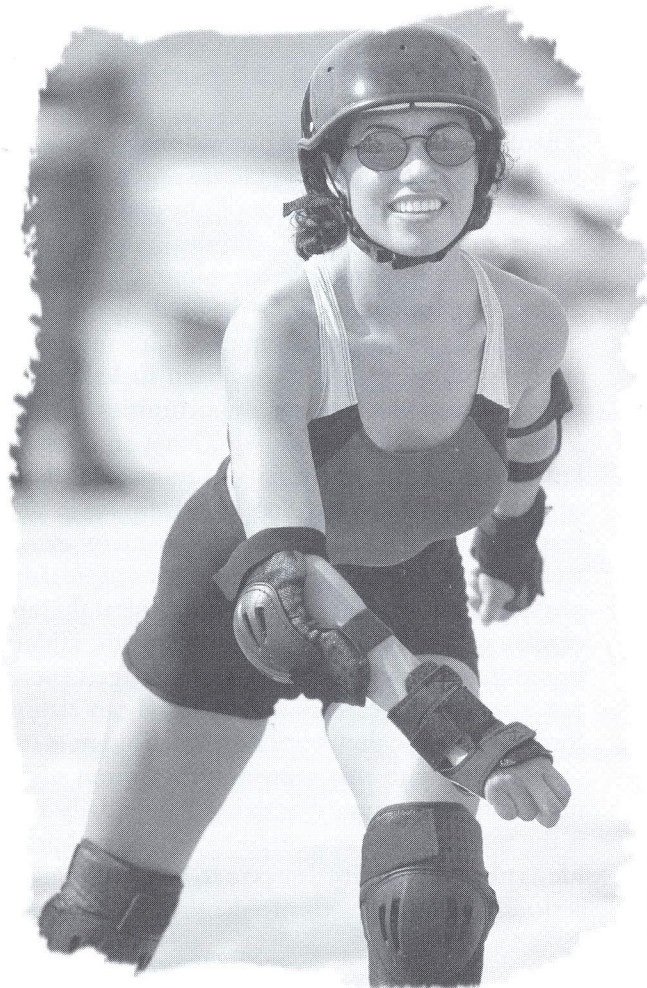


Introduction to Kinesiology and Physical Activity

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Have you been physically active today? If you haven't been to the gym or the athletic field lately, the temptation may be to answer no. But even if you haven't exercised or played sports or engaged in hard physical labor, most likely you have been immersed in physical activity. Today, for example, you managed to get out of bed, walk to the bathroom, get dressed, eat breakfast, and perhaps make your way to class, each of which requires hundreds of different movements. These movements are remarkable not only for their complexity but also for their variety. In fact, physical activity is so interwoven into your life that it's probably far easier to count the number of ways in which you weren't physically active today than the ways in which you were.

A moment's reflection will convince you that our lives are an endless universe of physical activity. We walk, reach, run, lift, leap, throw, grasp, wave, push, pull, and perform thousands of other movements as part of living a normal human existence. Physical activity is essential in our work. Our daily tasks around the house require physical activity. It is an important means of expressing ourselves through gesture, art, and dance. Our health depends on performing regular forms of vigorous physical activity, and we rely on various forms of recreational physical activity for fun and enjoyment.

Even more than this, physical activity is part of our human nature. It is an important means by which we explore and discover our world, and it helps define us as human beings. A significant part of our lifetimes is spent learning to master a broad range of physical activities, from the earliest skills of reaching, grasping, and walking to enormously complex skills such as hitting a baseball, performing a somersault, or playing the piano. Most of us master a broad range of physical activities at a moderate level of competence. Others concentrate on a limited number of skills, a focus that can lead to extraordinary performances ranging from the incredible accuracy with which an NFL quarterback can throw a football to the amazing finger dexterity of a concert pianist.

This chapter is intended to arouse your curiosity about physical activity and cause you to appreciate its complexity, its diversity, and its importance to human life. As a prospective physical activity professional you must understand how the discipline of **kinesiology** is organized and how it relates to the phenomenon of physical activity. Because

you've been physically active throughout your life, you already have a solid background of knowledge about physical activity. This background will be of enormous benefit to you as you roll up your sleeves and begin to probe the depths of knowledge of kinesiology. At the same time, our experiences can sometimes hinder our understanding, especially when we are asked to think about a subject in new and different ways. You probably haven't thought about physical activity or experienced it in quite the same way that this text will ask you to do. At times you may have to set aside past experiences and assumptions so that you can examine physical activity from a fresh and exciting point of view.

As you can see, you have a great deal to accomplish in this chapter, so if you're feeling a bit drowsy, you might want to take a brisk walk, run a few miles, or play a favorite sport with friends before you go any further. When you come back, you will be rejuvenated and ready to learn about the fascinating subject of physical activity.

Ways of Developing an Understanding of Kinesiology

Thanks to the influence of professionals working in the field of kinesiology, people are now more aware than ever of the importance of physical activity to our cognitive, emotional, physical, and spiritual well-being. For example, enrollment in college and university curriculums devoted to the study of physical activity is on the rise. This interest in studying physical activity has been fueled in part by an explosion of career opportunities for college-trained professionals who have an in-depth knowledge of the scientific and humanistic bases of physical activity, coupled with training in professional practice. Career possibilities now extend well beyond the traditional professions of teaching physical education and coaching. Physical therapy, cardiac rehabilitation, sport management, athletic training, and fitness leadership and management are just a few of the careers that are likely to require formal academic preparation in kinesiology.

Coupled with this growing recognition of the importance of physical activity in our daily lives is the realization that something as vital to human life as physical activity deserves to be studied just as seriously and systematically as other disciplines in

CHAPTER OBJECTIVES

In this chapter we will

- help you appreciate the pervasiveness and diversity of physical activity in human life;
- introduce you to ways of defining and thinking about physical activity;
- introduce you to the discipline of kinesiology and its relationship to physical activity;
- familiarize you with the types of knowledge about physical activity acquired through experience, scholarly study, and professional practice; and
- introduce you to the concept of a profession and to career possibilities centering on physical activity.

higher education such as biology, psychology, and sociology. You've probably heard the word *discipline*, but you may not really understand what it means. A **discipline** is a body of knowledge organized around a theme or focus (see figure 1.1); learned people consider them worthy of study. The focus of a discipline is important because it tells you what those who are in the discipline study. The central focus of biology, for example, is life forms; the focus of psychology is the mind and mental and emotional processes; and the focus of anthropology is the study of cultures. Although debates are still being waged about the focus of kinesiology, it is now generally regarded as the discipline that focuses on physical activity.

In this book you will come to appreciate the unique way that people learn kinesiology. You may have noticed in the college courses you've taken that you do not develop understanding of all disciplines in the same way. For example, students learn art through reading, writing, and experimentation with artistic projects in the studio. People learn history, literature, and philosophy largely through intensive reading, writing, memorization, and discussion. Reading, writing, memorization, and discussion are also important in learning chemistry and biology, but these disciplines also involve active participation in laboratory exercises. People learn kinesiology partly in the same ways as they learn other disciplines, and partly in different ways.

Just as students in the disciplines of art or music learn to appreciate art or music by watching and performing them, kinesiology students gain much of their knowledge about physical activity through performing and watching it. Your direct experience with physical activity, then, is an important source of knowledge about physical activity and contributes to your understanding of kinesiology. You may perform or watch physical activity simply because you enjoy it, but doing so can be a learning experience as well. Performing or watching

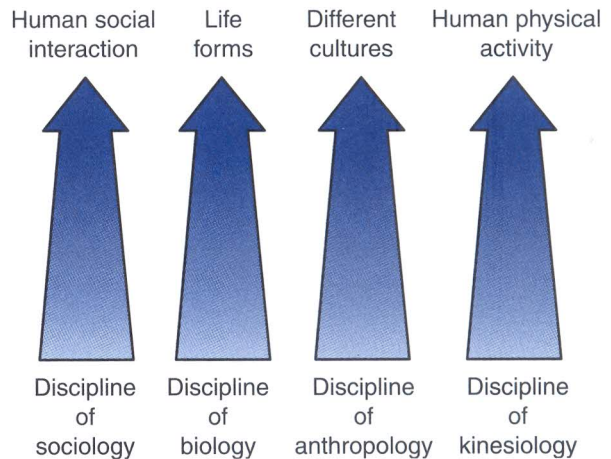


Figure 1.1 The discipline of kinesiology focuses on human physical activity.

physical activity may not seem as important as what you learn through scholarly study, but you shouldn't underestimate its value in developing your understanding of physical activity. When knowledge derived from experiencing physical activity is included in college or university kinesiology curriculums, it becomes part of the body of knowledge of kinesiology.

A second way of developing an understanding of kinesiology is through planned and systematic scholarly study. This way of learning involves much reading, thoughtful and careful analysis, and discussion with colleagues about theoretical and practical matters related to physical activity. Mastering subjects in the kinesiology curriculum such as sport history and philosophy, motor development and learning, exercise physiology, biomechanics, and sport psychology also requires this form of study. Where does the knowledge contained in such subjects come from? Mostly, it originates from the work of research scientists and scholars in the field of kinesiology who have developed and have added to the knowledge base through systematic research and scholarship. The knowledge we have of sport history or philosophy of sport, for example, results from the research of sport historians and sport philosophers. Scholars who conduct research in biomechanics laboratories at universities develop the knowledge that we have of biomechanics of physical activity. All knowledge about physical activity produced through research by kinesiologists is part of the discipline of kinesiology. Much of this knowledge is included in college and university kinesiology curriculums. Scholars in other disciplines (e.g., psychology, physiology, history) also produce knowledge about physical activity. Often this knowledge becomes incorporated into the discipline of kinesiology, is used in further research by kinesiologists, and is included in college and university kinesiology curriculums.

A third way of learning about physical activity is through professional practice, although here the focus is not so much on knowledge about physical activity as it is on how to use physical activity to bring about predetermined, useful ends. Physical activity professionals such as physical education teachers, personal trainers, and cardiac rehabilitation specialists, for example, systematically plan and manipulate the physical activity experiences of others (students, clients, patients, and so on) to help them achieve individual goals. Accomplishing this

task requires a great deal of knowledge, but where does this knowledge come from? Some of it arises from applied research that tests the effectiveness of different styles of teaching, different methods of treatment, different types of exercise routines, and other professional routines. Some of it comes from hands-on experience—a knowledge base developed by helping clients, students, or patients to achieve their goals. And, as we shall see, knowledge gained from experiencing physical activity and the scholarly study of physical activity can be important in professional practice as well.

Thus exercise therapists, teachers and coaches, athletic trainers, and other physical activity professionals develop a rich knowledge base of physical activity through scholarly study about physical activity and through their personal experience engaging in and watching physical activity. This knowledge can serve as a kind of foundation for professional practice knowledge. If this knowledge is grounded in careful, systematic observations of the effects of their manipulations of physical activity on others such as students, patients, and clients, it often becomes incorporated into kinesiology curriculums offered by colleges and universities and is taught to students. As such it also is part of the discipline of kinesiology.

Experiencing physical activity, scholarly study of physical activity, and professional practice centered in physical activity are the three sources of physical activity knowledge that constitute the discipline of kinesiology.

You will notice that we have carefully defined kinesiology as knowledge derived from experiencing physical activity, scholarly study of physical activity, and professional practice centered in physical activity, *but only when that knowledge is embedded in a college or university curriculum in kinesiology or used by kinesiologists in their physical activity research*. The reason for this is to clarify precisely what is part of the “official” discipline and what is not. People perform, study, and have physical activity as the center of professional practice in many venues outside the college or university setting. These activities may be important and valuable in their own right, but they do not constitute the “doing” of kinesiology any more than a businessperson who uses elementary psychological principles to motivate her sales force is “doing” psychology. The discipline of psychology

remains tied to the college and university curriculum, and to the research of psychologists. Similarly, people may use the principles of kinesiology in many ways outside the discipline, but kinesiology per se remains a function of curriculums and research in colleges and universities.

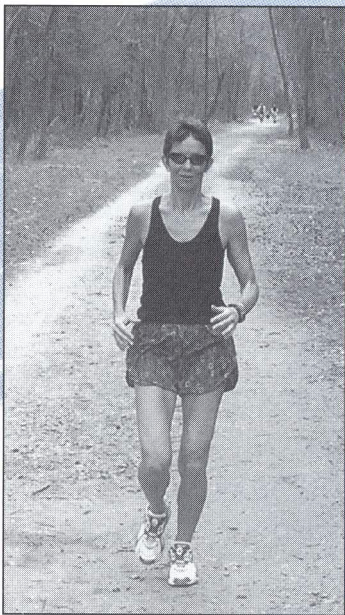
There is another reason for limiting our definition of kinesiology only to that knowledge contained in college or university curriculums or used in research. The knowledge that you will learn in your major curriculum is more highly organized and more scientifically verifiable than the knowledge of physical activity that laypersons use. Universities carefully monitor the authenticity of the knowledge included in their curriculums. Think about it. Would you have more confidence in the suggestions of a university faculty member in kinesiology who specializes in fencing than those of a lawyer who fences as a hobby? Would you have more confidence in the scientific accuracy of statements concerning an exercise program offered by an exercise physiologist than the statements offered by a television exercise guru who lacks formal training in kinesiology? Would you be more likely to trust the recommendations of a university specialist in pedagogy concerning how to organize a large group of young children for instruction in gymnastics than the recommendations of a volunteer coach

who has no formal training in kinesiology? Given your intentions to invest several years preparing for a career in the specialized field of kinesiology, the presumption is that you would answer yes to all three questions.

