

PART I

Kinesiology: Its Fundamentals and Paradoxes

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Fundamentals and Paradoxes

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LEARNING OBJECTIVES

1. Identify and describe four paradoxes found in the discipline of kinesiology.
2. Define *kinesiology*.
3. Identify the various forms of movement.
4. Describe the subdisciplines of kinesiology.
5. Identify and define the three strata into which kinesiology is organized.
6. Explain the differences between physical education of the past and kinesiology as it is taught in universities today.

KEY TERMS

fundamental movement skills

human movement

kinesiology

kinesiology administrative location

medical gymnastics

“rolling-out-the-ball” methods

subdisciplines

Introduction

What brings you here? We hope that this is a question that intrigues you. How have you arrived at this point where you are reading this page right now, attending this university, and choosing this major? Perhaps you have a quick and easy answer that you use to fend off the many people who have asked these questions of you since you made the decisions that have brought you here. Perhaps there are some deeper aspects to these questions that you would prefer not to face right now, because the answers are not that clear. We are writing this text, in large part, because we have taught the “foundations” courses over many years and have witnessed hundreds and hundreds of students struggling with such questions. Worse yet have been those instances of students who have shrugged off these questions as “unknowable” and just plowed ahead into a great unknown with nothing on their side but blind trust. We are committed to each of you having much more than blind trust as you go forward with us.

Life’s big choices, such as what course of study will be the fundamental grounding of one’s career and life work, tend to be complicated with networks of explanations running in all directions. Additionally, these explanatory networks may be based on emotion, subjective, and not completely obedient



to the laws of logic. It is highly probable that one reason you are reading this text is that it is required for a course you are taking. It is also highly likely that the course you are taking is an introduction to your choice of major—**kinesiology**.

Many paradoxes and curiosities are to be found in kinesiology and the choice of this area of study as a major. We think it is important to name some of these paradoxes right from the start. It is a good first step in knowing and appreciating the path you have chosen. Of course, we think you have made the choice of a lifetime in becoming a kinesiology major (but more about that as we go along).

Paradox 1: If you are new to a college campus, it is quite possible that you have chosen to major in a field in which you have never taken a class. In secondary schools, students take courses in physical education but not kinesiology. Chemistry is still chemistry in high school, and biology is still biology. Why is kinesiology different? Some of your fellow kinesiology majors are extraordinarily fit and athletic; some may be scholarship athletes; and others may seem somewhat ungainly and not able to move comfortably for any number of reasons. The athletes say they chose the major because of their “love of sport” and that they want the opportunity to bring it to everyone. The less-abled say they love sport as well and are committed to bringing sport opportunities to all those who, like themselves, are in danger of missing it completely.

Paradox 2: How can people come to a common mission in kinesiology from vantage points that are as different from one another as chemistry, biology, psychology, and philosophy? Are there ways to discern commonality in the face of great diversity? In kinesiology, *diversity* can have many different meanings.

Paradox 3: How can a discipline that began as being apparently limited to the physical realm ever be understood as actually one of the most holistic ones in the academic community?

We will deal more directly with the history of physical education and kinesiology in later sections, but it is

kinesiology

The study of the art and science of human movement.

STOP AND THINK



What are your main motivations for majoring in kinesiology at your institution?

STOP AND THINK



Team A was heavily favored to defeat Team B in an important tournament, but Team B won.

- How would a kinesiology major who focuses on the physiology and biomechanics of performance explain this outcome?
- How would a kinesiology major who focuses on psychology explain this outcome?
- How would a philosophy-oriented kinesiology major explain this outcome?
- What is gained by looking at all of these factors in explaining the outcome?

important to mention a bit about our history here as an aspect of our exploration of the complexity of the field. If we could go back to a time as recent as the 1960s, it was easy to find people in our field on college campuses. We were called “PE” or “physical education,” and we were usually physically housed in a “gym.” We might have shared the space with the athletic department, and, in fact, athletics may have gotten the prime offices and play spaces. Our unit was either housed in the athletics department; part of a small college that included professionals in health, recreation, and dance; or we were included in a college of education. We were considered to be immersed in squats (exercise) and sports. Lastly, we existed as two separate departments—one for men and one for women—and the programs of study for each were different from one another.

