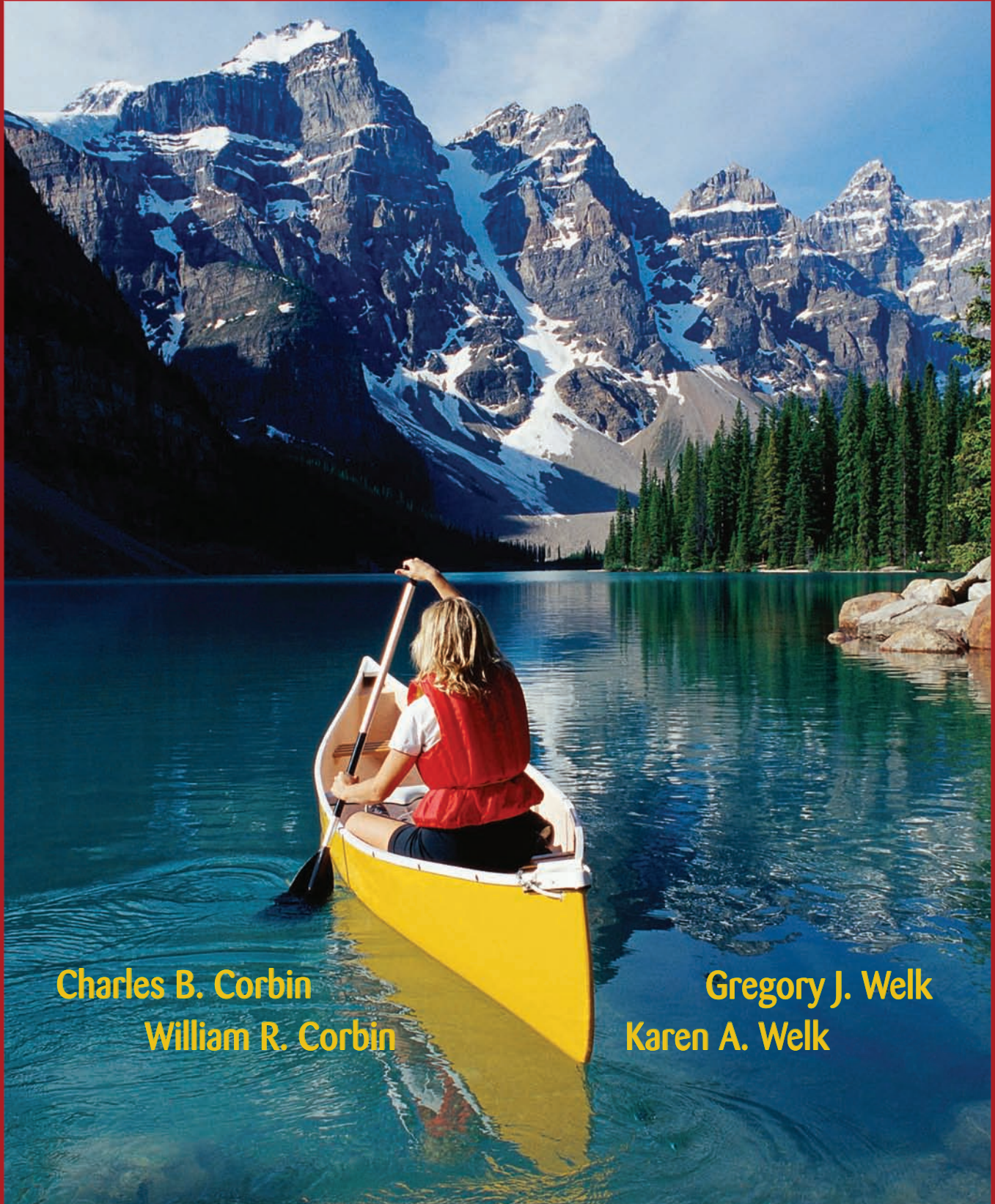


# Concepts of PHYSICAL FITNESS

Active Lifestyles for Wellness

FOURTEENTH EDITION



Charles B. Corbin  
William R. Corbin

Gregory J. Welk  
Karen A. Welk

# Concepts of Physical Fitness

ACTIVE LIFESTYLES FOR WELLNESS

Fourteenth Edition

**Charles B. Corbin**

*Arizona State University*

**Gregory J. Welk**

*Iowa State University*

**William R. Corbin**

*Yale University*

**Karen A. Welk**

*Mary Greeley Medical Center*

*Ames, Iowa*



Boston Burr Ridge, IL Dubuque, IA New York San Francisco St. Louis  
Bangkok Bogotá Caracas Kuala Lumpur Lisbon London Madrid Mexico City  
Milan Montreal New Delhi Santiago Seoul Singapore Sydney Taipei Toronto



CONCEPTS OF PHYSICAL FITNESS: ACTIVE LIFESTYLES FOR WELLNESS

Published by McGraw-Hill, an imprint of The McGraw-Hill Companies, Inc., 1221 Avenue of the Americas, New York, NY 10020. Copyright © 2008, 2006, 2005, 2003, 2000, 1997, 1994 by The McGraw-Hill Companies, Inc. All rights reserved. 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 The McGraw-Hill Companies, Inc., including, but not limited to, in any network or other electronic storage or transmission, or broadcast for distance learning.

This book is printed on acid-free paper.

1 2 3 4 5 6 7 8 9 0 DOW/DOW 0 9 8 7 6

ISBN: 978-0-07-352357-6

MHID: 0-07-352357-7

Editor in Chief: *Emily Barrosse*

Publisher: *William Glass*

Executive Editor: *Christopher Johnson*

Executive Marketing Manager: *Pamela S. Cooper*

Director of Development: *Kathleen Engelberg*

Senior Developmental Editor: *Carlotta Seely*

Developmental Editor for Technology: *Julia D. Akpan*

Project Manager: *Jill Eccher*

Manuscript Editor: *Dale Boroviak*

Senior Designer/Cover Design: *Violeta Diaz*

Interior Design: *Jeanne Calabrese*

Photo Research: *Alex Ambrose/Emily Tietz*

