

Fit & FIFTH EDITION Well

Core Concepts and Labs in
Physical Fitness and Wellness



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

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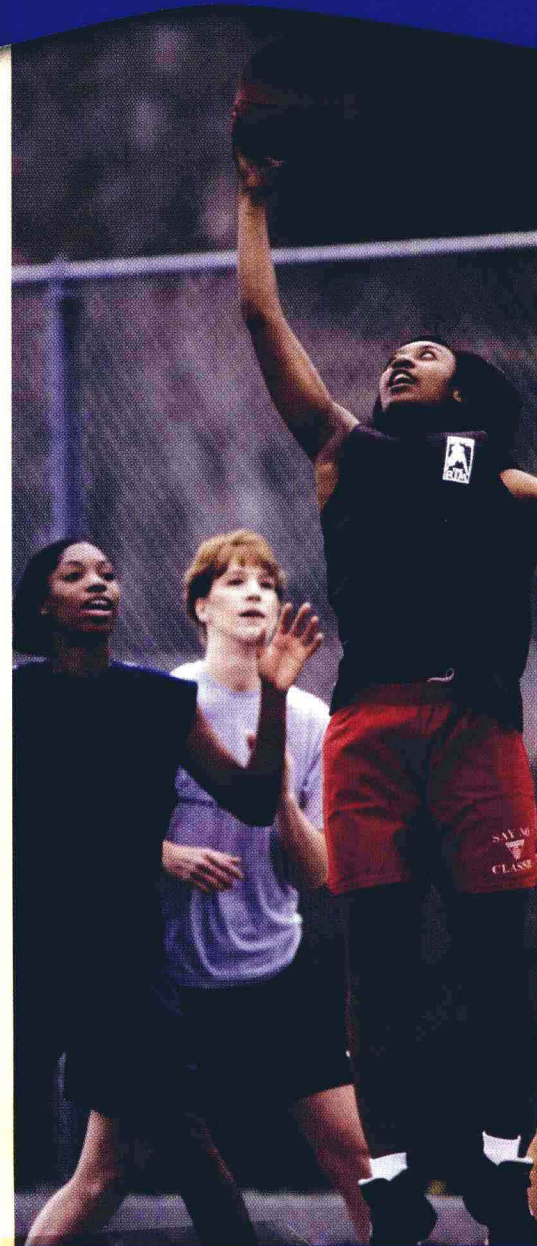
Thomas D. Fahey
California State University, Chico

Paul M. Insel
Stanford University

Walton T. Roth
Stanford University



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Preface

For today's fitness-conscious student, *Fit and Well* combines the best of two worlds. In the area of physical fitness, *Fit and Well* offers expert knowledge based on the latest findings in exercise physiology and sports medicine, along with tools for self-assessment and guidelines for becoming fit. In the area of wellness, it offers accurate, current information on today's most important health-related topics and issues, again with self-tests and guidelines for achieving wellness. To create this book, we have drawn on our combined expertise and experience in exercise physiology, athletic training, personal health, scientific research, and teaching.

OUR AIMS

Our aims in writing this book can be stated simply:

- To show students that becoming fit and well greatly improves the quality of their lives
- To show students how they can become fit and well
- To motivate students to make healthy choices and to provide them with tools for change

The first of these aims means helping students see how their lives can be enhanced by a fit and well lifestyle. This book offers convincing evidence of a simple truth: To look and feel our best, to protect ourselves from degenerative diseases, and to enjoy the highest quality of life, we need to place fitness and wellness among our top priorities. *Fit and Well* makes clear both the imprudence of our modern, sedentary lifestyle and the benefits of a wellness lifestyle.

Our second aim is to give students the tools and information they need to become fit and well. This book provides students with everything they need to create their own personal fitness programs, including instructions for fitness tests, explanations of the components of fitness and guidelines for developing them, descriptions and illustrations of exercises, sample programs, and more. In addition, *Fit and Well* provides accurate, up-to-date, scientifically based information about other key topics in wellness, including nutrition, weight management, stress, cardiovascular health, cancer, drugs, alcohol, STDs, and a multitude of others.

In providing this material, we have pooled our efforts. Thomas Fahey has contributed his knowledge as an exercise physiologist, teacher, and author of numerous exercise science textbooks. Paul M. Insel and Walton T. Roth have contributed their knowledge of current topics in health as the authors of the leading personal health textbook, *Core Concepts in Health*.

Because we know this expert knowledge can be overwhelming, we have balanced the coverage of complex topics with student-friendly features designed to make the book accessible. Written in a straightforward, easy-to-read style and presented in a colorful, open format, *Fit and Well* invites the student to read, learn, and remember. Boxes, labs, tables, figures, artwork, photographs, and other features add interest to the text and highlight areas of special importance.

Our third aim is to involve students in taking responsibility for their health. *Fit and Well* makes use of interactive features to get students thinking about their own levels of physical fitness and wellness. We offer students assessment tools and laboratory activities to evaluate themselves in terms of each component of physical fitness and each major wellness area, ranging from cardiorespiratory endurance and muscular strength to heart disease, cancer, and STDs.

We also show students how they can make difficult lifestyle changes by using the principles of behavior change. Chapter 1 contains a step-by-step description of this simple but powerful tool for change. The chapter not only explains the five-step process but also offers a wealth of tips for ensuring success. Behavior management aids, including personal contracts, behavior checklists, and self-tests, appear throughout the book. *Fit and Well's* combined emphasis on self-assessment, self-development in each area of wellness, and behavior change ensures that students not only are inspired to become fit and well but also have the tools to do so.

When students use these tools to make significant lifestyle changes, they begin to realize that they are in charge of their health—and their lives. From this realization comes a sense of competence and personal power. Perhaps our overriding aim in writing *Fit and Well* is to convey the fact that virtually everyone has the ability to

understand, monitor, and make changes in his or her own level of fitness and wellness. By making healthy choices from an early age, individuals can minimize the amount of professional medical care they will ever require. Our hope is that *Fit and Well* will help people make this exciting discovery: that they have the power to shape their own futures.

