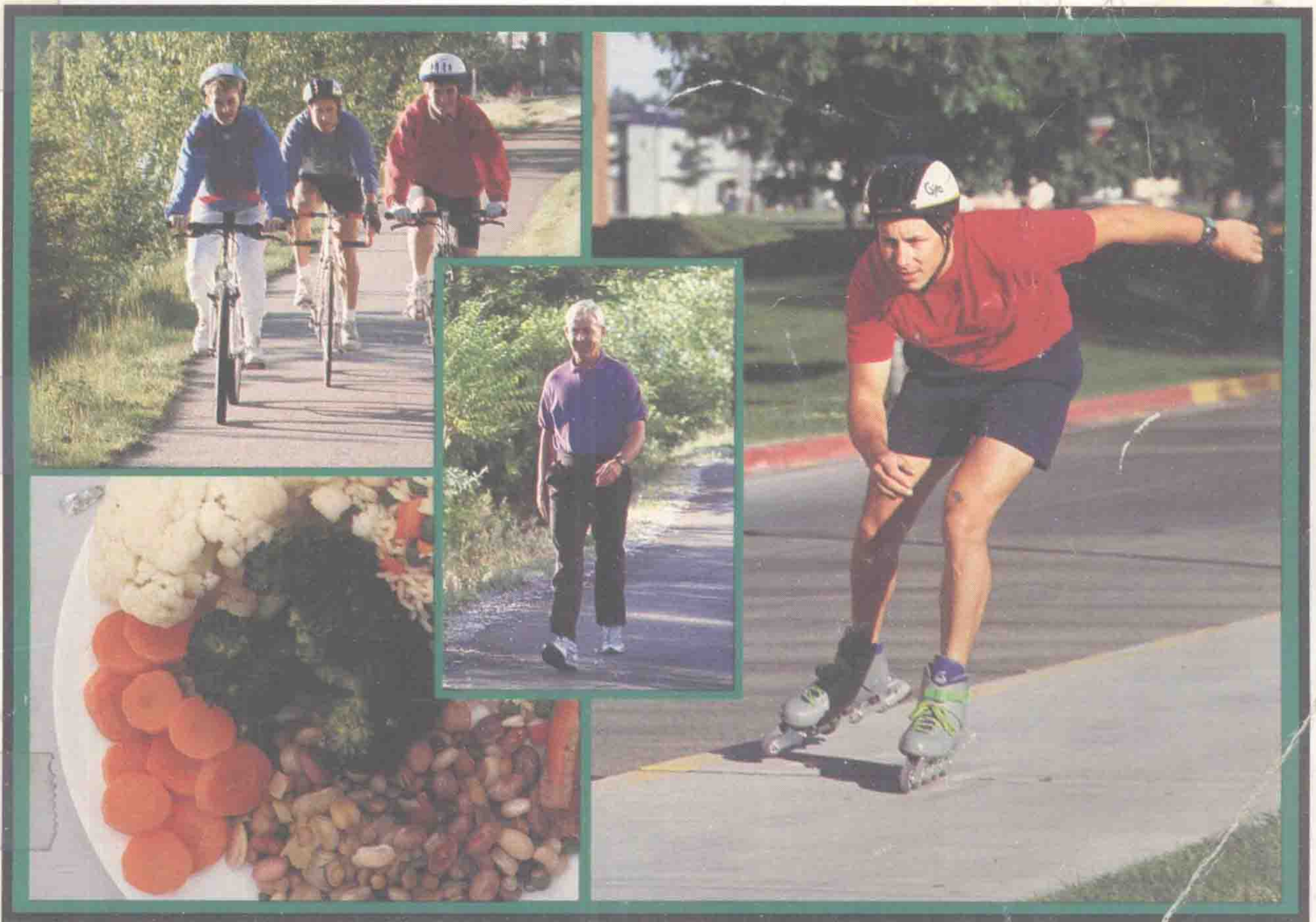


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A PERSONALIZED PROGRAM

LIFETIME PHYSICAL FITNESS AND WELLNESS



WERNER W.K. HOEGER & SHARON A. HOEGER

♥ THIRD EDITION ♥

Lifetime Physical Fitness And Wellness

A Personalized Program

THIRD EDITION

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1

Introduction to Lifetime Physical Fitness and Wellness

O B J E C T I V E S

- Identify the major health problems in the United States.
- Define physical fitness.
- List the components of health-related and skill-related fitness.
- Learn the difference between health standards and physical fitness standards.
- Define wellness.
- Learn the differences between physical fitness and wellness.
- Understand the benefits and the significance of participating in a lifetime fitness and wellness program.
- Identify lifestyle factors that help improve health and longevity.
- Identify risk factors that may interfere with safe exercise participation.

Movement and physical activity are basic functions for which the human organism was created. However, advances in modern technology have almost completely eliminated the need for physical activity in almost everyone's daily life. Physical activity is no longer a natural part of our existence. We now live in an automated society, where most of the activities that used to require strenuous physical exertion can be accomplished by machines with the simple pull of a handle or push of a button. The available scientific evidence shows that physical inactivity and sedentary lifestyle are a serious threat to our health and rapidly increase the deterioration rate of the human body.

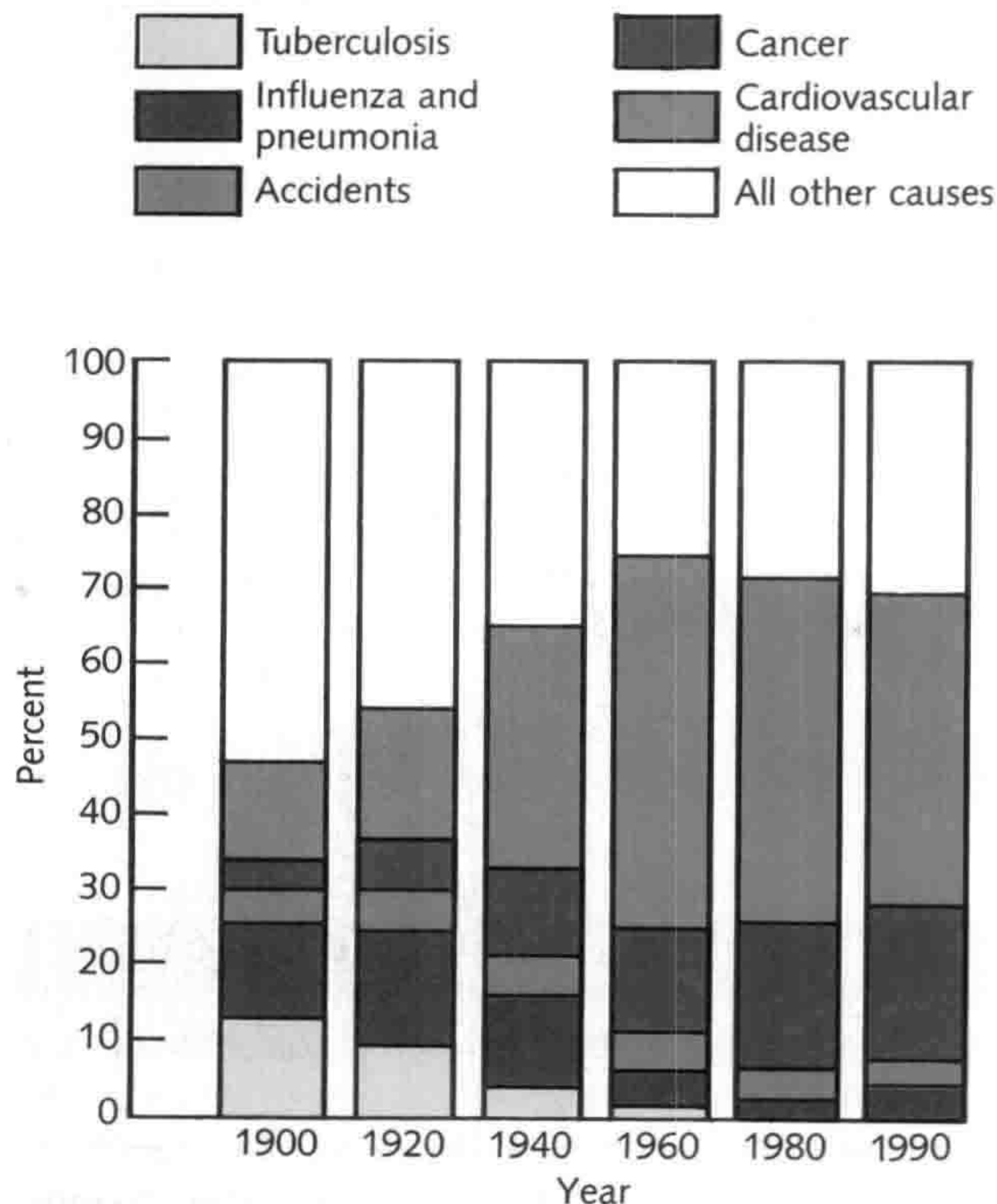
With the new developments in technology, three additional factors have significantly changed our lives and have had a negative effect

