

# Postgraduate Certificate

## Physiological Therapeutic Effects of HBOT





## Postgraduate Certificate Physiological Therapeutic Effects of HBOT

- » Modality: online
- » Duration: 6 weeks
- » Certificate: TECH Technological University
- » Dedication: 16h/week
- » Schedule: at your own pace
- » Exams: online

Website: [www.techtute.com/pk/medicine/postgraduate-certificate/physiological-therapeutic-effects-hbot](http://www.techtute.com/pk/medicine/postgraduate-certificate/physiological-therapeutic-effects-hbot)

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# 01

# Introduction

Hyperbaric oxygenation treatment (HBOT) is booming because of its value as an adjuvant tool in different medical specialties, although the specialization of healthcare personnel is still necessary. Thanks to this course, physicians will be able to gain insight into the field of the physiological therapeutic effects of HBOT.





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*It is essential for health professionals to be trained in hyperbaric oxygenation, a technique that can be used to cure or alleviate the symptoms of various pathologies”*

The detailed knowledge of the physiological therapeutic effects obtained from the generation of hyperoxia will allow the student to develop the critical sense to understand the mechanisms of action in the different proven and potential clinical applications. For this purpose, the physiological therapeutic effects are explained in detail through documents, videos and exercises of applications in different pathologies.

Each particular case will benefit from different biochemical effects triggered by the transient increase in reactive oxygen species during the HBOT session.

For this purpose, the first part of the course presents the action of hyperbaric oxygen in mitochondrial reactivation, and reviews the importance of reversing mitochondrial dysfunction in the prevention and treatment of different pathologies. Thus, the most relevant physiological effects described are detailed: vasoconstriction, angiogenesis, collagen synthesis, osteogenesis, neuroprotection, peripheral axonal regeneration, bactericidal effect, anti-inflammatory effect and antioxidant effect. A bibliography is also provided for those who wish to study a particular effect in greater depth, as well as review documents in Spanish.

On the other hand, the concept of relative hyperoxia is presented, an effect achieved with normobaric oxygenation and that it is considered that it could be achieved with hyperbaric oxygenation treatment at low pressures.

The understanding and interpretation of this course is fundamental to be able to perform the evaluation of the probable effect achieved in different clinical cases.

This Postgraduate Certificate in Physiological Therapeutic Effects of HBOT contains the most complete and up-to-date scientific program on the market. The most important features of the program include:

- ♦ Development of practical cases presented by experts in Hyperbaric Medicine.
- ♦ The graphic, schematic, and eminently practical contents with which they are created provide scientific and practical information on the disciplines that are essential for professional practice.
- ♦ Developments in Hyperbaric Medicine.
- ♦ Practical exercises where the self-assessment process can be carried out to improve learning.
- ♦ Special emphasis on innovative methodologies in Hyperbaric Medicine.
- ♦ 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.



*Don't miss the opportunity to study at the largest private online university in the Spanish-speaking world".*



*This course is the best investment you can make in the selection of a refresher program for two reasons: in addition to updating your knowledge in Physiological Therapeutic Effects of HBOT, you will obtain a degree endorsed by TECH - Technological University".*

It includes in its teaching staff professionals belonging to the field of Hyperbaric Medicine, who pour into this training the experience of their work, in addition to recognized specialists from reference 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 training programmed to train in real situations.

This program is designed around Problem Based Learning, whereby the specialist must try to solve the different professional practice situations that arise during the academic year. For this purpose, the professional will be assisted by a novel interactive video system developed by renowned and experienced HBOT experts in Physiological Therapeutic Effects.

*This training comes with the best didactic material, providing you with a contextual approach that will facilitate your learning.*

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



# 02 Objectives

The Postgraduate Certificate in Physiological Therapeutic Effects of HBOT is oriented to train in the fundamentals and applications of hyperbaric oxygenation treatment and to expose the scientific evidence in the different specialties in the field of health.





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*It is the best option to learn about the latest advances in hyperbaric medicine.*



## General Objectives

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- ♦ Promote the usefulness of hyperbaric oxygenation treatment in different medical specialties.
- ♦ Train health professionals on the foundations, mechanisms of action, indications, contraindications and applications of hyperbaric oxygen.
- ♦ Study the degree of evidence published and the recommendations and indications of the different scientific societies related to Hyperbaric Medicine.
- ♦ Recognise the potential applications of hyperbaric oxygen in different clinical cases and the benefits that can be achieved with the treatment, as well as performing the indication and detection of the contraindications.





