

K. K. Jain

Textbook

of

**Hyperbaric
Medicine**

3rd Revised Edition



Hogrefe & Huber Publishers
Seattle · Toronto · Bern · Göttingen

Textbook of Hyperbaric Medicine

Third edition

by

K. K. Jain, MD
American College of Hyperbaric Medicine

SSI SCUBA SCHOOLS INT.
Instructor No. 12653
Albrecht Salm

AS
3/2003

PADI
Albrecht Salm
Master Scuba Diver Trainer
PADI MSDT # 33913



PADI
INSTRUCTOR 33913
Albrecht Salm



Table of Contents

Foreword by <i>E. Teller</i>	IX
Preface to the Third Edition	XI
Preface to the Second Edition	XII
Preface to the First Edition	XIII
Part I: Basic Aspects	1
1. The History of Hyperbaric Medicine	2
2. Physical, Physiological, and Biochemical Aspects of Hyperbaric Oxygenation	10
3. Effects of Diving and High Pressure Environments on the Human Body	28
4. Physical Exercise under Hyperbaric Conditions	42
5. Hypoxia	50
6. Oxygen Toxicity by <i>K.K. Jain, D. Torbati, H.Y. Tao, and G.T. Ni</i>	64
7. Hyperbaric Chambers: Equipment, Technique, and Safety	82
8. Indications, Contraindications, and Complications of Hyperbaric Oxygen Therapy	102
9. Drug Interactions with Hyperbaric Oxygenation	110
Part II: Clinical Applications	117
10. Decompression Sickness by <i>P.B. James and K.K. Jain</i>	118
11. Cerebral Air Embolism	142
12. Carbon Monoxide and Other Tissue Poisons	154
13. Hyperbaric Oxygen Therapy in Infections	188

14. Hyperbaric Oxygen Therapy in Wound Healing, Plastic Surgery, and Dermatology	212
15. Hyperbaric Oxygen Therapy in the Management of Radionecrosis	242
16. The Use of Hyperbaric Oxygen in Treating Neurological Disorders	258
17. Role of Hyperbaric Oxygenation in the Management of Stroke	280
18. Hyperbaric Oxygen Therapy in Global Cerebral Ischemia/Anoxia and Coma by <i>Paul G. Harch and Richard A. Neubauer</i>	318
19. Hyperbaric Oxygen Therapy in Neurosurgery by <i>M. Sukoff and K.K. Jain</i>	350
20. Hyperbaric Oxygen Therapy in Multiple Sclerosis by <i>D.J.D. Perrins, R.A. Neubauer, and P.B. James</i>	372
21. Hyperbaric Oxygen Therapy in Headache by <i>J. Bookspan, C.E. Fife, and W.P. Fife</i>	382
22. Hyperbaric Oxygen Therapy in Cardiovascular Diseases	392
23. Hyperbaric Oxygen Therapy in Hematology and Immunology	420
24. Hyperbaric Oxygen Therapy in Gastroenterology	432
25. Hyperbaric Oxygen and Endocrinology	446
26. Hyperbaric Oxygen and Pulmonary Disorders	452
27. Hyperbaric Oxygen Therapy in Pediatric Surgery by <i>S.A. Baydin</i>	460
28. Hyperbaric Oxygenation in Traumatology and Orthopedics	472
29. Hyperbaric Oxygen Therapy in Otolaryngology	490
30. Hyperbaric Oxygen and Ophthalmology	504
31. Hyperbaric Oxygenation in Obstetrics and Neonatology	518
32. Hyperbaric Oxygenation in Geriatrics	524
33. Hyperbaric Oxygenation as an Adjuvant in Rehabilitation and Sports Medicine	532
34. Role of Hyperbaric Oxygen in Enhancing Cancer Radiosensitivity	538
35. Anesthesia in the Hyperbaric Environment by <i>E.M. Camporesi</i>	548
36. Hyperbaric Oxygen in Emergency Medicine by <i>K. Van Meter, L. Weiss, and P.G. Harch</i>	556
37. Hyperbaric Medicine as a Specialty: Training, Practice, and Research	590
38. Hyperbaric Medicine Around the World	600
39. Hyperbaric Medicine in Japan by <i>H. Takahashi and H. Yagi</i>	610
Part III: Appendix, Bibliography, Index	615
40. Appendix: Diagnostic Imaging and Hyperbaric Oxygen Therapy by <i>P.G. Harch, R.A. Neubauer, J.M. Uszler, and P.B. James</i>	616
41. Bibliography	626
42. Index	668

A 312003

This textbook, now appearing in its 3rd, fully updated, and expanded edition, has become widely known as the best exposition available on the topic of hyperbaric medicine and the wide range of applications of hyperbaric oxygen (HBO) techniques.

In addition to explaining the basic principles of HBO, and its application in carbon monoxide poisoning and decompression sickness, the textbook looks objectively and critically at its use in numerous other areas, such as stroke, CNS and neurological disorders, traumatology and wound healing, infectious diseases, rehabilitation and sports medicine, plastic surgery, emergency medicine, obstetrics, and cancer treatment. With over 2100 up-to-date references and an extensive index, the volume is not just a textbook suitable for those seeking an introduction to this expanding field but also an invaluable resource for specialists.

For the new, 3rd edition, the book has been thoroughly revised to take account of the latest developments in clinical and basic research, and includes 5 completely new chapters as well as other contributions written by international experts. Features include:

- More details on HBO in global cerebral ischemia/anoxia and coma associated with conditions such as head injuries and drowning, including results obtained using brain imaging studies.
- Rewritten and expanded chapter on stroke.
- A full chapter on the use of HBO in the management of vascular headaches, such as migraine.
- The use of HBO in emergency departments.
- Reviews of hyperbaric medicine in various countries around the world
- Fully updated bibliography, expanded to 2175 references.