

# Postgraduate Diploma

## Structure and Pathology of the Locomotor System: Fitness, Functional and Biomechanical Assessment

Endorsed by the NBA





## Postgraduate Diploma

### Structure and Pathology of the Financial System: Fitness, Functional and Biomechanical Assessment

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/us/sports-science/postgraduate-diploma/postgraduate-diploma-structure-pathology-financial-system-fitness-functional-biomechanical-assessment](http://www.techtute.com/us/sports-science/postgraduate-diploma/postgraduate-diploma-structure-pathology-financial-system-fitness-functional-biomechanical-assessment)

# Index

01

Introduction

---

*p. 4*

02

Objectives

---

*p. 8*

03

Course Management

---

*p. 12*

04

Structure and Content

---

*p. 20*

05

Methodology

---

*p. 24*

06

Certificate

---

*p. 32*

# 01

# Introduction

Working as a personal trainer is a booming profession, as more and more people decide to improve their physical appearance and health with comprehensive fitness programs advised by a professional. The boom in this profession is the perfect opportunity to make a difference with other professionals, thanks to a quality educational program that includes the main innovations in the sector.





“

*Personal trainers must have sound knowledge of physical exercises to improve sports performance and injury rehabilitation, but also in-depth knowledge of coaching and business methodologies, which will set them apart from their competitors"*

At TECH we have set out to create contents of the highest teaching and educational quality that will turn our students into successful professionals, following the highest quality standards in teaching at an international level. Therefore, we offer you this Postgraduate Diploma with extensive content that will help you reach the elite of personal training.

Distinguishing the different parts of the anatomical structure of the body becomes essential for the personal trainer specializing in functional rehabilitation and recovery, because they have to know the tissue that is injured or dysfunctional. Therefore, the anatomical position is the first step when starting to work on the subject's readaptation and rehabilitation. The adoption of a standard anatomical position provides a better description of the different tissues, organs, systems and structures of the human body for their evaluation, assessment and study.

Knowledge of the structure and functionality of the different types of bones, muscles, joints, cartilage, tendons and ligaments becomes a key tool for the personal trainer to have a global understanding of the process both in the initial evaluation and in the process of improvement and complete recovery.

Likewise, the approach to functional rehabilitation can be approached from two different perspectives: prevention and treatment. The fight against morbidity with the increasing life expectancy in society has become essential. It is essential that the increase in the age of the population does not lead to an increase in physical incapacity and increase functional dependence, which in turn reduces the quality of life of the population in the last stage of their lives.

This Postgraduate Diploma will cover the most common pathologies of the locomotor system, among which are cervical pain, back pain and lower back pain (widely suffered by most of the population once or several times throughout their lives), scoliosis, herniated discs, tendinitis in the shoulder and elbow, the latter called epicondylitis or "tennis elbow", osteoarthritis of the hip and knee, the well-known ankle sprains, and problems such as plantar fasciitis and hallux valgus.

This **Postgraduate Diploma in Structure and Pathology of the Locomotor System: Fitness, Functional and Biomechanical Assessment** contains the most complete and up-to-date scientific program on the market. The most important features include:

- ◆ The development of numerous case studies presented by specialists in personal training
- ◆ The graphic, schematic and practical contents of the course are designed to provide all the essential information required for professional practice
- ◆ Exercises where the self-assessment process can be carried out to improve learning
- ◆ Algorithm-based interactive learning system for decisionmaking
- ◆ Special emphasis on innovative methodologies in personal training
- ◆ Theoretical lessons, questions to the expert, debate forums on controversial topics, and individual reflection work
- ◆ Content that is accessible from any fixed or portable device with an Internet connection



*Immerse yourself in the study of this high-level Postgraduate Diploma and improve your skills as a personal trainer"*

“

*This Postgraduate Diploma is the best investment you can make in selecting a refresher program for two reasons: in addition to updating your knowledge as a personal trainer, you will obtain a qualification from a leading online university: TECH Global University”*

The teaching staff includes professionals from the field of sports science, who bring their experience to this specialization program, as well as renowned specialists from leading societies and prestigious universities.

The multimedia content, developed with the latest educational technology, will provide the professional with situated and contextual learning, i.e., a simulated environment that will provide immersive learning programmed to train in real situations.

