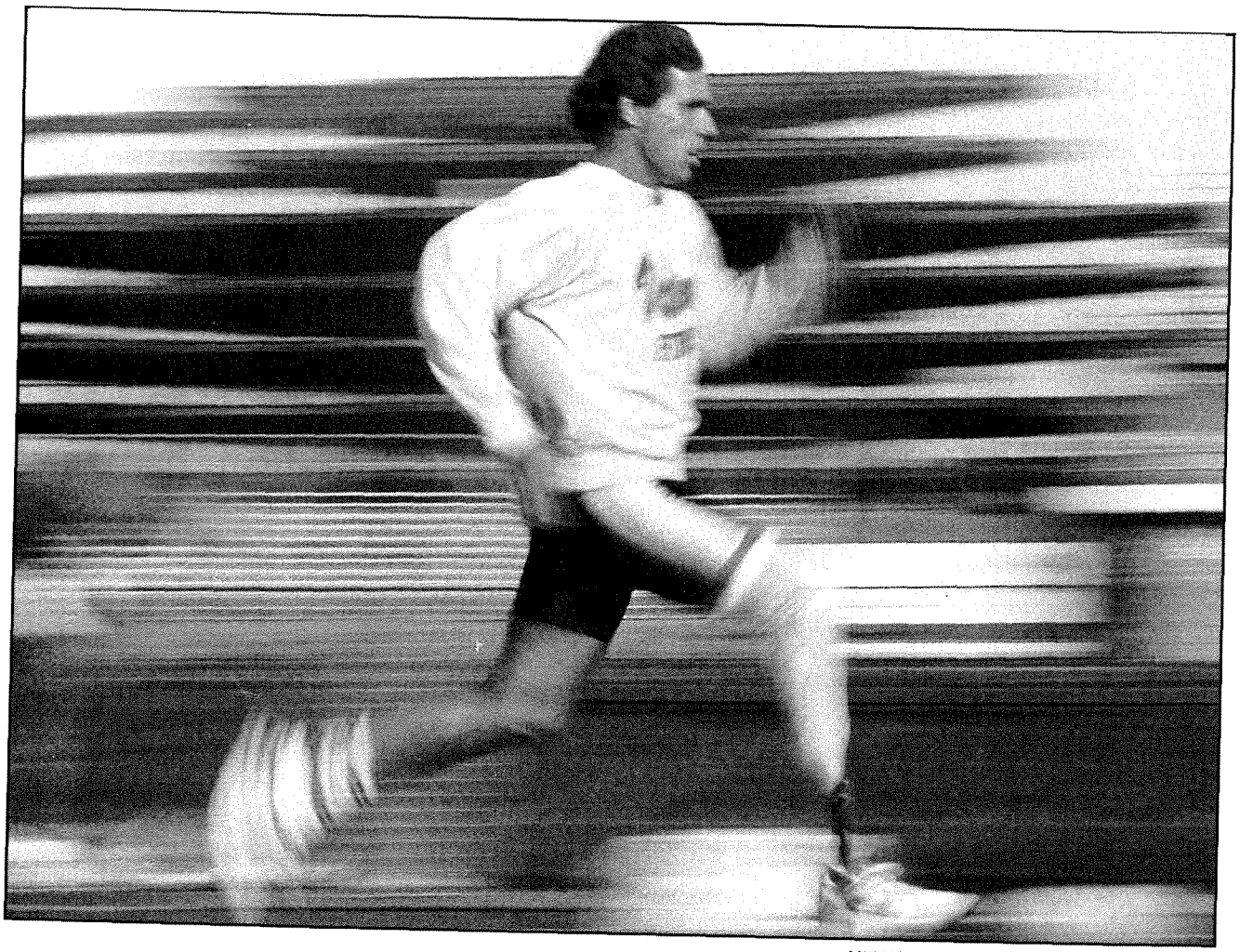
PART ONE

PHYSICAL FITNESS GUIDELINES



NEWSDAY/J. CONRAD WILLIAMS, JR.

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INTRODUCTION

This book presents a guide for helping people who have had a lower limb amputation realize fully their physical capabilities. It is intended as a resource for the clinical team in rehabilitation management, and provides guidelines for designing a realistic, safe, and enjoyable program of physical conditioning and exercise.

Its goal is to stimulate a lifelong interest in fitness, not only for a sense of physical and mental well-being, but to improve longevity. Studies indicate that individuals with amputations are more prone to develop cardiovascular diseases and have a somewhat shorter life expectancy than the general population. These circumstances may be the result of inactivity based on perceived restrictions due to a disability and a sedentary lifestyle, predisposing these individuals to earlier development of degenerative diseases.

