

Book Review

Metabolic Calculations: Simplified, by David P. Swain and Brian C. Leutholtz, Williams & Wilkins, Baltimore, Maryland, 1997, 100 pgs.

Geared toward exercise-science students and American College of Sports Medicine (ACSM) certification candidates working in clinical environments, *Metabolic Calculations* provides simplified versions of ACSM metabolic equations. These equations have been both simplified and adapted to measurements familiar to American students (i.e., English system replaces metric units where possible) on the premise that simplified math reduces error. This concise reference runs 100 pages and consists of seven chapters that cover equations for walking, running, cycle ergometry, stepping, other modes of exercise (machines for rowing, multiple extremity movement, etc.), heart rate prescriptions, and calculating VO_2 max. Appendices present multiple sample problems and a few case studies, and explain how the equations were derived. The case studies and sample problems provide useful practice opportunities. The lack of an index is a drawback to quickly finding calculations for specific purposes (e.g., evaluating handicapped individuals, specific-arm ergometry calculations).

Swain and Leutholtz's approach has both benefits and drawbacks. To the purist, mathematical models should explain the concepts behind the equations and not merely be

memorized by rote. Equations should reinforce how the separate components factor into the final result, whether it is an overall picture of health or a specific exercise prescription. The authors' promise of reducing the chance of error may not be an acceptable exchange for empirical purists because this exchange implies a risk of students not truly comprehending the material at hand. Many of the equations are still long, although the units of measurement may be more familiar to practitioners in the American clinical system. This book will have limited use outside of the United States, where metric system is standard.

However, for the progressive, these equations are welcomed because they simplify their more cumbersome traditional counterparts. In a clinical setting, obtaining a correct outcome can outweigh the importance of understanding the mathematical theory or the components that factor into such equations. Many exercise-science students and professionals working in clinical settings will find this text extremely useful.

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