

Third Edition

# INTRODUCTION TO *KINESIOLOGY*

Studying Physical Activity



**SHIRL J. HOFFMAN**

EDITOR



*Includes online study guide with  
139 learning activities*

# Introduction to Kinesiology

STUDYING PHYSICAL ACTIVITY

THIRD EDITION

Shirl J. Hoffman, EdD  
Editor

运动学概论：身体活动研究

Introduction to kinesiology: studying physical activity



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To Tom and Dale

“Without friends, no one would choose to live, though he had all other goods”

—Aristotle, *The Nicomachean Ethics*

# PREFACE

## For Instructors

Writing an introductory text for any discipline is a daunting task, but it is especially so in a young discipline undergoing rapid evolution. Substantial questions about the discipline's nature, future, organization, purpose, name, and relationship to the professions have yet to be answered to the satisfaction of all kinesiologists. In one way or another, all these issues converge in the writing of an introductory text. This text takes bold positions on many of these issues, such as the name for the discipline, the central phenomenon of study, and definitions of critical terms. Issues that seemed less critical for understanding the big picture of kinesiology were purposely kept in the background so as not to distract students from the primary theme of the text.

Even more problematic for authors of introductory texts is the changing demographic landscape of students enrolling in departments of kinesiology. Gone are the days when physical education professors could confidently assume that all students entering as majors in their departments were planning to be physical education teachers and coaches. Now it is just as likely that students have their sights set on careers in sport management, athletic training, cardiac rehabilitation, fitness counseling and leadership, aquatic leadership, rehabilitative exercise, sport information, adapted physical education, or related professions. Faculty are encountering many students who elect the kinesiology major as preparation for graduate study in physical therapy, chiropractic, podiatry, or medicine. Still others choose kinesiology as a course in liberal studies, without specific professional goals in mind. And of course, a substantial percentage of students come to the introductory course lacking any clear vision of what career they will pursue. The likelihood that students with a diverse range of needs and interests would use this book was very much in mind at every stage of the writing process.

I believe that a shared interest in and curiosity about physical activity are what unite students with these differing professional aspirations and also make kinesiology the logical discipline for them to study. This book is centered on the phenomenon of physical activity. Students who lack insight into its pervasiveness and indispensability, or who doubt its worth in their personal or social lives, will not easily be convinced that a field of kinesiology is needed; thus, much of the text is designed to convince them of the centrality of physical activity to our lives. Most students come to an introductory class in kinesiology with a wealth of knowledge and experience about physical activity, but that is no guarantee they will appreciate its variety, complexity, and elegance. Like art educators, who often must reorient students accustomed to viewing their world with category-hardened habits of seeing before they can view it from a fresh and novel perspective, so the teacher of this introductory course must assist students in viewing physical activity in new and exciting ways if they are to appreciate fully the importance of the discipline of kinesiology.

The overarching purpose of this text, then, is to help students appreciate the breadth and importance of physical activity, to orient them to the discipline of kinesiology and help them understand its relationship to physical activity, and to introduce them to the physical activity professions. The perspective on physical activity is both broad and narrow. In part I, especially



chapter 2, the discussion ranges far beyond exercise, sport, or health-related physical activity. By embracing such an expansive view of physical activity and kinesiology, however, I am not suggesting that the emphasis currently given to sport and exercise in kinesiology be diminished. These topics have been and will continue to be the dominant forms of physical activity studied in the discipline. At the same time, the book will have missed its mark if it fails to expand students' conceptions of physical activity or fails to develop an appreciation for the potential contributions that kinesiology can make to fields far removed from sport and exercise.

## Plan of the Text

The text is organized around a model of kinesiology as a discipline that draws knowledge from three sources: participating in and observing physical activity, studying and conducting research, and delivering professional services. By defining the discipline as an integration of knowledge associated with experience, formal study, and professional practice, the authors hope that students will recognize the critical importance of all three of these dimensions of the discipline.

