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Human Cardiovascular Control



Synopsis

This is a new and comprehensive analysis of reflex and hormonal control of the human cardiovascular system that grew out of Rowell's 1986 volume, *Human Circulation: Regulation During Physical Stress*, and incorporates more recent findings. The goal is to assist students, physiologists and clinicians to understand control of pressure, vascular volume, and blood flow by examining the cardiovascular system during orthostasis and exercise, two stresses that most affect these variables. These stresses are employed to analyze the passive properties of the vascular system and provide a basis for a detailed examination of how these properties are modified by mechanical, neural, and humoral factors. Interactive effects of the vasculature on cardiac performance are stressed to underline the importance of autonomic control supplemented by muscle pumping to maintain adequate ventricular filling pressure, particularly during exercise. Limitations in cardiac pumping ability, in oxygen diffusion from lungs to blood and from blood to active muscle, in metabolism, and in neural control of organ blood flow are analyzed to explain how total oxygen consumption is limited. The unsolved mystery is the nature of signals that govern the cardiovascular responses to exercise. This is discussed in a new and critical synthesis of ideas and evidence concerning the specific "error signals" that are sensed and then corrected by activation of cardiac and vascular effectors during exercise.

Book Information

Hardcover: 500 pages

Publisher: Oxford University Press; 1 edition (January 15, 1993)

Language: English

ISBN-10: 0195073622

ISBN-13: 978-0195073621

Product Dimensions: 9.5 x 1.4 x 6.4 inches

Shipping Weight: 2 pounds (View shipping rates and policies)

Average Customer Review: 5.0 out of 5 stars 4 customer reviews

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Customer Reviews

"A detailed, comprehensive analysis." --*Annals of Internal Medicine* "It is a delight to read the

historical perspective provided for each of the major concepts discussed as that allows the reader to gain an understanding of the early contributions by a number of scientists to the concepts of cardiovascular control accepted today....Pertinent headings are presented throughout to ease the digestion of the wealth of information provided. The illustrations are excellent, each elaborating concepts presented in the text. The author has provided mini summaries at the end of each section so that major points of importance are emphasized....When finished with this volume I had the feeling that I had just received a thorough education in the current concepts of blood pressure regulation." --J.A. Armour, MD, PhD, Integrative Physiology and Behavioral Science "This is a unique publication that succeeds in synthesizing material spanning decades of reported work into an integrated view of the topic of circulatory control....The writing is highly readable and the illustrations are clear and helpful. While progression from one section to the next flows logically, it is also well suited to reading a chapter at a time....Will be valuable for students and investigators, or any discipline in physiology or medicine, who are interested in cardiovascular function, exercise, or comparative biology....Engaging reading..." --Kathy F. Sietserna, MD, Chest "This book provides a superb synthesis and compendium of what is known and not known about cardiovascular function in people during exercise. Rowell gives excellent examples of integrative physiology in his description of the complex interplay of critical variables that maintain cardiopulmonary homeostasis during standing and dynamic exercise...Each chapter is well developed, informative, and provocative...Human Cardiovascular Control should be readily available to all cardiologists, cardiovascular physiologists, and those involved with exercise and sports who want to understand and be abreast of this discipline, It is an excellent and provocative textbook..." --Carl Rothe, Indiana University, School of Medicine

This new analysis of reflex and hormonal control of the human cardiovascular system developed from questions raised in Human Circulation: During Physical Stress (Rowell, 1986) and from recent findings. The goal is to help students, physiologists and clinicians understand the control of pressure, vascular volume, and blood flow by examining the cardiovascular system during orthostasis and exercise, two stresses that most affect these variables. A discussion of the passive physical properties of the vascular system provides a basis for explaining how vascular control is modified by mechanical, neural, and humoral factors. Interactive effects of the vasculature on cardiac performance are emphasized; they reveal the importance of autonomic control, supplemented by muscle pumping, in maintaining adequate ventricular filling pressure. The author's detailed analysis of how total oxygen consumption is restricted focuses on limitations in cardiac

pumping ability, oxygen diffusion from lungs to blood and from blood to active muscle, oxidative metabolism and neural control of organ blood flow. An unsolved mystery is the nature of the signals that govern the cardiovascular responses to exercise. This is discussed in a new and critical synthesis of ideas and evidence concerning the "error signals" that are sensed and then corrected by activation of the autonomic nervous system during exercise.

Is it weird to say i'm in love with a book? Because I am. I had to rent out Rowell's book in the university library because I felt so lost in my Cardiovascular Exercise Physiology book, and man did this bad boy come in handy. Not only that, but the diagrams and pictures inside were helpful the language was engaging and really, after the semester was over I still wanted this book. I returned (the now thoroughly highlighted) library book (sorry!) and bought this, read it over and highlighted it all over again. It was also useful for my next two semesters and in the end was a useful reference for my comps. Solid investment.

Amazing book. I really liked.

Good book.

It arrived a little bit late. but the book itself came with a very good shape and new.

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