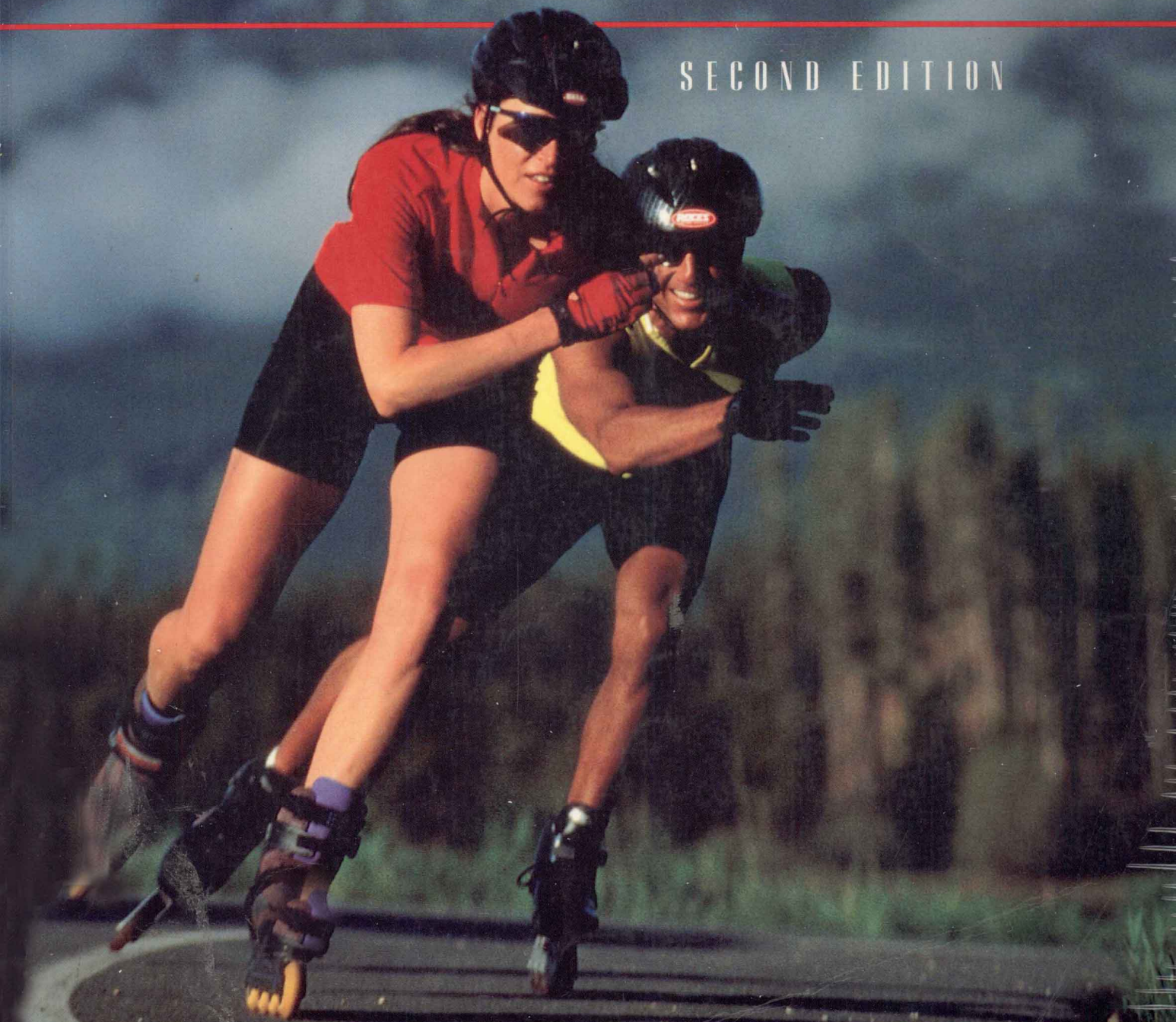
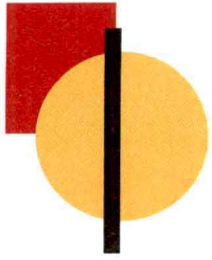