Cover Photo: © *PhotoDisc/Getty Images*

Senior Production Supervisor: *Rich DeVitto*

Media Producer: *Michele Perez*

Media Project Manager: *Kate Boylan*

This book was set in 10/12 Janson by Precision Graphics and printed on 45# New Era Matte by R. R. Donnelley & Sons.

The credits section for this book begins on page C-1 and is considered an extension of the copyright page.

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

Concepts of physical fitness: active lifestyles for wellness / Charles B. Corbin ... [et al.]—14th ed.

p. cm.

Includes bibliographical references and index.

ISBN-13: 978-0-07-352357-6; ISBN-10: 978-0-07-352357-7 (softcover : alk. paper)

1. Exercise. 2. Physical fitness. 3. Physical fitness—Problems, exercises, etc.

RA781.C58 2008

613.7--dc22

20065843



# Brief Contents

## Section I

### Lifestyles for Health, Wellness, and Fitness

- 1 Health, Wellness, Fitness, and Healthy Lifestyles: An Introduction 1
- 2 Self-Management and Self-Planning Skills for Health Behavior Change 21

## Section II

### An Introduction to Physical Activity

- 3 Preparing for Physical Activity 43
- 4 The Health Benefits of Physical Activity 63
- 5 How Much Physical Activity Is Enough? 83

## Section III

### The Physical Activity Pyramid

- 6 Lifestyle Physical Activity: Being Active in Diverse Environments 97
- 7 Cardiovascular Fitness 111
- 8 Active Aerobics, Sports, and Recreational Activities 133
- 9 Flexibility 149
- 10 Muscle Fitness and Resistance Exercise 173

## Section IV

### Physical Activity: Special Considerations

- 11 Body Mechanics: Posture, Questionable Exercises, and Care of the Back and Neck 213
- 12 Performance Benefits of Physical Activity 251

## Section V

### Nutrition and Body Composition

- 13 Body Composition 275
- 14 Nutrition 309
- 15 Managing Diet and Activity for Healthy Body Fatness 333