Kind of amazing isn’t it? As a consequence of many diverse forces (which will be explored later), male and female professionals merged into one field and (often) took on the identity of kinesiology. Leaders in the field decided it was better that our academic colleagues, as well as the lay public, become confused for a time about who we were and where we belonged administratively, rather than remain as woefully misunderstood and misperceived as we were in earlier times. Forty years later, a kind of ‘name game’ persists with regard to the labeling of our discipline on university campuses. It has not been easy to achieve widespread understanding and consensus concerning our new identity. As one small example, take a look at the **kinesiology administrative location** (or the equivalent) on numerous campuses in just one state university system in California (**TABLE 1-1**). There are five variants! Yet, kinesiology is one of the most popular majors in the California State University (CSU) system. This is a real tribute to student persistence and ingenuity concerning how to find the housing of their major!

kinesiology administrative location

The place where kinesiology is housed within the organizational structure of a university.

STOP AND THINK



Did you personally have any difficulty locating information on the kinesiology department when you were exploring what school or major you would choose? Describe any difficulties you encountered.

One last paradox for kinesiology is that a student’s devotion to his or her chosen work can become a limitation to the full appreciation of the discipline itself. How can this be? Kinesiology is complex in its taxonomy, and among its important components are the various movement forms that exist in our culture and that in fact are almost objects of worship. For example, American football, global football (soccer), basketball, marathon, track, and tennis are just a few of the movement forms that engage us. Great numbers of professionals in kinesiology enter the field because of

TABLE 1-1 Institutional Housing of Kinesiology

University	College	Department
Cal Poly Pomona	Science	Kinesiology and Health
Cal State Fullerton	Health/Human Development	Kinesiology
Cal State LA	Health/Human Services	Kinesiology
Cal State Northridge	Health/Human Development	Kinesiology
Cal State Stanislaus	Education	Kinesiology (Physical Education and Recreation)
Humboldt State	Professional Studies	Kinesiology and Recreation
San Diego State	School of Exercise and Nutritional Sciences	Kinesiology
San Jose State	Applied Science and Art	Kinesiology
Sonoma State	Science and Technology	Kinesiology

their devotion to one or more of these forms and the place it holds, or once held, in their lives. People coach a particular sport or a particular age group for decades or an entire career. Likewise, athletic trainers are frequently completely devoted to the rehabilitation of injured athletes. This commitment



Courtesy of California State University, Northridge, College of Health and Human Development.

and desire motivates them to spend countless hours throughout their career (often volunteering) in keeping athletes whole and in the game. We would never maintain that this is a bad thing; however, a love affair with specific, tiny pieces of kinesiology can mask an observer's understanding of the whole and how the tiny pieces fit together into a unified discipline.

You are reading this text in the context of a foundations course. Enrollment could be 30, 60, or over 100. Imagine if, on the first day of class, each student is asked to introduce him- or herself and describe why he or she is taking the class. We predict that almost all will say they have chosen the major because of something (usually professionally) each wants to *do* with it—teach, promote, research, heal, perform. Who will say, “I am here because I love and want to study kinesiology”? We hope this book will be a stepping-stone to more students understanding the nature of kinesiology and how it is the “whole of it” that allows us to do all the things we want to do with the important pieces and parts.

Classic Definitions

human movement

The change of position of the individual in time-space resulting from force developed from expending energy in interaction with the environment.

medical gymnastics

The first organized school activities involving human movement in the United States. The most popular types were those based on German, Danish, and Swedish programs.

Kinesiology is the study of the art and science of human movement, where **human movement** “is the change in position of the individual in time-space resulting from force developed from the expenditure of energy interacting with the environment” (Brown & Cassidy, 1963, p. 33). The cornerstones of kinesiology as an academic discipline and field of study, with an agreed-upon structure of knowledge, have been built upon these definitions.

Here we are, however, with that same old “bad penny” showing up: what is our consensus view of the structure of knowledge in kinesiology? In the decades since the 1960s, a great deal of progress has been made in unifying the disciplinary study for men and women in our field and in exemplifying that the study of human movement is not limited to the physical realm. Of primary importance has been the transformation in our understanding of what elements form the core of kinesiology, but even our most fundamental core is not something about which we all agree.

