

**Exercise Testing and Interpretation: A Practical Approach.** Christopher B Cooper and Thomas W Storer. Cambridge, United Kingdom: Cambridge University Press. 2001. Soft cover, illustrated, 278 pages, \$44.95.

This book is a practical guide to exercise testing, intended for an audience with a basic background in respiratory and cardiac physiology, although the book also contains sections useful to health care professionals who have a more extensive background in exercise physiology. The authors have well-established experience in teaching this topic in a number of academic settings, which supports the value of this book as an introductory text. For a physician, a respiratory therapist, or a pulmonary function technician with no prior exposure to exercise testing, this book is an excellent way to begin to learn about exercise testing.

In comparison with other currently available exercise testing textbooks this book is unusual in that it fully covers many practical issues in the performance of exercise testing and acquisition of appropriate data. A major portion of the book focuses on the equipment available for exercise testing and on a variety of exercise protocols, in a depth not attained by other texts.

The chapter on instrumentation begins with a complete discussion of ergometers, ranging from the simplest friction ergometers to electronically controlled ergometers and treadmills. The next section gives a comprehensive review of devices that measure exercise ventilation, again covering the entire range of instruments that could be used, ranging from simple equipment that might be found in a community exercise facility to instruments in sophisticated research facilities. Finally, a full range of respiratory gas analysis devices are discussed, with explanation of the principles underlying the measurement of gas concentrations, practical points concerning potential errors of measurement, and suggestions for proper maintenance of the instruments.

The chapter on testing methods describes "field test" protocols used for fitness studies of normal subjects and that require minimal equipment. This includes a description of the 12-min run, the 6-min walk, and other protocols for estimating maximum oxygen

consumption. Though these tests are generally most applicable to exercise trainers and health clubs, it is helpful for exercise testing personnel at tertiary care facilities to be aware of these tests as nontechnical options for certain subjects. A number of simple protocols that measure nonmaximal oxygen consumption are discussed, along with cautions concerning the interpretation of the results for diagnostic purposes. The traditional maximal progressive work exercise protocols are covered appropriately, including a perspective on adjusting the protocol to the subject's capacity. The authors discuss the preparation of subjects for exercise testing, including basic laboratory safety, a description of the test for the patient, and an appropriate process to obtain informed consent.

The chapter on interpretation of the response variables obtained in an exercise test is brief relative to the complexity of the information that needs to be evaluated, but may be sufficient for an introductory text. However, the wide range of variation among normal subjects is not adequately covered, especially with respect to the wide normal range of maximum exercise heart rates. Likewise, the effects of fitness and training are only touched on lightly and deserve more coverage in a book that includes fitness program testers as part of its audience. The section on exercise electrocardiogram interpretation is too superficial to be helpful, and other texts need to be consulted for better background on this topic. Likewise, the range of exercise abnormalities observed in many different diseases is not discussed, and again other advanced texts are available to fill this need.

The book provides a relatively brief and simplified set of examples for interpreting the full data sets obtained in a diagnostic exercise test. The 9-panel data display produced by commercial exercise testing systems often overwhelms beginning interpreters, and the brief explanation provided for the example cases may prove inadequate for beginners. The paucity of example cases will not prepare the reader to interpret any but the simplest of diagnostic exercise tests. Because of that brevity, the chapter examples will not be particularly useful for experienced exercise practitioners.

A unique feature that deserves special mention is this book's extensive set of appendices, which include reference values for various exercise tests, a glossary, and useful forms for protocols and supplemental materials. This 60-page section alone justifies purchasing the book, for even the most sophisticated exercise facility.

In summary, this book is intended for beginners who have background knowledge of respiratory and cardiac physiology, and it serves this introductory function as well as any other book on the market. The interpretation of test results receives relatively little attention; this is a complex topic that requires a longer book for full coverage. Certainly the appropriate acquisition of reliable data is the essential first step in the performance of exercise tests, and this book is especially well suited to teaching those who will perform and troubleshoot the tests.

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**Clinical Exercise Testing.** Idelle M Weisman and R Jorge Zeballos, Editors. (Progress in Respiratory Research, Volume 32. CT Golliber, Editor.) Basel, Switzerland: Karger. 2002. Hard cover, illustrated, 329 pages, \$192.25.

I have spent all of my academic career as a pulmonologist and have a nerdy infatuation with exercise physiology. I have exercised subjects from lung transplant patients to Olympic athletes, and from clinical laboratories to research facilities in bizarre and remote places as high as 21,000 feet altitude. I have loved trying to understand how the body works under all kinds of stresses, the most natural of which is exercise. It is thus with great gusto that I agreed to review **Clinical Exercise Testing**.

I will start out by saying that I was not disappointed and that I learned a great deal from reading this book from cover to cover. It is a valuable addition to the library of any physician who is involved in exercise testing, and for any respiratory therapist or exercise technician who works in a pulmonary function or exercise testing laboratory.