on human health: nutrition, stress, and environment. Fatty foods, sweets, alcohol, tobacco, excessive stress, and environmental hazards (wastes, noise, air pollution, etc.) have detrimental effects on people.

At the beginning of the twentieth century, the most common health problems in the United States were infectious diseases such as tuberculosis, diphtheria, influenza, kidney disease, polio, and other diseases of infancy. Progress in the field of medicine largely eliminated these diseases. Nevertheless, as the American people started to enjoy the "good life" (sedentary living, alcohol, fatty foods, excessive sweets, tobacco, drugs, etc.), a parallel increase was seen in chronic diseases such as hypertension, atherosclerosis, coronary disease, strokes, diabetes, cancer, emphysema, and cirrhosis of the liver (see Figure 1.1).

FIGURE 1.1

Deaths for Selected Causes as a Percent of All Deaths:
United States, Selected Years, 1900 to 1990



Source: National Center for Health Statistics, Division of Vital Statistics.

As the incidence of chronic diseases increased, it became clear that prevention was the best medicine. Consequently, a new fitness and wellness trend gradually developed over the last two and a half decades. People began to realize that good health is largely self-controlled and that the leading causes of premature death and illness in the United States could be prevented through adherence to positive lifestyle habits.

LEADING HEALTH PROBLEMS IN THE UNITED STATES

The most prominent health problems in the United States today are lifestyle-related (see Table 1.1). According to research, more than 50 percent of all disease is self-controlled, 64 percent of the factors contributing to mortality are caused by lifestyle

TABLE 1.1

Leading Causes of Death in the United States: 1988

Cause	Total Number of Deaths	Percent of Total Deaths
1. Major cardiovascular diseases	969,400	44.7
2. Cancer	485,048	22.4
3. Accidents	97,100	4.5
4. Chronic and obstructive pulmonary disease	82,853	3.8
5. All other causes	533,598	24.6

Source: Advance Report of Final Mortality Statistics, 1988. National Center for Health Statistics. U.S. Department of Health and Human Services.

(48 percent) and environmental (16 percent) factors, and 83 percent of deaths prior to age sixty-five are preventable. Most Americans are threatened by the very lives they lead today.

Current statistics indicate that approximately 70 percent of all deaths in the United States are caused by cardiovascular disease and cancer (see Table 1.1 and Figure 1.1). Close to 80 percent of these deaths could be prevented through a healthy lifestyle program. Accidents are the third leading cause of death. While not all accidents are preventable, many are. Many fatal accidents are related to drug abuse and lack of use of seat belts. The fourth cause of death, chronic and obstructive pulmonary disease, is largely related to tobacco use.

CARDIOVASCULAR DISEASE

The most prevalent degenerative diseases in the United States are those of the cardiovascular system. As shown in Table 1.1, close to half of all deaths in this country are attributed to heart and blood vessel disease. *According to the 1988 estimates by the American Heart Association, 68.09 million Americans were afflicted by diseases of the cardiovascular system, including nearly 62 million suffering from hypertension (high blood pressure) and over 5 million affected by coronary heart disease. Many of these individuals suffer from more than one type of cardiovascular disease. Additionally, the 1991 estimated cost of heart and blood vessel disease exceeded \$101 billion. Heart attacks alone cost American industry approximately 132 million workdays annually, including \$15 billion in lost productivity because of physical and emotional disability.*

More than 1.5 million people suffer heart attacks each year, and over half a million of them die as a result. About half the time, the first symptom of coronary heart disease is the heart attack itself, and 40 percent of the people who have a first heart attack die within the first twenty-four hours. In one out of every five cardiovascular deaths, sudden death is the initial symptom. About half of those who die are men in their most productive years — between the ages of forty and sixty-five. Furthermore, the American Heart Association estimates that in excess of \$700 million a year is spent in replacing employees who had heart attacks. Most coronary heart disease risk factors are reversible and preventable, and the individual can control them through lifestyle modifications (see Chapter 8).

CANCER

The second leading cause of death in the United States is cancer. Unlike cardiovascular disease, the mortality rate for cancer has steadily increased over the last few decades (see Figure 1.1). Even though cancer is not the number-one killer, it is the number one health fear of the American people. Cancer is defined as an uncontrolled growth and spread of abnormal cells in the body. Some cells grow into a mass of tissue

called a tumor, which can be either benign or malignant. A malignant tumor is a “cancer.” If the spread of cells is not controlled or checked, death ensues. Approximately 23 percent of all deaths in the United States are due to cancer. Almost 510,000 people died of this disease in 1991, and an estimated 1,100,000 new cases were reported the same year. The overall medical costs for cancer were estimated to be in excess of \$20 billion for 1990. Table 1.2 shows the 1991 estimated new cases and deaths for major sites of cancer, excluding non-melanoma skin cancer and carcinoma in situ.

Testing procedures for early detection of cancer as well as treatment modalities are continuously changing and improving. In fact, cancer is now viewed as the most curable of all chronic diseases. More than 7 million Americans with a history of cancer are now alive, and close to 3 million of them can be considered cured. The American Cancer Society maintains that the biggest factor in fighting cancer today is prevention through health education programs. Evidence indicates that as much as 80 percent of all human cancer can be prevented through positive lifestyle behaviors. The basic recommendations include a diet high in cabbage-family vegetables, high in fiber, high in vitamins A and C, and low in fat. Alcohol and salt-cured, smoked, and nitrite-cured foods should be used in moderation. Cigarette smoking and tobacco use in general should be eliminated, and obesity should be avoided.

TABLE 1.2

Estimated Deaths and New Cases for Major Sites of Cancer: 1991.
From 1991 Cancer Facts and Figures. American Cancer Society.

