

Twenty-First Edition

Foundations of
**PHYSICAL EDUCATION,
EXERCISE SCIENCE, AND SPORT**



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Jennifer L. Walton-Fisette | Deborah A. Wuest

21st Edition

FOUNDATIONS OF PHYSICAL EDUCATION, EXERCISE SCIENCE, AND SPORT

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FOUNDATIONS OF PHYSICAL EDUCATION, EXERCISE SCIENCE, AND SPORT

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PREFACE

Was physical education or anatomy and physiology one of your favorite classes? Were you a high school athlete or did you play a club sport? Are you interested in fitness, physical activity, and sport? Most importantly, are you considering a career in a human movement field such as a physical education teacher, exercise specialist, personal trainer, or sport administrator? Then this text is for you! Come join us on this educational journey to learn about physical activity, physical education, and sport. We will provide you with the most up-to-date information while recognizing that the dynamic field of kinesiology and its disciplines are ever changing in this fast-paced, technology-driven society in which we live.

We will challenge you from the beginning of your career to commit to ongoing professional development and growth in your discipline. We encourage you to be advocates for physical activity and quality physical education, to value diversity and appreciate its many forms, and to work toward making opportunities to participate in physical activity available to all people throughout their lifespan. We hope that, as a young leader, you will work collaboratively with other dedicated professionals to address the issues facing us, the challenges ahead, and the realization of physical education, exercise science, and sport's potential to positively contribute to the lives of all people.

ORGANIZATION

The 15 chapters of this book are organized into four parts. Part I provides students with an orientation to the field of kinesiology along with the field's disciplines. Chapter 1 focuses on exploring your social identity and systems of meaning and the meaning and scope of contemporary physical education, exercise science, and sport. Emphasis is placed on understanding the scope of the disciplines and committing to professional development. In Chapter 2, students are introduced to the philosophy, goals, and objectives of physical education, exercise science, and sport. The last chapter in this part, Chapter 3, discusses the health and physical activity levels in our society, particularly in relation to the changing demographics, wellness movement, and fitness and physical activity movement.

In Part II, the historical foundations of the field and an overview of some of the disciplines are presented. The historical foundations are covered in Chapter 4, including our heritage from other countries and the significant influences on the growth of the field in the United States. In Chapter 5, an overview of motor behavior is provided. Chapter 6, biomechanics, is written by Dr. Deborah King, Ithaca College. Chapter 7 with its focus on exercise physiology and fitness follows. In Chapter 8, an overview of sport sociology is presented, and Chapter 9

provides information on sport and physical activity psychology. Chapter 10 focuses on physical education pedagogy and provides information on curriculum, pedagogy, and assessment.

Part III, which consists of four chapters, addresses professional considerations and career opportunities, including enhancing professional marketability. Chapter 11 focuses on professional development, including professional responsibilities, ethics, and certification. New to this edition is information on occupational socialization and self-care. Chapter 12, on teaching and coaching careers, shows how opportunities for these careers have broadened from the school setting and school-age population to nonschool settings and people of all ages. In Chapter 13, employment opportunities for professionals interested in fitness- and health-related careers are discussed. Careers in sport management, sport communication, performance, and other sport-related careers are described in Chapter 14.

Part IV explores how professionals can be leaders and advocates and looks ahead to the future. The final chapter, Chapter 15, addresses two key professional responsibilities: leadership and advocacy. The textbook closes with a discussion of current and future trends.

HIGHLIGHTS OF THIS EDITION

The twenty-first edition of *Foundations of Physical Education, Exercise Science, and Sport* continues its dual emphasis on providing students with an overview of disciplinary knowledge and encouraging them to explore the expanding career opportunities. This edition reflects the dynamic nature of the field today and is designed for use in introductory and foundations courses. Specifically, the most significant change in this edition is an explicit emphasis placed on social justice, diversity, and cultural humility. These concepts and issues have been a component of the text for some time; however, we have created social justice boxes in each chapter to highlight the salient social issues that are concerning and prevalent related to the chapter focus. We also invite the students to explore their social identities and systems of meaning starting in Chapter 1.

