



connect®

### Learning that fits you.

You have a lot going on, so we've designed Connect to fit your individual learning needs, making every minute you have to study more efficient and effective with our digital learning assistant. And when you download the free ReadAnywhere app to your smartphone or tablet, you can access your digital textbook anytime, anywhere—even if you're offline. Get learning that fits your busy life with Connect.

Students who access Connect sooner, do better.\*

11%

Average increase in student scores when using Connect on Day 1 vs. Day 14 of class.

85%

of students pass their courses using Connect compared to 72% of students not using Connect.

\*Source: The Impact of Connect on Student Success. McGraw Hill Connect® Effectiveness Study 2016

**SUPPORT** AT  
*every step*

**Activate your Connect subscription today!**

If you need a hand getting started with Connect, or at any step along the way, we're standing by—ready to help.

[mhhe.com/collegesmarter](http://mhhe.com/collegesmarter)  
**800.331.5094**



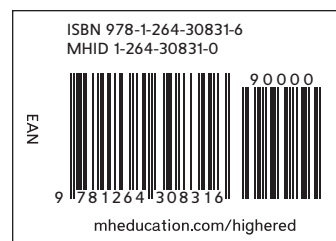
@mhhighered



@mhhighered



@mcgrawhillhighered



15e

Fit & Well

Core Concepts and Labs in  
Physical Fitness and Wellness

Fahey  
Insel  
Roth  
Insel

Mc  
Graw  
Hill

Thomas D. Fahey Paul M. Insel Walton T. Roth Claire E. Insel

# Fit & Well

Core Concepts and Labs in Physical Fitness and Wellness

15e

Mc  
Graw  
Hill



# FIT&WELL

Core Concepts and Labs in Physical Fitness and Wellness



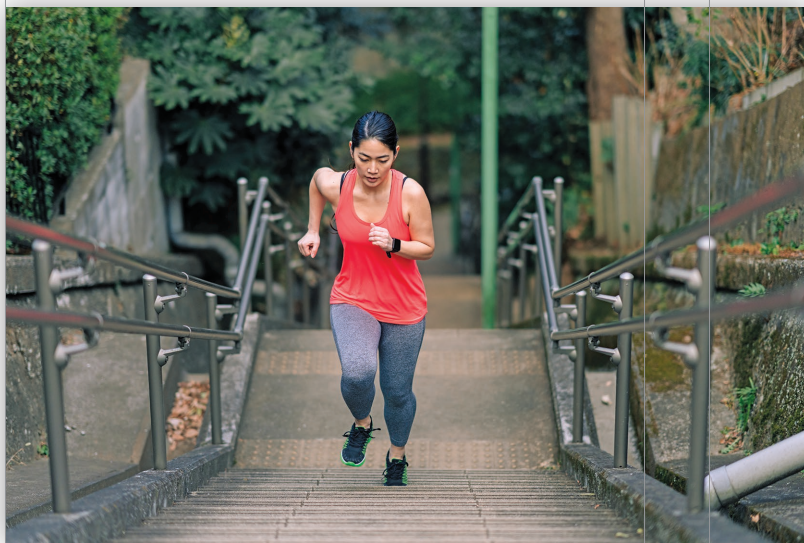
FIFTEENTH EDITION

ftp\_tt

# FIT & WELL

ftp\_st

Core Concepts and Labs in Physical Fitness and Wellness



recep-bg/E+Getty Images

Mc  
Graw  
Hill

**Thomas D. Fahey**

*California State University, Chico*

**Paul M. Insel**

*Stanford University*

**Walton T. Roth**

*Stanford University*

**Claire E. Insel**

*California Institute  
of Human Nutrition*





**FIT & WELL: CORE CONCEPTS AND LABS IN PHYSICAL FITNESS AND WELLNESS,  
FIFTEENTH EDITION**

Published by McGraw Hill LLC, 1325 Avenue of the Americas, New York, NY 10019. Copyright ©2023 by McGraw Hill Education. All rights reserved. Printed in the United States of America. Previous editions ©2021, 2019, and 2017. No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written consent of McGraw Hill LLC, including, but not limited to, in any network or other electronic storage or transmission, or broadcast for distance learning.

Some ancillaries, including electronic and print components, may not be available to customers outside the United States.

This book is printed on acid-free paper.

1 2 3 4 5 6 7 8 9 LWI 27 26 25 24 23 22

ISBN 978-1-264-30831-6 (bound edition)  
MHID 1-264-30831-0 (bound edition)  
ISBN 978-1-264-39333-6 (loose-leaf edition)  
MHID 1-264-39333-4 (loose-leaf edition)

Portfolio Manager: *Erika Lo*  
Product Development Manager: *Dawn Groundwater*  
Senior Product Developer: *Kirstan Price*  
Marketing Manager: *Antoinette Moore*  
Content Project Managers: *Rick Hecker and George Theofanopoulos*  
Senior Buyer: *Sandy Ludovissy*  
Designer: *Beth Blech*  
Lead Senior Content Licensing Specialist: *Brianna Kirschbaum*  
Cover Image: *Lya\_Cattel/Getty Images*  
Compositor: *Aptara®*, Inc.

All credits appearing on page or at the end of the book are considered to be an extension of the copyright page.

**Library of Congress Cataloging-in-Publication Data**

Names: Fahey, Thomas D. (Thomas Davin), 1947- author. | Insel, Paul M., author. | Roth, Walton T., author. | Insel, Claire, author.

Title: Fit & well : core concepts and labs in physical fitness and wellness / Thomas D. Fahey, California State University, Chico Paul M. Insel, Stanford University, Walton T. Roth, Stanford University, Claire E. Insel, California Institute of Human Nutrition.

Other titles: Fit and well

Description: Fifteenth edition. | New York, NY : McGraw Hill Education, [2023] | Includes index.

Identifiers: LCCN 2021029394 (print) | LCCN 2021029395 (ebook) | ISBN 9781264308316 (hardcover) | ISBN 9781264393336 (spiral bound) | ISBN 9781264393329 (ebook) | ISBN 9781264393305 (ebook other)

Subjects: LCSH: Physical fitness. | Health.

Classification: LCC GV481 .F26 2023 (print) | LCC GV481 (ebook) | DDC 613.7/1-dc23

LC record available at <https://lcn.loc.gov/2021029394>

LC ebook record available at <https://lcn.loc.gov/2021029395>

2015033669

The Internet addresses listed in the text were accurate at the time of publication. The inclusion of a website does not indicate an endorsement by the authors or McGraw Hill LLC, and McGraw Hill LLC does not guarantee the accuracy of the information presented at these sites.

[mheducation.com/highered](http://mheducation.com/highered)



# BRIEF CONTENTS

## PREFACE *xiv*

1. INTRODUCTION TO WELLNESS, FITNESS, AND LIFESTYLE MANAGEMENT 1
2. PRINCIPLES OF PHYSICAL FITNESS 27
3. CARDIORESPIRATORY ENDURANCE 59
4. MUSCULAR STRENGTH AND ENDURANCE 97
5. FLEXIBILITY AND LOW-BACK HEALTH 147
6. BODY COMPOSITION 183
7. PUTTING TOGETHER A COMPLETE FITNESS PROGRAM 207
8. NUTRITION 233
9. WEIGHT MANAGEMENT 281
10. STRESS MANAGEMENT AND SLEEP 315
11. CARDIOVASCULAR HEALTH AND DIABETES 353
12. CANCER 375
13. SUBSTANCE USE AND MISUSE 397
14. SEXUAL WELLNESS 425
15. ENVIRONMENTAL HEALTH 445

## APPENDIXES

- A. INJURY PREVENTION AND PERSONAL SAFETY A-2
- B. MONITORING YOUR PROGRESS B-1

## BEHAVIOR CHANGE WORKBOOK *W-1*

## INDEX *I-1*





# CONTENTS

## PREFACE *XIV*

### 1

## INTRODUCTION TO WELLNESS, FITNESS, AND LIFESTYLE MANAGEMENT *1*

### WELLNESS: NEW HEALTH GOALS *2*

The Dimensions of Wellness *2*

New Opportunities for Taking Charge *4*

National Health *7*

Behaviors That Contribute to Wellness *8*

Wellness Factors That Seem Outside Our Control *10*

College Students and Wellness *11*

### REACHING WELLNESS THROUGH LIFESTYLE MANAGEMENT *12*

Getting Serious about Your Health *12*

Building Motivation to Change *13*

Enhancing Your Readiness to Change *16*

Dealing with Relapse *16*

Developing Skills for Change: Creating a Personalized Plan *17*

Putting Your Plan into Action *20*

Staying with It *20*

Being Fit and Well for Life *20*

*Tips for Today and the Future 21*

*Summary 21*

*For Further Exploration 21*

*Selected Bibliography 22*

**LAB 1.1 Your Wellness Profile 23**

**LAB 1.2 Lifestyle Evaluation 25**

### 2

## PRINCIPLES OF PHYSICAL FITNESS *27*

### PHYSICAL ACTIVITY AND EXERCISE FOR HEALTH AND FITNESS *28*

Physical Activity on a Continuum *28*

How Much Physical Activity Is Enough? *31*

### COMPONENTS OF PHYSICAL FITNESS *33*

Cardiorespiratory Endurance *33*

Muscular Strength *34*

Muscular Endurance *34*

Flexibility *34*

Body Composition *34*

Skill (Neuromuscular)–Related Components of Fitness *35*

## PRINCIPLES OF PHYSICAL TRAINING:

### ADAPTATION TO STRESS *35*

Specificity—Adapting to Type of Training *36*

Progressive Overload—Adapting to the Amount of Training and the FITT Principle *37*

Reversibility—Adapting to a Reduction in Training *38*

Individual Differences—Limits on Adaptability *38*

### DESIGNING YOUR OWN EXERCISE PROGRAM *38*

Getting Medical Clearance *38*

Assessing Yourself *39*

Setting Goals *39*

Choosing Activities for a Balanced Program *39*

Guidelines for Training *42*

*Tips for Today and the Future 45*

*Summary 45*

*Common Questions Answered 47*

*For Further Exploration 47*

*Selected Bibliography 48*

**LAB 2.1 Safety of Exercise Participation: PAR-Q+ 49**

**LAB 2.2 Overcoming Barriers to Being Active 53**

**LAB 2.3 Using a Fitness Tracker or Smartphone Exercise App to Measure Physical Activity 57**

### 3

## CARDIORESPIRATORY ENDURANCE *59*

### BASIC PHYSIOLOGY OF CARDIORESPIRATORY ENDURANCE EXERCISE *60*

The Cardiorespiratory System *60*

Energy Production *63*

Exercise and the Three Energy Systems *63*

### BENEFITS OF CARDIORESPIRATORY ENDURANCE EXERCISE *65*

Improved Cardiorespiratory Functioning *65*

Improved Cellular Metabolism *66*

Reduced Risk of Chronic Disease *67*

Better Control of Body Fat *68*

Improved Immune Function *69*

Improved Psychological and Emotional Well-Being *70*

### ASSESSING CARDIORESPIRATORY FITNESS *70*

Choosing an Assessment Test *70*

Monitoring Your Heart Rate *70*

Interpreting Your Score *72*

DEVELOPING A CARDIORESPIRATORY ENDURANCE PROGRAM 72

Setting Goals 72

Applying the FITT Principle 72

Warming Up and Cooling Down 76

Building Cardiorespiratory Fitness 76

Maintaining Cardiorespiratory Fitness 78

EXERCISE SAFETY AND INJURY PREVENTION 78

Hot Weather and Heat Stress 78

Cold Weather 81

Poor Air Quality 81

Exercise Injuries 81

Tips for Today and the Future 83

Summary 83

Common Questions Answered 85

For Further Exploration 85

Selected Bibliography 86

LAB 3.1 Assessing Your Current Level of Cardiorespiratory Endurance 87

LAB 3.2 Developing an Exercise Program for Cardiorespiratory Endurance 95

4

MUSCULAR STRENGTH AND ENDURANCE 97

BASIC MUSCLE PHYSIOLOGY AND THE EFFECTS OF STRENGTH TRAINING 98

Muscle Fibers 98

Motor Units 99

Metabolic and Heart Health 102

ASSESSING MUSCULAR STRENGTH AND ENDURANCE 102

CREATING A SUCCESSFUL STRENGTH TRAINING PROGRAM 102

Static versus Dynamic Strength Training Exercises 102

Weight Machines, Free Weights, and Body Weight Exercises 105

Other Training Methods and Types of Equipment 105

Applying the FITT Principle: Selecting Exercises and Putting Together a Program 107

The Warm-Up and Cool-Down 109

Getting Started and Making Progress 109

More Advanced Strength Training Programs 110

Weight Training Safety 110

Supplements and Drugs 112

Tips for Today and the Future 114

WEIGHT TRAINING EXERCISES 114

Common Questions Answered 130

Summary 131

For Further Exploration 131

Selected Bibliography 132

LAB 4.1 Assessing Your Current Level of Muscular Strength 135

LAB 4.2 Assessing Your Current Level of Muscular Endurance 141

LAB 4.3 Designing and Monitoring a Strength Training Program 145

5

FLEXIBILITY AND LOW-BACK HEALTH 147

TYPES OF FLEXIBILITY 148

WHAT DETERMINES FLEXIBILITY? 148

Joint Structure 148

Muscle Elasticity and Length 148

Nervous System Regulation 149

BENEFITS OF FLEXIBILITY 149

Joint Health 149

Prevention of Low-Back Pain and Injuries 150

Additional Potential Benefits of Flexibility 151

ASSESSING FLEXIBILITY 151

CREATING A SUCCESSFUL PROGRAM TO DEVELOP FLEXIBILITY 151

Applying the FITT Principle 151

Making Progress 154

EXERCISES TO IMPROVE FLEXIBILITY: A SAMPLE PROGRAM 154

PREVENTING AND MANAGING LOW-BACK PAIN 158

Function and Structure of the Spine 158

Core Muscle Fitness 159

Causes of Back Pain 159

Preventing Low-Back Pain 160

Managing Acute Back Pain 160

Managing Chronic Back Pain 162

EXERCISES FOR THE PREVENTION AND MANAGEMENT OF LOW-BACK PAIN 162

Tips for Today and the Future 162

Summary 163

Common Questions Answered 167

For Further Exploration 167

Selected Bibliography 167

LAB 5.1 Assessing Your Current Level of Flexibility 171

LAB 5.2 Creating a Personalized Program for Developing Flexibility 177

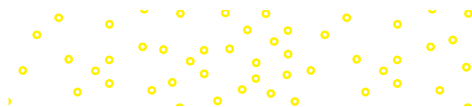
LAB 5.3 Assessing Muscular Endurance for Low-Back Health 179

6

BODY COMPOSITION 183

WHAT IS BODY COMPOSITION, AND WHY IS IT IMPORTANT? 184

Overweight and Obesity Defined 184





Prevalence of Overweight and Obesity among Americans	185
Excess Body Fat and Wellness	185
Problems Associated with Very Low Levels of Body Fat	186
<b>ASSESSING BODY MASS INDEX, BODY COMPOSITION, AND BODY FAT DISTRIBUTION</b>	187
Calculating Body Mass Index	187
Estimating Percent Body Fat	189
Assessing Body Fat Distribution	191
Somatotype	191
<b>SETTING BODY COMPOSITION GOALS</b>	192
<b>MAKING CHANGES IN BODY COMPOSITION</b>	192
<i>Tips for Today and the Future</i>	194
<i>Summary</i>	194
<i>For Further Exploration</i>	194
<i>Selected Bibliography</i>	194
<i>Common Questions Answered</i>	196
<b>LAB 6.1 Assessing Body Mass Index and Body Composition</b>	197
<b>LAB 6.2 Setting Goals for Target Body Weight</b>	205

## 7

## PUTTING TOGETHER A COMPLETE FITNESS PROGRAM 207

<b>DEVELOPING A PERSONAL FITNESS PLAN</b>	208
1. Set Goals	208
2. Select Activities	208
3. Set a Target Frequency, Intensity, and Time (Duration) for Each Activity	210
4. Set Up a System of Mini-Goals and Rewards	211
5. Include Lifestyle Physical Activity and Strategies to Reduce Sedentary Time in Your Program	212
6. Develop Tools for Monitoring Your Progress	212
7. Make a Commitment	213

### PUTTING YOUR PLAN INTO ACTION 213

#### EXERCISE GUIDELINES FOR LIFE STAGES AND PEOPLE WITH SPECIAL HEALTH CONCERNS 215

Exercise Guidelines for Life Stages	215
Exercise Guidelines for People with Special Health Concerns	217

*Common Questions Answered* 219

*Summary* 219

*For Further Exploration* 219

*Selected Bibliography* 219

*Sample Programs for Popular Activities* 221

#### LAB 7.1 A Personal Fitness Program Plan and Agreement 229

#### LAB 7.2 Getting to Know Your Fitness Facility 231

## 8

## NUTRITION 233

### NUTRITIONAL REQUIREMENTS: COMPONENTS OF A HEALTHY DIET 234

Calories	234
Proteins—The Basis of Body Structure	235
Fat—Another Essential Nutrient	236
Carbohydrates—A Key Source of Energy	238
Fiber—A Closer Look	240
Vitamins—Organic Micronutrients	241
Minerals—Inorganic Micronutrients	243
Water—Vital but Underappreciated	243
Other Substances in Food	244

### NUTRITIONAL GUIDELINES: PLANNING YOUR DIET 246

Dietary Reference Intakes (DRIs)	246
Daily Values	246
<i>Dietary Guidelines for Americans</i>	247
USDA's MyPlate	251
Other Eating Plans	253
The Plant-Based Alternative	254
Functional Foods	255
Dietary Challenges for Various Population Groups	255

### NUTRITIONAL PLANNING: MAKING INFORMED CHOICES ABOUT FOOD 258

Food Labels	258
Calorie Labeling: Restaurants and Vending Machines	258
Dietary Supplements	260
Food Additives	260
Foodborne Illnesses	260
Irradiated Foods	263
Environmental Contaminants and Organic Foods	263

### A PERSONAL PLAN 264

Assessing and Changing Your Diet	264
Staying Committed to a Healthy Diet	264
<i>Tips for Today and the Future</i>	264
<i>Summary</i>	264

*Common Questions Answered* 266

*For Further Exploration* 266

*Selected Bibliography* 268

#### LAB 8.1 Your Daily Diet versus MyPlate 275

#### LAB 8.2 Dietary Analysis 277

#### LAB 8.3 Informed Food Choices 279

## 9

## WEIGHT MANAGEMENT 281

### WHAT CONTRIBUTES TO OUR WEIGHT AND BODY COMPOSITION? 282

Genetic Factors	282
-----------------	-----

Fat Cells	283
Metabolism	283
Hormones	283
Gut Microbiota	284
Sleep	284
Food Marketing and Public Policy	284
Food Perceptions and Behaviors	285
<b>THE OVERWEIGHT AND OBESITY CRISIS</b>	285
Obesity and Health	286
Assessing Weight and Disease Risk	286
<b>BODY IMAGE</b>	287
Severe Body Image Problems	287
Healthy Change and Acceptance	288
<b>EATING DISORDERS</b>	288
Disordered Eating	289
Anorexia Nervosa	290
Bulimia Nervosa	290
Binge-Eating Disorder	290
Other Specified Feeding or Eating Disorders (OSFED)	291
Treating Eating Disorders	291
<b>A HEALTHY LIFESTYLE FOR MANAGING WEIGHT AND DISEASE PREVENTION</b>	291
Dietary Patterns and Eating Habits	292
Physical Activity and Exercise	295
Thoughts and Emotions	296
Coping Strategies	296
<b>APPROACHES TO OVERCOMING A WEIGHT PROBLEM</b>	297
Losing Weight	298
Gaining Weight	302
<i>Tips for Today and the Future</i>	303
<i>Summary</i>	303
<i>For Further Exploration</i>	303
<i>Common Questions Answered</i>	304
<i>Selected Bibliography</i>	304
<b>LAB 9.1 Evaluate Your Environment for Weight Management</b>	307
<b>LAB 9.2 Identifying Weight-Loss Goals</b>	309
<b>LAB 9.3 Checking for Body Image Problems and Eating Disorders</b>	311

10

<b>STRESS MANAGEMENT AND SLEEP</b>	315
<b>WHAT IS STRESS?</b>	316
Physical Responses to Stressors	316
Cognitive and Psychological Responses to Stressors	318
The Stress Experience as a Whole	320
<b>STRESS AND WELLNESS</b>	320
The General Adaptation Syndrome	320

More Recent Ideas about Stress	321
Stress and Specific Conditions	321
<b>COMMON SOURCES OF STRESS</b>	322
Major Life Changes	322
Daily Hassles	322
College Stressors	322
Job-Related Stressors	323
Relationships and Stress	323
Social Stressors	323
Other Stressors	324
<b>MANAGING STRESS</b>	325
Exercise	325
Nutrition	325
Social Support	325
Communication	326
Conflict Resolution	328
Striving for Spiritual Wellness	328
Confiding in Yourself through Writing	328
Time Management	328
Cognitive Techniques	330
Relaxation and Body Awareness Techniques	331
Other Stress-Management Techniques	332
Counterproductive Strategies for Coping with Stress	332
<b>GETTING HELP</b>	333
Peer Counseling and Support Groups	334
Professional Help	334
Is It Stress or Something More Serious?	334
<b>SLEEP</b>	335
How Sleep Works: The Physiology of Sleep	335
Natural Sleep Drives	336
Adequate Sleep and Your Health	337
Sleep Disorders	339
Improving Sleep	340
<i>Tips for Today and the Future</i>	341
<i>Summary</i>	341
<i>Common Questions Answered</i>	342
<i>For Further Exploration</i>	342
<i>Selected Bibliography</i>	343
<b>LAB 10.1 Identifying Your Stress Level and Key Stressors</b>	345
<b>LAB 10.2 Stress-Management Techniques</b>	347
<b>LAB 10.3 Evaluating and Improving Sleep</b>	349

