Introduction to Physical Education, Exercise Science, & Sport

Tenth Edition

Mc Graw Hill Education

ANGELA LUMPKIN

Introduction to Physical Education, Exercise Science, and Sport

TENTH EDITION

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INTRODUCTION TO PHYSICAL EDUCATION, EXERCISE SCIENCE, AND SPORT,
TENTH EDITION

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Brief Contents

Contents

Preface

Introduction to Physical Education, Exercise Science, and Sport provides students with an exciting opportunity to discover the diversity of physical education, exercise science, and sport and the wealth of careers available in these fields. Students are introduced to the heritage, current programs, and future potential of the field they are considering. This book introduces students to these multifaceted fields and involves them in examining potential careers in physical education, exercise science, and sports.

The intent of this book is to broaden students' understanding of how the philosophies and programs in physical education, exercise science, and sports evolved as well as to present the current status of these fields. Inherent within the changing nature of physical education, exercise science, and sports is a need to examine how Title IX of the 1972 Education Amendments, the inclusion into classrooms of physically and mentally challenged students, the increased emphasis on physical activity and fitness for all ages, past programs in the United States and in Europe, and various philosophies and ethical perspectives have affected and will continue to influence professionals in these fields.

No longer are physical education, exercise science, and sport programs just for schools or colleges, although teaching in these settings is certainly an important endeavor. By learning about careers in leisure services, athletic training, corporate fitness, sport management, fitness club instruction and management, recreation for all ages and abilities, coaching, cardiac rehabilitation, and a variety of other activity-related pursuits, students will gain a clearer perspective of the future role physical education, exercise science, and sports will play in American society. Individuals who accept the challenges and opportunities of these careers will help women, ethnic minorities, senior citizens, individuals in lower socioeconomic classes, individuals with special needs, students, and others benefit from living active, fit lives. Practical suggestions are provided to help students choose and prepare for careers. To enhance this process, the importance of physical education, exercise science, and sports as expanding and diverse fields of service, enjoyment, and employment is emphasized throughout the book.

UPDATES TO THIS EDITION

The tenth edition provides the latest information about the exercise and sport sciences, physical activity, and fitness. Each chapter has been updated and includes some of the latest research to stimulate students' critical thinking and continued study. Review questions, boxed material, student activities, key points, and Web connections have been revised and updated. Other specific additions by chapter include the following:

Chapter 1 Physical Education, Exercise Science, and Sport—Dynamic Fields

- Revised text as needed for clarity
- Checked and updated all links in text and Web Connections
- Updated statistics about obesity

Chapter 2 Exercise and Sport Sciences

- Revised text as needed for clarity
- Checked and updated all links in text and Web Connections

Chapter 3 Professions of Physical Education, Exercise Science, and Sport

- Revised text as needed for clarity
- Replaced all references to AAHPERD (and NASPE) and replaced with information about SHAPE America
- Revised certification information about athletic training
- Checked and updated all links in text and Web Connections

Chapter 4 Philosophy of Physical Education, Exercise Science, and Sport

- Revised text as needed for clarity
- Checked and updated all links in text and Web Connections

Chapter 5 Career Options

- Revised text as needed for clarity
- Checked and updated all links in text and Web Connections

Chapter 6 Preparation for a Career

- Revised text as needed for clarity
- Checked and updated all links in text and Web Connections
- Updated and added information about certifications
- New career perspective of Director of recreational sports

Chapter 7 Early Heritage in Sports and Gymnastics

- Checked and updated all links in text and Web Connections

Chapter 8 Early American Physical Education and Sport

- Added new career perspective of supervisor of cardiac and pulmonary rehabilitation

Chapter 9 Twentieth and Twenty-First Century Physical Education, Exercise Science, and Sport

- Revised text as needed for clarity
- Checked and updated all links in text and Web Connections
- Added new career perspective of an owner of fitness and sport centers

Chapter 10 Opportunities and Challenges in Physical Education and Exercise Science

- Revised text as needed for clarity
- Checked and updated all links in text and Web Connections

Chapter 11 Issues in Sports

- Updated Table 11-1 with the latest data and Table 11-2 with data about the number of athletes by gender and divisional level
- Checked and updated all links in text and Web Connections
- Added new career perspective of an intercollegiate athletic conference commissioner

Chapter 12 Leadership for Active Living

- Added figure depicting the two dimensions of leadership

CONTENT DESIGN

Written in a conversational and personal style, *Introduction to Physical Education, Exercise Science, and Sport* is designed for students enrolled in their first course related to exercise science, sport management, physical education, athletic training, or related majors.