We believe, as physical education, exercise science, and sport professionals, that students and future professionals need to be educated about issues related to social justice and social inequities.

The text continues its focus on the role of physical education, exercise science, and sport professionals in promoting lifespan participation in physical activity for all people. There is a need for culturally sensitive professionals to work with our increasingly diverse population. The responsibility of professionals to serve as advocates for historically underserved populations is stressed; this work is essential if our goal of lifespan involvement in physical activity for all is to be achieved.

Updated information and statistics are used to help students stay abreast of developments in the field. Additional key changes to this edition are highlighted below:

- A focus on current trends has been included in each chapter. Salient factors and issues related to each chapter that are currently hot topics are discussed.
- Expanded emphasis on social justice and the importance of professionals to infuse this theme within their professional practice.
- Updated information on using social media to network and advance one's career is included. Occupational socialization, self-care, and mental health are new additions to this text.
- New end-of-chapter Discussion Questions are added to this edition and can be used by instructors to engage students' critical thinking skills in the classroom.
- Several chapters have been restructured based on government reports and policies that have significant applications for professional practice, such as *2020–2025 Dietary Guidelines and MyPlate Recommendations*, *Gender and Race Report Card in Sports*, *SHAPE America Physical Education National Standards*, *Every Student Succeeds Act*, and *Whole School, Whole Community, Whole Child Model*.
- Because the future of physical education, exercise, and sport is closely related to the issues and challenges of today, this edition combines these

topics in one final chapter. This final chapter closes the textbook with an emphasis on leadership and advocacy and discusses future trends.

We hope that readers will gain knowledge and inspiration through the topics and issues discussed in this text. We hope that they will aspire to be future leaders and agents of change as physical education, exercise science, and sport professionals.

SUCCESSFUL FEATURES

The following pedagogical aids have been incorporated into this textbook:

Instructional Objectives. At the beginning of each chapter, the instructional objectives and competencies to be achieved by the students are listed. This identifies for the students the points that will be highlighted. Attainment of the objectives indicates the fulfillment of the chapter's intent.

Summaries. Each chapter ends with a brief review of the material covered, assisting the students in understanding and retaining the most salient points.

Discussion Questions. At the end of each chapter, discussion questions are provided to stimulate critical thinking. Students are encouraged to share their perspectives with their classmates and to explore different solutions to the problems and issues presented.

Internet Resources. Each chapter includes a *Get Connected* box, which lists Internet sites that provide up-to-date information about relevant topics. The self-assessment exercises include activities that draw on these Internet resources.

Self-Assessment Activities. Self-assessment activities are presented at the end of each chapter to enable students to check their comprehension of the chapter material. More activities using technology resources and tools are included.

References. Each chapter provides up-to-date references to allow students to gain further information about the subjects discussed in the chapter.

Photographs. Carefully chosen photographs have been used throughout the text to enhance the presentation of material and to illustrate key points.

Writing Style. *Foundations of Physical Education, Exercise Science, and Sport* has been written in a style that students find readable and that provides them with important insights into the foundations and the roles of physical education, exercise science, and sport in the world today. Students will find substantial information about the career and professional opportunities that exist for knowledgeable, dedicated, and well-prepared professionals committed to the promotion of lifespan involvement in physical activity for all people.



The twenty-first edition of *Foundations of Physical Education, Exercise Science, and Sport* is now available online with Connect, McGraw Hill Education's integrated assignment and assessment platform. Connect also offers SmartBook® 2.0 for the new edition, which is an adaptive reading experience proven to improve grades and help students study more effectively. All the title's website and ancillary content is also available through Connect, including:

- an Instructor's Manual for each chapter;
- a full Test Bank of multiple-choice questions that test students on central concepts and ideas in each chapter;
- Lecture Slides for instructor use in class.