11

<b>CARDIOVASCULAR HEALTH AND DIABETES</b>	353
<b>MAJOR FORMS OF CARDIOVASCULAR DISEASE</b>	354
Atherosclerosis	354
Heart Disease and Heart Attacks	355





Stroke	357
Congestive Heart Failure	357
<b>RISK FACTORS FOR CARDIOVASCULAR DISEASE</b>	357
Major Risk Factors That Can Be Changed	357
Contributing Risk Factors That Can Be Changed	361
Major Risk Factors That Can't Be Changed	362
Possible Risk Factors Currently Being Studied	364

## **PROTECTING YOURSELF AGAINST CARDIOVASCULAR DISEASE** 364

Eat a Heart-Healthy Diet	364
Exercise Regularly	365
Avoid Tobacco	365
Know and Manage Your Blood Pressure	365
Know and Manage Your Cholesterol Levels	365
Develop Ways to Handle Stress and Anger	365

## **DIABETES** 367

Types of Diabetes	367
Warning Signs and Testing	368
Treatment	368
Prevention	368
<i>Common Questions Answered</i>	369
<i>Tips for Today and the Future</i>	370
<i>Summary</i>	370
<i>For Further Exploration</i>	370
<i>Selected Bibliography</i>	371

## **LAB 11.1 Cardiovascular Health** 373

# 12

## **CANCER** 375

### **WHAT IS CANCER?** 376

Tumors	376
Metastasis	377

### **THE CAUSES OF CANCER** 377

Tobacco Use	377
Alcohol Use	377
Dietary Factors	377
Obesity and Inactivity	378
The Role of DNA	379
Race/Ethnicity and Poverty	381
Carcinogens in the Environment	381

### **COMMON CANCERS** 382

Lung Cancer	382
Colon and Rectal Cancer	382
Breast Cancer	384
Prostate Cancer	385
Cancers of the Female Reproductive Tract	385
Skin Cancer	386
Head and Neck Cancers	388

## **Testicular Cancer** 388

## **Other Cancers** 388

## **DETECTING AND TREATING CANCER** 389

Detecting Cancer	389
Stages of Cancer	389
Treating Cancer	389
<i>Tips for Today and the Future</i>	392
<i>Common Questions Answered</i>	393
<i>Summary</i>	393
<i>For Further Exploration</i>	393
<i>Selected Bibliography</i>	394

## **LAB 12.1 Cancer Prevention** 395

# 13

## **SUBSTANCE USE AND MISUSE** 397

### **ADDICTION** 398

Diagnosing Substance Misuse and Addiction	399
How Does an Addiction Develop?	400
Examples of Behavioral Addictions	400

### **PSYCHOACTIVE DRUGS** 401

Who Uses Drugs?	401
Opioids and Drug Overdose Deaths	403
Marijuana	403
Other Illicit Drugs of Concern	404
Treatment for Substance Use Disorder and Addiction	405
Preventing Substance Use Disorder	405
The Role of Drugs in Your Life	405

### **ALCOHOL** 405

Chemistry and Metabolism	405
Immediate Effects of Alcohol	405
Alcohol Use Disorder: From	
Mild to Severe	408
Effects of Alcohol Use Disorder	409
Drinking and Driving	409
Binge Drinking	410
Drinking and Responsibility	410

### **TOBACCO** 410

Nicotine Addiction	410
Health Hazards of Cigarette Smoking	411
Risks Associated with Other Forms of Tobacco Use	413
Environmental Tobacco Smoke	414
Smoking and Pregnancy	415
Giving Up Tobacco	416
Action against Tobacco	416
<i>Common Questions Answered</i>	418
<i>Tips for Today and the Future</i>	418
<i>Summary</i>	418
<i>For Further Exploration</i>	419
<i>Selected Bibliography</i>	419

LAB 13.1 Is Alcohol a Problem in Your Life?
421

LAB 13.2 For Smokers Only: Why Do You Smoke?
423

14

SEXUAL WELLNESS425

SEX AND YOUR BODY426

Sexual Anatomy426

Gender and Sexual Orientation427

Sexual Stimulation and Behavior428

CONTRACEPTION428

How Contraceptives Work428

Contraceptive Effectiveness429

THE MAJOR STIs429

HIV Disease and AIDS430

Chlamydia434

Gonorrhea435

Pelvic Inflammatory Disease436

Human Papillomavirus (HPV)436

Genital Herpes437

Hepatitis B437

Syphilis438

Other STIs438

WHAT YOU CAN DO ABOUT STIs439

Tips for Today and the Future440

Summary440

For Further Exploration440

Common Questions Answered441

Selected Bibliography442

LAB 14.1 Behaviors and Attitudes Related to STIs443

15

ENVIRONMENTAL HEALTH445

ENVIRONMENTAL HEALTH DEFINED446

POPULATION GROWTH AND CONTROL446

Factors That Contribute to Population Growth447

How Many People Can the World Hold?447

AIR QUALITY AND POLLUTION448

Air Quality and Smog448

The Greenhouse Effect and Global Warming449

Thinning of the Ozone Layer451

Energy Use and Air Pollution452

Indoor Air Pollution453

Preventing Air Pollution453

WATER QUALITY AND POLLUTION455

Water Contamination and Treatment455

Water Shortages455

Sewage455

Protecting the Water Supply455

SOLID WASTE POLLUTION456

Solid Waste456

Reducing Solid Waste457

CHEMICAL POLLUTION AND HAZARDOUS WASTE458

Asbestos458

Lead459

Pesticides459

Mercury460

Other Chemical Pollutants460

Preventing Chemical Pollution461

RADIATION POLLUTION461

Nuclear Weapons and Nuclear Energy462

Medical Uses of Radiation462

Radiation in the Home and Workplace462

Avoiding Radiation463

NOISE POLLUTION463

Common Questions Answered464

Tips for Today and the Future465

Summary465

For Further Exploration465

Selected Bibliography466

LAB 15.1 Environmental Health Checklist467

APPENDIX A

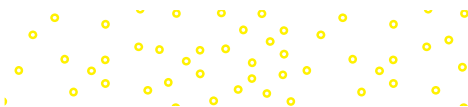
INJURY PREVENTION AND PERSONAL SAFETYA-2

APPENDIX B

MONITORING YOUR PROGRESSB-1

BEHAVIOR CHANGE WORKBOOKW-1

INDEXI-1





## BOXES

### TAKE CHARGE

- Financial Wellness 5
- Tips for Moving Forward in the Cycle of Behavior Change 17
- Move More, Sit Less 29
- Vary Your Activities 44
- High-Intensity Conditioning Programs 79
- Rehabilitation Following a Minor Athletic Injury 83
- Harnessing Motor Control for Improving Skill and Power 100
- Safe Weight Training 111
- Good Posture and Low-Back Health 161
- Yoga for Relaxation and Pain Relief 163
- Getting Your Fitness Program Back on Track 215
- Choosing More Whole-Grain Foods 240
- Eating for Healthy Bones 245
- Positive Changes to Meet the *Dietary Guidelines* 250
- Judging Portion Sizes 252
- Eating Strategies for College Students 256
- Safe Food Handling 262
- If Someone You Know Has an Eating Disorder . . . 291
- Be More Active during Screen Time 295
- Lifestyle Strategies for Successful Weight Management 298
- Guidelines for Effective Communication 327
- Dealing with Anger 329
- Mindfulness Meditation 333
- Sleep and Learning 338
- Overcoming Insomnia 339
- Warning Signs of Heart Attack, Stroke, and Cardiac Arrest 356
- Testicle Self-Examination 389
- Dealing with an Alcohol Emergency 408
- Drinking Behavior and Responsibility 411
- Using Male Condoms 435
- Protecting Yourself from STIs 439
- Checking Your Environmental Footprint 448
- Energy-Efficient Lighting 454
- Endocrine Disruption: A “New” Toxic Threat 459

### CRITICAL CONSUMER

- Evaluating Sources of Health Information 14
- Choosing a Fitness Center 46
- Choosing Exercise Footwear 84
- Choosing Healthy Beverages 216
- Using Food Labels 259
- Using Dietary Supplement Labels 261
- Is There a Perfect Diet for Weight Management? 294

- Choosing and Evaluating Mental Health Professionals 334
- Sunscreens and Sun-Protective Clothing 387
- Smoking Cessation Products 416
- Getting an HIV Test 433
- How to Be a Green Consumer 458

### DIVERSITY MATTERS

- Wellness Issues for Diverse Populations 9
- Fitness and Disability 36
- Benefits of Exercise for Older Adults 68
- Gender Differences in
  - Muscular Strength 101
- The Female Athlete Triad 188
- Ethnic Foods 265
- Gender, Ethnicity, and Body Image 289
- Diverse Populations, Discrimination,
  - and Stress in the Time of Pandemic 324
- Gender, Race/Ethnicity, and CVD 363
- Gender and Tobacco Use 413
- Poverty, Gender, and Environmental Health 460

### THE EVIDENCE FOR EXERCISE

- Does Being Physically Active Make a Difference in
  - How Long You Live? 11
- Exercise Is Good for Your Brain 32
- Combine Aerobic Exercise with Strength Training 69
- Benefits of Muscular Strength and Endurance 103
- Does Physical Activity Increase or Decrease
  - the Risk of Bone and Joint Disease? 150
- Why Is Physical Activity Important Even If Body
  - Composition Doesn't Change? 193
- The Importance of Reducing Sedentary Time 212
- Do Athletes Need a Different Diet? 257
- What Is the Best Way to Exercise for Weight Loss? 297
- Does Exercise Improve Mental Health? 325
- How Does Exercise Affect CVD Risk? 366
- How Does Exercise Affect Cancer Risk? 380
- How Does Exercise Help a Smoker Quit? 417
- Does Exercise Help Our Immune System? 431

### WELLNESS IN THE DIGITAL AGE

- Quantify Yourself 13
- Digital Workout Aids 45
- Fitness Trackers, Heart Rate Monitors,
  - Smart Watches, and GPS Devices 71
- At-Home Virtual Workouts 106
- Using BIA at Home 191
- Digital Motivation 214

Apps and Wearables for Weight Management 299

Digital Devices: Help or Harm for a Good Night's Sleep? 337

Electronic Health Records 391

## BEHAVIOR CHANGE WORKBOOK ACTIVITIES

### PART 1

#### DEVELOPING A PLAN FOR BEHAVIOR CHANGE AND COMPLETING A CONTRACT

1. Choosing a Target Behavior W-1
2. Gathering Information about Your Target Behavior W-1
3. Monitoring Your Current Patterns of Behavior W-2
4. Setting Goals W-3
5. Examining Your Attitudes about Your Target Behavior W-3
6. Choosing Rewards W-4
7. Breaking Behavior Chains W-4
8. Completing a Contract for Behavior Change W-7

### PART 2

#### OVERCOMING OBSTACLES TO BEHAVIOR CHANGE

9. Building Motivation and Commitment W-8
10. Managing Your Time Successfully W-9
11. Developing Realistic Self-Talk W-10
12. Involving the People around You W-11
13. Dealing with Feelings W-12
14. Overcoming Peer Pressure: Communicating Assertively W-13
15. Maintaining Your Program over Time W-14

## LABORATORY ACTIVITIES

**LAB 1.1** Your Wellness Profile 23

**LAB 1.2** Lifestyle Evaluation 25

**LAB 2.1** Safety of Exercise Participation: PAR-Q+ 49

**LAB 2.2** Overcoming Barriers to Being Active 53

**LAB 2.3** Using a Fitness Tracker or Smartphone Exercise App to Measure Physical Activity 57

**LAB 3.1** Assessing Your Current Level of Cardiorespiratory Endurance 87

**LAB 3.2** Developing an Exercise Program for Cardiorespiratory Endurance 95

**LAB 4.1** Assessing Your Current Level of Muscular Strength 135

**LAB 4.2** Assessing Your Current Level of Muscular Endurance 141

**LAB 4.3** Designing and Monitoring a Strength Training Program 145

**LAB 5.1** Assessing Your Current Level of Flexibility 171

**LAB 5.2** Creating a Personalized Program for Developing Flexibility 177

**LAB 5.3** Assessing Muscular Endurance for Low-Back Health 179

**LAB 6.1** Assessing Body Mass Index and Body Composition 197

**LAB 6.2** Setting Goals for Target Body Weight 205

**LAB 7.1** A Personal Fitness Program Plan and Agreement 229

**LAB 7.2** Getting to Know Your Fitness Facility 231

**LAB 8.1** Your Daily Diet versus MyPlate 275

**LAB 8.2** Dietary Analysis 277

**LAB 8.3** Informed Food Choices 279

**LAB 9.1** Evaluate Your Environment for Weight Management 307

**LAB 9.2** Identifying Weight-Loss Goals 309

**LAB 9.3** Checking for Body Image Problems and Eating Disorders 311

**LAB 10.1** Identifying Your Stress Level and Key Stressors 345

**LAB 10.2** Stress-Management Techniques 347

**LAB 10.3** Evaluating and Improving Sleep 349

**LAB 11.1** Cardiovascular Health 373

**LAB 12.1** Cancer Prevention 395

**LAB 13.1** Is Alcohol a Problem in Your Life? 421

**LAB 13.2** For Smokers Only: Why Do You Smoke? 423

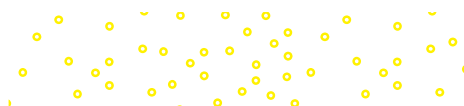
**LAB 14.1** Behaviors and Attitudes Related to STIs 443

**LAB 15.1** Environmental Health Checklist 467



**connect**<sup>®</sup>

The Behavior Change Workbook and the laboratory activities are also found in an interactive format in Connect ([connect.mheducation.com](http://connect.mheducation.com)).



# LEARN WITHOUT LIMITS

*Fit & Well* offers students the knowledge and skills they need to make meaningful and lasting behavior changes. Trusted science-based content has been shown to help students improve their exercise and eating habits, as well as to deal more effectively with stress.



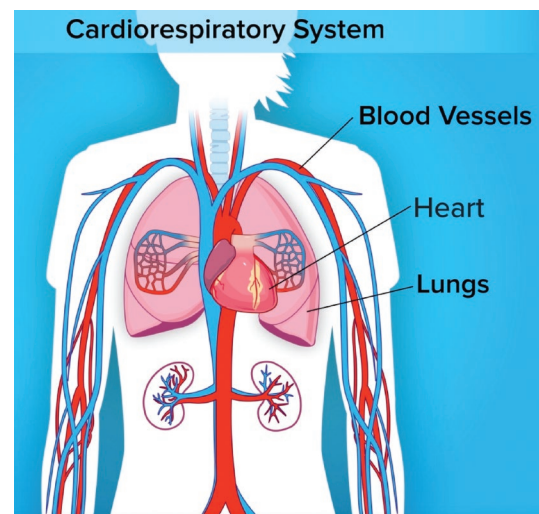
**McGraw Hill Connect** is a digital teaching and learning environment that improves performance over a variety of critical outcomes; it is easy to use, and it is proven effective. Connect® empowers students to achieve better outcomes by continually adapting to deliver precisely what they need, when they need it, and how they need it, so your class time is more engaging and effective. Connect strengthens the links between faculty, students, and coursework, allowing instructors and students to accomplish more in less time.

Connect for *Fit & Well* offers a wealth of interactive online content that allows students to apply key concepts to their own lives. Activities include fitness and wellness labs and self-assessments, video activities on timely health topics and exercise techniques, a behavior change workbook, and practice quizzes with immediate feedback. The Connect eBook makes it easy for students to access their reading materials on smartphones and tablets; they can study on the go and don't need internet access to use it.

McGraw Hill's **Application-Based Activities** are highly interactive, automatically graded, online learn-by-doing exercises that provide students the opportunity to assess their current fitness and wellness status and apply critical thinking skills to improve well-being. For this edition of *Fit & Well*, the Application-Based Activities include the Lab Activities and Behavior Change

Workbook from the text as well as additional self-assessments. Instructors have the option to assign privacy-enabled versions of the activities, which allow students to opt out of sharing their responses while being credited for completion of the activities within Connect. Aggregated self-assessment results for sections are also available for some Application-Based Activities.

Expanded for this edition are assignable and assessable **Concept Clips**, which help students master key personal health concepts. Using colorful animation and easy-to-understand audio narration, Concept Clips provide step-by-step presentations to promote student comprehension. Topics include the stages of change model, diabetes types and metabolism, changes to the Nutrition Facts label, the cardiorespiratory system, exercise program planning, the stress response, and sleep stages.



The screenshot displays the McGraw Hill Connect user interface. On the left, a sidebar titled 'Filter Results' allows users to filter by 'Activity Type' (Self-Assessments) and 'Keywords' (Alcohol, Alcohol Use Disorder, Assessing Physical Fitness, Behavior Change Planning, Body Image, COVID-19). The main content area is titled 'Application-Based Activities (ABA)' and lists several activities, including 'Lab 01.1 Your Wellness Profile' and 'Lab 01.2 Lifestyle Evaluation'. On the right, a 'Lifestyle Evaluation' quiz is shown, featuring a progress bar and two questions about exercise habits. The first question asks about moderate exercise, and the second asks about muscular strength exercises. Both questions have radio button options for 'Almost always', 'Sometimes', and 'Never'.

McGraw Hill



Also expanded are **NewsFlash** activities, which tie current news stories to key fitness and wellness concepts. After interacting with a contemporary news story, students are assessed on their understanding and their ability to make the connections between real-life events and course content. Examples of NewsFlash topics include the COVID-19 pandemic’s effect on mental health, racial health disparities, dangers of sedentary time, colon cancer screening, and low-fat versus low-carb diets.



**NutritionCalc Plus** is a powerful dietary analysis tool featuring more than 30,000 foods from the reliable and accurate ESHA Research nutrient database, which includes data from the latest USDA Standard Reference database, manufacturer’s data, restaurant data, and data from literature sources. NutritionCalc Plus allows users to track food and activities, and then analyze their choices with a robust selection of intuitive reports. The interface was updated to accommodate ADA requirements and modern mobile experience native to today’s students. This tool is provided at no additional charge within Connect for *Fit & Well*.



### Video Capture Powered by GoReact

With just a smartphone, tablet, or webcam, students and instructors can capture video with ease. Video Capture Powered by GoReact doesn’t require any extra equipment or complicated training. All it takes is five minutes to set up and start recording! Use Video Capture to create your own custom video capture assignment, including lab activities, exercises, presentations, self-review, and peer review. With customizable rubrics, time-coded comments, and visual markers, students will see feedback at exactly the right moment, and in context, to help improve their skills.

### Writing Assignment

The Writing Assignment tool within Connect delivers a learning experience to help students improve their written communication skills and conceptual understanding. As an instructor you can assign, monitor, grade, and provide feedback on writing more efficiently and effectively. Writing Assignment gives students an all-in-one location interface, so you can provide feedback more efficiently. Features include:

- Saved and reusable comments (text and audio)
- Ability to link to resources in comments
- Rubric building and scoring
- Ability to assign draft and final deadline milestones
- Tablet ready and tools for all learners



Available within Connect, **SmartBook 2.0** makes study time as productive and efficient as possible by identifying and closing knowledge gaps. SmartBook identifies what an individual student knows and doesn’t know based on the student’s confidence level, responses to questions, and other factors. SmartBook continually adapts to an individual student’s needs, creating a personalized learning experience for each student. SmartBook creates a more productive learning experience by focusing students on the concepts they need to study the most. Students spend less time on concepts they already understand and more time on those they don’t. This ensures that every minute spent with SmartBook is returned to the student as the most value-added minute possible. The result? More confidence, better grades, and greater success. Find out more about the powerful personalized learning experience in SmartBook 2.0 at [www.mheducation.com/highered/connect/smartbook](http://www.mheducation.com/highered/connect/smartbook).



Read or study when it’s convenient for you with McGraw Hill’s free ReadAnywhere app. Available for iOS or Android smartphones or tablets, ReadAnywhere gives users access to McGraw Hill tools including the eBook and SmartBook 2.0 or Adaptive Learning Assignments in Connect. Take notes, highlight, and complete assignments offline—all of your work will sync when you open the app with WiFi access. Log in with your McGraw Hill Connect username and password to start learning—anytime, anywhere!

# PROVEN, SCIENCE-BASED CONTENT

The digital teaching and learning tools within Connect are built on the solid foundation of *Fit & Well*'s authoritative, science-based content. *Fit & Well* is written by experts who work and teach in the fields of exercise science, physical education, and health education. *Fit & Well* provides accurate, reliable current information on key health and fitness topics while also addressing issues related to mind-body health, diversity, research, and consumer health.



**Wellness in the Digital Age** sections focus on the many fitness- and wellness-related devices and applications that are appearing every day.



**The Evidence for Exercise** sections demonstrate that physical activity and exercise recommendations are based on solid scientific evidence.



**Critical Consumer** boxes help students navigate the numerous and diverse set of health-related products currently available.



**Take Charge** features provide a wealth of practical advice for students on how to apply concepts from the text to their own lives.



**Diversity Matters** features address the ways that our biological and cultural differences influence our health strengths, risks, and behaviors.



**Fitness Tips** and **Wellness Tips** catch students' attention and get them thinking about—and acting to improve—their fitness and wellness.



**Hands-on lab activities** give students the opportunity to assess their current level of fitness and wellness and to create their own individualized programs for improvement.



