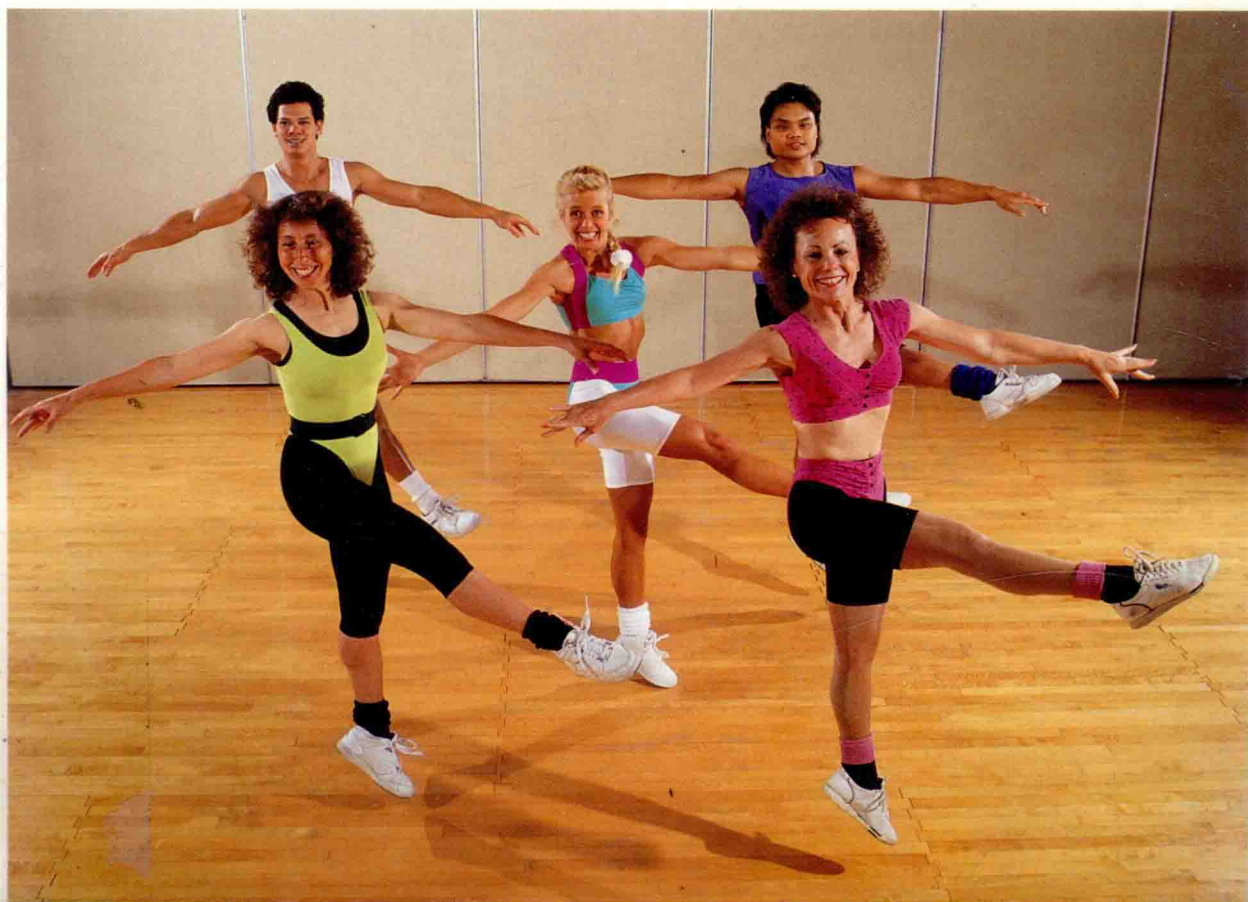


Keep Moving!