TEST BUILDER IN CONNECT

Available within Connect, Test Builder is a cloud-based tool that enables instructors to format tests that can be printed or administered within a learning management system (LMS). Test Builder offers a modern, streamlined interface for easy content configuration that matches course needs, without requiring a download.

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- add instructions and configure default settings.

Test Builder provides a secure interface for better protection of content and allows for just-in-time updates to flow directly into assessments.

ACKNOWLEDGMENTS AND DEDICATIONS

The authors extend their appreciation to Dr. Deborah King, Ithaca College, for authoring Chapter 6. We also thank the reviewers for their thoughtful feedback. The reviewers of this edition include:

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Catawba College

Barbara Tyree
Valparaiso University

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Jennifer L. Walton-Fisette. This edition is dedicated to all of the professionals who stayed devoted to their disciplines and persevered throughout the pandemic to create educational experiences for their students, clients, and patients. Your commitment, care, and tenacity were noticed and meaningful to many. This book is also dedicated to my coauthor, Deb, who has been a great mentor and friend for many years. I marvel at her ability to see good in all, to have patience and fortitude through so much chaos, and continually mentors, supports, and advocates for others. Thank you for your dedication and heart, Deb.

Deborah Wuest. This edition is dedicated to my daughter, Meriber, who inspires me with her passion for the world's beautiful game—soccer or football as known globally. This book is also dedicated to my early-morning writing companions—my cats Evy, Sophie, Magic, and Casper and my dogs, Bella and Hank. They were great company and, in their honor, a portion of the proceeds of this edition will be donated to the SPCA. Most importantly, a special thank you to my coauthor, Jen. Jen continues to impress me with her enthusiasm for life, her passion for and leadership within the field, and her ongoing advocacy for social justice. Jen's commitment to social justice is reflected throughout this edition. I value our longstanding professional relationship and personal friendship.



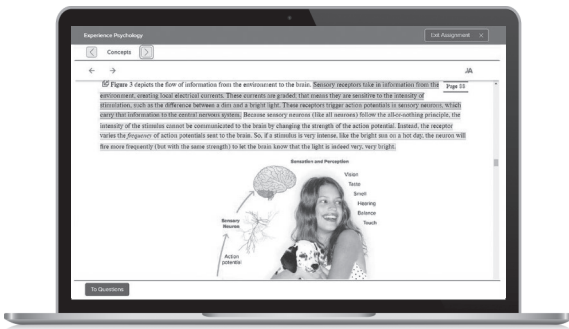
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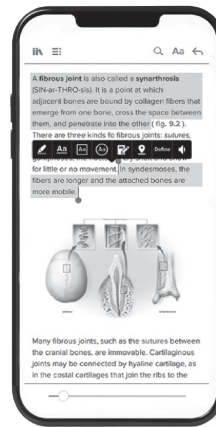
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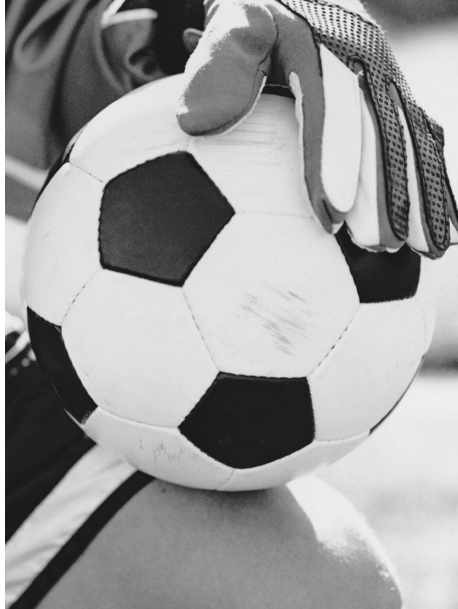
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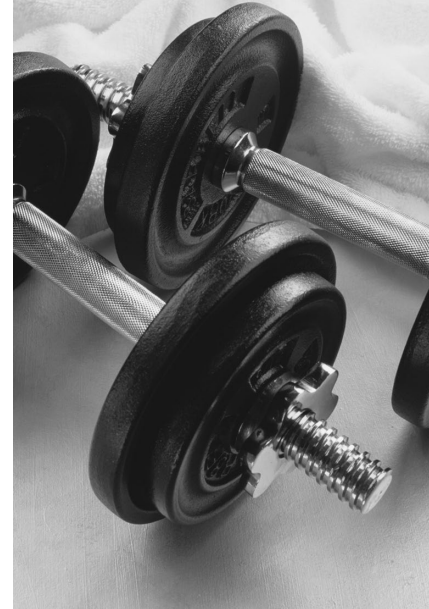
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I