CONTENT AND ORGANIZATION OF THE FIFTH EDITION

The basic content of *Fit and Well* remains unchanged in the fifth edition. Chapter 1 provides an introduction to fitness and wellness and explains the principles of behavior change. Chapters 2–7 focus on the various areas of fitness. Chapter 2 provides an overview, discussing the components of fitness, the principles of physical training, and the factors involved in designing a well-rounded, personalized exercise program. Chapter 3 provides basic information on how the cardiorespiratory system functions, how the body produces energy for exercise, and how individuals can create successful cardiorespiratory fitness programs. Chapters 4, 5, and 6 look at muscular strength and endurance, flexibility and low-back health, and body composition, respectively. Chapter 7 “puts it all together,” describing the nature of a complete program that develops all the components of fitness. This chapter also includes complete sample exercise programs.


Chapters 8, 9, and 10 treat three key areas of wellness promotion: nutrition, weight management, and stress management, respectively. It is in these areas that individuals have some of the greatest opportunities for positive change. Chapters 11 and 12 focus on two of the most important reasons for making lifestyle changes: cardiovascular disease and cancer. Students learn the basic mechanisms of these diseases, how they are related to lifestyle, and what individuals can do to prevent them. Chapters 13 and 14 focus on other important wellness issues: addictive behaviors, including the use and abuse of tobacco, alcohol, and other drugs (Chapter 13) and sexually transmitted diseases (Chapter 14). Finally, Chapter 15 looks at four additional wellness topics: intimate relationships, aging, the health care system, and environmental health.

For the fifth edition, each chapter was carefully reviewed, revised, and updated. The latest information from scientific and wellness-related research is incorporated in the text, and newly emerging topics are discussed. The following list gives a sample of some of the new and updated material included in the fifth edition of *Fit and Well*:

- *Healthy People 2010* objectives
- Performance aids and dietary supplement safety and labeling issues
- Links between lifestyle and quality of life

- Dietary Guidelines for Americans, 2000 edition, and Dietary Reference Intakes
- Fitness and fatness
- Body image and eating disorders
- Preventing and managing low-back pain
- Nutrition for athletes
- Diabetes
- Sleep
- Diet pills and diet aids
- Anger management
- College stressors and counterproductive coping methods
- Cholesterol testing and treatment recommendations
- Binge drinking and alcohol emergencies
- Ecstasy, GHB, and other club drugs
- Spiritual wellness
- Sunscreens and sun-protective clothing
- Complementary and alternative medicine
- Health fraud and quackery

Research in the areas of health and wellness is ongoing, with new discoveries, advances, trends, and theories reported nearly every week. For this reason, no wellness book can claim to have the final word on every topic. Yet, within these limits, *Fit and Well* does present the latest available information and scientific thinking on important wellness topics. Taken together, the chapters of the book provide students with a complete, up-to-date guide to maximizing their well-being, now and through their entire lives.

 To help students obtain the most current wellness information, each chapter in the fifth edition is also closely tied to the Web site developed as a companion to the text. Boxes, illustrations, tables, labs, terms, and sections of text marked with the special new World Wide Web icon have corresponding links and activities on the Fit and Well Online Learning Center (www.mhhe.com/fahey5e).


FEATURES OF THE FIFTH EDITION

This edition of *Fit and Well* builds on the features that attracted and held our readers' interest in previous editions. These features are designed to help students increase their understanding of the key concepts of wellness and to make better use of the book.

Laboratory Activities

To help students apply the principles of fitness and wellness to their own lives, *Fit and Well* includes **laboratory activities** for classroom use. These hands-on activities give students the opportunity to assess their current level of fitness and wellness, to create plans for changing their

lifestyle to reach wellness, and to monitor their progress. They can assess their daily physical activity, for example, or their level of cardiorespiratory endurance; they can design a program to improve muscular strength or meet weight-loss goals; they can explore their risk of developing cardiovascular disease or cancer; and they can examine their attitudes and behaviors in relation to alcohol use and STDs. Labs are found at the end of each chapter; they are perforated for easy use. New to the fifth edition, assessment labs end with a section labeled “Using Your Results,” which guides students in evaluating their scores, setting goals for change, and moving forward.

 Also new to the fifth edition, the laboratory activities are found in an interactive format on the Fit and Well Online Learning Center. For a complete list of laboratory activities, see p. xvi in the table of contents.

Illustrated Exercise Sections

To ensure that students understand how to perform important exercises and stretches, *Fit and Well* includes three **illustrated exercise sections**, one in Chapter 4 and two in Chapter 5. The section in Chapter 4 covers exercises for developing muscular strength and endurance, as performed both with free weights and on weight machines. One section in Chapter 5 presents stretches for flexibility, and the other presents exercises to stretch and strengthen the lower back. Each exercise is illustrated with one or more full-color photographs showing proper technique.

Sample Programs

To help students get started, Chapter 7 offers seven complete **sample programs** designed to develop overall fitness. The programs are built around four popular cardiorespiratory endurance activities: walking/jogging/running, bicycling, swimming, and in-line skating. They also include weight training and stretching exercises. Each one includes detailed information and guidelines on equipment and technique; target intensity, duration, and frequency; calorie cost of the activity; record keeping; and adjustments to make as fitness improves. The chapter also includes general guidelines for putting together a personal fitness program: setting goals; selecting activities; setting targets for intensity, duration, and frequency; maintaining a commitment; and recording and assessing progress.

Boxes

Boxes are used in *Fit and Well* to explore a wide range of current topics in greater detail than is possible in the text itself. Boxes fall into five different categories, each marked with a special icon and label.



Take Charge boxes distill from the text the practical advice students need to apply information to their own lives. By referring to these boxes, students can easily find information about such topics as

becoming more active, rehabilitating athletic injuries, exercising in hot weather, adding whole-grain foods to the diet, judging serving sizes, helping a friend who has an eating disorder, managing anger, dealing with an alcohol emergency, enhancing support in interpersonal relationships, and many others.



Critical Consumer boxes are designed to help students develop and apply critical thinking skills, thereby enabling them to make sound choices related to health and well-being. Critical Consumer boxes provide specific guidelines for choosing a fitness center and exercise footwear and equipment; for evaluating health information, diet pills and aids, supplements, and smoking cessation products; and for using food labels and dietary supplement labels to make informed dietary choices.