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

*This Postgraduate Diploma offers simulated environments which provides an immersive learning experience designed to train for real-life situations.*

*This 100% online Postgraduate Diploma will allow you to combine your studies with your professional work while expanding your knowledge in this field.*



# 02 Objectives

The main objective of this program is the development of theoretical and practical learning, so that the sports science professional can master Personal Training in a practical and rigorous way.





“

*Our goal is to achieve academic excellence and help you achieve professional success. Don't hesitate any longer and join us”*



## General Objectives

---

- ◆ Acquire specialized knowledge in sports rehabilitation, injury prevention and functional recovery
- ◆ Assess the athlete from the point of view of physical, functional and biomechanical condition to detect aspects that hinder recovery or favor relapses in the injury
- ◆ Design both specific readaptation and recovery work as well as individualized integral work
- ◆ Acquire a specialization in the pathologies of the locomotor system with the highest incidence in the population as a whole
- ◆ Be able to plan prevention, rehabilitation and functional rehabilitation programs
- ◆ Deepen in the characteristics of the different types of injuries most frequently suffered by athletes nowadays
- ◆ Assess the subject's nutritional needs and make nutritional recommendations and nutritional supplements to support the recovery process
- ◆ Evaluate and monitor the evolutionary process of recovery and/or rehabilitation of an athlete's or user's injury
- ◆ Acquire skills and abilities in readaptation, prevention and recovery, increasing professional possibilities as a personal trainer
- ◆ Differentiate from an anatomical point of view the different parts and structures of the human body
- ◆ Improve the injured athlete's physical condition as part of the integral work with the objective of achieving a better and efficient recovery after the injury
- ◆ Use *coaching* techniques that allow personal trainers to face general psychological aspects of the athlete or injured individual that favor an effective approach from the personal training work
- ◆ Understanding marketing as a key tool for success in personal training in the field of rehabilitation, prevention and functional recovery





## Specific Objectives

---

### Module 1. Structure of the Locomotor System

- ◆ Manage the different anatomical concepts: axes, planes and anatomical position
- ◆ Differentiate the different elements that make up the locomotor apparatus
- ◆ See the functioning processes of the integrated active and passive locomotor apparatus

### Module 2. Frequent Pathologies of the Locomotor System

- ◆ Analyze the severity of ligament pathologies and their assessment for a better and more efficient rehabilitation
- ◆ Focus on the analysis of joint pathologies due to their high incidence in sports
- ◆ Examine the most common pathologies that usually occur in the spine
- ◆ Assess pain as an element to be taken into account in the diagnosis of a greater or lesser degree of injury

### Module 3. Fitness, Functional and Biomechanical Assessment

- ◆ Use biomechanics of movement as a key tool in the prevention and rehabilitation process
- ◆ Clarify the importance of nutritional, biochemical, genetic and quality of life assessment from the initial period to the end of the process
- ◆ Evaluate the different parameters related to physical fitness: strength, speed, flexibility, endurance, etc
- ◆ Detect anomalies that hinder or prevent a correct recovery/rehabilitation process



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



03

# Course Management

Our teaching team, experts in Personal Training, are all highly regarded in the profession and are professionals with years of teaching experience who have come together to help you give a boost to your profession. For this reason, they have developed this Postgraduate Diploma with recent updates in the subject that will allow you to train and increase your skills in this sector.





“

*Learn from the best professionals  
and become a successful  
professional yourself”*

## International Guest Director

Dr. Charles Loftis is a renowned specialist who serves as a **sports performance therapist** for the **Portland Trail Blazers in the NBA**. His impact on the world's premier basketball league has been significant, bringing distinguished expertise in creating strength and conditioning programs.

Prior to joining the Trail Blazers, he was the head strength and conditioning coach for the Iowa Wolves, implementing and overseeing the development of a comprehensive player program. In fact, his experience in the sports performance field began with the establishment of XCEL Performance and Fitness, of which he was the founder and head coach. There, Dr. Charles Loftis worked with a wide range of athletes to develop strength and conditioning programs, in addition to working on the **prevention and rehabilitation of sports injuries**.

His academic background in the field of chemistry and biology gives him a unique perspective on the science behind sports performance and physical therapy. As such, he holds CSCS and RSCC designations from the National Strength and Conditioning Association (NSCA), which recognize his knowledge and skills in the field. He is also certified in PES (Performance Enhancement Specialist), CES (Corrective Exercise Specialist) and dry needling.

