



## Activities & Assessments

- 1.1 Healthstyle: A Self-Test
- 1.2 Family Health History
- 1.3 Defining Physical Activity and Health
- 1.4 Barriers to Being Active Quiz



# The Physical Activity and Health Connection

## what's the connection?

**F**inding her way to classes. Learning to schedule time for studying. Meeting new people and making friends. These are just a few of Destiny's experiences during the first weeks of her first year at college. Destiny spends lots of time in the library, and when she isn't studying or going to classes she is working as a part-time receptionist at the university bookstore. With all these commitments, Destiny is finding it difficult to stay physically active; as a matter of fact, her daily routine requires very little physical activity. In high school, Destiny was physically active in club sports and either walked or rode her bike to school every day. As the semester continues, Destiny notices that she feels more and more lethargic—she is not as energetic as she used to be. Destiny attributes these feelings to being away from home, to the change in environment, and to studying a lot.



[go.jblearning.com/kotecki4e](http://go.jblearning.com/kotecki4e)

The website for this book is a great source for supplementary physical health information for both students and instructors. Visit [go.jblearning.com/kotecki4e](http://go.jblearning.com/kotecki4e) to find a variety of useful tools for learning, thinking, and teaching.

## concepts

- 1 Many of us are concerned about our present and future health.
- 2 Wellness is conceptualized as a complex interaction and integration of the seven dimensions of health, each based on a dynamic level of functioning oriented toward maximizing our potential and based on self-responsibility.
- 3 A healthy lifestyle is a recurring pattern of health-promoting and disease-preventing behaviors undertaken to achieve wellness.
- 4 A self-change approach assumes that human beings can manage their lifestyle change and learn to control environmental factors that are detrimental to health.
- 5 No medicinal treatment in current or prospective use holds as much promise for sustained health as a regular program of physical activity.
- 6 Current physical activity guidelines call attention to the health-related benefits of regular moderate physical activity that do not meet the traditional exercise/physical fitness guidelines.



*The first wealth is health.*

—Ralph Waldo Emerson

## Introduction

Almost everyone wants good health. Nationwide polls indicate that we consider good health as one of the most important determinants of our quality of life. It is a precious resource and one of our most prized possessions, but it is often taken for granted until it is lost.

Many of us feel that we have some control over our health through our lifestyle or behaviors—things we can do or not do—that will promote health and prevent disease. However, the actions of far too many of us do not produce the good health we desire. As a college student, you face many health choices—choices that can affect you in the “here-and-now” and for the rest of your life. Too many of you do not know the best possible answers on how to maintain or improve your health or you lack the necessary lifestyle skills to implement these optimal choices. By reading this text, you have taken an important step toward becoming more informed about your health. This text provides you with the information, skills, and practical know-how to develop and maintain a healthy lifestyle. You are responsible for learning and implementing the best choices regarding your health. It is a responsibility only you can own.

This chapter provides an understanding of the concepts of health and physical activity. It explores the inseparable relationship between health and physical activity when it comes to achieving and maintaining a high quality of life

(**FIGURE 1.1**).

## Health, Wellness, and Lifestyle

The concept of health is diverse and has been viewed in a number of ways over the last century. This section identifies three different perceptions of health over the last 100 years: (1) health as an absence of disease, (2) health as a holistic concept, and (3) health as wellness.

In the early twentieth century, health was viewed as the absence of disease. If you were not sick or physically ill, you were naturally healthy. If you were ill or had evidence of disease, the best way to restore health was to have a medical doctor cure or treat the disease through medicine. This medical model approach has two important limitations. First, restoring health through medicine, drugs, or surgery in an attempt to treat disease was the primary viewpoint, rather than prevention of the disease. Still many people today maintain this attitude: “Here I am, Doctor, with all my worn-out parts—fix me up.” Even as today’s scientists explore the frontiers of biomedicine, they keep confirming the truism that health is easier to preserve than it is to repair.

Second, viewing health as the direct opposite of physical disease does not take into account that human beings are multidimensional. One can be free of physical symptoms or disease and still not enjoy a full and satisfying life. All aspects of a person (e.g., thoughts, emotions, beliefs, values, relationships, passions) affect that person’s functioning. Further, these individual aspects affect one another. For example, a



Many of us are concerned about our present and future health.



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**FIGURE 1.1 Relationship Between Health and Physical Activity.** Regular physical activity is an essential lifestyle behavior for promoting health.



college student who is not passionate about his chosen major may experience boredom and pessimism (intellectual and emotional dimensions). A sense of uselessness (spiritual dimension) may develop that causes others to avoid him (social dimension). This increases the student's emotional stress or level of despair and can lead him to drop out of college.

It was not until 1948—at the World Health Organization (WHO), an international entity—that the term *health* was defined to recognize the whole person. WHO defined **health** in its constitution as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (WHO, 1948). This still widely used definition recognizes that any meaningful description of health must include the multidimensional aspects of human life and must be positive (i.e., not merely addressing the absence of disease or infirmity). Even so, the definition has been criticized over the years for its flaws. Many feel it is too idealistic in its expectations for complete well-being, which remains as elusive as it is positive, and it is too static in viewing health as a state rather than a dynamic or ever-changing process that requires constant effort and activity to preserve. Others see the dimensions cited in the definition as inadequate to capture each of the variations of health.

Subsequently, in 1986, the original WHO definition was modified and health was redefined more broadly “as less of an abstract state and more as means to an end which can be expressed in functional terms as a resource which permits people to lead an individually, socially, and economically productive life. Health is a resource for everyday life, not the object of living. It is a positive concept emphasizing social and personal resources as well as physical capabilities” (WHO, 1986, p. 1).

The evolution of the contemporary concept of health into a wellness concept reflects the idea that health is dynamic and requires the sense that a person is actively working toward functioning at a higher level. To achieve greater levels of health, you have to make a deliberate choice to assume personal responsibility for the process. When a person makes a conscious decision to work toward these enhanced aspects of health, well-being or wellness is identified. Halbert Dunn (1967) first wrote about the upper limits of health in his book *High Level Wellness*. Dunn saw **wellness** as a dynamic process of change and growth that was largely determined by the decisions we make about how to live our lives.

Expanding on the three dimensions of health cited in the WHO definition, the contemporary view includes seven dimensions of health: physical, intellectual, emotional, social, spiritual, occupational, and environmental factors (**FIGURE 1.2**).