An overview of the field is stressed rather than an in-depth examination of the disciplinary areas. The relevant topics discussed include practical suggestions for choosing and obtaining a job in the chosen career; current issues affecting job selection; girls and women in sport; ethnic minorities in physical education and sport; the standards and accountability movement; teacher, coach, athletic trainer, and exercise specialist certifications; educational values of sports; and the importance of physical activity for all.

The book's three units are self-contained and may be read in any order, although each is important to a full understanding of these fields. Unit One provides foundational information in the first four chapters before focusing on careers. In Chapter 1, numerous terms, including physical education, exercise science, and sport, are defined to help describe these dynamic fields. The cognitive, affective, and psychomotor development objectives of physical education, exercise science, and sport indicate how these can contribute to improvements in quality of life for all. Chapter 2 provides an in-depth look at the exercise and sport sciences, such as exercise physiology, athletic training, and sport management. An explanation of several undergraduate majors organizations in the field adds to the discussion about preparation programs for school and non-school careers in Chapter 3. The five traditional philosophies and a discussion of ethics are presented in Chapter 4 and provide reference points for the development of a personal philosophy.

A career emphasis is integrated throughout and given special attention in Chapters 5 and 6. Chapter 5 describes more than 80 careers in education, exercise

science, recreation, fitness, sports, and athletics. Students learn about job responsibilities, prerequisite education and preparation, and potential availability of positions. Chapter 6 provides practical ideas for preparing for careers, with an emphasis on the importance of internships, volunteer experiences, and obtaining certifications. Recommendations for writing a résumé, developing a portfolio, and seeking a job are provided.

Unit Two covers the history and development of physical education, exercise science, and sport from early cultures through today. Athletics in Athens and Sparta, European gymnastics programs, and sports and games in Great Britain are emphasized in Chapter 7 because of their influence on programs in the United States. In Chapter 8, early American physical education, exercise science, and sport are traced from early sporting diversions through formalized gymnastics programs of the late 1800s. Chapter 9 completes the chronology of evolving programs that are diverse in philosophy, clientele, and activity. In addition to the historical information, Chapter 9 provides up-to-date information about recreation programs for all, competitive sports for both genders, and the impact of federation legislation on school and public physical activity programs.

Unit Three describes issues and trends in physical education, exercise science, and sport. Chapter 10 examines the value of physical activity for everyone; exercise science program developments; curricular features of elementary, middle, and secondary school physical education; challenges facing physical educators; standards and accountability; and career burnout. The beneficial outcomes and associated issues of sports for girls and women, ethnic minorities, senior citizens, individuals with special needs, youth, school students, college athletes, and Olympic athletes are addressed in Chapter 11. The final chapter emphasizes leadership, name changes, future challenges, and physical activity for life.

SUCCESSFUL FEATURES

Learning Outcomes

Each chapter begins with expectations by emphasizing what students should know and be able to understand and apply. These statements help students focus on what they should be learning from each chapter.

Introductions

The first paragraphs in each chapter briefly set the stage for and preview the content. They help students gain further perspectives on the relevance of the most salient points.

Illustrations

More than 136 photographs help students see the diversity of physical education, exercise science, and sport and potential careers in these fields. The photographs also reemphasize the popularity of sports and activities for all and help reinforce important concepts. Several line figures also help explicate the content.

Boxed Material

Throughout the text, specially highlighted information is designed to enhance students' understanding and provide additional insights into the profession. The insights contained in these boxes expand on and add significantly to the information provided in the text.

Web Connections

Each chapter provides students with annotations about content that can enhance learning at the sites of the URLs provided.

Summaries

A summary paragraph at the conclusion of each chapter emphasizes the primary areas of importance, and refocuses students on achieving the learning outcomes. These summaries help students recall and remember the key points in each chapter.

Career Perspectives

A unique feature of this book is the integration of biographical sketches of sport, exercise science, and physical education professionals in several diverse careers. The featured individuals list their job responsibilities, hours, course work, and degrees, discuss experiences needed for their careers, describe satisfying aspects of their careers and job potential, and offer suggestions for students.