All in all, Dr. Charles Loftis is a vital member of the NBA community, working directly with both the strength and performance of elite athletes as well as the necessary prevention and rehabilitation of various sports injuries.



## Dr. Loftis, Charles

---

- Head strength and conditioning coach for the Iowa Wolves
- Founder and head coach at XCEL Performance and Fitness
- Head performance coach for the Oklahoma Christian University men's basketball team
- Physical Therapist at Mercy
- Doctor of Physical Therapy from Langston University
- B.S. in Chemistry and Biology from Langston University

“

*A unique training experience,  
key and decisive to boost your  
professional development”*

## International Guest Director

Isaiah Covington is a highly skilled performance coach with extensive experience in treating and addressing various injuries in elite athletes. In fact, his professional career has been directed to the **NBA**, one of the most important sports leagues around the world. He is the **performance coach of the Bolton Celtics**, one of the most important teams in the Eastern Conference and with the greatest projection in the United States.

His work in such a demanding league has made him specialize in maximizing the **physical and mental potential** of the players. His past experience with other teams, such as the Golden State Warriors and the Santa Cruz Warriors, has been key. This has also allowed him to work on sports injuries, focusing on the **prevention and rehabilitation** of the most common injuries in elite athletes.

In the academic field, his interest has focused on the field of kinesiology, exercise science and high performance sport. All of this has led him to excel prolifically in the NBA, working day-to-day with some of the top basketball players and coaching staffs from around the world.





## D. Covington, Isaiah

---

- Boston Celtics Performance Coach - Massachusetts, U.S.A.
- Performance coach of the Golden State Warriors.
- Head Performance Coach of the Santa Cruz Warriors
- Performance Coach at Pacers Sports & Entertainment
- B.S. in Kinesiology and Exercise Science from the University of Delaware
- Specialization in Training Management
- Master's degree in Kinesiology and Exercise Science from Long Island University
- Master's Degree in Performance Sport from Australian Catholic University

“

*Thanks to TECH, you will be able to learn with the best professionals in the world”*

## Management



### Dr. González Matarín, Pedro José

- ♦ Doctor in Health Sciences
- ♦ Degree in Physical Education Teacher
- ♦ Master's Degree in Functional Recovery in Physical Activity and Sport
- ♦ Master's Degree in Regeneration Medicine
- ♦ Master's Degree in Physical Activity and Health
- ♦ Master in Dietetics and Diet Therapy
- ♦ Postgraduate in Obesity
- ♦ Postgraduate in Nutrition and Dietetics
- ♦ Postgraduate Degree in Genomic Medicine, Pharmacogenetics and Nutrigenetics
- ♦ Associate Professor Doctor and Private University (DEVA)
- ♦ PDI collaborator at UNIR, VIU, UOC and TECH



“

*Our teaching team will provide you with all their knowledge so that you are up to date with the latest information on the subject”*

04

# Structure and Content

The content structure has been designed by a team of professionals who understand the implications of specialization in daily practice, are aware of the current relevance of quality specialization in the field of personal training, and are committed to quality teaching through new educational technologies.



PE  
T



PERSONAL  
TRAINED

“

*We have the most complete and up-to-date scientific program on the market. We want to provide you with the best training”*

## Module 1. Structure of the Locomotor System

- 1.1. Anatomical Position, Axes and Planes
- 1.2. Bone
- 1.3. Joints
  - 1.3.1. Etiology
  - 1.3.2. Synarthrosis
  - 1.3.3. Amphiarthrosis
  - 1.3.4. Diarthrosis
- 1.4. Cartilage
- 1.5. Tendons and Ligaments
- 1.6. Skeletal Muscle
- 1.7. Development of the Musculoskeletal System
- 1.8. Components of the Musculoskeletal System
- 1.9. Nervous Control of Skeletal Muscles
- 1.10. Muscle Contraction
  - 1.10.1. Functioning of Muscle Contraction
  - 1.10.2. Type of Muscle Contraction
  - 1.10.3. Muscle Bioenergetics