	Estimated New Cases			Estimated Deaths		
	Total	Male	Female	Total	Male	Female
Lung	161,000	101,000	60,000	143,000	92,000	51,000
Colon-Rectum	157,500	79,000	78,500	60,500	30,000	30,500
Breast*	175,900	900	175,000	44,800	300	44,500
Prostate	122,000	122,000	—	32,000	32,000	—
Pancreas	28,200	13,700	14,500	25,200	12,100	13,200
Urinary	75,500	52,800	22,700	20,100	12,700	7,400
Leukemia	28,000	15,800	12,200	18,100	9,800	8,300
Ovary	20,700	—	20,700	12,500	—	12,500
Uterus**	46,000	—	46,000	10,000	—	10,000
Oral	30,800	20,600	10,200	8,150	5,275	2,875
Skin***	32,000	17,000	15,000	8,500	5,400	3,100

*Invasive cancer only

**New cases total over 50,000 if carcinoma in situ is included

***Estimates are over 600,000 if new cases of nonmelanoma are included

ACCIDENTS

Most people do not consider accidents a health problem, but accidents are the third leading cause of death in the United States, affecting the total well-being of millions of Americans each year. Accident prevention and personal safety are also part of a health enhancement program aimed at achieving a higher quality of life. Proper nutrition, exercise, abstinence from cigarette smoking, and stress management are of little help if the person is involved in a disabling or fatal accident due to distraction, a single reckless decision, or not properly wearing safety seat belts.

Accidents do not just happen. We cause accidents, and we are victims of accidents. Although some factors in life are completely beyond our control, such as earthquakes, tornadoes, and airplane crashes, more often than not, personal safety and accident prevention are a matter of common sense. A majority of accidents are the result of poor judgment and confused mental states. Accidents frequently happen when we are upset, not paying attention to the task with which we are involved, or abusing alcohol and other drugs.

Alcohol abuse is the number-one cause of all accidents. Statistics clearly show that alcohol intoxication is the leading cause of fatal automobile accidents. Other drugs commonly abused in society alter feelings and perceptions, lead to mental confusion, and impair judgment and coordination, greatly increasing the risk for accidental morbidity and mortality.

To help improve your personal safety, you are encouraged to fill out the "Health Protection Plan for Environmental Hazards, Crime Prevention, and Personal Safety" given in Appendix C. Keep in mind that you control most actions in your life, and by following the recommendations given in this questionnaire, you can further enhance your personal safety and well-being.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

Chronic obstructive pulmonary disease (COPD) is a term used to describe diseases that limit air flow, such as chronic bronchitis, emphysema, and a reactive airway component similar to that of asthma. The incidence of COPD increases proportionately with cigarette smoking (or other forms of tobacco use) and exposure to certain

types of industrial pollution. In the case of emphysema, genetic factors may also play a role.

PHYSICAL FITNESS

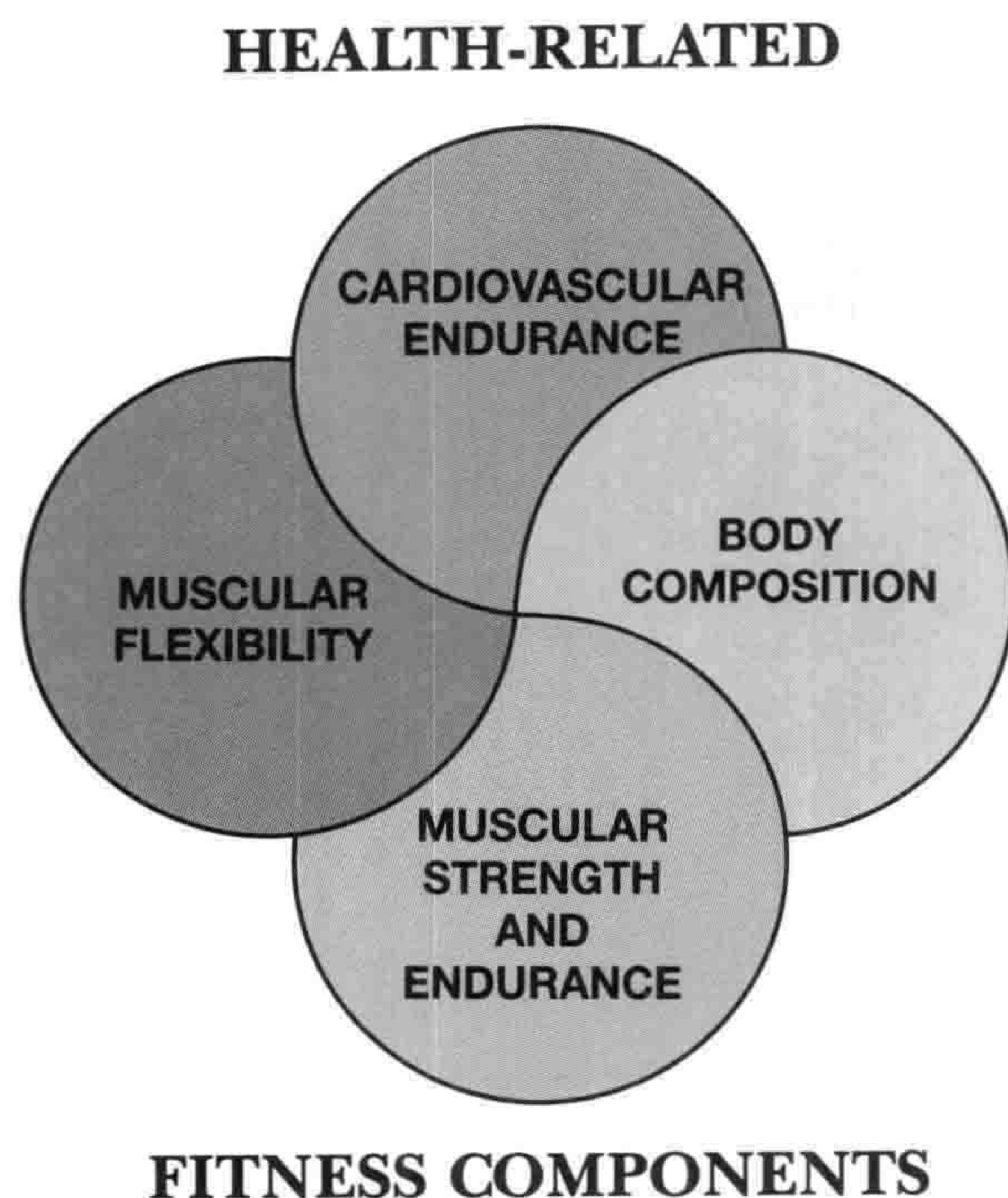
Physical fitness has been defined in several ways and has meant different things to different people. Initially, health care practitioners simply defined fitness as the absence of disease. Many athletic coaches perceived fitness as the ability to perform certain sports skills. Perhaps the most comprehensive definition has been given by the American Medical Association, which has defined *physical fitness as the general capacity to adapt and respond favorably to physical effort*. This implies that individuals are physically fit when they can meet the ordinary as well as the unusual demands of daily life safely and effectively without being overly fatigued, and still have energy left for leisure and recreational activities.

