

Werner W.K. Hoeger & Sharon A. Hoeger

# Lifetime

## PHYSICAL FITNESS & WELLNESS



A Personalized Program

# **Lifetime Physical Fitness and Wellness**

## **A Personalized Program**

**Sixth Edition**

**Werner W. K. Hoeger**  
Boise State University

**Sharon A. Hoeger**  
Fitness & Wellness, Inc.



**Morton Publishing Company**  
925 W. Kenyon, Unit 12  
Englewood, Colorado 80110

# Acknowledgments

We would like to thank all the users of *Lifetime Physical Fitness and Wellness* for their many suggestions and especially for using the text. We hope you will like this new edition and will continue to use it. Special thanks to Jim Larkin of Berea College for his suggestion to do a correlation chart of the tests for ease in locating various tests within the text.

We would also like to express special gratitude to Debbie Thompson, Lester Caldwell, Christina Kleiss, Walter Hoeger, Amber Hoeger, Jonathan Hoeger, and Christopher Hoeger who helped with the photography in this sixth edition. We would also like to thank Dr. Elaine Long for her valuable contribution in the development of the new diet plan used in Chapter 9. Kind gratitude is also expressed to Drs. Glenn Potter and Ross Vaughn for their continued help and support in all of our endeavors.

Publisher: Douglas N. Morton

Managing Editor: Ruth Horton

Assistant Editor: Dona Mendoza

Cover Design: Bob Schram, Bookends

Copy Editor: Carolyn Acheson

Interior Design: Joanne R. Saliger

Typography: Ash Street Typecrafters, Inc.

Software Developer: Sharon A. Hoeger

Copyright © 1986, 1989, 1992, 1995, 1998, 2000 by Morton Publishing Company

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher.

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

ISBN: 0-89582-525-2

# Preface

Most people realize that good health is largely self-controlled and that premature illness and mortality can be prevented through adequate fitness and positive lifestyle behaviors. The current American way of life, unfortunately, does not provide the human body with sufficient physical activity to enhance or maintain adequate health. Further, many present lifestyle patterns are such a serious threat to our health that they actually increase the deterioration rate of the human body and often lead to premature illness and mortality.

As we begin the 21st century, the majority of people in the United States know that physical activity and positive lifestyle habits promote better health, but most do not reap these benefits because they simply do not know how to implement a sound physical fitness and wellness program that will indeed yield the desired results. According to the Surgeon General, more than 60% of U.S. adults do not achieve the recommended amount of physical activity, and 25% are not physically active at all.

Scientific evidence has clearly shown that improving the quality and most likely the longevity of our lives is a matter of personal choice. The biggest challenge that we are faced with as we approach the 21st century is to teach individuals how to take control of their personal health habits to insure a better, healthier, happier, and more productive life. The information presented in this book has been written with this objective in mind, providing you with the opportunity to initiate your own healthy lifestyle program.

As you work through the different chapters in this book, you will be able to develop and regularly update your own lifetime program to improve the various components of physical fitness and wellness. The emphasis is on teaching you how to take control of your personal health and lifestyle habits, so that you can make a constant and deliberate effort to stay healthy and realize your highest potential for well-being.

## **NEW AND ENHANCED FEATURES OF THE SIXTH EDITION**

- All chapters in this edition of *Lifetime Physical Fitness and Wellness* have been revised and updated to include new information reported in the literature and at professional health, physical education, and sports medicine meetings.
- The U.S. Health Objectives for the year 2010 have been included in Chapter 1. These objectives clearly emphasize the need for health promotion and disease prevention, personal responsibility, and health benefits for all people in the United States.
- A quick reference guide that includes page numbers and scoring and classification procedures for all fitness and wellness tests contained in this edition is provided on the inside of the front and back covers of the book. This reference guide helps students and instructors gain quick access to the various assessments given in *Lifetime Physical Fitness and Wellness*.
- The book contains 15 chapters instead of 14. A new chapter on behavior modification has been added as Chapter 2. This chapter contains essential information on motivation and behavior modification, including the Transtheoretical Model or stages of change model. The model has been designed to help students understand the process

of change as they work to eliminate unhealthy habits and adopt healthy behaviors. Tips for behavior modification and stages of change forms for the various wellness components are also provided throughout the chapters in the book.

