



Handbook of Physiology: Section 12: Exercise: Regulation and Integration of Multiple Systems

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This is the first section of the Handbook of Physiology to deal exclusively with exercise. It is also the first single volume to analyze in-depth the regulation and integration of motor, respiratory, cardiovascular and metabolic systems over the broad range of functions demanded by exercise. Its systematic examination of the regulation of these four systems draws from every area of physiology as well as from pharmacology, biochemistry, cellular and molecular biology and medicine. It highlights exercise as a uniquely powerful means of exploring the integrative aspects of whole body function.

One feature of this volume is its in-depth analysis of the regulatory mechanisms responsible for the close matching of motor, respiratory, cardiovascular, and metabolic control during exercise. By combining studies of control at cellular and molecular levels with studies on whole animals, this *Handbook* provides the natural and logical integration that is a hallmark of physiology--and is also what lures many scientists to the study of exercise.

The internationally recognized authors provide a critical analysis of the mechanisms that govern control of movement, breathing, pulmonary gas exchange, blood flow and blood pressure, and skeletal muscle metabolism. They examine both functional and structural limits to the performance of organ systems under severe stress and show how these limits can be altered by age and physical conditioning. In some cases this requires treatment of topics that have not been reviewed before such as how the heart interacts mechanically with the pericardium, lung, and chest wall to alter central hemodynamics.

This volume offers a unique synthesis of fresh information and ideas about the physiology of exercise that will provide a basis for future investigations in this field. It sets a new standard for the physiological study of exercise and will be of keen interest and lasting value to physiologists, sports scientists, kinesiologists, cardiologists, motor control neurologists, and physicians.

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Review

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About the Author

Loring B. Rowell, Professor of Physiology and Biophysics, University of Washington. John T. Shepherd, Professor of Physiology and Biophysics, Mayo Clinic and Foundation.

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