## Dimensions of Health

- *Physical health* refers to the overall condition of the organ systems of the body (cardiovascular, respiratory, skeletal, muscular, digestive, nervous, endocrine, immune, reproductive, urinary, and integumentary).
- *Intellectual health* refers to the use of our mental capacities. The characteristics include having a mind that is open to new ideas and concepts. Intellectual health includes expanding our decision-making capacity and then being willing to take action. This can be accomplished by processing information using higher-order thinking skills through synthesizing, analyzing, applying, and evaluating information.
- *Emotional health* is the ability to express feelings appropriately. Thoughts cause feelings. We can look at the same event in different ways—in an optimistic way or a pessimistic way. People who manage their own feelings well and deal with them effectively are more likely to live content and productive lives. These people generally manifest the qualities of optimism, self-esteem, and trust. Emotional health is the sense of well-being that we obtain from feeling capable, courageous, worthy, respected, appreciated, and loved.

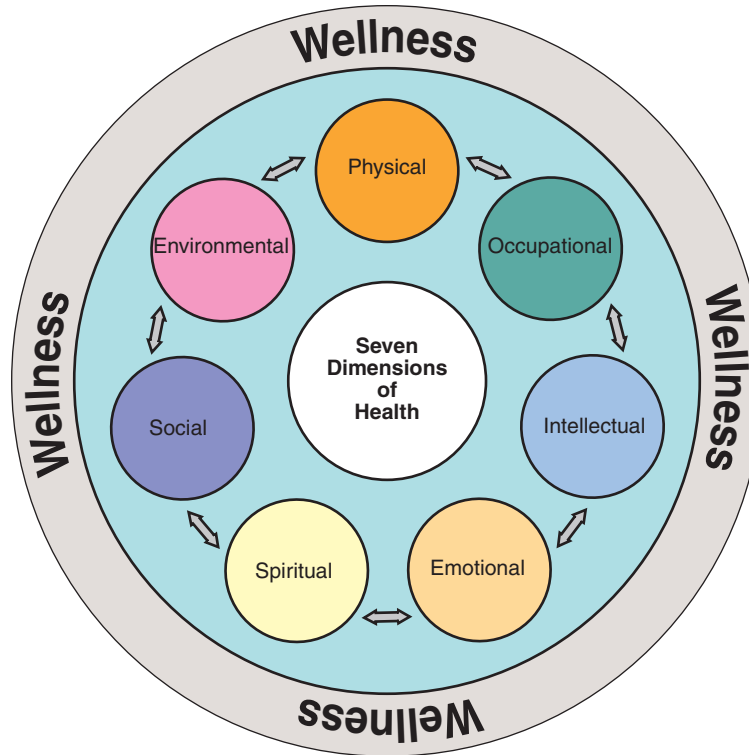
**Health** Considered less of an abstract state and more as a means to an end, which can be expressed in functional terms as a resource that permits people to lead an individually, socially, and economically productive life. Health is a resource for everyday life, not the object of living. It is a positive concept emphasizing social and personal resources as well as physical capabilities.

**Wellness** A complex interaction and integration of the seven dimensions of health, each based on a dynamic level of functioning oriented toward maximizing one's potential and based on self-responsibility.



Wellness is conceptualized as a complex interaction and integration of the seven dimensions of health, each based on a dynamic level of functioning oriented toward maximizing our potential and based on self-responsibility.





**FIGURE 1.2** Concept of Health as Wellness. The contemporary view of health contains seven dimensions. Wellness is conceptualized as a complex interaction and integration of these seven dimensions. It is your responsibility to respect and honor each of the seven dimensions of health uniformly.

- *Social health* refers to having the ability to interact effectively with other people and have meaningful/caring relationships. Socially healthy persons behave in ways to help and assist others. They accomplish this by understanding and respecting differences in various social groups based on their age, ethnicity, personality characteristics, beliefs, education, religion, and sexual orientation. Social health is the sense of well-being that we obtain from having intellectually interesting and emotionally compassionate relationships with friends and family (**FIGURE 1.3**).
- *Spiritual health* pertains to the soul or spirit. *Soul* or *spirit* can be defined as the inspiring principle or dominating influence in a person's life. Spiritual health is the belief that we are a part of a larger scheme of life and that our lives have purpose. Spirituality provides meaning and direction in life. Selflessness, compassion, a passion for living, faith, a sense of right and wrong, ethics, and morals are important components of spiritual health. Spiritual health is a sense of well-being that we obtain from having an awareness and appreciation for the life force that moves us.



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**FIGURE 1.3** Social Health. Walks through the park with friends and family can enhance social and physical health.

- *Career or occupational health* pertains to our chosen vocation in life. People spend most of their life at work. It is therefore essential that we choose work that is satisfying intrinsically and extrinsically. It means choosing the kind of work that makes the best use of our abilities and gives a sense of accomplishment. It includes being able to earn a living and contribute to society.
- *Environmental health* refers to everything around us and includes the impact of natural and human-made environments on our health. It includes



working to preserve ecosystems and the biodiversity of the planet. It also means adapting the human-made environment to reduce the risk of suffering from intentional and unintentional injuries and communicable and noncommunicable diseases.

Each of these seven dimensions, or component parts, of health—all interacting in a synergistic way—allow us to assume higher levels of functioning that can lead to more productive and satisfying lives. One of the best descriptors of this complex mixture of factors that are dependent on each other is **quality of life**. Quality of life is a subjective measure that reflects our levels of fulfillment, satisfaction, happiness, and feeling good about ourselves despite any limitations we may have. For example, it is not essential that individuals satisfy the traditional definition of good health to rate themselves high in terms of wellness. For instance, many people with chronic diseases or disabilities report high levels of satisfaction within each of the seven dimensions of health. Similarly, people who are symptom or disease free or completely able may not necessarily give themselves high scores in all seven aspects of health.