**Exercise photos and online videos** demonstrate how to correctly perform exercises described in the text.

Wellness in Digital Age (smartwatch): Hong Li/DigitalVision/Getty Images; Evidence for Exercise (sneakers & stethoscope): Vstock LLC/Tetra Images/Getty Images; Critical Consumer (businessman): Sam74100/iStock/Getty Images; Take Charge (woman in red shirt): VisualCommunications/E+/Getty Images; Diversity Matters (large group): Robert Churchill/Rawpixel Ltd/iStockphoto/Getty Images; Fitness Tips (dumbbells): Fuse/Getty Images; Hands-on lab activities (tablet): Mark Dierker/McGraw Hill; Exercise photos and online videos (squat): Photo taken by Taylor Robertson Photography

# CHAPTER-BY-CHAPTER CHANGES IN *FIT & WELL*, 15TH EDITION

## Chapter 1: Introduction to Wellness, Fitness, and Lifestyle Management

- Updated statistics on leading causes of death and life expectancy
- New section on the concept of health span
- New discussion of disparities during the COVID-19 pandemic
- New illustration of relationship between life expectancy and healthy habits
- New illustration of relationship between social and environmental factors and rates of exercise
- Updated discussion of *Healthy People 2030*

## Chapter 2: Principles of Physical Fitness

- Updated American College of Sports Medicine (ACSM) recommendations for fitness programs
- New illustration of relationship between cardiorespiratory fitness and longevity
- Updated research on the cellular health benefits of exercise, the relationship between fitness and health span, and the impact of skill training on motor nerves
- Updated 2021 version of the PAR-Q+ Physical Activity Readiness Questionnaire for Everyone in Lab 2.1

## Chapter 3: Cardiorespiratory Endurance

- New illustration of relationship between physical activity intensity and all-cause mortality
- Updated American College of Sports Medicine (ACSM) recommendations for cardiorespiratory endurance fitness programs
- Updated research and information on benefits of cardiorespiratory endurance exercise and fitness trackers

## Chapter 4: Muscular Strength and Endurance

- New illustration of a motor unit
- New feature box titled “At-Home Virtual Workouts”
- New feature box titled “Harnessing Motor Control for Improving Skill and Power”
- Updated American College of Sports Medicine (ACSM) recommendations for muscle fitness programs

## Chapter 5: Flexibility and Low-Back Health

- New section on foam rolling
- Updated American College of Sports Medicine (ACSM) recommendations for stretching programs
- Updated research and information on benefits of maintaining flexibility

## Chapter 6: Body Composition

- Updated statistics on body composition, obesity, and diabetes
- Updated research and information on causes and health risks of overweight and obesity, including COVID-19

## Chapter 7: Putting Together a Complete Fitness Program

- Updated American College of Sports Medicine (ACSM) recommendations for fitness programs
- Updated information on popular exercise programming apps for smartphones

## Chapter 8: Nutrition

- Discussion of the *Dietary Guidelines for Americans, 2020–2025*
- Updated discussion of fats, dietary fiber, whole-grains, and other healthy choices within food groups
- Streamlined discussions of AMDRs, fats, and dietary fibers
- Updated statistics on current U.S. diet
- Expanded discussion of non-USDA eating plans, including the Harvard Healthy Eating Plate
- Updated and expanded discussion of plant-based diets
- Expanded material on culturally diverse diets

## Chapter 9: Weight Management

- Chapter reorganized to acknowledge the importance of self-esteem and body acceptance in the process of weight management; the chapter now focuses first on factors contributing to weight and body composition, and body image and eating disorders are also covered earlier in the chapter
- New figure titled “A Social-Ecological Model (SEM) for food and physical activity”
- Updated statistics on overweight, obesity, and eating disorders



- Updated discussion of factors impacting body weight and body composition and on selecting a dietary pattern for weight management
- New and expanded material on weight bias, excessive exercise, the Health at Every Size movement, disordered eating, and gaining weight
- Streamlined discussion of prescription drugs and surgery for treatment of obesity
- New lab activity titled “Evaluating Your Environment for Weight Management”

#### **Chapter 10: Stress Management and Sleep**

- Expanded coverage of physiological reactions to stressors, including the freeze response
- New discussion of the Adaptive Calibration Model of stress
- Updated statistics and discussion of sources of stress, including social media use and COVID-19
- Updated feature box on diverse populations and stress, with new section on the impact of the COVID-19 pandemic
- Updated research and discussion of social stressors that impact girls and women more than men and on the role of cultural background
- New question in the Common Questions Answered feature on the use of sleeping aids

#### **Chapter 11: Cardiovascular Health and Diabetes**

- Updated statistics and information on CVD types, CVD prevention, and diabetes
- New illustration of the prevalence of healthy and unhealthy lifestyle choices related to CVD risk
- Updated to acknowledge the importance of self-esteem and body acceptance in the process of weight management; the chapter now focuses information on CVD patterns and risk factors by gender and race/ethnicity

#### **Chapter 12: Cancer**

- Updated statistics on cancer cases and deaths
- Expanded discussion of cancer risks by gender and race/ethnicity
- New illustration describing how excess body fat can lead to cancer

- Updated research and discussion of how exercise affects cancer risk
- Updated discussion of risks factors and cancer prevention strategies

#### **Chapter 13: Substance Use and Misuse**

- Updated statistics on nonmedical drug use among Americans, binge drinking, vaping, tobacco use among different population groups, and medical marijuana
- Expanded examples of behavioral addictions such as sex addiction
- Updated discussion of the opioid epidemic
- New sections on the challenges of overdose prevention during the COVID-19 pandemic and on new psychoactive substances
- New illustration of the effects of increasing blood alcohol concentration
- Updated research and discussion of the role of exercise in quitting smoking

#### **Chapter 14: Sexual Wellness**

- Chapter revised to cover sexual wellness topics in addition to a streamlined discussion of sexually transmitted infections; new sections are included on sexual anatomy, sexual behavior, gender, sexual orientation, and contraception
- New illustration focused on contraceptive types and effectiveness
- Updated statistics on major STIs, HIV transmission, and sexual risk behaviors among college students
- Updated information on HIV testing, HPV vaccination, and PrEP for HIV

#### **Chapter 15: Environmental Health**

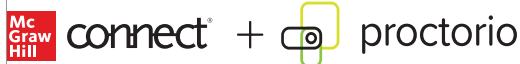
- Updated statistics on world population growth, components of solid waste, and greenhouse emissions
- Updated discussion of food and climate change and the impacts of climate change, including recent wildfires
- Updated discussion of disproportionate impacts of environmental health on certain population groups, including people of low income, women, and children

# YOUR COURSE, YOUR WAY



McGraw Hill's Content Collections Powered by Create® is a self-service website that enables instructors to create custom course materials—print and eBooks—by drawing upon McGraw Hill's comprehensive, cross-disciplinary content. Choose what you want from our high-quality textbooks, articles, and cases. Combine it with your own content quickly and easily, and tap into other rights-secured, third-party content such as readings, cases, and articles. Content can be arranged in a way that makes the most sense for your course and you can include the course name and information as well. Choose the best format for your course: color print, black-and-white print, or eBook. The eBook can be included in your Connect course and is available on the free ReadAnywhere app for smartphone or tablet access as well. When you are finished customizing, you will receive a free digital copy to review in just minutes! Visit McGraw Hill Create®—[www.mcgrawhillcreate.com](http://www.mcgrawhillcreate.com)—today and begin building!

## REMOTE PROCTORING & BROWSER-LOCKING CAPABILITIES



Remote proctoring and browser-locking capabilities, hosted by Proctorio within Connect, provide control of the assessment environment by enabling security options and verifying the identity of the student. Seamlessly integrated within Connect, these services allow instructors to control students' assessment experience by restricting browser activity, recording students' activity, and verifying students are doing their own work. Instant and detailed reporting gives instructors an at-a-glance view of potential academic integrity concerns, thereby avoiding personal bias and supporting evidence-based claims.

## OLC-ALIGNED COURSES

### Implementing High-Quality Online Instruction and Assessment through Preconfigured Courseware

In consultation with the Online Learning Consortium (OLC) and our certified Faculty Consultants, McGraw Hill has created pre-configured courseware using OLC's quality scorecard to align with best practices in online course delivery. This turnkey courseware contains a combination of formative assessments, summative assessments, homework, and application activities, and can easily be customized to meet an individual's needs and course outcomes. For more information, visit <https://www.mheducation.com/highered/olc>.

## TEGRITY: LECTURES 24/7

Tegrity in Connect is a tool that makes class time available 24/7 by automatically capturing every lecture. With a simple one-click start-and-stop process, you capture all computer screens and corresponding audio in a format that is easy to search, frame by frame. Students can replay any part of any class with easy-to-use, browser-based viewing on a PC, Mac, iPod, or other mobile device.

Educators know that the more students can see, hear, and experience class resources, the better they learn. In fact, studies prove it. Tegrity's unique search feature helps students efficiently find what they need, when they need it, across an entire semester of class recordings. Help turn your students' study time into learning moments immediately supported by your lecture. With Tegrity, you also increase intent listening and class participation by easing students' concerns about note-taking. Using Tegrity in Connect will make it more likely you will see students' faces, not the tops of their heads.

## INTEGRATION WITH YOUR LEARNING MANAGEMENT SYSTEM

McGraw Hill integrates your digital products from McGraw Hill Education with your school LMS for quick and easy access to best-in-class content and learning tools. Build an effective digital course, enroll students with ease, and discover how powerful digital teaching can be.

Available with Connect, integration is a pairing between an institution's learning management system (LMS) and Connect at the assignment level. It shares assignment information, grades, and calendar items from Connect into the LMS automatically, creating an easy-to-manage course for instructors and simple navigation for students.

## TRUSTED SERVICE AND SUPPORT

Connect offers comprehensive service, support, and training throughout every phase of your implementation. If you're looking for some guidance on how to use Connect or want to learn tips and tricks from super users, you can find tutorials as you work. Our Digital Faculty Consultants and Student Ambassadors offer insight into how to achieve the results you want with Connect: [www.mheducation.com/connect](http://www.mheducation.com/connect).

## INSTRUCTOR RESOURCES

Instructor resources available through Connect for *Fit & Well* include a course integrator guide, test bank, image bank, and PowerPoint presentations for each chapter.

Available within Connect, **Test Builder** is a cloud-based tool that enables instructors to format tests that can be printed, administered within a Learning Management System, or exported as a Word document of the test bank. Test Builder offers a modern, streamlined interface for easy content configuration that matches course needs, without requiring a download. Test Builder allows you to:

- access all test bank content from a particular title.
- easily pinpoint the most relevant content through robust filtering options.

ACKNOWLEDGMENTS

*Fit & Well* has benefited from the thoughtful commentary, expert knowledge, and helpful suggestions of many people. We are deeply grateful for their participation in the project.

Academic Advisors and Reviewers

Caitlyn Browning, *Belmont University*  
Natalie Carter, *Broward College-South*  
Anna L. Cass, *Furman University*  
Anthony Caterisano, *Furman University*  
Karen Dennis, *Illinois State University*  
Greg Ehlers, *Concordia University Wisconsin*  
Jay Garrels, *Saint Peter's University*  
Cameron M. Geisert, *Wayne State College*  
Kenneth Grant Darnell, *Wayne State College*  
Britton Johnson, *Missouri Western State University*  
Justin Kraft, *Missouri Western State University*

- manipulate the order of questions or scramble questions and/or answers.
- pin questions to a specific location within a test.
- determine your preferred treatment of algorithmic questions.
- choose the layout and spacing.
- 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.

Nicholas D. Luden, *James Madison University*  
Keith McKelphin, *Montgomery College*  
Scott Murr, *Furman University*  
Laura Pipe, *UNC-Greensboro*  
Shannon Powers, *Ball State University*  
Scott Rogers, *College of Southern Idaho*  
Matthew Sanders, *Butler Community College*  
Eric Sobolewski, *Furman University*  
Martha Stephenson, *San Antonio College*  
Shinya Takahashi, *University of Nebraska-Lincoln*  
Jason Talanian, *Fitchburg State University*  
Daniela Terson de Paleville, *University of Louisville*  
Laura Wheatley, *Utah Valley University*  
Jennifer Wilson, *Belmont University*  
Jeffrey Wimer, *Millersville University*







# connect<sup>®</sup>

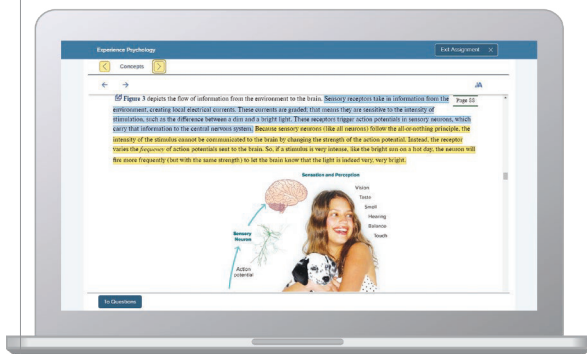
## Instructors: Student Success Starts with You

### Tools to enhance your unique voice

Want to build your own course? No problem. Prefer to use an OLC-aligned, prebuilt course? Easy. Want to make changes throughout the semester? Sure. And you'll save time with Connect's auto-grading too.

# 65%

Less Time  
Grading



Laptop: McGraw Hill; Woman/dog: George Doyle/Getty Images

### Study made personal

Incorporate adaptive study resources like SmartBook<sup>®</sup> 2.0 into your course and help your students be better prepared in less time. Learn more about the powerful personalized learning experience available in SmartBook 2.0 at [www.mheducation.com/highered/connect/smartbook](http://www.mheducation.com/highered/connect/smartbook)

### Affordable solutions, added value



Make technology work for you with LMS integration for single sign-on access, mobile access to the digital textbook, and reports to quickly show you how each of your students is doing. And with our Inclusive Access program you can provide all these tools at a discount to your students. Ask your McGraw Hill representative for more information.

Padlock: Jobalou/Getty Images

### Solutions for your challenges



A product isn't a solution. Real solutions are affordable, reliable, and come with training and ongoing support when you need it and how you want it. Visit **[www.supportateverystep.com](http://www.supportateverystep.com)** for videos and resources both you and your students can use throughout the semester.

Checkmark: Jobalou/Getty Images

**SUPPORT** <sup>AT</sup>  
*every step*

## Students: Get Learning that Fits You

### Effective tools for efficient studying

Connect is designed to help you be more productive with simple, flexible, intuitive tools that maximize your study time and meet your individual learning needs. Get learning that works for you with Connect.

### Study anytime, anywhere

Download the free ReadAnywhere app and access your online eBook, SmartBook 2.0, or Adaptive Learning Assignments when it's convenient, even if you're offline. And since the app automatically syncs with your Connect account, all of your work is available every time you open it. Find out more at [www.mheducation.com/readanywhere](http://www.mheducation.com/readanywhere)

*"I really liked this app—it made it easy to study when you don't have your textbook in front of you."*

- Jordan Cunningham,  
Eastern Washington University



Calendar: owattaphotos/Getty Images

### Everything you need in one place

Your Connect course has everything you need—whether reading on your digital eBook or completing assignments for class, Connect makes it easy to get your work done.

### Learning for everyone

McGraw Hill works directly with Accessibility Services Departments and faculty to meet the learning needs of all students. Please contact your Accessibility Services Office and ask them to email [accessibility@mheducation.com](mailto:accessibility@mheducation.com), or visit [www.mheducation.com/about/accessibility](http://www.mheducation.com/about/accessibility) for more information.

Top: Jenner Images/Getty Images, Left: Hero Images/Getty Images, Right: Hero Images/Getty Images



# FIT&WELL

**Core Concepts and Labs in Physical Fitness and Wellness**



## CHAPTER

## 1

# Introduction to Wellness, Fitness, and Lifestyle Management

## LOOKING AHEAD...

After reading this chapter, you should be able to

- Describe the dimensions of wellness.
- Identify the major health and lifestyle problems in the United States today.
- Describe the behaviors that are part of a wellness lifestyle.
- Evaluate some of the available sources of wellness information.
- Create a behavior management plan.

## TEST YOUR KNOWLEDGE

1. Which of the following lifestyle factors is the leading preventable cause of death for Americans?
  - a. excess alcohol consumption
  - b. cigarette smoking
  - c. obesity
2. The terms *health* and *wellness* mean the same thing. True or false?
3. A person's genetic makeup determines whether they will develop certain diseases (such as breast cancer), regardless of that person's health habits. True or false?

*See answers on the next page.*



iStock/Getty Images



**W**hen was the last time you felt truly healthy? Not just free from illness, but energized, hungry, and flexible, like all your muscles just got a good stretching or working out? Many of us do not feel this way. We're overweight; we smoke; we eat a lot of sugar; we don't sleep well. We may be surrounded by people who might be contagious, or we might be contagious ourselves.

The good news? There is always something we could be improving. This book can help you learn about the many aspects of life that work together to get you feeling on top of your game. Let's set some goals and make some changes!

## WELLNESS: NEW HEALTH GOALS

Generations of people have viewed health simply as the absence of disease, and that view largely prevails today. The word **health** typically refers to the overall condition of a person's body or mind and to the presence or absence of illness or injury. **Wellness** expands this idea of health to include our ability to achieve optimal health and vitality—to living life to its fullest. Although we use the terms *health* and *wellness* interchangeably in this book, they differ in two important ways:

- Health—or some aspects of it—can be determined or influenced by factors beyond your control, such as your genes, age, and family history. For example, a man with a family history of prostate cancer will have a higher-than-average risk for developing prostate cancer.
- Wellness is largely determined by the decisions you make about how you live. That same man can reduce his risk of cancer by eating sensibly, exercising, and having regular screening tests. Even if he develops the disease, he may still reduce its effects and live a rich, meaningful life. This means not only caring for himself physically, but also maintaining a positive outlook, keeping up his relationships with others, challenging himself intellectually, and nurturing other aspects of his life.

Wellness, therefore, involves making conscious decisions to control **risk factors** that contribute to disease or injury. Age and family history are risk factors you cannot control. Behaviors such as exercising, eating a healthy diet, and choosing not to smoke are well within your control.

## The Dimensions of Wellness

The concept of wellness encompasses nine dimensions, all of which contribute to overall wellness. These dimensions are

### Answers (Test Your Knowledge)

1. **b.** Smoking causes about 480,000 deaths per year. But obesity is a close second, if not equal, contributor to premature deaths.
2. **False.** Although the words are used interchangeably, they have different meanings. The term *health* refers to the overall condition of the body or mind and to the presence or absence of illness or injury. The term *wellness* refers to optimal health and vitality, encompassing all the dimensions of well-being.
3. **False.** In many cases, behavior can tip the balance toward good health even when heredity or environment is a negative factor.

physical, emotional, intellectual, interpersonal, cultural, spiritual, environmental, financial, and occupational. The process of achieving wellness is continuing and dynamic, involving change and growth. Each dimension affects the others. Figure 1.1 lists specific qualities and behaviors associated with the nine dimensions of wellness. Ignoring any dimension of wellness can have harmful effects on your life. The following sections briefly introduce the dimensions of wellness. Lab 1.1 will help you learn what wellness means to you, what your wellness strengths and weaknesses are, and where you rate in each dimension on a continuum from low to high wellness.

**Physical Wellness** Your physical wellness includes not just your body's overall condition and the absence of disease, but also your fitness level and your ability to care for yourself. The higher your fitness level, the higher your level of physical wellness. Similarly, as you take better care of your own physical needs, you ensure greater physical wellness. The decisions you make now—and the habits you develop over your lifetime—will largely determine the length and quality of your life.



**Wellness Tip** Enhancing one dimension of wellness can have positive effects on others. For example, joining a meditation group can help you enhance your spiritual well-being, but it can also affect the emotional and interpersonal dimensions of wellness by enabling you to meet new people and develop new friendships.

Jonathan Goldberg/Alamy Stock Photo



**Figure 1.1** Qualities and behaviors associated with the dimensions of wellness.

**Emotional Wellness** Your emotional wellness reflects your ability to understand and deal with your feelings. It involves attending to your own thoughts and feelings, monitoring your reactions, and identifying obstacles to emotional stability. *Self-acceptance* is your personal satisfaction with yourself, which might exclude society's expectations, whereas *self-esteem* relates to the way you think others perceive you. *Self-confidence* can be a part of both acceptance and esteem. Achieving this type of wellness means finding solutions to emotional problems, with professional help if necessary.

**Intellectual Wellness** Intellectual wellness develops by continually challenging the mind. An active, curious mind is essential to wellness because it detects problems and seeks solutions to questions about the self and the larger world. People who enjoy intellectual wellness never stop learning. They seek out and relish new experiences and challenges.

**Interpersonal Wellness** Satisfying and supportive relationships are important to physical and emotional wellness. Learning good communication skills, developing the capacity for intimacy, and cultivating a supportive network are all important to interpersonal (social) wellness. Social wellness requires participating in and contributing to your community and to society.

**Cultural Wellness** Cultural wellness refers to the way you interact with others who are different from you in terms of ethnicity, religion, gender, sexual orientation, age, and customs

(practices). It involves creating relationships with others and suspending judgment on others' behavior until you have lived with them or "walked in their shoes." It also includes accepting, valuing, and even celebrating the different cultural ways people interact in the world. The extent to which you value your own and others' cultural identities is one measure of cultural wellness.