As the fitness concept developed in the last two decades, it also became clear that no single test was sufficient to assess overall fitness. Rather, a battery of tests was necessary because several specific components have to be established to determine an individual's overall level of fitness. In this regard, most authorities agree that physical fitness can be classified into health-related and motor skill-related fitness. *As illustrated in Figure 1.2, from a health point of view, there are four health-related fitness components: cardiovascular (aerobic) endurance, muscular strength and endurance, muscular flexibility, and body composition.*

The motor skill-related components of fitness are more important in athletics. In addition to the four components just mentioned, motor skill-related fitness includes agility, balance, coordination, power, reaction time, and speed. Although these components are important in achieving success in athletics, they are not crucial for developing better health. In terms of preventive medicine, the main emphasis of fitness programs should be placed on the health-related components. That is the focus of this book.

During the late 1960s and in the 1970s, we began to realize that good fitness was important in the fight against chronic diseases, particularly those of the cardiovascular system. Because of increased participation in fitness programs in the last few years, we have begun to see a reduction in cardiovascular mortality rates. The rate started to decline in about 1963, and by 1982 had dropped by 37 percent. In the year 1983 alone

FIGURE 1.2

Health-Related Components of Physical Fitness

there were an estimated 165,000 fewer cardiovascular deaths than expected. This decrease in mortality is attributed to increased fitness and better health care in the country.

Furthermore, several studies have shown an inverse relationship between exercise and premature cardiovascular mortality rates. The results of

a study¹⁷ conducted among 16,936 Harvard alumni linking physical activity habits and mortality rates indicated that as the amount of weekly physical activity increased, the risk of cardiovascular deaths decreased. The greatest decrease in cardiovascular deaths was observed among alumni who used in excess of 2,000 calories per week through physical activity (Table 1.3).

A major study⁶ published in the *Journal of the American Medical Association* in 1989 based on data from 13,344 people followed over an average of eight years upheld the findings of the Harvard alumni study. The study conducted at the Institute of Aerobics Research in Dallas, Texas, confirms that the level of cardiovascular fitness is related to mortality from all causes. The results showed a graded and consistent inverse relationship between cardiovascular fitness and mortality, regardless of age and other risk factors. In essence, the higher the level of cardiovascular fitness, the longer the life (see Figure 1.3). Death-rate from all causes for the least fit (group 1) men was 3.4 times higher than the most fit men. For the least fit women, the death rate was 4.6 times higher than the most fit women. The study also reported a greatly reduced rate of premature deaths even at moderate fitness levels that can be easily achieved by most adults. Even greater protection is attained when increased fitness level is combined with reduction in other risk factors such as hypertension, cholesterol, cigarette smoking, and excessive body fat.

Another major research study⁹, published in 1989, showed that a healthy lifestyle contributes

TABLE 1.3

Cause-Specific Death Rates^a per 10,000 Man-Years of Observation Among 16,936 Harvard Alumni, 1962-1978, by Physical Activity Index

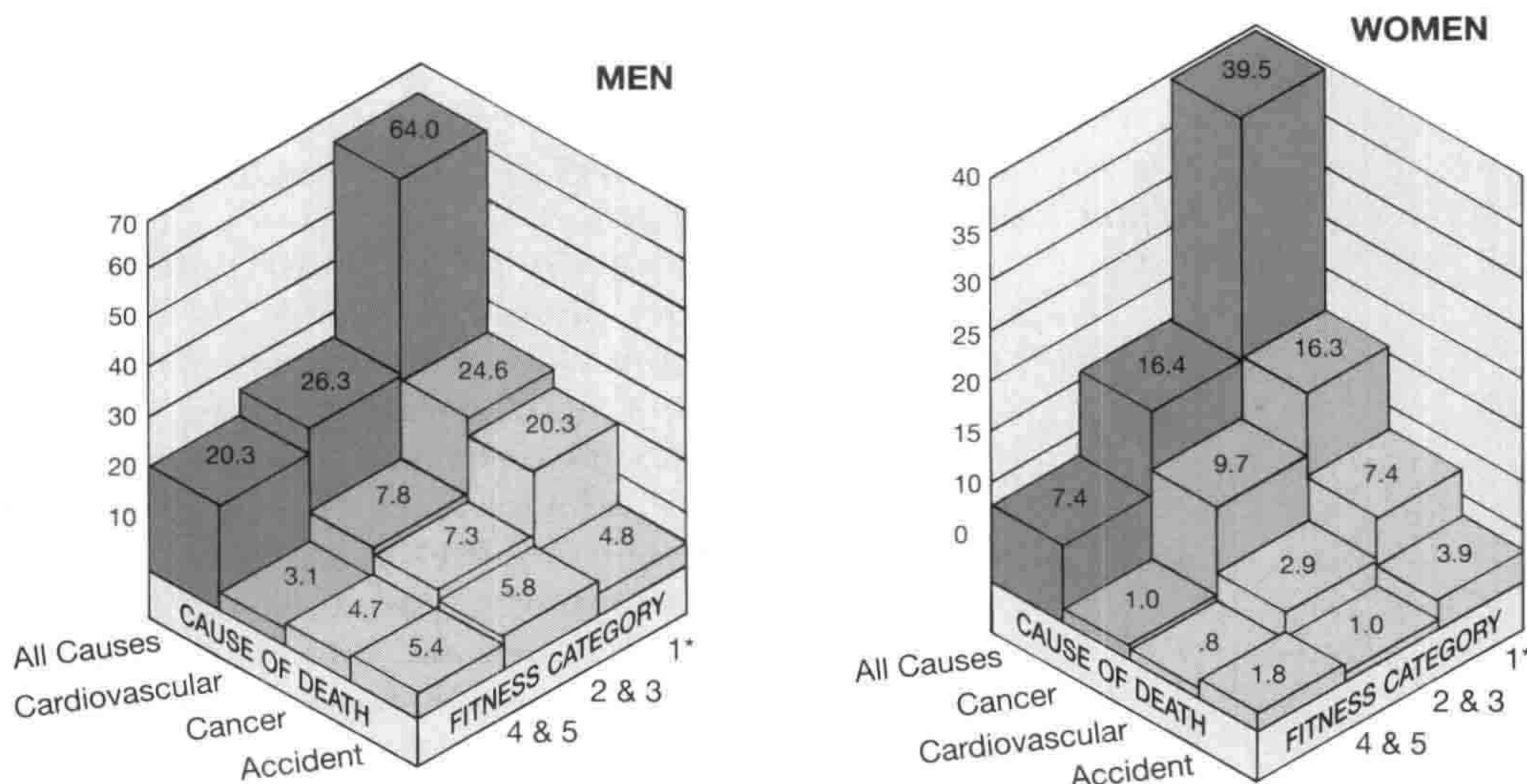
Cause of Death (n = 1,413)	% of Total Deaths	Physical Activity Index, cal/week		
		<500	500-1,999	2,000+
Cardiovascular Diseases	45.3	39.5	30.8	21.4
Cancer	31.6	25.7	19.2	19.0
Accidents	5.5	3.6	3.9	3.0
Suicides	4.8	5.1	3.2	2.9
Respiratory Diseases	4.3	6.0	3.2	1.5

From Paffenbarger, R. S., R. T. Hyde, A. L. Wing, and C. H. Steinmetz. "A Natural History of Athleticism and Cardiovascular Health." *JAMA* 252(4): 491-495, 1984. Copyright 1985, American Medical Association.

^aAdjusted for differences in age, cigarette smoking, and hypertension.