It's Aerobic Dance
SECOND EDITION

Esther Kan • Minda Goodman Kraines



*Keep
Moving!*

It's Aerobic Dance

SECOND EDITION

Esther Kan

SOLANO COLLEGE

Minda Goodman Kraines

MISSION COLLEGE



Mayfield Publishing Company

Copyright © 1992 by Mayfield Publishing Company

All rights reserved. No portion of this book may be reproduced in any form or by any means without written permission of the publisher.

Library of Congress Cataloging-in-Publication Data

Kan, Esther.

Keep Moving! : it's aerobic dance / Esther Kan, Minda Goodman Kraines. — 2nd ed.

p. cm.

Includes bibliographical references and index.

ISBN 0-87484-990-X

1. Aerobic dancing. I. Kraines, Minda Goodman. II. Title.

RA781.15.K36 1991

613.7'15—dc20

91-22628

CIP

Manufactured in the United States of America

10 9 8 7 6 5 4 3

Mayfield Publishing Company
1240 Villa Street
Mountain View, California 94041

Sponsoring editor, James Bull; managing editor, Linda Toy; production editor, Carol Zafiroopoulos; manuscript editor, Andrea McCarrick. This text was set in 9 1/2/11 Garamond by Carlisle Communications and printed on 50# Finch Opaque by Malloy Lithographing.



Foreword

Keep Moving! It's Aerobic Dance is an excellent book for anyone interested in fitness. I've been teaching Aerobic Dance since 1976. It has been my pleasure and reward to watch it grow into a multi-million-dollar-a-year industry . . . You can't stop a good program!

Naturally, in any field that is growing at such a tremendous rate, it is difficult to keep participants well informed. That is what this book aims to do—provide good, up-to-date information.

Esther Kan and Minda Goodman Kraines have produced a well-written, practical, and educational book—truly one of the best I've read on the subject. They completely break down all the elements of aerobic dance, from why an aerobic workout is important to what the various components of an aerobic dance class are. This includes movement tips, how to add variety to your workout, precaution boxes so you can avoid injury, and even a glossary to help you learn and remember important aerobic dance terms. Nutrition, body composition, components of fitness, and much more are addressed in *Keep Moving! It's Aerobic Dance*.

Joanie Greggains
"Morning Stretch"



Foreword

Your personal lifestyle choices, experts say, greatly affect your health. For a long and healthy life, you need to maintain an ideal body weight, avoid smoking and substance abuse, watch your intake of saturated fats and salt, and include substantial amounts of fruits, vegetables, and fiber in your diet. Above all, you need exercise. With its intrinsic benefits and its ability to moderate many risk factors, exercise is the key to your personal health program.

At first inspection, these new prescriptions for a healthy life may seem terribly limiting and disagreeable. But no perception could be further from the truth. Health requires autonomy, personal independence, voluntary selection of options, and assumption of the power to change your own future. Good health allows you to freely experience joy, beauty, and triumph.

In this book, written with both joyous expression and scientific accuracy, Esther Kan and Minda Goodman Kraines provide the feeling as well as the substance of an important form of exercise that can help you achieve good health. Aerobic dance can help you control many specific risks to good health and at the same time provide enjoyment in its purest sense. *Keep Moving!* provides a solid, scientific background necessary for the beginning student of aerobic dance to understand what happens to the body during the early months of aerobic training. Description of the warm-ups and dances will help the beginner become familiar with unfamiliar exercises and routines that are the basis of a successful dance program.

I liked this book very much in the first edition. Now, it is even stronger and better. The chapter on introduction of variety is useful—we want lifetime aerobics. Sections on low-impact aerobics and avoidance of nagging injuries further will help keep exercise a long-term part of your life. Many other chapters and improvements have been added.

I hope that many will read and use this book and embark successfully on new experiences.

James F. Fries, M.D.
author of *Take Care of Yourself, Taking Care of
Your Child, Aging Well, and Comprehensive
Guide to Arthritis*
Associate Professor, Stanford University School
of Medicine

Preface

We have been extremely gratified by the success of the first edition of *Keep Moving!* Since its publication in 1987, more than 50,000 college students have found it an invaluable resource for getting the most out of their aerobic dance classes.

