

Preface

In this new millennium, our love affair with fitness and sports continues to grow. Worldwide, although physical inactivity is still very prevalent in developed nations, more of us are joining fitness facilities or initiating fitness programs, such as bicycling, running, swimming, walking and weight training. Improvement in health and fitness is one of the major reasons that more and more people initiate an exercise program. Research has shown that adults who become physically active also may become more interested in other aspects of their lifestyles—particularly nutrition—that may affect their health in a positive way.

Nutrition is the study of foods and their effects upon health, development, and performance. Although a relatively young science, nutrition research has made a significant contribution to our knowledge of essential nutrient needs. During the first part of the twentieth century, most nutrition research focused on identification of essential nutrients and amounts needed to prevent nutrient-deficiency diseases, such as scurvy from inadequate vitamin C. More recently, medical researchers have focused on the effects of foods and their specific constituents as a means to help prevent major chronic diseases, such as heart disease and cancer, that are epidemic in developed countries. *Nutriceutical* is a relatively new term used to characterize the drug, or medical, effects of a particular nutrient. Recent research findings continue to indicate that our diet is one of the most important determinants of our health status, and although individual nutrients are still being evaluated for possible health benefits, research is also focusing on dietary patterns, or the totality of the diet, and resultant health benefits.

Other than the health benefits of exercise and fitness, many physically active individuals also are finding the joy of athletic competition, participating in local sport events such as golf tournaments, tennis matches, triathlons, and road races. Individuals who compete athletically are always looking for a means to improve performance, be it a new piece of equipment or an improved training method. In this regard, proper nutrition may be a very important factor in improving exercise and sport performance. Although the effect of diet on sport and exercise performance had been studied only sporadically prior to 1970, subsequently numerous sport scientists and sport nutritionists have studied the performance-enhancing effects of nutrition, such as diet composition and dietary supplements. Results of these studies have provided nutritional guidance to enhance performance in specific athletic endeavors.

With the completion of the Human Genome Project, it is only a matter of time that its practical applications may enhance our

health and sport performance. Our personal genetic code plays an important role in determining our health status and our sports abilities, and futurists speculate that one day each of us will carry our own genetic chip that will enable us to tailor food selection and exercise programs to optimize our health and sport performance. Such may be the case, but for the time being we must depend on available scientific evidence to provide us with prudent guidelines.

Each year literally thousands of published studies and reviews analyze the effects of nutrition on health or exercise and sports performance. The major purpose of this text is to evaluate these scientific data and present prudent recommendations for individuals who want to modify their diet for optimal health or exercise/sport performance.

Textbook Overview

This book uses a question-answer approach, which is convenient when you may have occasional short periods to study, such as riding a bus or during a lunch break. In addition, the questions are arranged in a logical sequence, the answer to one question often leading into the question that follows. Where appropriate, cross-referencing within the text is used to expand the discussion. No deep scientific background is needed for the chemical aspects of nutrition and energy expenditure, as these have been simplified. Instructors who use this book as a course text may add details of biochemistry as they feel necessary.

Chapter 1 introduces you to the general effects of exercise and nutrition on health-related and sports-related fitness, including the importance of well-controlled scientific research. Chapter 2 provides a broad overview of sound guidelines relative to nutrition for optimal health and physical performance. Chapter 3 focuses upon energy and energy pathways in the body, the key to all exercise and sport activities.

Chapters 4 through 9 deal with the six basic nutrients—carbohydrate, fat, protein, vitamins, minerals, and water—with emphasis on the health and performance implications for the physically active individual. Chapters 10 through 12 review concepts of body composition and weight control, with suggestions on how to gain or lose body weight through diet and exercise, as well as the implications of such changes for health and athletic performance. Several appendixes complement the text, providing data on caloric expenditure during exercise, methods to determine body

composition, nutritional value of fast foods, and other information pertinent to physically active individuals.

Enhanced Pedagogy

Each chapter contains several features to help enhance the learning process. **Chapter Learning Objectives** are presented at the beginning of each chapter, highlighting the key points and serving as a studying guide. **Key Terms** also are listed at the beginning of each chapter, along with the page number on which they are first highlighted and defined. Although some terms may appear in the text before they are defined, a thorough glossary includes the key terms as well as other terms warranting definition. **Key Concept Check** provides a summary of essential information presented in each main section. Students are encouraged to participate in several practical activities to help reinforce learning. **Check for Yourself** includes individual activities, such as checking food labels at the supermarket or measuring your body fat percentage, while the **Application Exercise** at the end of each chapter may involve more extensive involvement, such as a case study in weight control involving yourself or a survey of an athletic team. Students may wish to peruse all application exercises at the beginning of the course, as some may take several weeks or months to complete.

The bibliographic references are of three types. *Books* listed provide broad coverage of the major topics in the chapter. *Reviews* are detailed analyses of selected topics, usually involving a synthesis and analysis of specific research studies. The *specific studies* listed are primary research studies. The reference lists have been completely updated for this seventh edition, with the inclusion of nearly 450 new reviews and 300 new specific studies, and provide the scientific basis for the new concepts or additional support for those concepts previously developed. These references provide greater in-depth reading materials for the interested student. Although the content of this book is based on appropriate scientific studies, a reference-citation style is not used, that is, each statement is not referenced by a bibliographic source. However, names of authors may be used to highlight a reference source where deemed appropriate.

This book is designed primarily to serve as a college text in professional preparation programs in health and physical education, exercise science, athletic training, sports medicine, and sports nutrition. It is also directed to the physically active individual interested in the nutritional aspects of physical and athletic performance.

Those who may desire to initiate a physical training program may also find the nutritional information useful, as well as the guidelines for initiating a training program. This book may serve as a handy reference for coaches, trainers, and athletes. With the tremendous expansion of youth sports programs, parents may find the information valuable relative to the nutritional requirements of their active children.

In summary, the major purpose of this book is to help provide a sound knowledge base relative to the role that nutrition, complemented by exercise, may play in the enhancement of both health and sport performance. Hopefully, the information provided in this text will help the reader develop a more healthful and performance-enhancing diet. Bon appetit!

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The reviewers of the six previous editions have played an integral role in the changes that are made, and this edition is no exception. I wish to extend a special note of appreciation to those who reviewed the sixth edition text, and the seventh edition manuscript.

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