Review Questions

To enhance retention of each chapter's content, students are encouraged to answer the review questions. Rather than seeking rote memorization of facts, these questions stress understanding key concepts.

Key Points

Points of emphasis help students focus on what is most important to learn. These short statements help student emphasize remembering key "take-home" points.

Student Activities

The student activities encourage students to think about and use the chapter content in greater depth and to extract practical ideas for career application. These activities also encourage active participation in the learning process.

Glossary

A comprehensive glossary of important terms reinforces students' understanding of the terminology used in the book and in physical education, exercise science, and sports.

The tenth edition of *Introduction to 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 for the new edition, which is the first adaptive reading experience proven to improve grades and help students study more effectively. All of the title's Web site content is also available on Connect, including a full course Instructor's Manual, Test Bank, and PowerPoint presentations.

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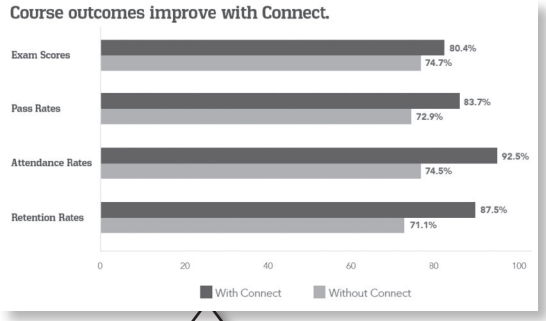

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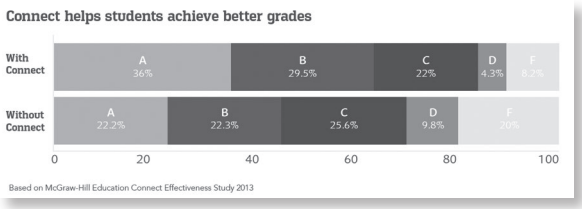

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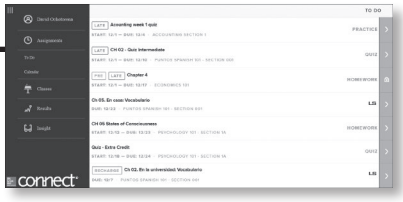

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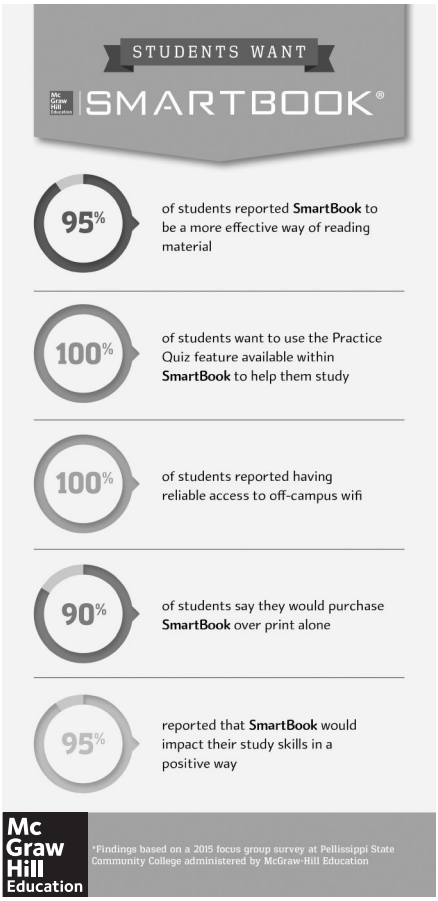

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UNIT

1

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

CHAPTER

1 PHYSICAL EDUCATION, EXERCISE SCIENCE, AND SPORT–DYNAMIC FIELDS

LEARNING OUTCOMES

- Students will be able to explain the dynamic fields of physical education, exercise science, and sport and the ways professionals in each of these fields can directly impact the quality of life for individuals they serve.
- Students will be able to describe how to develop the five components of health-related physical fitness and the importance of each.
- Students will articulate the importance of the federal government's initiatives, such as the 2008 Physical Activity Guidelines and Healthy People 2020, in helping citizens live healthier lives.
- Students will explore the parameters of cognitive development, affective development, and psychomotor development and identify ways they can contribute to these as physical educators, exercise scientists, and sport professionals.