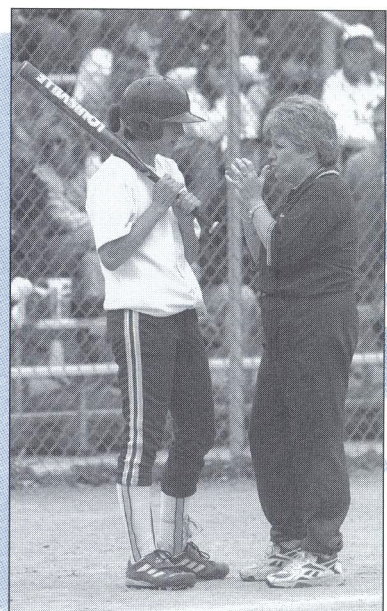
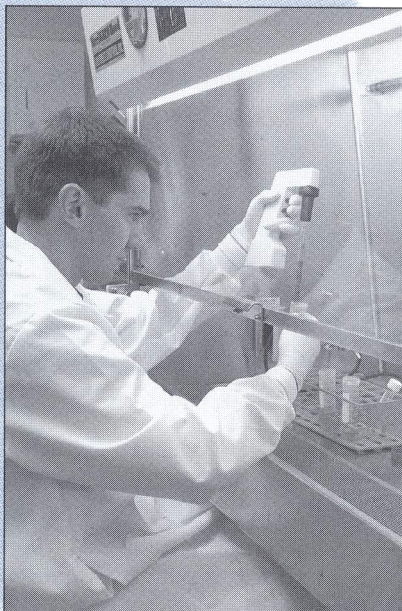
Many people experience physical activity (e.g., walk through a supermarket collecting groceries, play pickup basketball), study physical activity (e.g., read popular trade books on fitness or sports), or engage in a form of “professional” practice (e.g., volunteer as a youth league coach) outside the confines of the university curriculum, but these do not necessarily constitute “doing” kinesiology.

Only knowledge about physical activity that is included in a college or university curriculum or used in research is part of the body of knowledge of kinesiology.

Later in this chapter you will learn how all three components of physical activity fit together to make up the discipline of kinesiology. People gain the most complete knowledge of kinesiology from engaging in all three components—experience, scholarly study, and professional practice—although knowledge from each component is valuable in its own right. These three components are depicted in



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The discipline of kinesiology includes experiencing, studying, and practicing a profession in physical activity.

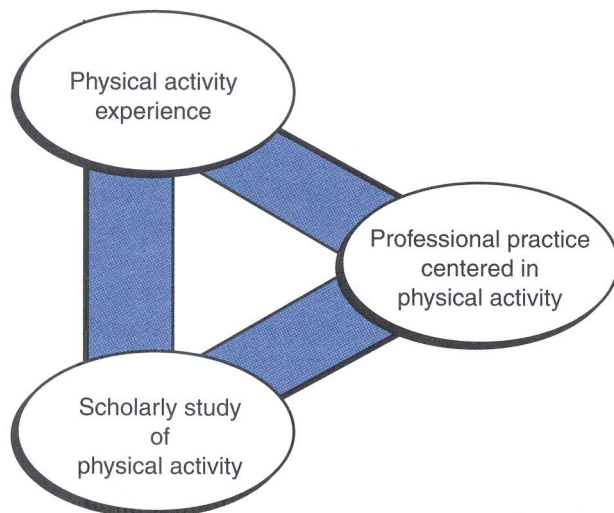


Figure 1.2 Sources of knowledge in kinesiology.

figure 1.2. This figure will appear throughout the book to remind you of the component of physical activity currently being discussed in the text.

What Is Physical Activity?

We have already noted that kinesiology is the discipline that focuses on physical activity. But what exactly *is* physical activity? At first you might think this a silly question. Everybody knows what it is, so why waste time defining it? But definitions can be

important, especially in scientific and professional fields in which terms may be defined somewhat differently than they are in everyday language. These definitions, called **technical definitions**, ensure that people working within a science or profession have a common understanding. You may be surprised to learn that kinesiologists do not agree about the definition of *physical activity*. Thus, before we go much further, let's be sure that we all have the same understanding of what physical activity is. We must be careful in formulating our technical definition, because it will specify the types of human activities that form the centerpiece of kinesiology.

In everyday life, almost any muscular action is considered physical activity. Throwing a javelin, driving a car, walking, performing a cartwheel, swimming, digging a ditch, hammering a nail, typing at a keyboard—all are examples of physical activity, as are the kick you exhibit when the doctor taps your patellar tendon to test your reflexes, the blinking of your eye, the peristaltic action of your small intestine brought on by muscular contractions, the contraction of your diaphragm when you sneeze, and the action of your throat muscles when you swallow. But are all these muscular actions of equal concern to kinesiologists? Not really. Although all are examples of human movement, they're too diverse in form and purpose for any single discipline to study. Indeed, if kinesiology focused on all forms of human movement, then kinesiologists would study everything that humans do, because any time we do anything, we move!

Defining Physical Activity

This would be a good time to wrestle with some fundamental questions about physical activity. Although we are all familiar with physical activity, we rarely ask ourselves some of the most fundamental questions about it. So before you continue reading this chapter, think carefully about the following questions. Take time to compare your answers with those of your classmates.

1. How would you define physical activity?
2. What do you consider the most important characteristics of physical activity?
3. What methods can you think of that kinesiologists might use to study physical activity?
4. Name five professions that use physical activity.

After you have thought about or discussed these questions, rewrite your definition of physical activity. Keep your description handy to compare with the definition that we will propose in the next few pages.

Physical Activity and “Doing”

The distinguished neurophysiologist Sir Charles Sherrington wrote the following in his classic book, *Man on His Nature*: “. . . all (humans) can do is to move things, and (their) muscle contraction is (their) sole means thereto” (Sherrington 1940, p. 107). What do you think that Sherrington meant when he said all we can *do* is “move things”? Can you think of anything you can do without moving? What does your answer imply about the importance of physical activity in our lives?

For this reason, kinesiologists use a much narrower definition of physical activity than people typically use in everyday language. The discipline requires a definition that is neither too *inclusive* (e.g., all human movement) nor too *exclusive* (e.g., only human movement related to sports). Kinesiologists are not in complete agreement concerning the best technical definition to use (see figure 1.3). Con-

sider, for example, how the surgeon general’s report defines physical activity: “bodily movement that is produced by the contraction of skeletal muscle *and that substantially increases energy expenditure*” [italics added] (U.S. Department of Health and Human Services [USDHHS] 1996, p. 21).

Let’s take this definition apart. The first thing you should notice is that it limits physical activity

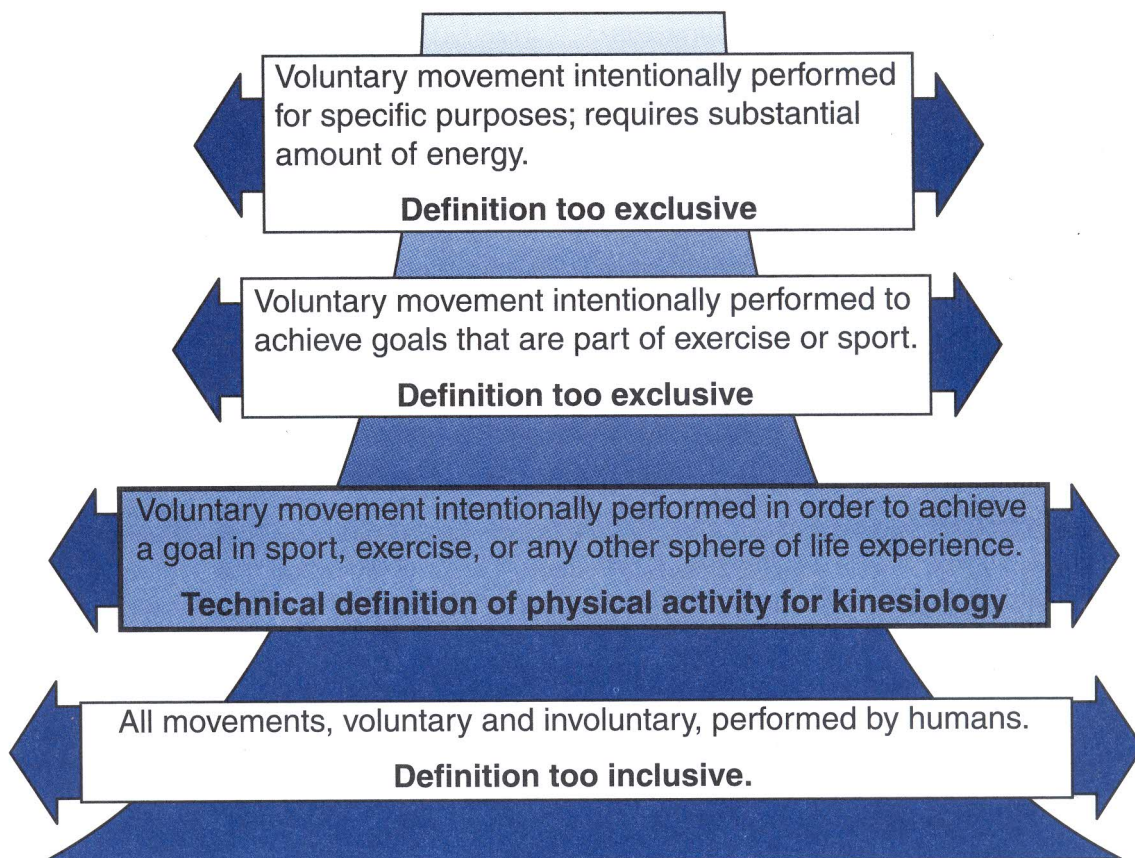


Figure 1.3 Definitions of physical activity. Only movement that is voluntary and goal oriented meets the technical definition of physical activity.

to voluntary or purposeful behaviors (contraction of the skeletal muscles as opposed to contraction of involuntary muscles). This idea seems sensible because most of the time kinesiologists are interested in the ways in which people carry out intentional or planned actions, not simplistic physiological responses. But if you read the definition carefully, you will see that the surgeon general's report narrows the definition much further. Only voluntary movement that "substantially increases energy expenditure" meets this technical definition of physical activity.

Obviously, kinesiologists are interested in vigorous forms of physical activity such as running, lifting weights, and exercising—forms of physical activity that substantially increase our energy expenditure. But kinesiologists are also interested in many types of physical activity that do not require substantial amounts of energy. For example, teachers and coaches often teach bowling or archery; occupational and physical therapists may spend large amounts of time teaching stroke patients or elderly residents of a nursing home how to use a knife and fork, to bathe, or to comb their hair. Motor control researchers may be interested in measuring the reaction time of a group of subjects or in assessing the speed at which individuals can move their arms under different experimental conditions. Obviously, none of these requires expenditure of substantial amounts of energy. Thus, the surgeon general's technical definition seems too restrictive because it eliminates many types of physical activity that interest kinesiology scholars and professionals.

Of course we could limit our technical definition of physical activity to include only those physical

activities that relate directly to exercise and sport. Because kinesiology has its historical roots in exercise and sport (a point emphasized in chapter 6), and because most students entering the field have their sights set on a career in exercise or sport, this definition might seem to make a great deal of sense.

Although those two categories of physical activity receive the most attention in the field of kinesiology—and they certainly take center stage in this text—we should not ignore the fact that the study of kinesiology also includes the study of other, more wide-ranging forms of physical activity. For example, kinesiologists study basic postural mechanisms, the physiology and body mechanics of work, the development of reaching and grasping behaviors in infants, and the daily life support activities of the elderly. Physical activity professionals who are physical education teachers teach children how to perform fundamental movement patterns such as hopping, running, and skipping, or expressive physical activities such as dance; and therapists working in rehabilitation programs teach patients to recover lost capacities to walk, sit, rise from a chair, or drive a car. As the range of occupations open to graduates of kinesiology departments continues to expand, clearly a technical definition of physical activity that reaches beyond the two types of physical activity we call exercise and sport is in order.

The definition of physical activity used in this text takes its cue from Professor Karl Newell's definition of **physical activity** as *intentional, voluntary movement directed toward achieving an identifiable goal* (1990a). Notice three things about this definition: First, it does not stipulate that the activity uses substantial amounts of energy. Large-muscle

More About the Surgeon General's Definition of Physical Activity

Sometimes kinesiologists focus so tightly on the specific area of physical activity in which they work that they tend to define it only in terms that make sense to them. Physiologists concerned about the health ramifications of not engaging in daily vigorous exercise wrote the surgeon general's report. Because it is well known that only forms of physical activity that "substantially increase energy expenditure" are likely to ward off heart and vascular disease, this limited type of physical activity served as the working definition for the final report. How might coaches using only their focused experiences of physical activity define physical activity? Physical therapists? Dance teachers?

activities typically require the highest levels of energy, but the definition doesn't limit physical activity only to these. Swimming, lifting barbells, running marathons, and in-line skating are physical activities, but so are typing, handwriting, sewing, and surgery.