Dimensions of Diversity boxes focus on the important theme of diversity. Most wellness issues are universal; we all need to exercise and eat well, for example. However, certain differences among people—based on gender, educational attainment, socioeconomic status, ethnicity, age, and other factors—do have important implications for wellness. Dimensions of Diversity boxes give students opportunities to identify special wellness concerns that affect them because of who they are, as individuals or as members of a group. Topics of Dimensions of Diversity boxes include fitness for people with disabilities, gender differences in the effects of smoking, gender and ethnic differences in body image, ethnic foods, and complementary and alternative medicine.



Wellness Connection boxes highlight important links among the different dimensions of wellness—physical, emotional, social/interpersonal, intellectual, spiritual, and environmental—and emphasize that all the dimensions must be developed in order for an individual to achieve optimal health and well-being. Topics include the effects of exercise on mental functioning, paths to spiritual wellness, expressive writing, coping with cancer, and the benefits of volunteering.



In Focus boxes highlight current topics and issues of particular interest to students. These boxes focus on such topics as the importance of lifestyle for young adults, exercise safety, exercise machines versus free weights, diabetes, fitness and fatness, glycemic index, the benefits of quitting smoking, and many others.

Vital Statistics

Vital Statistics tables and figures highlight important facts and figures in an accessible format. From tables and figures marked with the Vital Statistics label, students

learn about such matters as the leading causes of death for Americans and the factors that play a part in each one; the relationship between lifestyle and quality of life; the most popular fitness activities; drug use in the United States; the effects of binge drinking on college students; routes of HIV infection; and a wealth of other information. For students who learn best when material is displayed graphically or numerically, Vital Statistics tables and figures offer a way to grasp information quickly and directly.

Common Questions Answered

Sections called **Common Questions Answered** appear at the ends of Chapters 2–14. In these student-friendly sections, the answers to frequently asked questions are presented in easy-to-understand terms. Included are such questions as, Do I need more protein in my diet when I train with weights? Are kickboxing and Tae Bo effective forms of exercise? Can working out with an exercise ball be useful in preventing and managing low-back pain? How can I tell if I'm allergic to a food? and, Can marijuana be used medically?

Quick-Reference Appendixes

Included at the end of the book are four appendixes containing vital information in an easy-to-use format. **Appendix A, Injury Prevention and Personal Safety**, is a reference guide to preventing common injuries, whether at home, at work, at play, or on the road. It also provides information on giving emergency care when someone else's life is in danger.

Appendix B, Nutritional Content of Common Foods, allows students to assess their daily diet in terms of 11 nutrient categories, including protein, fat, saturated fat, fiber, cholesterol, and sodium. **Appendix C, Nutritional Content of Popular Items from Fast-Food Restaurants**, provides a breakdown of the nutritional content of the most commonly ordered menu items at popular fast-food restaurants.

Appendix D, Monitoring Your Progress, is a log that enables students to record and summarize the results of the assessment tests they complete as part of the laboratory activities. With space for preprogram and postprogram assessment results, the log provides an easy way to track the progress of a behavior change program.

Built-in Behavior Change Workbook

The built-in Behavior Change Workbook contains 15 separate activities that complement the lifestyle management model presented in Chapter 1. The workbook guides students in developing a successful program by walking them through each of the steps of behavior change—from choosing a target behavior to completing and signing a contract. It also includes activities to help students overcome common obstacles to behavior change. The workbook is also found on the Online Learning Center.

OTHER FEATURES AND LEARNING AIDS

At the beginning of each chapter, under the heading **Looking Ahead**, five or six statements preview the main points of the chapter for the student and serve as learning objectives. New to the fifth edition, each chapter also opens with **Test Your Knowledge**—a series of three multiple-choice and true-false questions, with answers. These self-quizzes facilitate learning by emphasizing key points, highlighting common misconceptions, and sparking debate. Within each chapter, important terms appear in boldface type and are defined on the same or facing page of text in a **running glossary**, helping students handle new vocabulary.

Other features and learning aids are found at the end of each chapter. **Tips for Today**, new to the fifth edition, provide a very brief distillation of the major message of the chapter, followed by suggestions for a few simple things that students can try right away. Tips for Today are designed to encourage students and to build their confidence by giving them easy steps they can take immediately to improve wellness. **For Further Exploration** sections, also new to the fifth edition, offer suggestions for using the free student supplements that accompany the text—the Online Learning Center, the Daily Fitness and Nutrition Journal, and the HealthQuest CD-ROM—to build fitness and wellness. These sections also list recommended books, newsletters, organizations, hotlines, and Web sites. Finally, **chapter summaries** offer students a concise review and a way to make sure they have grasped the most important concepts in the chapter.

For more on the features of the book, refer to the illustrated **User's Guide to Fit and Well**, found on pp. xvii–xx.

TEACHING TOOLS

Available with the fifth edition of *Fit and Well* is a comprehensive package of supplementary materials designed to enhance teaching and learning.

Instructor's Resource Binder (ISBN 0-07-253058-8)

The Instructor's Resource Binder contains a variety of helpful teaching materials in an easy-to-use form:

- The **Course Integrator Guide** (ISBN 0-7674-2949-4) includes learning objectives, extended chapter outlines, lists of additional resources, and many other teaching tools. It also describes all the print and electronic supplements available with the text and shows how to integrate them into lectures and assignments for each chapter.
- More than 90 **Additional Laboratory Activities**

supplement the labs that are included in the text.

- The printed **Test Bank** (0-07-253054-5) includes more than 1000 true-false, multiple choice, and essay questions.

Computerized Test Bank CD-ROM (ISBN 0-07-253050-2)

The Computerized Test Bank CD-ROM from Brownstone provides a powerful, easy-to-use test maker to create a print version, a computer lab version, or an Internet version of each test. The CD-ROM includes the Diploma program for Windows users and Exam VI for Macintosh users. The Diploma program also includes a built-in gradebook.