## Section VI

### Stress Management

- 16 Stress and Health 347
- 17 Stress Management, Relaxation, and Time Management 361

## Section VII

### Making Informed Choices

- 18 Evaluating Fitness and Wellness Products: Becoming an Informed Consumer 383
- 19 Toward Optimal Health and Wellness: Planning for Healthy Lifestyle Change 399

## Appendixes

- A Metric Conversion Charts A-1
- B Calorie, Fat, Saturated Fat, Cholesterol, and Sodium Content of Selected Fast-Food Items A-4
- C Calorie Guide to Common Foods A-5
- D Calories of Protein, Carbohydrates, and Fats in Foods A-7
- E Canada's Food Guide to Healthy Eating A-9

Selected References R-1

Credits C-1

Index I-1



# Contents

## Section I

### Lifestyles for Health, Wellness, and Fitness 1

- 1 Health, Wellness, Fitness, and Healthy Lifestyles: An Introduction 1**
  - National Health Goals 2
  - Health and Wellness 2
  - Physical Fitness 6
  - A Model for Achieving and Maintaining Lifelong Health, Wellness, and Fitness 9
  - Factors Influencing Health, Wellness, and Fitness 9
  - Healthy Lifestyles 12
  - The HELP Philosophy 13
  - Strategies for Action 14
  - Lab Resource Materials:** The Healthy Lifestyle Questionnaire 17
  - Lab 1A** Wellness Self-Perceptions 19
- 2 Self-Management and Self-Planning Skills for Health Behavior Change 21**
  - Making Lifestyle Changes 22
  - Factors That Promote Lifestyle Change 23
  - Self-Management Skills 27
  - Self-Planning for Healthy Lifestyles 27
  - Strategies for Action 32
  - Lab Resource Materials** 36
  - Lab 2A** The Stage of Change Questionnaire 37
  - Lab 2B** The Self-Management Skills Questionnaire 39

## Section II

### An Introduction to Physical Activity 43

- 3 Preparing for Physical Activity 43**
  - Factors to Consider Prior to Physical Activity 44
  - Factors to Consider during Daily Physical Activity 46

- Physical Activity in the Heat and Cold 48
  - Physical Activity in Other Environments 51
  - Soreness and Injury 52
  - Attitudes about Physical Activity 52
  - Strategies for Action 55
  - Lab 3A** Readiness for Physical Activity 57
  - Lab 3B** The Warm-Up and Cool-Down 59
  - Lab 3C** Physical Activity Attitude Questionnaire 61
- 4 The Health Benefits of Physical Activity 63**
    - Physical Activity and Hypokinetic Diseases 64
    - Physical Activity and Cardiovascular Diseases 65
    - Physical Activity and the Healthy Heart 65
    - Physical Activity and Atherosclerosis 66
    - Physical Activity and Heart Attack 68
    - Physical Activity and Other Cardiovascular Diseases 69
    - Physical Activity and Other Hypokinetic Conditions 71
    - Physical Activity and Aging 74
    - Physical Activity, Health, and Wellness 75
    - Strategies for Action 78
    - Lab 4A** Assessing Heart Disease Risk Factors 81



**5 How Much Physical Activity Is Enough? 83**

The Principles of Physical Activity 84

The FIT Formula 86

The Physical Activity Pyramid 87

Understanding Physical Activity Guidelines 89

Physical Activity Patterns 90

Physical Fitness Standards 91

Strategies for Action 92

**Lab 5A** Self-Assessment of Physical Activity 93**Lab 5B** Estimating Your Fitness 95**Section III****The Physical Activity Pyramid 97****6 Lifestyle Physical Activity: Being Active in Diverse Environments 97**

Adopting an Active Lifestyle 98

The Health Benefits of Lifestyle Physical Activity 99

How Much Lifestyle Physical Activity Is Enough? 101

Lifestyle Activity and the Environment 104

Strategies for Action 105

**Lab 6A** Planning and Self-Monitoring (Logging) Your Lifestyle Physical Activity 107**Lab 6B** Evaluating Physical Activity Environments 109**7 Cardiovascular Fitness 111**

