

**Clinical Blood Gases: Assessment and Intervention**, 2nd edition. William J Malley MSc RRT CPFT. St Louis: Elsevier Saunders. 2005. Hard cover, illustrated, 523 pages, \$59.95.

The author, William Malley, provides us with a well-titled text, **Clinical Blood Gases: Assessment and Intervention**, which is a most practical guide into the subjects of oxygenation, ventilation, and acid-base status. It also provides a comprehensive reference for the details associated with blood gases. It's written for both students and experienced health care professionals, including physicians, nurses, and respiratory therapists.

The book includes 16 chapters organized into 6 logical units, with sufficient figures, diagrams, and tables to illustrate the points made. Each chapter begins with an interesting quotation or two on the subject matter, made by a prominent person. Following the quotation(s) is an outline, which provides more detail than does the book's table of contents.

The first of the book's 6 units is "Introduction to Blood Gases," which covers terminology and definitions, sample-collection, and normal values, and introduces the reader to systematic assessments and interventions. Unit II, "Technical Issues in Blood Gas Analysis," thoroughly discusses pre-analytical, analytical, and post-analytical error, instrument methodology, and reasonable—albeit brief—descriptions of quality control and quality management processes. Unit III presents the physiology of respiration, oxygenation, oxygen transport, acid-base homeostasis, and abnormalities and the body's compensation for them. Units IV and V apply the physiology to the clinical setting. Unit IV tackles oxygenation and Unit V addresses acid-base issues. Unit VI reviews noninvasive monitoring, including oximetry, and provides case studies.

This book conveys a considerable amount of information in a writing style that's easy to read. The index, table of contents, and chapter outlines likewise make it easy to locate specific items quickly. An equally attractive feature of the book is the exercises, which appear in all but the final chapter. These "On-Call Cases" and "NBRC [National Board for Respiratory Care] Challenges" test not only the student's text-

book knowledge and understanding of the material, but, more importantly, application of that material to clinical practice.

The "On-Call Cases," which are real-world situations specific to the subject matter of the chapters in which they appear, are excellent teaching tools in that they lead the reader through the assessment and intervention processes in a consistent pattern of (1) identifying the abnormalities, (2) determining possible explanations, (3) evaluating the information, and (4) deciding what actions to take. The cases are nicely varied, with some of them effectively demonstrating what can occur when pre-analytical error is not recognized. They are also an introduction to case studies, being similar to them in format but more selective in their lessons. Actual case studies are presented at length in Chapter 16, which continues to apply the systematic method applied in the "On-Call Cases": identify, explain, evaluate, act.

The "NBRC Challenges" at the ends of the chapters will be particularly useful to respiratory care students. The questions were developed using the NBRC credential examination matrix, and they're a good preview of expectations from the perspective of a professional society. They cover aspects of respiratory care and blood gases from the basic points to complex interactions with chemistries and pharmacology. Beware of the error in the answer for NBRC Challenge question #5 on page 465. The narrative describes answer C, not answer D.

Unfortunately, I also found a few other discrepancies in the book, in addition to the latter error.

1. Outdated documents from the National Committee for Clinical Laboratory Standards (NCCLS) appear in the citation list. The information in those documents was consolidated with other standards more than 3 years ago. A reader unfamiliar with NCCLS documents would probably have difficulty finding the needed information with those outdated citations. Specifically:

- Reference 6, Blood Gas Pre-Analytical Considerations - NCCLS Standard C27-P, was discontinued as a separate document. It was incorporated into the NCCLS Standard that is listed as Reference 1, Blood Gas and pH Analysis - C46-A.

- Reference 14, Percutaneous Collection of Arterial Blood - H11-A2, was updated to H11-A3 (listed as Reference 107). Relevant parts of H11 were also included in the document that is listed as Reference 1, Blood Gas and pH Analysis - C46-A.
- Reference 27, Additives to Blood Collection Devices - H24-P, was discontinued as a separate document.

2. The terms "Allen's test" and "modified Allen's test" are used interchangeably on page 21, in Figure 1-11, and in Tables 1-3 at the end of the chapter, but the Allen's test and the modified Allen's test are definitely not the same procedure. The Allen's test assesses collateral circulation in the hand, in 2 steps. Step 1 occludes the radial artery for several minutes and compares the hand color to the other hand. The hand is said to have sufficient collateral circulation through the ulnar artery if there is no change in color. Step 2 occludes the ulnar artery. A change in hand color means the potential for radial artery occlusion is high. That is a positive Allen's test, which *contraindicates* radial-artery puncture. This text describes the *modified Allen's test*, but the word "modified" is omitted at critical points in the discussion of the test results. This text says that a positive Allen's test means that the radial artery is a good option for arterial puncture, which is incorrect. It should say the radial artery is a good option for puncture when the *modified Allen's test* is positive. Likewise, it says that a negative Allen's test means the radial artery should be avoided; it should say *modified Allen's test*. Interestingly, the author suggests using "normal" or "abnormal" to describe the result, instead of "positive" or "negative," because of the confusion that can occur over what "positive" and "negative" results indicate. I agree and would carry the thought even further by suggesting that the result should be described as either the presence or absence of collateral blood flow.

A future edition of this book will presumably be modified to avoid fueling the confusion between the Allen's test and the modified Allen's test, but with this edition the reader should be alerted to the missing word "modified." With that caveat in mind, this book would be a solid addition to a

collection of respiratory care texts, and quite likely an often-used one.