Visual Resources: PowerPoint Slides, Acetates, and Videos

A variety of visual resources is available for use with the fifth edition of *Fit and Well*:

- The **Image Presentation CD-ROM** (ISBN 0-07-253056-1) is an electronic library of visual resources. It includes images from the text displayed in PowerPoint as well as complete, ready-to-use PowerPoint presentations for each chapter.
- Expanded for the fifth edition, a set of 100 color **Transparency Acetates** (ISBN 0-07-253051-0) is available as a lecture resource.
- The new **McGraw-Hill Custom Video for Health** (ISBN 0-7674-2567-7) includes brief video segments with additional information on wellness topics such as nutrition, exercise, and heart disease.
- **Students on Health Custom Video** (ISBN 0-7674-0022-4) features students from college campuses across the country discussing how their daily lives are affected by their choices in such wellness areas as exercise, nutrition, and stress.
- The **Healthy Living Video Clips CD-ROM** (ISBN 0-07-238808-0) contains a collection of brief, digitized video clips that can be used to introduce a lecture or to spark classroom discussion. The segments are 2–4 minutes long, and links provide brief descriptions of each clip.

Videos from Films for Humanities and from the award-winning series *Healthy Living: Road to Wellness* are also available.

Digital Solutions

The *Fit and Well* Online Learning Center (www.mhhe.com/fahey5e) provides many additional resources for both instructors and students. Instructor tools include downloadable versions of the Course Integrator Guide and all the PowerPoint slides, links to professional resources, and a guide to using the Internet. For students, there are learning objectives, self-quizzes and glossary

flashcards for review, interactive Internet activities, and extensive links. The Online Learning Center also includes many tools for wellness behavior change, including interactive versions of the Behavior Change Workbook as well as lab activities from the text.

The **Health and Human Performance Web Site** (www.mhhe.com/hhp) provides monthly articles about current issues, downloadable supplements for instructors, a “how-to” technology guide, self-assessments, study tips, exam-preparation materials, and a wealth of other tools and resources for instructors and students. It also includes information about professional organizations, scholarship opportunities, conventions, and careers.

PageOut (www.pageout.net) is a free, easy-to-use program that enables instructors to quickly develop Web sites for their courses. PageOut can be used to create a course home page, an instructor home page, an interactive syllabus that can be linked to elements in the Online Learning Center, Web links, online discussion areas, an online grade book, and much more. The Online Learning Center can also be customized to work with products like WebCT and Blackboard.

PowerWeb (www.dushkin.com/online) is a student Internet resource of course-specific articles and current events. Students can visit PowerWeb and take self-scoring quizzes, complete interactive exercises, or check the daily news. Students using PowerWeb are also granted full access to Dushkin/McGraw-Hill’s Student Site, where they can read study tips, conduct Web research, learn about different career paths, and follow Web links.

For more information about McGraw-Hill’s digital resources, including how to obtain passwords for PageOut and PowerWeb, contact your local representative and visit McGraw-Hill on the World Wide Web (www.mhhe.com/solutions).

Student Resources Available with *Fit and Well*

In addition to the materials on the Online Learning Center, there are many resources available with *Fit and Well* designed to help students learn and apply key concepts.

- The **Daily Fitness and Nutrition Journal** (ISBN 0-07-253055-3) is a handy booklet that guides students in planning and tracking their fitness programs. It also helps students assess their current diet and make appropriate changes. It is packaged free with each copy of the text.
- **HealthQuest 4.0** (ISBN 0-07-253052-9) is an interactive CD-ROM that helps students explore their wellness behavior. It includes tutorials, assessments, and behavior change guidance in such key areas as stress, fitness, nutrition, communicable diseases, cardiovascular disease, cancer, tobacco, alcohol, and other drugs. It is packaged free with each copy of the text.
- The **FoodWise CD-ROM** (ISBN 0-07-243775-8) is

a dietary analysis program that includes food composition information based on USDA data. It offers a variety of functions, including the ability to add new foods to the database. FoodWise is available for both Windows and Macintosh and can also be networked.

- **The Quick View Guide to the Internet for Students of Health, Physical Education, and Exercise Science, Version 2.0** (ISBN 0-7674-2062-4) provides step-by-step instructions on how to access the Internet; how to find, evaluate, and use online information about fitness and wellness; and many other topics.
- **TestWell** (ISBN 0-69-721131-2) is a printed, self-scoring wellness assessment developed by the National Wellness Institute in Stevens Point, Wisconsin. It can be used as a pre- and postcourse assessment tool.

Additional supplements and many packaging options are available; check with your local sales representative.

A NOTE OF THANKS

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Academic reviewers of the fifth edition:

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Tom Ball, DePauw University
Joan Barch, Lansing Community College
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Laura L. Borsdorf, Ursinus College
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Michelle Miller, Indiana University
Laurie A. Milliken, University of Massachusetts, Boston
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Thomas D. Fahey
Paul M. Insel
Walton T. Roth

TIPS FOR TODAY

Tips for Today sections, found at the end of each chapter, provide a brief summary of the major message of the chapter, followed by suggestions for a few easy steps you can try right away to improve your level of wellness.

Tips for Today

Good flexibility and proper posture improve the health of your joints and muscles and may prevent injuries and low-back pain, contributing to long-term quality of life. Stretching exercises are also a great way to relax and relieve aches and pains. To improve and maintain your flexibility, perform stretches that work the major joints at least twice a week.

Right now you can

- Make a list of five benefits of flexibility that are particularly meaningful to you. Put the list on your mirror and use it as a motivational tool for beginning and maintaining your fitness program.
- Stand up and stretch—do either the upper-back stretch or the across-the-body stretch shown in the chapter.
- Practice the recommended sitting and standing postures suggested in the chapter (see p. 136). If needed, adjust your chair or find something to use as a footrest.
- If you frequently work at a computer, check the position in which you typically sit and make any needed adjustments to improve your posture. Your back should be flat or slightly rounded, feet flat on the floor (or a footrest), and knees at or slightly above hip level. When your hands are on the keyboard, your shoulders should be relaxed, your forearms and hands should be in a straight line, and the top of the monitor screen should be at or slightly below eye level. Your eyes should be about 18–30 inches from the screen.