In the early 1900s, school exercise programs were introduced in the United States that were often referred to as **medical gymnastics**. The primary purpose of these programs was to enable students to tolerate the loss of activity associated with the hours spent in required public education. In the 1920s and 1930s, the program focus shifted from prescribed exercise to

so-called natural sports and games (Spears, 1973), where the fundamental core of physical education was sports and dance activities. Let us refer to these activities as *forms of movement*. Programs for boys and girls emphasized greatly differing forms of movement. However, even in times where the focus of attention was on sports and games, professionals in the field and curriculum visionaries were consistently clear that what was of crucial import in preparation of qualified teachers was the grounding of sport/games instruction in adherence to scientific and medical principles that would guarantee that the consequences of participation would be healthy and developmentally appropriate growth (Brown & Cassidy, 1963). Throughout the first 60 years of the 20th century, the attention to quality physical education based on cutting-edge research and science was in stark contrast to **“rolling-out-the-ball” methods**, where simply playing the game was sufficient.

Once leaders such as Henry (1964) and Brown and Cassidy (1963) began to speak out, a paradigm shift was begun that had striking results. The sport/dance forms of

“rolling-out-the-ball” methods

Physical activity programs focused only on play rather than on planned human movement using scientific methods.

STOP AND THINK



Did you ever have a physical education class in which the teacher just distributed equipment and told everyone to go play? What was the result? Is this practice widespread today, or is it “past history”?



movement were moved from the programmatic core and were replaced by concepts directly drawn from the scientific domains underlying, explaining, and predicting human movement behavior. University programs featured sequences of courses in exercise and sport science, with movement forms appearing as applications requiring professional training in the latter stages of baccalaureate work. Masters and doctoral programs grew for those who were interested in the scientific underpinnings of kinesiology. However, primary and secondary school programs continued to focus on popular sports, games, and dance.

Three Strata

The study of the art and science of human movement can be organized into three multifaceted strata: (1) core scientific domains, (2) sociocultural-based forms of movement, and (3) methods in professional (career) applications. Our purpose here is to give a brief overview of the whole of kinesiology and a sense of its breadth and complexity.

CORE SCIENTIFIC DOMAINS

Although from program to program, in the United States and globally, there may be modest variations in scope and terminology, what follows are the agreed-upon foci of inquiry in kinesiology. You may notice that many of the core elements are rooted in or have overlap with traditional and ancient disciplines. Our core domains are often referred to as **subdisciplines**, because they share commonalities with the so-called parent disciplines (**TABLE 1-2**). In each instance, time and exercise/sport science research **has** revealed significant and unique elements of the kinesiology subdisciplines that distinguish them from disciplines. This can be seen most dramatically in the subdiscipline of biomechanics. Biomechanics is the study of the principles that govern the human body in motion. It requires a combination of knowledge concerning the physics of objects and the anatomy of human motion. Biomechanics, dealing as it does with our familiar movement forms, also concerns itself with the human moving in relation to inanimate objects (e.g., ball, bat, javelin) and animate cocreators of movement (e.g., dogs/sleds, horses in equestrian). Neither anatomy, nor physics, nor any other scientific domain covers the subject area of biomechanics. This same pattern (i.e.,

subdiscipline

Field within a discipline. Kinesiology has a number of subdisciplines, including biomechanics, exercise physiology, neurophysiology of performance, and others.

TABLE 1-2 Subdisciplines in Kinesiology

Biomechanics
Exercise physiology
History of sport and dance
Neurophysiology of performance
Philosophy of sport
Psychology of performance (developmental, learning, self-regulation, and performance)
Sociology of sport
Sport medicine

overlap with other disciplines but with extensive uniqueness) holds true for the variety of sport/exercise subdisciplines that overlap in limited ways with more traditional disciplines in the arts and sciences.

SOCIOCULTURAL-BASED FORMS OF MOVEMENT

Country by country, around the world, thousands of game, sport, and dance forms exist as part of ethnic or national cultures. Canadians love their curling. In the United States, sport sociologists have analyzed the shift of our “national pastime” of baseball over time from its original rural, agrarian orientation, as well as our current fascination with football and its corporate structure and basketball as an urban, fast-paced, diverse sport (Woods, 2007).