Nature and Scope of Physical Education, Exercise Science, and Sport

Part I introduces the reader to physical education, exercise science, and sport. The first chapter sets the stage for the reader to explore their social identities and systems of meaning and then provides an introduction to the specialized areas of study within physical education, exercise science, and sport. Chapter 1 concludes with a discussion of how to grow as a professional as current students and in their future career paths within kinesiology. Chapter 2 includes the influences of various philosophies on programs and provides the

reader with information about the objectives and assessment of physical education, exercise science, and sport. Chapter 3 describes the contribution of physical education, exercise science, and sport to society and health, and the critical role of professionals delivering services to people of all ages.

Physical education, exercise science, and sport are representative of the growing and expanding field of kinesiology. The growth of this field is reflected in the expanding knowledge base and the development of specialized areas of study. The expansion of physical education, exercise science, and sport has created a diversity of career options for professionals.



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C H A P T E R 1

MEANING AND SCOPE

O B J E C T I V E S

After reading this chapter, students should be able to—

- Identify your social identities and systems of meaning and discuss how they will impact you as a future professional in the field of kinesiology.
- Define the following specialized areas of study: sport philosophy, sport history, sport sociology, sport and physical activity psychology, motor development, motor learning, biomechanics, exercise physiology, sports medicine/athletic training, physical education pedagogy, adapted physical activity/physical education, and sport management.
- Describe how the disciplines are interdisciplinary to the professions of physical education, exercise science, and sport relative to the field of kinesiology.
- Explain the relationship of physical education, exercise science, and sport to allied fields of study.
- Describe the different types of research reports and their application to physical education, exercise science, and sport.
- Identify social media resources that can inform the practice within the field of physical education, exercise science, and sport.

Our lives have been disrupted, challenged, and changed due to national and global experiences related to the COVID-19 pandemic, continued racial injustice, and political unrest. The pandemic has devastated many lives through loss of loved ones, worsened mental health issues, and/or not having the financial resources to support oneself or family. Systemic racism has permeated our country for hundreds of years. This came to the forefront when George Floyd was murdered in May 2020, which propelled thousands of protestors advocating for racial justice across all institutions (e.g., education, sport) as well as rallying against laws and policies that discriminate and oppress Black, people of color, and marginalized persons. The November 2020 Presidential election resulted in polarization in our country, creating a divide among the American people on a wide range of issues, including the pandemic and rights for marginalized folx. Such heaviness. Such hardship. Even a few years later.

You have come into adulthood during this challenging time. There is no doubt, in some way, you have been affected by one or more of these issues—and likely still are since there is no resolve. Yet, we have hope. Through all of this, we have exposed the importance of justice, equity, diversity, and inclusion (JEDI) of all people regardless of one’s social identity—in all facets of our world. This includes our field of kinesiology as each of you intend to work with individuals in a human movement career path. This means that you will be working with individuals who are similar and different from you. You may be in charge of making decisions related to policies and practices, curriculum and instruction, and the planning and development of movement or sport-related tasks. Across these areas, there are many systems in place that perpetuate or focus on privileged people—particularly white, male, heterosexual, able-bodied individuals. How will you actively take action against these systemic and socially constructed issues to be equitable and just for all?