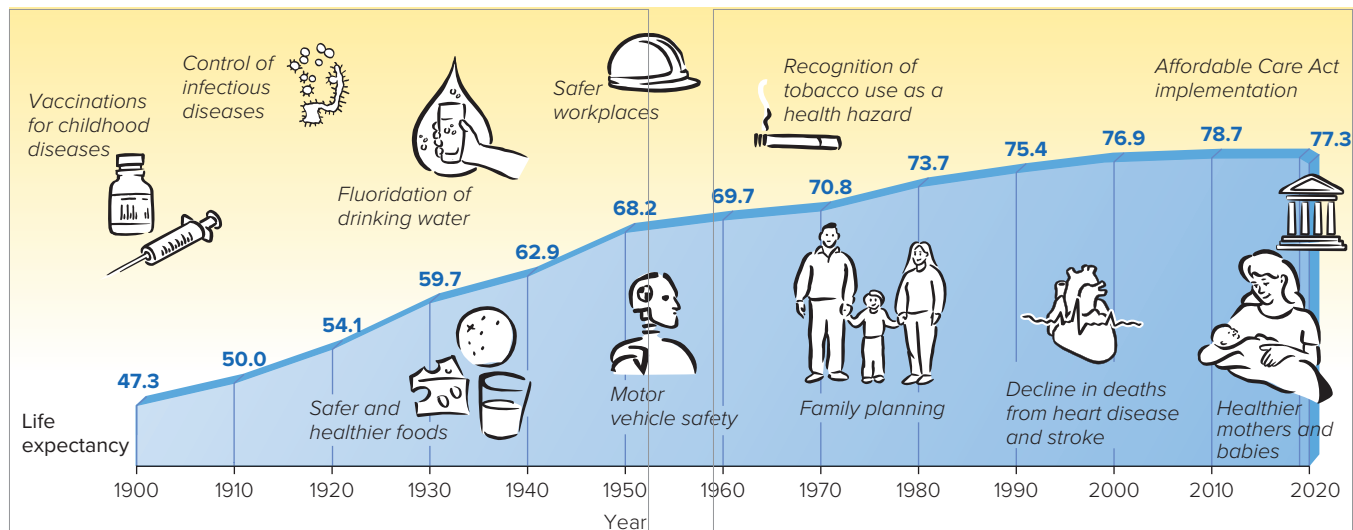
**Spiritual Wellness** To enjoy spiritual wellness is to possess a set of guiding beliefs, principles, or values that give meaning and purpose to your life, especially in difficult times. The well person uses spirituality to focus on positive aspects of life and to fend off negative feelings such as cynicism, anger, and pessimism. Organized religions help many people develop spiritual health. Religion, however, is not the only source or form of spiritual wellness. Many people find meaning and purpose in their lives on their own—through nature, art, meditation, or good works—or with their loved ones.

**health** The overall condition of body or mind and the presence or absence of illness or injury.

#### TERMS

**wellness** Optimal health and vitality, encompassing all dimensions of well-being.

**risk factor** A condition that increases one's chances of disease or injury.



**Figure 1.2 Public health and life expectancy of Americans from birth.** Public health achievements during the 20th and 21st centuries are credited with adding more than 25 years to life expectancy for Americans, greatly improving quality of life, and dramatically reducing deaths from infectious diseases. Recent public health improvements include greater roadway safety, a steep decline in childhood lead poisoning, and an expansion of health insurance coverage. The decline in life expectancy in 2020, especially for Black and Hispanic people, was attributed primarily to the COVID-19 pandemic, which became the third-leading cause of death that year; but the opioid and obesity epidemics were also responsible for recent life expectancy declines.

**SOURCES:** Arias, E., B. Tejada-Vera, et al. 2021. Provisional life expectancy estimates for 2020. *Vital Statistics Rapid Release*, No. 15. Hyattsville, MD: National Center for Health Statistics. <https://dx.doi.org/10.15620/cdc:107201>; Centers for Disease Control and Prevention. 1999. Ten great public health achievements—United States, 1900–1999. *MMWR* 48(50): 1141.

**Environmental Wellness** Your environmental wellness is defined by the livability of your surroundings. Personal health depends on the health of the planet—from the safety of the food supply to the degree of violence in society. Access to nutritious food and physical safety in your own neighborhood can also have profound effects on your environmental wellness. To improve your environmental wellness, you can learn about and protect yourself against hazards in your surroundings and work to make your world a cleaner, safer, and more beautiful place.

**Financial Wellness** Financial wellness refers to your ability to live within your means and manage your money in a way that gives you peace of mind. It includes balancing your income and expenses, staying out of debt, saving for the future, and understanding your emotions related to money. For more on this topic, see the box “Financial Wellness.”

**Occupational Wellness** Occupational wellness refers to the level of happiness and fulfillment you gain through your work. High salaries and prestigious titles can be gratifying, but they alone do not bring about occupational wellness. Your occupational wellness depends on liking your work, feeling connected with others in the workplace, and feeling as though you’re learning something and making a contribution. Another important aspect of occupational wellness is recognition from managers and colleagues.

## New Opportunities for Taking Charge

In the 19th and early 20th centuries, Americans considered themselves lucky just to survive to adulthood. A boy born in

1850, for example, could expect to live only about 38 years, and a girl, 40 years. Many people died from common **infectious diseases** (such as pneumonia, tuberculosis, or diarrhea) and poor environmental conditions (such as water pollution and poor sanitation).

By 2000, however, life expectancy nearly doubled (Figure 1.2). This increase in life span is due largely to the development of vaccines and antibiotics to fight infections, and to public health measures to improve living conditions. The health of our society at large also relies on social movements: Social activists help bring scientific breakthroughs to the general public—for example, promoting pasteurization of milk, wider access to safe drinking water, and use of vaccines and masks during infectious disease outbreaks.

While life expectancy has consistently increased in the United States each decade since 1850, the rate of improvement has slowed and, in some recent years, actually declined—even without factoring in the COVID-19 pandemic. The long-term impact of COVID-19 on death rates and life expectancy is not yet known. The recent declines in life expectancy are generally attributed to increases in rates of drug overdose, suicide, and obesity. Medical treatments may be reaching their limits in treating heart disease and in preventing other early deaths related to obesity. Moreover, people are developing obesity at earlier ages, exposing them to the adverse effects of excess body

**infectious disease** A disease that can spread from person to person, and which is caused by microorganisms such as bacteria and viruses.

### TERMS



## TAKE CHARGE

### Financial Wellness



Many students feel less prepared to manage their money than to handle almost any other aspect of college life. Compared to a 2016 study on students' financial behaviors, an identical 2019 study reveals that fewer students reported paying bills on time, saving money, and avoiding spending money they don't have. Compared to college graduates and those who did not complete college, students were least likely to know their credit score; they also scored lower on tests about financial literacy and money-management skills. Financial wellness means having a healthy relationship with money. Here are strategies for establishing that relationship:

#### Follow a Budget

A budget is a way of tracking where your money goes and making sure you're spending it on the things that are most important to you. Start by listing your monthly income and your expenditures. If you aren't sure where you spend your money, track your expenses for a few weeks or a month. Then organize them into categories, such as housing, food, transportation, entertainment, services, personal care, clothes, books and school supplies, health care, loan payments, and miscellaneous. Knowing where your money goes is the first step in achieving control of it.

#### Be Wary of Credit Cards

Students have easy access to credit but little training in finances. Nearly half of students use a credit card, with an average monthly balance of \$1,183. Many pay credit card bills late, pay only the minimum amount, and have large total outstanding credit balances.

Shifting away from credit and toward debit cards is a good strategy for staying out of debt. More students now use mobile payment services like PayPal and Venmo, and the majority link their debit cards to it. Familiarity with financial terminology helps as well. Basic financial literacy with using credit cards involves understanding terms like APR (annual percentage rate—the interest you're charged on your balance), credit limit (the maximum amount you can borrow), minimum monthly payment (the smallest payment your creditor will accept each month), grace period (the number of days you have to pay your bill before interest or penalties are charged), and over-the-limit and late fees (the amounts you'll be charged if you go over your credit limit or your payment is late).

#### Manage Your Debt and Get Politically Active

One-fifth of students with debts are behind in their payments. When it comes to student loans, having a personal plan for repayment can save time and money, reduce stress, and help you prepare for the future. However, only about 10% of students feel they have all the information needed to pay off their loans. Work with your lender and make sure you know how to access your balance, when to start repayment, how to make payments, what your repayment plan options are,

and what to do if you have trouble making payments. Information on managing federal student loans is available from <https://studentaid.ed.gov/sa/>.

Your student debt may reflect circumstances beyond your control. For example, financial aid programs may require students to hold down jobs while also maintaining certain grade point averages. Consider contacting policymakers and asking them to pass measures to help students in need. One suggestion is for the Free Application for Federal Student Aid (FAFSA) to take into account how much debt a family or student already has when determining how much aid to grant.

#### Start Saving

If you start saving early, the same miracle of compound interest that locks you into years of credit card debt can work to your benefit (for an online compound interest calculator, visit [www.interestcalc.org](http://www.interestcalc.org)). Experts recommend “paying yourself first” every month—that is, putting some money into savings before you start paying your bills. If you work for a company with a 401(k) retirement plan, contribute as much as you can every pay period.

#### Become Financially Literate

Most Americans have not received basic financial training. For this reason, the U.S. government has established the Financial Literacy and Education Commission (MyMoney.gov) to help Americans learn how to save, invest, and manage money better. Developing lifelong financial skills should begin in early adulthood, during the college years, if not earlier, as money-management experience appears to have a more direct effect on financial knowledge than does education. For example, when tested on their basic financial literacy, students who had checking accounts had higher scores than those who did not.



Panuwat Phimpha/Shutterstock

**SOURCES:** Sallie Mae and Ipsos Public Affairs. 2019. *Majoring in Money 2019* ([www.salliemae.com/assets/about/who\\_we\\_are/Majoring-In-Money-Report-2019.pdf](http://www.salliemae.com/assets/about/who_we_are/Majoring-In-Money-Report-2019.pdf)); Smith, C., and G. A. Barboza. 2013. The role of trans-generational financial knowledge and self-reported financial literacy on borrowing practices and debt accumulation of college students. Social Science Research Network (<http://ssrn.com/abstract=2342168>); EverFi. 2019 *Money Matters on Campus* (<https://everfi.com/wp-content/uploads/2019/05/MoneyMatters-2019.pdf>).

**Table 1.1** Leading Causes of Death in the United States, 2020

VITAL STATISTICS				
RANK	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENTAGE OF TOTAL DEATHS	LIFESTYLE FACTORS
1	Heart disease	690,882	20.6	D I S A O
2	Cancer	598,932	17.8	D I S A O
3	COVID-19	345,323	10.2	D I S A O
4	Unintentional injuries	192,175	5.7	I S A
5	Stroke	159,050	4.7	D I S A O
6	Chronic lower respiratory diseases	151,637	4.5	D I S A O
7	Alzheimer disease	133,382	4.0	I S
8	Diabetes mellitus	101,106	3.0	D I S A O
9	Influenza and pneumonia	53,495	1.6	S A
10	Kidney disease	52,260	1.6	S A O
11	Intentional self-harm (suicide)	44,834	1.3	A
	All causes	3,358,814	100.0	
<b>Key</b> <b>D</b> Diet plays a part <b>S</b> Smoking plays a part <b>I</b> Inactive lifestyle plays a part <b>A</b> Excessive alcohol use plays a part <b>O</b> Obesity is a contributing factor				
<b>NOTE:</b> Although not among the overall top 10 causes of death, HIV/AIDS (5,044 deaths in 2019) is a major killer. In 2019, HIV/AIDS was the tenth-leading cause of death for Americans aged 25–34 years.				
<b>SOURCE:</b> Ahmad, F. B., et al. 2021. The leading causes of death in the US for 2020. <i>JAMA</i> (Doi:10.1001/jama.2021.5469); Xu, J.Q., et al. 2021. Deaths: Final data for 2019. <i>National Vital Statistics Reports</i> , vol. 70, no. 8. NHyattsville, MD: National Center for Health Statistics. <a href="https://dx.doi.org/10.15620/cdc:106058">https://dx.doi.org/10.15620/cdc:106058</a> ; Centers for Disease Control and Prevention. 2020. <i>COVID-19: Assessing Risk Factors</i> ( <a href="https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/assessing-risk-factors.html">https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/assessing-risk-factors.html</a> ).				

fat over a longer period of time. Obesity and poor eating habits contribute to all the major chronic diseases. Heart disease and cancer, now the top two leading causes of death for Americans, are **chronic diseases** (Table 1.1).

Despite spending more money per person on health care, U.S. life expectancy is lower than that in nearly all other high-income countries. U.S. health care often focuses more on treatment of disease than on prevention.

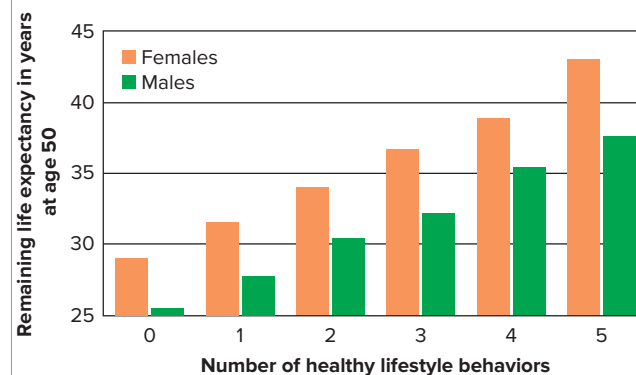
However, research has shown that **lifestyle choices** count. In an analysis of data for over 125,000 people, healthy lifestyle choices—never smoking, maintaining a healthy weight, getting regular physical activity, eating a healthy diet, and keeping alcohol consumption moderate—were found to significantly raise life expectancy (Figure 1.3). The greater the number of healthy choices adopted, the bigger the increase. Table 1.1 helps illustrate why, highlighting strong links between lifestyle factors and the leading causes of death among Americans, including COVID-19. For young adults, healthy choices related to safety behaviors are

**chronic disease** A disease that develops and continues over a long period of time, such as heart disease or cancer.

**lifestyle choice** A conscious behavior that can increase or decrease a person's risk of disease or injury; such behaviors include decisions regarding smoking, eating a healthy diet, exercising, and using alcohol.

**health span** How long we stay healthy and free from chronic or disabling disease.

#### TERMS



**Figure 1.3 Life expectancy and healthy habits.** Researchers found that engaging in healthy habits was associated with increased life expectancy, with the longest life expectancy seen among those with the largest number of healthy habits. The five healthy habits examined in this analysis were not smoking, exercising regularly, eating well, drinking alcohol in moderation, and maintaining a normal body weight.

**SOURCE:** Li, Y., et al. 2018. Impact of healthy lifestyle factors on life expectancies in the US population. *Circulation* 138(4): 345–355.

also critical, as injuries are the leading cause of death among those aged 15–24 years (Table 1.2).

Lifestyle factors impact both quantity and quality of life. The major difference between life span (how long we live) and **health span** (how long we stay healthy) is freedom from chronic or disabling disease. Healthy lifestyle choices help delay, prevent, or reduce the impact of chronic diseases.

VITAL STATISTICS			
Table 1.2 Leading Causes of Death among Americans Aged 15–24, 2019			
RANK	CAUSE OF DEATH	NUMBER OF DEATHS	PERCENTAGE OF TOTAL DEATHS
1	Unintentional injuries	11,755	39.5
	Motor vehicle	(5,867)	19.7
	Poisoning*	(4,346)	14.6
2	Suicide	5,954	20.0
3	Homicide	4,774	16.0
4	Cancer	1,388	4.7
5	Heart disease	872	2.9
	Other causes	5,024	16.9
	All causes	29,767	100.0

\*Poisoning deaths in this age group are primarily due to drug and alcohol overdose.

**SOURCE:** Centers for Disease Control and Prevention. 2021. 10 leading causes of death by age group, United States, 2019. *Web-Based Injury Statistics Query and Reporting System* ([www.cdc.gov/injury/wisqars](http://www.cdc.gov/injury/wisqars)).

Most Americans contend with some level of physical and cognitive impairment during the last 15% of their lives. Another important factor in overall quality of life is level of happiness. An analysis of responses to the Health and Retirement Study from 11,964 older adults found that happiness and cognitive impairment are not closely linked; we can expect to live happy years, even if they overlap with cognitive impairment.

While healthy lifestyle habits are often viewed as individual choices, they are impacted by environmental and social context. Figure 1.4 illustrates how widely one lifestyle behavior—exercise—varies among people in different income and education groups and in different parts of the country. Consider how external factors might influence your own health habits.

## National Health

Wellness is a personal concern, but the U.S. government has financial and humanitarian interests in it, too. A healthy population is the nation's source of vitality, creativity, and wealth. Poor health drains the nation's resources and raises health care costs for all.

**Health Insurance Options** The Affordable Care Act (ACA), also called “Obamacare,” was signed into law on March 23, 2010. It has remained in effect since that time, although certain provisions have been altered.

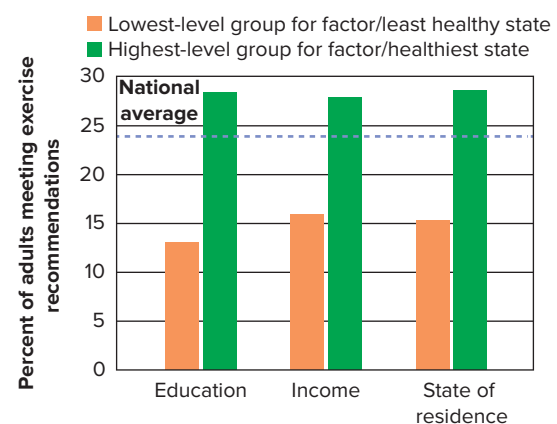
**FINDING A PLAN** Under the ACA, health insurance marketplaces, also called health exchanges, facilitate the purchase of health insurance at the state level. The health exchanges provide a selection of government-regulated health care plans that students and others may choose from. Those who are below income requirements are eligible for federal help with the premiums.

Many employers and universities also offer health insurance to their employees and students. Small businesses and members of certain associations may also be able to purchase insurance through membership in a professional group.

**BENEFITS TO COLLEGE STUDENTS** The ACA permits young adults to stay on their parents' health insurance plans until age 26—even if they are married or have access to coverage through an employer. Students not on their parents' plans who do not want to purchase insurance through their schools can do so through a health insurance marketplace.

Young, healthy people may be tempted to buy a “catastrophic” health plan. Such plans tend to have low premiums but require you to pay all medical costs up to a certain amount, usually several thousand dollars. This can be risky if you select a plan that does not cover the ACA's 10 essential benefits: outpatient care, emergency services, hospitalization, maternity care, mental health and substance use treatment, prescription drugs, rehabilitative services and devices, lab services, preventive services and chronic disease management, and pediatric care. It's recommended that everyone select a plan that covers all of these important types of care.

Students whose income is below a certain level may qualify for Medicaid. Check with your state. Individuals with nonimmigrant status, which includes worker visas and student visas, qualify for insurance coverage through the exchanges. You can browse plans and apply for coverage at [www.healthcare.gov](http://www.healthcare.gov).



**Figure 1.4 Differences in rates of exercise associated with social and environmental factors.** The overall proportion of U.S. adults who meet the federal recommendations for aerobic and muscle-strengthening exercise is 24%, but that value masks significant variations, especially in education, income, and geography. Exercise rates are 2.2 times higher among college graduates than among those with less than a high school education, 1.8 times higher among adults with a high annual household income (\$75,000 or more) than for those with a low income (less than \$25,000), and 1.9 times higher in the state with the highest rate compared to the state with the lowest rate.

**SOURCES:** United Health Foundation. 2020. *America's Health Rankings Annual Report, 2020* ([www.americashealthrankings.org/learn/reports/2020-annual-report](http://www.americashealthrankings.org/learn/reports/2020-annual-report)); U.S. Department of Health and Human Services. 2020. *Healthy People 2020: An End of Decade Snapshot* (<https://health.gov/our-work/healthy-people/assessing-healthy-people-2020>).

**Table 1.3** Progress toward *Healthy People* Targets

OBJECTIVE	BASELINE (% MEETING GOAL IN 2008)	MOST RECENT PROGRESS (% MEETING GOAL IN 2016–18)	TARGET (% BY 2030)
Increase proportion of people with health insurance	83.2	89.0	92.1
Reduce proportion of adults with hypertension	29.9	29.5	27.7
Reduce proportion of adults with obesity	33.9	38.6	36.0
Reduce proportion of adults who engaged in binge drinking in past 30 days	28.2	26.6	25.4
Increase proportion of adults who meet federal guidelines for exercise	18.2	24.0	28.4
Reduce proportion of adults who smoke cigarettes	20.6	13.9	5.0

**SOURCE:** U.S. Department of Health and Human Services. *Healthy People 2020* data search ([www.healthypeople.gov/2020/data-search/Search-the-Data](http://www.healthypeople.gov/2020/data-search/Search-the-Data)).  
U.S. Department of Health and Human Services. *Healthy People 2030* (<https://health.gov/healthypeople>).

**The Healthy People Initiative** The national *Healthy People* initiative aims to prevent disease and improve Americans' quality of life. *Healthy People* reports, published each decade since 1980, set national health goals based on 10-year agendas. *Healthy People 2030* sets the following overarching goals:

- Attain healthy, thriving lives and well-being free of preventable disease, disability, injury, and premature death.
- Eliminate health disparities, achieve health equity, and attain health literacy to improve the health and well-being of all.
- Create social, physical, and economic environments that promote attaining the full potential for health and well-being for all.
- Promote healthy development, healthy behaviors, and well-being across all life stages.
- Engage people across multiple sectors to take action and design policies that improve the health and well-being of all.

Examples of selected individual health-promotion goals from the most recent *Healthy People* report, along with estimated progress, appear in Table 1.3.

*Healthy People 2030* continues to emphasize social determinants of health, which are conditions in the places where we live, work, learn, and play that affect health risks and outcomes. Social determinants include health care access, education quality, economic stability, neighborhoods and the built environment, and the overall social and community context. Social determinants contribute to health disparities—health differences linked with social, economic, and environmental disadvantages that disproportionately affect certain groups. Health disparities were highlighted during the COVID-19 pandemic (see the box “Wellness Issues for Diverse Populations”).