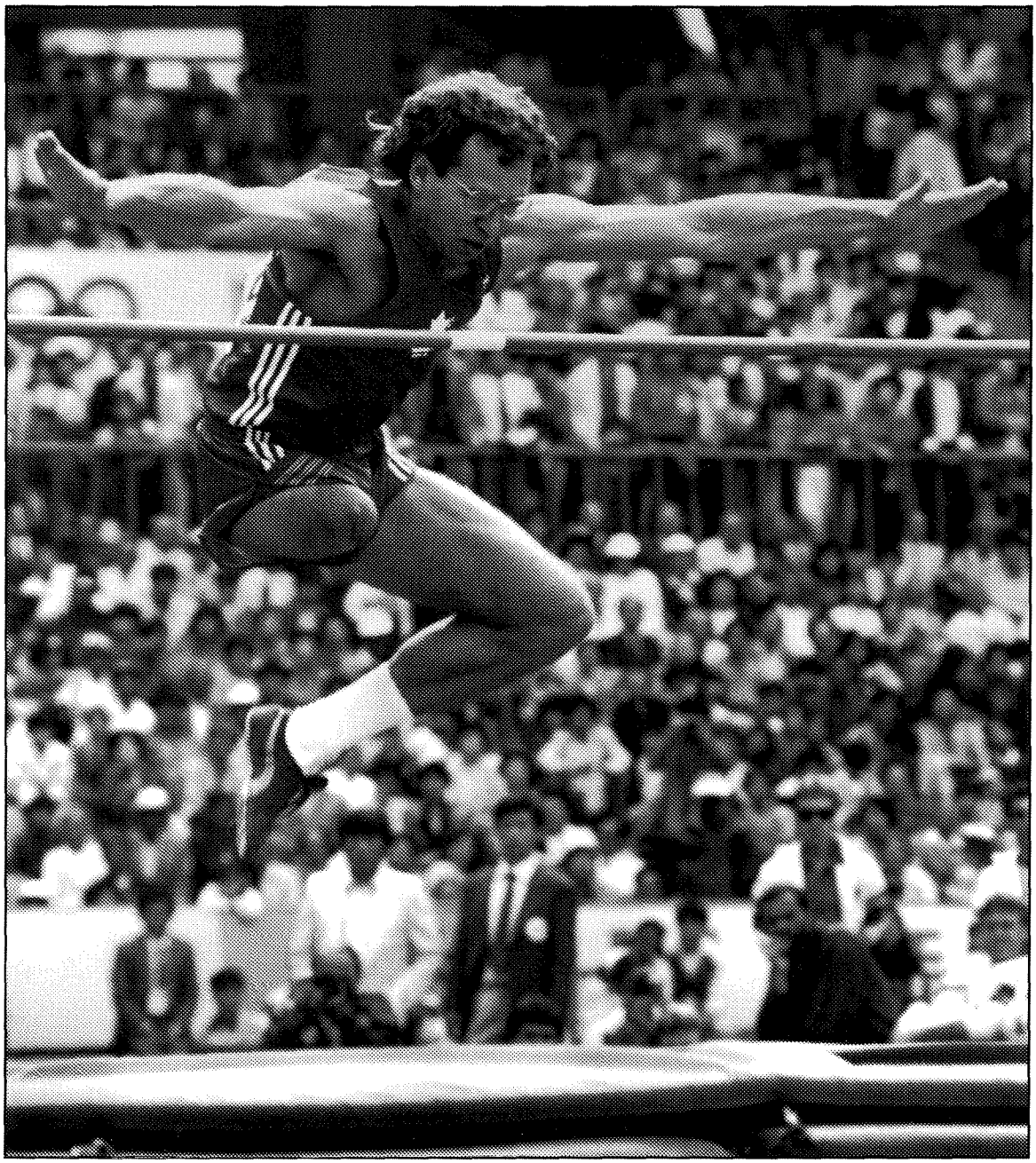
It is no longer considered wise to discourage or limit physical activity merely because an individual has had an amputation. The amputation can often be a stimulus to better physical fitness, even for older people. Exercise is a form of treatment in the rehabilitation process. Unless there is a valid medical reason for limiting even the gentler forms of exercise, physical disability should not be considered a reason for avoiding exercise.

By far the majority of amputations performed in America and the Western world today are caused by medical conditions: primarily, occlusive diseases of the arteries to the limbs and diabetes. For the most part these amputations occur in older people. A program of physical fitness, consistent with the state of health and physical capabilities of these older people, will surely enhance their quality of life for the remaining years. While the fitness programs described in this text are described and demonstrated, in general, for the younger physically active person, they will provide guidelines for those who are older and less active. The courage and physical capabilities described here provide an inspiration to all with lower limb loss. This positive rehabilitation message supersedes in some ways the actual mechanics of physical fitness outlined. The message is one of hope, accomplishment, and resolve.

The major concern of people of all ages who have undergone a lower limb amputation has been whether or not they would be able to regain their previous level of physical activity. This need not be a primary concern. Modern prosthetic technology will allow many individuals a recovery of function almost equal to pre-amputation potential. Persons with an amputation can not only participate in sports but can in many cases participate in those sports with their nondisabled teammates.