Children love to move because it is fun. Adults choose to engage in physical activities because they find them enjoyable. With increased leisure time, people of all ages are seeking instructional, recreational, competitive, and entertaining physical activity and sport programs. This interest promises a dynamic future for professionals who want to contribute to the well-being and quality of life of others. The millions who enroll in a variety of aerobic activity classes, join fitness clubs, bowl in leagues, hike, camp, swim, jog, climb, sail, walk, skate, and engage in many other physical pursuits already have determined that these activities are fun. Many also value the mental, social, and physical development resulting from their regular participation. Others enjoy being entertained by watching highly skilled individuals compete.

Although many people value maintaining physically active and fit lifestyles, others are not yet convinced to get moving. Motivating this latter group is the challenge awaiting you when you begin your career. Historically, the term physical

Aerobic activities develop cardiorespiratory endurance, an important component of physical fitness.

educator has been used to encompass professionals in various careers who teach fitness and sport skills. This descriptor identifies individuals who are committed to using physical activities to develop the whole person.

To help you meet the challenge to contribute to the wellness of others, this text introduces you to current concepts and objectives in the dynamic fields of physical education, exercise science, and sport and their rich heritage. Past physical education programs provide the foundation for today's ever-expanding programs in the United States, shaping the way we structure and describe these fields. Understanding the definition and objectives of physical education today and in the past will help you conceptualize the breadth and depth of these fields. Understanding affective, cognitive, and psychomotor domains of learning will ensure you know what physical education, exercise science, and sport programs seek to accomplish.

THE DYNAMIC FIELDS OF HUMAN MOVEMENT

The human body is like a machine because it will no longer function efficiently or effectively if used only minimally. For example, a broken arm placed in a cast for several weeks will noticeably atrophy as its muscular strength and endurance and flexibility diminish. The human body is designed to move, and its potential for future movement is predicated upon past movement. The functioning of the cardiovascular, musculoskeletal, metabolic, endocrine, and immune systems is enhanced through movement.

Because of their natural predisposition to move, humans learn to walk, catch, throw, and kick as they model their movements after what they see; at the same time, moving contributes to growth and development. Watching children hop, skip, and jump with exuberance reinforces the idea that moving is intrinsically rewarding.

Adults of all ages who choose to engage in activities that require moderate to vigorous movement usually do so because they personally reap physical, emotional, mental, or social benefits. That is, there are inevitable positive outcomes accruing to those who prioritize keeping their bodies moving (an analogy would be a well-oiled machine). Human movement, in its many types, variations, and settings, also appeals to individuals' tendencies or desires to share active experiences that are socially rewarding. This may entail joining a health club to work out with friends, joining a recreational softball team, or playing golf with associates from work.

Choosing to work in a field that can help people engage in enjoyable activities has a built-in advantage, because it is easier to get people to engage and persist in activities that are fun. This book provides a comprehensive examination of the dynamic fields that help facilitate human movement. It will introduce numerous terms to help you gain a greater appreciation of the various aspects of human movement as well as the breadth and depth of these dynamic fields. Learning and understanding the terminology of human movement will help you prepare for a career in one of these professions.

Physical education, exercise science, and sport are allied fields that share a common heritage and have grown more distinctive with the knowledge explosion and through disciplinary specialization. They relate to, but are not synonymous with, exercise, play, games, leisure, recreation, and athletics. Defining each of these terms can help clarify the distinctions and similarities. **Exercise** involves physical movement that increases the rate of energy expenditure and is engaged in for the purpose of getting fit. **Play** refers to amusements engaged in freely for fun with less formality in rules. **Games** can describe playful activities, rule-governed contests, and athletic competitions. Examples include hopscotch during recess, a recreation league softball game, or a professional sport competition. Similarly, **recreation** refreshes or renews one's strength and spirit after work; it is a diversion that occurs during leisure hours. **Athletics** are highly organized and structured competitions among skilled athletes. Interscholastic sports, intercollegiate athletics, and professional sports are examples.

Sports are physical activities governed by formal or informal rules that involve competition against an opponent or oneself and are engaged in for fun or reward. Examples of sports are basketball, golf, and tennis. Sports may be played both for exercise and as a game. Sport participants may use their leisure time to play games recreationally. Some describe bridge and chess games as sports, while others claim that rock climbing, fly fishing, and sky-diving are sports. When the rules governing the skill levels required of participants and significance placed on the outcome are rigidly structured, sport becomes athletics. Usually sport refers to a contest in which the outcome is viewed as important by the players, who will emerge as either winners or losers.