- A new equation is used in Chapter 3 to estimate maximal oxygen uptake (VO<sub>2</sub>max) according to the 1.0-mile walk test. The new equation is used because of research that shows that the previous equation overestimated VO<sub>2</sub>max in a college-aged population.
- The topic of Chapter 8, nutrition, has been updated extensively. This chapter contains new information on fiber and its benefits, an enhanced section on antioxidant nutrients, and the latest updates on the prevention of osteoporosis. Fiber content has also been added to Nutritive Value of Selected Foods list in Appendix A.
- The controversial association between fitness and obesity is discussed in Chapter 9, Principles of Weight Management. A new and unique diet plan is included in this chapter. Incorporating the diet-planning principles of the Dietary Guidelines for Americans and the Food Guide Pyramid, it was designed to meet the current Recommended Dietary Allowances for North Americans. The list of tips for behavior modification and adherence to a lifetime weight management program has been expanded to incorporate techniques used to enhance the process of change and the success rate in weight loss and weight maintenance programs.
- The cardiorespiratory exercise prescription principles in Chapter 4 have been updated to conform with the new 1998 American College of Sports Medicine guidelines. Chapter 5 also covers the benefits of cumulative versus continuous activity and an update on exercise in the heat and heat-related illness.
- The prescription of flexibility exercise in Chapter 6 is based on the newly released (1998) American College of Sports Medicine's guidelines for the development and maintenance of fitness.
- Revisions were made to the cardiovascular disease prevention chapter to incorporate advances in this area. The chapter includes statistical updates from the American Heart Association, nutrient guidelines related to the prevention of cardiovascular disease, the role of homocysteine as a risk factor for heart disease, and enhanced sections on the prevention of diabetes and treatment of high blood pressure.
- The therapeutic effects of polyphenols (for cancer prevention) and new recommendations by the American Cancer Society for early detection of cancer in asymptomatic people are included in Chapter 11.
- A more extensive section on responsible sex and the prevention of sexually transmitted diseases are provided in Chapter 14.
- On the chapter opening page is a set of **Student Learning Objectives** to put the chapter's content into a meaningful framework.
- Throughout the text, **Key Terms** are highlighted and defined to clarify the content and give the student easy access to the meanings of vocabulary essential to their understanding.
- We incorporate data to support the textual presentation through **illustrative tables** and **figures** from the most current sources available.
- The judicious use of **photographs** illustrates important information under the principle that a picture is worth a thousand words.
- At the end of the book you will find an updated **Glossary** of the important terminology used in the book, along with a concise, clear definition of each term.

- **World Wide Web** sites, with annotations, at the end of each chapter direct the reader to further, specific information related to the chapter topic. These entries are current and have been verified for authenticity.

## ANCILLARIES

To assist the instructor in presenting the course in an interesting and comprehensive way and for the student to get the most out of the class, the following ancillaries are provided without charge to qualified adopters.

- **INSTRUCTOR RESOURCE** binder containing:
  - Detailed outline of the text
  - Additional instructor activities
  - Black and white master pointer transparencies
  - World wide web sites
  - More than 70 **color overhead transparency acetates** of the book's most important illustrations and figures to facilitate class instruction and help explain key fitness and wellness concepts.
- **INSTRUCTOR RESOURCES CD-ROM** contains:
  - **Image bank and PowerPoint presentation:**
    - Available in Windows and Macintosh
    - Includes PowerPoint viewer, which allows instructors to use without PowerPoint program
    - Enables instructors who have PowerPoint to edit presentation to fit their lecture
    - Allows the instructor to go back to past chapters and to start at any chapter
  - **Microtest**, edited by Allan S. Cohen Consulting Services, a Fitness and Wellness Computerized Testbank contains the following features:
    - More than 800 multiple-choice and true/false questions
    - Capability to add or edit test questions in any format
    - Can add explanations for why a question is true, false, correct, or incorrect
    - Ability to save and recall previously generated test to create a new version of the test, as the multiple-choice answers will rotate each time a test is printed
    - Allows tests to be generated using a LaserJet printer
    - Available in Windows and Macintosh
  - **Profile Plus for Windows**, the most comprehensive computer software package available with any fitness textbook. This software, custom-designed for Morton Publishing Company *Fitness and Wellness* textbooks, includes:
    - Fitness and Wellness profile
    - Personalized Cardiorespiratory Exercise Prescription
    - Nutrient Analysis
    - Exercise Log

The software package offers a meaningful experience to all participants and greatly decreases course instructor's workload.
- **Student Interactive Study Guide**



- **VIDEO** containing a detailed explanation of many of the fitness assessment test items used in the book. Instructors can use this video to familiarize themselves with the proper test protocols for each fitness test. This audio-visual aid contains the following test items: 1.5-Mile Run Test, Step Test, Astrand-Ryhming Test, Muscular Strength and Endurance Test, Muscular Endurance Test, Strength-to-Body Weight Ratio Test, Modified Sit-and-Reach Test, Body Rotation Test, Shoulder Rotation Test, Skinfold Thickness Test, and Girth Measurements Test.