Physical Fitness and Wellness

SECOND EDITION



Herrold S. Greenberg George B. Dintiman Barbee Myers Oake



PHYSICAL FITNESS AND WELLNESS

Second Edition

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Dedication

Without the support of our spouses, this book could not have been written. Their encouragement during stressful times, their understanding of the extensive time commitment writing a book requires, and their help when help was needed are all appreciated. This dedication is in no way sufficient to express our appreciation for their contributions to this book, but we still want to publicly acknowledge Karen Greenberg and Carol Ann Dintiman and let them know their presence was and is a significant component of our own fitness and wellness.

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Preface

GIVEN THE EXISTENCE of numerous books on physical fitness, one might reasonably ask, “Why another?” The answer to this question lies within this book’s unique features. We were frustrated in our attempts to find a fitness textbook that responded to the diverse readers one might expect to be interested in such a book. Given that concern, we made sure to incorporate all the usual fitness content but in a way that was sensitive to and appreciative of the diversity of readers.

Certainly, we discuss topics one might expect to find in a book on physical fitness. There are chapters on principles of exercise, cardiorespiratory fitness, muscular strength and endurance, flexibility, and the like. In other words, there is an array of valid information about physical fitness in this book sufficient for you to become physically fit or maintain your present state of fitness if it is adequate.

APPROACH

We have recognized, though, that physical fitness is but one component of wellness and not an isolated one. Therefore, we discuss physical fitness in a larger context we describe as wellness, which views physical fitness as related to health and well-being. That is why we also discuss topics such as nutrition, weight control, stress and stress management, chemicals and drugs, heart disease and cancer and sexually transmitted diseases, and exercise injuries. To be fit without being healthy and well is not to have finished the journey toward a full life.

UNIQUE FEATURES

In addition to these more traditional approaches to the topic of physical fitness, we added information unique to this book. For example, recognizing that researchers

have found knowledge of physical fitness insufficient in itself to motivate people to become fit and to maintain adequate lifelong levels of physical fitness, we included a whole chapter on “Behavioral Change and Motivational Techniques.” These well-researched strategies are further described throughout the text in examples of how they might be used to overcome barriers to fitness. Most chapters have a **Behavioral Change and Motivational Strategies** box that describes obstacles specific to that chapter’s content that can interfere with achieving fitness, and behavioral change strategies that can be employed to overcome these obstacles.

We also know that changing behavior can be easier if role models exist to encourage changes. That is why we have provided fitness role models in each chapter in a feature entitled **Fitness Heroes**. These boxes describe people who have achieved high levels of fitness and wellness in spite of obstacles. These models are designed to expand readers’ perceptions of their capabilities in the face of whatever fitness obstacles they might experience—for example, being overweight or previously sedentary, having a physical disability, being uncoordinated, or lacking muscular strength.

We were also exasperated by the misconceptions about fitness that we encountered. Given the popularity of this topic and an array of fitness gurus who are neither adequately trained nor qualified to teach about physical fitness, too often misconceptions and inaccurate information are passed along as valid. For this reason we included a **Myth and Fact Sheet** box in each chapter. These boxes present general misconceptions related to the content of the chapter and correct these myths with factual information.

Perhaps the most important features of this book are the **Diversity Issues** boxes and the chapter on “Women and Physical Fitness.” Both these boxes and this chapter are designed to celebrate the diversity of our readers. The Diversity Issues boxes present issues specific to the content of the chapter but also have ethnic, racial, cultural, sex, age, and/or physical capability

implications. This feature directs attention throughout the book to the existence of and the value in our differences and our similarities. We refrain from grouping everyone into the majority cultural norm, and we recognize our diversity as a strength rather than an interference. Each of these boxed features has been updated for this edition of *Physical Fitness and Wellness*.