Physical activity is movement that is intentional, voluntary, and directed toward achieving an identifiable goal. This definition excludes human movements that are involuntary, such as reflexes, or those performed aimlessly and without a specific purpose.

Second, whether or not the activity takes place in a sport or exercise setting is irrelevant, according to this definition. Surely, shooting a basketball is a form of physical activity, but so is tossing a piece of paper in the wastebasket. Pole-vaulting is a physical activity, and so is jumping over a fence. Swinging a baseball bat is a physical activity, but so is swinging a sledgehammer. Just as physical activity takes place in many settings, so it takes many forms. Wrestling and skiing are not similar to typing or performing sign language, but all are forms of physical activity. In chapter 2 you will discover the truly wide range of physical activity that concerns those in the field of kinesiology.

Third, according to this definition, simply moving your body doesn't constitute physical activity. This idea can be confusing, especially when we consider that the term *kinesiology* is derived from

the Greek words *kinesis* (movement) and *kinein* (to move). **Movement** includes any change in the position of your body parts relative to each other. Obviously, we can't perform physical activity without moving, but movement by itself does not constitute physical activity as we use the term in this text. One way to think about the relationship between movement and physical activity is this: Movement is a necessary but not sufficient condition for physical activity.

In terms of the technical definition used by those in the field, however, only movement that is intentional and voluntary—purposefully directed toward an identifiable goal—meets our technical definition of physical activity. This excludes all involuntary reflexes and all physiological movements such as peristalsis, swallowing, or blinking an eye. It also excludes voluntary movements that people perform without an intentional goal in mind. A thoughtless scratch of the head, an absent-minded pulling of the earlobe, or the repetitive movements of a compulsive-obsessive psychiatric patient are examples of human movement that fall outside the technical definition of physical activity, because these movements are not designed to achieve a goal.

What Is Kinesiology?

Kinesiology is a discipline or body of knowledge that focuses on physical activity. The discipline

Thinking More Deeply About Physical Activity

As noted earlier, anytime we perform goal-oriented acts we move our bodies. At the same time, however, the relative importance of movement in attaining the goal of the action may vary greatly among different activities. In which of the following human acts is movement the most important? The least important?

- Performing an aerobics routine
- Driving a car
- Playing a violin
- Running a marathon
- Playing chess

What characteristics did you focus on in arriving at your answers?

derives and incorporates knowledge from three different yet related sources:

- experiencing physical activity (experiential knowledge);
- studying the theoretical and conceptual bases of physical activity (theoretical knowledge); and
- professional practice centered in physical activity (professional practice knowledge).

We have already mentioned that this book is organized around the unique combination of ways that kinesiology is learned. Typically, we tend to associate learning with reading, writing, discussion, and memorization. We have seen, however, that experience with physical activity, theories and concepts about physical activity, and professional practice are all important sources of knowledge for kinesiologists. They are also important sources of knowledge for you as a student who is studying kinesiology. For this reason, this text has been divided into three parts, each of which examines a distinct source of knowledge that is incorporated into the discipline of kinesiology.

Figure 1.4 depicts the three major dimensions of kinesiology and will help you apply what you have learned. You will notice that each dimension corresponds to a different source of knowledge of physical activity shown in figure 1.2. The part of the figure marked A1 represents disciplinary knowledge acquired from our hands-on experiences with physical activity. Usually, this involves performing physical activity, but we can also acquire knowledge by observing others perform. Students often acquire this **experiential knowledge**, described in part I of this book, through physical activity classes (e.g., classes in soccer, weight training, swimming) offered in kinesiology departments. The experiential knowledge included in a formal college or university kinesiology curriculum is part of the discipline of kinesiology. So far, experiential knowledge has not been divided into formal subdisciplines within the field of kinesiology, although each form of activity represents a specialized form of experience.

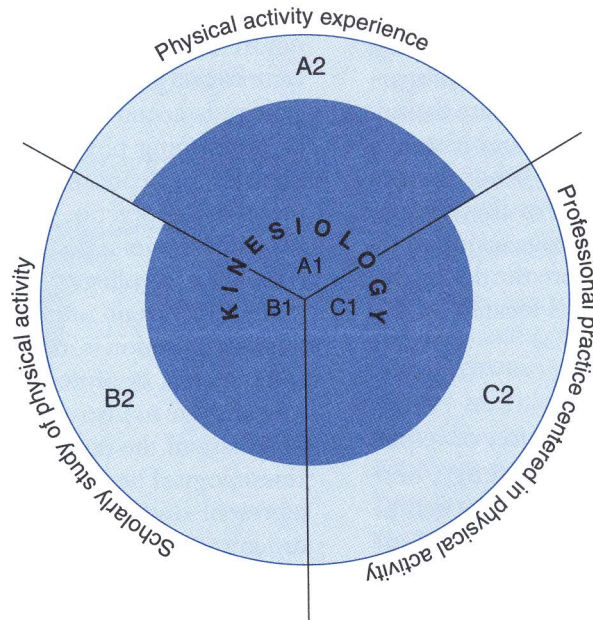
Of course, people may acquire experiential knowledge through physical activities outside a formal college or university curriculum; this kind of experiential knowledge is represented by part A2 of figure 1.4. This knowledge may be on the fringes of the discipline or not part of the discipline at all. For example, you might take tennis lessons at a

private club, play tennis on weekends with friends, take martial arts lessons at a commercial center, work out on your own at a campus fitness center, play intramural football in a recreational league, or train for firefighting through the fire department. You can often learn extremely valuable things from such experiences, but, in and of itself, this knowledge is not a central part of the kinesiology discipline unless it is formally incorporated into college and university kinesiology classes. These aspects of experiencing physical activity are also discussed in part I of this text.

Part B1 of figure 1.4 represents disciplinary knowledge acquired from the scholarly study of theories and concepts about physical activity. This **theoretical knowledge** falls into categories or **subdisciplines**. Taken together, the subdisciplines constitute the spheres of scholarly study examined in part II of this book. This disciplinary knowledge is taught in its most systematic and comprehensive form in college and university curriculums, usually in departments of kinesiology.

Because physical activity is such a broad category of human behavior, however, other university departments sometimes engage in the scholarly study of physical activity as well, as represented by part B2 in figure 1.4. For example, departments of drama, dance, and music sometimes teach about the scholarly aspects of physical activity, as do departments of engineering and medicine. This knowledge, however, is on the fringes of the discipline of kinesiology. Departments of kinesiology are the only academic units within colleges and universities that identify the unified study of physical activity *as their sole mission*. You have surely noticed many books and magazines on the shelves of your bookstore that deal with sports and fitness. People who lack in-depth education in kinesiology wrote many of these books, which therefore may have no basis in science or systematic analysis. Thus, we cannot consider them part of the discipline of kinesiology.

Part C1 of the model in figure 1.4 represents disciplinary knowledge acquired from professional practice centered in physical activity—professional practice such as managing a fitness center, teaching physical education, engaging in personal training, or working in cardiac rehabilitation. This **professional practice knowledge** becomes part of the discipline when it is discovered or tested in preprofessional or professional settings and is incorporated by faculty into college and university kinesiology classes,



A1 Knowledge gained through experiencing physical activity that is systematically incorporated into the discipline of kinesiology (e.g., college tennis class offered for academic credit, weight-training class offered for academic credit).

A2 Knowledge gained through experiencing physical activity that is not incorporated into the discipline of kinesiology (e.g., learning a dramatic stage movement, taking tennis lessons at a country club, playing Little League baseball, firefighting).

B1 Knowledge gained through scholarly study of physical activity that is systematically incorporated into the discipline of kinesiology (e.g., sport history, exercise physiology, motor development).

B2 Knowledge gained through scholarly study of physical activity that is not systematically incorporated into the discipline of kinesiology (e.g., research about playing a musical instrument, reading a popular book on fitness).

C1 Knowledge gained through professional practice centered in physical activity that is systematically incorporated into the discipline of kinesiology (e.g., knowledge gained in roles such as certified athletic trainer or elementary physical education teacher that is included in university kinesiology classes).

C2 Knowledge gained through professional practice centered in physical activity that is not systematically incorporated into the discipline of kinesiology (e.g., knowledge gained in roles such as certified athletic trainer or physical education teacher that is not included in university kinesiology classes).

Figure 1.4 Discipline of kinesiology in colleges and universities.

usually classes focused on preparing students for specific physical activity professions. Professional practice knowledge usually deals with appropriate ways of manipulating physical activity experiences to bring about specific results. For example, personal trainers may manipulate the exercise experiences of their clients in one way to increase muscular strength and in another way to increase flexibility. Likewise, physical education teachers may manipulate physical activity one way to achieve the fitness

goals of their school's curriculum and a completely different way to achieve motor development goals. Part III of this book describes this component of physical activity knowledge in detail.

Of course, not all knowledge acquired through professional practice becomes part of the kinesiology curriculum. For example, a coach who is planning drills for her team may rely more on knowledge gained from people who coached her in the past than from the latest research on pedagogy, skill

learning, and fitness. Such knowledge, of course, can be effective; after all, a coach is not likely to use it unless she has found it to be effective for preparing her players. But such knowledge is often flawed. The good results the coach observed may have less to do with her actions than with other factors that she didn't take into account. For that reason, among others, some of the knowledge acquired by practitioners is not incorporated into the discipline. To indicate this, such knowledge is located on the perimeter of C2 in figure 1.4.

The discipline of kinesiology consists of experiential knowledge, theoretical knowledge, and professional practice knowledge. Experiential knowledge derives from experiencing physical activity, theoretical knowledge derives from systematic research about physical activity, and professional practice knowledge derives from and contributes to the process of delivering physical activity services.

Professional practice knowledge is most valuable when combined with knowledge from the other dimensions of kinesiology (experience and scholarly study). Together, these can provide an important framework for conceiving of and using knowledge about professional practice. Sometimes, people who possess only a fraction of the disciplinary knowledge (as represented in parts A1, B1, and C1) are hired to perform professional roles anyway. This can occur because the demand for physical activity professionals is so great that companies and institutions must hire those lacking adequate qualifications. School districts, for example, sometimes hire coaches who have little or no background in kinesiology. Likewise, fitness centers may hire personal trainers who lack adequate qualifications. Obviously, one can develop a modest level of competency in almost any profession without mastering the total body of knowledge. Through trial and much error, such a person may muddle through. This approach, however, can be dangerous. For example, you may have known or heard about laypersons who managed to learn enough about the law to represent themselves in court. But such a person runs a high risk of making a mistake. (This is the basis for the old saying "He who chooses to represent himself in court has a fool for a client.") Similarly, an unqualified individual who assumes the role of a physical activity professional lacks the informed judgment of one who has studied kinesiology.

Let's quickly review our description of kinesiology. It is a discipline or body of knowledge that concentrates on physical activity. The knowledge of kinesiology is acquired through experience—watching or performing physical activity, scholarly study of theories and concepts about physical activity, and professional practice centered in physical activity. Because kinesiology is a formal discipline, it typically is taught in a college or university by people highly trained in certain areas of specialization, whether this specialization is in performance, scholarly study and research, or professional practice. Thus, faculty who are able to instruct you about the broad knowledge base of the discipline teach in departments of kinesiology. The curriculums of these departments represent organized sequences of classes that are structured in ways to ensure maximal opportunities for integrating all three types of knowledge.

The Focus of Kinesiology: Exercise and Skilled Movement

Kinesiology focuses on two general categories or forms of physical activity: exercise and skilled movement (see figure 1.5). You know much about both forms of physical activity. In fact, your interest in one or both of these is probably responsible for your deciding to seek a degree in kinesiology.

People engage in **exercise** to improve or regain performance, health, or bodily appearance. If you view exercise as simply any movement that causes you to sweat, your vision is too narrow. Running or lifting weights to increase your fitness (improve your health) or to lose body fat (change the appearance of your body) is exercise, as is weight training by bodybuilders hoping to increase the size and definition of their muscles to achieve an ideal "look." Working out to increase strength or cardiovascular endurance as adjuncts to healthful living also is exercise. And so are the more basic rehabilitation routines that patients undergo as they attempt to regain function following an injury or disease.

Because the term *exercise* can describe many different types of physical activity, breaking it down into three major categories is helpful:

- Exercise performed for the express purpose of conditioning your body to improve athletic performance, or your performance in other physical activities, is a specific type of exercise known as

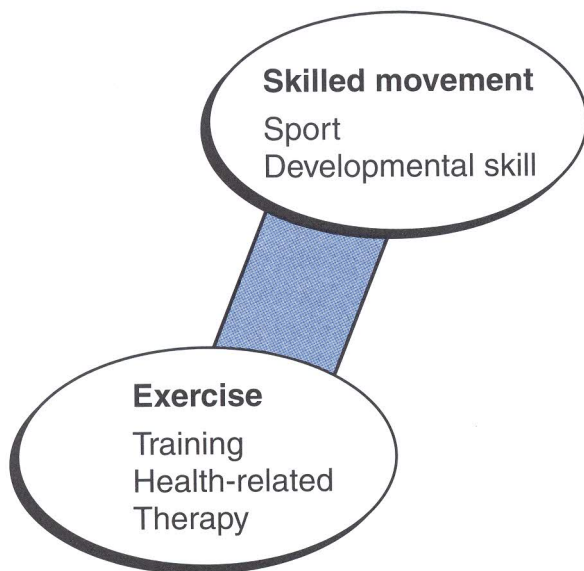


Figure 1.5 Categories of physical activity.

training (see chapter 3). Kinesiology graduates who embark on careers as conditioning specialists with university or professional sport teams are focusing on physical activity as training.