Chapter 1 provides an overview of the book, offers key definitions, and presents the model around which the text is organized. The model is intended to explain to those unfamiliar with the traditions of our field how the field is organized, and to help those who already are members of the profession understand how their work fits into the larger whole. Part I (chapters 2 through 4) focuses on experiencing physical activity; it uses a wide lens to view the many ways in which our physical activity experiences contribute to our understanding of kinesiology. Chapter 2 introduces students to "the spheres of physical activity experience" as a way of helping them appreciate the pervasiveness and importance of physical activity, not only in sport and exercise but also in work, rehabilitation, daily living, and other spheres of existence. Chapter 3 directs attention to the importance of physical activity experiences, concentrating on the way kinesiologists ("physical activity experience specialists") design and manipulate physical activity experiences to bring about predetermined ends. Discussions of the benefits of physical activity experiences can, often quite unintentionally, lead students to appreciate only the physical aspects of physical activity. The holistic approach taken in chapter 4 is intended to pique students' interest in the subjective aspects of physical activity. It invites students to consider the deep emotional and spiritual meanings, as well as the many different kinds of knowledge, that they can glean from physical activity.

Part II (chapters 5 through 11) introduces students to the academic subdisciplines of kinesiology, portraying them as elements in three spheres of scholarly study of physical activity: the biophysical, sociocultural, and behavioral spheres. The authors of the chapters in part II, eminent scholars in their subdisciplines, provide a general overview of each area of study with an eye toward helping students understand the particular contribution it makes to the discipline of kinesiology. Each chapter gives a brief overview of major historical events in the development of the subdiscipline; the research methods used in the subdiscipline; what professionals such as biomechanists, exercise physiologists, and others do in the course of their professional work; and how students' present knowledge can form a foundation for more advanced study. Each chapter presents practical, real-world applications from the subdiscipline and is organized to help readers understand why the subdiscipline is important and how it may relate to a variety of professional endeavors.

The third edition is different in several ways. New authors make an appearance in both parts II and III. Scott Kretchmar has additional support from Cesar Torres for chapter 5 on philosophy of physical activity, and Katherine Jamieson joins Margaret Duncan in the newer edition of chapter 7 on sociology of physical activity. New also to this edition is Jennifer Caputo, who has written chapter 11 on physiology of physical activity. The text is better for their valuable contributions. Returning authors include Richard Swanson, Jerry and Kathi Thomas, Robin Vealey, and Kathy Simpson, all of whom have reworked their chapters in an effort to reach the critical audience of this text. Part II is ambitious in its effort to cover many subdisciplines in single chapters. We hope this edition makes these chapters more "digestible" and accessible to undergraduate students who may not have in-depth background in the various subdisciplines. In teaching the material in these chapters, I have found it helpful

to incorporate lectures from colleagues in my department who are specialists in the relevant subdiscipline. Students enthusiastically welcome these visits.

The goal of part III (chapters 12 through 17) is to help students begin thinking about professions in which physical activity plays a central role. Throughout this section, authors have kept in mind that many students entering kinesiology departments may have tentative professional goals at best. To this end, chapter 12 takes a general approach to the physical activity professions, introducing students to what it means to be a professional and what will be required of them if they are to become professionals. This chapter also leads students through a series of steps intended to assist them in determining whether their interest, talent, and motivation suit them to a career in kinesiology.

Chapters 13 through 17 include a wealth of information about clusters of careers drawn from the spheres of professional practice. Each chapter focuses on a collection of professional opportunities within a sphere, including health and fitness, therapeutic exercise, teaching and coaching, and sport management. The authors of all these chapters explain the need for professions in the given area and offer a brief historical background of the sphere. In addition, each chapter includes an analysis of work settings in the sphere; up-close views of specific professions; an overview of educational qualifications needed to practice in the sphere; resources, case studies, and profiles of working professionals; and a section offering inside advice to those planning careers in that cluster of professions. All of these chapters have been updated and expanded for the third edition.

