Human Physiology (2nd ed.)

Robert F. Schmidt and Gerhard Thews (editors)
New York: Springer-Verlag, 1989, 825 pp., $79.00.

Human Physiology is a textbook written primarily for medical students. The first edition (1983) was the English translation of the German textbook, *Physiologie des Menschen,* which was first published by Hermann Rein in 1936. The second edition has been revised, reorganized, updated, and expanded by about 100 pages. The book represents the combined efforts of 25 German authors.

Human Physiology is a thorough and well-organized textbook. Classic physiology is emphasized throughout the book's 34 chapters. An introductory section contains various topics in cell physiology. The emphasis of this section is on membrane transport, membrane electrical activity, and synaptic transmission, with little discussion of other intracellular events. This section is followed by a section on muscle and neurophysiology. These chapters are notable for their breadth and depth of material. Almost 150 pages are devoted to sensory physiology. The chapter on general sensory physiology includes a number of classic theories of psychophysics and even has a paragraph on parapsychology. Thirst and hunger are treated as special senses. The chapter on the autonomic nervous system (ANS) goes well beyond the usual discussion of the peripheral ANS by including detailed information on central autonomic mechanisms. The section on neural and hormonal regulation contains a chapter devoted to principles of regulation and control theory. However, the concept of homeostasis is underemphasized throughout most of the book. The remainder of the book covers the circulatory and respiratory systems, energy balance, digestion, excretion, and reproduction. The chapters on reproduction lack the detail found in other chapters.

The experimental nature of physiology is emphasized throughout the text. The authors have incorporated numerous figures containing actual or stylized experimental data. Mathematical formulas are abundant in many chapters. Chemical structures and biochemical pathways are almost totally absent. For example, the biosynthesis of steroid hormones is briefly described, yet the structure of a steroid is never shown. This approach is explained by one of the authors, who states that "structural formulas can be found in textbooks of biochemistry." Brief references to human medicine and pathophysiology are common.

Three chapters stand out as unique among medical physiology textbooks. One is a short chapter on information theory. This chapter is complex and very mathematically oriented, emphasizing the importance of redundancy and parallel transmission of information. The chapter on work physiology is very interesting and practical, discussing physical and mental performance and describing the physiological adjustments to work. Additional topics included in this chapter are performance limits, exhaustion and fatigue, circadian rhythms, training, and aptitude testing. The chapter on aging is a valuable addition to the text. The chapter contains a brief discussion of life expectancy and theories of aging, followed by a system-by-system description of age-related changes in structure and function. Unfortunately, there is no attempt to tie these concepts together around unifying themes, such as loss of enzymatic activity or replacement of functional tissue with connective tissue.

The writing style of *Human Physiology* is succinct; it reads smoothly and holds the reader's interest. New terms and important points are emphasized with bold type or italics. Occasional small-print paragraphs provide more detailed discussions of certain topics. There are over 600 figures, almost all small, two-color figures. Some of the figures are very detailed, with too much information and lengthy figure legends. References found at the end of each chapter include textbooks, review articles, and original research articles. The most recent references are dated 1987. Several classic works are cited. The index is very thorough, enhancing the value of this book as a reference.

Human Physiology has a solid grounding in physiological principles and contains a wealth of information in a readable style. Students will benefit from the inclusion of both experimental and clinical approaches to physiology found in this excellent textbook.

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Future Meetings

1991	
APS Conference: Interactions of the Endocrine and Cardiovascular Systems in Health and Disease	Sept. 29–October 3 San Antonio, TX
1992	
FASEB Spring Meeting	April 5–10 Anaheim, CA
APS Conference: Integrative Biology of Exercise	September 22-26 Colorado Springs, CO
APS Conference: The Cellular and Molecular Biology of Membrane Transport	November 4-10 Orlando, FL
1993	
FASEB Spring Meeting	March 28–April 1 New Orleans, LA
1994	
FASEB Spring Meeting	April 24–29 Anaheim, CA

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Scientific Meetings and Congresses

Second International Conference on Sodium/Calcium Exchange, Baltimore, MD, April 8-10, 1991. *Information*: Marketing Department, New York Academy of Sciences, 2 East 63rd Street, New York, NY 10021, Tel: 212-838-0230, Fax: 212-888-2894.