## Behaviors That Contribute to Wellness

A lifestyle based on good choices and healthy behaviors maximizes quality of life. It helps people avoid disease, remain strong and fit, and maintain their physical and mental health as long as they live.

**Be Physically Active** The human body is designed to be active. It readily adapts to nearly any level of activity and exertion. **Physical fitness** is a set of physical attributes that allows the body to respond or adapt to the demands and stress of physical effort. The more we ask of our bodies, the stronger and more fit they become. When our bodies are not kept active, they deteriorate: Bones lose density, joints stiffen, muscles become weak, and cellular energy systems degenerate. To be truly well, human beings must be active.

Unfortunately, a **sedentary** lifestyle is common among Americans. According to the U.S. Department of Health and Human Services, only 27% of men, 20% of women, and 20% of adolescents meet the federal physical activity guidelines for aerobic physical activity (150 minutes or more per week of moderate aerobic exercise or 75 minutes per week of vigorous aerobic exercise) and muscle-strengthening activity. The older the adults, the less likely they are to meet the guidelines.

The benefits of physical activity are both physical and mental, immediate and long term (Figure 1.5). In the short term, being physically fit makes it easier to do everyday tasks, such as lifting; it provides reserve strength for emergencies; and it helps people look and feel good. In the long term, being physically fit confers protection against chronic diseases and lowers the risk of dying prematurely. (See the box “Does Being Physically Active Make a Difference in How Long You Live?”) Physically active people are less likely to develop or die from heart disease, respiratory disease, high blood pressure, cancer, osteoporosis, and type 2 diabetes (the most common form of diabetes). As they get older, they may be able to avoid weight gain, muscle and bone loss, fatigue, and other problems associated with aging.

**Choose a Healthy Diet** In addition to being sedentary, many Americans have a diet that is too high in calories, unhealthy fats, and added sugars, as well as too low in fiber, complex

**physical fitness** A set of physical attributes that allows the body to respond or adapt to the demands and stress of physical effort.

### TERMS

**sedentary** Physically inactive; literally, “sitting.”



## DIVERSITY MATTERS

### Wellness Issues for Diverse Populations



We all need to exercise, eat well, manage stress, and cultivate positive relationships. Protecting ourselves from disease and injuries is important, too. But some of our differences—both as individuals and as members of groups—have important implications for wellness. These differences can be biological (determined genetically) or cultural (acquired as patterns of behavior through daily interactions with family, community, and society). Many health conditions are a function of biology and culture combined. You share patterns of influences with others; and information about groups can be useful in identifying areas that may be of concern to you and your family.

#### Disparities in Health

**Sex and Gender.** Sex represents biological and physiological characteristics, whereas *gender* refers to how people identify themselves and also the roles, behaviors, activities, and attributes that a given society considers appropriate. A person's gender is rooted in biology and physiology, but it is shaped by experience and environment—how society responds to individuals based on their sex. Examples of gender-related characteristics that affect wellness include the higher rates of smoking and drinking found among men and the lower earnings of women even when doing the same or similar work as men.

**Race and Ethnicity.** Although the concept of race is complex, with the number of people who identify themselves as biracial or multiracial growing, it is still useful to identify and track health risks among population groups. Some diseases are concentrated in certain gene pools, the result of each racial or ethnic group's relatively distinct history. Racial and ethnic groups may vary in their traditional diets; their family and interpersonal

relationships; their attitudes toward tobacco, alcohol, and other drugs; and their health beliefs and practices.

**Income and Education.** Of all the variables, inequalities in income and education are the most highly correlated to health status. Income and education are closely related, and groups with the highest poverty rates and least education have the worst health status.

**Disability.** People with disabilities have activity limitations or need assistance due to a physical or mental impairment. About one in four people in the United States has some level of disability, and the rate is rising, especially among younger segments of the population. People with disabilities are more likely to have obesity, heart disease, and diabetes, and to smoke. Many also lack access to health care services.

#### Disparities during the COVID-19 Pandemic

By mid-2020, demographic breakdowns of COVID-19 cases and deaths showed that in addition to people over age 65—especially those living in nursing or long-term care facilities—non-white groups were disproportionately affected throughout the country and across all age groups. Data collected since the start of the pandemic have confirmed that Black, Hispanic, American Indian and Alaska Native (AIAN), and possibly Asian people have substantially higher rates of infection, hospitalization, and death compared with white people.

Higher infection rates among people of color reflect social and economic inequalities in working and living conditions—social determinants of health. About 80% of Black and 85% of Latino workers have to leave home to work, and

people of color are overrepresented in essential work settings like health care facilities, factories, grocery stores, and public transportation. Doing jobs that cannot be done from home, as well as living in more crowded neighborhoods and households, translates to greater likelihood of being exposed to the virus.

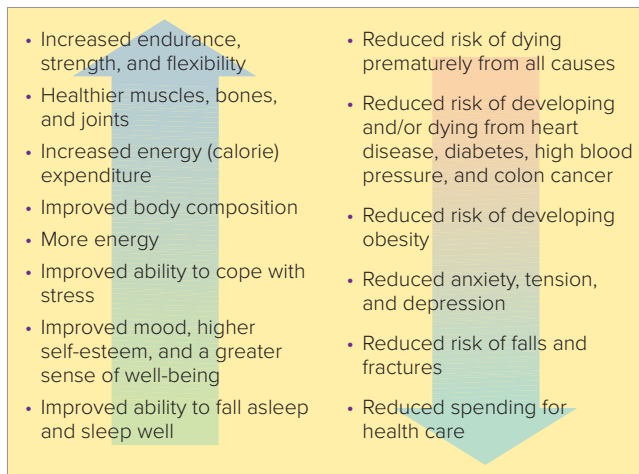
Higher hospitalization and death rates are partially explained by underlying medical conditions. For example, heart and lung disease and diabetes occur at higher rates among Black, Latino, and AIAN populations, and these are also risk factors for severe illness and death from COVID-19. Additionally, people from some racial or ethnic groups are less likely than non-Hispanic whites to be insured, and they experience more barriers to health care, including lack of transportation, childcare, or time off from work; communication and language gaps; and distrust of health care systems.

But even after researchers controlled for factors like infection rate, underlying medical conditions, socioeconomic status, and barriers to care, disparities in hospitalizations and deaths were still found to exist, pointing to factors like discrimination. Discrimination, including racism, not only shapes the myriad social and economic factors that increase the risk of COVID-19 for people of color, but it also contributes to chronic stress, which suppresses immunity and increases vulnerability to infectious disease.

**SOURCES:** Centers for Disease Control and Prevention. 2021. *Risk for COVID-19 Infection, Hospitalization, and Death by Race/Ethnicity* ([www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html](https://www.cdc.gov/coronavirus/2019-ncov/covid-data/investigations-discovery/hospitalization-death-by-race-ethnicity.html)); Centers for Disease Control and Prevention. 2021. *Health Equity Considerations and Racial and Ethnic Minority Groups* ([www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html](https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html)).

carbohydrates, fruits, and vegetables. Like physical inactivity, this diet is linked to a number of chronic diseases. A healthy diet provides necessary nutrients and sufficient energy without also providing too much of the dietary substances linked to diseases.

**Maintain a Healthy Body Weight** The effect of obesity can be measured by cases of coronary artery disease. Except for smoking, no other modifiable risk factor contributes to a shorter life span than obesity. Overweight and obesity are associated



**Figure 1.5** Benefits of regular physical activity.

with a number of disabling and potentially fatal conditions and diseases, including heart disease, cancer, and type 2 diabetes. Healthy body weight is an important part of wellness—but short-term dieting is not part of fitness or wellness. Maintaining a healthy body weight requires a lifelong commitment to regular exercise, a healthy diet, and effective stress management.

**Manage Stress Effectively** Many people cope with stress by eating, drinking, or smoking too much. Others don't deal with it at all. In the short term, inappropriate stress management can lead to fatigue, sleep disturbances, and other symptoms. Over longer periods of time, poor stress management can lead to less efficient functioning of the immune system and increased susceptibility to disease. Learning to incorporate effective stress-management techniques into daily life is an important part of a fit and well lifestyle.

**Avoid Tobacco and Drug Use and Limit Alcohol Consumption** Tobacco use is associated with 9 of the top 10 causes of death in the United States; personal tobacco use and secondhand smoke kill nearly 500,000 Americans each year, more than any other behavioral or environmental factor. In 2019, 14% of adult Americans described themselves as current smokers. Lung cancer is the most common cause of cancer death among both men and women and one of the leading causes of death overall. On average, the direct health care costs associated with smoking exceed \$225 billion per year. If the cost of lost productivity from sickness, disability, and premature death is included, the total exceeds \$300 billion.

Excessive alcohol consumption is linked to 8 of the top 10 causes of death and results in about 95,000 deaths a year in the United States. The social, economic, and medical costs of alcohol abuse are estimated at more than \$250 billion per year. Alcohol or drug intoxication is an especially notable factor in the death and disability of young people, particularly through unintentional injuries (such as drownings and car crashes caused by drunken driving) and violence.

**Protect Yourself from Disease and Injury** The most effective way of dealing with disease and injury is to prevent them.



**Wellness Tip** Maintaining physical fitness and a healthy diet can lead to a longer life.

Pablo Hidalgo/pxhidalgo/123RF

Many lifestyle strategies discussed here help protect you against chronic illnesses. In addition, you can take specific steps to avoid infectious diseases, particularly those that are sexually transmitted.

**Take Other Steps toward Wellness** Other important behaviors contribute to wellness, including these:

- *Developing meaningful relationships*—for example, learning to communicate and dealing with anger
- *Planning for successful aging*—for example, anticipating physical challenges and maintaining hobbies
- *Learning about the health care system*—for example, knowing what treatment options are available to you
- *Acting responsibly toward the environment*—for example, helping to reduce pollution and encouraging sustainable practices

## Wellness Factors That Seem Outside Our Control

Heredity, the environment, and adequate health care are other important influences on health and wellness. These factors can interact in ways that raise or lower the quality of a person's

## THE EVIDENCE FOR EXERCISE

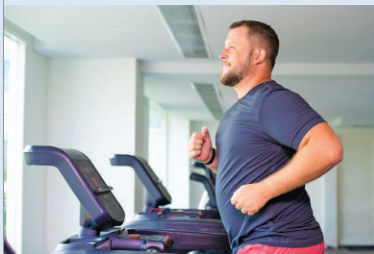
### Does Being Physically Active Make a Difference in How Long You Live?



How can we be sure that physical activity and exercise are good for our health? To answer this question, the U.S. Department of Health and Human Services asked a committee to review scientific literature. The committee's mission was to determine if enough evidence existed to warrant the government making physical activity recommendations to the public. The answer was yes. The committee's report, which summarized the scientific evidence for the health benefits of regular physical activity, formed the basis of the *Physical Activity Guidelines for Americans*, first released in 2008. The evidence was evaluated again in the lead-up to the release of the second edition of the guidelines in 2018.

The 2018 Physical Activity Guidelines Advisory Committee reviewed the link between moderate-to-vigorous physical activity and all-cause mortality (deaths from all causes). It looked at studies involving hundreds of thousands of people from all age groups and from different racial and ethnic groups. The data from these studies strongly support an *inverse relationship* between physical activity and all-cause mortality; that is, physically active people were less likely to die during the follow-up periods of the studies.

The review found that active people have about a 30% lower risk of dying compared with inactive people. These



Evgeniia Medvedeva/iStock/Getty Images

inverse associations were found not just for healthy adults but also for older adults (age 65 and older); for people with coronary artery disease, diabetes, or impaired mobility; and for people with overweight or obesity. Poor fitness and low physical activity levels were

found to be better predictors of premature death than smoking, diabetes, or obesity. Based on the evidence, the committee determined that about 150 minutes (2.5 hours) of physical activity per week is enough to reduce all-cause mortality (see Chapter 2 for more details). It appears that it is the overall volume of energy expended, no matter which kinds of activities are done, that makes a difference in risk of premature death.

life and the risk of developing particular diseases. For example, a sedentary lifestyle combined with a genetic predisposition for diabetes can greatly increase a person's risk of developing the disease. If such people also lack adequate health care, they are much more likely to suffer dangerous complications from diabetes.

But in many cases, behavior can tip the balance toward health even if heredity or environment is a negative factor. Breast cancer, for example, can run in families, but it is also associated with overweight and a sedentary lifestyle. A woman

The committee also looked at whether there is a *dose-response* relation between physical activity and all-cause mortality—that is, whether more activity reduces death rates even further. Again, the studies showed an inverse relation between these two variables. So, more activity above and beyond 150 minutes per week produces greater benefits. Surprisingly, for inactive people, benefits are seen at levels below 150 minutes per week. In fact, *any* increase in physical activity resulted in reduced risk of death. The 2018 *Physical Activity Guidelines* refer to this as the “some is better than none” message. A target of 150 minutes per week is recommended, but any level of activity below the target is encouraged for inactive people.

Looking more closely at this relationship, the committee found that the greatest risk reduction is seen at the lower end of the physical activity spectrum (30–90 minutes per week). In fact, sedentary people who become more active have the greatest potential for improving health and reducing the risk of premature death. Additional risk reduction occurs as physical activity increases, but at a slower rate. For example, people who engaged in physical activity 90 minutes per week had a 20% reduction in mortality risk compared with inactive people, and those who were active 150 minutes per week, as noted earlier, had a 30% reduction in risk. But to achieve a 40% reduction in mortality risk, study participants had to be physically active 420 minutes per week (7 hours).

Regular exercise reduces the risk of cardiovascular disease and related health problems such as hypertension, high cholesterol, and diabetes. The message from the research is clear: It doesn't matter what activity you choose or even how much time you can devote to it per week, as long as you get moving!

**SOURCES:** American College of Sports Medicine. 2021. *ACSM's Guidelines for Exercise Testing and Prescription*, 11 ed. Philadelphia: Wolters Kluwer; Dietary Guidelines Advisory Committee. 2020. *Scientific Report of the 2020 Dietary Guidelines Advisory Committee*. Washington, DC: U.S. Department of Health and Human Services; 2018 Physical Activity Guidelines Advisory Committee. 2018. *2018 Physical Activity Guidelines Advisory Committee Report*. Washington, DC: U.S. Department of Health and Human Services.

with a family history of breast cancer is less likely to die from the disease if she controls her weight, exercises, and has regular mammograms to help detect the disease in its early, most treatable stage.

### College Students and Wellness

Each year, thousands of students lose productive academic time to activities causing stress and other physical and emotional health problems—some of which can continue for a lifetime.



According to the Spring 2021 American College Health Association National College Health Assessment III, the following were commonly reported factors affecting academic performance:

- Procrastination (50% of students affected)
- Stress (43%)
- Anxiety (35%)
- Sleep difficulties (25%)
- Depression (25%)
- Work/career (16%)
- Headaches/migraines (13%)
- Health of someone close (13%)

Each of these factors is related to one or more dimensions of wellness, and most can be influenced by choices students make daily. For example, there are many ways to manage stress: By reducing unhealthy choices, such as using alcohol to relax, and by increasing healthy choices, such as using time-management techniques, even busy students can reduce the impact of stress.

What about wellness choices in other areas? The American College Health Association survey found the following:

- Only 34% of sexually active students reported that they used a condom mostly or always during vaginal intercourse in the past 30 days.
- About 8% of students had seven or more drinks the last time they drank in a social setting.
- About 3.5% of students misused one or more prescription stimulants, sedatives, or opioids within the past year.
- About 6.7% of students smoked cigarettes, and 11.8% used e-cigarettes, at least once during the past 3 months.

How do your daily wellness choices compare to those of other students?



## Ask Yourself

### QUESTIONS FOR CRITICAL THINKING AND REFLECTION

How often do you feel exuberant? Vital? Joyful? What makes you feel that way? Conversely, how often do you feel downhearted, de-energized, or depressed? What makes you feel that way? Have you ever thought about how you might increase experiences of vitality and decrease experiences of discouragement?

## REACHING WELLNESS THROUGH LIFESTYLE MANAGEMENT

Moving in the direction of wellness means cultivating healthy behaviors and working to overcome unhealthy ones. This approach to lifestyle management is called **behavior change**. As you may already know from experience, changing an unhealthy habit, or a condition such as depression, can be harder than it sounds. When you embark on a behavior change plan, it may seem like too much work at first. But as you make progress, you will gain confidence

in your ability to take charge of your life. You will also experience the benefits of wellness—more energy, greater vitality, deeper feelings of appreciation and curiosity, and a higher quality of life.

The rest of this chapter outlines a general process for changing unhealthy behaviors that is backed by research and has worked for many people. You will also find many specific strategies and tips for change. For additional support, work through the activities in the Behavior Change Workbook at the end of the text.

## Getting Serious about Your Health

Before you can start changing a wellness-related behavior, you have to know that the behavior is problematic and that you *can* change it. To make good decisions, you need information about relevant topics and issues, including what resources are available to help you change.

**Examine Your Current Health Habits** Consider how your current lifestyle is affecting your health today. How will it affect your health in the future? Do you know which of your current habits enhance your health and which ones may be harmful? Begin your journey toward wellness with self-assessment: Think about your own behavior, complete the self-assessment in Lab 1.2, and talk with friends and family members about what they've noticed about your lifestyle and your health. Digital trackers can also help with your self-assessment; see the box "Quantify Yourself."

**Choose a Target Behavior** Changing any behavior can be demanding. Start small by choosing one behavior you want to change—called a **target behavior**—and working on it until you succeed. Your chances of success will be greater if your first goal is simple, such as resisting the urge to snack on junk food between classes. As you change one behavior, make your next goal a little more significant, and build on your success over time.

**Learn about Your Target Behavior** After you've chosen a target behavior, you need to learn its risks and benefits for you—both now and in the future. As a starting point, use this text and the resources listed in the For Further Exploration section at the end of each chapter; see the box "Evaluating Sources of Health Information" for additional guidelines. Ask these questions:

- How is your target behavior affecting your level of wellness today?
- Which diseases or conditions does this behavior place you at risk for?
- What effect would changing your behavior have on your health?

**behavior change** A lifestyle management process that involves cultivating healthy behaviors and working to overcome unhealthy ones.

**target behavior** An isolated behavior selected as the object of a behavior change program.

### TERMS



## WELLNESS IN THE DIGITAL AGE

### Quantify Yourself



You feel stressed and under the weather. How can you feel better? Do you have a habit you want to kick? Where to start?

People's increasing desire to track their moods, sleep, exercise, and diet patterns has brought about some 165,000 health-related apps and movements, like Quantified Self—a California-based company that promotes self-tracking tools among communities across the world. By giving you numerical data related to your daily behaviors, digital trackers provide objective feedback about what is going on with your health. The technology also helps you describe your behaviors to doctors and can be integrated with behavior change strategies learned through counseling. Here are three steps to making good use of technology for wellness:

1. **Monitor yourself.** How much are you smoking? Sleeping? Exercising? What are you eating? Digital trackers can help answer these questions for you. A wristband can record whether you are getting enough restful sleep. Your smartphone can tell you how many steps you took to get across campus.
2. **Analyze your data.** You've tracked your sleep, your blood pressure, and your steps. You've kept a journal related to your diet. You've taken your body measurements. What patterns do you notice? What time of day do you tend to need food? Cigarettes? Sleep? How do your patterns match up with your goals?

Standard weight-loss apps allow users to input weight goals and monitor progress toward those goals; more sophisticated apps can analyze users' data and offer daily physical-activity goals, or help them establish a regular eating schedule. You can now find advice, education, e-mail reminders, alerts for lapses in progress, motivational messages, and journals to record and track emotion. Many weight-loss apps also link to social media for encouragement and social support, or rewarding games and

challenges. Additional features can be critical; tracking alone isn't sufficient for successful behavior change. You need to apply strategies for change such as those described later in the chapter.

3. **Extend the list of behaviors you'd like to change.** You can do more than track your diet and exercise habits with digital assistance. Electronic devices and smart programs are available to help with many aspects of wellness, including the following:

- Stress management
- Meditation and spirituality
- Heart rate and respiration
- Menstrual cycles
- Family medical history
- Journaling

With so many possibilities, how do you choose what to monitor? Start with one or two variables. The interactive labs at the end of each chapter focus on aspects of fitness and wellness to get you going. Also, you'll find a variety of digital devices and apps discussed in later chapters, in "Wellness in the Digital Age" boxes. You may find one or more apps (many of which are free) that appeal to you and can help you make progress toward your fitness and wellness goals.

**SOURCES:** IMS Institute for Healthcare Informatics. 2015. *IMS Health Study: Patient Options Expand as Mobile Healthcare Apps Address Wellness and Chronic Disease Treatment Needs* ([www.imshealth.com/en/about-us/news/ims-health-study-patient-options-expand-as-mobile-healthcare-apps-address-wellness-and-chronic-disease-treatment-needs](http://www.imshealth.com/en/about-us/news/ims-health-study-patient-options-expand-as-mobile-healthcare-apps-address-wellness-and-chronic-disease-treatment-needs)); Schoeppe, S., et al. 2016. Efficacy of interventions that use apps to improve diet, physical activity and sedentary behaviour: A systematic review. *International Journal of Behavioral Nutrition and Physical Activity* 13(127).

**Find Help** Have you identified a particularly challenging target behavior or mood—something like overuse of alcohol, binge eating, or depression—that interferes with your ability to function or places you at a serious health risk? You may need help to change behaviors or conditions that are too deeply rooted or too serious for self-management. Don't be discouraged by the seriousness or extent of the problem; many resources are available to help you solve it. On campus, the student health center or campus counseling center can provide assistance. To locate community resources, consult [yellowpages.com](http://yellowpages.com), your physician, or the internet.