FIGURE 1.3

Age-Adjusted Cause-Specific Death Rates per 10,000 Person-Years of Follow-up (1970 to 1985)
by Physical Fitness Groups* in Men and Women in the Aerobics Center Longitudinal Study in Dallas, Texas



*Least fit group = 1, most fit group = 5

Based on data from Blair, S. N., H. W. Kohl III, R. S. Paffenbarger, Jr., D. G. Clark, K. H. Cooper, and L. W. Gibbons. Physical fitness and all-cause mortality: a prospective study of healthy men and women. JAMA 262:2395-2401, 1989.

to some of the lowest mortality rates ever reported in the literature. Compared with the general white population, a group of 5,231 men and 4,631 women (wives) from the Church of Jesus Christ of Latter Day Saints (LDS or Mormon Church) had a much lower cancer, cardiovascular, and overall death rate. The healthy lifestyle habits include abstention from tobacco, alcohol, caffeine, drugs, and adherence to a well-balanced diet. Nutrition recommendations include a diet based on grains, fruits, vegetables, and moderate use of poultry and red meat.

The investigators in this study looked at three general health habits among the participants: lifetime abstinence from smoking, regular physical activity, and sleep. Men in this study had one-third the death rate for cancer, one-seventh the death rate for cardiovascular disease, and one-fifth the rate of overall mortality. The wives showed about one-half the rate of cancer and overall mortality, and one-third the death rate for cardiovascular disease. Life expectancy for 25-year-old church members who adhered to the three health habits were 85 and 86 years, respectively, as compared to 74 and 80 for the average

U.S. white man and woman. This study was funded by the American Cancer Society and the National Cancer Institute, and it was conducted by non-LDS investigators.

FITNESS STANDARDS: HEALTH vs. PHYSICAL FITNESS

A meaningful debate has recently developed to determine recommended fitness standards for the nation. For instance, cardiovascular endurance is measured in terms of the maximal amount of oxygen that the body is able to utilize per minute of physical activity (see Chapter 2). Maximal oxygen uptake is commonly expressed in milliliters of oxygen per kilogram of body weight per minute (ml/kg/min). Individual values can range from about 10 ml/kg/min in cardiac patients to approximately 70 to 85 ml/kg/min in world class runners and

cross-country skiers (although we recognize that high values (70s and 80s) are crucial for success in elite athletic events). *The debate now focuses on determining sound age- and gender-related fitness standards for the general population. Two trends have begun to develop in this regard: a health fitness standard and a physical fitness standard.*

The proposed health fitness standards are based on epidemiological data linking minimum fitness values to health and disease prevention. For instance, according to the results of the research study⁶ presented in Figure 1.3, the data seem to indicate that maximal oxygen values of 35 and 32.5 ml/kg/min for men and women respectively may be sufficient to significantly decrease the risk for all-cause mortality. Although greater improvements in fitness yield a slightly lower risk of premature death, the largest drop in mortality risk is seen between the lowest fit (group 1) and the moderately fit groups (2 and 3). Therefore, the 35 and 32.5 ml/kg/min values could be selected as the health fitness standards.

Physical fitness standards are usually set higher than the health fitness norms. Many experts feel that people who meet the criteria of “good” physical fitness should be able to perform moderate to vigorous amounts of physical activity without undue fatigue and also maintain this capability throughout life. In this context, physically fit people of all ages will have the freedom to enjoy most of life’s daily and recreational activities to their fullest potential. Current health fitness standards may not be enough to achieve these objectives.

Sound physical fitness provides the individual with a degree of independence throughout life that most people in the United States do not enjoy. While not with the same intensity, most people should be able to carry out in their later years activities similar to those conducted in their youth. A person does not have to be an elite athlete, but activities such as changing a tire, chopping wood, climbing several flights of stairs, playing a vigorous game of basketball, mountain biking, playing soccer with grandchildren, walking several miles around a lake, and hiking through a national park, require more than the current “average fitness” level of the American people. For the purposes of this book, therefore, the reader will notice that the fitness standards for cardiovascular endurance, strength, flexibility, and body composition (Chapters 2, 3, 4, and 5 respectively) provide both a health fitness and a physical fitness standard.

THE WELLNESS CONCEPT

Although there is a definite improvement in the quality of life and an increase in longevity for individuals who participate in fitness programs, in the 1980s it became obvious that just improving the health-related components of fitness was not always sufficient to decrease the risk for chronic diseases and insure better health. For example, an individual who is running three miles per day, lifting weights regularly, participating in stretching exercises, and watching his/her body weight can easily be classified in the good or excellent category for each of the fitness components. If this same individual, however, has high blood pressure, smokes, is under constant stress, consumes excessive alcohol, and/or eats too many fatty foods, he/she is probably developing several risk factors for cardiovascular disease and may not be aware of it. A risk factor is defined as an asymptomatic state produced by a negative health behavior that may lead to disease.

One of the best examples that good fitness is not always a risk-free guarantee for a healthy and productive life was the tragic death in 1984 of Jim Fixx, author of *The Complete Book of Running*. At the time of his death by heart attack, Fixx was fifty-two years old. He had been running between sixty and eighty miles per week and had felt that anyone in his condition could not die from heart disease. At age thirty-six, Jim Fixx smoked two packs of cigarettes per day, weighed about 215 pounds, did not engage in regular cardiovascular exercise, and had a family history of heart disease. His father had experienced a first heart attack at age thirty-five and died at age forty-three. Perhaps in an effort to decrease his risk of heart disease, Fixx began to increase his fitness level. He started to jog, lost fifty pounds, and quit cigarette smoking. Nevertheless, on several occasions Fixx declined to have an exercise electrocardiogram (ECG) test, which would have most likely revealed his cardiovascular problem. This unfortunate death is a good example that exercise programs by themselves will not make high-risk people immune to heart disease, other than possibly delaying the onset of a serious or fatal problem.

Once it became clear that good fitness by itself would not always decrease the risk for disease and insure better health, a new “wellness” concept developed in the 1980s. Wellness has been

defined as *the constant and deliberate effort to stay healthy and achieve the highest potential for well-being*. The term “wellness” implies an all-inclusive umbrella covering a variety of activities aimed at helping individuals recognize components of lifestyle that are detrimental to their health, and then implement positive programs to change behavior so as to improve health, quality of life, and total well-being.

This new concept goes well beyond absence of disease and optimal fitness. *Wellness incorporates aspects such as adequate fitness, proper nutrition, stress management, disease prevention, spirituality, smoking cessation, personal safety, substance abuse control, regular physical examinations, health education, and environmental support* (Figure 1.4). Not only must the individual be physically fit and have no signs of disease, but there must also be an absence of risk factors for disease (hypertension, hyperlipidemia, cigarette smoking, negative

stress, faulty nutrition, etc.). The relationship between adequate fitness and wellness is illustrated in the wellness continuum in Figure 1.5. While an individual tested in a fitness center may demonstrate adequate fitness on all health-related components, indulgence in other unhealthy lifestyle behaviors will still cause an increase in risk for chronic diseases and decrease the person's well-being.