- Exercise undertaken to develop or maintain a sound working body, free of disease and able to perform daily tasks and emergencies is known as **health-related exercise**. Kinesiology graduates who work as fitness leaders and personal trainers focus almost exclusively on physical activity as health-related exercise.

- Exercise also may be performed to restore capacities previously acquired or developed, which have been lost because of injury, disease, or behavioral patterns. This type of exercise is **therapeutic exercise**. For example, postcardiac patients usually require physical activity regimens to help them regain cardiovascular health following a heart attack. Kinesiology graduates who embark on careers to work in these cardiac rehabilitation programs, or who work as athletic trainers or physical therapists, are focusing on physical activity as therapy.

Skilled movement is the second area of focus of kinesiology. Skilled movement involves performances in which accuracy of direction, force, and rhythm or timing is essential to accomplishing predetermined goals. Normally, people must learn these qualities of physical activity through systematic practice. Factors normally associated with

exercise such as strength, cardiovascular endurance, or flexibility, although important in executing many physical tasks, are not elements of skilled movement. (They are developed through training, health-related exercise, or therapeutic exercise.) Chapter 3 addresses these differences. Two categories of skilled movement are of primary interest to kinesiologists: sport and developmental skills.

- Sport has long been of interest to scientists, teachers, and practitioners in kinesiology. We can define **sport** in general terms as a form of physical activity in which a person performs skilled movement to achieve a goal in a manner specified by established rules, usually in competitive contexts. People usually perform sport merely for the enjoyment it brings them. Note three things about this definition. First, the physical activity in sport is “skilled.” Not all forms of physical activity require a great deal of skill, but in every type of sport the advantage belongs to competitors who have learned to move their bodies in skillful ways. The soccer player who passes the ball deftly to her teammate, the golfer who strikes the ball squarely, and the gymnast who successfully completes a double rotation on dismount all are expressing skill in their performances. Second, note that rules are essential in sport. They exist for the sole purpose of creating the game. Without rules players could do whatever they felt like doing at the time, and the game would soon break down. If basketball players all decide not to dribble the ball as they run down the court, they can no longer be said to be playing the sport of basketball. Finally, note that the physical activities performed in sport tend to be framed in competition, either against other teams or individuals or against established records or “personal bests.” Often, rules are intended to create a level playing field for all competitors, ensuring that each has an equal chance to win the competition.

- **Developmental skills**, which are performed in nonsport settings where rules and competition are irrelevant, are also of special interest to kinesiologists. For example, as part of their professional responsibilities elementary physical education teachers teach first graders how to perform such fundamental movement patterns as skipping, throwing, or hopping. Acquiring these developmental skills at an early age may lead to high levels of proficiency in sport and in other activities in later years, but they really have no direct correlation with a specific sport. Likewise, graduates of kinesiology programs who go on to earn a degree

in occupational or physical therapy or who work in nursing home facilities as physical activity specialists may spend a great deal of time teaching poststroke elderly patients the developmental skills required to eat, dress, and groom. The range of developmental skills is enormous. Some kinesiologists study the characteristics of walking and running, some study the mechanics of grasping or reaching, and some study the developmental skills associated with various types of work. Because they are important facets of our lives across the life span, their roles in the lives of infants and children as well as in adults and the elderly are important topics of study in kinesiology.

Obviously, these categories of physical activity are not mutually exclusive. Some people engage in exercise and sport simultaneously. For example, you might compete in racquetball with the hope of getting good enough to win your city's championship, but you also intend to get enough exercise to improve your body's functioning or appearance. Individuals might participate in judo competition because they enjoy it, but they also participate because of the health benefits that it brings. You should use the

categories as guides to understanding and appreciating the various types of physical activity that concern kinesiologists, not as hard and fast distinctions.

Exercise and sport are the principal forms, but not the only forms, of physical activity studied by kinesiologists.

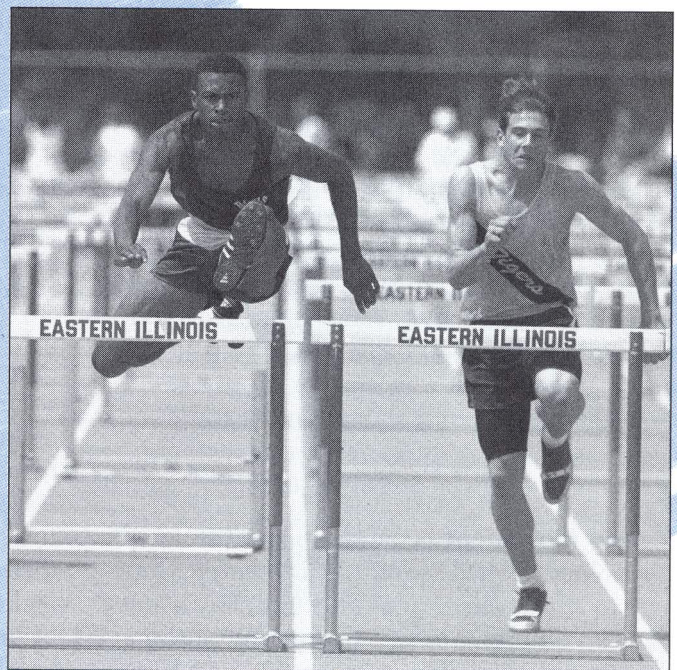
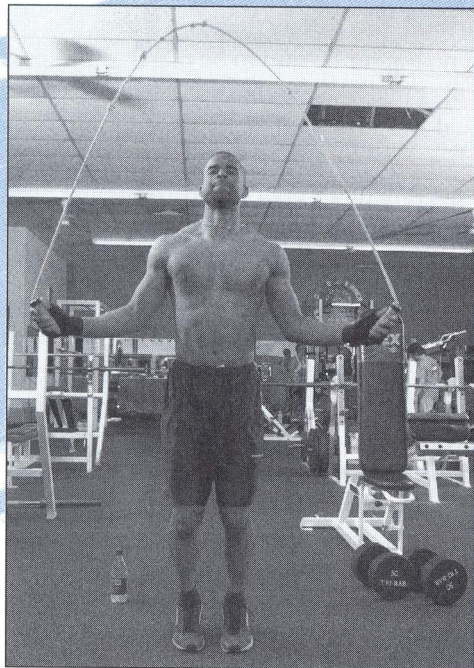
- Exercise includes any physical activity performed to improve performance, health, or bodily appearance. Exercise is of three types:

Training for improving performance in sports or other types of physical activity

Health-related to maintain or improve health

Therapy to rehabilitate individuals from debilitating disease or injury

- Skilled movement includes physical activities in which accuracy of direction, force, or rhythm is essential to attaining predetermined goals. Skilled movement is important in both sport and developmental skills.



Exercise and skilled movement are the primary focuses of kinesiology.

Kinesiology and Your Career

One of the things that makes kinesiology such an exciting field is the diversity of professional opportunities that are available to graduates of kinesiology programs. Because an undergraduate program exposes students to a wide range of knowledge about physical activity, with a special emphasis on the human body, it is excellent preparation for a variety of careers. Preparing fitness leaders and consultants, teachers and coaches, cardiac and neuromuscular rehabilitation specialists, sport management specialists, athletic trainers, strength-training specialists, and numerous other physical activity professionals may be considered the primary mission of kinesiology. But other professions also are beginning to view kinesiology as appropriate preparation for study in their fields at the graduate level. And increasingly, students are pursuing undergraduate kinesiology degrees as liberal studies

subjects, with no plans to enter a physical activity profession but with a great deal of interest in learning about physical activity in human life.

Many undergraduates pursue master's degrees in kinesiology after graduation (see figure 1.6). Some do so to become more knowledgeable about their chosen physical activity profession and to meet special certification requirements. Others pursue graduate work to meet the educational requirements of a related profession. Increasingly, master's degrees are becoming the minimal requirement for entering some physical activity professions. In these cases, undergraduate study in kinesiology is considered **preprofessional** preparation for graduate study. Professions such as physical therapy and athletic training, for example, are now requiring or soon will require a master's degree as an entry-level degree for professional practice. Because of their deep knowledge about physical activity, students with an undergraduate degree in kinesiology are

Classifying Physical Activity

Assign the general form of physical activity to each of the following. Note that each may be classified as more than one general form of physical activity.

Exercise			Skilled movement		Activity
Training	Health-related	Therapy	Sport	Developmental skills	
					An athlete in the training room works to strengthen muscles in his right leg after knee surgery.
					A player catches a football thrown by a teammate.
					An executive plays racquetball to maintain her health and control weight.
					A dancer practices the routine she will perform in a dance recital.
					A bodybuilder lifts against heavy resistance to bulk up for competition.
					A man runs for 18 mi every other day simply because he enjoys it.
					A woman who is recovering from a heart attack does light aerobic exercise at a cardiovascular rehabilitation clinic.
					A child learns to use a knife and fork.
					A sedentary executive decides to visit the gym three days a week to improve her general health.
					A teenager learns to drive a car.

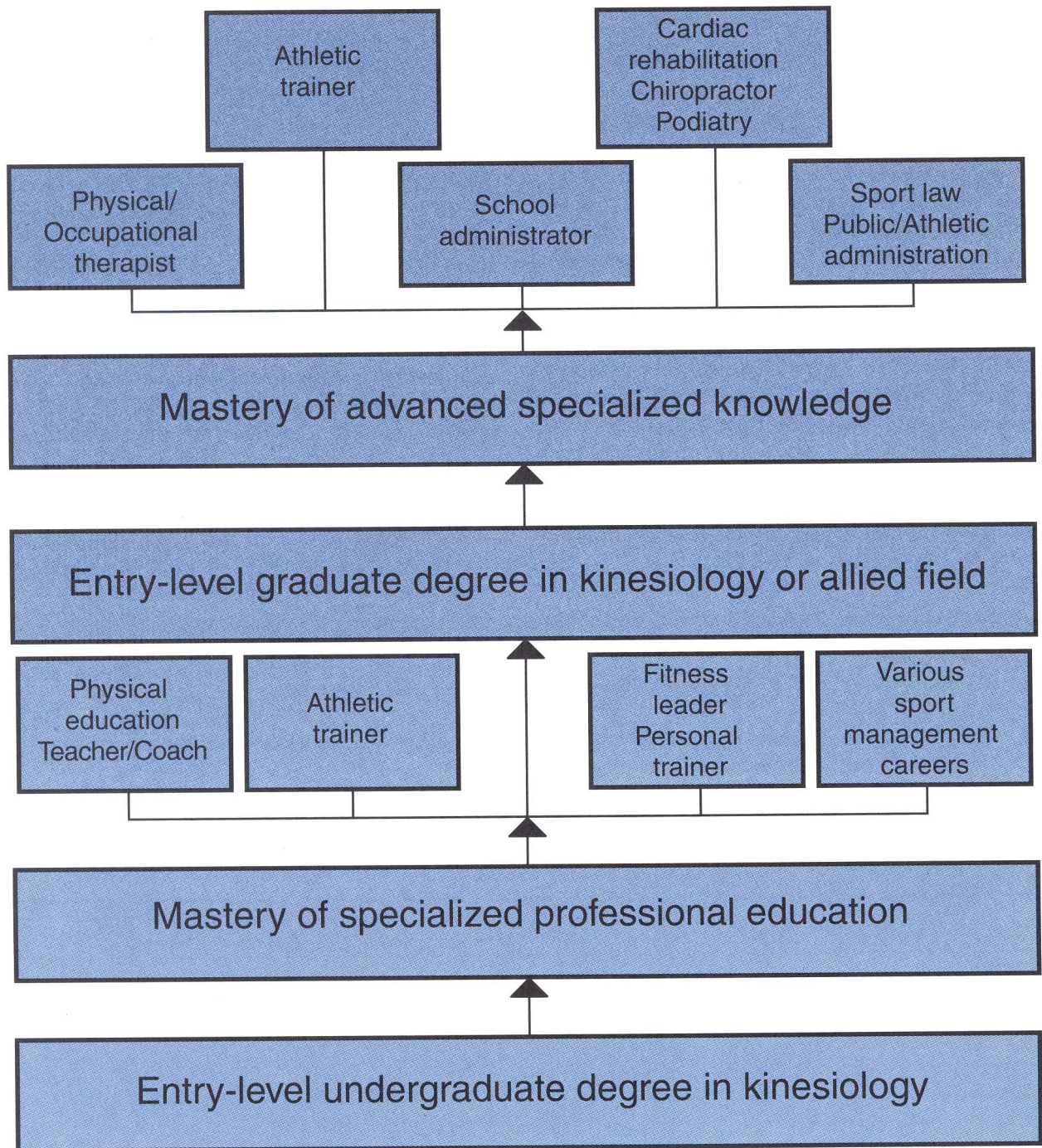


Figure 1.6 An undergraduate degree in kinesiology can be the starting point for many different physical activity careers.

considered especially good candidates for admission to graduate programs in such fields. Sometimes, students continue their studies beyond the master's level to obtain the doctoral degree in kinesiology so that they can become college or university faculty members or researchers.