### Building Motivation to Change

Knowledge is necessary for behavior change, but it isn't usually enough to make people act. Millions of people have sedentary lifestyles, for example, even though they know it's bad for their health. To succeed at behavior change, you need to be motivated and to know that even though an active lifestyle may seem difficult, we are all capable of great change.



**Wellness Tip** Look for behavior change support if you need it. Certain health behaviors are exceptionally difficult to change. Some people can quit smoking on their own; others get help from a smoking cessation program or a nicotine replacement product.

baona/iStock/Getty Images



## CRITICAL CONSUMER

### Evaluating Sources of Health Information

Surveys indicate that college students are smart about evaluating health information.

They trust the health information they receive from health professionals and educators and are skeptical about popular information sources, such as magazine articles and websites.

How smart are you about evaluating health information? Here are some tips.

#### General Strategies

Whenever you encounter health-related information, take the following steps to make sure it is credible:

- **Go to the original source.** Media reports and social media posts often simplify the results of medical research. Find out for yourself what a study really reported, and determine whether it was based on good science. What type of study was it? Was it published in a recognized medical journal? Was it an animal study, or did it involve people? Did the study include a large number of people? What did the study's authors actually report?
- **Carefully evaluate health claims from potentially partisan sources.** Health information from commercial interests, politicians, certain news media, and other potentially partisan sources may be incomplete or inaccurate because their goal is to shape public debate or policy to their own benefit. Always evaluate your sources. When it comes to medical advice, pay attention to information from doctors and other experts associated with major medical institutions, government health agencies, or universities. Websites that can help you check claims include SciCheck ([www.factcheck.org/scicheck/](http://www.factcheck.org/scicheck/)) and Snopes ([www.snopes.com](http://www.snopes.com)).
- **Watch for misleading language.** Reports that tout “breakthroughs” or “dramatic proof” are probably hype. A study may state that a behavior “contributes to” or is “associated with” an outcome, but this does not prove a cause-and-effect relationship.
- **Distinguish between research reports and public health advice.** Do not change your behavior based on the results of a single report or study. If an agency such as the National Cancer Institute urges a behavior change, however, you should follow the advice. Large, publicly funded organizations issue such advice based on many studies, not a single report.
- **Remember that anecdotes are not facts.** A friend may tell you he lost weight on some new diet, but individual success stories do not mean the plan is truly safe or effective. Be wary of information from website comments sections and social media shared content; these also represent only anecdotal

evidence, and the source may be a bot rather than a person. Do any scientific studies back up the claims being made?

- **Be skeptical.** If a report seems too good to be true, it probably is. Be wary of information contained in advertisements. An ad's goal is to sell a product, even if there is no need for it, and sometimes even if the product has not been proven to be safe or effective.
- **Make choices that are right for you.** Friends and family members can be a great source of ideas and inspiration, but you need to make health-related choices that work best for you.

#### Internet Resources

Online information sources pose special challenges. When reviewing a health-related website, ask these questions:

- **What is the source of the information?** Websites maintained by government agencies, professional associations, or established academic or medical institutions are likely to present trustworthy information. Many other groups and individuals post accurate information, but it is important to look at the qualifications of the people who are behind the site. (Check the home page or click the “About Us” link.) Verify information you get from social media by visiting the originating organization's website and evaluating the source.
- **How often is the site updated?** Look for sites that are updated frequently. Check the “last modified” date of any web page. Newer studies may contradict the results of earlier ones.
- **Is the site promotional?** Be wary of information from sites that sell specific products, use testimonials as evidence, appear to have a social or political agenda, or ask for money. Addresses ending with .com are commercial and rely on advertising dollars.
- **What do other sources say about a topic?** Be wary of claims and information that appear at only one site or come from a chat room, bulletin board, or blog. Do other authors cite the same studies as the ones in this article?
- **Does the site conform to any set of guidelines or criteria for quality and accuracy?** Look for sites that identify themselves as conforming to some code or set of principles, such as those set forth by the Health on the Net Foundation or the American Medical Association. Medical and health journals that have been peer reviewed (edited by experts in the field), and websites maintained by government agencies, professional associations, or established academic or medical institutions are most likely to present trustworthy information.

**Examine the Pros and Cons of Change** Health behaviors have short-term and long-term benefits and costs. Consider the benefits and costs of an inactive lifestyle:

- **Short term.** Such a lifestyle allows you more time to watch TV and hang out with friends, but it leaves you less fit and less able to participate in recreational activities.

- **Long term.** This lifestyle increases the risk of heart disease, cancer, stroke, and premature death.

To successfully change your behavior, you must believe that the benefits of change outweigh the costs.

Carefully examine the pros and cons of continuing your current behavior and of changing to a healthier one. Focus on

the effects that are most meaningful to you, including those tied to your personal identity and values. For example, engaging in regular physical activity and getting adequate sleep can support an image of yourself as an active person who is a good role model for others. Eliminating dependencies like tobacco or alcohol use is a way to be more independent and exercise greater control of your life. To complete your analysis, ask friends and family members about the effects of your behavior on them. For example, a younger sister may tell you that your smoking habit influenced her decision to take up smoking.

Although some people are motivated by long-term goals, such as avoiding a disease that may hit them in 30 years, most are more likely to be moved to action by shorter-term goals. Feeling better, doing better in school, improving at a sport, reducing stress, and increasing self-esteem are common, more immediate benefits of health behavior change. Many wellness behaviors are associated with immediate improvements in quality of life. For example, within hours of quitting smoking, blood oxygen levels normalize; within 2 days, the sense of taste and smell return to normal; and within 2 weeks, lung functions improve. Similarly, a single bout of moderate to vigorous physical activity can reduce anxiety, lower blood pressure, and improve sleep.

Over time, these changes add up to a substantially higher quality of life. Surveys have found that both nonsmokers and physically active people feel healthy and full of energy more days each month, and report fewer days of sadness and troubled sleep than do smokers and sedentary people.

**Boost Self-Efficacy** When you start thinking about changing a health behavior, a big factor in your eventual success is whether you have confidence in yourself and in your ability to change. **Self-efficacy** refers to your belief in your ability to successfully take action and perform a specific task. Strategies for boosting self-efficacy include developing an internal locus of control, using visualization and self-talk, and getting encouragement from supportive people.

**LOCUS OF CONTROL** Who do you believe is controlling your life? Is it your parents, friends, or school? Is it “fate”? Or is it you? **Locus of control** refers to the figurative “place” a person designates as the source of responsibility for the events in their life. People who believe they are in control of their own lives are said to have an *internal locus of control*. Those who believe that factors beyond their control determine the course of their lives are said to have an *external locus of control*.

For lifestyle management, an internal locus of control is an advantage because it reinforces motivation and commitment. An external locus of control can sabotage efforts to change behavior. For example, if you believe that you are destined to die of breast cancer because your mother died from the disease, you may view screening mammograms as a waste of time. In contrast, if you believe that you can take action to reduce your risk of breast cancer in spite of hereditary factors, you will be motivated to follow guidelines for early detection of the disease.

If you find yourself attributing too much influence to outside forces, gather more information about your wellness-related behaviors. List all the ways that making lifestyle changes will improve your health. If you believe you’ll succeed, and if you recognize that you are in charge of your life, you’re on your way to wellness.

**VISUALIZATION AND SELF-TALK** One of the best ways to boost your confidence and self-efficacy is to visualize yourself successfully engaging in a new, healthier behavior. Imagine yourself going for an afternoon run 3 days a week or no longer smoking cigarettes. Also visualize yourself enjoying all the short-term and long-term benefits that your lifestyle change will bring. Create a new self-image: What will you and your life be like when you become a regular exerciser or a nonsmoker?

You can also use **self-talk**, the internal dialogue you carry on with yourself, to increase your confidence in your ability to change. Counter any self-defeating patterns of thought with more positive or realistic thoughts: “I am a strong, capable person, and I can maintain my commitment to change.” See Chapter 10 for more on self-talk.

#### ROLE MODELS AND OTHER SUPPORTIVE INDIVIDUALS

Social support can make a big difference in your level of motivation and your chances of success. Perhaps you know people who have reached the goal you are striving for; they could be role models or mentors, providing information and support for your



**Fitness Tip** Visualization is such a powerful technique that Olympic athletes learn how to harness it for peak performance. It works for average people, too. Set a small fitness goal, then imagine yourself doing it—as clearly and as often as you can. Visualization can help you believe in yourself, and belief can be a step toward success!

Hero Images Inc./Alamy Stock Photo

**self-efficacy** The belief in one’s ability to take action and perform a specific task.

#### TERMS

**locus of control** The figurative “place” a person designates as the source of responsibility for the events in their life.

**self-talk** A person’s internal dialogue.

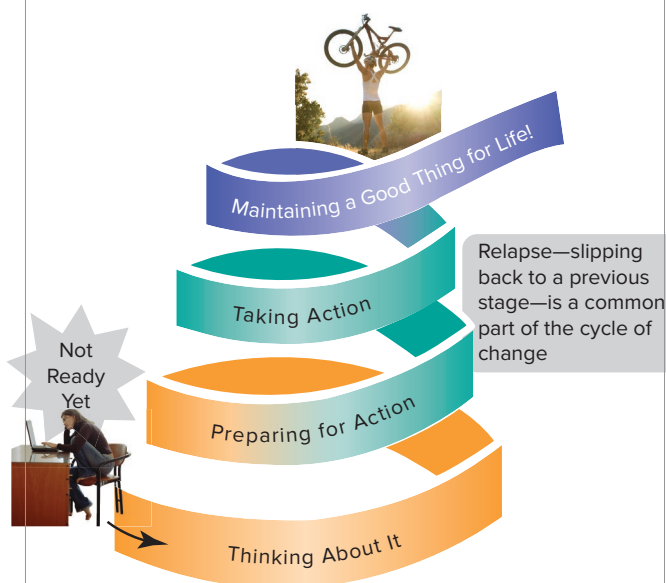


efforts. Gain strength from their experiences, and tell yourself, “If they can do it, so can I.” In addition, find a friend who wants to make the same changes you do and who can take a helpful role in your behavior change program. For example, an exercise partner can provide companionship and encouragement when you might be tempted to skip your workout.

**Identify and Overcome Barriers to Change** Don’t let past failures at behavior change discourage you; they can be a great source of information you can use to boost your chances of future success. Make a list of the problems and challenges you faced in any previous behavior change attempts. To this list, add the short-term costs of behavior change that you identified in your analysis of the pros and cons of change. After you’ve listed these key barriers to change, develop a practical plan for overcoming each one. For example, if you always smoke when you’re with certain friends, decide in advance how you will turn down the next cigarette you are offered.

## Enhancing Your Readiness to Change

The transtheoretical, or “stages-of-change,” model is an effective approach to lifestyle self-management. According to this model, you move through distinct stages as you work to change your target behavior. It is important to determine what stage you are in now so that you can choose appropriate strategies for progressing through the cycle of change (Figure 1.6). This approach can help you enhance your readiness and intention to change.



**Figure 1.6 The stages of change: A spiral model.**

**SOURCE:** Centers for Disease Control and Prevention. (n.d.). *PEP Guide: Personal Empowerment Plan for Improving Eating and Increasing Physical Activity*. Dallas, TX: The Cooper Institute.

(bike): Adam Brown/UpperCut Images/Getty Images; (desk): Ray Kachatorian/Stone/Getty Images

**Precontemplation** People at this stage do not think they have a problem and do not intend to change their behavior. They may be unaware of the risks associated with their behavior or may deny them. They may have tried unsuccessfully to change in the past and may now think the situation is hopeless. They may also blame other people or external factors for their problems. People in the precontemplation stage believe that the reasons not to change outweigh the costs and reasons to change.

**Contemplation** People at this stage know they have a problem and intend to take action within 6 months. They acknowledge the benefits of behavior change but worry about the costs of changing or specific barriers that appear too difficult to overcome. To be successful, people must believe that the benefits of change outweigh the costs. People in the contemplation stage wonder about possible courses of action but don’t know how to proceed.

**Preparation** People at this stage plan to take action within a month or may already have begun to make small changes in their behavior. They may be engaging in their new, healthier behavior but not yet regularly or consistently. They may have created a plan for change but may be worried about failing.

**Action** During the action stage, people outwardly modify their behavior and their environment. Although people in this stage are at risk for reverting to old, unhealthy patterns of behavior, they may also be reaping the rewards of a positive behavior change. The action stage requires the greatest commitment of time and energy.

**Maintenance** People at this stage have maintained their new, healthier lifestyle for at least 6 months. Lapses may have occurred, but people in maintenance have been successful in quickly reestablishing the desired behavior. The maintenance stage can last for months or years.

**Termination** People at the termination stage have exited the cycle of change and are no longer tempted to lapse back into their old behavior. They have a new self-image and total self-efficacy with regard to their target behavior. For ideas on changing stages, see the box “Tips for Moving Forward in the Cycle of Behavior Change.”

## Dealing with Relapse

People seldom progress through the stages of change in a straightforward, linear way. Rather, they tend to move to a new stage and then slip back to a previous stage before resuming their forward progress. Research suggests that most people make several attempts before they successfully change a behavior; four out of five people experience some degree of backsliding. For this reason, the stages of change are best conceptualized as a spiral in which people cycle back through previous stages but are further along in the process each time they renew their commitment.

## TAKE CHARGE

### Tips for Moving Forward in the Cycle of Behavior Change

#### Precontemplation

- **Raise your awareness.** Research your target behavior and its effects.
- **Be self-aware.** Look at the mechanisms you use to resist change, such as denial or rationalization. Find ways to counteract these mechanisms.
- **Seek social support.** Friends and family members can help you identify target behaviors and understand their impact on the people around you.
- **Identify helpful resources.** These might include exercise classes or stress-management workshops offered by your school.

#### Contemplation

- **Keep a journal.** A record of your target behavior and the circumstances that elicit the behavior can help you plan a change program.
- **Do a cost-benefit analysis.** Identify the costs and benefits (both current and future) of maintaining your behavior and of changing it. Costs can be monetary, social, emotional, and so on.
- **Identify barriers to change.** Knowing these obstacles can help you overcome them.
- **Engage your emotions.** Watch movies or read books about people with your target behavior. Imagine what your life will be like if you don't change.
- **Create a new self-image.** Imagine what you'll be like after changing your target behavior. Try to think of yourself in new terms right now.
- **Think before you act.** Learn why you engage in the target behavior. Determine what "sets you off" and train yourself not to act reflexively.

#### Preparation

- **Create a plan.** Include a start date, goals, rewards, and specific steps you will take to change your behavior.

If you experience a *lapse*—a single slip—or a *relapse*—a return to old habits—don't give up. Relapse can be demoralizing, but it is not the same as failure. Failure means stopping before you reach your goal and never changing your target behavior. During the early stages of the change process, it's a good idea to plan for relapse so that you can avoid guilt and self-blame and get back on track quickly. Follow these steps:

1. *Forgive yourself.* A single setback isn't the end of the world.
2. *Give yourself credit for the progress you have already made.* You can use that success as motivation to continue.
3. *Move on.* You can learn from a relapse and use that knowledge to deal with potential setbacks in the future.

- **Make change a priority.** Create and sign a contract with yourself.

- **Practice visualization and self-talk.** These techniques can help prepare you mentally for challenging situations.

- **Take short steps.** Successfully practicing your new behavior for a short time—even a single day—can boost your confidence and motivation.

#### Action

- **Monitor your progress.** Keep up with your journal entries.
- **Change your environment.** Make changes that will discourage the target behavior—for example, getting rid of snack foods or not stocking the refrigerator with beer.
- **Find alternatives to your target behavior.** Make a list of things you can do to replace the behavior.
- **Reward yourself.** Rewards should be identified in your change plan. Give yourself lots of praise, and focus on your success.
- **Involve your friends.** Tell them you want to change, and ask for their help.
- **Don't get discouraged.** Real change is difficult.

#### Maintenance

- **Keep going.** Continue using the positive strategies that worked in earlier stages.
- **Be prepared for lapses.** Don't let slip-ups set you back.
- **Be a role model.** After you have successfully changed your behavior, you may be able to help someone else do the same thing.

If relapses keep occurring or if you can't seem to control them, you may need to return to a previous stage of the behavior change process. If this is necessary, reevaluate your goals and your strategy. A different or less stressful approach may help you avoid setbacks when you try again.

### Developing Skills for Change: Creating a Personalized Plan

Once you are committed to making a behavior change, it's time to develop the necessary skills to make that change successful. This includes setting goals, anticipating problems, finding rewards, and taking the following steps:

1. *Monitor your behavior and gather data.* Keep a record of your target behavior and the circumstances surrounding it. Record this information for at least a week or two. Keep your notes in a health journal or on your smartphone (see the sample journal entries in Figure 1.7).





Date		November 5		Day		M	TU	W	TH	F	SA	SU									
Time of day	M/S	Food eaten	Cals.	H	Where did you eat?	What else were you doing?			How did someone else influence you?	What made you want to eat what you did?	Emotions and feelings?	Thoughts and concerns?									
7:30	M	1 C Crispix cereal 1/2 C skim milk coffee, black 1 C orange juice	110 40 — 120	3	home	looking at news headlines on my phone			alone	I always eat cereal in the morning	a little keyed up & worried	thinking about quiz in class today									
10:30	S	1 apple	90	1	hall outside classroom	studying			alone	felt tired & wanted to wake up	tired	worried about next class									
12:30	M	1 C chili 1 roll 1 pat butter 1 orange 2 oatmeal cookies 1 soda	290 120 35 60 120 150	2	campus food court	talking			eating w/ friends; we decided to eat at the food court	wanted to be part of group	excited & happy	interested in hearing everyone's plans for the weekend									
M/S = Meal or snack													H = Hunger rating (0–3)								

**Figure 1.7 Sample health journal entries.**

Record each occurrence of your behavior, noting the following:

- What the activity was
- When and where it happened
- What you were doing
- How you felt at that time

If your goal is to be more active, monitoring your behavior will help you see patterns. For example, noticing that sedentary behavior frequently occurs when you get home after classes might suggest that the ideal time to begin exercise is directly after classes and before going home.

2. *Analyze the data and identify patterns.* After you have collected data on the behavior, analyze the data to identify patterns. Note the connections between your feelings and such external cues as time of day, location, situation, and actions of others around you. When are you most likely to overeat? To skip a meal? What events trigger your appetite? For example, as in Figure 1.7, perhaps you drink a soda every time you go to the campus food court or when you're with certain friends.
3. *Be "SMART" about setting goals.* If your goals are too challenging, you may have trouble making steady progress and may be more likely to give up altogether. If, for example, you are in poor physical condition, it will not make sense to set a goal of being ready to run a marathon within 2 months. If you set goals you can live with, it will be easier to stick with your behavior change plan and be successful.

Following the SMART criteria, your behavior change goals should be

- *Specific.* Avoid vague goals like "eat more fruits and vegetables." Instead, state your objectives in specific terms, such as "eat two cups of fruit and three cups of vegetables every day."
- *Measurable.* Your progress will be easier to track if your goals are quantifiable, so give your goal a number. You might measure your goal in terms of time (such as "walk briskly for 20 minutes a day"), distance ("run two miles, 3 days per week"), or some other amount ("drink eight glasses of water every day").
- *Attainable.* Set goals that are within your physical limits. For example, if you are a poor swimmer, you might not be able to meet a short-term fitness goal by swimming laps. Walking or biking might be better options.
- *Realistic.* Manage your expectations when you set goals. For example, long-time smokers may not be able to quit cold turkey. A more realistic approach might be to use nicotine replacement patches or gum for several weeks while getting help from a support group.
- *Time frame-specific.* Give yourself a reasonable amount of time to reach your goal, state the time frame in your behavior change plan, and set your agenda to meet the goal within the given time frame.

Using these criteria, sedentary people who want to improve their health and build fitness might set a goal of being able to run three miles in 30 minutes, to be achieved within a time frame of 6 months. To work toward that goal, they might set a number of smaller,

intermediate goals that are easier to achieve. For example, the list of goals might look like this:

WEEK	FREQUENCY	ACTIVITY	DURATION (MINUTES)
1	3	Walk < 1 mile	10–15
2	3	Walk 1 mile	15–20
3	4	Walk 1–2 miles	20–25
4	4	Walk 2–3 miles	25–30
5–7	3–4	Walk/run 1 mile	15–20
21–24	4–5	Run 2–3 miles	25–30

You may not be able to meet these goals, but you never know until you try. As you work toward meeting your long-term goal, you may find it necessary to adjust your short-term goals. For example, you may find that you can start running sooner than you thought, or you may be able to run farther than you originally estimated. In such cases, you may want to make your goals more challenging. To stay motivated, however, some people may make them easier.

For some goals and situations, it may make more sense to focus on something other than your outcome goal. If your goal involves a long-term lifestyle change, such as reaching a healthy weight, focus on developing healthy habits rather than targeting a specific weight loss. Your goal in this case might be exercising 30 minutes every day, reducing portion sizes, or eliminating late-night snacks.

4. *Devise a plan of action.* Develop a strategy that will support your efforts to change. Your plan of action should include the following steps:

- *Get what you need.* Identify resources that can help you. For example, you can join a community walking club or sign up for a smoking cessation program. You may also need to buy some new running shoes or nicotine replacement patches. Get the items you need right away; waiting can delay your progress.
- *Modify your environment.* If you have cues in your environment that trigger your target behavior, try to control them. For example, if you normally have alcohol at home, getting rid of it can help prevent you from indulging. If you usually study with a group of friends in an environment that allows smoking, move to a nonsmoking area. If you always buy a snack at a certain vending machine, change your route to avoid it.
- *Control related habits.* You may have habits that contribute to your target behavior; modifying these habits can help change the behavior. For example, if you usually plop down on the sofa while watching TV, try putting an exercise bike or yoga mat in front of the TV so that you can burn calories while watching.
- *Reward yourself.* Giving yourself instant, real rewards for good behavior will reinforce your efforts. Decide in advance what each reward will be and how you will earn it. For example, you might treat yourself to a movie after a



### Wellness Tip

Your environment contains powerful cues for both positive and negative lifestyle choices. The presence of parks and running/bike paths encourages physical activity, even in an urban setting. Examine your environment for cues that can support your behavior change efforts.