The chapter on “Women and Physical Fitness” emphasizes the fact that everyone is not the same. The U.S. National Institutes of Health (NIH) was so appalled by the lack of research studies that included female subjects, and therefore the inability to generalize results from these studies to women, that they created the Office of Research on Women’s Health. That office reviews proposed research to be funded by NIH to ensure that it includes female subjects, and that it funds other studies concerned with female health issues such as breast cancer. Similarly, there has been a lack of adequate attention to issues specific to women and physical fitness. To correct this oversight, and to have sufficient space to discuss the issues fully, we devoted a whole chapter to this topic.

In this edition of *Physical Fitness and Wellness*, we responded to reviewers’ requests for additional content and revision of existing content. For example, we significantly expanded Chapter 2, in which readers are guided through tests to determine their fitness profile. Further, we added a section on sexually transmitted diseases in Chapter 13 and revised or eliminated those Lab Activities our readers suggested were in need of improvement. We consider ourselves fortunate in this way. Having the opportunity to revise this text, we were able to keep the most effective features and rework the others to make this book even better than it was previously. We thank our reviewers and editors for that.

We have presented the information needed to engage in a physical fitness program, we have provided techniques that can be used to motivate and encourage continued participation in this program, and we have done so in a manner that recognizes the diversity of our readers. The use of this book to achieve physical fitness, health, and high-level wellness is now up to each reader. We will feel no greater satisfaction than if we have suc-

ceeded in improving the lives of our readers throughout the country by having written this book. Make our days—become physically fit!

SUPPLEMENTS

Instructor’s Manual and Test Bank with Transparency Masters and Video Guide

This comprehensive supplement provides everything a fitness instructor will need to teach from this exciting new text. Included in the Instructor’s Manual section are chapter outlines, objectives and summaries, key terms and concepts, lecture and lab activity outlines, discussion questions, suggested student activities, supplementary readings, and supplementary videos and other media materials. The Test Bank provides 50 questions for each chapter with multiple choice, true-false, fill-in, and essay type questions to choose between. A computerized version of the test bank is available to adopters in both IBM and Macintosh formats. In order to further assist the instructor with lecture material there is a lecture outline in Power Point disk available in either IBM or Mac versions.

Allyn and Bacon Video Library

Allyn and Bacon has entered into a publishing partnership with Films for the Humanities and Science to provide a series of award-winning documentaries on a variety of subjects to enliven and enrich the teaching of your health/wellness/fitness course. The videos are available free to qualified adopters. The video selections include topics such as: Health, Wellness, and Nutrition; Fitness; First Aid; AIDS/Sexually Transmitted Infection and Diseases; Smoking and Substance Abuse/Cancer; and Violence. For additional information please contact your Allyn and Bacon sales representative.

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In addition, we owe a debt of gratitude to the people at Allyn and Bacon who committed themselves to the careful review, editing, and production of this book. In particular, we wish to thank Suzy Spivey, Senior Series Editor, and Amy Braddock, editorial assistant. They provided us with valuable insight and guidance in all phases of the creation of this book, from the first written word to the last details of organization, design, illustration, and production.

Finally, our families provided us with the support that all authors need. They were there to bounce ideas off of, to console and to cajole (whichever happened to be needed at the time), and to provide a haven of love to which we could retreat. Although we have come to expect these things from our families, we nevertheless would like to take this opportunity to acknowledge that we probably do take them for granted too often and announce loudly for all to hear: Thanks for being there!

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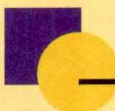
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1

PHYSICAL FITNESS, HEALTH, AND WELLNESS



Chapter Objectives

By the end of this chapter, you should be able to:

1. Define and differentiate between physical fitness, health, and wellness.
2. Describe the benefits of being physically fit.
3. Discuss the relationship between physical fitness and self-esteem.

INEZ WAS A college athlete. Her basketball team always had a winning record, and she was a major reason they were so good. Still, that was long ago. Today, Inez is in her 50s, and an automobile accident has left her without the use of her legs. But she still participates in sports. She plays wheelchair basketball in her leisure time and coaches a community center soccer team on the weekends. She may not be able to run a mile, but she certainly can shoot foul shots. She may not be able to demonstrate a soccer kick, but she sure can motivate the girls she coaches.