No human movement specialist could possibly possess expert skills and understanding of all of our myriad forms of sociocultural-based movement. In the past, physical education preparation was devoted to producing a teacher/coach with all the capabilities necessary for the most commonly practiced movement forms. Today, the credit hours necessary for the science core of the major makes this kind of skills focus impractical. These diverse movement forms serve an important purpose in potentially offering opportunities for people of all sizes, shapes, conditions, strengths and vulnerabilities, personal temperaments, and interests to find activities for health and vitality throughout the lifetime. One of the challenges of kinesiology today is to find avenues for schools, local governments, and public health agencies to provide as many options as possible to engage as many citizens as

TABLE 1-3 Examples of Common Sociocultural-Based Forms of Movement

Aquatics (all types)
Combatives (boxing, fencing, martial arts, shooting)
Equestrian activities
Individual sports (racket, handball)
Running (marathon, triathlon)
Team (basketball, baseball, football, softball, soccer)
Vertigo sports (diving, gymnastics)
Winter sports (skiing, skating)

possible in an active lifestyle. Additionally, the professional workforce for staffing these options must be produced. **TABLE 1-3** lists some of the most common sociocultural-based forms of movement in the United States and most other developed countries. Kinesiology departments usually feature processes by which students in the major can develop and demonstrate knowledge and proficiencies in some number of these forms.

SPECIALIZED MOVEMENT FORMS

Two specialized types of movement forms are crucial in schools, public recreational spaces, hospitals, and private facilities. The first of these specialized types is often referred to as **fundamental movement skills**, or *basic movement skills*. These are the childhood building blocks on which sophisticated sport skills are based. Such skills include catching, hopping, jumping, kicking, skipping, running, throwing, twirling, and walking. Elementary school physical education focuses on these fundamentals, and low-organized games and rhythmic activities put these skills to use. Some believe that these basic skills are “natural” and do not need to be formally taught and practiced. In many states today, physical education has all but disappeared from elementary schools. However, motor development research has shown that the acquisition of basic movement skills is far from natural or automatic for all children.

A second important specialized type of movement falls under the category of exercise. Research has shown that specially designed movement

fundamental movement skills

Building blocks of human movement upon which sport skills are based, including catching, hopping, jumping, kicking, skipping, running, throwing, twirling, and walking.



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patterns are ideally suited for building capacities such as strength, cardiovascular endurance, muscular endurance, flexibility, agility, and the like. Today, well-designed exercise programs are an important part of kinesiology in restoring capacity in those who are wounded or disabled, increasing their capacity for high-level skill performance and maintaining fitness levels throughout the lifespan.



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METHODS IN CAREER APPLICATIONS

Once a student has acquired knowledge and understanding of the principles derived from the subdisciplinary domains and appropriate proficiencies in movement forms common in our culture, professional training begins. Generally, in kinesiology a student will complete some upper-division baccalaureate work and possibly some graduate work to acquire certifications and licenses that enable the application of kinesiology in a profession or career. Five general areas of professional training are rooted in kinesiology knowledge and skills:

1. Capacity building and/or restorative practice (e.g., strength and conditioning, personal training, athletic training)
2. Management, administration, or coaching of sport
3. Performance enhancement (e.g., sport psychology consulting)
4. Instruction in physical education
5. Research (career in academics)

This text presents three pathways to accomplish our purpose, which is to enable you to understand, describe, and appreciate the discipline of kinesiology. These three pathways include a competency orientation, a learning-centered focus, and a holistic perspective. Your journey is opening up before you.

CHAPTER SUMMARY

This chapter asked you to consider four paradoxes in kinesiology that contribute to its unique nature as a discipline. Kinesiology was defined, and its key subdisciplines identified. The three strata of kinesiology were presented: the scientific core, forms of movement, and professional practice. The chapter also identified how contemporary kinesiology differs from its historical precursors.

DISCUSSION QUESTIONS

1. What is kinesiology? Discuss what the concept of kinesiology entails.
2. Describe the paradoxes found in kinesiology. Have you had personal experience with any of these paradoxes?
3. Are you more drawn to the core scientific domains of kinesiology, sociocultural-based forms of movement, or professional (career) applications? What area drew you to the major? What area are you most excited about learning more about?

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