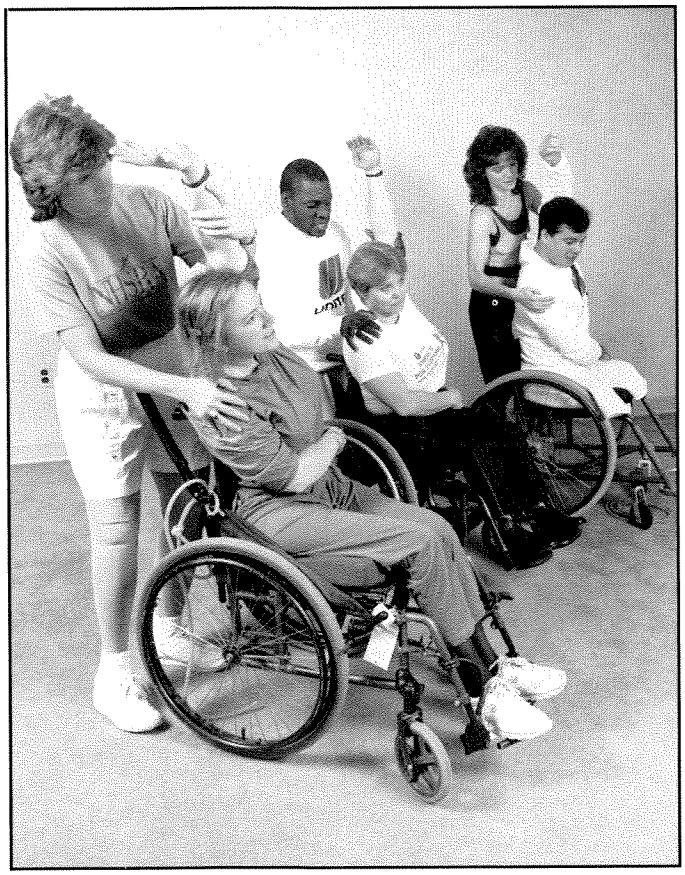
Competitive sports activities among people with disabilities are held throughout the world. Performance is impressive: a person with a lower limb amputation has run 100 meters in 11.73 seconds, another a 26-mile marathon in less than 3 1/2 hours. Disabled athletes also compete in organized sports events with nondisabled athletes and often surpass them.

The exercises and many of the sports activities



REUTERS/BETTMANN NEWSPHOTOS

Canadian athlete Arnold Boldt leaps over the high jump bar to win a gold medal at the 1988 Paralympic Games in Seoul, Korea.



RICHARD LAKIN/NHS, WASHINGTON, DC
A variety of disabled individuals participate in the National Handicapped Sports fitness clinics across the country.

illustrated in this book are performed by young people with a lower limb amputation. Thus, it may seem that the book is primarily directed toward young adults. That is not the intent. It is equally important—in fact, probably more important—that older people be concerned about physical fitness. Often, increasing age implies decreasing activity. This is particularly true in those with lower limb amputation.

Studies of the effects of moderate exercise on older people have repeatedly indicated that careful stretching can significantly improve the range of motion of joints and that the mineral content of bone can be increased. Aerobic exercise will stimulate greater blood flow to the body and brain, which will increase acuity and improve reflex time.

Most of the exercises and sports activities presented in this book can be performed and enjoyed by persons of all ages who are in good health. The first step is a complete medical review, regardless of the degree of fitness or pre-amputation activity. The fitness program should begin with conditioning exercises. As strength and flexibility are developed, sports activities may be combined with the exercises. Over time, athletic ability will increase and goals may be broadened.

Without reasonable precaution, physical exercise and sports can pose a risk of injury, and overexertion may result in cardiovascular complications. People with a lower limb amputation must learn to compensate for impaired balance and mobility; their risk of injury is far greater than that of nondisabled individuals. A sound limb will usually become stronger through regular physical activity. It must be carefully protected from injury because dysfunction will result if it is unable to sustain weightbearing. Learning to use protective equipment, such as knee braces, and learning to avoid unnecessary risk are integral parts of a physical conditioning program.

A person who is physically fit has more energy, and this contributes to improved performance in other aspects of life. The best surgery, technology, therapy, and prosthesis cannot provide this energy without the motivation of the individual to develop new physical strength. This book is intended to help by stimulating motivation and action.

Chapter 2, The Rehabilitation Process, addresses the purpose and scope of this book as they relate to the rehabilitation process. Chapter 3, Components of Physical Conditioning, briefly defines and discusses the main components of physical conditioning: cardiovascular endurance; flexibility; muscular strength and endurance; and skill development. Part Two presents a selection of exercises to develop flexibility and muscular strength and endurance that can be adapted to various skill levels and conditioning needs of people with lower limb amputation. Part Three describes the application of good physical conditioning to skill acquisition in several sports that promote cardiovascular fitness and can be enjoyed throughout a lifetime. Safety precautions and assistive modifications are described for the activities presented in Parts Two and Three.

Along with good physical fitness, diet and nutrition are important factors in total health. This book concentrates on conditioning, however, and does not include information on diet and nutrition.