## STUDENT SUPPLEMENTS

- **Personal Daily Log** shrink-wrapped with the text at no additional charge, enables the student to track results on a daily basis. It contains an exercise pyramid, study/exercise guide, goal-setting tips, food pyramid, and federally developed guide to food serving sizes.
- **Student Interactive Study Guide** to help the student study for tests and retain information learned in the course.
  - A fun CD-ROM to reinforce the content of each chapter
  - Key terms matched to the description
  - Review of chapter objectives
  - Quizzes
  - A brief outline of the chapter that can be printed for notetaking during class
  - A game utilizing the full Glossary
  - Links to World Wide Web sites
  - Available in Windows and Macintosh
- **JumpStart with WebLinks: A Guidebook for Fitness/Wellness/Personal Health**, edited by Professor Eileen L. Daniel, Ph.D.:
  - Spiral-bound guidebook
  - 36 topics on fitness, wellness, and personal health
  - Topic introduction orients users to the topic
  - Concludes with a mix of personal assessment and content-related questions
  - Directory of WebLinks
  - Brief description of each site.
  - WWW sites are appropriate for students and faculty alike
  - Each site has been fully verified and approved by a Web Advisory Board
  - Can be value-packaged with the text

The features and ancillaries outlined here have resulted in a comprehensive course presentation that covers the content in a most expansive way. We developed this 6th edition with the student at the forefront. We hope readers will apply the information to their own lives in a positive way, leading to their optimal health and overall wellness.

**Morton Publishing Company**

**1-800-348-3777**

**Web Site: <http://www.morton-pub.com>**

# Contents

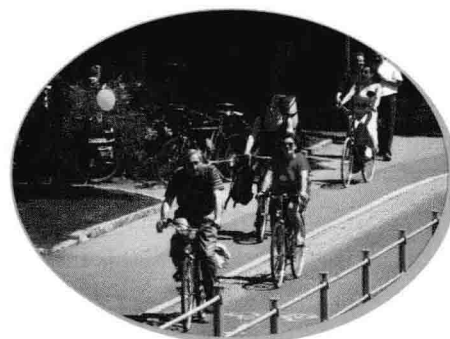
## 1 Introduction to Lifetime Physical Fitness and Wellness . . . . . 1

Physical Activity Versus Exercise	2
Surgeon General's Report on Physical Activity and Health	3
A Healthy Lifestyle	4
Wellness	4
Leading Health Problems in the United States	5
Cardiovascular Disease	7
Cancer	7
Wellness, Fitness, and Longevity	8
Physical Fitness	10
Fitness Standards: Health Versus Physical Fitness	11
Benefits of a Comprehensive Wellness Program	12
Health Benefits	13
Economic Benefits	14
The Wellness Challenge for the 21st Century	15
National Health Objectives for the Year 2010	16
A Personal Note	17
Notes	19
Suggested Readings	20



## 2 Behavior Modification . . . . . 25

Barriers to Change	27
Motivation and Locus of Control	29
Changing Behavior	30
Stages-of-Change Model (Transtheoretical Model)	30
The Process of Change	32
Rewards	35
Techniques of Change	35
Goal Setting	35
Notes	38
Suggested Readings	38



## 3 Cardiorespiratory Endurance Assessment . . . . . 41

Aerobic and Anaerobic Exercise	43
Benefits of Aerobic Training	43
Assessment of Cardiorespiratory Endurance	45
1.5-Mile Run Test	46
1.0-Mile Walk Test	47
Step Test	48
Astrand-Ryhming Test	49
12-Minute Swim Test	53
Interpreting Maximal Oxygen Uptake Results	54
Heart Rate and Blood Pressure Assessment	54
Note	56
Suggested Readings	56