BENEFITS OF PHYSICAL FITNESS AND WELLNESS PROGRAMS

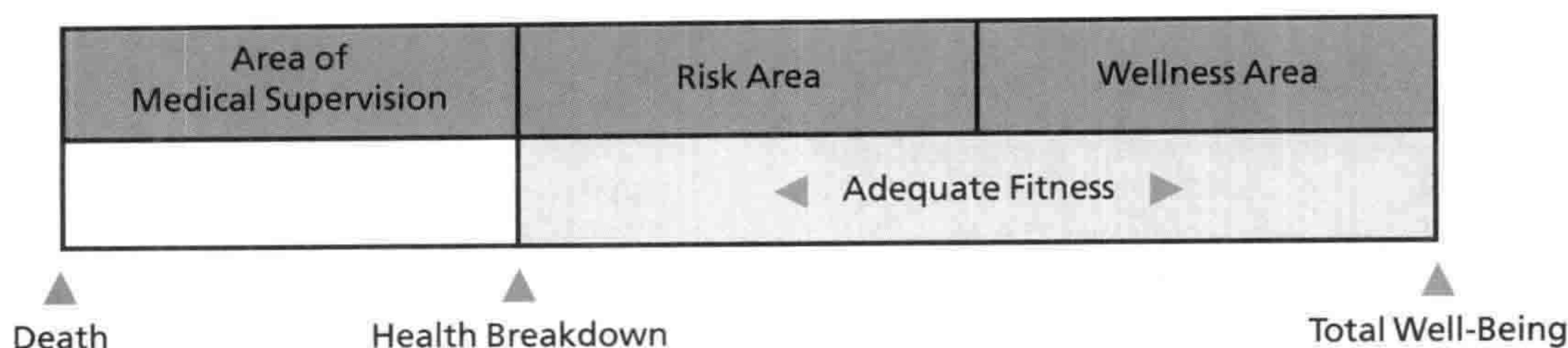
A most inspiring story illustrating what fitness can do for a person's health and well-being is that of George Snell from Sandy, Utah. At the age of forty-five, Snell weighed approximately 400

FIGURE 1.4

Wellness Components



FIGURE 1.5

Wellness Continuum

pounds, his blood pressure was 220/180, he was blind because of diabetes that he did not know he had, and his blood glucose level was 487. Snell had determined to do something about his physical and medical condition, so he started a walking/jogging program. After about eight months of conditioning, Snell had lost almost 200 pounds, his eyesight had returned, his glucose level was down to 67, and he was taken off medication. Two months later, less than ten months after initiating his personal exercise program, he completed his first marathon, a running course of 26.2 miles.

Most people exercise because it helps improve personal appearance and it makes them feel good about themselves. While there are many benefits to be enjoyed as a result of participating in a regular fitness and wellness program, and although there are indications that active people live a longer life (Table 1.3), the greatest benefit of all is that physically fit individuals enjoy a better quality of life (Figure 1.6). These people live life to its fullest potential, with fewer health problems than inactive individuals who may also be indulging in negative lifestyle patterns. Although it is difficult to compile an all-inclusive list of the benefits reaped through fitness and wellness program participation, Figure 1.7 provides a summary of many of these benefits.

In addition to the many health benefits, the economic impact of sedentary living has left a strong impression on the nation's economy. As the need for physical exertion steadily decreased in the last century, the nation's health care expenditures dramatically increased. Health care costs in the United States have risen from \$12 billion in 1950 to \$600 billion in 1990 (Figure 1.8). If the rate of escalation continues, health

care expenditures could double every five years. The 1990 figure represents about 12 percent of the gross national product (GNP), and it is projected to reach 17 percent by the year 2000 and 37 percent by 2030. Furthermore, and as illustrated in Figure 1.9, the 1989 average health care cost per person in the United States (\$2,354) was almost twice as high as most other industrialized nations (\$800–\$1,400).

There is now strong scientific evidence linking fitness and wellness program participation not only to better health, but also to decreased

FIGURE 1.6



Regular participation in a lifetime exercise program increases quality of life and longevity

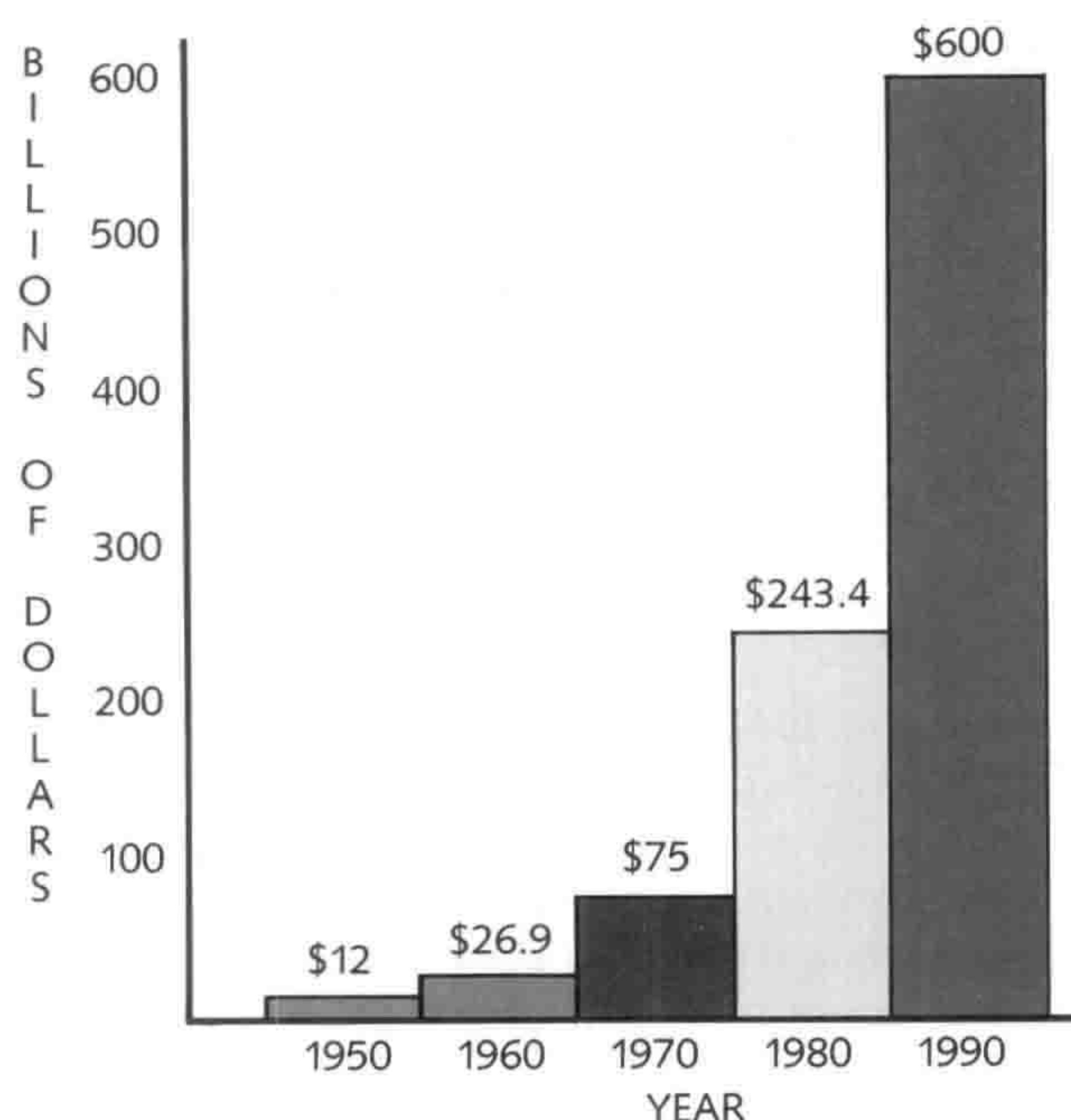
FIGURE 1.7

Benefits derived through participation in a comprehensive fitness and wellness program

