

It is also chock-full of great information for pulmonary fellows and graduate students in exercise physiology. It supplements, but in some ways goes beyond, some of the excellent clinical exercise textbooks that are presently available.

Part of the success of the book has to do with the editors' selection of a diverse and capable group of contributing authors. Although there is some heterogeneity in the time and effort put in on some of the chapters, for the most part each chapter is a valuable gem. I will first pick out some highlights and then critique a couple of areas where there might have been some improvement in either content or organization.

The first chapter, by JR Rodman et al, entitled "Cardiovascular and Respiratory System Responses and Limitations to Exercise," is a superb and succinct treatise on gas exchange and lung mechanics. The authors integrated a rather brief but important section on the cardiovascular system, with comments on cardiorespiratory interactions. The authors then discuss respiratory limitations during exercise and finish up with some comments on training.

The second chapter, by HR Gosker et al, addresses important recent observations on the effect of severe chronic obstructive pulmonary disease and heart failure on stride and muscle. This chapter is an excellent resource for what I think will be a very important topic of future research and clinical application.

In the third chapter the volume's editors describe "Modalities of Clinical Exercise Testing." This is an excellent short chapter on the various ways to induce exercise stress in patients, with guidelines on how to choose. My only critique of this section is that there was a disproportionate amount of space dedicated to some of the less commonly used methods. This chapter is appropriately followed by one on further "Methods for Cardiopulmonary Exercise Testing," written by KC Beck and IM Weisman. This chapter provides excellent guidelines for clinicians. It seems to end abruptly, with a discussion on ventilatory limitations.

Deconditioning and principles of training are discussed by T Troosters et al, in an adequate fashion; this chapter deals primarily with the clinical arena. DA Mahler et al then deal with dyspnea in a succinct but valuable chapter, though the end seems a bit truncated with respect to the effects of rehabilitation, medications (such as codeine), oxygen, and surgical intervention on

ameliorating dyspnea. The chapter also aches for a summary that would bring it all together.

Dyspnea is one of the most common diagnoses that exercise laboratory clinicians are asked to address, and SE Gay et al produced excellent guidelines on the differential diagnosis as elucidated by exercise testing. Excellent chapters follow on aging and exercise, heart failure and cardiac transplantation, cardiac ischemia (this section would have been greatly improved if sample electrocardiograms had been included), cardiac rehabilitation, a superb treatise on exercise and chronic obstructive pulmonary disease, pulmonary rehabilitation, and a number of other specific pulmonary diseases. There is an unfortunately very brief chapter on pulmonary vascular disease, which should have provided a rich source of material for the understanding of gas exchange, pulmonary vascular response, lung mechanics, and cardiac limitation. DY Sue's discussion of impairment and disability is outstanding, as is J Fahey et al's chapter on exercise testing of children. The final chapter, written by the editors, describes an integrative approach to interpretation of exercise tests and provides some case studies. This is an appropriate ending to this volume.

I do have 2 further comments about how I think the book could have been better. First, the organization of the chapters seems a bit random. Although they cover many topics, some of them seem a bit out of order. For instance, I think the chapter entitled "Muscular Alterations in Chronic Obstructive Pulmonary Disease and Chronic Heart Failure at Rest and During Exercise" should have come much later in the book, after the 2 chapters on exercise methods. Some of the chapters on basic physiology, such as the chapters on deconditioning and aging, should provide natural lead-ins to groups of organ dysfunction, particularly pulmonary, cardiac, and muscle.

My second disappointment was that there was essentially no information on extraordinary exercise physiology. There is no information on the elite aerobic or strength athlete nor any information on the limits of human performance in extraordinary environments (at altitude, underwater, in cold, or in heat). Furthermore, I think we as humans understand our place and adaptation in this world if we can understand how our physiologic adaptations compare to other creatures. There is no hint of comparative physiology in this volume, which I think

would help the reader understand human physiology and pathophysiology.

Despite these latter reservations I still will cherish this volume as both a resource book on my shelf and a very helpful volume for pulmonary fellows and students.

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Handbook for Respiratory Care Research. Robert L Chatburn RRT FAARC. Cleveland Heights OH: Mandu Press. 2002. Soft cover, illustrated, 291 pages, with appendices, PDF format available free online for AARC members (<http://www.aarc.org/>); soft cover for members \$50; soft cover for nonmembers \$60 (available via the AARC online store).

One of the perennial voids in the respiratory care literature has been a text introducing our relatively young profession to the tenets of research methodology. This has now been addressed by Robert Chatburn's text **Handbook for Respiratory Care Research**. This new text was actually predated by an earlier book on research methods in respiratory care, which is now out of print, entitled **Fundamentals of Respiratory Care Research**, edited by Robert Chatburn and Kenneth Craig (Norwalk, Connecticut: Appleton & Lange, 1988). Though there was excellent material in that earlier text, the current work is far better organized and the topics are nicely synchronized to applications in respiratory care. The contents are divided into 5 major sections plus appendices. The sections are: "Introduction" (which includes chapters on ethics in research and outcomes research), "Planning the Study," "Conducting the Study," "Analyzing the Data," and "Publishing the Findings."