Professionals trained in kinesiology share a common interest in and curiosity about physical activity in its broadest dimensions. At the same time, they also tend to develop specialized orientations depending on their professional roles. For example, practitioners working in the area of cardiovascular

fitness may be most interested in vigorous, sustained forms of physical activity involving the large muscles of the body. They are especially interested in how such experiences can alter the physiological functioning of the body. Physical education teachers may entertain a more comprehensive perspective of physical activity. Their interests span cardiovascular fitness activities, sport skills, and (if they are elementary teachers) developmental activities in throwing, catching, running, and hopping. In addition, they may have a special interest in physical activity that develops social responsibility and other personal traits in children.

Professionals working in athletic training or rehabilitation exercise are particularly interested in physical activity as a medium of rehabilitation. Sport marketers have a different orientation to physical activity altogether. Their interests center on making physical activity appealing to paying audiences by promoting and staging performances that are attractive to the largest number of people. Thus, in addition to developing an understanding and appreciation for physical activity, you should seek to develop a deep understanding of physical activity in the context of whatever specialized professional practice you choose to enter.

Why “Kinesiology”?

Scholars have debated at length the label that would best characterize an academic discipline focused broadly on physical activity. For many years, the label *physical education* was considered an appropriate

label for the rather limited mission of kinesiology departments—preparing school physical education teachers and coaches. Today, physical education is generally understood to focus on the teaching of sport and exercise performance in schools, colleges, and universities. Most colleges and universities continue to sponsor an activity program for the general student body. In most cases this program is referred to as “the physical education program” or the “activity instruction program.” “Physical education” is also the name for the academic specialization within kinesiology departments that prepares teachers to teach physical education in the schools. Often this is called PETE—physical education teacher education.

But many believe that the term hardly captures the essence of a discipline that now contains extensive knowledge about physical activity used in a wide range of professions. Many names have been proposed for the discipline. In this text it is called kinesiology. Your department might be called exercise and sport science, kinesiology, human performance, health and human performance, human movement science, sport studies, exercise science, physical education, or any of the other departmental names as listed below. Because students and faculty in anthropology, sociology, psychology, and history work in older, more established disciplines, they don’t face this problem of having alternative names for their disciplines.

Why, then, does the problem exist in kinesiology? The answer is partly that kinesiology is a young discipline and that disciplines often need a long time to define themselves. The problem also results from

Different Names for Kinesiology

Department of physical education

Department of health, physical education, recreation, and dance

Department of physical education, health, and leisure sciences

Department of physical education and fitness

Department of exercise and health science

Department of sport science and physical education

Department of kinesiology

Department of exercise and sport science

Department of physical education and movement science

Department of movement sciences and leisure studies

Department of food, nutrition, and exercise science

Department of human movement studies

Department of sport studies

the fact that departments teaching kinesiology are often responsible for teaching other disciplines as well. Thus, on some campuses the department may be named human kinetics and leisure studies or health and exercise science to reflect the fact that the department offers degrees in leisure studies or health as well as kinesiology. In one large Southern university, kinesiology degrees are offered in the department of nutrition, food, and movement sciences, a name that reflects the fact that the department offers three different degree programs. Thus, you should not confuse the title of departments in particular universities with the title of the field as it is coming to be known across the country.

Although none of the various names used for our field is “wrong,” most scholars emphasize the need for a single term broad enough to describe the discipline. Although not all scholars believe that *kinesiology* is the best name for the discipline (Locke 1990; Siedentop 1990), we believe that it is. A growing number of departments at prestigious universities are adopting the term, because it best characterizes a discipline that is learned in many different ways and deals with many different forms of physical activity in diverse professional settings.

Support for the label *kinesiology* has come from the American Academy of Physical Education, an honorary society of approximately 120 scholars. The 70-year-old academy undertook a 2-year study of the matter in 1990 and decided to change the name of the organization to the American Academy of Kinesiology and Physical Education. So, regardless of the name of the department in which you are enrolled, we encourage you to refer to the discipline as kinesiology.

Allied Fields

Two of the largest professional organizations centered around physical activity are the American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) and the Canadian Association for Health, Physical Education, Recreation and Dance. The membership of these organizations includes not only those with a central interest in exercise and sport but also those working in the fields of health, recreation, and dance.

- Health problems arising from inactivity are of interest to physical activity professionals as well as

health professionals, but health professionals are also interested in health problems that have little to do with physical activity, including issues related to sexually transmitted diseases, HIV, smoking cessation, and drug abuse.

- Recreation specialists are interested in physical activity as a leisure pursuit, but leisure pursuits stretch far beyond those in which physical activity is a primary concern. Travel, crafts, and nature study are examples.

- Dance professionals also attend these meetings, and, although dancers share kinesiologists' interest in physical activity, they are interested in a much narrower slice of the physical activity pie. Expressive and artistic forms of movement form the centerpiece of the field of dance.

Combining this assortment of fields into a single professional organization may seem strange, but they have a long, historic relationship. For most of the 20th century these areas were represented in a single college or university department across the land; in many cases they are still housed in the same department. Today, each field has become more specialized and isolated from the others; each has its own professional organizations and journals. In many cases, each is taught in a separate department. But because of their shared histories and because they are often interested in the same problems, faculty from these areas frequently work together as colleagues.

Holistic Nature of Kinesiology

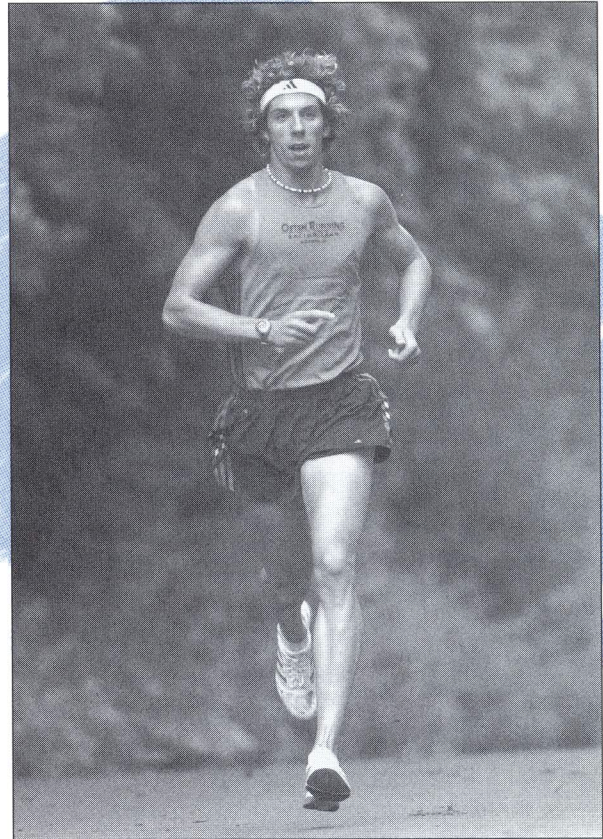
When you complete this introductory study of kinesiology, we hope that you will be convinced of the holistic nature of physical activity. **Holism** is a term underscoring the interdependence and interrelatedness of mind, emotions, body, and spirit. Although it is natural for people to think of kinesiology as a discipline dealing exclusively with body movement, in reality physical activity involves our minds, emotions, and souls as much as it does our bodies. We find it convenient to speak of *physical* activity because the physical aspects are readily observable, but physical activity also is *cognitive* activity, *emotional* activity, and even *soul* activity. Thus, studying kinesiology will take you far beyond the study of the biological aspects of physical activity. Kinesiology includes an analysis of the psychological antecedents and outcomes of

sport and exercise; the sociological, philosophical, and historical foundations of physical activity; the dynamics of skill development, performance, and learning; and the human processes involved in the teaching and learning of physical activity.

Think about the last time you went for a run or a brisk walk. First, you may have stretched a bit to warm up your muscles and started slowly as your body continued to warm up. You probably realize that you didn't have to think that much about controlling the muscles involved. Like most well-learned skills, your muscle contractions occurred almost automatically, as did the increase in your heart rate, the depth and frequency of your breathing, and the onset of perspiration. Of course, you were able to direct your attention to your running form when you wanted to, adjusting the length or frequency of your stride or altering your posture. You also could enjoy the scenery that you passed—the calmness of a lake or the beauty of a mountain trail. And, if you're like most runners, you may have simply let your mind wander, solving problems, thinking of the day ahead of or behind you, or dreaming dreams.

Most people find physical activities such as running or walking so easy that they rarely think about the marvelous human capacities that allow us to perform them. We can easily forget how wonderfully complex the human body is. Most students who enroll in kinesiology programs are curious about the functioning of the human body. If you continue with your studies in kinesiology, you'll study anatomy and physiology along with advanced courses in exercise physiology, biomechanics, sport and exercise psychology, and motor behavior. These classes will help you understand and appreciate the many mechanisms and systems that enable our bodies to perform physical activity.

In addition, through your studies in philosophy of physical activity you will come to appreciate how impossible it is to separate our bodies from "ourselves," and you will learn how important it is for people to discover meaning in physical activity. And, through your study of psychology and sociology of physical activity you will learn to appreciate the importance of attitudes and social settings in helping us interpret the significance of our physical activity experiences. Although it is easier to talk about our bodies or body parts such as the heart, muscles, or bones as though they are machines or instruments that our minds or souls



Although body movement is the core focus of kinesiology, the discipline also recognizes the holistic nature of humans.

“use” to achieve our purposes, they actually are part of our humanity. As noted, kinesiology is a holistic discipline that includes knowledge far beyond the physiological processes associated with movement. Indeed, it may not be an exaggeration to say that no other discipline is so diverse in its aims, so interdisciplinary in its subject matter, or so complex in its organization.

Although kinesiology most often focuses on the bodily aspects of physical activity, it is important to remember that human beings are holistic creatures with interrelated cognitions, emotions, body, and soul.

The three-dimensional analysis of physical activity offered in this book—experience, study, professional practice—is designed to help you organize your thinking about the discipline of kinesiology

and the broader field of physical activity. This approach will not only help you develop a framework for understanding physical activity and the physical activity professions but also help you understand the basis for your course work in kinesiology and assist you in planning and implementing career goals. Let's look briefly at each of the three dimensions.

Experiencing Physical Activity

Figure 1.7 shows the contribution of physical activity experience to your knowledge of kinesiology. By this point in your life, you have had literally millions of physical activity experiences. You've learned to master thousands of complex motor skills including tying your shoelaces, brushing your teeth, driving your car, playing Frisbee, and maybe performing cartwheels. Many of these forms of physical activity are essential to living your life. Others, such as sports and leisure-time pursuits are discretionary—you choose to do them because they are fun. All of them offer the potential to teach you something about physical activity, yourself, and the world around you.

We *experience* physical activity when we perform it or watch it. Inevitably, performing or watching

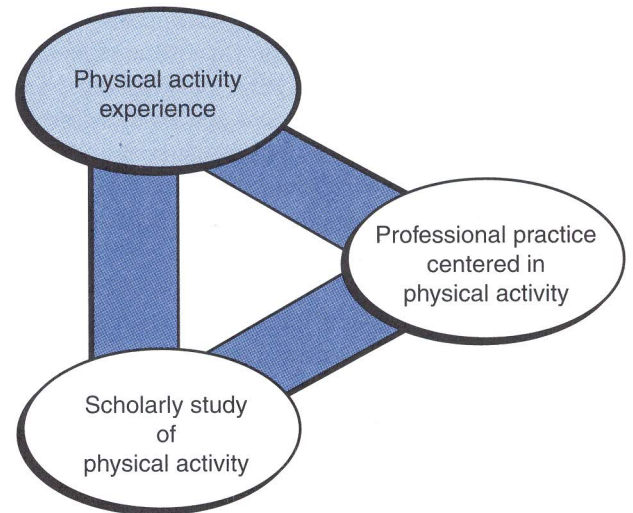


Figure 1.7 Experience and the other two sources of kinesiology knowledge.

generates personal sensations, emotions, thoughts, and feelings. Watching an Olympic gymnastics championship is likely to produce different feelings than watching a dance performance or a football game; digging a ditch is likely to induce different feelings than swinging a golf club. Watching a demonstration of a performance when we are learning

Inventory of Personal Experiences With Physical Activity

To think more about your personal experiences with physical activity, answer the following questions.

1. What physical activity that you perform regularly requires the most skill?
 2. What sport do you most enjoy performing?
 3. What is the hardest physical work you have ever done?
 4. What sport do you most enjoy watching?
 5. What is the most dangerous physical activity you have ever performed?
 6. What is the longest distance you have run?
 7. What physical activity would you most like to learn to perform well?
 8. What physical activity have you performed that you never want to perform again?
 9. Briefly describe the emotion or emotions that you most commonly experience when doing exercise.
 10. What have you learned about yourself because of performing your favorite physical activity?
-

it is a different form of experience than watching someone perform the activity purely for our own enjoyment. Precisely how we experience physical activity depends on the nature of the activity itself, the context in which it is performed, and our own peculiar sets of attitudes and experiences.

