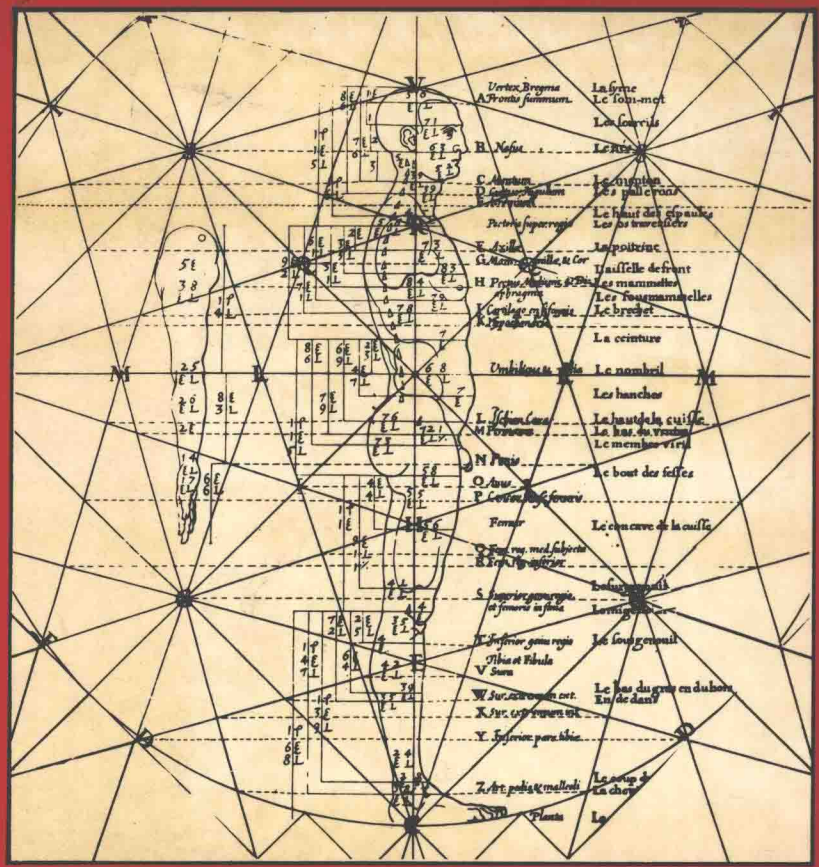
International Series on Sport Sciences,
Volume 9

KINANTHROPOMETRY II



Edited by
Michel Ostyn,
Gaston Beunen,
and
Jan Simons

UNIVERSITY PARK PRESS Baltimore

International Series on Sport Sciences, Volume 9

KINANTHROPOMETRY II

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KINANTHROPOMETRY II

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Series Editors: **Richard C. Nelson and Chauncey A. Morehouse**

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Preface

As early as 1975, there had been some talk of organizing at Leuven the 4th International Seminar for Ergometry, thereby relieving Berlin, which deserves so much praise for organizing so well the first three meetings for ergometry experts. Eventually, the project was abandoned because of the upcoming International Congress of Physical Activity Sciences in Montreal in 1976. At this congress a first attempt was made to assemble all scientists interested in measurement of man in movement—biometrists, physical anthropologists, human biologists, biotypologists, ergometrists—in a new discipline, kinanthropometry, to be considered as the sport science branch dealing with measurement and evaluation. The Montreal experience was encouraging enough to have a second edition planned by the Research Committee of the International Council for Sport and Physical Education. The Physical Education Institute of the Leuven University (Katholieke Universiteit Leuven) felt greatly flattered by the mandate it was given to organize this 2nd International Seminar for Kinanthropometry, and fully enjoyed doing it.

The date 1978 marks the 350th anniversary of the publication of Gerard Thibault's monumental work on fencing, "L'Académie de l'Espée," in this country (Antwerp). This Flemish fencing instructor at the French Royal Court was a brilliant precursor of the kinanthropometrists, since he studied the most suitable body dimensions and proportions to ensure success in fencing, and even carefully described the ideal fencer's typology. The organizers therefore chose two of the drawings done for him by famous Renaissance artists as emblems of the seminar. 1978 marks another anniversary: it was 50 years ago, at the Amsterdam Olympic Games, that a comprehensive biometric study was carried out for the first time on top athletes. The organizers of the seminar were extremely glad to welcome Professor Ernst Jokl from Lexington, Kentucky, a former athlete and subject of the population studied in 1928, among the participants.

The 112 participants from 14 countries were invited to attend 59 lectures, keynote reports, and papers, partly spread over two sections. The seminar was held with English as the only working language, without translation service. This may seem surprising for a country with three other national languages: Dutch, French, and German. It was nevertheless reasonably well accepted and meant for the organizers a real and considerable economy.

Several sponsors, listed among the honorary committee members, gave their moral and financial support, thus considerably facilitating the work of the orga-

nizers. The co-sponsors, among whom were several faithful Maecenae of all initiatives of our Institute, also deserve our sincere thanks for their financial contribution.

The organizing committee consisted exclusively of members of the academic, scientific, and administrative staffs of the Physical Education Institute, who, for the sake of good fellowship, volunteered for the job and did it very efficiently. We are extremely obliged to them all. Special thanks are due for the fine and delicate work done by the Scientific Committee.