Phew. This is some heavy stuff here, especially if you are just starting out your collegiate career. How does this impact you as a future professional in physical education, exercise science, or sport? It is quite simple: You need to learn and grow into a professional that is equitable and just. This is not

something that you do at the end of your program or learn on the job, this influences who you are—and becomes a part of your philosophy and what you value. In any interview, they will ask you what your philosophy of physical education, coaching, personal training, or sport management is. They will also ask how you work with others and what steps you will take to create equitable learning opportunities for those engaged in your programs. We want you to start working toward answering those questions along your time in the program. We want you to be prepared and develop into a professional that values and instills JEDI-related practices. We are here to help you along your journey.

Starting Your Journey—Exploring Your Social Identity and Systems of Meaning

The first step in this process is exploring and critically reflecting upon your social identity. Your social identity consists of how you identify related to your race, gender, sexuality, (dis)ability, social class, and religion, among others. See Figure 1-1 to help guide you in this exploration. After completing this chart (there are many other activities that you can complete to explore your social identities) ask yourself—how and why do you identify this way? Which

SOCIAL IDENTITY PROFILE		
Social Identities	Examples of Social Identities	Your Identity
Race	Black, White, Indigenous, Asian/Pacific Islander, Latino/a, Native American, Biracial	
Gender	Woman, Man, Transgender, Non-binary	
Class	Poor, Working Class, Middle Class, Owning Class	
Physical/Mental/Developmental Ability	Non-Disabled, Disabled, Hidden	
Sexual Identity	Lesbian, Gay, Bisexual, Heterosexual, Questioning	
Religion	Catholic, Jewish, Protestant, Buddhist, Hindu, Muslim, Baptist, Evangelical	
Age	Young, Old, Middle-Aged	
Other		

Figure 1-1

Reflecting on Systems of Meaning	
<i>What is your comfort level with?</i>	
<ul style="list-style-type: none"> • A person who is a different racial, ethnic or cultural group? • A person who believes you are incompetent? • A person who is openly judgmental and critical of others? • A person who speaks a different language? • A person with a physical disability? • A person who is abusing drugs or alcohol? • A person who engages in recreational drug use? • A person who was raised in a different social class than you? 	<ul style="list-style-type: none"> • A person who practices a different religion than you? • A person who is suicidal? • A person who is loud and loves the attention of others? • A person who is obese? • A person who is always right and never asks for opinions? • A person who believes women are not worthy of respect? • A person who believes that abuse is acceptable in certain situations? • A person who dislikes children? • A person who is experiencing mental illness? • A person who is having mental health issues?

Figure 1-2 Reflect on your Systems of Meaning. Adapted from Souers, K., & Hall, P. (2019).

identities are more salient to you compared to others and why? How have you been privileged, marginalized, and/or oppressed based on your social identities? This certainly is a lot to reflect upon and process, but it is necessary as you start to envision yourself as an educator, coach, or trainer.

The next step is to explore your systems of meaning (see Figure 1-2) related to your comfort level of people who may be similar or different from you. The key is to allow yourself to be honest and open. We all have biases and place judgment on others. None of us are free from this—we are human after all! Reflect on the question prompts and consider your level of comfort with each of those contexts and situations. What are your responses telling you about yourself and what you believe and value? This is all foundational work as you prepare to become a physical education, exercise science, and sport professional. Although it is important to engage in this process, now it is our hope that you will continue to critically reflect upon your social identities and how this positions you in the contexts in which you live and work as a professional in the field of kinesiology. Let us move forward in your exploration of becoming the professional you hope to be.

Contemporary Physical Education, Exercise Science, and Sport Programs

Contemporary physical education, exercise science, and sport have evolved from a common heritage—the traditional program of physical education designed to prepare teachers to serve children and youth in the school setting. Since the 1960s, the foundation, scope, and focus of our programs have grown and changed tremendously. As physical education expanded, new disciplines of study—exercise science and sport—emerged. Today physical education, exercise science, and sport professionals serve people of all social identities in diversity settings within the field of kinesiology.