Shutterstock

week of avoiding snacks. Make a list of items or events to use as rewards. They should be special to you and preferably unrelated to food, tobacco, or alcohol.

- *Involve the people around you.* Ask family and friends to help you with your plan. To help them respond appropriately to your needs, create a specific list of dos and don'ts. For example, ask them to support you when you set aside time to exercise or when you avoid second helpings at dinner.
  - *Plan for challenges.* Think about situations and people that might derail your program and develop ways to cope with them. For example, if you think it will be hard to stick to your usual exercise program during exams, schedule short bouts of physical activity (such as a brisk walk) as stress-reducing study breaks.
5. *Make a personal contract.* A serious personal contract—one that commits you to your word—can result in a higher chance of follow-through than a casual, offhand promise. Your contract can help prevent procrastination by specifying important dates and can also serve as a reminder of your personal commitment to change.
 

Your contract should include a statement of your goal and your commitment to reaching it. The contract should also include details, such as the following:

    - The date you will start
    - The steps you will take to measure your progress
    - The strategies you will use to promote change
    - The date you expect to reach your final goal

Have someone—preferably someone who will be actively helping you with your program—sign your contract as a witness.

Figure 1.8 shows a sample behavior change contract for someone committing to eating more fruit every day. A blank contract is included as Activity 8 in the Behavior Change Workbook at the end of this text.

**Behavior Change Contract**

1. I, Tammy Lau, agree to  
increase my consumption of fruit from 1 cup per week to 2 cups per day.

2. I will begin on 10/5 and plan to reach my goal of  
2 cups of fruit per day by 12/7

3. To reach my final goal, I have devised the following schedule of mini-goals.  
 For each step in my program, I will give myself the reward listed.

I will begin to have ½ cup of fruit with breakfast	10/5	see movie
I will begin to have ½ cup of fruit with lunch	10/26	new video game
I will begin to substitute fruit juice for soda 1 time per day	11/16	concert

My overall reward for reaching my goal will be trip to beach

4. I have gathered and analyzed data on my target behavior and have identified the following strategies for changing my behavior:  
Keep the fridge stocked with easy-to-carry fruit. Pack fruit in my backpack every day. Buy lunch at place that serves fruit.

5. I will use the following tools to monitor my progress toward my final goal:  
Chart on fridge door  
Diet log app

I sign this contract as an indication of my personal commitment to reach my goal: Tammy Lau 9/28

I have recruited a helper who will witness my contract and also increase his consumption of fruit; eat lunch with me twice a week.  
Eric March 9/28

Figure 1.8 A sample behavior change contract.

## Putting Your Plan into Action

The starting date has arrived, and you are ready to put your plan into action. This stage requires commitment, the resolve to stick with the plan no matter what temptations you encounter. Remember all the reasons you have to make the change—and remember that *you* are the boss. Use all your strategies to make your plan work. Make sure your environment is change friendly, and get as much support and encouragement from others as possible. Keep track of your progress in your health journal, and give yourself regular rewards. Most important, congratulate yourself; notice how much better you look or feel, and feel good about how far you've come and how you've gained control of your behavior.

## Staying with It

As you continue with your program, don't be surprised when you run up against obstacles; they're inevitable. In fact, it's a good idea to expect problems and give yourself time to step back and see how you're doing. Feel free to make some changes before going on. If your program is grinding to a halt, identify what is blocking your progress. It may come from one of the sources described in the following sections.

**Social Influences** Take a hard look at the reactions of the people you're counting on, and see if they're really supporting you. If they come up short, connect with others who will be more supportive. A related trap is trying to get your friends or family

members to change *their* behaviors. The decision to make a major behavior change is something people come to only after intensive self-examination. You may be able to influence someone by tactfully providing facts or support, but that's all. Focus on yourself. When you succeed, you may become a role model for others.

**Levels of Motivation and Commitment** You won't make real progress until an inner drive prompts you to the stage of change at which you are ready to make a personal commitment to the goal. If commitment is your problem, you may need to wait until the behavior you're dealing with makes you unhappier or unhealthier; then your desire to change it will be stronger. Or you may find that changing your goal will inspire you to keep going. For more ideas, refer to Activity 9 in the Behavior Change Workbook.

**Choice of Techniques and Level of Effort** If your plan is not working as well as you thought it would, make changes where you're having the most trouble. If you've lagged on your running schedule, for example, maybe it's because you don't like running. An aerobics class might suit you better. Alternatively, you may not be trying hard enough. Plan to push toward your goal. If it were easy, you wouldn't need a plan.

**Stress Barrier** If you hit a wall in your program, look at the sources of stress in your life. If the stress is temporary, such as catching a cold or having a term paper due, you may want to wait until it passes before strengthening your efforts. If the stress is ongoing, find healthy ways to manage it (see Chapter 10). You may even want to make stress management your highest priority for behavior change.

**Procrastinating, Rationalizing, and Blaming** Be alert to games you might be playing with yourself, so you can stop them. Such games include the following:

- **Procrastinating.** If you tell yourself, "It's Friday already; I might as well wait until Monday to start," you're procrastinating. Break your plan into smaller steps that you can accomplish one day at a time.
- **Rationalizing.** If you tell yourself, "I wanted to go swimming today but wouldn't have had time to wash my hair afterward," you're making excuses.
- **Blaming.** If you tell yourself, "I couldn't exercise because Dave was hogging the elliptical trainer," you're blaming others for your own failure to follow through. Blaming is a way of taking focus off the real problem and denying responsibility for your own actions.

## Being Fit and Well for Life

Your first attempts at making behavior changes may never go beyond the contemplation or preparation stage. But as you experience some success, you'll start to have more positive feelings about yourself. You may discover new physical activities and sports you enjoy, and you may encounter new situations and meet new people. Perhaps you'll surprise yourself by accomplishing things you didn't think were possible—breaking a long-standing nicotine

habit, competing in a race, climbing a mountain, or developing a leaner body. Most of all, you'll discover the feeling of empowerment that comes from taking charge of your health. Being healthy takes effort, but the paybacks in energy and vitality are priceless.

Once you've started, don't stop. Assume that health improvement is forever. Take on the easier problems first, and then use what you learn to tackle more difficult problems later. When you feel challenged, remind yourself that you are creating a lifestyle that minimizes your health risks and maximizes your enjoyment of life. You can take charge of your health in a dramatic and meaningful way. *Fit & Well* will show you how.

## ? Ask Yourself

### QUESTIONS FOR CRITICAL THINKING AND REFLECTION

Think about the last time you made an unhealthy choice instead of a healthy one. How could you have changed the situation, the people in the situation, or your own thoughts, feelings, or intentions to avoid making that choice? What can you do in similar situations in the future to produce a different outcome?



## TIPS FOR TODAY AND THE FUTURE

You are in charge of your health. Many of the decisions you make every day have an impact on the quality of your life, both now and in the future.

### RIGHT NOW YOU CAN

- Go for a 15-minute walk.
- Have a piece of fruit for a snack.
- Call a friend and arrange for a time to catch up with each other.
- Think about whether you have a health behavior you'd like to change. If you do, consider the elements of a behavior change strategy. For example, begin a mental list of the pros and cons of the behavior, or talk to someone who can support you in your attempts to change.

### IN THE FUTURE YOU CAN

- Stay current on health and wellness news and issues.
- Participate in health awareness and promotion campaigns in your community—for example, support smoking restrictions in local venues.
- Be a role model for someone else who is working on a health behavior you have successfully changed.

## SUMMARY

- Wellness is the ability to live life fully, with vitality and meaning. Wellness is dynamic and multidimensional; it incorporates physical, emotional, intellectual, interpersonal, cultural, spiritual, environmental, financial, and occupational dimensions.

- As chronic diseases have emerged as major health threats in the United States, people must recognize that they have greater control over and greater responsibility for their health than ever before.

- Behaviors that promote wellness include being physically active, choosing a healthy diet, maintaining a healthy body weight, managing stress effectively, avoiding tobacco and limiting alcohol use, and protecting yourself from disease and injury.

- Although heredity, environment, and health care all play roles in wellness and disease, behavior can change their negative effects.

- The national *Healthy People 2030* initiative aims to prevent disease and improve Americans' quality of life. To achieve this goal, it proposes broad national health objectives, emphasizing the importance of health determinants—factors that affect the health of individuals, demographic groups, or entire populations.

- To make lifestyle changes, you need information about yourself, your health habits, and available resources to help you change.

- You can increase your motivation for behavior change by examining the benefits and costs of change, boosting self-efficacy, and identifying and overcoming key barriers to change.

- The stages-of-change model describes six stages that people may move through as they try to change their behavior: precontemplation, contemplation, preparation, action, maintenance, and termination.

- A specific plan for change can be developed by (1) collecting and recording data on your behavior; (2) analyzing the data; (3) setting specific goals; (4) devising strategies for modifying the environment, rewarding yourself, and involving others; and (5) making a personal contract.

- To start and maintain a behavior change program, you need commitment, a well-developed and manageable plan, social support, and stress-management techniques. You will also benefit from monitoring the progress of your program and revising it as necessary.

## FOR FURTHER EXPLORATION

*Centers for Disease Control and Prevention (CDC).* Through phone, fax, and the internet, the CDC provides a wide variety of health information.

[www.cdc.gov](http://www.cdc.gov)

*Federal Deposit Insurance Corporation: Money Smart.* A free source of information, unaffiliated with commercial interests, that includes eight modules on topics such as “borrowing basics” and “paying for college and cars.”

[www.fdic.gov/resources/consumers/money-smart/index.html](http://www.fdic.gov/resources/consumers/money-smart/index.html)

*Federal Trade Commission: Consumer Information: Health & Fitness.* Includes online brochures about a variety of consumer health topics, including fitness equipment, generic drugs, and fraudulent health claims.

[www.consumer.ftc.gov/health](http://www.consumer.ftc.gov/health)

*Healthfinder.* A gateway to online publications, websites, support and self-help groups, and agencies and organizations that produce reliable health information.

[www.healthfinder.gov](http://www.healthfinder.gov)

*Health.gov.* A portal for online information from a wide variety of federal agencies.

<https://health.gov>



*Healthy Campus.* The American College Health Association's introduction to the Healthy Campus program.

[www.acha.org/HealthyCampus](http://www.acha.org/HealthyCampus)

*Healthy People.* Provides information on *Healthy People* objectives and priority areas.

<https://health.gov/healthypeople>

*MedlinePlus.* Provides links to news and reliable information about health from government agencies and professional associations; also includes a health encyclopedia and information on prescription and over-the-counter drugs.

<https://medlineplus.gov/>

*National Health Information Center (NHIC).* Puts consumers in touch with the organizations that are best able to provide answers to health-related questions.

[www.health.gov/nhic/](http://www.health.gov/nhic/)

*National Institutes of Health (NIH).* Provides information about all NIH activities as well as consumer publications, hotline information, and an A-to-Z listing of health issues with links to the appropriate NIH institute.

[www.nih.gov](http://www.nih.gov)

*National Wellness Institute.* Serves professionals and organizations that promote optimal health and wellness.

[www.nationalwellness.org](http://www.nationalwellness.org)

*Office of Minority Health.* Promotes improved health among racial and ethnic minority populations.

<https://minorityhealth.hhs.gov>

*Office on Women's Health.* Provides information and answers to frequently asked questions.

[www.womenshealth.gov](http://www.womenshealth.gov)

*Quantified Self.* Offers a forum for people interested in tracking their diet, sleep, and other behaviors and activities using technology.

<https://quantifiedself.com>

*Surgeon General.* Includes information on activities of the Surgeon General and the text of many key reports on such topics as tobacco use, physical activity, and mental health.

[www.surgeongeneral.gov](http://www.surgeongeneral.gov)

*World Health Organization (WHO).* Provides information about health topics and issues affecting people around the world.

[www.who.int/en](http://www.who.int/en)

## SELECTED BIBLIOGRAPHY

Ahmad, F. B., et al. 2021. Provisional mortality data—United States, 2020. *MMWR* 70(14): 519–522.

American Cancer Society. 2021. *Cancer Facts and Figures—2021*. Atlanta, GA: American Cancer Society ([www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2021/cancer-facts-and-figures-2021.pdf](http://www.cancer.org/content/dam/cancer-org/research/cancer-facts-and-statistics/annual-cancer-facts-and-figures/2021/cancer-facts-and-figures-2021.pdf)).

American College Health Association. 2021. *American College Health Association—National College Health Assessment III: Reference Group Executive Summary Spring 2021*. Silver Spring, MD: American College Health Association ([www.acha.org/NCHA/ACHA-NCHA\\_Data/Publications\\_and\\_Reports/NCHA/Data/Reports\\_ACHA](http://www.acha.org/NCHA/ACHA-NCHA_Data/Publications_and_Reports/NCHA/Data/Reports_ACHA)).

American Heart Association. 2018. *Heart Disease and Stroke Statistics—2018 Update*. Dallas, TX: American Heart Association ([www.ahajournals.org/doi/10.1161/CIR.0000000000000558](http://www.ahajournals.org/doi/10.1161/CIR.0000000000000558)).

Andrade, B. S., et al. 2021. Long-COVID and post-COVID health complications: An up-to-date review on clinical conditions and their possible molecular mechanisms. *Viruses* 13(4): 700.

Centers for Disease Control and Prevention. 2021. *Economic Trends in Tobacco* ([https://www.cdc.gov/tobacco/data\\_statistics/fact\\_sheets/economics/econ\\_facts/index.htm](https://www.cdc.gov/tobacco/data_statistics/fact_sheets/economics/econ_facts/index.htm)).

Centers for Disease Control and Prevention. 2021. *Health Equity Considerations and Racial and Ethnic Minority Groups* ([www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html](http://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/race-ethnicity.html)).

Centers for Disease Control and Prevention. 2021. *Racial and Ethnic Approaches to Community Health (REACH)* ([www.cdc.gov/nccdphp/dch/programs/reach](http://www.cdc.gov/nccdphp/dch/programs/reach)).

Centers for Disease Control and Prevention. 2020. *HIV Surveillance Report* ([www.cdc.gov/hiv/library/reports/hiv-surveillance.html](http://www.cdc.gov/hiv/library/reports/hiv-surveillance.html)).

Cornelius, M. E., et al. 2020. Tobacco product use among adults—United States, 2019. *MMWR* 69(46): 1736–1742.

Esser, M. B., et al. 2020. Deaths and years of potential life lost from excessive alcohol use—United States, 2011–2015. *MMWR* 69(30): 981–987.

Goldman, D. 2020. *Obesity, Second to Smoking as the Most Preventable Cause of US Deaths, Needs New Approaches* (<https://healthpolicy.usc.edu/article/obesity-second-to-smoking-as-the-most-preventable-cause-of-us-deaths-needs-new-approaches/>).

Goldrick-Rab, S. 2016. *Paying the Price: College Costs, Financial Aid, and the Betrayal of the American Dream*. Chicago, IL: University of Chicago Press.

Hersi, M., et al. 2017. Risk factors associated with the onset and progression of Alzheimer's disease: A systematic review of the evidence. *NeuroToxicology* 61: 143–187.

Inoue, T., and Y. Tanaka. 2016. Hepatitis B virus and its sexually transmitted infection—an update. *Microbial Cell* 3(9): 420–437.

Jepsen, R., et al. 2015. Physical activity and quality of life in severely obese adults during a two-year lifestyle intervention programme. *Journal of Obesity* Article ID 314194 ([www.hindawi.com/journals/job/2015/314194/](http://www.hindawi.com/journals/job/2015/314194/)).

Johnson, S. 2021. "The Living Century." *The New York Times Magazine: Health Issue*, May 2.

Kaerberlein, M. 2018. How healthy is the healthspan concept? *GeroScience* 40(4): 361–364.

Kaiser Family Foundation. 2020. *Key Facts about the Uninsured Population* (<http://kff.org/uninsured/fact-sheet/key-facts-about-the-uninsured-population>).

National Center for Complementary and Integrative Health. 2021. *Finding and Evaluating Online Resources* (<https://nccih.nih.gov/health/webresources>).

National Center for Health Statistics. 2021. *Health, United States, 2019*. Hyattsville, MD: National Center for Health Statistics (<https://dx.doi.org/10.15620/cdc:100685>).

National Institutes of Health. 2021. *Cervical Cancer* ([www.cancer.gov/types/cervical](http://www.cancer.gov/types/cervical)).

National Research Council, Institute of Medicine. 2015. *Measuring the Risks and Causes of Premature Death: Summary of Workshops* (p. 24). Washington, DC: National Academies Press ([www.ncbi.nlm.nih.gov/pubmed/25834864](http://www.ncbi.nlm.nih.gov/pubmed/25834864)).

Ogden, C. L., et al. 2020. Trends in obesity prevalence by race and Hispanic origin—1999–2000 to 2017–2018. *JAMA* 324(12): 1208–1210.

Persky, S., et al. 2014. The role of weight, race, and health care experiences in care use among young men and women. *Obesity* 22(4): 1194–1200.

Petrides, J., et al. 2019. Lifestyle changes for disease prevention. *Primary Care* 46(1): 1–12.

Prochaska, J. O., J. C. Norcross, and C. C. DiClemente. 1995. *Changing for Good: The Revolutionary Program That Explains the Six Stages of Change and Teaches You How to Free Yourself from Bad Habits*. New York: Morrow.

Swire-Thompson, B., and D. Lazer. 2020. Public health and online misinformation: Challenges and recommendations. *Annual Review of Public Health* 41: 433–451.

Takler, G., et al. 2017. "Resilience and Grit: Pursuing Organizational Change & Preventing Burnout in GIM." Research presented at The Society of General Internal Medicine 2017 Annual Meeting, April 19–22, 2017. Washington, DC.

University of California, Berkeley. 2021. *Evaluating Web Pages* ([www.lib.berkeley.edu/TeachingLib/Guides/Internet/Evaluate.html](http://www.lib.berkeley.edu/TeachingLib/Guides/Internet/Evaluate.html)).

U.S. Department of Health and Human Services. 2020. *Healthy People 2030* (<https://health.gov/healthypeople>).

U.S. Department of Health and Human Services. 2018. *Physical Activity Guidelines for Americans* (2nd ed.). Washington, DC: U.S. Department of Health and Human Services.

Woolf, S. H., and H. Schoemaker. 2019. Life expectancy and mortality rates in the United States, 1959–2017. *JAMA* 322(20): 1996–2016.





Name \_\_\_\_\_

Section \_\_\_\_\_ Date \_\_\_\_\_

## LAB 1.1 Your Wellness Profile

Consider how your lifestyle, attitudes, and characteristics relate to each of the dimensions of wellness. Fill in at least three strengths for each dimension (examples of strengths are listed with each dimension). Once you've completed your lists, choose what you believe are your five most important strengths and circle them.

**Physical wellness:** To maintain overall physical health and engage in appropriate physical activity (e.g., stamina, strength, flexibility, healthy body composition).


**Emotional wellness:** To have a positive self-concept, deal constructively with your feelings, and develop positive qualities (e.g., optimism, trust, self-confidence, determination).


**Intellectual wellness:** To pursue and retain knowledge, think critically about issues, make sound decisions, identify problems, and find solutions (e.g., common sense, creativity, curiosity).


**Interpersonal/social wellness:** To develop and maintain meaningful relationships with a network of friends and family members, and to contribute to your community (e.g., friendly, good-natured, compassionate, supportive, good listener).


**Cultural wellness:** To accept, value, and even celebrate personal and cultural differences (e.g., refuse to stereotype based on ethnicity, gender, religion, or sexual orientation; create relationships with those who are different from you; maintain and value your own cultural identity).


## LABORATORY ACTIVITIES

**Spiritual wellness:** To develop a set of beliefs, principles, or values that gives meaning or purpose to your life; to develop faith in something beyond yourself (e.g., religious faith, service to others, mindful meditation).


**Environmental wellness:** To protect yourself from environmental hazards and to minimize the negative impact of your behavior on the environment (e.g., carpooling, recycling).

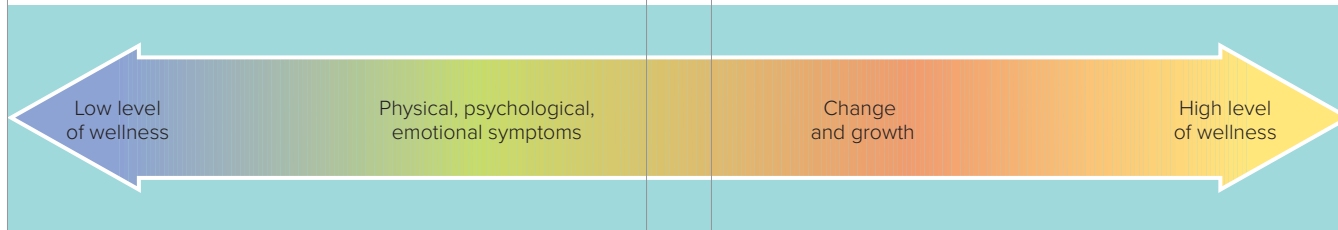

**Financial wellness:** To be able to live within your means and manage your money in a way that gives you peace of mind (e.g., drawing up a budget, setting up a savings account).


**Occupational wellness:** To gain a measure of happiness and fulfillment through your work (e.g., enjoy what you do, feel valued by your manager, build positive relationships with coworkers, take advantage of opportunities to learn and be challenged).