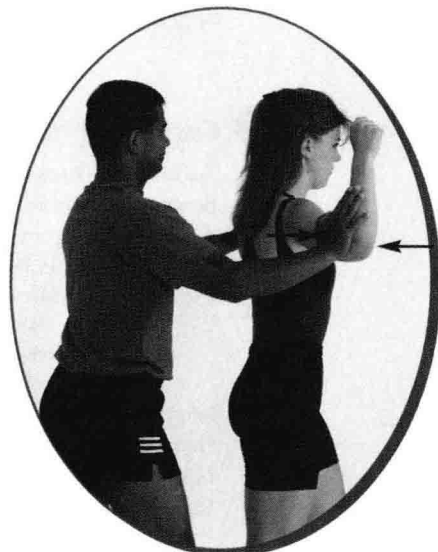


**4 Cardiorespiratory Exercise Prescription. . . . . 59**

Readiness for Exercise	60
Guidelines for Cardiorespiratory Exercise Prescription	63
Intensity of Exercise	63
Mode of Exercise	65
Duration of Exercise	67
Frequency of Exercise	68
Choices of Aerobic Activity	71
Walking	71
Hiking	71
Jogging	73
Cross-Country Skiing	74
Aerobics	74
Swimming	75
Water Aerobics	76
Cycling	76
Cross-Training	78
Rope Skipping	78
In-Line Skating	78
Rowing	79
Stair Climbing	79
Racquet Sports	80
Fitness Benefits of Aerobic Activities	80
Specific Considerations	82
Exercise-Related Injuries	87
Acute Sports Injuries	87
Muscle Soreness and Stiffness	88
Exercise Intolerance	89
Side Stitch	89
Shin Splints	89
Muscle Cramps	90
Leisure-Time Physical Activity	90
Getting Started and Adhering to a Lifetime Exercise Program	90
A Lifetime Commitment to Fitness	91
Notes	92
Suggested Readings	92

**5 Muscular Strength Assessment and Prescription . . . . . 97**

Relationship Between Strength and Metabolism	98
Gender Differences	98
Changes in Body Composition	100
Assessment of Muscular Strength and Endurance	101
Hand Grip Test	101
Muscular Endurance Test	102
Muscular Strength and Endurance Test	105
Recording Your Strength Fitness Category	105
Strength Training Prescription	111
Factors That Affect Strength	111
Principles Involved in Strength Training	112
Mode of Training	112
Resistance	113
Sets	114
Frequency of Training	114
Plyometrics	115
Strength-Training Exercises	116
Setting Up Your Own Strength-Training Program	116
Notes	118



Suggested Readings	118
Strength-Training Exercise without Weights	123
Strength-Training Exercises with Weights	127

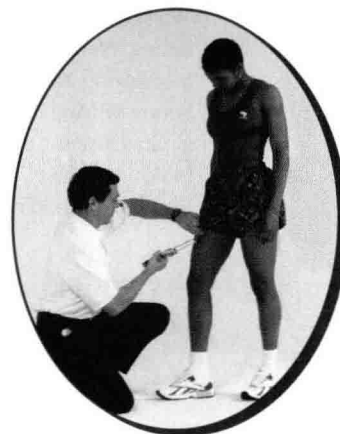
## **6 Muscular Flexibility Assessment and Prescription..... 133**

Factors Affecting Flexibility	135
Assessment of Flexibility	135
Interpreting Flexibility Test Results	141
Principles of Muscular Flexibility Prescription	142
Mode of Training	142
Intensity of Exercise	145
Repetitions	145
Frequency of Exercise	145
When to Stretch?	146
Flexibility Exercises	146
Preventing and Rehabilitating Low Back Pain	146
Notes	148
Suggested Readings	148
Your Back and How to Care For It	149
Flexibility Exercises	151
Exercises for the Prevention and Rehabilitation of Low-Back Pain	153



## **7 Body Composition Assessment..... 155**

What Does "Body Composition" Mean?	156
Essential and Storage Fat	157
Techniques for Assessing Body Composition	157
Hydrostatic Weighing	157
Skinfold Thickness	158
Girth Measurements	163
Bioelectrical Impedance	165
Waist-to-Hip Ratio	167
Body Mass Index	167
Determining Recommended Body Weight	168
Importance of Regular Body Composition Assessment	169
Notes	170
Suggested Readings	170



## **8 Nutrition for Wellness..... 173**

Nutrients	174
Carbohydrates	176
Fats	178
Proteins	180
Vitamins	181
Minerals	183
Water	183
Energy (ATP) Production	184
Balancing the Diet	184
Nutrient Analysis	185
Achieving a Balanced Diet	189
Nutrient Supplementation	191
Antioxidants and Folate	192
Folate	194
Side Effects	194
Benefits of Foods	195