Furthermore, we would like to acknowledge the active cooperation of all participants who made the days in Leuven a very enjoyable vacation week for the organizers. Their contribution has also made possible the edition of the proceedings. It is needless to say that Richard C. Nelson and Chauncey A. Morehouse, two good friends of those of us at Leuven and editors of the *International Series on Sport Sciences,* deserve our gratitude for accepting our proceedings in their prestigious series. Although we intended to publish all papers presented during the IInd International Seminar on Kinanthropometry this could not be realized. The total amount of pages was much too large to include all papers in one volume. For this reason we had to select the most valuable papers that were closely related to the topic of the seminar, and present abstracts of most others. We offer our apologies to those contributors whose papers were not included in full in the volume, but we are convinced that they will understand our position.

Special thanks are due to our colleagues J. Van Roey and R. Leslie of the Arts Faculty of the Université Catholique de Louvain (Louvain-la-Neuve), who were of constant assistance with English translation problems.

Finally, we hope that the seminar may have been a milestone in the worldwide acknowledgment of the young discipline of kinanthropometry; we also hope that the scientific work done in this field may from time to time find a practical and worthwhile application in the physical education of youth and in the training of sportsmen. We must not forget that, even if Thibault was an excellent fencing theorist in the 17th century, the king of France appointed an Italian as fencing instructor of his son, because the Italians were the best practitioners and also made the best fencers of their pupils.

Michel Ostyn

Introduction

This volume contains the proceedings of the IInd International Seminar on Kinanthropometry, held at the Institute of Physical Education of the Katholieke Universiteit te Leuven, Belgium, from July 10 to 13, 1978. Kinanthropometry can be described as the measurement and evaluation of different aspects of human movement:

Components of body build such as body measurements, proportions, composition, shape, and maturation.
Motor abilities: neuromotor functions as well as cardiorespiratory parameters.
Physical activities: daily activity as well as highly specialized sports performance.

Defined as such, kinanthropometry can be viewed as belonging to the field of human biology or physical anthropology, with the "homo movens" as specific object of study.

The need for developing kinanthropometry as a scientific discipline was recognized by the Research Committee of the International Council of Sport and Physical Education (ICSPE), and the establishment of an International Working Group in Kinanthropometry was approved during the VIIIth annual meeting of this committee, held in Brasilia (September 11, 1978). The organizing committee of the IInd International Seminar on Kinanthropometry decided that discussions within a limited area would be commendable, and the "Multidisciplinary Approach to Physical Fitness" was therefore chosen as the central theme.

By proposing this theme, the organizers intended to focus the attention of kinanthropometrists of all continents on several major multidisciplinary studies that are being or have been conducted to assess the physical condition of growing children. Furthermore, this theme seemed to be the more appropriate since the evaluation of physical fitness has been, and still is, one of the major interests of various research teams in Belgium. In the tradition of the Belgian scientist A. Quetelet (1796–1874), who was one of the originators of the quantitative assessment of human biometry, these research teams have conducted and are still conducting large epidemiologic studies on the physical fitness of the Belgian youth.

The opening lecture of the seminar was given by Professor Dr. W. D. Ross, Simon Fraser University, Burnaby, Canada. As one of the prime movers in kinanthropometry, he traced the historical development of this emerging discipline. The main theme of the seminar was covered by four topics:

Differential aspects of physical fitness
Ergometry
Kinanthropometry
Methodological problems related to the assessment of the development of physical fitness during growth.

The first three topics were introduced by eminent specialists: Dr. R. M. Malina (Austin), Dr. C. T. M. Davies (London), and Dr. J. Pařízková (Prague). In the section on growth and development several speakers were invited to report on their current multidisciplinary research projects. They were: Dr. J. Simons (Leuven), Dr. R. Mirwald (Saskatoon), Dr. R. J. Shephard (Toronto, Trois-Rivières), Dr. M. Hebbelinck (Brussels), Dr. Š. Šprynarová (Prague), and Dr. K. Willimczik (Darmstadt). Moreover, Dr. O. Eiben (Budapest), Dr. G. L. Rarick (Berkeley), Dr. E. Jokl (Lexington), and Dr. J. E. L. Carter (San Diego) agreed to give surveys on topics of current research in differential and methodological aspects of the assessment of physical fitness.

Although the main theme and the four sub-topics of the seminar had been announced to all contributors before the seminar, in organizing the contents of these proceedings it was sometimes a hazardous undertaking to classify a given contribution, and more than once a more or less arbitrary decision had to be taken. In the first part the *Differential Aspects of Physical Fitness: Variation and Interrelationships* are discussed. The factors underlying variation in physical fitness are treated in a first section with contributions on genetic, ecological, social, and cultural factors of physical performance. A second section deals with the interrelationships between different components of physical fitness and the factor structure of the motor domain. The significance of kinanthropometry in the evaluation of sports performance and the guidance of athletes is illustrated in a third section concerning the physical fitness of the young and adult athlete.

Part two, entitled *Growth and Development of Physical Fitness,* focuses on the multidisciplinary growth studies conducted during the past decade. The reports on these growth studies, which are mostly of a purely longitudinal or mixed longitudinal nature, are brought together in the fourth section, whereas the fifth section depicts some aspects of the development of physical fitness components.

Crucial points of discussion in the assessment of physical fitness are the techniques and methods used to measure, evaluate, and interpret physical fitness. Therefore, the third part, on *Methodological Aspects: The Assessment of Physical Fitness,* was divided into two sections. The sixth section describes methodological problems in the assessment of motor abilities and body dimensions. Some recent advances in ergometry are treated in the final section of this volume.

Even if the proceedings of a seminar cannot possibly give a complete picture of the total field, it is hoped that the varied materials offered in this volume will have some appeal for biometrists, physical anthropologists, human biologists, ergometrists, biotypologists, physical educators, and all those interested in the evaluation and interpretation of the assessment of man in movement.

Gaston Beunen
Jan Simons

KINANTHROPOMETRY II