Our experiences have a significant influence on the meanings we attach to particular physical activities. They also influence our future decisions about engaging in a particular activity again. Obviously, we must perform some types of physical activity, such as those required in our work or those required to eat and maintain our personal hygiene, whether we enjoy them or not. But beyond this we have a great deal of discretion about which activities we will perform, with whom, under what conditions, and for how long. Ultimately, our decisions about such things as whether to spend our leisure moments playing basketball or playing hockey, running five miles or swimming 50 laps, taking the elevator or climbing the stairs, mowing the yard or hiring someone else to do it, and seeking out physical activity or living the life of a couch potato will depend, to a large degree, on our personal experiences.

Thus, it is important to understand at the beginning that, even though classrooms, laboratories, and libraries offer kinesiological knowledge, direct participation in physical activity is an important source of knowledge as well. By incorporating participation in physical activity as part of the formal course work, faculty in kinesiology departments add experiential knowledge to the overall body of knowledge that makes up the discipline of kinesiology.

When we participate in physical activities as part of the course work in kinesiology, we learn not only about the particular physical activities in which we're involved but also about ourselves (and often others around us) as moving human beings. Climbing a rock face, skating on a frozen pond, or parachuting from an airplane can be the unique means by which we gain a greater understanding not only of the activity itself but knowledge of our own capacities and limitations, and knowledge about those around us. And performing certain types of physical activities such as surfing, hiking, or long-distance running offers unique opportunities for reflective and meditative thought not normally available in other aspects of our lives.



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Direct participation in physical activity is an important source of kinesiological knowledge.

Self-Discovery

One way that humans use physical activity to learn about themselves is to test their physical limits by attempting to improve on records set by others. For example, it was long believed that people could not free dive (without assisted-breathing apparatuses) deeper than 100 ft (30.5 m), but in 1956 two Italian divers set a record of 134 ft (40.8 m). Twelve years later, Robert Croft, a U.S. Navy diver, shattered this record with a dive of 240 ft (73.1 m). Then, in the mid-1980s the record was shattered again, this time by Jacques Mayol, who dove to 360 ft (109.7 m). And in 1993 Francisco Ferreras of Cuba stunned the diving world with a record-breaking 410 ft (125 m) dive, an incredible feat given that Ferreras' body had to withstand 160 lb of pressure per square in. (11.2 kg per square cm)—a total weight on his body in excess of 100 tons (90,000 kg)!



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We learn much about ourselves from our physical activity experiences.

For most of us, physical activity has become such an ordinary aspect of our lives that we fail to recognize how often it intersects with our everyday experiences. We depend on physical activity when we work, play, cook our meals, drive our cars, type reports, or sign our names. As a student of kinesiology, you should understand the place of physical activity in each sphere or category of your life experiences. In this book, we refer to these various aspects of our everyday lives in which physical activity plays a distinct role as the **spheres of physical activity experience** (see figure 1.8).

We experience physical activity in a variety of spheres of our personal lives. Each opportunity to perform or watch physical activity represents a unique opportunity to learn about physical

activity and our own (and sometimes others') interests and capacities and the meanings we attach to the activities.

Scholarly Study of Physical Activity

Interest in formally studying and learning about physical activity is at an all-time peak that shows every indication of continuing well into the future. At least 600 colleges and universities in the United States, and many more in other countries, have academic programs devoted to the study of physical activity (figure 1.9). In addition, unknown numbers of institutes and centers outside academe—from medical complexes, to military and space research programs, to industrial engineering centers—explore various dimensions of physical activity. And judging from the numbers of books on sports, exercise, and fitness flooding popular bookstores, laypeople have a keen interest in studying physical activity.

Faculty who design formal programs of study in colleges and universities pride themselves on organizing knowledge in ways that promote the fullest understanding. Because physical activity is such a pervasive phenomenon—almost as pervasive as human nature itself—kinesiologists have found it difficult to organize knowledge about this phenomenon around a single framework that will help us study it systematically. In fact, debates continue about how to organize the discipline of kinesiology (Newell 1990b).

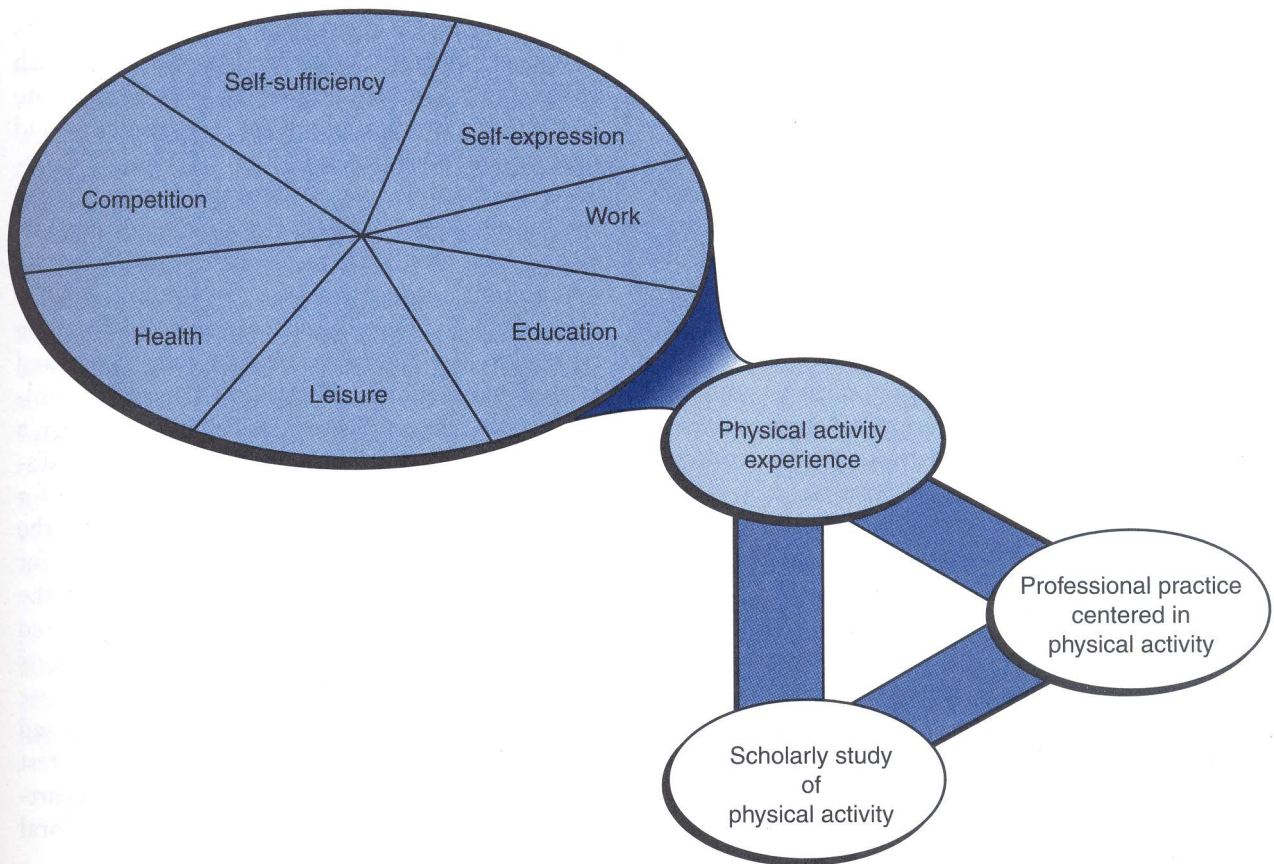


Figure 1.8 The spheres of physical activity experience. Physical activity plays an important role in every major sphere of our lives.

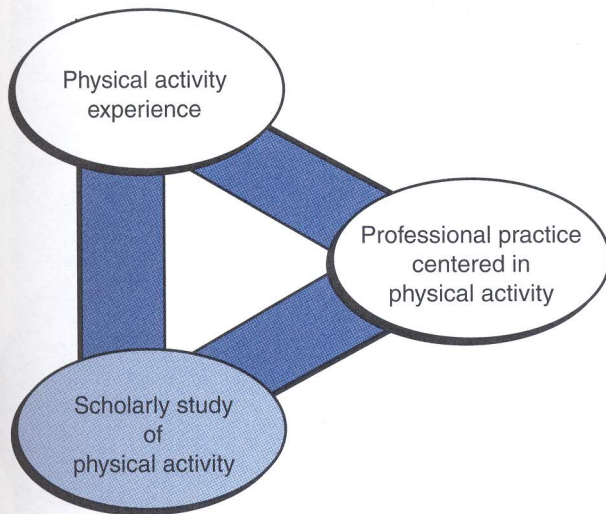


Figure 1.9 Scholarly study and the other two sources of kinesiology knowledge.

For the present, scholars have been content to divide the scholarly study of kinesiology into a number of subdisciplines. Each of these subdisciplines is related to some larger, older, and more established “parent” discipline such as psychology, physiology, sociology, biology, history, or philosophy. For instance, exercise physiology draws on basic concepts and theories from physiology, motor behavior draws on psychology, and philosophy of physical activity draws on philosophy. This means that kinesiology students must develop a working knowledge of the language and theories of a number of major disciplines and learn to apply them to physical activity. You will find this a formidable challenge!

You will also discover that each subdiscipline addresses a different set of questions about sport and exercise. Exercise physiologists typically ask and answer questions related to short-term changes that occur because of exercise or long-term changes that

occur because of training. Questions having to do with forces acting on the body, forces generated by the body, or ways of altering performance technique to improve physical functioning are the province of biomechanics. Specialists in motor behavior ask and answer questions dealing with how human development affects motor skill performance, the neural mechanisms underlying the performance of motor tasks, and the effect of practice on learning of motor skills. Sport and exercise psychologists are most concerned about the mental aspects of performance, whether it be psychological techniques that help elite athletes attain optimal performances or motivational factors that cause people to drop out of exercise programs. Kinesiologists who study questions of values and ethics as they relate to sport and exercise, such as “What values should guide our design of sport and exercise programs?” or “Can sport be a form of art?” are specialists in the philosophy of physical activity. Sport historians study the factors that have affected the development of sport and kinesiology in different countries, and sport sociologists analyze the influence of such factors as gender, race, class, media, politics, and religion on participation in sport and exercise.

Over the past four decades, the subdisciplines have developed into specialized areas of study, each with its own place in undergraduate and graduate curriculums in kinesiology, its own academic and professional societies, and its own scholarly journals. For example, members of the Association for the Advancement of Sport Psychology meet annually to hear the latest research reports about the psychological aspects of sport and exercise. They keep abreast of developments in this subdiscipline by reading the *Sport Psychologist*, a journal devoted to applied psychological research in sport psychology, or the *Journal of Sport and Exercise Psychology*, a journal about more theoretical aspects of the subdiscipline. Members of the North American Society for Sport History, the North American Society for the Sociology of Sport, the North American Society for the Psychology of Sport and Physical Activity, the Canadian Society for Psychomotor Learning and Sport Psychology, the American College of Sports Medicine, and the Canadian Society for Exercise Physiology, along with several other specialized societies, also meet annually to discuss the latest findings in their fields. Many kinesiology departments now offer master’s degrees and doctoral

Growth of Interest in the Scholarly Study of Physical Activity

At least 10,000 scholars around the world study physical activity, on either a part- or a full-time basis, spending an estimated \$80 to \$100 million annually to acquire knowledge in the field. The growth of interest in the scholarly study of physical activity can be seen in the increase in scholarly journals and academic societies over the last 35 years (see figure 1.10).

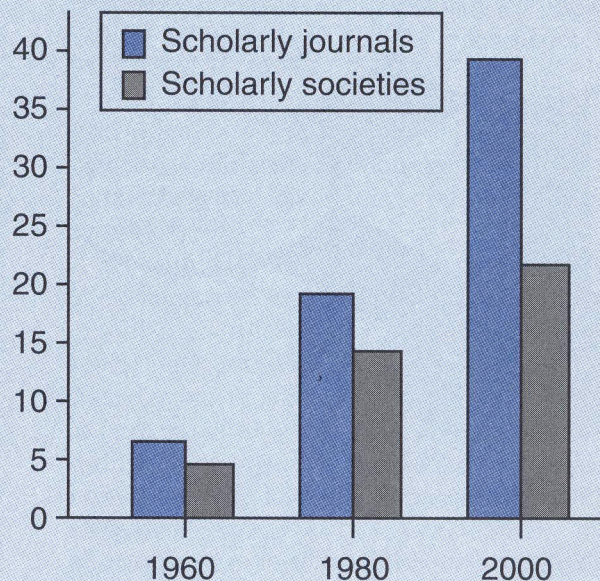


Figure 1.10 Increase in scholarly journals and scholarly societies in the physical activity field since 1960.

degrees in sport and exercise psychology. We can see the same pattern of specialization for exercise physiology, biomechanics, pedagogy of physical activity, motor learning and control, sociology of physical activity, history of physical activity, and philosophy of physical activity.