**Module 2. Frequent Pathologies of the Locomotor System**

- 2.1. Cervical Pain, Dorsalgia and Lumbalgia
- 2.2. Scoliosis
- 2.3. Herniated Disc
- 2.4. Shoulder Tendinitis
- 2.5. Epicondylitis
  - 2.5.1. Epidemiology
  - 2.5.2. Pathologic Anatomy/Pathogenesis
  - 2.5.3. Clinical Symptoms
  - 2.5.4. Diagnosis
  - 2.5.5. Treatment
- 2.6. Hip Osteoarthritis
- 2.7. Gonarthrosis
- 2.8. Plantar Fasciitis
  - 2.8.1. Conceptualization
  - 2.8.2. Risk Factors
  - 2.8.3. Symptoms
  - 2.8.4. Treatments
- 2.9. Hallux Valgus and Flat Feet
- 2.10. Sprained Ankle

**Module 3. Fitness, Functional and Biomechanical Assessment**

- 3.1. Anatomy and Kinesiology
- 3.2. Human Movement Science
- 3.3. Applied Biomechanics
- 3.4. Initial Customer Inquiry
- 3.5. Physical Fitness Testing Protocols and Standards
- 3.6. Functional Movement Assessment
  - 3.6.1. Motion Detection, Testing and Evaluation
  - 3.6.2. *Functional Movement Screen (FMS)*
  - 3.6.3. Selective Assessment of Functional Movement
  - 3.6.4. Specific Functional Performance Tests
- 3.7. Nutritional Assessment, Genetic Evaluation, Biochemistry and Quality of Life
- 3.8. Biomechanics
  - 3.8.1. Biomechanical Fundamentals
  - 3.8.2. Biomechanics of Human Movement
  - 3.8.3. Muscular Control of Movement
  - 3.8.4. Biomechanics of Resistance Exercise
- 3.9. Evaluation of Physical Fitness
- 3.10. Risk Detection and Stratification



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

# 05 Methodology

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

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







“

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

### Case Study to contextualize all content

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

“

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



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



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

### A learning method that is different and innovative

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

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

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

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

## Relearning Methodology

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

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

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

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

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





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

With this methodology, we have trained more than 650,000 university graduates with unprecedented success in fields as diverse as biochemistry, genetics, surgery, international law, management skills, sports science, philosophy, law, engineering, journalism, history, markets, and financial instruments. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