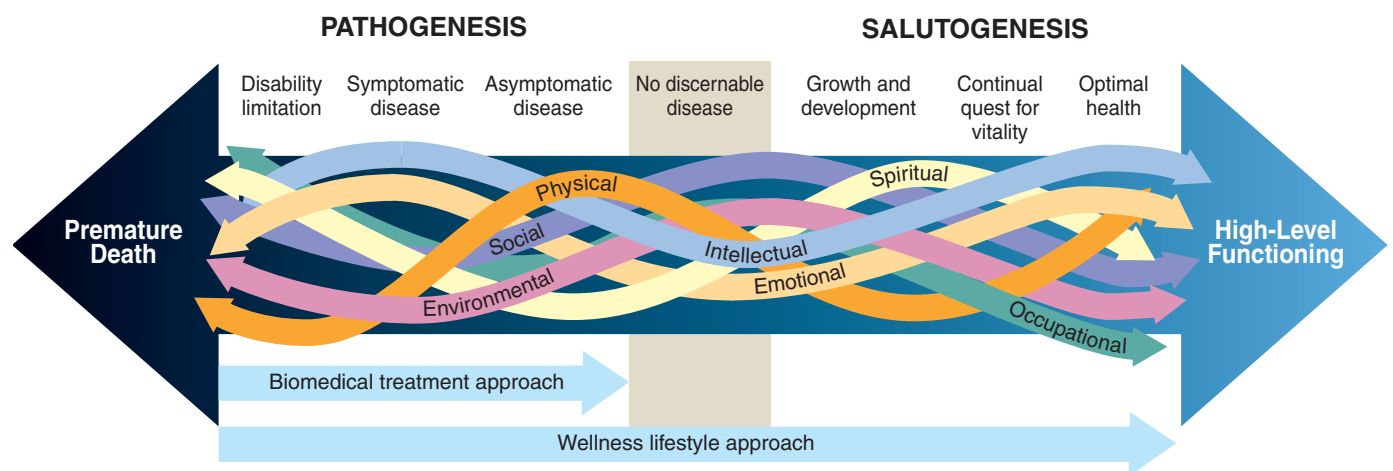
Health is a continually changing process; it changes from day to day, week to week, month to month, and year to year. **FIGURE 1.4** illustrates the concept of the multidimensional aspects of health as a continuum: from high-level functioning at one end to disability, limitation, and premature death at the other end. Moving from the neutral point or center (where there is no discernable disease) to the left indicates a progressive worsening of health resulting from inappropriate and undesirable adaptation by the body, or *diseases of maladaptation* or **pathogenesis**. This includes asymptomatic disease, symptomatic disease, disability limitation, and finally the absence of functioning or premature death. Moving to the right of the neutral point indicates not only an absence of disease but also increasing levels of health and optimal functioning, or **salutogenesis**.

Everyone falls on the continuum somewhere. Most young adults are likely to be found in the center. However, by becoming more aware of what you can become, you can take steps to improve your own wellness—because moving from adolescence to young adulthood provides you increasing control over your lifestyle choices. A goal of wellness is not being perfect in each dimension, but rather managing and balancing the dimensions in such a way as to maximize your quality of life and self-fulfillment based on your daily challenges.

**Quality of life** A subjective measure that reflects our levels of fulfillment, satisfaction, happiness, and feeling good about ourselves despite any limitations we may have.

**Pathogenesis** The origination and development of a disease.

**Salutogenesis** An approach focusing on factors that support human health and well-being rather than on factors that cause disease.



**FIGURE 1.4 The Dimensions of Health and Wellness.** The continuum allows you to visualize the seven interrelated dimensions of health and wellness and biomedical treatment approaches to health and disease.



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**FIGURE 1.5 Wellness and Medical Approaches to Health.**

A wellness lifestyle approach to health can be utilized at any point on the health continuum, including for individuals with differing degrees of disability or disease. In such cases, the goal is to move above physical or mental limitations to live a richer, fuller life.

The continuum also is a way to visualize the wellness and medical approaches to health. As discussed earlier, the biomedical treatment approach to health attempts to bring individuals to the neutral point where signs, symptoms, and disability are alleviated. The biomedical treatment approach to health, however, is not designed to take people past the neutral point to higher levels of growth and functioning. Only you can decide to do that for yourself. Conversely, individuals, including individuals with differing degrees of disease or disability, can use the wellness lifestyle approach to health at any point on the continuum. Wellness does not assume you live free of disease or disability or some other limitation

(**FIGURE 1.5**). The motivation to improve quality of life within the framework of your own unique capabilities is important to achieving wellness.

It is important to recognize that the wellness approach to health is not intended to replace the biomedical treatment approach but rather to work in combination with it. Modern medical treatment is a great thing, but there is a problem with it: people expect too much from it. Promoting healthy lifestyles has become

increasingly important in recent years as the epidemiological evidence of the association between behavior and disease continues to grow (Alpert, 2009; King, Mainous, Carnemolla, & Everett, 2009).

**Epidemiology** is the study of factors affecting the health and illness of populations, and it serves as the basic science for public health and preventive medicine. It is a highly quantitative discipline based on principles of statistics and research studies. The purpose of the studies is to investigate the relationships between various characteristics of people and the occurrence of specific health outcomes across time. Epidemiological studies assist scientists in sorting through many factors and identifying those that are most highly associated with a specific health outcome, which then provides the foundation and logic for creating interventions made in the interest of preventing disease and promoting health (Centers for Disease Control and Prevention [CDC], 2012a).

To fully appreciate the impact of various determinants on our health, it's essential to understand the terms *risk factor* and *protective factor*. Both are based on the probability that an event will occur. In epidemiology, these terms are most often used to express that a particular outcome will occur following a particular exposure utilizing statistical analysis. The term **risk factor** means an exposure that in some way increases a person's chance for getting a certain disease; for example, smoking is a specific health behavior that is proven to be associated with an increased susceptibility to developing lung cancer. **Protective factors** decrease the chance of getting a certain disease. Some examples of protective factors for preventing cancer are getting regular physical activity, maintaining a healthy weight, and eating a nutritious diet.

Unhealthy lifestyles are major contributing factors to many chronic medical conditions, including cardiovascular disease, cancer, diabetes mellitus, obesity, high blood pressure, and high blood lipids (CDC, 2012c). These diseases are generally not cured by medication, and neither do they just disappear (Kotecki & Clayton, 2003). Despite the major advances in medical research, medicine has not been able to restore individuals to health. It merely helps us cope better with serious and often debilitating conditions. So, while we continue to be in awe of the advances in medical technology, we must recognize that this is not *restorative* health care. Only the human body, when it is kept fit, has its own restorative capacities.

**Epidemiology** The study of factors affecting the health and illness of populations; serves as the basic science for public health and preventive medicine.

**Risk factor** An exposure that in some way increases the chance of getting a certain disease.

**Protective factor** An exposure that in some way decreases the chance of getting a certain disease.



A **healthy lifestyle** is a way of life based on the idea that our chances of self-fulfillment are increased or decreased directly by our level of health. Further, a healthy lifestyle can decrease significantly the risk of disease and increase the chances of living a high quality of life into the later decades of life. Or, as this author likes to say, “It is to allow us to die young as late as possible.”

It is important to mention that although your daily choices are the most important determinants of your well-being, health is the culmination of many interacting factors. Besides lifestyle behaviors, heredity and human biology, social circumstances, environment, and medical care play key roles in disease and premature death (McGinnis, 2003). **FIGURE 1.6** shows the extent to which human longevity is affected by these factors along with lifestyle decisions.