To encompass the various outcomes experienced by all people in diverse programs, **physical education** is defined as a process through which an individual

Walking is a moderate activity that can be enjoyed throughout life.

obtains optimal physical, mental, and social skills and fitness through physical activity. In recent years, many colleges have chosen to rename their departments, using terms such as kinesiology, exercise science, human movement, and sport. **Kinesiology,** which many prefer as a more scientific descriptor than physical education, is the study of human movement. **Exercise science** describes the scientific analysis of the human body in motion. This broad term encompasses content from exercise physiology, biomechanics, kinesiology, anatomy, physiology, motor behavior, and some aspects of sports medicine. Exercise science researchers explore how to maximize the potential of human movement through physiological, biomechanical, and psychological studies. Practitioners apply these findings to improve the quality of life for all who incorporate physical activity into their lives. Thus, the term exercise science rather than physical education may more broadly define what people know and do relative to human movement. **Sport** is a broad term that encompasses the application of components of the social sciences of history, management, philosophy, psychology, and sociology in a sporting context. Sport includes the examination of how each of these disciplines impacts participants and observers and helps shape their attitudes, beliefs, and behaviors.

QUALITY OF LIFE

What does quality of life mean? Is it happiness, wellness, health, fitness, or fun? Maybe it refers to enjoyable use of leisure time, relief from stress, safety from harm, or absence of disease. In today's world quality of life, although defined individually, increasingly means a long and healthy life. Inherent therein is the concept that a feeling of well-being or some level of fitness enhances life. Maybe it is an outgrowth of Americans' search for the fountain of youth, but fitness, or at least the appearance of fitness, appears to be valued.

Cycling is an example of a popular aerobic activity.

This commitment to fitness is not a fad; it has become an integral part of life for many. Executives may choose where to take a job based on the availability of exercise programs, or employers may hire only healthy and fit employees. Families often plan vacations and leisure time around various recreational and sport activities. Thousands of people sign up for marathons, 10-kilometer road races, and fun runs. Walking has become popular for people of all ages. Sporting goods and sport clothing sales continue to gross millions of dollars. Sport facilities, such as health clubs, aerobics centers, tennis courts, swimming pools, and golf courses, are increasingly attracting people who take their health and sports seriously.

The contributions of physical education, exercise science, and sport to quality of life can be enhanced by encouraging participation in team sports and individual sports. Schools, recreation departments, and independent organizations offer league competitions in baseball, basketball, football, soccer, softball, and volleyball. Within these settings, team members potentially can learn and demonstrate teamwork, cooperation, communication skills, and the ability to lead and follow. Team camaraderie may lead to lifelong friendships and the willingness to place the team's benefit above individual goals. Although some of these sports can become lifelong pursuits, many individuals discontinue participation because their teams lack sufficient players or because of the physical demands of the sport.

Individual sports are often called lifetime sports because of the greater likelihood of continued participation throughout life. Most of these sports can be engaged in by an individual either alone or with only one other person. Bowling, fishing, golf, hiking, jogging, swimming, tennis, walking, and weight lifting are among the most popular of these sports and activities. They can be engaged in recreationally or competitively through leagues, tournaments, and organized events. Individual sports, like team sports, can teach fair play, self-confidence, and how to win and lose graciously, as well as specific sport skills.

Individuals of all ages are seeking to achieve the healthy benefits of physical activity.

Typically, interscholastic athletic teams and city or business recreational leagues attract skilled participants or those at least moderately comfortable with their skills. Those lacking skills, however, are often relegated to spectator roles or easy chairs in front of their televisions, video games, or computers. More instructional programs and beginning-level leagues and teams are needed for individuals of all ages. Often though, there is an overlap between the lower skilled and the economically disadvantaged. Because of their cost, golf, swimming, and tennis, for example, have often been categorized as upper-class sports. To bridge this gap, tax-supported recreation departments need to provide opportunities for these and other activities for all individuals.

Senior citizens, a growing percentage of the U.S. population, also have recreational needs. For example, exercise has been found to reduce osteoporosis (a breakdown of calcium in the bones), especially for women in their post-menopausal years. Senior citizens need activities matched with their capabilities. On the other end of the spectrum, children have many needs for physical activity that remain unfulfilled. Daily physical education from kindergarten through grade 12 would greatly enhance children's movement skills and fitness capacities, if all school students were provided this instruction. Nonschool sport programs also can provide opportunities for physical activity and play. Increased fun-filled opportunities for physical activities will contribute to the development of healthy lifestyles for everyone. You, as a coach, recreation leader, personal trainer, or teacher, hold the key to unlocking the doors of opportunity to the physical, psychological, and social benefits of physical activity.