## Specific Objectives

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- Training on the effects of hyperoxia on a mitochondrial level and the physiological benefits it triggers.
- Describe the importance of mitochondrial reactivation with HBOT and its potential effect on different related pathologies with mitochondrial dysfunction.
- Present the physiological effects that are triggered with HBOT and the production of reactive oxygen species.
- Relate this physiological effects with different indications of HBOT.
- Training in the analysis of different clinical cases which can benefit from the therapeutic effects of HBOT.



04

# Course Management

This program includes in its teaching staff reference experts in hyperbaric medicine, who pour into this training the experience of their work. Additionally, other recognized specialists participate in its design and preparation, which means that the program is developed in an interdisciplinary manner.





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*Leading professionals in the field have come together to teach you the latest advances in Hyperbaric Medicine”.*

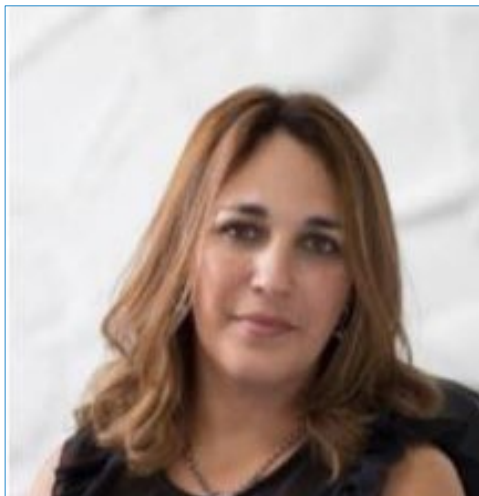
## Management



### Dr. Cannellotto, Mariana

- ♦ President of AAMHEI Biobarica Medical Director
- ♦ Specialist in Hyperbaric Medicine, Medical Clinic

## Codirector



### Dr. Jordá Vargas, Liliana

- ♦ Degree in Clinical Biochemistry
- ♦ Microbiology
- ♦ Scientific Director of AEMHEI and AAMHEI
- ♦ Biobarica Scientific and Clinical Research Director





## Teachers

### **Dr. Emilia Fraga, Pilar María**

- ◆ FINES Teacher
- ◆ AAMHEI Pedagogical Assistant.

### **Dr. López Jiménez, Elías**

- ◆ Degree in Medicine at Madrid Complutense University
- ◆ Specialist in Radiotherapeutic Oncology via RMI, La Princesa Hospital.

### **Dr. Navarro Viltre, Bárbara Ivonne**

- ◆ Deputy of the Emergency Department at Catalonia Hospital
- ◆ Specialist in Family and Community Medicine.
- ◆ Head of Hyperbaric Medicine unit at Catalonia Hospital.

### **Dr. Ramallo, Rubén Leonardo**

- ◆ Master in Psychoneuroimmunoendocrinology.
- ◆ Biobarica Medical Doctor Núñez and Larrea.
- ◆ Director of the AAMHEI Medical Clinic Commission.

### **Dr. Romero-Feris, María Delfina**

- ◆ President of AEMHEI
- ◆ Biobaric Medical Director Spain

### **Dr. Verdini, Fabrizio**

- ◆ Diploma in Public Health Management.
- ◆ Master's Degree in Healthcare Management.

05

# Structure and Content

The structure of the content has been designed by the best professionals in the Hyperbaric Medicine sector, with extensive experience and recognized prestige in the profession, backed by the volume of cases reviewed, studied, and diagnosed, and with extensive knowledge of new technologies applied to teaching.



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*This Postgraduate Certificate in Physiological Therapeutic Effects of HBOT contains the most complete and up-to-date scientific program on the market.*