SUMMARY

- Flexibility, the ability of joints to move through their full range of motion, is highly adaptable and specific to each joint.
- The benefits of flexibility include preventing abnormal stresses that lead to joint deterioration and possibly reducing the risk of injuries and low-back pain.
- Range of motion can be limited by joint structure, muscle inflexibility, and stretch receptor activity.

COMMON QUESTIONS ANSWERED

Are there any stretching exercises I shouldn't do? Yes. Avoid exercises that put excessive pressure on your joints, particularly your spine and knees. Previous injuries and poor flexibility may make certain exercises dangerous for some people. Exercises that may cause problems are described in the box "Stretches to Avoid."

Is stretching the same as warming up? People often confuse stretching and pre-exercise warm-up. Although they are complementary, they are two distinct activities. A warm-up involves light exercise that increases body temperature so your

- Developing flexibility depends on stretching the elastic tissues within muscles regularly and gently until they lengthen. Overstretching can make connective tissue brittle and lead to rupture.
- Signals sent between stretch receptors and the spinal cord can enhance flexibility because contracting a muscle stimulates a relaxation response, thereby allowing a longer muscle stretch, and because stretch receptors become less sensitive after repeated stretches, initiating lower contractions.
- Static stretching is done slowly and held to the point of mild tension. Ballistic stretching consists of bouncing stretches and can lead to injury. Proprioceptive neuromuscular facilitation uses muscle receptors in contracting and relaxing a muscle.
- Passive stretching, using an outside force in moving muscles and joints, achieves a greater range of motion and has a higher injury risk than active stretching, which uses opposing muscles to initiate a stretch.
- Stretches should be held for 10–30 seconds per form at least 4 repetitions. Flexibility training should be done 2 or more days a week, preferably following activity when muscles are warm.
- The spinal column consists of vertebrae separated by intervertebral disks. It provides structure and support for the body and protects the spinal cord.
- Acute back pain can be treated as a soft tissue injury, with cold treatment followed by application of heat (once swelling subsides); prolonged bed rest is not recommended. A variety of treatments have been suggested for chronic back pain, including regular exercise, physical therapy, acupuncture, education, and psychological therapy.
- In addition to good posture, proper body mechanics, and regular physical activity, a program for preventing low-back pain includes exercises that stretch and strengthen major muscle groups that affect the lower back.

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TAKE CHARGE *Becoming More Active*

"Too little time" is a common excuse for not being physically active. Learning to manage your time successfully is crucial if you are to maintain a wellness lifestyle. You can begin by keeping a record of how you are currently spending your time in your health journal, use a grid broken into blocks of 15, 20, or 30 minutes to track your daily activities. Then analyze your record. List each type of activity and the total time you engaged in it on a given day—for example, sleeping, 7 hours; eating, 1.5 hours; studying, 3 hours; and so on. Take a close look at your list of activities and prioritize them according to how important they are to you, from essential to somewhat important to not important at all.

Based on the priorities you set, make changes in your daily schedule by subtracting time from some activities in order to make time for physical activity. Look particularly carefully at your leisure time activities and your methods of transportation; these are areas where it is easy to build in physical activity. Make changes using a system of tradeoffs. For example, you may choose to reduce the total amount of time you spend playing computer games, listening to the radio, and chatting on the telephone in order to make time for an after-dinner bike ride or walk with a friend. You may decide to watch 10 fewer minutes of television in the morning in order to change your 5-minute drive to class into a 15-minute walk. In making these kinds of changes in your schedule, don't feel that you have to make out on anything yet. You can get more from less time by focusing on what you are doing and by combining activities.

discusses (figure 2.3, p. 80). However, exercising at low intensities does little to improve physical fitness. Although you get many of the health benefits of exercise by simply being more active, you obtain even more benefits when you are physically fit. In addition to long-term health benefits, fitness also significantly contributes to quality of life. Fitness can give you freedom—freedom to move your body the way you want. If people have more energy and better body control, they can enjoy a more active lifestyle—cycling, hiking, skiing, and so on—than their more sedentary counterparts. Even if you don't like sports, you need physical energy and stamina in your daily life, and for many nonrecreational activities—visiting museums, playing with children, gardening, and so on.

Where does this leave you? Most experts agree that some physical activity is better than none, but that more—as long as it does not result in injury—is probably better than some. At the very least, strive to become more active and meet the goal set by the Surgeon General's report of using about 150 minutes a day in physical activity. Choose to be active whenever you can. For even better health and well-being, participate in a structured exercise program that develops physical fitness. Any increase in physical

The following are just a few ways to become more active:

- Take the stairs instead of the elevator or escalator.
- Walk to the mailbox, post office, store, bank, or library whenever possible.
- Park your car a mile or even just a few blocks from your destination, and walk briskly.
- Do at least one chore every day that requires physical activity: wash the windows or your car, clean your room or house, mow the lawn, rake the leaves.
- Take study or work breaks to avoid sitting for more than 30 minutes at a time. Get up and walk around the library, your office, or your home or dorm; go up and down a flight of stairs.
- Stretch when you stand in line or watch TV.
- When you take public transportation, get off one stop down the line and walk to your destination.
- Go dancing instead of to a movie.
- Walk to visit a neighbor or friend rather than calling him or her on the phone (or for a walk while you chat).
- Put your remote control in storage when you want to change TV or radio stations; get up and do it by hand.
- Take the dog for a walk (or an extra walk) every day.
- Play actively with children or go for a walk pushing a stroller.
- Seize every opportunity to get up and walk around. Move more and sit less.

activity will contribute to your health and well-being, now and in the future.

Next, let's take a closer look at the components of physical fitness and the basic principles of fitness training.

HEALTH-RELATED COMPONENTS OF PHYSICAL FITNESS

Physical fitness has many components; some related to general health and others related more specifically to particular sports or activities. The five components of fitness most important for health are: cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition. **Health-related fitness** contributes to your capacity to enjoy life, helps your body withstand physical and psychological challenges, and protects you from chronic disease.

health-related fitness: Physical capacities that contribute to health: cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition.

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TAKE CHARGE BOXES

Take Charge boxes, found throughout the text, provide practical advice that you can apply to your everyday life.

