11.6.4. Nutritional Issues Related to Prosthetics
- 11.7. Planning and Nutritional Problems in Para Athletes with Vision-Hearing Impairment and Intellectual Impairment
  - 11.7.1. Sports Nutrition Problems with Visual Impairment: Retinitis Pigmentosa, Diabetic Retinopathy, Albinism, Stargardt's Disease and Hearing Pathologies
  - 11.7.2. Sports Nutrition Problems in Para-Athletes with Intellectual Deficiencies: Down Syndrome, Autism and Asperger's and Phenylketonuria

- 11.8. Body Composition in Para Athletes
  - 11.8.1. Measurement Techniques
  - 11.8.2. Factors Influencing the Reliability of Different Measurement Methods
- 11.9. Pharmacology and Nutrient Interactions
  - 11.9.1. Different Types of Drugs Taken by Para Athletes
  - 11.9.2. Micronutrient Deficiencies in Para Athletes
- 11.10. Ergogenic Aids
  - 11.10.1. Potentially Beneficial Supplements for Para Athletes
  - 11.10.2. Adverse Effects on Health and Contamination and Doping Problems Due to the Intake of Performance Enhancing drugs

## Module 12. Sports by Weight Category

- 12.1. Characteristics of the Main Sports by Weight Category
  - 12.1.1. Regulation
  - 12.1.2. Categories
- 12.2. Programming of the Season
  - 12.2.1. Competitions
  - 12.2.2. Macrocycle
- 12.3. Body composition
  - 12.3.1. Combat Sports
  - 12.3.2. Weightlifting
- 12.4. Stages of Muscle Mass Gain
  - 12.4.1. % Body Fat
  - 12.4.2. Programming
- 12.5. Definition Stages
  - 12.5.1. Carbohydrates
  - 12.5.2. Protein
- 12.6. Pre-competition
  - 12.6.1. Peek Week
  - 12.6.2. Before Weighing
- 12.7. Per Competition
  - 12.7.1. Practical Applications
  - 12.7.2. Timing

- 12.8. After the Competition
  - 12.8.1. Hydration
  - 12.8.2. Protein
- 12.9. Ergogenic Aids
  - 12.9.1. Creatine
  - 12.9.2. Whey Protein

## Module 13. Different Stages or Specific Population Groups

- 13.1. Nutrition in the Female Athlete
  - 13.1.1. Limiting Factors
  - 13.1.2. Requirements
- 13.2. Menstrual Cycle
  - 13.2.1. The Luteal Phase
  - 13.2.2. The Follicular Phase
- 13.3. Triad
  - 13.3.1. Amenorrhea
  - 13.3.2. Osteoporosis
- 13.4. Nutrition in the Pregnant Female Athlete
  - 13.4.1. Energy Requirements
  - 13.4.2. Micronutrients
- 13.5. The Effects of Physical Exercise on the Child Athlete
  - 13.5.1. Strength Training
  - 13.5.2. Endurance Training
- 13.6. Nutritional Education in the Child Athlete
  - 13.6.1. Sugar
  - 13.6.2. Eating Disorders
- 13.7. Nutritional Requirements in the Child Athlete
  - 13.7.1. Carbohydrates
  - 13.7.2. Proteins
- 13.8. Changes Associated with Aging
  - 13.8.1. % Body Fat
  - 13.8.2. Muscle Mass



- 13.9. Main Problems in the Older Athlete
  - 13.9.1. Joints
  - 13.9.2. Cardiovascular Health
- 13.10. Interesting Supplements for Older Athletes
  - 13.10.1. Whey Protein
  - 13.10.2. Creatine