Several years had passed—five to be exact—since Rodney and I last saw each other. I was looking forward to catching up on old times. When I asked the standard “How have you been?” Rodney replied that he had never felt better. He had taken up jogging and was now running 50 miles a week. He had given up cigarette smoking, become a vegetarian, and had more confidence than ever.

In spite of his reply, I needed further assurance. He looked like death warmed over. His face was gaunt, his body emaciated. His clothes were baggy, creating a sloppy appearance. He had an aura of tiredness about him.

“How’s Cynthia?” I asked.

“Fine,” Rodney replied. “But we are no longer together. She just couldn’t accept the time I devoted to running, and her disregard for her own health was getting on my nerves. She is still somewhat overweight, you know, and I started viewing her differently when I became healthier myself.”

You may know an Inez, a Rodney, or someone like them. Are they healthy? This is a complicated question, one that this chapter explores, first by defining physical fitness, health, and wellness and then by differentiating among them.

Physical fitness is defined differently by different people. In this text, we define it as the ability to meet life's demands and still have enough energy to respond to unplanned events. There are five basic components of physical fitness: cardiorespiratory endurance, muscular strength, muscular endurance, flexibility, and body composition. Participation in sports activities that can improve these fitness components often requires certain motor skills. Consequently, motor skills (such as agility, balance, coordination, power, speed, and reaction time) are often included in physical fitness programs. It is possible to develop the five basic components of physical fitness without proficiency in these and other motor skills. That is why someone who is not a natural athlete can still be extremely fit.

COMPONENTS OF PHYSICAL FITNESS

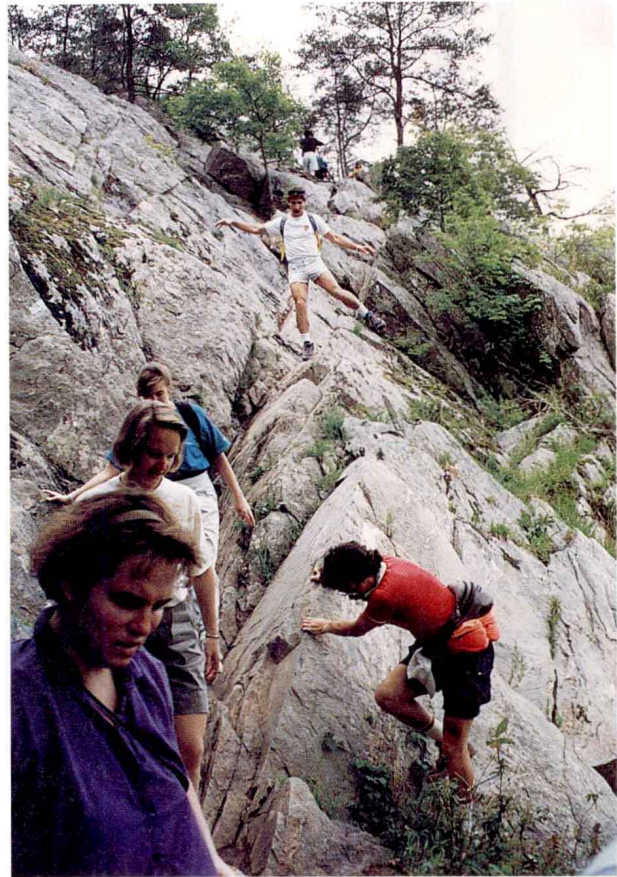
Elsewhere in this book, we will discuss developing the five basic components of physical fitness. First, however, we must define these components.

Cardiorespiratory Endurance

To engage in physical activity, even breathing, requires oxygen. Without oxygen, it would be impossible to burn the food you need for energy. To supply oxygen to the various parts of the body requires a transport system. The body's transport system consists of lungs, heart, and blood vessels. When you breathe, you inhale air that contains oxygen into the lungs. The lungs absorb oxygen into their blood vessels and transport it to the heart where it is pumped out through other blood vessels to all parts of the body. The more efficiently and effectively you transport oxygen, the greater your cardiorespiratory endurance (*cardio* for heart and *respiratory* for lungs and breathing), the ability to supply and use oxygen, over a period of time and in sufficient amounts, to perform normal and unusual activities.