Our goals remain the same in this second edition: To provide lucid, accurate coverage of the basic scientific and physiological principles that underlie aerobic dance; to describe the most popular aerobic dances clearly and with an abundance of illustrations; and to offer brief discussions of such vital topics as injuries, nutrition, stress, posture, and flexibility so that class time can be spent dancing.

The second edition of *Keep Moving!* offers the following features:

- Completely revised and updated coverage of the important scientific and physiological principles that underlie aerobic dance;
- Clear, well-illustrated descriptions of dozens of popular, contemporary aerobic dance movements. *Keep Moving!* includes more than 300 how-to illustrations;
- A new chapter on nonimpact and low-impact aerobics (Chapter 9);
- More than thirty precautions boxes that help students avoid injury;
- Movement tips, which have been added to help students master particularly challenging dance moves;
- Two chapters on the important cool-down phase of the aerobic workout (Chapters 10 and 12);
- A new chapter on how to add variety to your aerobic workout (Chapter 16);
- Three new appendixes, covering video cassette workouts (Appendix E), music resources (Appendix C), and answers to frequently asked questions (Appendix A);
- A separate chapter on what to expect in an aerobic dance class (Chapter 5);
- A new glossary to help students learn and remember important aerobic dance terms.

Minda Goodman Kraines wishes to thank her husband, Guy Kraines, and her daughters, Denaya and Marissa. Without their love and support she could not have completed her work on this book. Esther Kan would like to thank Mariam Combs for her assistance and encouragement.

We would like to express our appreciation to those who served as models for the illustrations in this book and on the cover: Christopher Anasco, Lisá Marie Austin, Prescillo Baltar, Robin Bertz, Guillermo Garcia, Kelly Garcia, Michael Kan, Julia Kimsey, Stuart McGee, Patrice Rackstraw, Antonio Silva, and Karen Stenger. Special thanks also to Karin Bivens and Phil Sienna.

We would like to thank the following reviewers for their valuable suggestions: Maridy Bronstein, University of Alabama; Elizabeth Brown, Univer-

sity of Maryland; Lisa Rene Chaisson, Lamar University; Christine Cobb, Youngstown State University; Gwen English, Wright State University; Gail G. Evans, San Jose State University; Lorna L. Francis, San Diego State University; Barbara Jahn, University of California at Davis; Janine McAlpin,

Lorain County Community College; Beverly McCraw, Duke University; Janice Gudde Plastino, University of California at Irvine; Karin Volkwein, University of Tennessee, Knoxville; Donna Wilson, Southern Illinois University at Carbondale; Penny Wright, Tarleton State University.



Contents

| | | | |
|--|-------------|---|-----------|
| <i>Foreword, by Joanie Greggains</i> | <i>xi</i> | Progression | 7 |
| <i>Foreword, by James F. Fries, M.D.</i> | <i>xii</i> | Specificity Principle | 7 |
| <i>Preface</i> | <i>xiii</i> | Fitness for Life | 8 |
| CHAPTER 1 | | CHAPTER 2 | |
| <i>What Is Fitness?</i> | 3 | <i>Why the Aerobic Workout Is So Important</i> | 11 |
| Strength | 3 | Bodily Changes during a | |
| Flexibility | 4 | Workout | 11 |
| Endurance | 4 | Heart | 11 |
| Aerobic Exercise versus Anaerobic | | Lungs | 12 |
| Exercise | 5 | Blood Vessels | 12 |
| Training Effect | 6 | Metabolism | 12 |
| Threshold of Training | 6 | Benefits of Aerobics | 12 |
| Overload Principle | 7 | | |

| | |
|------------------------|----|
| Cardiovascular Changes | 12 |
| Respiratory Changes | 12 |
| Metabolic Changes | 13 |
| Body Composition | 13 |
| Cardiac Risk | 13 |
| Psychological Benefits | 13 |