Returning authors include Chad Starkey, Kim Graber and Tom Templin, and Lori Miller and Clay Stoldt. A number of new faces appear in the roster of authors in part III. Chapter 13, on careers in health and fitness, has been rewritten by Jim Morrow and Laura Fast; and chapter 16 has been coauthored by Joe Luxbacher. Brief biographies of all of the authors can be found in the back pages of the text. Again, in teaching the course, I have found that outside visitors representing various career areas of the physical activity industry are valuable adjuncts to the introductory course.

## Features of the Text

Schematics guide the organization of the book and, while they may appear redundant, help students keep the big picture in mind as they read individual chapters. Key points and interesting sidebars are helpful supplements to the main text. As in the second edition, interactive exercises throughout the text involve students actively in their learning. These exercises engage students more deeply with the content, helping them put themselves into the picture described in a chapter. The study questions at the end of the chapter also have proven helpful in focusing students' attention on key points in the text. In the final analysis, however, the effectiveness of the text will depend on the creative uses to which it is put by the teacher. Rather than relying on the text as a single resource, teachers should integrate the various topics that it covers with challenging in-class and out-of-class projects that will encourage students to view themselves as professionals-in-training and take the initial steps toward identifying and attaining their career goals.

An addition to this edition of the book is the online study guide. This rich, interactive tool offers students a variety of learning features:

- **Interactive activities.** Using a variety of multimedia experiences, these activities engage students in the material. Scenario-based audio and video activities demonstrate an aspect of kinesiology and then require students to complete an activity based on the demonstration and explanation. Other activities involve drag-and-drop, selecting from a menu, or responding with short answers to photos and scenarios presented.
- **Study questions.** These questions reinforce key material throughout the text and help students comprehend the concepts.
- **Review of key points.** The online review allows students to test themselves on the key points with the use of interactive activities. Students have the option of printing out the key points as a study aid after completing the activity.



- **Activity feedback.** Students receive targeted information to correct or reinforce their answers to activities.
- **Web searches.** Students can seek out specific information on the Internet and then provide their findings on forms that can be printed out and turned in to you.

## For Students

If you are like most students, you probably entered college having decided on a major before you knew a great deal about it. You may not have thought much about such questions as, Why is the major important? What types of careers do people in the major enter after graduating? What subjects do students study in this major? How is the course of study organized? Even though you have decided on or are considering a major in kinesiology, you may not know much about the field of study and may have only vague ideas about the career opportunities available. Not knowing the answers to these questions at the beginning of your undergraduate experience makes it difficult to put course work in perspective and could leave you questioning the value of many of the courses that you are required to take.

We wrote this textbook to address those questions and concerns. The book is intended to help you understand what the discipline of kinesiology is, why it is important, what kinesiology majors study, what types of knowledge you will acquire over the course of four years, and what types of careers are available to you. If you read and study it carefully, this book will help you reach an early decision not only about whether you want to major in kinesiology but also about what type of career most interests you. You may see no pressing need to decide on a career at this early stage of your college experience; but as you will see in this book, there are advantages to identifying early the career path that you want to follow.

*Kinesiology* may be a term that you have never heard before. In fact, you may be enrolled in a major called exercise and sport science, or physical education and exercise science, or something else. One of the confusing things about this major is that the discipline is known by many titles. This circumstance isn't all that uncommon for a young and evolving area of study such as kinesiology; the discipline simply hasn't been around long enough for everybody to agree on a single term! Over the past decade, however, more and more scholars and college and university departments have decided to use the term *kinesiology*. For this reason we have selected it as the title of this text.