Providing an overview of the entire field of kinesiology is, quite admittedly, a challenge as it is expanding and changing rapidly. This virtual explosion of knowledge has led to the development of new areas of study that are highly specialized and discrete and yet, at the same time, highly interrelated and vitally connected. Thus, in this text, we will refer to kinesiology with a specific emphasis placed on and within the disciplines of physical education, exercise science, and sport.

SOCIAL JUSTICE

Defining Social Justice: Advocacy, agency, and action directed toward (a) correcting disparities and inequities in all institutions across societies including education, health, law, politics, and so on, between majority (e.g., mostly white men) and minoritized people (e.g., African American citizens), especially those in poor communities, women, and persons with disabilities; and (b) empowering such marginalized people for meaningful, sustainable change (Harrison et al., 2021; Hodge & Clark, 2020; Hodge & Harrison, 2021).

Talking Points

- Physical activity initiatives and opportunities need to be provided to all individuals regardless of one's social identity and status (e.g., gender identity, race, sexual identity, (dis)ability, socioeconomic status, and age) if we want to increase physical activity levels and decrease chronic and hypokinetic diseases.
- All aspects of human movement need to be advocated for and supported rather than placing emphasis on judging and critiquing the level or type of an activity over others (e.g., playing a sport is better than walking or doing yoga).
- Emphasis needs to be placed on the interrelatedness of the disciplines and allied fields instead of the disciplines operating as silos or in competition with one another.
- Establishing a critical perspective through scientific-based research will allow professionals to make informed decisions that influence their clients, players, employees, or students.

We now know that leading a physically active lifestyle can help prevent disease and positively contribute to health and well-being throughout the lifespan. If the health of our nation is to improve, physical education, exercise science, and sport professionals must make certain that all people have

access to programs, regardless of their age, race, ethnicity, gender, gender identity, sexual identity, ability/disability status, income, educational level, or geographic location. This is a challenge that awaits you as future professionals.



Career opportunities in physical education, exercise science, and sport range from teaching in the school setting to instructing in nonschool settings, such as leading group exercise classes in a community or corporate fitness setting.

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CONTEMPORARY PHYSICAL EDUCATION, EXERCISE SCIENCE, AND SPORT PROGRAMS

The proliferation of physical education, exercise science, and sport programs during the last five decades has been remarkable. Programs have expanded from the traditional school setting to community, home, worksite, commercial, and medical settings. School-community partnerships bring sport instruction and fitness programs to adults in the community and offer increased opportunities for youth involvement. Community recreation programs offer a great variety of instruction and sport activities for people of all ages and abilities.

Millions of people purchase health club memberships or a wide array of exercise equipment to



Ryan McVay/Getty Images

workout at home, especially during COVID-19. Corporations offer employees comprehensive onsite health promotion programs, encompassing a wide range of fitness activities as well as cardiac rehabilitation and nutritional counseling. Many worksites offer smoking cessation, stress management, and occupational safety courses to their employees, who find it convenient to fit these health-enhancing opportunities into their busy schedules. Hospitals sponsor cardiac rehabilitation programs and increasingly offer fitness programs to community members. Sports medicine clinics treat injured sport and fitness participants of all identities, no longer limiting their practice to the elite adult athlete.

People of all ages are seeking out sport opportunities in many different settings. A total of 56.1% of young people participate in youth sports.¹ Almost 8 million athletes participate in interscholastic sports and over 641,000 participate in intercollegiate sports.^{2,3,4,5} Sport events such as



People of all ages enjoy athletic competition.

Sarah Rich

Senior Games, running events, Tough Mudders, and master's swimming competitions involve millions of adults in sport competitions. Community recreational leagues provide increased opportunities for participation. Sport events such as the Super Bowl, Olympics, World Cup, and National Collegiate Athletic Association basketball tournament capture the enthusiasm of millions of spectators. Girls and women are participating in sports and physical activities in record numbers.