RUNNING GLOSSARY

Important terms appear in boldface type in the text and are defined in a running glossary on the same or facing page. A pronunciation guide to the glossary terms is found on the Online Learning Center.

CRITICAL CONSUMER BOXES

Critical Consumer boxes help you develop and apply critical thinking skills so you can make sound choices related to wellness. Additional resources for each Critical Consumer topic are found on the *Fit and Well* Online Learning Center.

CRITICAL CONSUMER Dietary Supplements: A Consumer Dilemma

"Builds lean muscle fast!" "Burns fat and gives you super energy!"
"The most effective muscle-building product ever!" Its only human nature is to want to feel, perform, and look as good as possible. But wading through advertising hype can be tricky when you are considering taking a dietary supplement. While drugs and food products undergo stringent government testing, dietary supplements can be freely marketed without testing for safety or effectiveness. There is no guarantee that advertising claims about dietary supplements are accurate or true.

What is the difference between a drug—which must be approved by the Food and Drug Administration (FDA)—and a dietary supplement? In some cases, the only real difference is in how the product is marketed. Some dietary supplements are as potentially dangerous as potent prescription drugs. For example, the male hormone testosterone, a powerful drug with many adverse effects, is closely regulated by the FDA. Androstenedione, a hormone converted in the body to testosterone (and estrogen), is readily available without a prescription as a dietary supplement. Androstenedione ("andro") is legal and can be purchased in thousands of stores and Internet sites. Andro disrupts the hormonal balance of its users and can increase the risk of heart disease. Teens who take andro are at risk for early closure of bone growth centers, which could limit their adult height. Other potential adverse effects of andro include acne, psychological disturbances, male breast development, baldness, and kidney and liver dysfunction. Advertisements for andro claim that it will increase muscle size, strength, and performance, but there are actually very few good studies of andro effects on humans; the two best studies showed no significant difference in muscle growth and strength in andro users compared with nonusers. Most medical experts believe that andro is neither safe nor effective—yet it is used by thousands of athletes, most of whom are unaware of the risks.

Androstenedione is only one of the many popular dietary supplements that are of questionable benefit and safety. Ephedra is another common ingredient in dietary supplements, often touted as an "energy booster" and a "fat burner." Consumers might assume that ephedra is free of serious side effects since it is a natural herbal product and is available without a prescription. But ephedra has caused severe high blood pressure, heart attacks, strokes, and seizures, and has been implicated in numerous deaths. Adverse effects are much more likely when ephedra, which is a stimulant, is combined with other stimulants such as caffeine. Despite the risk, many ephedra-containing dietary supplements do contain caffeine, or other stimulants—a fact that may not be clear from their labels. Many sports organizations, including the National Football League, have banned the use of ephedra because of safety concerns. However, its estimated that more than 12 million Americans use ephedra-containing products. (Chapter 9 has more information about ephedra and other dietary supplements marketed for weight loss.)

Growing reports about the supposed effects of dietary supplements may sound very enticing, but how can you determine if a particular supplement might be helpful? Ask yourself the following questions:

- **Do you really need a supplement at all?** Nutritional authorities agree that most athletes and young adults can obtain all the necessary ingredients for health and top athletic performance by eating a well-balanced diet and training appropriately. There is no dietary supplement that outperforms wholesome real food and a good training regimen. Remember, too, that athletic performance and appearance are not life and death issues. It's one thing to take a cancer chemotherapy drug with many known adverse effects if there is a reasonable chance that it will save your life. It's another to take a potentially dangerous dietary supplement that may not even work for you when your goal is to increase your sports performance.
- **Is the product safe and effective?** The fact that a dietary supplement is available in your local store is no guarantee of safety. As described above, the FDA doesn't regulate supplements in the same way as drugs. The only way to determine if a supplement really works is to perform carefully controlled research on human subjects. Testimonials from individuals who claim to have benefited from the product don't count. Few dietary supplements have undergone careful human testing, so it is difficult to tell which of them may actually work. Reliable resources for information on dietary supplements include the FDA Center for Food Safety and Applied Nutrition (<http://www.fda.gov/cfsan/foodsuppl/index.html>) and the Nutritional Supplements for Athletes Web site from Kansas State University (<http://www.cseer.ksu.edu/nutrition/supplements.html>).
- **Can you be sure that the specific product is of high quality?** There is no official agency that ensures the quality of dietary supplements. There is no guarantee that a supplement contains the desired ingredient, that dosages are appropriate, that potency is standardized, or that the product is free from contaminants (see Chapter 8 for more information on dietary supplement labeling).

A recent study of twelve over-the-counter brands of supplements containing androstenedione and related steroids found that one brand contained more and eleven brands contained less than the amount stated on the label; in addition, one brand contained a significant amount of a controlled steroid. The International Olympic Committee recently issued a warning to athletes based on a test of 634 different nutritional supplements; researchers found that 15% of the supplements tested contained unlisted substances that would cause an athlete to fail a drug test. Many dietary supplements are ineffective and/or unsafe, but it is extremely difficult for consumers to get the information they need to make an informed decision. Once you have gathered the best information you can find, consider whether the potential benefits of the supplement appear to outweigh the risks and the cost. When in doubt, it's best not to buy or take the product. Remember that no supplement eliminates the need for proper training, and no supplement has been shown to be safe and effective in long-term weight loss. A product that is marginally effective, not proven safe, and expensive to have is probably not worth the money or the risk.

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Behavior Change Workbook

This workbook is designed to take you step by step through the process of behavior change. The first eight activities in the workbook will help you develop a successful plan—beginning with choosing a target behavior and moving through the program planning steps described in Chapter 1, including the completion and signing of a behavior change contract. The final seven activities will help you work through common obstacles to behavior change and maximize your program's chances of success.