Because kinesiology integrates knowledge from a variety of sources and draws on theories, concepts, and principles from many other disciplines, students often find it difficult to describe or explain the field to their friends who aren't familiar with it. This text presents the discipline in a new and exciting way. It will help you understand not only the enormous breadth of the discipline but also how the many parts of the discipline are tied together. In the pages that follow, you will learn that physical activity is the centerpiece of the kinesiology discipline. Indeed, this idea may be the most important point in the book. Whether you plan to be a sport administrator, athletic trainer, physical education teacher, or physical or occupational therapist, you should have an interest in and curiosity about physical activity.

Just as the discipline of psychology is the study of human behavior and the discipline of biology is the study of life forms, the discipline of kinesiology is the study of physical activity. But don't interpret *study* to mean merely reading books, writing papers, and taking exams. Kinesiology integrates knowledge from three different yet related sources: your experiences performing and observing physical activity, the formal study of physical activity, and professional practice centered in physical activity. This new approach will help you understand the interrelationships of the parts of the discipline.

## How the Text Is Organized

Part I of the text will spark your thinking about physical activity, why it is important, and how it intersects our lives at a variety of different junctures that we call *spheres of physical activity experience*. If you think that sport and exercise are what kinesiologists study, you

are correct; but you are not correct if you think that these are the *only* forms of physical activity that kinesiologists study. After reading this book you should come to appreciate the fact that kinesiology also contributes to our understanding and improvement of physical activity performances in venues far beyond the athletic field or exercise gym. It also will become clear that human experience in physical activity is a unique source of knowledge; that humans have a unique ability to plan and engage in physical activity experiences to improve the quality of their lives; that the interaction of our thoughts and emotions (subjective experiences) with physical activity may be as critical as the activity itself; and that the unique contribution of teachers, coaches, fitness leaders, sport managers, athletic trainers, cardiac rehabilitation therapists, and many other related professionals consists of their skill in manipulating physical activity experiences to achieve predetermined objectives.

Whereas part I invites you to reflect on knowledge you have gained through the experiences of participating in and watching physical activity, part II presents broad coverage of the knowledge that we can derive from the scholarly study of physical activity. The chapter titles in this part of the book outline the core body of academic (theoretical) knowledge that all kinesiology students should master before graduation. At your institution a single course may cover each of these areas, or one course may cover two or more areas. To help you better organize this vast body of knowledge in your mind, we have divided it into larger categories called *spheres of scholarly study*. Nationally recognized scholars who are particularly skilled at introducing you to their areas of specialized study have written these chapters. Keep in mind that each chapter is intended only to introduce you to the area of study, not to provide you with all the scholarly knowledge that you will need to master in that area before you graduate.

Part III introduces you to the world of professional practice. Students enrolled in kinesiology departments often have widely disparate career goals, ranging from careers as an athletic trainer or physical educator to becoming a corporate fitness leader or a cardiac rehabilitation specialist, among many other possibilities. Each of these is a form of professional practice. This part of the book groups the many possible careers into *spheres of professional practice* according to similarities in the types of work and general educational requirements. Outstanding scholars in various areas of professional practice wrote the chapters. These writers are eminently qualified to describe the different types of work that physical activity professionals do, as well as to offer details concerning what you can do to develop yourself into an outstanding professional.

## Features of the Text

The book contains a great deal of information, perhaps more than you will be able to absorb in a single course. We have designed the text in a way that should help you absorb the material presented: Key points, interesting sidebars, interactive items, special elements, and some truly exciting photos should make this an enjoyable read. Don't skip over the objectives listed at the beginning of each chapter; they are your map for the pages that follow. Take time to read the many interactive items sprinkled throughout the text. These features will stimulate your thinking and reinforce what you have learned by reading the previous paragraphs. Don't miss the unique opportunity that they offer for learning.

Also, make sure to focus on the key points that you will find in every chapter. They are brief summaries of what your authors believe to be the most important points made in the previous few pages. Read each key point carefully and think back over what you have read. You will find also that many of the captions for photographs in this text are information packed. In many cases they constitute key points in their own right. The study questions at the end of each chapter will direct you to what the authors believe are some of the most important points they have covered.