*Heredity* refers to the transfer of biological characteristics from natural parents to offspring. Each of us has a cellular design that dictates shape and size and to a significant extent our personality and life expectancy. *Environment* refers to everything around us, with a primary focus on the human-made environment. For example, exposure to toxic agents from environmental pollutants and occupational hazards can increase risk of ill health. *Social circumstance* refers to our level of income, housing, education, and employment (socioeconomic status). In general, people with a lower socioeconomic status have poorer health outcomes than those who are better off. *Medical care* refers to limited or inadequate services from the health care system. For those without health insurance, health problems are generally more serious because uninsured individuals use fewer screening and preventive services and delay seeking care when they are sick. As a result, when they enter the medical care system, they tend to be more ill and at more advanced disease stages than are insured persons. In the end, health is determined not by these factors acting alone, but by how they interact with one another (McGinnis, 2003).

An old military tactic is “know your enemy.” Because we are in a war to increase our years of healthy life, it is important for us to know who that enemy is. At least half of this nation’s premature deaths from the 10 leading causes of mortality are attributable to personal behavior and health habits such as tobacco use, lack of physical activity, alcohol and drug misuse, and risky sexual practices (Remington & Brownson, 2011). Lifestyle choices are also linked to higher ambulatory care and hospitalization costs, with preventable illness accounting for as much as 75 percent of all medical care spending (CDC, 2012b).

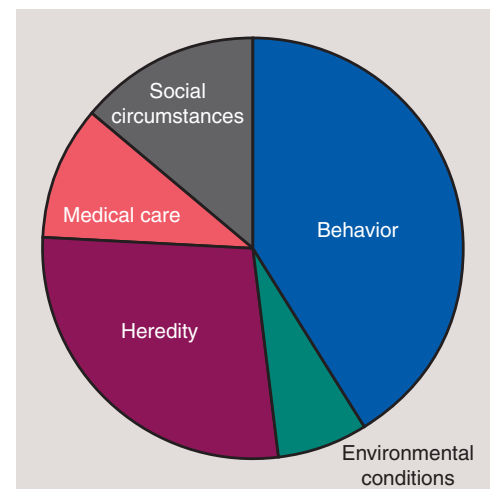
“We have met the enemy, and he is us” is the famous and most frequently quoted phrase of cartoonist Walt Kelly, and it is applicable here. As protectors of our own health, it is no secret that we are frequently our own worst enemy. We harm ourselves repeatedly in many ways. What is worse, we seldom realize it. We can be our own best friend, too, but more commonly we are our own worst enemy. After honest self-reflection, we are likely to see some ill-fated lifestyle choices we have made. Identifying these choices and evaluating their consequences is the first step toward being responsible for our own health.

Studies show that most Americans desperately want to have healthy lives, yet it’s an elusive dream for so many because health is lost before it’s valued and before its maintenance is understood. Choosing to participate in a healthy lifestyle requires self-responsibility and a self-change approach—you don’t blame someone else, make excuses, or avoid personal accountability. Taking responsibility for your health is recognizing that your daily choices affect your total well-being. This includes being physically active, eating sensibly, maintaining a healthy weight, managing stress effectively, avoiding tobacco, following sensible drinking habits, and being safety conscious. Your challenge is to make smart decisions. Halbert Dunn (1967) states it simply: “We cannot take high-level wellness like a pill out of a bottle. It will come only to those who work at following its precepts.”



A healthy lifestyle is a recurring pattern of health-promoting and disease-preventing behaviors undertaken to achieve wellness.

**Healthy lifestyle** A recurring pattern of health-promoting and disease-preventing behaviors undertaken to achieve wellness.



**FIGURE 1.6** Factors Influencing Premature Death or Longevity.

Behavior is the single most important and modifiable factor influencing health and disease. SOURCE: McGinnis, J.M. (2003). A vision for health in our new century. *American Journal of Health Promotion* 18(2):146–150.



A self-change approach assumes that human beings can manage their lifestyle change and learn to control environmental factors that are detrimental to health.



No medicinal treatment in current or prospective use holds as much promise for sustained health as a regular program of physical activity.

**Chronic diseases** Illnesses that can develop early in life and last for many years.

**Physical activity** Any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal (resting) level.

There is something truly remarkable in the fact that practically all of us want to better ourselves. Life continually presents opportunities for achieving what we desire. Most of us strive to be self-changers. A self-change approach puts you in control of your health and permits you to determine what to do, how, and when to do it. A self-change approach requires planning, time and effort, and, most important, the development of special lifestyle skills.

## Physical Activity and Its Relationship to Health

Imagine picking up the daily newspaper and seeing the front-page headline: Miraculous New Health Pill Discovered. You read quickly through the article, which reports that this miracle drug can make you look younger, provide better weight control, give you more energy and a brighter mental outlook, relieve stress and anxiety, make you fit and flexible, and decrease your risk of serious diseases such as heart disease, cancer, diabetes, hypertension, depression, and osteoporosis. All of this with virtually no side effects. You would probably hurry to your physician to get a prescription for a supply of this remarkable new medication. Of course, this pill has not yet been discovered, and despite the miracles of modern medical research, it is not likely to happen any time soon. However, there is a prescription already available to everyone that can provide all of these benefits and many more. It is regular physical activity! In fact, no medicinal treatment in current or prospective use holds as much promise for sustained health as a regular program of physical activity (TABLE 1.1). This author believes that if physical activity could be packaged in a pill, it would be the most widely prescribed pill the world's ever seen.

Unfortunately, more than one in two U.S. adults (53 percent) are not getting enough leisure-time aerobic physical activity to benefit their health (CDC, 2012d). Furthermore, approximately one in four U.S. adults is completely inactive (sedentary) during their leisure time or is a genuine couch potato. Leading a sedentary lifestyle is common in the United States as well as in the rest of the world: 60 percent of the global population does not get the recommended amount of physical activity to promote health (WHO, 2012). This chapter explains later how we got this way. Right now, these enduring rates begin to show why some public health experts have declared that physical inactivity has become the biggest health problem in the twenty-first century (Blair, 2009). This declaration of crisis is based on decades of research by the finest scientists worldwide, who have revealed that sedentary living is a leading cause of **chronic diseases**—illnesses that can develop early in life and last for many years—poor quality of life, disability, and premature death in the United States, Canada, and many other developed countries (FIGURE 1.7). Such information shapes the case for current recommendations/ guidelines from many national health organizations and expert panels that advise that the first-line approach in preventing this unnecessary health crisis is encouraging physical activity. Simply put, their end purpose in recommending physical activity is the promotion of health and wellness.

