Exercise and Altitude

Medicine and Sport
Vol. 1

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Published for and on behalf of Research Committee
International Council of Sport and Physical Education
UNESCO

S. Karger Basel (Switzerland) New York

Exercise and Altitude

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With 47 figures and XXIV tables

S. Karger Basel (Switzerland) New York 1968

This volume is dedicated to
Ben Eiseman .D.
surgeon, sportsman, friend

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Book design by Thomas Duss, Basel
Printed in Switzerland by Buchdruckerei National-Zeitung AG, Basel
Blocks by Steiner & Cie. AG, Basel
Binding by Max Grollimund, Basel

Editor's Preface

The publishing house of S. Karger, Basel has decided to issue a series of monographs devoted to selected themes that have a bearing on Medicine and Sport. The subject occupies an important place in two different academic disciplines. First, in the Sports Sciences, second in Medicine. In the former, it stands alongside scientific studies in other fields such as Psychology of Sport, Sociology of Sport, History of Sport, Underwater Medicine, Biomechanics, Biochemistry of Sport, Sport and Leisure, Sport and Work, Sport and Law, Sports Facilities, and Ergometry. All of these as well as others are under investigation by the Research Committee and by Working Groups of the International Council of Sport and Physical Education (ICSPE) of UNESCO. Medicine and Sport or Sports Medicine has been dealt with competently for many years by the Fdration Internationale de Mdecine Sportive (FIMS), the recognized world organization of sports physicians. The discipline falls into four categories : Applied Physiology,
Clinical Medicine, Traumatology and Rehabilitation. Each of these also encompasses issues other than exercise even though no other science is thus integrated. However, the emphasis which Sports Medicine lays upon the practical application as well as on the systematic study of physical activity has decisively contributed to their conceptual growth and to their pragmatic relevance.

Medicine and Sport or Sports Medicine is a branch of clinical medicine. Thus, the Karger series of monographs will appear under the editorial supervision of physicians. At the same time, it is appropriate to point out that medicine owes a debt of gratitude to experts in biophysics, biochemistry, engineering, and mathematics. Many contributions made by specialists in these fields will receive attention in subsequent volumes of this series, among them one on Biomechanics, whose editorial board includes Professor J. WARTENWEILER of Zurich, and Professor M. HEBBELINCK of Brussels; and one on Biochemistry of Exercise, edited by Professor J. POORTMANS of Brussels; while others will review specific medical problems of exercise that have been identified only in recent years. One will be concerned with the current knowledge of Physical Activity and Aging, a second with Neuro-Psychiatric Aspects of Boxing, and a third with Sudden Cardiac Death during Exercise. Since independent media of communication have been established in the various specialities of the Sport Sciences, other than Medicine and Sport as enumerated earlier, due reference will be made to them. They include such important publications as the Proceedings of the First International Congress on Sports Psychology, edited by Professor F. ANTONELLI of Rome, and the International Review of Sport Sociology, edited by Professor A. WOHL of Warsaw.

An attempt has been made to include in the Advisory Board for the Karger monographs physicians from all over the globe drawn from the membership of the leading medical organizations in the sector under reference, more particularly the FIMS, the Medical Committee of the IOC, the Medical Committees of the International Federations, the ICSPER and the ICSPE. The last named body will sponsor the manuscripts with a view to consolidating and coordinating the world wide activities in Sports Medicine. Also, the Research Committee of the ICSPE desires thus to pay a tribute to the pioneering work in Sports Medicine of the Federation Internationale de Medecine Sportive which issues the authoritative Journal of Sports Medicine and Physical and Physical Fitness under the able guidance of Professor G. LA CAVA of Rome.
Since the Editor has the privilege to belong to several of the medical groups referred to above, he hopes to be able to benefit from the unmatched knowledge of their members on all aspects of Medicine and Sport.

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Introduction

The problem of exercise at altitude has occupied the attention of the Research Committee of the International Council of Sport and Physical Education of UNESCO since its inception. Early in 1963, members of the International Olympic Committee and of the International Federations presented requests to be supplied with information on the effect of altitude on athletic performances. The immediate reason for doing so was their desire to be able to discuss the then pending proposal to hold the 1968 Olympic Games in Mexico City. The paper which appears on p. 28 of this volume was prepared in response to these requests. Also in 1963, the Research Committee suggested to its Swiss member, Professor Schnholzer of Berne, cooperation with the International Council of Sport and Physical Education in the organization of a Scientific Seminar on Sport in mittlerer Hhe.


The present volume contains a number of papers whose publication as a monograph seems timely. The four main sections are devoted to a Historical Introduction, to Performance Analyses, Physiological and Clinical Observations, and The Pulmonary Circulation, followed by a Selected Bibliography.
The Research Committee of the International Council of Sport and Physical Education expresses its sincere thanks for permission to reprint the articles included in this volume, given by the authors and by the editors of the journals in which they were originally published, as detailed in footnotes to the opening pages of each chapter.

Because of their desire to present the different contributions in this monograph in the same manner in which they were originally written, the editors have abstained from insisting upon adoption in this treatise of a unified pattern of style, abbreviations, bibliographic references and other technical details.