School physical education programs focus on promotion of lifespan involvement in physical activity. Students learn the skills, knowledge, and dispositions that will enable them to participate in various physical activities throughout their lives. At the collegiate level, young adults enroll in personal fitness and wellness courses, work out at fitness centers, and take part in recreational sports programs. Intercollegiate athletic programs for men and women continue to expand, involving more participants and attracting greater interest from the public.

COVID-19 prompted many to get outdoors and engage in physical activity, resulting in an increased public recognition that being active is good for your health. Several national reports, such as the *National Physical Activity Plan*,⁶ *Healthy People 2030*,⁷ and *The Physical Activity Guidelines*⁸ present overwhelming evidence that people of all social identities can improve their health and quality of



Patrick Byrd/mylife photos/Alamy Stock Photo



Maria Taglienti-Molinari/Brand X Pictures/Getty Images

life by including moderate amounts of physical activity in their daily lives. Although most people know that physical activity is good for them and participation in physical education, exercise science, and sport programs is at an all-time high, a closer look at the participation by children, adolescents, and adults reveals much cause for concern.

A primary reason that individuals across the lifespan may not engage in physical activity is due to the health disparities and fitness inequities among different population groups. Age, socioeconomic status, race, ethnicity, gender, educational attainment, and geographic location were found to influence physical activity levels. Inactivity is greatest among women, racial minorities, the economically and educationally disadvantaged, people with disabilities, and the aged.⁷ These populations have less access to services and face other barriers to the adoption and maintenance of physically active lifestyles. Their limited opportunities for physical activity adversely affect their health, their quality of

life, and, ultimately, their lifespan. This was significantly enhanced during COVID-19 in relation to individuals who had severe symptoms, were hospitalized, and/or lost their lives.

The main challenges facing professionals are increasing the level of physical activity by people across the nation and addressing inequities in physical activity opportunities. As physical education, exercise science, and sport professionals, we must make a greater commitment to reach out to these populations and involve them in our programs. We must address the specific barriers that inhibit the adoption and maintenance of physical activity by different population groups, utilize new approaches that are sensitive to the needs of increasingly diverse populations, and improve access by developing quality public programs in schools, recreation centers, worksites, and health care settings. All people have the right to good health and the opportunity to be physically active throughout their lifespan.

As you begin your professional career, make a commitment to service. Commit yourself to creating opportunities for all people—regardless of race, age, income, education, ethnicity, gender identity, sexual identity, geographic location, or ability—to enjoy and to benefit from lifespan participation in physical activity.

Physical Education, Exercise Science, and Sport Defined

Physical education, exercise science, and sport share a common focus—human movement or, more generally, physical activity. Yet, each discipline offers a unique approach as to how human movement and physical activity are learned, enhanced, or achieved. Each of these disciplines is defined in this section as well as in the Definitions of Terms box.

Physical education is an educational process that uses physical activity as a means to help individuals acquire skills, fitness, knowledge, and dispositions

that contribute to their optimal development and well-being. In this definition, the term *education* refers to the ongoing process of learning that occurs throughout our lifespan. Education, just like physical education, takes place in a variety of settings and is not limited to a specific age group. Homeschooling, continuing education through distance learning, worksite health promotion programs, and preschools are just some of the expanded settings for education and physical education programs. Teachers today may be called instructors, leaders, directors, or facilitators. Today's students span the age range, from the very young exploring movement skills in a preschool program to the older adults learning how to play an activity through a community recreation program.