IMPORTANCE OF PHYSICAL ACTIVITY

Making physical activity a priority in one's daily schedule is relatively easy, even for the person who is really busy. Among the tips for becoming more active are taking 10-minute fitness breaks at work, school, or home; choosing to walk or cycle to work, school, or the store; walking up stairs instead of taking the elevator or escalator; parking the car farther away from a destination and walking (rather than seeking the closest possible spot); and exercising by using hand weights while watching television or a movie, riding a stationary bicycle, or performing stretching exercises. The key point is to choose a fun and rewarding physical activity and one that will continue to be enjoyable.

Significant health benefits can be obtained by adults including a moderate amount of physical activity in weekly routines (e.g., 30 minutes of brisk walking, 15 minutes of running, or 45 minutes of playing volleyball on most, if not all, days of the week). Regular physical activity improves health by reducing the risk of premature death, dying from heart disease, developing type 2 diabetes, developing high blood pressure, or developing colon cancer. Daily, moderate physical activity helps reduce blood pressure in people who already have high blood pressure, reduces feelings of depression and anxiety, helps control weight, helps older adults become stronger and better able to move without falling, and promotes psychological well-being.

However, many people have a plethora of excuses or rationalizations for why they are not physically active. At the top of most lists is "I don't have time." Rather than rationalizing that it is impossible or inconvenient to find time for exercise, most people should be able to look at the 1,440 minutes in each day and allocate at least 20 minutes to exercise. Many people claim they need to spend more time with family or friends, so setting aside time for personal exercise would be too selfish or neglectful. Alternatively, exercising with a group of family members or friends allows all to benefit. On a very personal level, some people find physical activity boring, do not like to sweat so much that a shower is required, or they have had a bad experience with sports or exercise in the past. A moderate and enjoyable activity, such as gardening or walking, could address each of these excuses, especially when a friend joins in the activity. Individuals who are worried about existing or anticipated injuries, aches, and pains should check with their physicians, who can prescribe the appropriate types of exercises and the slow, progressive initiation of exercise programs. Few people are too old to start or learn how to be physically active in ways that will benefit them not only physically but also emotionally, mentally, and socially. The motivation comes from within each person, so everyone is encouraged to set a goal to get moving. The reward will be an increased feeling of well-being.

A few other tips for exercise programs include starting slowly at an easy pace and then increasing time or distance gradually as muscles warm up; listening to the body—monitoring the level of fatigue, heart rate, and any physical discomfort; being aware of any signs of breathlessness, muscle soreness, and overexertion; wearing comfortable and appropriate clothing and shoes for the activity; finishing by stretching the muscles used; and drinking water before, during, and after exercise.

Developing and maintaining fitness can be fun.

In 1996, the first-ever Surgeon General's report on *Physical Activity and Health* emphasized that Americans could substantially improve their health and the quality of their lives by participating in regular physical activity. Despite the *Healthy People 2000* goals, the patterns and trends in physical activity reported in the Surgeon General's report indicated little progress and even some decreases in activity levels. A few of these low participation levels included the following:

- Approximately 15% of adults and about 50% of individuals 12 to 21 years old in this country engaged in vigorous physical activity at least 3 times a week for at least 20 minutes.
- Approximately 22% of adults in this country engaged in sustained physical activity at least 5 times a week for at least 30 minutes.
- About 25% of adults and 25% of individuals 12 to 21 years old in this country engaged in no physical activity.
- Daily attendance in high school physical education classes between 1991 and 1995 declined from approximately 42% to 25%.

These data verified the significant challenge facing this nation and confirmed a national concern for the physical welfare of most citizens.

Healthy People 2010, published by the federal government in 2000, continued to report disturbing statistics (as did *Healthy People 2000,* published in 1990) about the poor status of Americans' overall health. Millions of citizens were overweight and inactive and suffering the consequences of unhealthy lifestyles. National efforts to address the health of all citizens continue with *Healthy People 2020*. Box 1.1 describes its goals, the determinants of health, leading health indicators, and physical activity objectives.