- 1 Improves and strengthens the cardiovascular system (improved oxygen supply to all parts of the body, including the heart, the muscles, and the brain).
- 2 Maintains better muscle tone, muscular strength, and endurance.
- 3 Improves muscular flexibility.
- 4 Helps maintain recommended body weight.
- 5 Improves posture and physical appearance.
- 6 Decreases risk for chronic diseases and illness (coronary heart disease, cancer, strokes, etc.).
- 7 Decreases mortality rate from chronic diseases.
- 8 Thins the blood so it clots less readily (decreasing the risk for coronary heart disease and strokes).
- 9 Decreases blood pressure.
- 10 Helps prevent diabetes.
- 11 Helps people sleep better.
- 12 Helps prevent chronic back pain.
- 13 Relieves tension and helps in coping with stresses of life.
- 14 Increases levels of energy and job productivity.
- 15 Increases longevity and slows down the aging process.
- 16 Improves self-image and morale and aids in fighting depression.
- 17 Motivates toward positive lifestyle changes (better nutrition, smoking cessation, alcohol and drug abuse control).
- 18 Decreases recovery time following physical exertion.
- 19 Speeds up recovery following injury and/or disease.
- 20 Eases the process of childbearing and childbirth.
- 21 Regulates and improves overall body functions.
- 22 Improves physical stamina and helps decrease chronic fatigue.
- 23 Improves quality of life; makes people feel better and live a healthier and happier life.

FIGURE 1.8

U.S. Health Care Cost Increments Since 1950



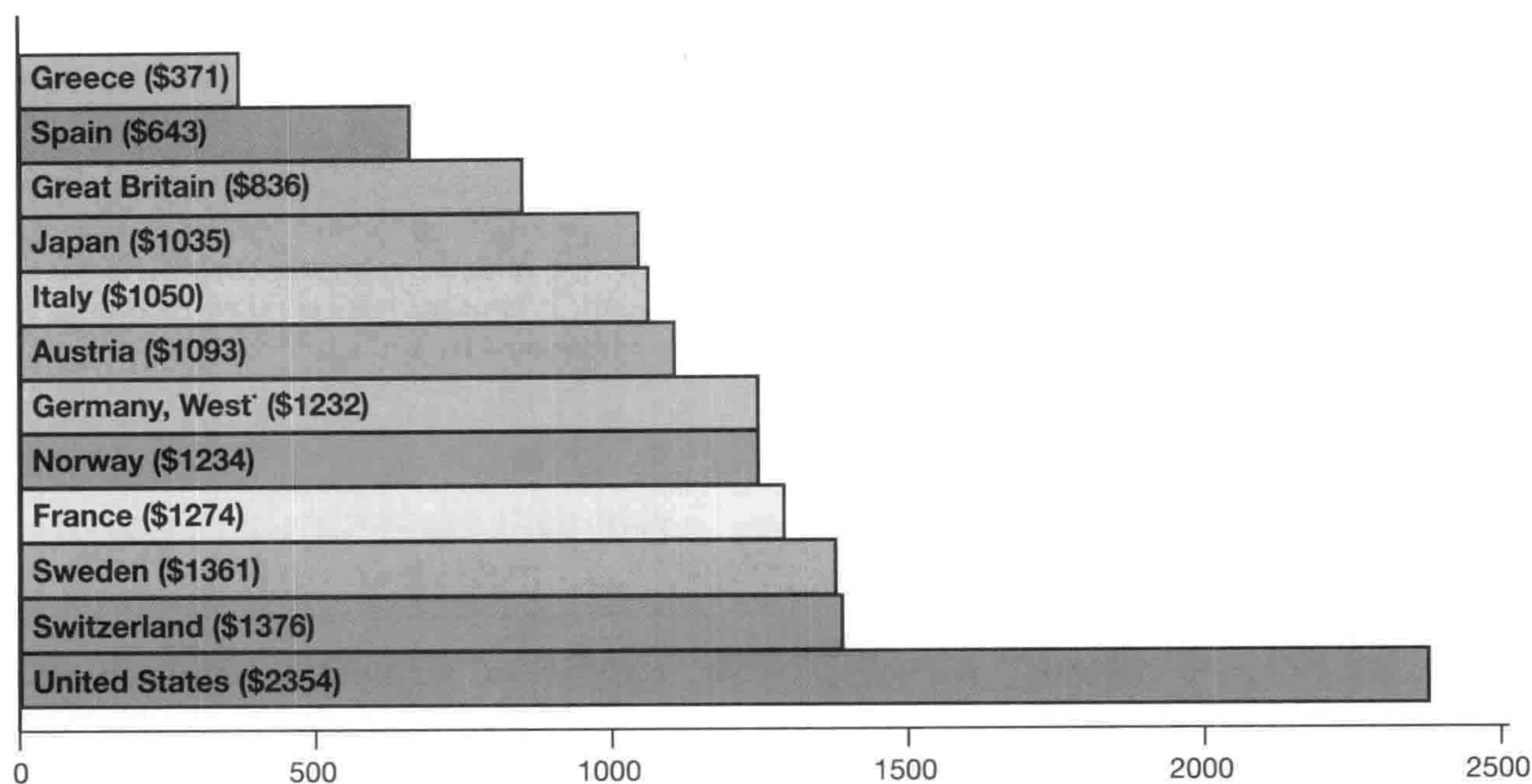
medical costs and improved job productivity. Most of this research is being conducted and reported by organizations that have already implemented fitness or wellness programs, because approximately half of the health care expenditures in the United States are being absorbed by American business and industry. In 1989, business spending on health insurance premiums and health care for employees and former employees was more than 100 percent of after-tax profits by all U.S. companies combined.

As a result of the recent staggering rise in medical costs, many organizations are beginning to realize that it costs less to keep employees healthy than to treat them once sick. Consequently, health care cost containment, through fitness and wellness programs, has become a major issue for many organizations around the country. Let's examine the evidence:

The backache syndrome, usually the result of physical degeneration (inelastic and weak muscles), costs American industry more than \$1 billion annually in lost productivity and services alone. An additional \$250 million is spent in workers compensation. The Adolph Coors Company in Golden, Colorado, which offers a wellness program for employees and their families,

FIGURE 1.9

1989 Average Health Care Costs Per Person for Selected Countries in the World



*Prior to reunification

Source: "Daten Der Woche." *Welt am Sonntag*. 25:35, 1991.

reported savings of more than \$319,000 in 1983 alone through a preventive and rehabilitative back injury program.

The Prudential Insurance Company of Houston, Texas, released the findings of a study conducted on its 1,386 employees. Those who participated for at least one year in the company's fitness program averaged 3.5 days of disability, as compared to 8.6 days for nonparticipants. A further breakdown by level of fitness showed no disability days for those in the high fitness group, 1.6 days for the good fitness group, and 4.1 disability days for the fair fitness group.