## Module 1. Physiological Therapeutic Effects of HBOT

- 1.1. Introduction to the Physiological Therapeutic Effects.
- 1.2. Vasoconstriction
  - 1.2.1. Robin Hood Effect.
  - 1.2.2. Effect of HBOT on Blood Pressure and Heart Rate.
- 1.3. Stem Cells and Oxygen.
  - 1.3.1. Liberation of Stem Cells with HBOT.
  - 1.3.2. Importance of Stem Cells on Wound Healing.
  - 1.3.3. Oxygen in the Differentiation of Stem Cells.
- 1.4. Oxygen in the Synthesis of Collagen.
  - 1.4.1. Synthesis and Types of Collagen.
  - 1.4.2. Oxygen in the Synthesis and Maturing of Collagen.
  - 1.4.3. HBOT and Collagen in Healing.
- 1.5. Angiogenesis and Vasculogenesis.
  - 1.5.1. Degenerative Angiogenesis and Hyperbaric Oxygen.
- 1.6. Osteogenesis
  - 1.6.1. HBOT and Osteogenesis and Bone Resorption.
- 1.7. Mitochondrial Function, Inflammation and Oxidative Stress.
  - 1.7.1. Mitochondrial Dysfunction in the Pathogenesis of Different Pathologies.
  - 1.7.2. HBOT and Mitochondrial Function.
- 1.8. Oxidative Stress and Hyperbaric Oxygen.
  - 1.8.1. Oxidative Stress in Different Pathologies.
  - 1.8.2. Oxidative Stress in Hyperbaric Oxygen.
- 1.9. Anti-inflammatory Effect in Hyperbaric Oxygen.
  - 1.9.1. Hyperbaric Oxygen and Inflammation.
- 3.10. Antimicrobial Effect in Hyperbaric Oxygen.
  - 1.10.1. Bacterial Effect of Oxygen.
  - 1.10.2. Hyperbaric Oxygen and Biofilm.
  - 1.10.3. Hyperbaric Oxygen and the Immune Response
- 1.11. Oxygen and Neurone Function.
  - 1.11.1. Oxygen and Peripheral Axonal Regeneration.
  - 1.11.2. Oxygen and Neuroplasticity.







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*This training will allow you  
to advance in your career  
comfortably”*

05

# Methodology

This training program provides you with a different way of learning. Our methodology uses a cyclical learning approach: *Re-learning*.

This teaching system is used 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.





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*Discover Re-learning, 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

In a given situation, what would you do? Throughout the program, you will be presented with multiple simulated clinical cases based on real patients, where you will have to investigate, establish hypotheses and, finally, resolve the situation. There is abundant scientific evidence on the effectiveness of the method. Specialists learn better, faster, and more sustainably over time.

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



According to Dr. Gervas, 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 potential 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 professional medical practice.

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*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 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 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.



## Re-Learning Methodology

At TECH we enhance the Harvard case method with the best 100% online teaching methodology available: Re-learning.

Our 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, which represent a real revolution with respect to simply studying and analyzing cases.



*The physician 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 Re-learning method has managed to improve the overall satisfaction levels of professionals who complete their studies, with respect to the quality indicators of the best Spanish-speaking online university (Columbia University).

With this methodology we have trained more than 250,000 physicians with unprecedented success, in all clinical specialties regardless of the surgical load. All this in a highly demanding environment, where the students have a strong socio-economic profile and an average age of 43.5 years.

*Re-learning will allow you to learn with less effort and better performance, involving you more in your 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 (we 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.



In this program you will have access to the best educational material, prepared with you in mind:



#### Study Material

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

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



#### Latest Techniques and Procedures on Video

We introduce you to the latest techniques, to the latest educational advances, to the forefront of current medical techniques. All this, in first person, with the maximum rigor, explained and detailed for your assimilation and understanding. And best of all, you can watch them as many times as you want.



#### Interactive Summaries

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

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



#### Additional Reading

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







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

Effective learning ought to be contextual. Therefore, we will present you with real case developments in which the expert will guide you through focusing on and solving the different situations: a clear and direct way to achieve the highest degree of understanding.



**Testing & Re-testing**

We periodically evaluate and re-evaluate your knowledge throughout the program, through assessment and self-assessment activities and exercises: so that you can see how you are achieving your goals.



**Classes**

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

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



**Quick Action Guides**

We offer you the most relevant contents of the course in the form of worksheets or quick action guides. A synthetic, practical, and effective way to help you progress in your learning.



# 06 Certificate

This Postgraduate Certificate in Physiological Therapeutic Effects of HBOT guarantees you, in addition to the most rigorous and updated training, access to a Postgraduate Certificate issued by **TECH - Technological University**.





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*Successfully complete this training and receive your university degree without travel or laborious paperwork”.*

This **Postgraduate Certificate in Physiological Therapeutic Effects of HBOT** contains the most complete and up-to-date scientific program on the market.

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

The certificate issued by **TECH - Technological University** will specify the qualification obtained through the Postgraduate Certificate, and meets the requirements commonly demanded by labor exchanges, competitive examinations, and professional career evaluation committees.

Title: **Postgraduate Certificate in Physiological Therapeutic Effects of HBOT**

ECTS: **6**

Official Number of Hours: **150**





future  
health confidence people  
education information tutors  
guarantee accreditation teaching  
institutions technology learning  
community commitment  
personalized service innovation  
knowledge present  
online training  
development language  
virtual classroom



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