Muscular Strength and Endurance

The maximal pulling force of a muscle or a muscle group is called **muscular strength**. The ability of a muscle to contract repeatedly or to sustain a contraction is called **muscular endurance**. Lifting a load or moving an object depends on muscular strength. Doing that repeat-



Exercising outdoors is an invigorating way to enhance spiritual health while at the same time improving physical health. (Photo Courtesy of the Aspen Hill Club.)

edly over time requires muscular endurance. In spite of tremendous cardiovascular endurance, without sufficient muscular strength or endurance you may not be able to do the things you wish to do.

Muscular Flexibility

The range of motion around a joint, or more simply the degree to which you can move your limbs with grace and efficiency, is flexibility. Flexibility is important in performing exercise efficiently, safely, and enjoyably. Without adequate flexibility, you might not be able to stretch far, might overstress a muscle or ligament, and might even feel uncomfortable moving. Flexibility is probably the component of physical fitness that is most overlooked; yet the consequences of ignoring flexibility can be pain and discomfort, injury, and poor health.

Body Composition

Your body contains some parts that are made up of fats and others that are not. The fat component is usu-

ally referred to as **fat weight**, and fat in relation to the body as a whole is referred to as **percent body fat**. The nonfatty component is called **lean body mass**. **Body composition** is the relationship between these two components. In the past, people relied on height–weight charts to evaluate body composition. We now realize that someone can weigh many more pounds than a chart based on height says is appropriate but still have good body composition. This can happen because the person is muscular and has a good deal of lean body mass. Conversely, someone at just the right weight according to a height chart could in actuality be overweight because of too much fatty tissue and not enough lean body mass.

HEALTH AND WELLNESS

What do you mean when you think of health? If someone told you Aaron was really healthy, what picture of Aaron would you have in your mind? If you were asked to elaborate on your health, what would you say? We will help you answer that question, but first try listing five ways in which you could improve your health.

We are willing to bet you listed ways to improve your *physical* health. You probably listed ways to prevent contracting heart disease such as eating less fatty foods or exercising more or ways to prevent cancer by not smoking cigarettes and getting regular checkups. Yet physical health is not the total picture; there are other components of health that are just as important. These include:

1. **Social health** This is the ability to interact well with people and the environment, to have satisfying interpersonal relationships.
2. **Mental health** This is the ability to learn and grow intellectually. Life's experiences as well as more formal structures (for example, schools) enhance mental health. *endorphins*
3. **Emotional health** This is the ability to control emotions so that you feel comfortable expressing them and you can express them appropriately. Conversely, it is the ability to not express emotions when it is inappropriate to do so.
4. **Spiritual health** This is a belief in some unifying force, which will vary from person to person but will have the concept of faith at its core. Faith is a feeling of connection to other humans, of a purpose to life, and of a quest for meaning in life.

So health is not simply caring for your body. It concerns your social interactions, mind, feelings, and spirit. Often, we decide to give up health in one area to gain

greater health in another. For example, when you decide you're just not up to exercising today, you may choose to improve your emotional health (to seek relaxation) at some expense to your physical health. When you decide to study instead of spending time with your friends, you may be choosing mental over social health. We make decisions like these about our health all the time even though we do not express them in these terms.

To identify the strengths and weaknesses of the components of your health, complete Lab Activity 1.1: Identifying Your Health Strengths and Weaknesses at the end of this chapter.

Now you can appreciate that physical fitness is just one component of health. In fact, it is just one component of physical health, which, in turn, is a component of overall health. **Health, then, is an individual's total physical, social, emotional, mental, and spiritual status, and health is separate and distinct from illness**, as shown in the continuum in Figure 1.1 on page 5.

Note that the continuum is a dotted, rather than a solid, line. Each dot is made up of the five health components shown in Figure 1.2 on page 6, and therefore everyone has some degree of health no matter where they are located on the continuum.

Imagine that each health dot, as depicted in Figure 1.2, is a tire on the vehicle in which you travel through life. If the tire is properly inflated, you will have a smooth ride; if it is not, the ride will be bumpy. The same is true for your *health tire*. If you do not pay enough attention to your health and all its components,

Physical fitness The ability to meet life's demands and still have enough energy to respond to unplanned events.