**Rozanna Templin MSc CPFT**

Blood Gas Services  
Department of Respiratory Care  
Northwestern Memorial Hospital  
Chicago, Illinois

**Physiology of Sport and Exercise**, 3rd edition. Jack H Wilmore PhD and David L Costill PhD. Champaign, Illinois: Human Kinetics. 2004. Hard cover, illustrated, 726 pages, \$75.

The third edition of **Physiology of Sport and Exercise**, published in 2004, is improved and expanded over the original 1994 and 1999 editions. Jack Wilmore PhD and David Costill PhD have compiled a comprehensive, large, hard-bound textbook that includes 21 chapters in 7 sections. It has 726 pages, with more than 300 color graphs and illustrations that help explain important concepts. The book refers the student to a free, online, self-assessment study guide at <http://www.humankinetics.com/physiologyofsportandexercise/osg>, which includes interactive activities, feedback, flowcharts, lists of key concepts from each chapter, and self-assessment quizzes. That Web site gives the student a convenient method of self-paced review, skill practice, and interactive knowledge development. The authors also provide a wealth of information and resources for the instructor, in various media. The latest book revisions include the most recent and important findings in research since the previous edition was released.

The authors kept the features that made the original book popular with students, and other attributes were added. Each chapter begins with a chapter overview and an outline that includes page numbers, to assist in locating topics. Other features that promote easy-reading include the highlighted areas, which jump out to catch the reader's eye, impressing the importance of certain facts. Author-designated "Key Points" sections are highlighted in violet colored boxes to thumb through for quick review. "Key Terms" are printed in red, alphabetically listed at the end of each chapter, and included in the book's glossary. Spread throughout the text are green-highlighted review boxes that recap the most important points. Additional blue "fyi" boxes insert interesting facts related to the chapter material. Each chapter

provides study questions to allow the student to review for knowledge assessment. Finally, each chapter closes with references and suggested readings. There is also a full glossary and a complete index.

The material is well organized; the text flows well and is easy to read. The pictures and diagrams contribute to further clarity of the material presented. The online access to study materials is an extra bonus that enhances the benefits of this book for the student and teacher. I wish I had this book when I was a student! I found no inaccuracies of facts or typographical errors in the book.

The introduction portion of the book is a comprehensive, 21-page historical review of the science and development of physiology in sport and exercise as they have materialized from other basic sciences. Parts I through III review the physiologic systems and their responses to exercise, both in the acute setting and with long-term training.

Part I, which includes the first 3 chapters, is titled "Essentials of Movements." The focus is on how the muscle and neurologic systems coordinate during movement of the human body, especially with exercise. Part II discusses how the endocrine system regulates metabolism and how the basic energy systems of the body provide the energy that allows movement. Part III (Chapters 7–9) discusses the interaction of the cardiovascular system with the respiratory system to deliver oxygen to the body's systems and remove the metabolic waste by-products and carbon dioxide. The section also elaborates on how the cardiovascular and respiratory systems adapt to aerobic training.

Part IV examines the body's responses and adaptations to unusual environmental conditions. Environmental issues such as thermoregulation and hypobaric, hyperbaric, and microgravity conditions are discussed in detail.

Part V evaluates the ways athletes can best optimize physical performance. Chapters 12–15 discuss the effects of training methods, nutrition balance, and substances reported to improve athletic performance ("ergogenic aids"). Chapter 14 discusses the appropriateness of various body builds and compositions for different sports, and the delicate issue of weight standard in certain sports.

Part VI is titled "Age and Sex Considerations in Sport and Exercise." The 3 chapters in this section explore how the general

principles of exercise and sport physiology can be more specifically applied as the athlete grows and develops from child to adolescent to adulthood. The authors discuss how the different life stages affect physiologic capacity and performance, the effects of women's issues on training, and the biological differences between women's and men's response to training and exercise.

Part VII, "Physical Activity for Health and Fitness," puts all the pieces together to apply the information from the previous chapters to suggest ways to prevent and treat various diseases. Chapter 19 discusses the latest in diagnostic techniques for medical clearance prior to starting an exercise program. The final chapters devote a section to exercise for rehabilitation, for various reasons, and prescriptions for maintenance of fitness levels once achieved. The book finishes with an in-depth look at prevention and treatment of cardiovascular diseases, obesity, and diabetes as they relate to physical activity.

The target audience is undergraduate college students, which could include various disciplines, primarily exercise physiology and physical education, but also possibly an advanced 4-year respiratory therapy program. A typical associate's degree respiratory program would not have the time to cover this material to the depth presented in this textbook.

As I read through this comprehensive book, I was very impressed with the depth and scope of knowledge, the excellent presentation style, and the high quality illustrations.

**Catherine M Foss RRT RPFT**

Division of Pulmonary, Allergy and  
Critical Care Medicine  
Department of Medicine  
Duke University  
Durham, North Carolina

**Fundamentals of Lung and Heart Sounds**, 3rd edition. Robert L Wilkins PhD RRT FAARC, John E Hodgkin MD, Brad Lopez EdD RRT. St Louis: Mosby/Elsevier. 2004. Soft cover (with CD-ROM), illustrated, 175 pages. \$52.95.

As a nurse educator, one of my most difficult tasks is to help students learn the proper technique of chest auscultation and to correlate the findings with the patient's condition. This text, **Fundamentals of Heart and Lung Sounds**, and its accom-