## Module 14. The Injury Period

- 14.1. Introduction
- 14.2. Prevention of Injuries in Athletes
  - 14.2.1. Relative Energy Availability in Sport
  - 14.2.2. Oral Health and Injury Implications
  - 14.2.3. Fatigue, Nutrition and Injuries
  - 14.2.4. Sleep, Nutrition and Injuries
- 14.3. Phases of Injury
  - 14.3.1. Immobilization Phase. Inflammation and Changes Occurring during this Phase
  - 14.3.2. Return of Activity Phase
- 14.4. Energy Intake during the Period of Injury
- 14.5. Macronutrient Intake during the Period of Injury
  - 14.5.1. Carbohydrate Intake
  - 14.5.2. Fat Intake
  - 14.5.3. Protein Intake
- 14.6. Intake of Micronutrients of Special Interest during Injury
- 14.7. Sports Supplements with Evidence during the Period of Injury
  - 14.7.1. Creatine
  - 14.7.2. Omega 3
  - 14.7.3. Others
- 14.8. Tendon and Ligament Injuries
  - 14.8.1. Introduction to Tendon and Ligament Injuries. Tendon Structure
  - 14.8.2. Collagen, Gelatin and Vitamin C. Can they Help?
  - 14.8.3. Other Nutrients Involved in Collagen Synthesis
- 14.9. The Return to Competition
  - 14.9.1. Nutritional Considerations in the Return to Competition
- 14.10. Interesting Case Studies in Scientific Injury Literature





“*Make an academic tour through the latest concepts in sports nutrition*”



06

# 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. Specialists 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 in the physician's professional 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. Students who follow this method not only achieve the assimilation of concepts, but also a development of their mental capacity, through exercises that evaluate 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.





## 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.

*Professionals will learn through real cases and by resolving 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, more than 250,000 physicians have been trained with unprecedented success in all clinical specialties regardless of surgical load. 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 specialization, developing a critical mindset, defending arguments, and contrasting opinions: a direct equation to 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 TECH's 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 highly specific and precise.

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



#### Surgical Techniques and Procedures on Video

TECH introduces students to the latest techniques, the latest educational advances and to the forefront of current medical techniques. 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 the videos as many times as you like.



#### Interactive Summaries

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

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



#### 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.



07

# Certificate

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



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*Complete successfully this program and receive your university degree without the hassle of travel or paperwork”*



This **Advanced Master's Degree in Comprehensive Sports Nutrition** contains the most complete and up-to-date scientific on the market.

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

The diploma issued by **TECH Technological University** will reflect the qualification obtained in the Advanced Master's Degree, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Advanced Master's Degree in Comprehensive Sports Nutrition**

Official N.º of Hours: **3,000 h.**



**tech** technological university

Awards the following  
**DIPLOMA**  
to

Mr./Ms. \_\_\_\_\_, with identification number \_\_\_\_\_  
For having successfully passed and accredited the following program

**ADVANCED MASTER'S DEGREE**  
in  
**Comprehensive Sports Nutrition**

This is a qualification awarded by this University, equivalent to 3,000 hours, with a start date of dd/mm/yyyy and an end date of dd/mm/yyyy.

TECH is a Private Institution of Higher Education recognized by the Ministry of Public Education as of June 28, 2018.

June 17, 2020

*Tere Guevara*  
Tere Guevara Navarro  
Dean

This qualification must always be accompanied by the university degree issued by the competent authority to practice professionally in each country. Unique TECH Code: AFW0R023S techinstitute.com/certificates

**Advanced Master's Degree in Comprehensive Sports Nutrition**

General Structure of the Syllabus

Year	Subject	Hours	Type	Year	Subject	Hours	Type
1º	New Developments in Food	214	CO	2º	Adverse Conditions	214	CO
1º	Current Trends in Nutrition	214	CO	2º	Vegetarianism and Veganism	214	CO
1º	Assessment of Nutritional Status and Diet. Practical Application	214	CO	2º	The Type 1 Diabetic Athlete	214	CO
1º	Sports Nutrition	214	CO	2º	Para-Athletes	214	CO
1º	Muscle and Metabolic Physiology Associated with Exercise	214	CO	2º	Sports by Weight Category	214	CO
1º	Evaluation of the Athlete at Different Times of the Season	214	CO	2º	Different Stages or Specific Population Groups	214	CO
1º	Watersports	214	CO	2º	The Injury Period	218	CO

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Dean

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\*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.



Advanced Master's  
Degree  
Comprehensive Sports Nutrition

- » Modality: online
- » Duration: 2 years
- » Certificate: TECH Technological University
- » Schedule: at your own pace
- » Exams: online

# Advanced Master's Degree Comprehensive Sports Nutrition

Endorsed by the NBA