Nutrition for Athletes	195
Carbohydrate Loading	196
Amino Acid Supplements	197
Specific Nutrition Needs of Women	197
Bone Health and Osteoporosis	197
Estrogen Replacement Therapy	199
Adequate Iron Intake	200
Dietary Guidelines for Americans	200
Proper Nutrition: A Lifetime Prescription for Healthy Living	202
Notes	204
Suggested Readings	204



## **9 Weight Management ..... 207**

Obesity and Overweight	208
Tolerable Weight	210
The Weight Loss Dilemma	211
Eating Disorders	212
Anorexia Nervosa	212
Bulimia Nervosa	213
Physiology of Weight Loss	214
Energy-Balancing Equation	214
Setpoint Theory	214
Diet and Metabolism	216
Exercise: The Key to Weight Loss and Weight Maintenance	217
Healthy Weight Gain	220
Weight-Loss Myths	220
Losing Weight the Sound and Sensible Way	220
Monitoring Your Diet with Daily Food Logs	224
Behavior Modification and Adherence to a Weight Management Program	225
In Conclusion	227
Notes	228
Suggested Readings	229



## **10 Preventing Cardiovascular Disease ..... 239**

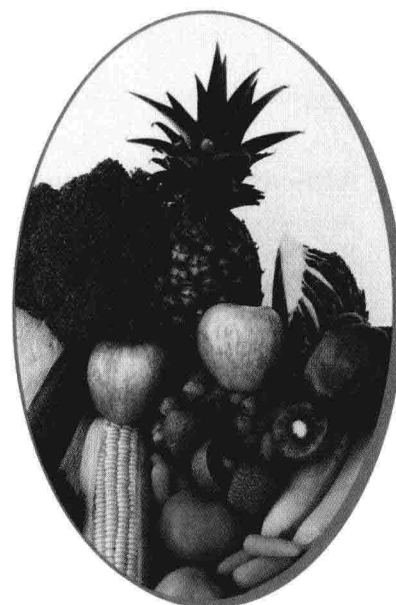
Coronary Heart Disease Risk Profile	241
Physical Inactivity	242
Abnormal Electrocardiograms	246
Abnormal Cholesterol Profile	247
Elevated Triglycerides	253
Elevated Homocysteine	254
Diabetes	254
Hypertension	255
Excessive Body Fat	259
Smoking	259
Tension and Stress	260
Personal and Family History	261
Age	261
A Final Word on Coronary Risk Reduction	261
Notes	262
Suggested Readings	263



## **11 Cancer Prevention ..... 265**

Incidence of Cancer	268
Guidelines for Preventing Cancer	270
Dietary Changes	270
Abstaining from Tobacco	272

Avoiding Excessive Sun Exposure	273
Monitoring Estrogen, Radiation Exposure, and Potential Occupational Hazards	273
Engaging in Physical Activity	274
Early Detection	274
Other Factors	274
Warning Signals of Cancer	274
Cancer Questionnaire: Assessing Your Risks	275
Lung Cancer	276
Colon/Rectum Cancer	276
Skin Cancer	279
Breast Cancer	279
Cervical Cancer	279
Endometrial Cancer	281
Prostate Cancer	281
Testicular Cancer	281
Pancreatic Cancer	282
Kidney and Bladder Cancer	283
Oral Cancer	283
Esophageal and Stomach Cancer	283
Ovarian Cancer	284
Thyroid Cancer	284
Liver Cancer	284
Leukemia	284
Lymphomas	285
What Can You Do?	285
Notes	285
Suggested Readings	286



## **12** Stress Assessment and Management Techniques ..... 293

Sources of Stress	295
Behavior Patterns	295
Vulnerability to Stress	300
Time Management	300
Five Steps to Time Management	300
Time Management Skills	305
Coping with Stress	306
Relaxation Techniques	311
Biofeedback	311
Physical Activity	312
Progressive Muscle Relaxation	313
Breathing Techniques	315
Autogenic Training	316
Which Technique is Best?	316
Notes	317
Suggested Readings	317



## **13** Freedom From Tobacco Use ..... 319

Morbidity and Mortality	320
Economic Impact	322
Trends	322
Smokeless Tobacco	323
Why People Smoke	323
Addiction	324
Dependency	324
"Why-Do-You-Smoke?" Test	324
Smoking Cessation	327
"Do You Want To Quit?" Test	329