Part 1 Developing a Plan for Behavior Change and Completing a Contract

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

Part 2 Overcoming Obstacles to Behavior Change

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

ACTIVITY 1 CHOOSING A TARGET BEHAVIOR

Use your knowledge of yourself and the results of Lab 1.2 (lifestyle evaluation) to identify five behaviors that you could change to improve your level of wellness. Examples of target behaviors include smoking cigarettes, not exercising regularly, eating candy bars every night, not getting enough sleep, getting drunk frequently on weekends, and not wearing a safety belt when driving or riding in a car. List your five behaviors below:

1. _____
2. _____
3. _____
4. _____
5. _____

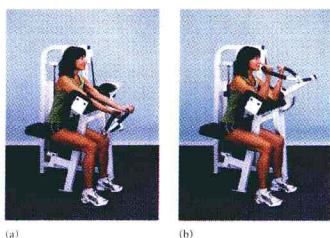
For successful behavior change, it's best to focus on one behavior at a time. Review your list of behaviors and select one to start with. Choose a behavior that is important to you and that you are strongly motivated to change. If this will be your first attempt at behavior change, start with a simple change, such as wearing your bicycle helmet regularly, before tackling a more difficult change, such as quitting smoking. Circle the behavior on your list that you've chosen to start with; this will be your target behavior throughout this workbook.

BEHAVIOR CHANGE WORKBOOK

The Behavior Change Workbook takes you step by step through the process of behavior change. It helps you target a specific behavior, set goals, create a plan, and overcome common obstacles to change. The Workbook is available in an interactive format on the Online Learning Center, and a printed copy is included in the full and Alternate editions of the text.

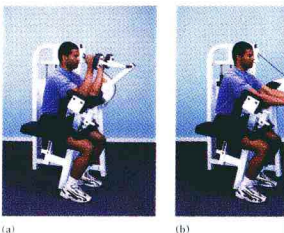
EXERCISE 6

BICEPS CURL
Muscles developed: Biceps, brachialis
Instructions: (a) Adjust the seat so that your back is straight and your arms rest comfortably against the top and side pads. Place your arms on the support cushions and grasp the hand grips with your palms facing up.
 (b) Keeping your upper body still, flex (bend) your elbows until the hand grips almost reach your collarbone. Return to the starting position.



EXERCISE 7

TRICEPS EXTENSION
Muscles developed: Triceps
Instructions: (a) Adjust the seat so that your back is straight and your arms rest comfortably against the top and side pads. Place your arms on the support cushions and grasp the hand grips with palms facing inward.
 (b) Keeping your upper body still, extend your elbows as much as possible. Return to the starting position.



Weight Training 1

SAMPLE EXERCISE PROGRAMS

Illustrated exercise programs in Chapters 4 and 5 show proper technique for exercises and stretches that develop muscular strength and endurance, flexibility, and low-back health. The complete sample fitness programs in Chapter 7 are built around popular endurance activities such as walking, jogging, cycling, and swimming.

SAMPLE PROGRAMS FOR POPULAR ACTIVITIES

Sample programs based on four different types of cardiorespiratory activities—walking/jogging/running, bicycling, swimming, and in-line skating—are presented below. Each sample program includes regular cardiorespiratory endurance exercise, resistance training, and stretching. To choose a sample program, first compare your fitness goals with the benefits of the different types of endurance exercise featured in the sample programs (see Table 7.1). Identify the programs that meet your fitness needs. Next, read through the descriptions of the programs you're considering, and decide which will work best for you based on your present routine, the potential for enjoyment, and adaptability to your lifestyle. If you choose one of these programs, complete the personal assessment in Table 7.1, just as if you had created a program from scratch.

No program will produce enormous changes in your fitness level in the first few weeks. Give your program a good chance. Follow the specifics of the program for 1–4 weeks. Then, if the exercise program doesn't seem suitable, make adjustments to adapt it to your particular needs. But retain the basic elements of the program that make it effective for developing fitness.

General Guidelines

The following guidelines can help make the activity programs more effective for you:

- **Intensity:** To work effectively for cardiorespiratory endurance training or to improve body composition, you must raise your heart rate into its target zone. Monitor your pulse or use rates of perceived exertion to monitor your intensity.

If you've been sedentary, begin very slowly. Give your muscles a chance to adjust to their increased workload. It's probably best to keep your heart rate below target until your body has had time to adjust to new demands. At first you may not need to work very hard to keep your heart rate in its target zone, but as your cardiorespiratory endurance improves, you will probably need to increase intensity.

- **Duration and frequency:** To experience training effects, you should exercise for 20–60 minutes at least three times a week.
- **Interval training:** Some of the sample programs involve continuous activity. Others rely on interval training, which calls for alternating a brief interval with exercise (walking after jogging, for example, or coasting after hiking uphill). Interval training is an effective way to achieve progressive overload. When your heart rate gets too high, slow down to lower your pulse rate and you're at the low end of your target zone. Interval training can also prolong the total time you spend in exercise and delay the onset of fatigue.
- **Warm-up and cool-down:** Begin each exercise session with a 10-minute warm-up. Begin your activity at a slow pace and work up gradually to your target heart rate. Always slow down gradually at the end of your exercise session to bring your system back to its normal state. It's a good idea to do stretching exercises to increase your flexibility after cardiorespiratory exercise or strength training because your muscles will be warm and ready to stretch.
- **Record keeping:** After each exercise session, record your daily distance or time on a progress chart.

WALKING/JOGGING/RUNNING SAMPLE PROGRAM

Walking, jogging, and running are the most popular forms of training for people who want to improve cardiorespiratory endurance; they also improve body composition and muscular endurance of the legs. It's not always easy to distinguish among these three endurance activities. For clarity and consistency, we'll consider walking to be any on-foot exercise of less than 5 miles per hour, jogging any pace between 5 and 7.5 miles per hour, and running any pace faster than that. Table 1 divides walking, jogging, and running into nine categories, with rates of speed in both miles per hour and minutes per mile and calorie costs for each. The faster your pace or the longer you exercise, the more calories you burn. The greater the number of calories burned, the higher the potential training effects of these activities. Tables 2 and 3 on p. 192 contain sample walking/jogging programs by time and distance.

Equipment and Technique

These activities require no or unusual facilities. Comfortable running shoes, and at a second hand are all you need.