CHAPTER 3

What the Heart Rate Tells Us 17

| | |
|----------------------|----|
| Resting Heart Rate | 18 |
| Target Heart Rate | 21 |
| Other Techniques for | |
| Measuring Intensity | 22 |
| Recovery Heart Rate | 23 |

CHAPTER 4

Take Care of Your Body 25

| | |
|-------------------------------|----|
| Self-assessment | 25 |
| Follow Your Feelings | 25 |
| Pain—A Friendly Signal | 25 |
| Soreness | 26 |
| R-I-C-E: The Recipe for First | |
| Aid | 26 |
| Self-care Injuries | 26 |
| Stitch Pain | 27 |
| Blister | 27 |
| Cramp | 27 |
| Muscle Strain | 27 |
| Injuries Needing Professional | |
| Attention | 27 |
| Shinsplints | 27 |
| Plantar Fascitis | 28 |

| | |
|------------------------|----|
| Achilles Tendinitis | 28 |
| Sprain | 28 |
| Chondromalacia Patella | |
| (Runner's Knee) | 28 |
| Patellar Tendinitis | |
| (Jumper's Knee) | 28 |
| Stress Fracture | 28 |
| Summary | 29 |

CHAPTER 5

What to Expect in an Aerobic Dance Class 31

| | |
|--------------------------------|----|
| Medical Considerations | 31 |
| Structure of an Aerobic Dance | |
| Class | 31 |
| Warm-up | 33 |
| Low-Impact Aerobics, or First- | |
| phase Aerobics | 33 |
| Peak Aerobics | 33 |
| Aerobic Cool-down | 33 |
| Body Toning and Conditioning | 33 |
| Flexibility Cool-down | 33 |
| Relaxation | 34 |
| Regular Attendance | 34 |
| Individual Pace | 34 |
| Signs of Overtraining | 34 |
| What to Wear | 35 |
| Shoes | 35 |
| What to Bring to Class | 36 |
| Floor Mat | 36 |
| Towel | 36 |
| Sweatbands | 37 |

| | |
|----------------------------------|----|
| Light Weights and | |
| Resistance Bands | 37 |
| Checklist for a Successful Class | 37 |

CHAPTER 6

Posture Perfect—or Imperfect? **39**

| | |
|----------------------------|----|
| Posture, Placement, and | |
| Alignment | 39 |
| Alignment Reference Points | 40 |
| Head and Neck | 41 |
| Shoulder Girdle | 42 |
| Rib Cage | 42 |
| Pelvis and Lower Back | 43 |
| Knees | 43 |
| Feet | 43 |
| Alignment Exercises | 43 |
| Lower Back Pain | 45 |
| Causes of Lower Back Pain | 45 |
| Lower Back Exercises | 46 |

CHAPTER 7

Warm-up **51**

| | |
|--------------------------|----|
| Warm-up Concepts | 52 |
| Isolation Exercises | 52 |
| Neck | 52 |
| Shoulders | 53 |
| Rib Cage | 54 |
| Hips | 54 |
| Active Warm-up Movements | 54 |
| Static Stretches | 55 |
| Shoulders and Chest | 55 |

| | |
|----------------------------------|----|
| Upper Back | 55 |
| Rib Cage and Waist | 56 |
| Hips and Buttocks | 57 |
| Upper Legs | 58 |
| Lower Legs | 60 |
| Ankles | 61 |
| Warm-up Routines and Precautions | 62 |

CHAPTER 8

Aerobic Dances **65**

| | |
|--------------------------------|----|
| Locomotor Movements | 65 |
| Walking | 65 |
| Running | 67 |
| Jumping | 69 |
| Hopping | 72 |
| Leaping | 74 |
| Skipping | 75 |
| Sliding | 76 |
| Dance Steps | 77 |
| Jazz and Modern Dance | 77 |
| Folk Dance | 81 |
| Social Dance | 82 |
| Arm Movements | 84 |
| Combinations of Movements | 85 |
| Precautions, or How to Survive | |
| the Aerobic Dance Class! | 85 |
| Aerobic Dance Routines | 86 |
| Choreographing an Aerobic | |
| Dance Routine | 86 |
| Music Selection | 86 |
| Music Analysis | 86 |
| Movement Selection | 87 |