This text emphasizes that regular physical activity is an essential lifestyle behavior for promoting health and preventing many major chronic diseases. It provides health benefits that cannot be obtained in any other way. Physical activity not only contributes directly to the physical health dimension but also contributes indirectly to the other six dimensions of health. It is important to establish what is meant by *physical activity* and the related term *exercise* when it comes to health.

## Physical Activity, Exercise, and Physical Fitness

**Physical activity** refers to any bodily movement produced by the contraction of skeletal muscle that increases energy expenditure above a basal (resting) level (U.S. Department of Health and Human Services [USDHHS], 2008). The major



**TABLE 1.1** The Health Benefits of Physical Activity

The table is based on a total physical activity program that includes activities and exercises to improve cardiorespiratory endurance, muscular strength and endurance, flexibility, neuromotor fitness, and body composition.

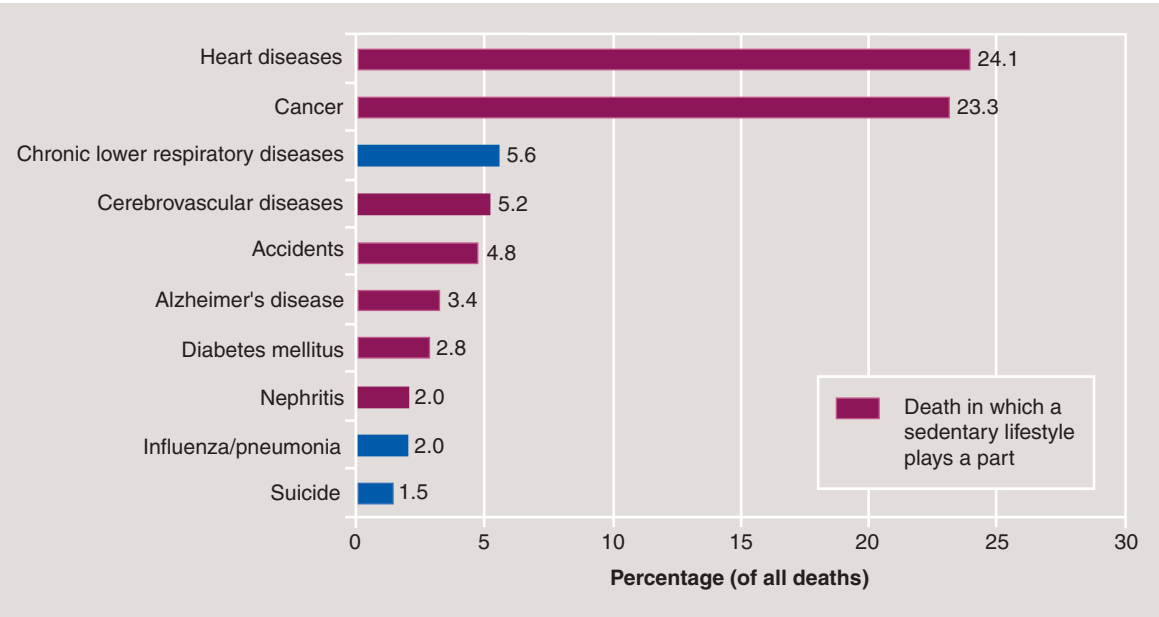
Physical Activity Benefit	Evidence	Physical Activity Benefit	Evidence
<b>Physical Fitness</b>		<b>Mental Health</b>	
Improves cardiorespiratory endurance	+++	Reduces stress symptoms	++
Improves muscular strength	+++	Reduces anxiety symptoms	++
Improves muscular endurance	+++	Reduces depression symptoms	++
Improves flexibility	+++	Enhances memory and learning	++
Decreases body fat percentage	+++	Enhances mood and self-esteem	++
<b>Cardiovascular Disease</b>		<b>Joint Health</b>	
Prevents coronary artery disease	+++	Prevents low-back pain	+
Prevents stroke	++	Prevents arthritis	+
Reduces atherosclerosis	+++	Treats arthritis	+
Treats heart disease	+++	Strengthens joint structure and functioning	+
<b>High Blood Pressure</b>		<b>Immune System</b>	
Prevents high blood pressure	+++	Improves overall immunity	++
Treats high blood pressure	+++	Prevents common cold	+
<b>High Blood Lipids (Fats)</b>		<b>Elderly</b>	
Lowers triglycerides	++	Increases years of healthy life	++
Lowers total cholesterol	++	Increases life expectancy	+
Lowers LDL cholesterol	++	Reduces risk of falling	+++
Raises HDL cholesterol	++	Reduces risk of Alzheimer's and dementia	+
<b>Diabetes</b>		<b>Bone Health</b>	
Prevents or delays type 2 diabetes	+++	Helps build bone density	+++
Treatment for type 2 diabetes	+++	Preserves bone mass and delays osteoporosis	++
Treatment for type 1 diabetes	+	Treats osteoporosis	++
<b>Healthy Weight Management</b>		<b>Occupational Health</b>	
Prevents fat gain	+++	Increases productivity	+
Maintains fat loss	++	Reduces short-term sick leave	+
Treats obesity	++	Reduces health insurance premiums	++
<b>Cancer</b>		<b>Pregnancy Benefits</b>	
Reduces risk of colon cancer	+++	Greater resistance to fatigue	+
Reduces risk of breast cancer	+++	Improved posture and stronger back muscles	+
Reduces risk of prostate cancer	++	May lead to easier labor and faster recovery	+
Reduces risk of endometrial cancer	++	Faster return to pre-pregnancy weight	+
Treats cancers	++	Reduces stress and elevates spirits	+
<b>Medical Care Expenditures</b>		<b>Morbidity and Mortality Rates</b>	
Lower annual direct medical care costs	+	Lower death rates for middle-age adults	++
Fewer hospital stays	+	Lower premature death rates	++
Fewer physician visits	+	Reduces and delays onset of illness	++
Reduced use of some medications	+	Reduces disease-related symptoms in many diseases	++

+++ Strong data support

++ Data supportive, but more research needed

+ Some data, but much more research needed

SOURCE: Kotecki, J.E. (2012). Updating the evidence that physical activity is good for health: An epidemiological review. A presentation delivered to the College of Pharmacy and Health Sciences, Butler University on October 8, 2012, in Indianapolis, Indiana.