Muscular strength The amount of force a muscle can exert for one repetition.

Muscular endurance A muscle's ability to continue submaximal contractions against resistance.

Flexibility The range of motion around a joint or the ability to move limbs gracefully and efficiently.

Fat weight The weight of your body fat.

Percent body fat The percentage of your body weight made up of fat.

Lean body mass The nonfatty component of your body.

Body composition The relationship between your fat weight and your lean body mass.

Health The total of your physical, social, emotional, mental, and spiritual status.

Diversity Issues

Paralympics

In 1996, just after the Olympic Games concluded in Atlanta, Georgia, 4000 elite athletes competed in the tenth Paralympic Games. The first of these games was held in Rome in 1960 and was limited to athletes with spinal-cord injuries. In 1976, any athlete who had some form of physical impairment was allowed to compete.

The following seventeen full-medal sports and two demonstration sports made up the 1996 Paralympic Games:

Full-Medal Sports

1. **Archery** As in the Olympic Games, the event programmed is the Olympic FITA Round, both individual and team. There are standing and wheelchair competitions, with archers grouped in classes according to disability.
2. **Athletics** This sport includes track, throwing, and jumping events and pentathlon and marathon. Blind athletes, amputees, wheelchair athletes, and athletes with cerebral palsy compete in these events, though not all take part in all the disciplines.
3. **Basketball** Wheelchair basketball is played by paraplegics, amputees, and athletes with polio. Athletes compete on the same court using a standard-height basket and NCAA 3-point line. The rules are the same as those of the Olympics with slight modifications.
4. **Boccia** A game of precision, this sport is played by athletes with cerebral palsy, whose object is to place balls closest to the white target ball on a long, narrow field of play. Boccia has Italian origins.
5. **Cycling** Events are divided into three groups according to disability: cerebral palsy, visual impairment, and impaired mobility. Events programmed are road racing and time trial events.
6. **Equestrian** All types of athletes compete in equestrian dressage events.
7. **Fencing** This sport features wheelchair athletes, amputees, and athletes with cerebral palsy. All athletes compete in wheelchairs fastened to the floor by a device that allows freedom of movement of the fencer's body. The events programmed include foil, sabre, and épée.
8. **Football** A variant of soccer, football is played by teams of seven athletes with various degrees of cerebral palsy, all ambulatory. The competition follows the FIFA rules for football, with certain modifications, including a slightly smaller field of play.
9. **Goalball** Played by blind competitors, this sport involves balls that contain bells to guide the players. It is played on a court with a goal at each end; three players on each side try to throw the ball into their opponent's goal.
10. **Judo** Visually impaired men follow International Judo Federation rules with only slight modifications. The different texture of the mat indicates the limits of the competition area.
11. **Lawn bowls** Played on a larger playing area than boccia, lawn bowls is a similar precision sport. It is played by amputees, wheelchair athletes, and athletes with visual impairment.
12. **Powerlifting** A sport open to wheelchair athletes, amputees, and competitors with cerebral palsy, this competition differs from the Olympic Games version in that the only event is the bench press. Only men's events are programmed.
13. **Shooting** Rifle and pistol events in the air gun and .22 calibre categories are programmed in this sport, open to amputees, wheelchair athletes, and competitors with cerebral palsy. Men's, women's, and mixed events are also programmed.
14. **Swimming** Swimmers compete by gender in two groups, one for blind competitors and one for swimmers with mobility impairments, including amputees, dwarfs, and wheelchair athletes.
15. **Table tennis** Wheelchair and standing events are programmed. The rules are the same as in the Olympic Games, with some minor technical variations in the wheelchair version.
16. **Tennis** Wheelchair tennis is similar to conventional tennis, except that the ball may bounce twice before being returned. Players compete in men's and women's singles and doubles.
17. **Volleyball** There are two competitions, standing and seated. The first is identical to the version played in the Olympic Games. The second differs in the placing of the net, which is lowered appropriately for amputees who play seated on the ground.