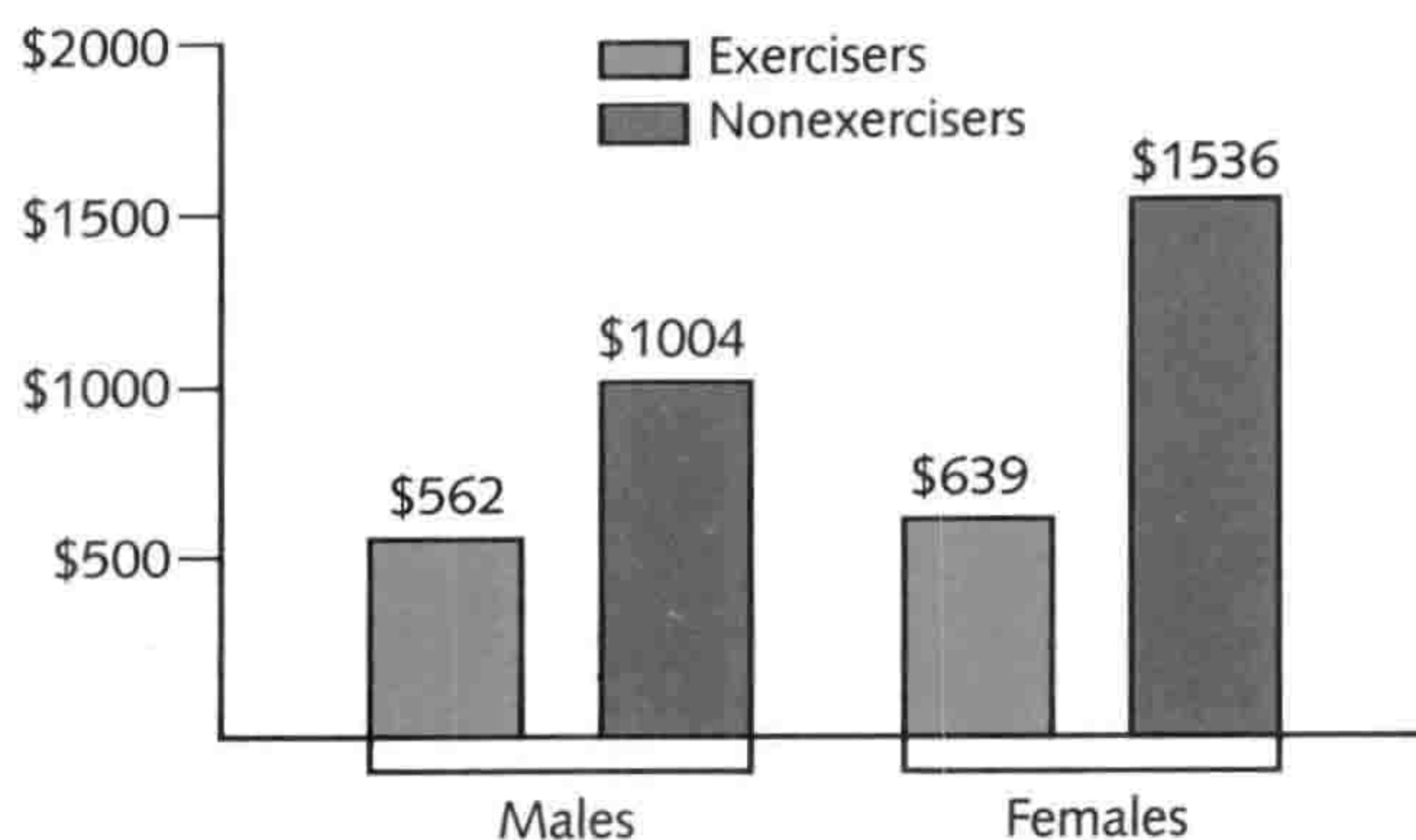
Since 1979 the Mesa Petroleum Company in Amarillo, Texas, has been offering an on-site fitness program to its employees and their family members. A 1982 survey showed an average of \$434 per person in medical costs for the nonparticipating group in the company, while the participating group averaged only \$173 per person per year. This represented a yearly reduction of \$200,000 in medical expenses. Sick leave time was also significantly less for the physically active group — twenty-seven hours per year as compared to forty-four for the inactive group.

Data analysis conducted by Tenneco Incorporated in Houston, Texas, in 1982 and 1983 showed a significant reduction in medical care costs for men and women who participated in an exercise program (see Figure 1.10). Annual medical care costs for male and female exercisers were \$562 and \$639 respectively. For the nonexercising group, the costs were reported at \$1,004 for the men and \$1,536 for the women. Sick leave was also reduced in the men and women participants. Furthermore, a survey of the more than 3,000 employees found that job productivity is related to fitness. The company reported that individuals with high ratings of job performance also rated high in exercise participation.

Strong data are also coming in from Europe. Research in West Germany reported 68.6 percent less absenteeism by workers with cardiovascular symptoms who participated in a fitness program. The Goodyear Company in Norrköping, Sweden, indicated a 50 percent reduction in absenteeism following the implementation of a fitness program. Studies in the Soviet Union report increased physical work capacity and motor coordination, lower incidence of disease, shorter illness duration, and fewer relapses among

FIGURE 1.10

Annual Medical Care Costs for
Tenneco Incorporated, Houston, Texas: 1982-83.



From "New Fitness Data Verifies: Employees Who Exercise Are Also More Productive." *Athletic Business* 8(12):24-30, 1984.

individuals participating in industrial fitness programs. In Germany, the law mandates that corporations employing workers for sedentary jobs must provide an in-house facility for physical exercise.

Another reason why some organizations are offering wellness programs to their employees — overlooked by many because it does not seem to directly affect the bottom line — is simple concern by top management for the physical well-being of the employees. Whether the program lowers medical costs is not the main issue. The only reason that really matters to top management is that wellness programs help individuals feel better about themselves and improve quality of life. Such is the case of Mannington Mills Corporation, which invested \$1.8 million in an on-site fitness center. The return on investment is secondary to the company's interest in happier and healthier employees. The center is also open to dependents and retirees. As a result of this program, Mannington Mills feels that the participants, about half of the 1,600 people eligible, can enjoy life to its fullest potential, and the employees will most likely be more productive simply because of the company's caring attitude.

In addition to the financial and physical benefits, many corporations are using wellness programs as an incentive to attract, hire, and retain employees. Many companies are taking a

hard look at the fitness and health level of potential employees and are seriously using this information in their screening process. As a matter of fact, some organizations refuse to hire smokers and/or overweight individuals. On the other hand, many executives feel that an on-site health promotion program is the best fringe benefit they can offer at their corporation. Young executives are also looking for such organizations, not only for the added health benefits, but because the head corporate officers are showing an attitude of concern and care.

THE WELLNESS CHALLENGE FOR THE 1990s

Since a better and healthier life is something that every person needs to strive to attain, our biggest challenge in the next few years is to teach people how to take control of their personal health habits by practicing positive lifestyle activities. With impressive data available on the benefits of fitness and wellness programs, improving the quality and possible length of our lives is a matter of personal choice.

Research indicates that to significantly increase health and longevity, a person should:

1. Participate in a lifetime exercise program. Exercise regularly three to six times per week. The exercise program should consist of twenty to thirty minutes of aerobic exercise, along with some strengthening and stretching exercises.
2. Do not smoke cigarettes. Cigarette smoking is the largest preventable cause of illness and premature death in the United States. When considering all related deaths, smoking is responsible for more than 350,000 unnecessary deaths each year.
3. Eat right. Eat a good breakfast and two additional well-balanced meals every day. Refrain from snacking between meals. Avoid eating too many calories and foods high in sugar, fat, and sodium. Increase your daily consumption of fruits, vegetables, and whole grain products.
4. Maintain recommended body weight. Maintaining proper body weight through adequate nutrition and exercise is important in preventing chronic diseases and in developing a higher level of fitness.