CHAPTER 9

Low-Impact and Nonimpact Aerobics 91

CHAPTER 10

Aerobic Cool-down 95

CHAPTER 11

Body Toning and Conditioning 99

Using Weights for Body Toning 100

Exercise Evaluation 101

Body Toning and Conditioning

Exercises 101

Arms 101

Chest, Rib Cage, and Waist 105

Abdomen 108

Hips and Buttocks 110

Back 111

Thighs 112

Lower Legs and Ankles 116

Body Toning and Conditioning

Routines 117

Is It Possible to Spot Reduce? 118

CHAPTER 12

Flexibility Cool-down 121

Proper Stretching Techniques 121

Stretching Exercises 122

Neck 122

Chest, Rib Cage, Waist, and Arms 122

Back 125

Thighs 125

Legs and Groin 125

Hips 127

Abdomen 127

Lower Legs 129

Ankles 129

Cool-down Routines 129

CHAPTER 13

Stress and Relaxation 131

Passive Relaxation Techniques 131

Total Relaxation 131

Meditation 132

Visual Imagery 132

Active Relaxation Techniques 132

Progressive Relaxation 132

Slow, Controlled Movements
for Your Head and Torso 132

CHAPTER 14

Body Composition 135

Fat Weight 135

Lean Body Weight 136

Hydrostatic Weighing 136

Skinfold Measurement 136

The Body Composition Analyzer 140

Somatotyping 140

| | |
|---------------|-----|
| Endomorph | 140 |
| Mesomorph | 140 |
| Ectomorph | 140 |
| In Conclusion | 140 |

CHAPTER 15

| | |
|--|------------|
| <i>Nutrition and Diet</i> | 143 |
| Protein | 143 |
| Fats | 144 |
| Carbohydrates | 144 |
| Water | 145 |
| Vitamins and Minerals | 145 |
| Calories | 145 |
| Weight Loss, or the “Set Point” Theory | 147 |
| Weight Loss Fallacies | 148 |

CHAPTER 16

| | |
|--|------------|
| <i>Adding Variety to Your Aerobic Workout</i> | 151 |
| Step Workout | 151 |
| Interval Training | 152 |
| Circuit Training | 153 |

APPENDIX A

| | |
|--|------------|
| <i>Frequently Asked Questions and the Answers You Want to Hear</i> | 155 |
|--|------------|

APPENDIX B

| | |
|--|------------|
| <i>Sources for Fitness Evaluations</i> | 159 |
|--|------------|

APPENDIX C

| | |
|------------------------|------------|
| <i>Music Resources</i> | 162 |
|------------------------|------------|

APPENDIX D

| | |
|--------------------------|------------|
| <i>Suggested Reading</i> | 163 |
| Aerobics and Fitness | |
| Flexibility | |
| Injuries | |
| Nutrition | |

APPENDIX E

| | |
|--------------------------------|------------|
| <i>Video Cassette Workouts</i> | 165 |
| Glossary | 167 |
| References | 169 |
| Index | 171 |

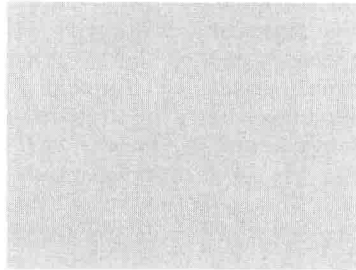


Keep Moving!



What Is Fitness?

Chapter



The term *fitness* is broadly used and often vaguely defined. Many people perceive health and fitness as one and the same, yet there is a definite distinction between the two concepts. Health reflects a person's state of being; it is typically viewed as the presence or absence of disease. Fitness, on the other hand, is the ability to do physical activity or to perform physical work (29).