The Introduction gives practical, down-to-earth reasons for studying and doing research in respiratory care. Chatburn notes how scientific evidence has shaped our field of respiratory care, such as in the demise of intermittent positive-pressure breathing, a vastly over-used and probably overly expensive therapy to encourage postoperative deep breathing and to administer nebulized drug solutions. He also cites a reason that should be close to all of us: if we are to be current, well-informed clinical practitioners, we must be able "to read and critically evaluate the published reports presented by other investigators" (page 3). The Introduction

also immediately introduces the reader to the importance of ethics in doing research (Chapter 2), and gives a brief overview of outcomes research (Chapter 3). Clinicians and others who are contemplating possible research projects need to be aware of ethical constraints when gathering data on human subjects. Many practitioners are not aware that proposed research involving human subjects must be reviewed by institutional review boards and that informed consent may be needed from recruited subjects. Table 3-1 provides a very helpful comparison and contrast of the differences between traditional clinical research and outcomes research. The first contrast given in the table shows the relevance and necessity of outcomes research in today's clinical climate: traditional clinical research is disease-centered, whereas outcomes research is patient- and community-centered.

Section II has chapters on the scientific method (Chapter 4), developing the study idea (Chapter 5), reviewing the literature (Chapter 6), and designing the experiment (Chapter 7). By putting the key components of the research process in a section entitled "Planning the Study," the text drives home the point that a study should be completely planned before any implementation is attempted.

Section III begins with a chapter on implementing the study (Chapter 8), which further serves to highlight the difference between the detailed and extensive planning needed and the actual performance of the study plan. This section also includes a chapter on measurement (Chapter 9), which I think could be improved in a future edition. The properties of measurement, namely accuracy (validity) and precision (reliability), are well explained, with ample applications given. However, there is only indirect material on how to estimate the accuracy and precision of measurement instruments. The discussion is also limited to physical methods of data collection, with no consideration of other measurement methods such as surveys, questionnaires, or tests, which are used in some respiratory care research. Methods of estimating accuracy and precision (as opposed to interpreting statements about accuracy) are lacking, especially for nonphysical methods of data collection.

Section IV offers a fine compilation and explanation of statistical techniques. This section opens with an overview of basic statistical concepts, including measures of descriptive statistics and concepts of inferen-

tial statistics, such as confidence intervals and hypothesis testing (Chapter 10). In Chapters 11, 12, and 13 specific statistical techniques/tests are given for nominal levels of measure, ordinal levels, and continuous, or interval, measures. By organizing statistical techniques into chapters based on levels of measurement, one of the major factors determining appropriateness of a statistical analysis is built into the chapter divisions. This may be one of the true contributions of the text. It should also be noted that characteristics of screening tests, such as false positives, sensitivity and specificity, and receiver operating characteristic curves to evaluate the efficiency of diagnostic tests, are clearly presented in Chapter 11, in the section on statistics for nominal measures. These statistical techniques are not typically found in courses on introductory classical statistics.

The last section will be particularly helpful for those who are just beginning to systematically collect observations and wish to find out how to share their results with others in a public forum such as a peer-reviewed journal or an abstract and poster session. In the "Publishing the Findings" section there is also a chapter on preparing a case report. As noted by the author, case studies represent legitimate clinical research and offer an opportunity for respiratory care practitioners to participate in research and publication when it is not feasible to perform or participate in full-scale clinical or laboratory studies. The chapter includes excellent detail on what constitutes a reportable case study and how to go about organizing and writing the case study. The identification of the elements of a patient case study, given in logical order, is not only useful for publishing a case report; it also applies to any case study in the clinical site. Included is a table that lists 12 common mistakes made by authors of case reports, which will be very helpful for prospective authors to identify what should and should not be done in preparing a case report for possible publication.

There are 6 appendices, including a glossary, a checklist for peer review of papers useful in reviewing one's own manuscript before submission, a complete model paper, a sample response to reviewers of the model paper, answers to questions in each of the chapters, and a flow chart to assist with selection of appropriate statistical techniques. The model paper is a complete manuscript presented in typed format as it would

be submitted to a journal. This will be extremely helpful to those who are not sure how to actually prepare a paper with all of its elements, such as tables and figures, for submission to a journal as a typed manuscript. The model paper would be equally useful for educational programs in which students are assigned papers for writing. Many writers make the mistake of trying to do "desktop publishing," meaning attempting to prepare the manuscript as it would look in print, with tables and figures incorporated into the text.

After reviewing this nicely done text from Robert Chatburn, I highly recommend it to practicing clinicians in respiratory care as well as other health care providers, including medical students, some of whom struggle with these concepts. This book will be especially beneficial and a unique resource for faculty and students in respiratory care programs. Respiratory therapy now has a current text on research methodology.

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Blood Collection in Healthcare. Majorie Schaub Di Lorenzo MT SH and Susan King Strasinger DA MT. Philadelphia: FA Davis. 2002. Soft cover, illustrated, 98 pages, \$19.95.

As a nurse who teaches venipuncture skills to other nurses, I looked forward to reading **Blood Collection in Healthcare** by Majorie Schaub Di Lorenzo and Susan King Strasinger. A postscript to the title states that the text is designed to be used for a short course. I think it would be best used in the classroom setting, with an experienced instructor, and not as an independent study text.

The authors provide some excellent tools for teaching a venipuncture course or class. Some of the teaching tools made available include a Microsoft PowerPoint presentation (which I did not review), information on obtaining teaching videos from product vendors, detailed lecture outlines, unit quizzes, and a comprehensive exam with the answers included. Some of the unit exercises include detailed, step-by-step guides that could be used as a skills or competency check-off evaluation. The inside front and back covers of this paperback text have a Vacutainer blood draw tube guide that includes color pictures of laboratory tube tops, additives, and general laboratory informa-