**FIGURE 1.7 The Ten Leading Causes of Death in the United States.** SOURCE: Data from Murphy, S.L., Jiaquan, X., & Kochanek, K.D. (2012). Deaths: Preliminary data for 2010. *National Vital Statistics Reports* 60(4):1–67.

contributors to this form of energy expenditure usually are everyday light-intensity activities people undertake while performing other functions, such as standing and waiting in line, relaxed walking to class, riding a bike for transportation, climbing a couple of sets of stairs, lifting lightweight objects, or performing domestic duties such as shopping, sweeping floors, and dusting the furniture. Much physical activity occurs as an incidental part of your daily routines. Although these low levels of light-intensity activities of daily living are included under the broad definition of physical activity, they usually are insufficient for you to gain the more substantial health benefits provided by integrating medium levels of moderate-intensity physical activity into your daily routines.

**Exercise** A subset of physical activity that is a planned, structured, repetitive, and purposeful attempt to improve or maintain physical fitness, physical performance, or health.

**Physical fitness** A set of attributes a person has or achieves that relate to a person’s ability or capacity to perform specific types of physical activity efficiently and effectively.

**Exercise**, on the other hand, refers to a subset of physical activity that is a planned, structured, repetitive, and purposeful attempt to improve or maintain physical fitness, physical performance, or health. It usually includes more noticeable leisure-time activities such as distance running, swimming, aerobic dancing, mountain biking, weight lifting, yoga, and sporting activities such as basketball, racquetball, and tennis ( **FIGURE 1.8** and **FIGURE 1.9** ). These activities generally require considerably more effort and energy expenditure than do the task-oriented activities of routine daily life.

Unlike physical activity and exercise, which are behavioral processes, **physical fitness** has been described as a set of attributes a person has or achieves. These attributes relate to a person’s ability or capacity to perform specific types of physical activity efficiently and effectively. They are specific to the health-related components (cardiorespiratory endurance, muscular strength and endurance, flexibility, and body composition) and skill-related components (agility, coordination, balance, power, reaction time, and speed) of fitness required for the particular activity. For example, the fitness requirements for distance swimming, tennis, and yoga are very different in their physical demands and skills. Different fitness levels are mainly a result of the levels and types of physical activity you perform; therefore, exercise programs can be devised to produce a physiologic training effect to improve fitness attributes. You can attain these physical fitness attributes through individually tailored exercise programs using the FITT principle. The





**FIGURE 1.9 Improving Physical Fitness.** Different fitness levels are the result of our levels of physical activity.

**FIGURE 1.8 Exercising for Health.** Recreational activities such as basketball can be an enjoyable way to exercise.

FITT principle includes specification of (F) frequency (days per week), (I) intensity (how hard, e.g., light, moderate, vigorous), (T) time (amount for each session or day), and (T) type of activity (e.g., running, weight training).

## Physical Activity Recommendations for Health

Regular physical activity and exercise are critically important for the health and well-being of people of all ages. Recent research demonstrates that virtually all individuals can benefit from regular physical activity, whether they participate in vigorous exercise or some type of moderate health-enhancing physical activity. That's right—there is no need to think that only strenuous exercise training provides improved health benefits. In fact, individuals obtain the greatest proportional benefit to health when they change from inactivity or a low level of physical activity (activity beyond baseline but fewer than 150 minutes a week) to a regular pattern of medium moderate-intensity physical activity (150 minutes to 300 minutes a week) (**FIGURE 1.10**).

According to the recommendations in the *Physical Activity Guidelines for Americans* (USDHHS, 2008), for the broader population who have different and diverse health needs to attain the most benefits from physical activity:

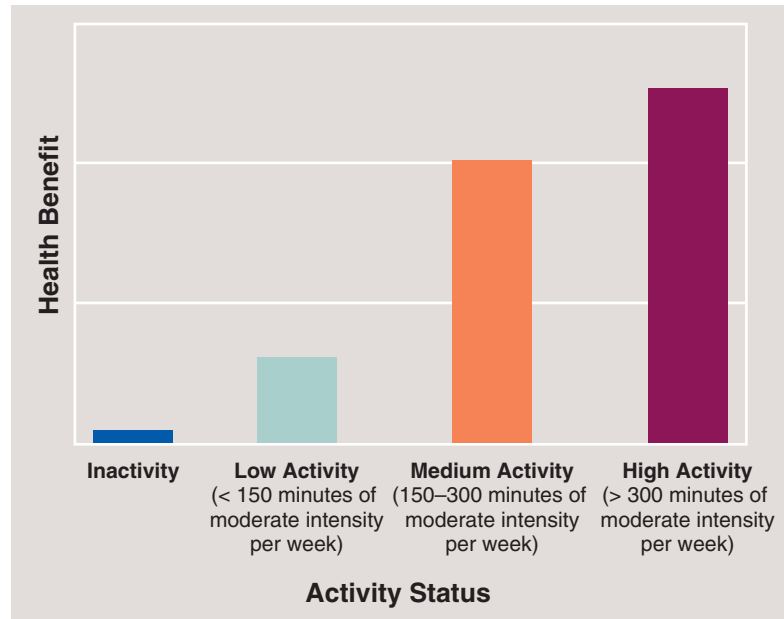
### Adults (ages 18–64)

- Adults should do 2 hours and 30 minutes a week of moderate-intensity, or 1 hour and 15 minutes a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic physical activity. Aerobic activity should be performed in episodes of at least 10 minutes, preferably spread throughout the week.
- Additional health benefits are provided by increasing to 5 hours a week of moderate-intensity aerobic physical activity, or 2 hours and 30 minutes a week of vigorous-intensity physical activity, or an equivalent combination of both.
- Adults should also do muscle-strengthening activities that involve all major muscle groups on 2 or more days per week.



Current physical activity guidelines call attention to the health-related benefits of regular moderate physical activity that do not meet the traditional exercise/physical fitness guidelines.

**FIGURE 1.10 Health Benefits and Activity Levels.** Individuals obtain the greatest proportional benefit to health when they change from inactivity or a low level of activity to a regular pattern of medium-intensity physical activity.



#### Older Adults (ages 65 or older)

- Older adults should follow the adult guidelines. If this is not possible due to limiting chronic conditions, older adults should be as physically active as their abilities allow. They should avoid inactivity. Older adults should do exercises that maintain or improve balance if they are at risk of falling.

#### Children and Adolescents (ages 6–17)

- Children and adolescents should do 1 hour or more of physical activity every day.
- Most of the 1 hour or more a day should be either moderate- or vigorous-intensity aerobic physical activity.
- As part of their daily physical activity, children and adolescents should do vigorous-intensity activity on at least 3 days per week. They also should do muscle-strengthening and bone-strengthening activity on at least 3 days per week.

#### Adults with Disabilities

- Follow the adult guidelines. If this is not possible, these persons should be as physically active as their abilities allow. They should avoid inactivity.