Most kinesiology professors have received in-depth education in one or two subdisciplines rather than in all of them. Your professors, for example, may identify themselves as biomechanists, exercise and sport psychologists, exercise physiologists, or some other title that denotes their special expertise. This process of specialization has advanced our knowledge of kinesiology by permitting researcher-scholars to focus on specific aspects of physical activity. The disadvantage is that communication among kinesiologists from the different subdisciplines is not always easy. Sometimes this problem hinders efforts to integrate the different kinds of knowledge and apply them to professional practice. Specialization also has led to the packaging of knowledge in kinesiology curriculums into

separate “boxes” (courses), each dealing with a separate subdiscipline; it is a curriculum model that can make it difficult for students to develop an integrated knowledge base that would serve them well in professional practice.

Figure 1.11 shows the spheres of scholarly study of physical activity. The subdisciplines presented in this book are those that are dominant right now. Because kinesiology is a dynamic, rapidly expanding discipline, the subdisciplines that compose it will likely expand also. In fact, some have already moved toward dividing into smaller, more specialized subfields. Biomechanics, for example, could be further separated into anatomical biomechanics and sport biomechanics. Sport psychology and exercise psychology are developing into separate subdisciplines. Exercise physiology, the oldest of the subdisciplines, may divide into such areas as sport physiology, work physiology, exercise epidemiology, exercise and nutrition, and others. This process of expansion of the boundaries of scholarly knowledge and the increased specialization that follows likely

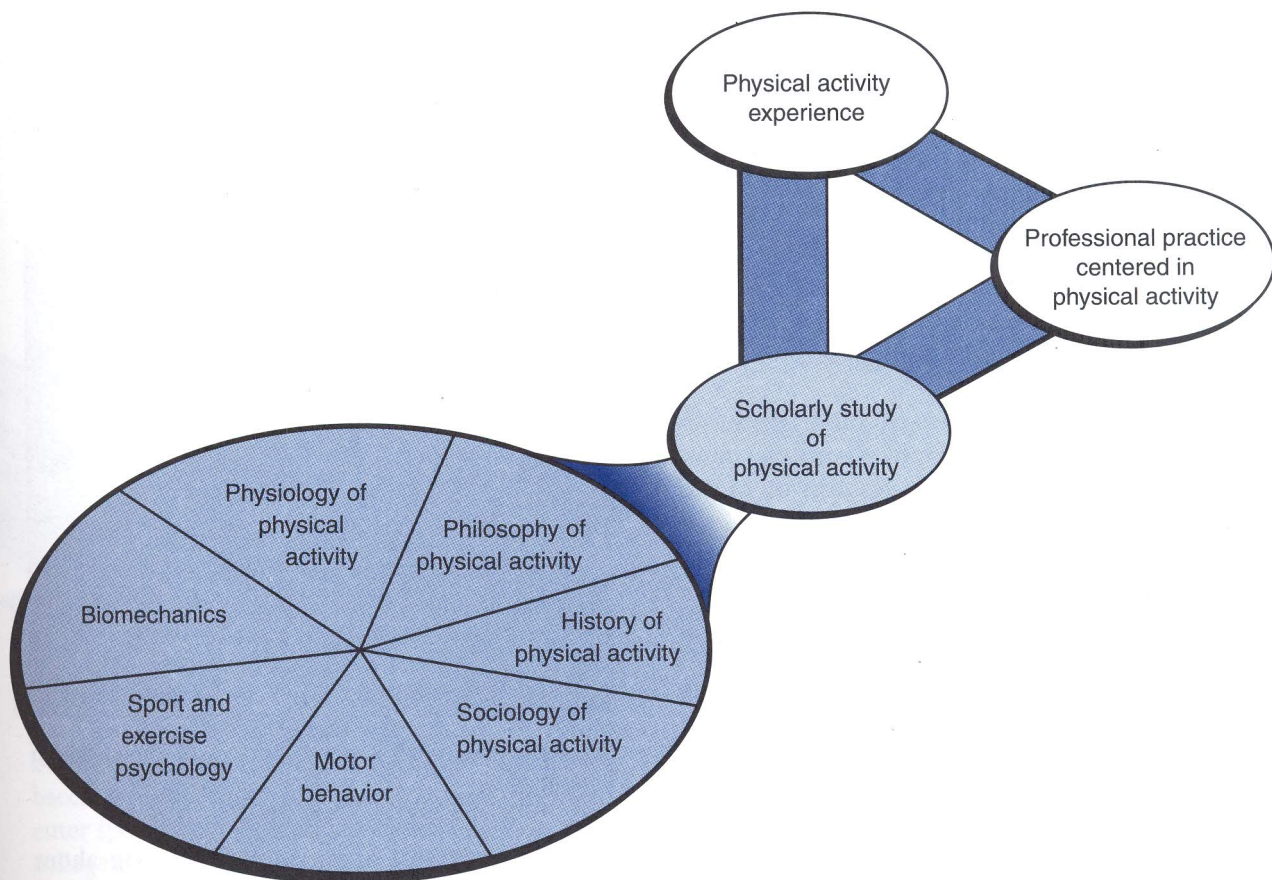


Figure 1.11 Spheres of scholarly study of physical activity.

Specialized Areas of Scholarly Study in Kinesiology

Each subdiscipline or area focuses on a different dimension of physical activity. Identify the subdiscipline that you believe will address the question by placing the appropriate letter in the blank before the numbered item. You can check your answers by referring to the key at the bottom.

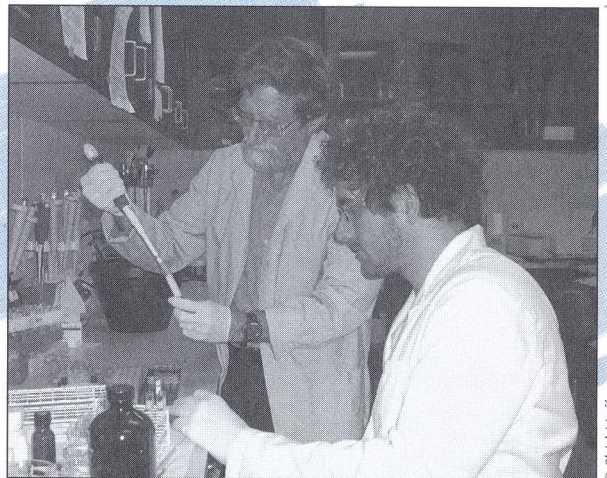
- a. Philosophy of physical activity
 - b. History of physical activity
 - c. Sociology of physical activity
 - d. Motor behavior
 - e. Psychology of sport and exercise
 - f. Biomechanics of physical activity
 - g. Physiology of physical activity
- ___ 1. How can I increase strength?
 - ___ 2. How did World War II affect major league baseball?
 - ___ 3. What muscles make the largest contribution to the bat swing?
 - ___ 4. What attitudinal factors might be responsible for causing people to drop out of exercise programs?
 - ___ 5. What is the best way to practice the tennis serve?
 - ___ 6. Is it wrong to cheat in a hockey game?
 - ___ 7. How do economic factors affect a person's access to exercise facilities?

Answers: 1-g, 2-b, 3-f, 4-e, 5-d, 6-a, 7-c

will continue for many years. This development, of course, underscores the need for kinesiologists and physical activity professionals to continue to work at staying abreast of knowledge contained in the spheres of scholarly study.

In many departments, each subdiscipline is represented in the curriculum by a separate course (e.g., sport history, sport psychology, or motor learning). In some cases two or more subdisciplines may be combined in one course. For example, the sociocultural sphere includes the study of history of physical activity, sociology of physical activity, and philosophy of physical activity. In your department these three subdisciplines may be taught in a single course, or a separate course may be allocated to each of them. As kinesiology continues to flex its muscles and the knowledge base expands, the number of courses devoted to the scholarly study of physical activity will probably increase.

As you dig into the material in part II of this book, remember that the subdisciplines and spheres of scholarly knowledge are merely frameworks to



Scholarly study is an important source of knowledge in kinesiology.

help us study and organize our thinking about physical activity. Mastery of the knowledge in each subdiscipline will require you to think in slightly different ways, to master different theories, and to

use different terminology. But keep in mind that breaking the discipline up into these little pieces can lead to fragmentation in our thinking about physical activity and cause us to forget that kinesiology is one unified body of knowledge. When you, as a physical activity professional, are solving problems in the field, you are likely to draw on the body of knowledge as a whole, not in the tidy boxes in which you learned it in your undergraduate program. For the present, this method of organizing the scholarly study of kinesiology seems to be the best way to approach it. As the discipline evolves, however, students and professors who are best able to make connections between facts, concepts, and principles drawn from different subdisciplines and different spheres of scholarly study will be in the best position to make significant contributions to the discipline.

Examining physical activity through research and logical, systematic analyses constitutes the scholarly study of physical activity. Our scholarly knowledge about physical activity has been organized into subdisciplines, each providing a unique perspective from which to view the dynamics and processes of physical activity.

Practicing a Physical Activity Profession

Fred Green lives to dance and perform gymnastics; eventually he wants to own a dance and gymnastics studio. Lavell Treen wasn't a football star, but he so much enjoys the game that his professional goal is to become a coach at the college level. Yvonne Singer was on the varsity basketball team in high school, but she spent most of her junior year undergoing rehabilitation for a knee injury. Now she's interested in a career as an athletic trainer or physical therapist. Melinda Billings was overweight and unfit until a friend got her interested in weight training and bodybuilding. Now she's a fit and confident young woman who would like to become a personal trainer to help others discover what she has learned. Jed Drein completed an undergraduate degree in business and has returned to school to complete a baccalaureate degree in kinesiology. He hopes to enter sport management and eventually become a college athletic director or manager of a major sport arena or stadium complex.

Like most college students, you probably didn't decide to enroll in college simply to learn about

physical activity. You (and surely your parents!) hope that your studies and your degree will lead eventually to a job, preferably a job in the physical activity field. But you probably have many questions. What types of jobs are available to kinesiology graduates? What do these jobs entail? What are their requirements? Is special certification or a graduate degree required? What types of certifications are appropriate? What social environments surround the workplace? Does your personality suit you for some types of work better than others? Can you be happy in this profession for the rest of your life? What does the job pay? These and many more questions face students exploring careers in physical activity.

Part III of this book introduces you to the third dimension of kinesiology—professional practice (see figure 1.12). Professional practice may be envisioned as a process of putting knowledge to work, a specific type of work performed by most of those who graduate from kinesiology programs.

When we enter professional practice, we learn new things about providing physical activity services to the public. For example, if you decide to become a physical education teacher, you will learn a great deal about how to structure a lesson, how to organize a curriculum, and how to deal with students, all under the tutelage of a university specialist who has advanced training in the preparation of physical education teachers. As you pursue your career you will probably learn a lot that you were never taught in college classes about how to work productively and collaboratively with other teachers in your

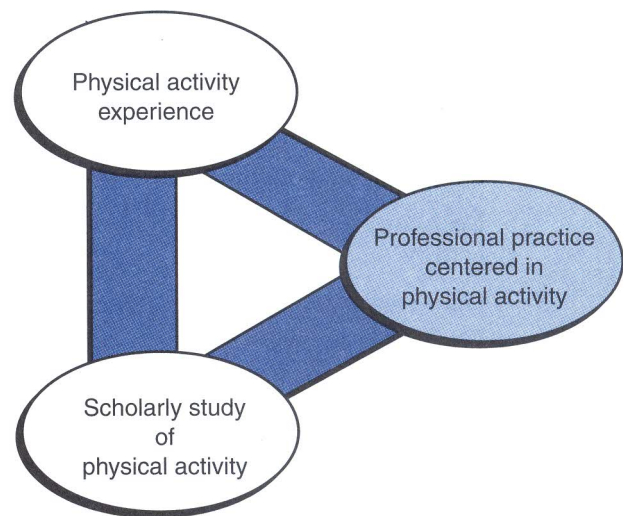


Figure 1.12 Professional practice and the other two sources of kinesiology knowledge.

school. This knowledge gained through hands-on experience under the supervision of a university specialist as well as on-the-job experience is different from knowledge acquired through research, and it is different from knowledge acquired through your own direct experiences performing or watching physical activity. When college and university faculty incorporate this knowledge into classes, it is considered part of the discipline of kinesiology.

Becoming a Professional

Now let's turn to thinking about your career plans. One of the first decisions you will have to make is whether you really want to serve in a professional capacity. But what does it mean to be a professional? In chapter 12 you will learn that becoming a professional entails special responsibilities such as devoting yourself to serving others, giving priority to your clients' needs and interests, performing your duties in an ethical manner, and keeping abreast of develop-

ments in your field to ensure that your decisions are based on the best available evidence. Whereas those who specialize in scholarly study focus on knowledge and how to communicate it effectively to others, those who specialize in professional practice focus on enhancing the lives of those they serve.

Not all types of work qualify as professions. Truck drivers, small business owners, hairstylists, and television repair people are not professionals. This classification is appropriate primarily because the educational qualifications required to do the work do not involve mastery of a complex body of knowledge. In chapter 12 you will see how various types of work can be located on a continuum from strictly nonprofessional (e.g., common laborer) to strictly professional (e.g., surgeon). Most types of work are located between these two extremes. More important, you will learn about the expectations society holds for professionals, and you will have an opportunity to decide whether you really want to pursue a professional career.