Health and physical education experts generally agree about the expanded (but incomplete) definition of fitness as an ability to carry out daily tasks with vigor and alertness, without undue fatigue, while still maintaining ample energy to enjoy leisure-time pursuits and to meet unforeseen emergencies.

Although not scientifically proven, it is generally agreed that fitness makes a major contribution to a healthier, longer, and more productive life.

Characteristics of a healthy lifestyle include regular exercise, a nutritious diet, and plenty of rest and relaxation. But what actually is the definition of fitness? What aspects are important for a healthy body? To define fitness we must understand the terms *strength*, *flexibility*, and *endurance*. It is the combination of these three components that leads to the achievement of fitness.

STRENGTH

Strength is the ability of a muscle or a group of muscles to exert force. Maximal strength is when a group of muscles exerts a force against a resistance in one all-out effort (32), such as one maximum lift in a weight-lifting exercise.

The body needs muscular strength for several reasons. First, strong muscles increase joint stability,

which in turn makes the body joints less susceptible to injury (32). Second, improved muscle tone also helps prevent common postural problems. For example, stronger abdominal muscles can help alleviate postural problems associated with the lower back. Often, lower back problems occur because the strength in the spinal muscles is greater than that in the abdominal muscles; this muscular imbalance causes the postural deviation **lordosis** (swayback). Weakened muscles of the upper back can cause the postural deviations termed **kyphosis** (rounding of the upper back) and/or round shoulders. By building strength in the weakened muscles, these postural deviations may be modified or alleviated. Finally, the body needs muscular strength because it contributes to agility, helps control the weight of the body in motion, and helps the body maneuver quickly (32).

In developing muscular strength, the muscles must be contracted against a heavy resistance with a minimum of exercise repetitions. It is important that minimum repetitions and maximum resistance be used in order to improve muscular strength. Many repetitions with light weights will not increase muscular strength. As the muscles become stronger, the resistance applied must be increased (32) if muscular strength is to continue to increase.

FLEXIBILITY

Although **flexibility** is generally associated with the elasticity of muscles, the total concept of flexibility is denoted by the range of motion of a certain joint and its corresponding muscle groups. Flexibility is influenced by the structure of the joint's bones and ligaments, the amount of bulk that surrounds the joint, and the elasticity of the muscles whose tendons cross the joint (32).

The range of motion of the body's various joints is called *joint mobility*. Joint mobility is measured by the amount of movement that exists where two joint surfaces articulate with each other. The greater the range of motion at the joint, the more the muscles can flex and extend. This range of motion or joint mobility is specific to each joint in the body. For example, your hip joint may be extremely flexible, whereas your shoulder joint may be inflexible (42).

There are several reasons why good joint mobility and muscular elasticity should be maintained. The movement range of muscles and joints not used frequently and regularly throughout their full range of motion becomes limited. Many movement experts claim that a lack of flexibility is a cause of improper movement performance in simple motor activities such as walking and running (32). Good joint mobility and muscular elasticity can also increase resistance to muscular injury and soreness; it is the person with inflexible muscles and joints who may experience muscular soreness or who may be more easily injured during activity because of the limited range of motion (32). However, too much flexibility in certain joints—such as the weight-bearing joints of the hips, knees, or ankles—may make a person more susceptible to injury or hamper performance. Loose ligaments may allow a joint to twist abnormally, tearing the cartilage and other soft tissue. In general, it is advisable to achieve and maintain a “normal” amount of flexibility throughout the body. Normal range varies with each individual.

For flexibility to be increased, the muscles must be stretched beyond their normal range of motion for at least 10 to 30 seconds (15). As flexibility increases, the range of the stretch must also be increased for continued improvement in flexibility. An in-depth discussion of proper stretching techniques are discussed in Chapter 12.

ENDURANCE

Endurance is the ability of a muscle or group of muscles to perform work (repeated muscular contractions) for a long time. With endurance, a muscle is able to resist fatigue when a movement is repeated over and over or when a muscle is held in a static contraction (the muscle generates a motionless force for an extended time) (22).