Another don't-miss feature is the online study guide. Whenever you see an orange box in the margin of a page, that's a trigger to go to the study guide where you'll find a variety of multimedia experiences that'll help you learn, understand, and apply the information in the text. (If you're reading this as an e-book, you can simply click on the trigger and you'll go



directly to the online activity). The study guide material is essential to your complete understanding of the content in your course. There are four different kinds of online activities:



These activities use a variety of multimedia to demonstrate an aspect of kinesiology. Audio, video, drag-and-drop activities, and other activity types make the content come alive.



Web searches point you to specific information on the Internet and then give you the opportunity to submit your findings to your instructor.



The study guide provides an online review of key points in each chapter and lets you test yourself on how well you understand the material. You can print out the key points as a study aid if you choose to.



These are repeats of the end-of-chapter questions in the text. Your instructor may ask you to complete them online and turn them in.

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Good luck in your reading, and good luck in your career in kinesiology!



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The project of this sort is the work of many hands. I have been fortunate to play a central role in shaping its direction: a rare opportunity that has been thoroughly enjoyable. I would compare being editor of a work such as this to having been given the opportunity to drive a new automobile; the pleasure of steering it and guarding its fenders comes only if those at the factory have assembled a road-worthy product. My knowledgeable co-contributors and a team of highly competent people at Human Kinetics have indeed made this text—now in its third edition—a roadworthy product.

Although this book features the work of many authors, it isn't an anthology or a compilation: it is a textbook in every sense of the word. It is organized around a central theme; structured to accomplish specific purposes; and integrated in terminology, concepts, objectives, and graphics. Each author brings to the project a unique professional and academic background and a track record of achievement in his or her respective specializations. Their contributions have added a richness and breadth to the text that is largely responsible for the book's success. Achieving consistency and flow hasn't been easy, either for the authors, the editor, or the editorial staff at Human Kinetics. We will wait for your feedback to let us know how well we managed to pull it off. Ultimately the responsibility for pulling together the diverse contributions of authors, providing a structure for the text, ironing out inconsistencies in terminology, and interpreting material fell to the editor. Any errors that have been made, whether of commission or omission, are attributable to me, not to others who have given so generously of their time.

At the risk of inadvertently omitting a name I would like to give special acknowledgment to those who played key contributions in the production of *Introduction to Kinesiology*. My co-contributors caught "the spirit" of the project, sensed its importance, and produced highly readable and informative pages. The finished product is as much theirs as it is mine. Special credit goes to my colleague Janet Harris who shared editorial duties for the first edition and played a major role in giving structure to the text. The time I found to carry out the editor's role was extracted from the hours I might have spent with my wife, Claude Mourot. Her understanding and steadying influence was more important than she knows.

Only those who have been fortunate enough to author books published by Human Kinetics can appreciate the talents of its publication teams. Those specifically involved with this book are listed on the copyright page, and each did his or her work superbly. Pam Brown, a faculty member at University of North Carolina at Greensboro, and Lisa Morgan, an instructional designer at Human Kinetics, created the activities in the student study guide. They did an outstanding job of making the material in the book interactive and easier to learn.

# CREDITS

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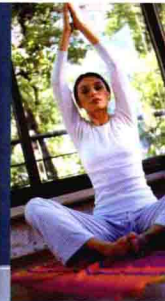
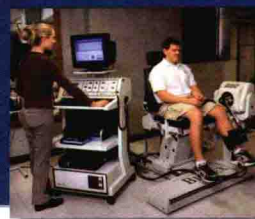
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**Figure 16.3:** Based on the study of G.M. DeMarco, 1999, "Physical education teachers of the year: Who they are, what they think, say, and do," *Teaching Elementary Physical Education* 10(2): 11-13.

**Figure 17.2:** Based on the work of A. Meek, 1997, "An estimate of the size and supported economic activity of the sports industry in the United States," *Sport Marketing Quarterly* 6(4): 15-22.



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