Developing Cardiorespiratory Endurance

The four variations of the sample program that follow are:

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intensity, duration, and frequency of your program. Use the following guidelines to choose the variation that is right for you:

- **Variation 1: Walking (Starting):** Choose this program if you have medical restrictions, are recovering from illness or surgery, are easily exhausted, or have a sedentary lifestyle, and if you want to prepare for the advanced walking program to improve cardiorespiratory endurance, body composition, and muscular endurance.
- **Variation 2: Advanced Walking:** Choose this program if you already can walk comfortably for 30 minutes and if you want to develop and maintain cardiorespiratory fitness, a lean body, and muscular endurance.
- **Variation 3: Preparing for a jogging Program:** Choose this program if you already can walk comfortably for 30 minutes.

FOR FURTHER EXPLORATION

For reliable nutrition advice, talk to a faculty member in the nutrition department on your campus, a registered dietitian (R.D.) or your physician. Many large communities have a telephone service called Dial a Dietitian. By calling this number, you can receive free nutrition information from an R.D. Experts on campus suggest that you seek clear advice from someone who puts forth any of the following false statements. Most diets are caused primarily by faulty nutrition. Large doses of vitamins are effective against many diseases. Food analysis can be used to determine a person's nutritional state, or a computerized nutritional deficiency test is a basis for prescribing vitamins. Any prescription—herbal or not—who sells supplements in his or her office should be thoroughly scrutinized.

Fit and Well Online Learning Center
 (www.mhhe.com/fahey5e)

Use the learning objectives, study guide questions, and glossary. Both analysis is easy, key terms and concepts, and prepare for exams. You can extend your knowledge of nutrition and gain experience in using the Internet as a resource by completing the activities and checking out the Web links for the topics on chapter 9 marked with the World Wide Web icon. For this chapter, Internet activities explore specialized food pyramids, food composition analysis, osteoporosis prevention, and dietary supplements; there are Web links for the Vitamins table, the Critical Consumer's focus on food labels and dietary supplements; and the chapter as a whole.

Daily Fitness and Nutrition Journal

Review the resources and complete the activities available in the nutrition portion of the journal. Take the portion sites online, complete the preprogram nutrition log, and analyze the results based on what you find. Set healthy goals for change and complete the contract. Once you put your plan into action, complete the postprogram nutrition log to determine how successful you've been at improving your diet and moving toward the goals you've set.

HealthQuest

Learn more about your current diet by completing the dietary assessment in the Nutrition and Weight Control module of the HealthQuest 1.0 CD-ROM from the Wellness Activities menu. Your scores will help you pinpoint dietary patterns that you could change to improve wellness. To determine if you are ready to make changes in your diet, complete the stages of change quiz (under Stages of Change from the Wellness Activities menu). You'll receive an assessment of your stage plus advice on moving forward toward the action and maintenance stages.

Books

American Dietetic Association. 1999. *The Personal Guide to Nutrition and the Food We Eat: Everything You Need to Know About the Foods You Eat*. New York: HarperCollins. An excellent review of current nutrition information and issues.

Irwin, P., R. E. Irwin, and D. Ross. 2001. *Nutrition: Fundamentals, Myths, Forces, or Barriers? A comprehensive review of nutrition in the 21st century*. New York: McGraw-Hill.

Irwin, P., R. E. Irwin, and D. Ross. 2002. *Nutrition: Fundamentals, Myths, Forces, or Barriers? A comprehensive review of nutrition in the 21st century*. New York: McGraw-Hill. Provides information about restaurant foods, including tips for making healthy choices. Nelson, M. 2000. *Strong Women, Strong Bones: Everything You Need to Know to Prevent, Treat, and Beat Osteoporosis*. New York: Putnam. A comprehensive, up-to-date guide to preventing and treating osteoporosis through exercise and nutrition. Schwartz, A. 2000. *The College Student's Guide to Eating Well on Campus*. Bethesda, MD: Johns Hopkins Press. Provides practical advice for students, including how to make healthy choices when eating in a dorm or restaurant and how to develop a healthy eating plan. Warden, C. M. 2002. *Improving your nutrition: 500 real-life New York Minute tips*. New York: McGraw-Hill. An easy-to-use, practical resource for improving your nutrition.

Williams, M. H. 2001. *Nutrition for Health, Fitness, and Sports*. New York: McGraw-Hill. An overview of the role of nutrition in enhancing health, fitness, and sport performance.

Newsletters

Endocrinological Nutrition. (907) 829-7344.
 Nutrition Action. Health Affairs. (202) 337-9410. <http://www.nutritionaction.org/>

Info: University Health and Nutrition. (800) 754-7361. <http://www.healthletter.org/>

Organizations, Hotlines, and Web Sites

American Dietetic Association. Provides a wide variety of educational materials on nutrition. 800.368.1833. <http://www.cdnutrition.org/>
 American Heart Association. Provides heart-related information about nutrition, tips for shopping and eating out, and heart healthy recipes. <http://www.heart.org/>
 American Dietetic Association. An easy-to-use online tip sheet relating to nutrition. <http://www.dietitian.com/>
 Consumer Information Center. Food. Provides government of public information about dietary fat, fiber, food safety, and other nutrition issues. <http://www.pirthe.gov/government/>
 Dietitian. Provides a variety of resources, including a profile that calculates calorie and nutrient needs and a database that provides nutrition information in food label format. <http://www.dietitian.com/>
 FDA's Center for Food Safety and Applied Nutrition. Offers information about topics such as food labeling, food additives, and foodborne illness. <http://www.fda.gov/cfsan/>
 Food Safety Hotline. Provides information on the safe handling, handling, cooking, and storage of food. 800.535.4535 (FDA).
 Government of Environment Nutrition Information. Provides government resources relating to food safety, including consumer advice and information on specific pathogens.

FOR FURTHER EXPLORATION

For Further Exploration sections at the end of each chapter describe books, newsletters, organizations, hotlines, and Web sites that you can turn to for additional advice and information. These sections also suggest ways to use the free tools available with *Fit and Well*:

- The Daily Fitness and Nutrition Journal gives you an easy way to plan and track a fitness program and a program for dietary improvement.
- The HealthQuest CD-ROM includes interactive tutorials, self-assessments, review questions, and many other resources.
- The *Fit and Well* Online Learning Center (www.mhhe.com/fahey5e) provides interactive study guide questions, learning objectives, chapter outlines, glossary flashcards, Internet activities, links, and other useful study aids.

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