Most physical education programs focus on developing the whole person. Physical education includes the acquisition and refinement of motor skills, the development and maintenance of fitness for optimal health and well-being, the attainment of knowledge about physical activities, and the fostering of

DEFINITION OF TERMS

- **Exercise**—physical activity done for the purpose of getting fit that increases energy expenditure above baseline levels. Exercise is planned, structured, and repetitive. The duration, frequency, and intensity of exercise can be measured.
- **Physical Activity**—bodily movement produced by the contraction of the skeletal muscles that substantially increase energy expenditure above baseline level. As a broad term, it encompasses exercise, sport, dance, active games, activities of daily living, and active occupational tasks.
- **Physical Education**—subject matter taught in schools that provides K–12 students with opportunities to learn, and have meaningful content and appropriate instruction. Quality physical-education programs focus on increasing physical competence, health-related fitness, self-responsibility, and enjoyment of physical activity for all students so that they can be physically active for a lifetime.
- **Physical Fitness**—capacity of people to perform physical activities; set of attributes that allow individuals to carry out daily tasks without undue fatigue and have the energy to participate in a variety of physical activities; state of well-being associated with low risk of premature health problems.
- **Sport**—well-established, officially governed competitive physical activities in which participants are motivated by internal and external rewards.

Sources: Adapted from the President's Council on Fitness, Sports, and Nutrition. Definitions: Health, fitness, and physical activity. 2013 (www.fitness.gov); US Department of Health and Human Services. *Healthy People 2030* (www.healthypeople.gov); National Association for Sport and Physical Education. *Moving into the Future: National Standards for Physical Education* (2nd ed.). Reston, Va.: Author, 2004; and Coakley J. *Sport in Society: Issues and Controversies* (10th ed.). New York: McGraw Hill, 2009.



Exercise physiologists study the body's short- and long-term adaptations to exercise.

Mauro Grigollo/E+/Getty Images

positive dispositions and values conducive to lifelong learning and lifespan participation.

Within the last five decades, there has been an increase in the scholarly study of physical education. Research continues to expand our knowledge with respect to the preparation of physical education teachers, teacher effectiveness, teaching methods, models-based practice, improvement of student learning, and pedagogies that are equitable and just. It also provides us with new insights on coaches' and athletes' behaviors.

Exercise science is the scientific analysis of exercise or, more inclusively, physical activity. To study physical activity, exercise scientists draw upon scientific methods and theories from many different disciplines, such as biology, biochemistry, physics, and psychology. The application of science to the study of physical activity led to rapid expansion of the knowledge base of exercise science. As the knowledge base of exercise science grew, so did our understanding of the effects of physical activity on various systems of the body. The significant role that physical activity plays in preventing disease and promoting health became clearer. Exercise's value as a therapeutic modality in the treatment of disease and the rehabilitation of injuries became better known.

Exercise science is a very broad area of study, encompassing many different aspects of physical activity. Through research, scholars gain new insights

into how people's movements develop and change across their lifespan and further expand their understanding of how people learn motor skills. Analysis of the performance of motor skills using biomechanics leads to improvement in skill efficiency and effectiveness. Researchers' exploration on the limits and capacities of performers has enabled athletes, of all abilities and identities, to perform at higher levels of achievement. The psychological effects of physical activity on well-being and strategies to enhance adherence to exercise and rehabilitation programs are some other areas of study within exercise science.

Sports are highly organized, competitive physical activities governed by rules. Rules standardize the competition and conditions so that individuals can compete fairly and achieve specified goals. Sports provide meaningful opportunities to demonstrate one's competence and to challenge one's limits. Competition can occur against an opponent or oneself.

People of all social identities engage in sports for enjoyment, personal satisfaction, and the opportunity to attain victory and/or obtain rewards. The level of competition ranges from recreational to elite sport. When sport is highly developed, governing bodies regulate sport and oversee its management. *Athletics* refers to highly organized, competitive sports engaged in by skillful participants. At this level, coaches play a significant role, athletes are highly skilled, specially trained officials ensure the fairness of the competition, records are kept, events are promoted through the media, and spectators assume an important role. Sports occupy a prominent position in our society.

Since the early 1970s, there has been an enormous interest in the scholarly study of sport. These sport studies have focused on the significant role of sport in our society, its tremendous impact on our culture, and its effects on the millions of people who play sports and the millions more who watch and read about them. Scholars study the philosophical, historical, sociological, and psychological dimensions of the sport experience. The growing popularity of sport and its prominent role in our society makes sport a vital area of study.