Breaking the Habit	329
Quitting Cold Turkey	333
Cutting Down Gradually	333
Nicotine Substitution Products	333
Life After Cigarettes	334
Notes	335
Suggested Readings	335

## **14 Addictive Behaviors and Sexually Transmitted Diseases . . . . . 339**

Addiction	340
Drugs and Dependence	340
Marijuana	341
Cocaine	341
Alcohol	342
Sexually Transmitted Diseases	345
Chlamydia	345
Gonorrhea	348
Pelvic Inflammatory Disease	348
Genital Warts	348
Herpes	348
Syphilis	348
HIV and AIDS	348
Guidelines for Preventing Sexually Transmitted Diseases	353
Reducing the Risk for STDs	354
Reducing the Risk for HIV	355
Notes	358
Suggested Readings	358



## **15 Healthy Lifestyle Issues and Wellness Guidelines for the Future . . . 359**

Spiritual Well-Being	360
Spirituality and Health	360
Altruism	361
Exercise and Aging	361
Relationship Between Fitness and Aging	361
Physical Training in the Older Adult	363
Accident Prevention and Personal Safety	364
Quackery and Fraud	364
Health/Fitness Club Memberships	365
Purchasing Exercise Equipment	366
The Future	366
Self-Evaluation	367
Behavioral Objectives for the Future	367
Fitness/Wellness Challenge for the Future	367
Notes	369
Suggested Readings	370




## **A Physical Fitness and Wellness Profile . . . . . 375**

## **B Nutritive Value of Selected Foods . . . . . 377**

## **Glossary . . . . . 395**

## **Index . . . . . 401**



# Introduction to Lifetime Physical Fitness and Wellness

# 1

## Objectives

Define wellness, and list its dimensions.

Define physical fitness and list health-related and skill-related fitness components.

State the differences between physical fitness and wellness.

Distinguish between health fitness standards and physical fitness standards.

Identify the major health problems in the United States.

Understand the benefits and the significance of participating in a lifetime fitness and wellness program.

Identify lifestyle factors that improve health and longevity.

Identify risk factors that may interfere with safe participation in exercise.



**T**he human organism was created to move and be physically active. Advances in modern technology, however, have drastically reduced physical activity in many people's daily life. Physical activity is no longer a natural part of our existence. We live in an automated society, where most of the activities that used to require strenuous exertion can be accomplished by machines with the simple pull of a handle or push of a button.

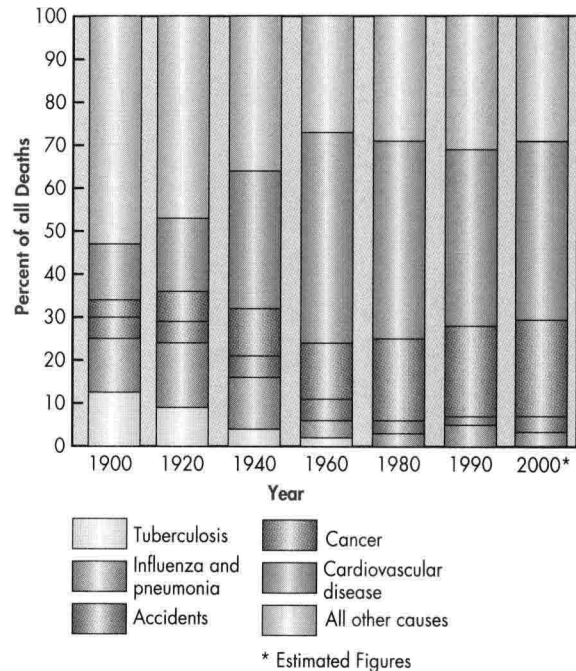
Physical inactivity and a sedentary lifestyle are a serious threat to our health and rapidly increase the deterioration rate of the human body. Physically active people live longer than their inactive counterparts, even if they begin activity later in life. Estimates indicate that more than 250,000 deaths in the United States yearly are attributed to lack of regular physical activity.<sup>1</sup> Similar trends are found in most industrialized nations throughout the world.

At the beginning of the 20th century, the most common health problems in the Western world were infectious diseases such as tuberculosis, diphtheria, influenza, polio, and other diseases of infancy. Progress in the field of medicine has largely eliminated these diseases. As the North American people started to enjoy the so-called good life — sedentary living, alcohol, fatty foods, excessive sweets, tobacco, drugs — we saw a parallel increase in the incidence of chronic diseases such as hypertension, coronary heart disease, atherosclerosis, strokes, diabetes, cancer, emphysema, and cirrhosis of the liver (see Figure 1.1).

