

PER-OLOF ÅSTRAND
KAARE RODAHL

Textbook of Work Physiology

PHYSIOLOGICAL BASES
OF EXERCISE

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TEXTBOOK OF WORK PHYSIOLOGY

Physiological Bases of Exercise

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Textbook of Work Physiology

PHYSIOLOGICAL BASES OF EXERCISE
Second Edition

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To

PROFESSOR ERIK HOHWÜ CHRISTENSEN,

who first introduced us to the field of work physiology.

It is to a large measure due to his encouragement

and continuous and active interest

that the writing of this book was undertaken.

Preface

The purpose of this new, revised edition of the *Textbook of Work Physiology* is the same as that of the original text: to bring together into one volume the various factors affecting human physical performance in a manner that is comprehensible to the physiologist, the physical educator, and the clinician. Contrary to most of the conventional textbooks of physiology, in which the emphasis is on the regulation of the various functions of the body at rest, the regulatory mechanisms studied during physical activity have been especially emphasized in this book. It is assumed that the reader has some knowledge of elementary physics and chemistry, as well as human anatomy and physiology. However, to facilitate the understanding of some of the physiological and biochemical events encountered during work stress and physical exercise, a certain amount of basic physiology and biochemistry has been included.

In the selection of the material, an attempt has been made to meet the modern needs of the student of physical education at both the undergraduate and the postgraduate levels. More references have been included than is customary in most textbooks. Inevitably, since the submission of our revised manuscript, new developments have taken place which we were not able to include in this edition.

We are aware of the fact that the curriculum in many physical education programs does not permit such a comprehensive study of physiology as this book may entail. For this reason, each chapter has been written as a fairly complete entity, relatively independent of the rest of the book. With this arrangement, the book may also be useful for those students who wish to penetrate more deeply into a particular field or a limited area of study.

It is our hope that this text may be useful not only in the teaching of physical education but also in the teaching of clinical and applied physiology and that it may serve to stimulate the appreciation of the role of physical education for young and old, in health and disease.

Much of the unpublished material included in this book has been gathered in collaboration with our colleagues at the College of Physical Education in Stockholm, and at the Institute of Work Physiology and the College of Physical Education in Oslo. Their kind cooperation is gratefully acknowledged. We have also benefited greatly from personal association and frequent discussions with

our many colleagues in these institutions. We are especially indebted to O. Grönneröd and O. Vaage for their valuable contribution in the revision of Chapter 2 and to O. Vaage and N. Secher in preparing the section on rowing in Chapter 16.

We are also very grateful for the technical assistance given us by Karin Marina and Joan Rodahl in the preparation of the manuscript.

Per-Olof Åstrand
Kaare Rodahl

Textbook of Work Physiology

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