37th Annual Meeting, American Society for Artificial Internal Organs, Chicago, IL, April 25-27, 1991. *Information:* ASAIO, 2200 North Federal Highway, Suite 201, Boca Raton, FL 33431-7710. Tel: 407-391-8589.

Magnesium in Clinical Medicine and Therapeutics: State of the Art - 1991 and Workshop on Methods for Assessing Magnesium in Body Fluids, Cells and Tissues, La Jolla, CA, May 2-4, 1991. *Information:* B. M. Altura, Box 31, SUNY Health Science Center, 450 Clarkson Avenue, Brooklyn, NY 11203, Tel: 718-270-2618 or Leo Galland, 41 East 60th Street, New York, NY 10022, Tel: 212-308-6622.

Conference on Neurotoxins and Neurodegenerative Disorders, Philadelphia, PA, May 6-8-1991. *Information:* Richard Heikkila, New York Academy of Sciences, 2 East 63rd Street, New York, NY 10021, Tel: 212-838-0230, Fax: 212-888-2894.

7th BMSR Workshop, "Models of Complex Respiratory Dynamics in Sleep and Wakefulness," Anaheim, CA, May 11, 1991. *Information:* Gabriele H. Larmon, BSR, University of California, School of Engineering, Los Angeles. Tel: 213-740-0839, Fax: 213-740-0343.

ANNOUNCEMENTS

Senior and Postdoctoral Research Associateships

The National Research Council (NRC) announces the 1991 Resident, Cooperative, and Postdoctoral Research Associateship Programs for research in the sciences and engineering to be conducted on behalf of 30 federal agencies or research institutions whose 115 participating research laboratories are located throughout the United States. The programs provide opportunities for PhD scientists and engineers of unusual promise and ability to perform research on problems largely of their own choosing yet compatible with the research interests of the sponsoring laboratory.

Approximately 450 new full-time Associateships will be awarded on a competitive basis in 1991 for research in chemistry; earth and atmospheric sciences; engineering and applied sciences; biological, health, and behavioral sciences and biotechnology; mathematics; space and planetary sciences; and physics. Most of the programs are open to both US and non-US nationals, and to both recent PhD recipients and senior investigators.

Awards are made for 1-2 years, renewable to a maximum of 3 years; senior applicants who have held the doctorate at least 5 years may request a shorter period. Annual stipends for recent PhD's for the 1991 program year range from $27,150 to $42,000 depending upon the sponsoring laboratory, and will be appropriately higher for senior Associates. Financial support is provided for allowable relocation expenses and for limited professional travel during duration of the award. The host laboratory provides the Associate with programmatic assistance including facilities, support services, necessary equipment, and travel necessary for the conduct of the approved research program.

NASA/NSF Research Projects

On October 11-12, 1990, the National Aeronautics and Space Administration (NASA) and the National Science Foundation (NSF) held a science working group meeting to discuss future joint projects to be conducted in polar areas that are applicable to long duration space flight, as well as beneficial to future polar science. Some of the areas of interest are circadian rhythms and sleep disturbances; epidemiology of infectious illness; energy balance and thermoregulation; telecommunication; habitat design; workload assessment; multicultural factors; group dynamics; and mental health. A joint NASA/NSF research announcement is planned for release in March 1991 for research starts in winter 1992. *Information:* Dr. J. Stoklosa, NASA, Manager, Biomedical Programs, 202-453-1527, or Dr. P. Penhale, NSF, Manager, Polar Biology and Medicine Program, 202-357-7894.