#### Children and Adolescents with Disabilities

- Work with the child's health care provider to identify the types and amounts of physical activity appropriate for them. When possible, these children should meet the guidelines for children and adolescents—or as much activity as their condition allows. Children and adolescents should avoid being inactive.

#### Pregnant and Postpartum Women

- Healthy women who are not already doing vigorous-intensity physical activity should get at least 2 hours and 30 minutes of moderate-intensity aerobic activity a week. Preferably, this activity should be spread throughout the



week. Women who regularly engage in vigorous-intensity aerobic activity or high amounts of activity can continue their activity provided that their condition remains unchanged and they talk to their health care provider about their activity level throughout their pregnancy.

The primary intentions of these guidelines are to increase public awareness of the importance of moderate physical activity and provide a realistic goal as it relates to the achievement of health benefits that are attainable by all individuals. Despite the well-known benefits of physical activity, most teenagers and adults have relatively sedentary (inactive) lifestyles and are not active enough to achieve the health benefits that can result from following the *Guidelines*.

Levels and patterns of physical activity and inactivity are important indicators of the health of Americans. Physical activity is one of the leading health indicators established by *Healthy People 2020*, a set of health objectives for the nation to achieve over the second decade of the twenty-first century. *The Healthy People* project, currently in its fourth decade, provides a set of 10-year objectives that is a road map for improving the health of all people in the United States. *Healthy People 2020* builds on initiatives pursued by its predecessors *Healthy People*, *Healthy People 2000*, and *Healthy People 2010*. Each *Healthy People* document has brought together national, state, and local government agencies; nonprofit, voluntary, and professional organizations; businesses; communities; and individuals to identify the most significant preventable threats to health and to establish national goals to reduce these threats (USDHHS, 2010).

In addition to physical activity, other major indicators of health include overweight and obesity, tobacco use, substance use, sexual behavior, mental health, injury and violence, environmental quality, immunization, and access to health care. The fourth edition of *Healthy People* was published in 2010. The physical activity and fitness objectives for *Healthy People 2020* are provided in [TABLE 1.2](#). Their overall goal is to improve the health, fitness, and quality of life of Americans through regular physical activity.

## Why We Live Sedentary Lives

Over the last half century, a dramatic decrease in physical activity levels has occurred as a result of changes in society and in the economy. Among the major factors contributing to this decrease include technological changes in the workplace that led to a decline in physically active occupations, widespread use of the automobile as the major form of transportation, the introduction of labor-saving devices for the home, and increases in sedentary activities such as television watching, computer use, and video game playing during spare time. Your author finds the last factor notable because now people can find highly entertaining things to do in a sedentary position. It is hard to compete with 200+ stations on cable television, great video games, and other choices available on the computer. A recent study of Americans found that the average sedentary time was just over 8 hours a day (Clark et al., 2011). That equates to roughly half of our waking hours. The majority of this comes from chronic prolonged sitting related to screen time (time spent in front of the television, computer, or other screen-based device) on a daily basis.

In addition to the increases in low-activity occupations, conveniences that make people's lives easier, and the increase in sedentary activities during spare time, many personal variables, including individuals' underlying thoughts and feelings, make people resistant to being physically active. The most common reasons this instructor hears from students is that they lack time, they're too exhausted from other commitments, they don't like to sweat, and they don't like to go to the gym where they are afraid they may look inadequate.

TABLE 1.2

Healthy People 2020 Physical Activity and Fitness Objectives

1. Reduce the proportion of adults who engage in no leisure-time physical activity
2. Increase the proportion of adults who meet current Federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity
3. Increase the proportion of adolescents who meet current Federal physical activity guidelines for aerobic physical activity and for muscle-strengthening activity
4. Increase the proportion of the Nation’s public and private schools that require daily physical education for all students
5. Increase the proportion of adolescents who participate in daily school physical education
6. Increase regularly scheduled elementary school recess in the United States
7. Increase the proportion of school districts that require or recommend elementary school recess for an appropriate period of time
8. Increase the proportion of children and adolescents who do not exceed recommended limits for screen time
9. Increase the number of States with licensing regulations for physical activity provided in child care
10. Increase the proportion of the Nation’s public and private schools that provide access to their physical activity spaces and facilities for all persons outside of normal school hours (that is, before and after the school day, on weekends, and during summer and other vacations)
11. Increase the proportion of physician office visits that include counseling or education related to physical activity
12. Increase the proportion of employed adults who have access to and participate in employer-based exercise facilities and exercise programs
13. Increase the proportion of trips made by walking
14. Increase the proportion of trips made by bicycling
15. Increase legislative policies for the built environment that enhance access to and availability of physical activity opportunities

SOURCE: Reproduced from U.S. Department of Health and Human Services. (2010). Healthy People 2020 Topics & Objectives: Physical Activity and Fitness. Online: <http://healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=33>.

### A Lifestyle Approach to Physical Activity

Most national goals address leisure time rather than occupational physical activity because people have more personal control over how they spend their leisure time and because most people do not have jobs that require regular physical activity. Furthermore, the use of labor-saving devices such as washing machines, dishwashers, garage door openers, and riding lawnmowers make tasks easier and leave people with more free time.

Earlier you read about the good news related to the scientific evidence that shows that physical activity done at a moderate intensity level can produce important health benefits. That’s right—people really do not have to suffer. Furthermore, it’s not necessary to carve out one 30-minute block of time from a busy schedule. The cumulative effect of physical activity throughout the day is what counts, and many types of activity can help (FIGURE 1.11).

College students usually have very busy schedules and often place exercise at the bottom of their list of priorities. It is easy to spend an entire day sitting in classes and meetings, studying in the library, and completing assignments using a computer. Some even have jobs and family commitments on top of their

educational responsibilities. And, of course, they must allow for some social time with friends and classmates. What most of these pursuits have in common is that they are sedentary activities.

Even with all of the commitments you have as a college student, it is essential that you make time for moderate-intensity physical activity. For example, did you know that fitting regular moderate-intensity physical activity into your daily routine can help you better accomplish your educational goals for the day, such as studying and being attentive in class? Because regular moderate-intensity physical activity can increase your concentration, mental well-being, stamina, and energy, you are more likely to be more proficient when it comes to learning. Fitting moderate-intensity physical activity into your daily routine may be easier than you might think if you follow a lifestyle approach.

A lifestyle approach to physical activity includes accumulating at least 30 minutes of self-selected activities, which can include leisure, occupational, or domestic activities—either intentional or unintentional—that are at least moderate in their intensity and are part of everyday life. You may not even have to adjust your schedule. For instance, walk briskly to class, the library, or the campus dining hall. Include marching in place, jumping jacks, or walking around in your study breaks. These activities can be done in short duration intervals (lasting for at least 10 minutes at a time) several times a day, as long as they add up to at least a half hour each day. The health benefits will accumulate without you having to take a couple of hours to go to the gym or do some of the other things you may have a hard time fitting into your schedule.