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

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

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



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



### Study Material

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

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



### Classes

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

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



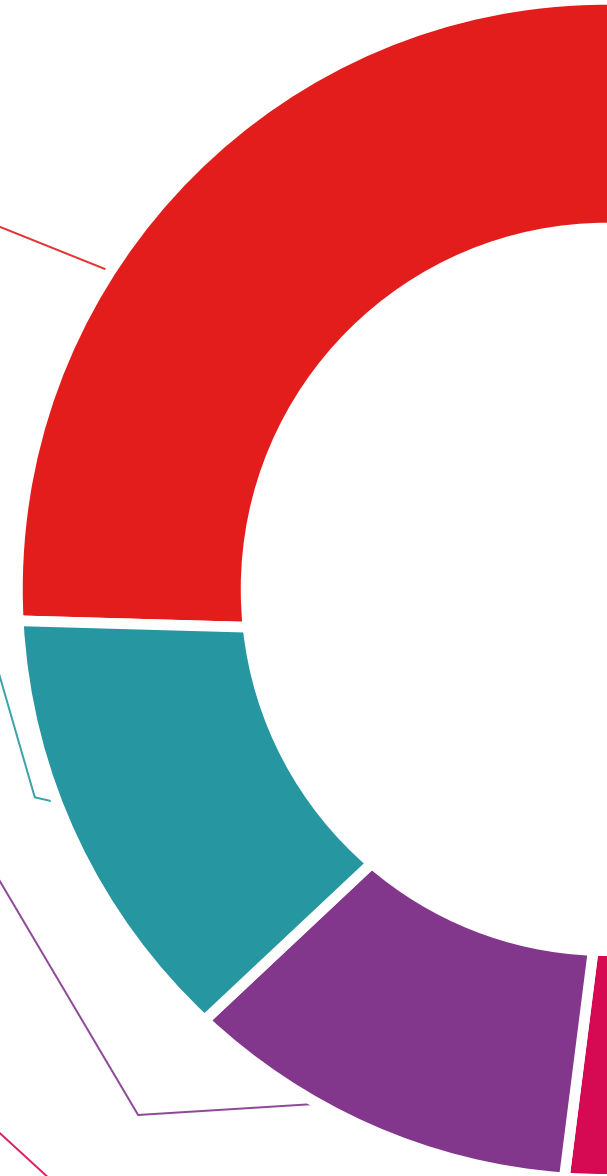
### Practising Skills and Abilities

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



### Additional Reading

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





#### Case Studies

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



#### Interactive Summaries

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

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



#### Testing & Retesting

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



# 06 Certificate

This Postgraduate Diploma in Structure and Pathology of the Locomotor System: Fitness, Functional and Biomechanical Assessment guarantees students, in addition to the most rigorous and up-to-date education, access to a Postgraduate Diploma issued by TECH Global University.





“

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

This program will allow you to obtain your **Postgraduate Diploma in Structure and Pathology of the Locomotor System: Fitness, Functional and Biomechanical Assessment** endorsed by **TECH Global University**, the world's largest online university.

**TECH Global University** is an official European University publicly recognized by the Government of Andorra ([official bulletin](#)). Andorra is part of the European Higher Education Area (EHEA) since 2003. The EHEA is an initiative promoted by the European Union that aims to organize the international training framework and harmonize the higher education systems of the member countries of this space. The project promotes common values, the implementation of collaborative tools and strengthening its quality assurance mechanisms to enhance collaboration and mobility among students, researchers and academics.

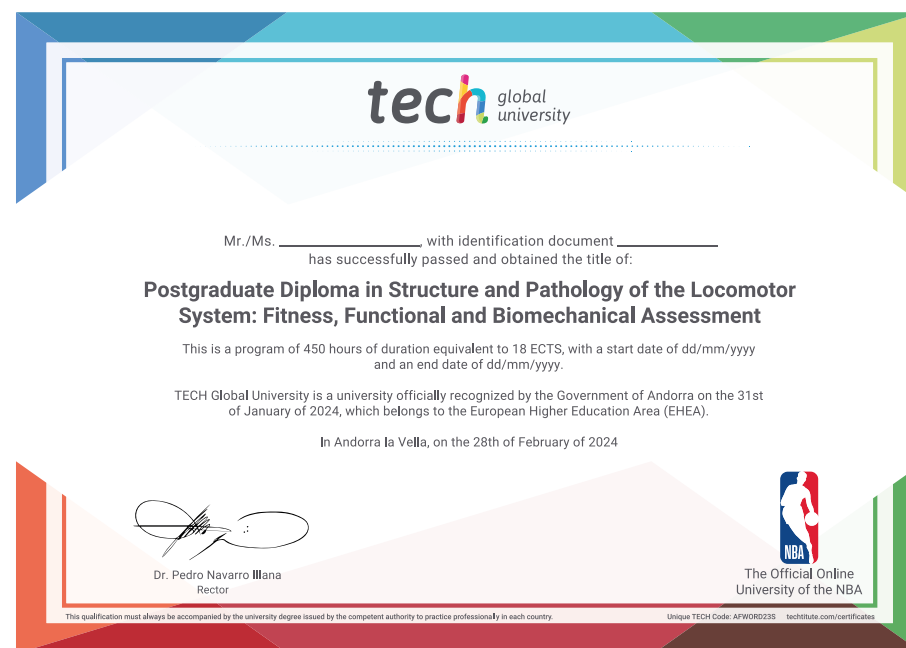
This **TECH Global University** title is a European program of continuing education and professional updating that guarantees the acquisition of competencies in its area of knowledge, providing a high curricular value to the student who completes the program.

Title: **Postgraduate Diploma in Structure and Pathology of the Locomotor System: Fitness, Functional and Biomechanical Assessment**

Modality: **online**

Duration: **6 months**

Accreditation: **18 ECTS**



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

health future  
confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community community  
personalized service innovation  
knowledge presence  
development online  
virtual classroom languages



## Postgraduate Diploma

Structure and Pathology of the  
Financial System: Fitness, Functional  
and Biomechanical Assessment

- » Modality: online
- » Duration: 6 months
- » Certificate: TECH Global University
- » Credits: 18 ECTS
- » Schedule: at your own pace
- » Exams: online

# Postgraduate Diploma

## Structure and Pathology of the Locomotor System: Fitness, Functional and Biomechanical Assessment

Endorsed by the NBA

