Advances in Body Composition Assessment. Current Issues in Exercise Science (Monograph No. 3)

By Timothy G. Lohman. Published 1992 by Human Kinetics, Box 5076, Champaign, IL 61825-5076. (160 pp., $18)

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Current Issues in Exercise Science is a series of monographs designed to provide information in a timely manner. The author of this monograph, Advances in Body Composition Assessment, is Timothy G. Lohman, who has written many research articles on the assessment of body composition. He is one of the editors of the Anthropometric Standardization Reference Manual (Human Kinetics). As indicated in the preface, Lohman’s intent was to explore some of the issues, concepts, and controversies inherent in body composition assessment and to provide an overview for some of the critical areas being explored.

The monograph contains 11 chapters and a references section. The first chapter, Basic Concepts in Body Composition Assessment, is somewhat mistitled. Someone without a background in body composition assessment and who is not familiar with the various terms used might become confused with the definition of and measurement of body density and the two-component model for predicting body fat based on body density. Few basic concepts are presented, the difference between fat-free body mass versus lean body mass being the notable exception. Several one-paragraph explanations as to the need for new reference methods, regional estimates of body composition, and population-specific body composition equations are presented. The second chapter discusses various factors pertaining to densitometry, total body water, and mineral content and their interaction when assessing the fat-free body/body fatness. Lohman asserts that “body density is no longer the standard for body composition assessment” (p. 23) and that approaches based on a combination of density and total body water, density and mineral content, and density, total body water, and mineral content may give a more accurate assessment and need to be further examined.

The use of radiography (single photon absorptiometer, dual photon absorptiometry, and dual energy radiographs) to measure body composition as well as its various components is the subject of chapter 3. An advantage of this type of assessment is the ease of obtaining regional body composition. When reading this section, one must be careful not to confuse the various subtypes of radiography. The next chapter examines and contrasts various predictive methods for assessing body composition: anthropometric measures (skinfolds, circumferences), bioelectric impedance, and body mass index. Also discussed are population-specific equations and factors affecting these equations in relation to using these types of measures. Other predictive methods such as infrared reactance and ultrasound are not mentioned, even though there has been research on these methods. However, infrared reactance is mentioned in chapter 11, Advances in
Body Composition Measurement. Chapter 5 concerns itself with the distribution of fat in the body and its relationship to wellness. It is one of the shorter chapters, identifying and discussing the four major fat depots. Although brief, it does not give superficial treatment regarding the health risks associated with varying types of fat distribution but instead reflects the overall direction of the monograph.

Chapter 6 examines the special considerations when estimating the body composition of children and the elderly. In both cases the chemical composition of the body differs from that of the "normal individual" and therefore special equations must be used in order to avoid over- or underestimating body fat. Some of this chapter overlaps the material in chapter 2. The title of the following chapter, The Prevalence of Obesity in Children in the United States, is a bit misleading. Lohman defines obesity as 25% fat for men and 32% fat for women, these values having been calculated from appropriate body mass indices for an adult population. Previous literature reports the use of both the 85th and 95th percentile for the triceps skinfold as an alternative standard for obesity. Body fat based on these and the 50th percentile were calculated and presented for both sexes. It remains to be seen whether prepubertal children should be classified as obese on the basis of normative data that have been generated on an adult population.

How body fatness tracks from infancy to adulthood is examined in chapter 8. Sections on tracking in infancy, childhood, and adolescence are presented. Cultural, environmental, and genetic aspects are also touched upon. Chapter 9 examines the trend of assessing body composition using skinfolds as part of youth fitness tests. Elements of a model body composition program are presented. This chapter also contains a useful list of addresses of skinfold caliper suppliers. The next chapter deals with the use of anthropometric equations to predict minimal weight. A small section on sports other than wrestling is presented, and specific requirements for developing equations to predict percent fat for females is also discussed. It must be pointed out that the current literature principally concerns itself with the sport of wrestling. Chapter 11 examines some of the more recent developments in assessing body composition as well as the role of industry and future research needs. The discussion of total body electrical conductivity could easily have gone into chapter 4, where bioelectric impedance is initially discussed.

This monograph would be most valuable as a secondary resource for an upper level course in body composition. It provides important information for the experienced researcher and is best suited for those who already have had experience in assessing body composition.