As the incidence of chronic diseases climbed, we came to recognize that prevention is the best medicine. Consequently, a fitness and wellness movement developed gradually over the last three decades. People began to realize that good health is mostly self-controlled and that the leading causes of premature death and illness in North America could be prevented by adhering to positive lifestyle habits.

## PHYSICAL ACTIVITY VERSUS EXERCISE

Based on the abundance of scientific research on physical activity and exercise over the last three decades, a clear distinction has been established between physical activity and exercise. Physical activity is bodily movement produced by skeletal muscles. It requires energy expenditure and produces progressive health benefits.<sup>2</sup> Examples of physical activity are walking to and from work, taking the stairs



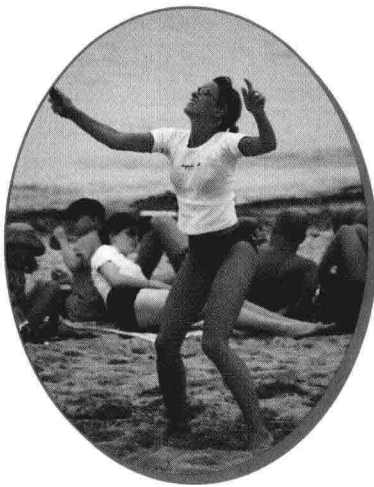
Source: National Center for Health Statistics, Division of Vital Statistics.

**FIGURE 1.1** Causes of death in the United States for selected years.

instead of elevators and escalators, gardening, doing household chores, dancing, and washing the car by hand. Physical inactivity, on the other hand, implies a level of activity that is lower than that required to maintain good health.

Physical inactivity and a sedentary lifestyle seriously threaten our health and hasten the deterioration rate of the human body.

Exercise is a type of physical activity that requires “planned, structured, and repetitive bodily movement to improve or maintain one or more components of physical fitness.”<sup>3</sup> Examples of exercise are walking, running, cycling, aerobics, swimming, and strength training.



An active lifestyle increases health, quality of life, and longevity.

## SURGEON GENERAL'S REPORT ON PHYSICAL ACTIVITY AND HEALTH

In 1996 the U.S. Surgeon General released a landmark report on the influence of regular physical activity on health.<sup>4</sup> The significance of this historic document cannot be underestimated. Until 1996, the Surgeon General had released only two other such reports — one on smoking and health in 1964, and a second one on nutrition and health in 1988.

The 1996 document on physical activity and health summarizes more than 1,000 scientific studies from the fields of epidemiology, exercise physiology, medicine, and the behavioral sciences.

According to the Surgeon General, poor health because of the lack of physical activity is a serious public health problem that we must meet head-on at once. More than 60% of adults do not achieve the recommended amount of physical activity, and 25% are not physically active at all. Further, almost half of all people between 12 and 21 years of age are not vigorously active on a regular basis. This report became a call to action nationwide. Regular moderate physical activity can prevent premature death, unnecessary illness, and disability. It also can help control health-care costs and help to maintain a high quality of life into old age.

The report states that regular moderate physical activity provides substantial benefits in health and well-being for the vast majority of people who are not physically active. Among these benefits are significantly reduced risks for developing or dying from heart disease, diabetes, colon cancer, and high blood

pressure. Regular physical activity also is important for the health of muscles, bones, and joints, and it seems to reduce symptoms of depression and anxiety, improve mood, and enhance the ability to perform daily tasks throughout life. Individuals who are already moderately active can achieve greater health benefits by increasing the amount of physical activity.

In the report, moderate physical activity has been defined as physical activity that uses 150 calories of energy per day, or 1000 calories per week. People should strive to achieve at least 30 minutes of physical activity per day most days of the week. Examples of moderate physical activity are walking, cycling, playing basketball or volleyball, swimming, water aerobics, dancing fast, pushing a stroller, raking leaves, shoveling snow, washing or waxing a car, washing windows or floors, and even gardening.

### Key Terms

**Sedentary** Describes a person who is relatively inactive and has a lifestyle characterized by a lot of sitting.

**Chronic diseases** Illnesses that develop and last a long time.

**Physical activity** Bodily movement produced by skeletal muscles that requires expenditure of energy and produces progressive health benefits.

**Exercise** A type of physical activity that requires planned, structured, and repetitive bodily movement with the intent of improving or maintaining one or more components of physical fitness.