Of course, you may intend to add an exercise program to your schedule and take advantage of the exercise facilities (e.g., weight room, track, tennis court) that your college offers. This is also a very good idea. Although participating in a regular exercise program can provide a higher intensity that can offer greater health benefits, it is imperative you remember that there are plenty of other ways to obtain the daily recommended amount of physical activity to accumulate the health benefits.

## Investing in Your Health

If good health came with a guarantee, the author bets most of you would pay any price asked. Obviously, that will never happen. However, you can invest in an insurance policy of sorts in the form of physical activity. Because physical activity is one of the most effective ways you can safeguard yourself from developing a number of major chronic degenerative diseases, it's really a major investment in minimizing the risks of developing debilitating conditions. You can also add years to your life and life to your years from this investment. As you have already learned, a little can go a long way, and it doesn't take as much of an investment to begin collecting quickly on the many benefits of physical activity.

If you are currently physically active, the author commends you for including this as part of your healthy lifestyle. You may already be aware of the many dividends you are reaping from this choice. It is important to remember that the benefits of physical activity last only as long as physical activity is accomplished. Large population studies show that currently the level of physical activity decreases throughout the entire human life span largely because of societal factors. No one is immune from becoming inactive. The most significant decline occurs in young people as they enter adolescence and young adulthood. This decrease generally continues throughout college and beyond.

Physical activity plays a role in your overall health and well-being. This *connection* between physical activity and health is one that is inseparable.



**FIGURE 1.11 Moderate-Intensity Physical Activity.** Gardening is enjoyable and expends energy.



## Physical Activity and Health Connection

Physical activity is an essential lifestyle behavior when it comes to promoting health and preventing many major chronic diseases. It provides health benefits that cannot be obtained in any other way. It can assist with every other aspect of a healthy lifestyle and is central to wellness.

One of the most important things you can do to promote well-being is to become knowledgeable enough to take responsibility for your own health. As a college student, you are beginning to develop a personal lifestyle, which, with slight modifications, you will likely follow for the rest of your life. Practicing positive health behaviors, with systematic reinforcement and follow-up throughout your college years, can provide you with the best opportunity for achieving wellness as well as preventing the development of dangerous and health-threatening behaviors that lead to serious diseases during the middle and later years of life.

### concept connections



**Many of us are concerned about our present and future health.** We feel that we have some control over our health through our lifestyle or behaviors—things we can do or not do—that will promote health and prevent disease. However, the actions of far too many of us do not produce the good health we desire. As a college student, you face many health choices—choices that can affect you in the “here-and-now” and for the rest of your life. You are responsible for learning and implementing the best choices regarding your health. It is a responsibility only you can own.



**Wellness is conceptualized as a complex interaction and integration of the seven dimensions of health, each based on a dynamic level of functioning oriented toward maximizing our potential and based on self-responsibility.** When a person makes a conscious decision to work toward these enhanced aspects of health, well-being or wellness is identified. Halbert Dunn (1967) first wrote about the upper limits of health in his book *High Level Wellness*. Dunn saw wellness as a dynamic process of change and growth that was largely determined by the decisions we make about how to live our lives.



**A healthy lifestyle is a recurring pattern of health-promoting and disease-preventing behaviors undertaken to achieve wellness.** It is a way of life based on the idea that our chances of self-fulfillment are increased or decreased directly by our level of health. Further, it can decrease significantly the risk of disease and increase the chances of living a high quality of life into the later decades of life.



**A self-change approach assumes that human beings can manage their lifestyle change and learn to control environmental factors that are detrimental to health.** It puts you in control of your health and permits you to determine what to do, how, and when to do it. A self-help approach requires planning, time and effort, and, most important, the development of special lifestyle skills.



**No medicinal treatment in current or prospective use holds as much promise for sustained health as a regular program of physical activity.** Regular physical activity can make you look younger, provide better weight control, give you more energy and a brighter mental outlook, relieve stress and anxiety, make you fit and flexible, and decrease your risk of serious diseases such as heart disease, cancer, diabetes, hypertension, and osteoporosis.



**Current physical activity guidelines call attention to the health-related benefits of regular moderate physical activity that do not meet the traditional exercise/physical fitness guidelines.** Recent research demonstrates that virtually all individuals can benefit from regular physical activity, whether they participate in vigorous exercise or some type of moderate health-enhancing physical activity. Although both moderate- and vigorous-intensity activities have important health implications, you need to understand that physical activity does not have to be strenuous to provide health-promoting benefits. In fact, the greatest proportional benefit to health is obtained when individuals change from inactivity or a sedentary state to a regular pattern of moderate-intensity physical activity.

## Terms

Chronic diseases, 10  
Epidemiology, 8  
Exercise, 12  
Health, 5  
Healthy lifestyle, 9

Pathogenesis, 7  
Physical activity, 10  
Physical fitness, 12  
Protective factor, 8

Quality of life, 7  
Risk factor, 8  
Salutogenesis, 7  
Wellness, 5

### making the connection

**D**estiny realizes that she is in college to learn and do well academically. Her mid-term grades are fine, but she doesn't like feeling tired all the time. After reading this chapter, Destiny realizes that she must take more responsibility for how she is feeling. She surmises that the lack of physical activity in her life may be contributing to her worn-out feeling and begins to think of ways she can find time to become more physically active while still maintaining other positive aspects of college life.

### Critical Thinking

1. Are you feeling lethargic and tired, like Destiny? Could it be because of a lack of physical activity? If so, what physical activity are you currently doing? If none, what can you do to increase your physical activity? Develop a list of campus events or organizations that involve physical activity (e.g., hiking club, co-ed intramural volleyball, walking club, kick boxing). Investigate several of them to see which one best fits your needs and schedule. Begin adding this activity into your daily or weekly college routine.
2. Using the seven dimensions of health, identify two behaviors you do that would be an example of enhancing each dimension.
3. The morning newspaper headline is “Scientific Studies Indicate Physical Activity Is Important to Health and Quality of Life.” The article mentions studies from the *Prestigious International Health and Medicine Journal*. Later that day, you hear a local radio report suggesting that too much physical activity can lead to an instant heart attack, maybe even death. We are bombarded with health messages daily. What is your major source of health information? Television? If so, which shows in particular? Magazines? School? Friends? How carefully do you analyze health information? Do you believe most of what you read about health, or does it depend on the source?



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