Doing Some Preliminary Thinking About Your Career

As a way of taking stock of how carefully you have thought about developing a career in the physical activity professions, answer the following questions. Based on your answers, write a brief paragraph outlining the steps you need to take to prepare for a successful career in the physical activity professions.

1. Do I know what types of careers are available to those with an undergraduate degree in kinesiology?
2. Does the profession I want to enter require a master's degree in kinesiology or a related field?
3. Do I know what courses will help me develop experiential knowledge of kinesiology?
4. Do I know what courses will help me develop theoretical knowledge of kinesiology?
5. Do I know what courses will help me develop professional practice knowledge?
6. Do I have a timetable and a plan for preparing myself for a career in the field of physical activity?
7. Have I asked any physical activity professionals about advice concerning how I can achieve my career aspirations?
8. Have I ever visited a professional setting similar to the one in which I hope to work when I graduate?
9. Given the choice between spending \$25 on a hot CD or on dues to a professional organization, would I choose to spend the money on dues?
10. Do I know any people currently working in the physical activity field?

Careers in the Physical Activity Field

Once you have made a commitment to becoming a physical activity professional, *you* must take primary responsibility for developing your career. A career is a lifelong pursuit that may move through various stages as you progress from one type of employment to another. For example, a career in the teaching profession may begin at the public school level and wind up at the community college or university level. On the other hand, you may spend an entire teaching career at one institution. A career in the fitness industry may take you from a position as a personal trainer at a local commercial center, to a position in a corporate fitness program, and ultimately to the position of director of a hospital-linked wellness

center. Career counselors now predict that young people graduating from college, on average, will change careers up to four times throughout their life spans. Of course, where you finish your career is not a pressing issue at this time. Getting a good start on a career is.

One of the exciting aspects of kinesiology is the diverse range of careers that you may develop from a solid undergraduate education. Unlike your friends who may be enrolled in education, nursing, or accounting programs that offer training tailored to specific careers, a degree in kinesiology offers many options. The list below lists a number of different professions that often have their roots in a kinesiology degree. Obviously, each of these may have specialized requirements *within* a kinesiology curriculum, but all can be viewed as professional applications of kinesiology. Each of these various

Possible Careers in the Physical Activity Profession

Health and Fitness Promotion

- Program director of corporate fitness center
- Fitness instructor or program director at commercial fitness center
- Personal trainer—private practice
- Exercise leader or nutrition consultant at weight control center
- Exercise and wellness coordinator at geriatric center
- Stress management clinic—exercise and stress management consultant
- Exercise physiologist—various exercise-related clinics and programs
- Fitness programmer at YMCA, YWCA

Therapeutic Exercise

- Athletic trainer
- Occupational therapist
- Physical therapist
- Cardiac rehabilitation specialist
- Exercise therapist at orthopedic clinic

Instruction

- Sports director at resort
- Professional golf instructor
- Professional ski instructor
- Professional tennis instructor
- Professional swimming instructor

- Varsity coach at school or college
- Physical education teacher at school or college
- Adapted physical education teacher
- Strength and conditioning coach
- Sport psychologist for performance enhancement

Sport Management

- Director of youth sport programs
- Director of youth camps
- Leader in community recreation programs
- Athletic administration in school or college
- Front-office administration in professional or semipro sports
- Sports marketing
- Sports promotion, information, and media
- Sports officiating
- Aquatics director
- Sports facility supervisor

Scholarly Study

- Research scientist in human performance lab
- Professor of exercise physiology
- Professor of sport history
- Professor of exercise and sport psychology

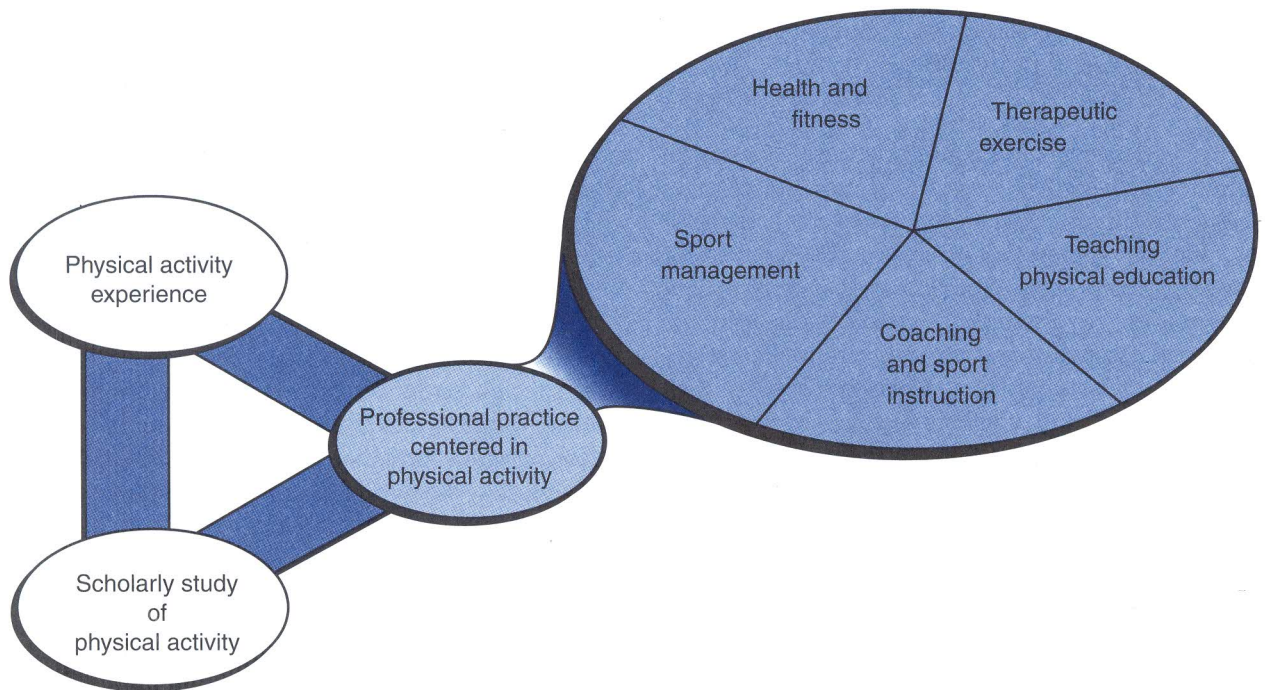


Figure 1.13 Spheres of professional practice centered in physical activity.

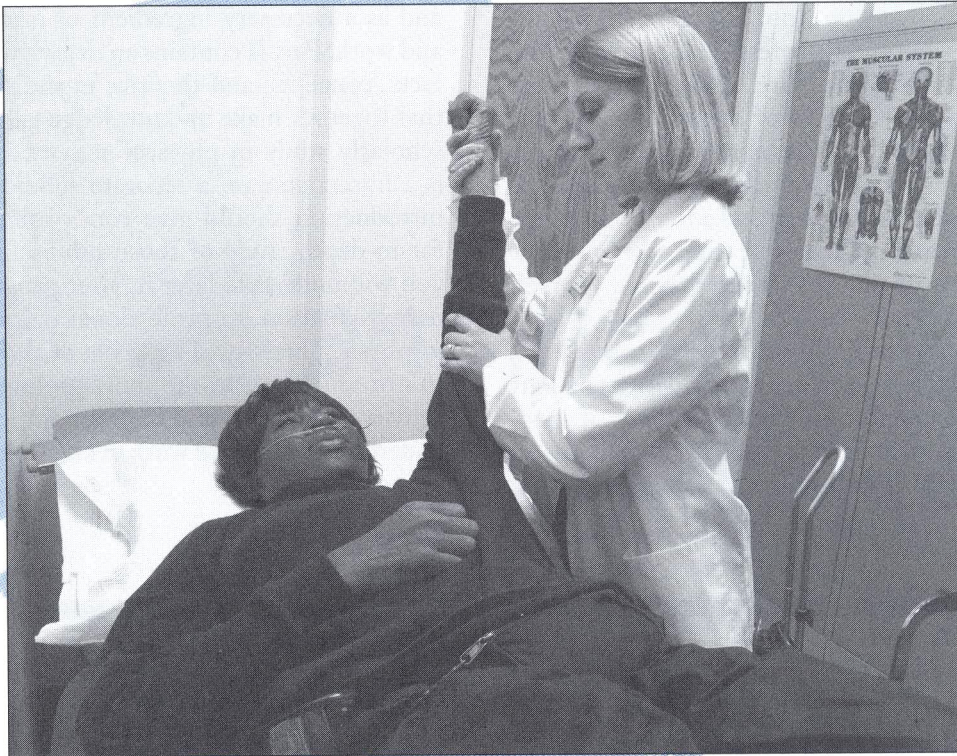
occupations can be assigned to one of the **spheres of professional practice in physical activity** displayed in figure 1.13.

Part III of this book not only provides you with information concerning these professions but also helps you get a start toward making yourself marketable as a professional. From this point forward in your college experience, you need to realize that you are involved in a competition. Whether you like to compete or not, you will be vying for grades on exams, papers, and projects. When you graduate, you will continue to compete, vying with other kinesiology graduates for professional positions. In many ways, this competition is the most important you will enter. How should you prepare? If you were preparing to compete for a world championship in the marathon, you probably would totally commit yourself to planning and implementing a strategic training program that offers you the best chances for achieving victory. If preparation is important for an athletic competition, how much more important is it for your lifelong career!

Throughout this book you will be reminded repeatedly of this important point: You and only you are responsible for preparing yourself for

your chosen career. Your academic department is responsible for offering you a well-sequenced, relevant curriculum. Your professor is responsible for offering competent advisement and teaching. But you are responsible for taking advantage of these resources to develop yourself into the best professional possible. From this point on, view yourself as a preprofessional, one who is not simply taking courses or majoring in a subject but one who is a professional-in-training.

To become a marketable, sought-after professional, you must make choices about your experiences on and off campus. Obviously, committing yourself to mastering the material of your course work is the first step, but it is only the first step. Hours spent outside the classroom in professionally relevant voluntary service work or summer employment are also critical. As a preprofessional you should show an interest in your profession that goes beyond excelling in course work. Becoming a student member of professional physical activity organizations is one way to demonstrate early commitment. The chapters that follow will encourage you to think on your own and act on behalf of your educational and professional development. It is never too early to take these vital steps.



Graduates with kinesiology degrees are finding a wider range of career options open to them.

For most students, the goal of pursuing a degree in kinesiology is to obtain a job in a physical activity profession. Those who identify with a profession early and diligently pursue their course work as well as professionally related experiences outside the classroom will be the top competitors for jobs in physical activity professions.

Wrap-Up

So we've left the harbor and headed out to sea on a journey to discover the land of kinesiology. The destination is clear: an understanding of what kinesiology is, how knowledge and competency in it are developed, and how it relates to your chosen career. The journey will be long and at times difficult. The voyage will demand much of you, but the rewards of understanding the field that you are studying and knowing about the careers for which a program in kinesiology prepares you are well worth

the time and effort. You've already learned a great deal. You know, for example, that kinesiology is the study of physical activity, and you know that physical activity has a technical definition that is quite different from how we use the term in everyday life. You also have learned that although kinesiology is concerned with all forms of physical activity, the research of kinesiologists and the careers of those who graduate from programs in kinesiology tend to revolve around two general forms of physical activity: exercise and skilled movement.

You've also learned something about how the field of kinesiology is organized and that this textbook follows the same pattern of organization. One source of knowledge contributing to kinesiology is experience that comes from participating and watching physical activity; this realm of experience can be broken down into seven spheres of physical activity experience. Another source of knowledge comes from scholarly study about physical activity, and this realm can be broken down into seven spheres or subdisciplines. Finally, knowledge comes from professional practice centered on physical

activity, and this realm, too, can be broken down into seven spheres of professional practice. You can remember this structure by thinking of these areas as the three circles of seven. Having read this introduction, you are now ready to explore physical activity as a form of human experience, an object of scholarly study, and a focal point for a professional career. Take some time now to review the key points of this chapter to prepare yourself for what lies ahead.

In the parts that follow we will explore each dimension of the physical activity field in detail. Part I will help you appreciate the importance of experiencing physical activity as a source of enjoyment; as a means to health, education, and rehabilitation;

and as a necessary ingredient of our lives at play and work. Part II contains an overview of the major facts, concepts, and theories in the subdisciplines that together make up knowledge gained from the scholarly study of physical activity. Each chapter is a minicourse on a separate subdiscipline. This introduction should give you a solid orientation for in-depth study of those subdisciplines, which you will undertake later in your program. Finally, part III focuses on professional practice centered in physical activity. The goals of that section are to introduce you to the most prominent physical activity professions and to point out ways in which undergraduate course work in kinesiology connects to them.

Study Questions and Activities

1. What is the technical definition of physical activity? Of movement? Give an instance in which human movement does not meet the technical definition of physical activity.
 2. What is meant when kinesiology is described as a holistic discipline?
 3. What two general forms of physical activity receive the most attention in kinesiology?
 4. What are the three sources of knowledge of kinesiology?
 5. List the spheres of physical activity experience.
 6. List the spheres of scholarly study and the subdisciplines contained in each.
 7. List the spheres of professional practice centered in physical activity, and give an example of a career in the physical activity professions for each sphere.
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