**Moderate physical activity** Activity that uses 150 calories of energy per day, or 1,000 calories per week.

## A HEALTHY LIFESTYLE

Most people recognize that participating in fitness programs improves their quality of life. In recent years, however, we came to realize that improving physical fitness alone was not always sufficient to lower the risk for disease and ensure better health. For example, individuals who run 3 miles (about 5 km) a day, lift weights regularly, participate in stretching exercises, and watch their body weight might be classified easily as having good or excellent fitness. Offsetting **risk factors**, however, include high blood pressure, smoking, constant stress, excessive alcohol drinking, and eating too many fatty foods. These factors place people at risk for cardiovascular disease and other chronic diseases of which they may not be aware.

One of the best examples that good fitness does not always provide a risk-free guarantee of a healthy and productive life was the tragic death in 1984 of Jim Fixx, author of the best-selling book, *The Complete Book of Running*. More than one million copies of this book have been sold. At the time of his death by heart attack, Fixx was 52 years old. He had been running between 60 and 80 miles a week and had believed that people at his high level of fitness would not die from heart disease.

At age 36, Jim Fixx smoked two packs of cigarettes per day, weighed about 215 pounds, did not participate in regular physical activity, and had a family history of heart disease. His father, having had a first heart attack at age 35, later died at age 43. Perhaps in an effort to lessen his risk for heart disease, Fixx began to raise his level of fitness. He started to jog, lost 50 pounds, and quit cigarette smoking. On several occasions, though, Fixx declined to have an exercise electrocardiogram (ECG) test, which most likely would have revealed his cardiovascular problem. His unfortunate death provides an example that an exercise program by itself will not make high-risk people immune to heart disease, though it may delay the onset of a serious or fatal problem.

## WELLNESS

Good health is no longer viewed as simply the absence of illness. The notion of good health has evolved notably in the last few years and continues to change as scientists learn more about lifestyle factors that bring on illness and affect wellness. Once the idea took hold that fitness by itself would not

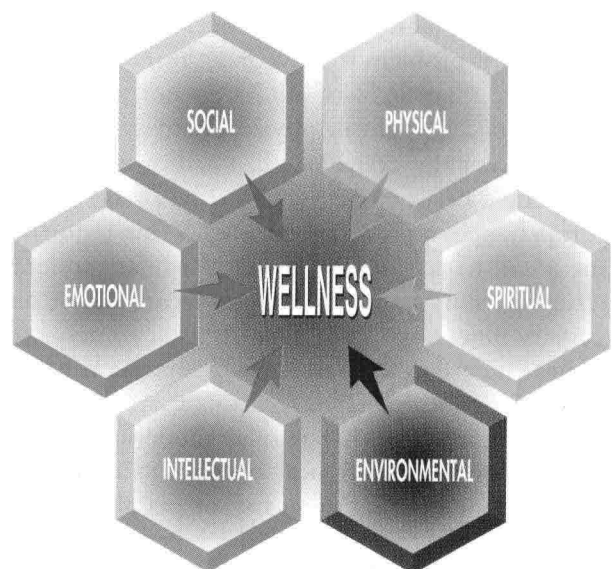
always decrease the risk for disease and ensure better health, the wellness concept developed in the 1980s.

The term **wellness** is an all-inclusive umbrella covering several components that are conducive to health. Wellness living requires implementing positive programs to change behavior to improve health and quality of life, prolong life, and achieve total well-being.

Wellness has six dimensions: physical, emotional, intellectual, social, environmental, and spiritual (see Figure 1.2). These dimensions are interrelated. One dimension frequently affects the others. For example, a person who is emotionally down often has no desire to exercise, study, socialize with friends, or attend church.

In looking at the six dimensions of wellness, it clearly goes beyond the absence of disease. Wellness incorporates factors such as adequate fitness, proper nutrition, stress management, disease prevention, spirituality, not smoking or abusing drugs, personal safety, regular physical examinations, health education, and environmental support (see Figure 1.3).

For a wellness way of life, not only must individuals be physically fit and manifest no signs of disease, but they also must not have risk factors for disease (such as hypertension, hyperlipidemia, cigarette smoking, negative stress, faulty nutrition, careless sex). The relationship between adequate fitness and wellness is illustrated in the wellness continuum in Figure 1.4. Even though an individual tested in a fitness center may demonstrate adequate or even excellent fitness, indulgence in unhealthy lifestyle behaviors will still



**FIGURE 1.2** Dimensions of wellness.