Cardiovascular Fitness 112

Cardiovascular Fitness and Health Benefits 115

Threshold and Target Zones for Improving Cardiovascular Fitness 116

Strategies for Action 123

**Lab Resource Materials:** Evaluating Cardiovascular Fitness 125**Lab 7A** Counting Target Heart Rate and Ratings of Perceived Exertion 129**Lab 7B** Evaluating Cardiovascular Fitness 131**8 Active Aerobics, Sports, and Recreational Activities 133**

Physical Activity Pyramid: Level 2 134

Active Aerobic Activities 136

Active Recreation Activities 140

Active Sport Activities 140

Strategies for Action 143

**Lab 8A** The Physical Activity Adherence Questionnaire 145**Lab 8B** Planning and Logging Participation in Active Aerobics, Sports, and Recreation 147**9 Flexibility 149**

Flexibility Fundamentals 150

Factors Influencing Flexibility 151

Health Benefits of Flexibility and Stretching 152

Stretching Methods 154

How Much Stretch Is Enough? 156

Flexibility-Based Activities and Training Aids 158

Guidelines for Safe and Effective Stretching Exercise 159

Strategies for Action 159

**Lab Resource Materials:** Flexibility Tests 167**Lab 9A** Evaluating Flexibility 169**Lab 9B** Planning and Logging Stretching Exercises 171**10 Muscle Fitness and Resistance Exercise 173**

Factors Influencing Strength and Muscular Endurance 174

Health Benefits of Muscle Fitness and Resistance Exercise 176

Types of PRE 177

Resistance Training Equipment 179

Progressive Resistance Exercise: How Much Is Enough? 180

Training Principles for PRE 183

Is There Strength in a Bottle? 184

Guidelines for Safe and Effective Resistance Training 187

Strategies for Action 189

**Lab Resource Materials:** Muscle Fitness Tests 201

**Lab 10A** Evaluating Muscle Strength: 1RM and Grip Strength 205

**Lab 10B** Evaluating Muscular Endurance 207

**Lab 10C** Planning and Logging Muscle Fitness Exercises: Free Weights or Resistance Machines 209

**Lab 10D** Planning and Logging Muscle Fitness Exercises: Calisthenics or Core Exercises 211

## Section IV

### Physical Activity: Special Considerations 213

#### 11 Body Mechanics: Posture, Questionable Exercises, and Care of the Back and Neck 213

Anatomy and Function of the Spine 214

Good Posture Is Important for Neck and Back Health 215

Good Body Mechanics Is Important for Neck and Back Health 217

Causes and Consequences of Back and Neck Pain 219

Guidelines for Safe Physical Activity 222

Prevention of and Rehabilitation from Back and Neck Problems 223

Strategies for Action 226

**Lab Resource Materials:** Healthy Back Tests 243

**Lab 11A** The Healthy Back Tests and Back/Neck Questionnaire 245

**Lab 11B** Evaluating Posture 247

**Lab 11C** Planning and Logging Exercises: Care of the Back and Neck 249

#### 12 Performance Benefits of Physical Activity 251

High-Level Performance and Training Characteristics 252

Training for Endurance and Speed 254

Training for Strength and Muscular Endurance 256

Training for Power 257

Training for Balance and Flexibility 258

Training for High-Level Performance: Skill-Related Fitness and Skill 259

Guidelines for High-Performance Training 261

Performance Trends and Ergogenic Aids 262

Strategies for Action 264

**Lab Resource Materials:** Skill-Related Physical Fitness 267

**Lab 12A** Evaluating Skill-Related Physical Fitness 271

**Lab 12B** Identifying Symptoms of Overtraining 273

## Section V

### Nutrition and Body Composition 275

#### 13 Body Composition 275

Understanding and Interpreting Body Composition Measures 276

Methods Used to Assess Body Composition 278

Health Risks Associated with Overfatness 280

Health Risks Associated with Excessively Low Body Fatness 282

The Origin of Fatness 283