## LABORATORY ACTIVITIES

Next, think about where you fall on the wellness continuum for each of the dimensions of wellness. Indicate your placement for each—physical, emotional, intellectual, interpersonal/social, cultural, spiritual, environmental, financial, and occupational—by placing Xs on the continuum below.



Based on both your current lifestyle and your goals for the future, what do you think your placement on the wellness continuum will be in 5 years? What new health behaviors will you have to adopt to achieve your goals? Which of your current behaviors will you need to change to maintain or improve your level of wellness in the future?

Does the description of wellness given in this chapter encompass everything you believe to be part of wellness for you? Write your own definition of wellness, including any additional dimensions that are important to you. Then rate your level of wellness based on your own definition.

### Using Your Results

*How did you score?* Are you satisfied with your current level of wellness—overall and in each dimension? In which dimension(s) would you most like to increase your level of wellness?

*What should you do next?* As you consider possible target behaviors for a behavior change program, choose things that will maintain or increase your level of wellness in one or more of the dimensions you listed as an area of concern. Remember to consider behaviors that may threaten your level of wellness in the future, such as smoking or eating a high-fat diet. List several possible target behaviors and the wellness dimensions that they influence.

#### Target behavior

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

#### Wellness dimension(s)

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

For additional guidance in choosing a target behavior, complete the lifestyle self-assessment in Lab 1.2.

**LABORATORY ACTIVITIES**

Name \_\_\_\_\_ Section \_\_\_\_\_ Date \_\_\_\_\_

**LAB 1.2 Lifestyle Evaluation**

How does your current lifestyle compare with the lifestyle recommended for wellness? For each question, choose the answer that best describes your behavior. Then add up your score for each section.

**Exercise/Fitness**

	Almost Always	Sometimes	Never
1. I engage in moderate exercise, such as brisk walking or swimming, for the equivalent of at least 150 minutes per week.	4	1	0
2. I do exercises to develop muscular strength and endurance at least twice a week.	2	1	0
3. I spend some of my leisure time participating in individual, family, or team activities, such as gardening, bowling, or softball.	2	1	0
4. I maintain a healthy body weight, avoiding overweight and underweight.	2	1	0

Exercise/Fitness Score: \_\_\_\_\_

**Nutrition**

1. I eat a variety of foods each day, including seven or more servings of fruits and/or vegetables.	3	1	0
2. I limit the amount of saturated and trans fat in my diet.	3	1	0
3. I avoid skipping meals.	2	1	0
4. I limit the amount of salt and added sugars I eat.	2	1	0

Nutrition Score: \_\_\_\_\_

**Tobacco and Nicotine**

1. I avoid smoking cigarettes.	4	1	0
2. I avoid using pipes, cigars, and e-cigarettes.	2	1	0
3. I avoid spit tobacco.	2	1	0
4. I limit my exposure to environmental tobacco smoke.	2	1	0

Tobacco Use Score: \_\_\_\_\_

**Alcohol and Drugs**

1. I avoid alcohol, or I drink no more than one (women) or two (men) drinks a day.	4	1	0
2. I avoid using alcohol or other drugs as a way of handling stressful situations or the problems in my life.	2	1	0
3. I am careful not to drink alcohol when taking medications (such as cold or allergy medications) or when pregnant.	2	1	0
4. I read and follow the label directions when using prescribed and over-the-counter drugs.	2	1	0

Alcohol and Drugs Score: \_\_\_\_\_

**Emotional Health**

1. I enjoy being a student, and I have a job or do other work that I enjoy.	2	1	0
2. I find it easy to relax and express my feelings freely.	2	1	0
3. I manage stress well.	2	1	0
4. I have close friends, relatives, or others whom I can talk to about personal matters and call on for help when needed.	2	1	0
5. I participate in group activities (such as community or church organizations) or hobbies that I enjoy.	2	1	0

Emotional Health Score: \_\_\_\_\_

## LABORATORY ACTIVITIES

### Safety

	Almost Always	Sometimes	Never
1. I wear a safety belt while riding in a car.	2	1	0
2. I avoid driving while under the influence of alcohol or other drugs.	2	1	0
3. I obey traffic rules and the speed limit when driving.	2	1	0
4. I read and follow instructions on the labels of potentially harmful products or substances, such as household cleaners, poisons, and electrical appliances.	2	1	0
5. I avoid using a cell phone while driving.	2	1	0
Safety Score: _____			

### Disease Prevention

	2	1	0
1. I know the warning signs of cancer, heart attack, and stroke.	2	1	0
2. I avoid overexposure to the sun and use sunscreen.	2	1	0
3. I get recommended medical screening tests (such as blood pressure and cholesterol checks and Pap tests), immunizations, and booster shots.	2	1	0
4. I do not share needles to inject drugs.	2	1	0
5. I am not sexually active, <i>or</i> I have sex with only one mutually faithful, uninfected partner, <i>or</i> I always engage in safer sex (using condoms).	2	1	0
Disease Prevention Score: _____			

**Scores of 9 and 10** Excellent! Your answers show that you are aware of the importance of this area to your health. More important, you are putting your knowledge to work for you by practicing good health habits. As long as you continue to do so, this area should not pose a serious health risk.

**Scores of 6 to 8** Your health practices in this area are good, but there is room for improvement.

**Scores of 3 to 5** Your health risks are showing.

**Scores of 0 to 2** You may be taking serious and unnecessary risks with your health.

## Using Your Results

*How did you score?* In which areas did you score the lowest? Are you satisfied with your scores in each area? In which areas would you most like to improve your scores?

*What should you do next?* To improve your scores, look closely at any item to which you answered “sometimes” or “never.” Identify and list at least three possible targets for a health behavior change program. (If you are aware of other risky health behaviors you currently engage in, but that were not covered by this assessment, you may include those in your list.) For each item on your list, identify your current “stage of change” and one strategy you could adopt to move forward (see the section “Enhancing Your Readiness to Change”). Possible strategies might include obtaining information about the behavior, completing an analysis of the pros and cons of change, or beginning a written record of your target behavior.

Behavior	Stage	Strategy
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____

**SOURCE:** Adapted from *Healthstyle: A Self-Test*, developed by the U.S. Public Health Service. The behaviors covered in this test are recommended for most Americans, but some may not apply to people with certain chronic diseases or disabilities or to pregnant people, who may require special advice from their physician.

Design elements: Evidence for Exercise box (shoes and stethoscope): Vstock LLC/Tetra Images/Getty Images; Take Charge box (lady walking): VisualCommunications/E+/Getty Images; Critical Consumer box (man): Sam74100/iStock/Getty Images; Diversity Matters box (holding devices): Robert Churchill/Rawpixel Ltd/iStockphoto/Getty Images; Wellness in the Digital Age box (Smart Watch): Hong Li/DigitalVision/Getty Images



## CHAPTER

## 2

## Principles of Physical Fitness

## LOOKING AHEAD...

After reading this chapter, you should be able to

- Describe how much physical activity is recommended for developing health and fitness.
- Identify the components of physical fitness and the way each component affects wellness.
- Explain the goals and basic principles of physical training.
- Describe the principles involved in designing a well-rounded exercise program.
- List the steps for making an exercise program safe, effective, and successful.

## TEST YOUR KNOWLEDGE

1. To improve your health, you must exercise vigorously for at least 30 minutes straight, 5 or more days per week. True or false?
2. Which of the following activities uses about 150 calories?
  - a. washing a car for 45–60 minutes
  - b. shooting a basketball for 30 minutes
  - c. jumping rope for 15 minutes
  - d. all three
3. Regular exercise can make a person smarter. True or false?

*See answers on the next page.*

Guy Bell/Alamy Stock Photo



**A**ny list of the benefits of physical activity is impressive. Although people vary greatly in physical fitness and performance ability, the benefits of regular physical activity are available to everyone. Significant health benefits from exercise occur when going from no activity (sedentary) to some moderate-intensity activity (Figure 2.1). Further health benefits occur when exercising harder or longer. The relative risk of death from all causes and the risk of heart disease decrease by as much as 65% when comparing the least and most active men and women. In Figure 2.1, relative risk of death refers to the risk of death per year of sedentary people compared to people in various activity levels.

This chapter provides an overview of physical fitness. It explains how both lifestyle physical activity and more formal exercise programs contribute to wellness. It also describes the components of fitness, the basic principles of physical training, and the essential elements of a well-rounded exercise program. Chapters 3, 4, 5, and 6 provide in-depth looks at the elements of a fitness program; Chapter 7 puts these elements together in a complete, personalized program.

## PHYSICAL ACTIVITY AND EXERCISE FOR HEALTH AND FITNESS

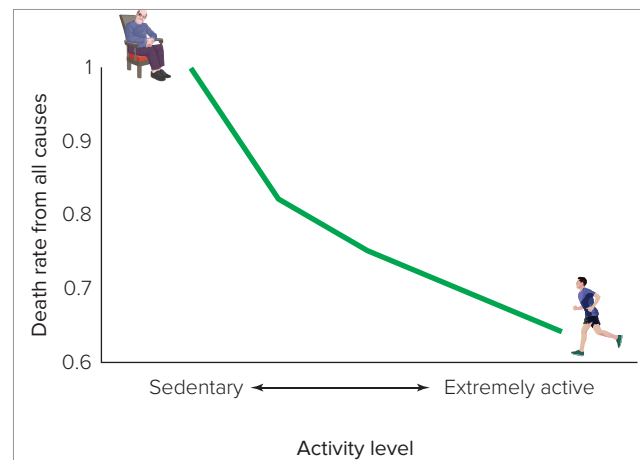
Almost any physical activity promotes health. Try to be more active during the day, regardless of whether you can fit in a formal workout. Get up and move around each hour when studying, working on the computer, or watching TV (see the box “Move More, Sit Less”). Physical activity and exercise are points along a continuum.

### Physical Activity on a Continuum

**Physical activity** is movement that is carried out by the skeletal muscles and requires energy. Different physical activities can vary by ease or intensity. Standing up or walking down a hallway requires little energy or effort, but each is a higher level of activity than sitting or lying down. More intense sustained activities, such as cycling five miles or running in a race, require considerably more effort.

#### Answers (Test Your Knowledge)

- 1. False.** Experts recommend at least 150 minutes of moderate-intensity physical activity or 75 minutes of vigorous-intensity physical activity per week. The activity can be done in short bouts—10-minute sessions, for example—spread out across the day. Any amount of moderate- to vigorous-intensity physical activity contributes to activity goals.
- 2. All three.** The more intense an activity, the more calories it burns in a given amount of time. This is one reason that people who exercise vigorously can get the same benefits in less time than people who exercise longer at a moderate intensity.
- 3. True.** Regular exercise (even moderate-intensity exercise) benefits the human brain and nervous system in a variety of ways. For example, exercise improves cognitive function—that is, the brain’s ability to learn, remember, think, and reason.



**Figure 2.1 Exercise promotes longevity.** The risk of death each year from all causes decreases with increased amounts and intensities of weekly physical activity.

**SOURCES:** Adapted from a composite of 12 studies involving over 300,000 men and women. 2018 Physical Activity Guidelines Advisory Committee. 2018. 2018 Physical Activity Guidelines Advisory Committee Scientific Report. Washington, DC: U.S. Department of Health and Human Services; Schnohr, P., et al. 2015. Dose of jogging and long-term mortality: The Copenhagen City Heart Study. *Journal of the American College of Cardiology* 65(5): 411–419.

**Exercise** refers to planned, structured, repetitive movement intended specifically to improve or maintain physical fitness. **Physical fitness** is a set of physical attributes that allows the body to respond or adapt to the demands and stress of physical effort—to perform moderate to vigorous levels of physical activity without becoming overly tired. Physical fitness is the most important health-related factor contributing to longevity and health span—the healthy, functional years of life. Figure 2.2 shows that people with superior fitness live longer and healthier.

Levels of fitness depend on such physiological factors as the heart’s ability to pump blood and the energy-generating capacity of the cells. These factors in turn depend both on *genetics*—a person’s inborn potential for physical fitness—and *behavior*—getting enough physical activity to stress the body and cause long-term physiological changes.

Physical activity is essential to health and confers wide-ranging health benefits, but exercise is necessary to significantly improve physical fitness. This important distinction between physical activity, which improves health and wellness, and exercise, which improves fitness, is a key concept in understanding the guidelines discussed in this section.

**physical activity** Body movement that is carried out by the skeletal muscles and requires energy.

#### TERMS

**exercise** Planned, structured, repetitive movement intended to improve or maintain physical fitness.

**physical fitness** A set of physical attributes that allows the body to respond or adapt to the demands and stress of physical effort—to perform moderate to vigorous levels of physical activity without becoming overly tired. It is one of the most important health habits promoting health and longevity.

## TAKE CHARGE

### Move More, Sit Less



A regular exercise program provides huge wellness benefits, but it does not cancel out all the negative effects of too much sitting during the day. Advances in technology promote sedentary behavior; we can now work or study at a desk, watch TV or play video games in our leisure time, order takeout and delivery for meals, and shop and bank online. To avoid the negative health effects of too little daily activity, you may need a plan to reduce your sitting time. Try some of these strategies:

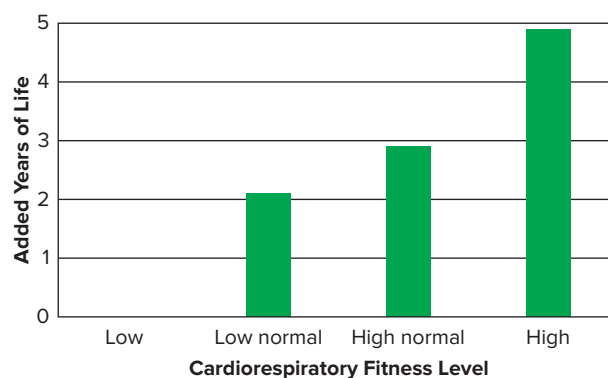
- Stand up and/or walk when you are on work or personal phone calls, in a meeting or study session, or on a coffee break.
- Take the stairs whenever and wherever you can; walk up and down escalators instead of just riding them.
- At work, walk to a coworker's desk rather than e-mailing or calling; take the long route to the restroom; and take a walk

break whenever you take a coffee or snack break. Drink plenty of water so that you'll have to take frequent restroom breaks.

- Set reminders to get up and move: Use commercial breaks while watching TV; at work or while using a digital device, use the clock function on your computer or phone to make sure you don't sit for longer than an hour at a time.
- Engage in active chores and leisure activities.
- Track your sedentary time to get a baseline, and then continue monitoring to note any improvements. You can also use a fitness tracker such as the Fitbit or step counter to track your general activity level or to set reminders to get up and move after sitting for a particular length of time.

### Increasing Physical Activity to Improve Health and Wellness

According to the U.S. Surgeon General's Office, "Engaging in regular physical activity is one of the most important things that people of all ages can do to improve their health." Physical activity is central to the national prevention strategy to improve health by promoting community design to support active lifestyles, encouraging exercise in young people, providing safe and accessible places for sports and exercise, and supporting physical activity in the workplace. The U.S. Department of Health and Human Services, American College of Sports Medicine, American Heart Association, and Surgeon General's Office have made specific exercise recommendations for promoting health. Their reports stress the importance of regular physical activity and emphasize that some physical activity is better than none.



**Figure 2.2 Added years of life associated with increasing fitness levels.** In a study that tracked fitness levels of more than 5,000 men for 47 years, higher cardiorespiratory fitness levels were associated with increased longevity. The high fitness group lived nearly 5 years longer than those with the lowest fitness levels.

**SOURCE:** From the data of Clausen, Johan SR, Jacob L. Marott, Andreas Holtermann, Finn Gyntelberg, and Magnus T. Jensen. Midlife Cardiorespiratory Fitness and the Long-Term Risk of Mortality: 46 Years of Follow-Up. *Journal of the American College of Cardiology* 72, no. 9 (2018): 987–95.

They also present evidence that regular activity promotes health and prevents premature death and a variety of diseases (see Figure 2.1). The reports include these key guidelines for adults:

- For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity aerobic physical activity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. As a rule of thumb for calculating a weekly total, 1 minute of vigorous-intensity activity is the equivalent of 2 minutes of moderate-intensity activity. Any amount of moderate- to vigorous-intensity activity contributes to these goals.
- For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity activity, or 150 minutes a week of vigorous-intensity activity, or an equivalent combination of moderate- and vigorous-intensity activity. Adults can enjoy additional health benefits by engaging in physical activity beyond this amount. The Health and Retirement Study—a long-term study of older adults sponsored by the National Institute on Aging—found that people who exercised vigorously had a lower death rate than those who exercised at moderate intensities or did no physical activity. After 16 years, the survival rate was 84% in those doing vigorous exercise, 78% in those doing moderate-intensity physical activity, and only 65% in those doing no physical activity.
- Adults should also do muscle-strengthening activities, such as moderate- or high-intensity weight training or body weight exercise involving all major muscle groups on two or more days a week. These activities provide additional health benefits—for example, they prevent muscle loss and falls in older adults.
- Everyone should avoid inactivity. Spend less time in front of a television or computer screen because such inactivity decreases metabolic health, contributes to a sedentary lifestyle, and increases the risk of obesity.

Common Activities	Duration (min)	
Washing and waxing a car	45–60	
Washing windows or floors	45–60	
Gardening	30–45	
Wheeling self in wheelchair	30–40	
Pushing a stroller 1½ miles	30	
Raking leaves	30	
Walking 2 miles	30 (15 min/mile)	
Shoveling snow	15	
Stairwalking	15	
Sporting Activities		
Playing volleyball	45–60	
Playing touch football	45	
Walking 1¾ miles	35 (20 min/mile)	
Basketball (shooting baskets)	30	
Bicycling 5 miles	30	
Dancing fast (social)	30	
Water aerobics	30	
Swimming laps	20	
Basketball (playing game)	15–20	
Bicycling 4 miles	15	
Jumping rope	15	
Running 1½ miles	15 (10 min/mile)	

**Figure 2.3 Examples of moderate-intensity physical activity.**

Each example uses about 150 calories.

**SOURCE:** National Heart, Lung, and Blood Institute, *Guide to Physical Activity* ([https://www.nhlbi.nih.gov/health/educational/lose\\_wt/phy\\_act.htm](https://www.nhlbi.nih.gov/health/educational/lose_wt/phy_act.htm)); accessed August 23, 2021.

The reports state that physical activity benefits people of all ages and of all racial and ethnic groups, including people with disabilities. The reports emphasize that the benefits of activity outweigh the dangers. The recommended levels of physical activity promote health and wellness by lowering the risk of high blood pressure, stroke, heart disease, type 2 diabetes, colon cancer, and osteoporosis and by reducing feelings of mild to moderate depression and anxiety.

What is moderate physical activity? Activities such as brisk walking, dancing, swimming, cycling, and yard work can all count toward the daily total. A moderate amount of activity uses about 150 **calories** of energy and causes a noticeable increase in heart rate, such as would occur with a brisk walk. Examples of activities that use about 150 calories in 15–60 minutes are shown in Figure 2.3. You can burn the same number of calories by doing a lower-intensity activity for a longer time or a higher-intensity activity for a shorter time. People are most likely to participate in physical activities they enjoy, such as dancing.

In contrast to moderate-intensity activity, *vigorous* physical activity—such as jogging—causes rapid breathing and a substantial increase in heart rate (Table 2.1). Physical activity and exercise

**calorie** The commonly used term for *kilocalorie*, which is a measure of energy equal to the amount of heat it takes to raise the temperature of 1 liter of water 1°C. One kilocalorie contains 1,000 calories, but the familiar term *calorie* is often used for the larger energy unit, including on food labels.

#### TERMS

**Table 2.1** Examples of Moderate- and Vigorous-Intensity Exercise

#### MODERATE-INTENSITY ACTIVITY

Uses 3.5–7 calories per minute and causes your breathing and heart rate to increase but still allows for comfortable conversation:

- Actively playing with children or pets
- Archery
- Ballroom dancing
- Bicycling or stationary bike, moderate pace
- Downhill skiing, moderate intensity
- Figure skating, recreational
- Fly fishing or walking along stream
- Gardening or yard work, moderate pace
- Golf
- Hiking, leisurely pace
- Horseback riding, recreational
- Housework, moderate intensity
- Skateboarding
- Softball
- Using stair-climber, elliptical trainer, or rowing machine, moderate pace
- Table tennis
- Tennis, doubles
- Walking at a moderate pace: walking to school or work, walking for pleasure
- Water aerobics
- Waxing the car
- Weight training and bodybuilding
- Yoga

**SOURCE:** Centers for Disease Control and Prevention. 2015. *General Physical Activities Defined by Level of Intensity* ([www.cdc.gov/nccdphp/dnpa/physical/pdf/PA\\_Intensity\\_table\\_2\\_1.pdf](http://www.cdc.gov/nccdphp/dnpa/physical/pdf/PA_Intensity_table_2_1.pdf)).

#### VIGOROUS-INTENSITY ACTIVITY

Uses more than 7 calories per minute and increases your heart and breathing rates considerably. These exercises cause larger increases in physical fitness:

- Group exercise: high-impact step aerobics, aerobic dance
- Backpacking
- Basketball, recreational
- Bicycling, high intensity
- Calisthenics, vigorous: jumping jacks, burpees, air squats
- Circuit weight training
- Cross-country skiing or snowshoeing
- Cross-training, such as CrossFit
- Downhill skiing, vigorous intensity
- Football, recreational
- Gardening or yard work, shoveling heavy snow, digging ditches
- Hand cycling
- Horseback riding, galloping or jumping
- In line skating
- High-intensity interval training: running, elliptical trainer, swimming, cycling
- Jogging
- Kayaking, whitewater
- Pushing a car
- Running up stairs
- Soccer, recreational
- Tennis, singles
- Wheelchair wheeling training