There are two types of endurance: muscular and cardiorespiratory. **Muscular endurance** is the ability of local skeletal muscles to work strenuously for progressively longer periods of time without fatigue, such as during the execution of 50 sit-ups. Note that muscle endurance is highly specific; it will be attained only by the specific muscles exercised (32).

Using light weights and doing many repetitions of an exercise will increase muscular endurance. This task will tone the muscle but, unlike strength building, will not create large muscle bulk. Increasing muscular endurance is often termed *body sculpting*, or *body toning*.

The other type of endurance is **cardiorespiratory endurance**. This is the aspect of fitness that involves the heart and the lungs—the most important muscles of your body. Cardiorespiratory (also called cardiovascular) endurance is the ability of the cardiovascular system (heart and blood vessels) and the respiratory system (lungs and air passages) to function efficiently during sustained, vigorous activities, such as running, swimming, and cycling. To function efficiently, the cardiorespiratory system must be able to increase both the amount of oxygen-rich blood it delivers to the working muscles and its ability to carry away carbon dioxide and other waste products.

To enhance cardiorespiratory endurance through exercise, the activity must fulfill certain criteria. It must be of sufficient intensity, duration, and frequency; involve large muscle groups; and be continuous, rhythmic, and repetitive. These criteria are termed *intensity*, *duration*, *frequency*, and *mode*. Without their proper application, cardiorespiratory endurance will not improve. Activities that adhere to these guidelines are termed **aerobic** activities. Walking, jogging, running, swimming, biking, cross-country skiing, stair climbing, trampolining, and, of course, aerobic dance are all aerobic activities.

Aerobic Exercise versus Anaerobic Exercise

To fully understand aerobic exercise, we must define the energy systems that occur in the body and how the energy from these systems is utilized for movement. In order for the muscles in our body to contract, which is necessary for movement, a substance termed **ATP** (adenosine triphosphate) must be present in the muscle cell. The initial burst of energy for muscular contraction requires no nutrients or oxygen. This energy system is called the **phosphagen system**, named after the compound **creatine phosphate**, which

exists in the muscle cell. Creatine phosphate breaks down the ATP to release energy for immediate muscular contraction. Since there is a limited amount of ATP that is always present in the cell, this energy system can contract the muscles for only 10 seconds or less. At the end of that time, either nutrients or oxygen must be delivered in order to resynthesize the ATP for continued muscular contraction. A vertical jump or maximum weight lift are examples of activities utilizing the phosphagen energy system.

After the initial burst of energy, the nutrient **glycogen** (the storage form of glucose) that is present in our muscle cell is used to continue the resynthesis of ATP. Like creatine phosphate, there is a limited amount of glycogen stored in our muscles. The supply of glycogen present in a muscle cell can continue muscle contraction for up to 2 minutes. The energy system that uses only the stored glycogen in our muscle cells to resynthesize the ATP is termed **anaerobic glycolysis**. Anaerobic means “without oxygen,” and glycolysis refers to the breakdown of glycogen (a form of carbohydrate). This energy system, like the phosphagen system, is only used for intense bursts of energy. Windsprints or ten repetitions of a bench press are examples of activities utilizing this energy system.

Unlike the phosphagen system, which has no end product, anaerobic glycolysis produces **lactic acid**. As lactic acid builds up in the cell, the muscle will fatigue and muscular contraction will become increasingly more difficult. You have probably heard the term “going for the burn.” This burn occurs when oxygen cannot be delivered to the cell to adequately meet the needs of the working muscle. At this point, the anaerobic energy system has been depleted and the aerobic energy system starts to function. Oxygen must now be supplied to the muscle cells in order for muscular contraction to continue.

Along with oxygen, nutrients are also needed to continue the resynthesis of ATP. The initial phases of aerobic exercise will utilize the nutrient glycogen—the same nutrient that was used in anaerobic glycolysis. When exercise continues for 20 minutes or more, fat will also be utilized to resynthesize ATP to continue muscular contraction.