CHAPTER 10

Managing Stress

OBJECTIVES

Understand how your body responds to stress.

Identify common sources of stress.

Describe effective tools for stress management.

Create your own stress management plan.

CASE STUDY

Cory

"Hi, I'm Cory. I'm a junior, majoring in biology. I'm from Denver, Colorado and just transferred schools in August to be closer to my dad, who lives alone and has diabetes. I take five classes, work part-time as a lab assistant, and I'm up late every night studying so that I can keep up my grades for applying to medical school. I've always felt like I was pretty good at working under pressure, but I have to admit, these past few months have been rough—I am constantly worn out, worried sick about my dad, and can hardly stay awake in class sometimes. I know that medical school will be even harder, so maybe I should just get used to living like this! But, man, I am so tired of being tired."

Everyone feels stress at least some of the time, be it from traffic, crowding, competition for schools and jobs, fast-changing technology, and/or a hectic pace that seems to accelerate yearly. Often we do not even realize how great our stress levels have become. Over time, however, stress can diminish not just our enjoyment of life, but our health and well-being, too. Thus, learning effective stress-management techniques is an important part of any complete wellness program.

This chapter explains the stress response, details the ways accumulated stress can affect your health, and proposes several helpful strategies you can use to counteract stress. Using the stress-management tools you'll discover in this chapter, you can better face the pressures of college life and beyond.

stress A term used to describe a physical, social, or psychological event or circumstance that disturbs the body's "normal" state and to which the body must try to adapt. Also used to describe the disturbed physical or emotional state experienced as a result of such events/circumstances.

stressor A physical, social, or psychological event or circumstance to which the body tries to adapt; stressors are often threatening, unfamiliar, disturbing, or exciting

stress response A set of physical and emotional reactions initiated by your body in response to a stressor

WHAT IS STRESS?

In a recent national survey, college students reported stress as the biggest impediment to their academic success, with a greater impact on achievement than colds, flu, sleep difficulty, relationship issues, and all other concerns.[1] But what, exactly *is* stress?

Stress is a term that is commonly used in many different ways. It is used to describe a *causative* physical, social, or psychological event (such as a threat, aggravation, or excitement) that disturbs an individual's "normal" physiological state and to which the body must try to adapt. Stress is also used to describe the disturbed physical and emotional state that a person experiences as a *result* of such an event.[2] Stress is even used to describe the *anticipation* of any event, real or imagined, that a person perceives as a threat.[3]

A more accurate term for any event that disrupts your body's "normal" state is **stressor.** A stressor can be physical, such as an angry roommate or an uncomfortably heavy backpack. It can also be emotional, like the fear and worry you feel before a major exam. A more accurate term for the physical *effect* of a stressor is the **stress response:** the set of physiological changes initiated by your body's nervous and hormonal signals. The stress response prepares the brain, heart, muscles, and other organs to respond to a perceived threat or demand. The dry mouth, sweaty palms, and pounding heart you might feel before giving a speech are all part of your body's stress response.

A more traditional view of stress includes the concepts of both positive stress and negative

stress. Positive stress, or **eustress,** presents an opportunity for personal growth, satisfaction, and enhanced well-being. Eustress can invigorate us and motivate us to work harder and achieve more. Entering college, starting a new job, and developing a new relationship are all challenges that can produce eustress. Negative stress, or **distress,** can result from a buildup of negative stressors such as academic pressures, relationship discord, or money problems. It can even result from an overload of positive stressors such as getting married, moving to a new state, and starting a new job all in the same week. Distress can reduce wellness by promoting cardiovascular disease, impairing immunity, or causing mental and emotional dysfunction.

HOW DOES YOUR BODY RESPOND TO STRESS?

You file into the lecture hall to take your hardest midterm, sit down in an aisle seat, and teaching assistants start passing out the exam papers. As you take one and pass the pile to your right, you realize your heart is pounding, your breathing has quickened, your hands are sweating, you have "butterflies" in your stomach, and you feel a sense of dread. You are experiencing a stress response: a reaction involving nervous and hormonal activities that prepare both body and mind to deal with the disturbance to your normal state.

THE STRESS RESPONSE

Here's a simplified version of what happens during the seconds that the body initiates a stress response and in the minutes and hours as the response continues (Figure 10.1):

1. Your senses perceive and your brain interprets something as a threat; for example, the arrival of a test that will determine half your grade.
2. The threat triggers a region of your brain called the *hypothalamus* to release a hormone that in turn triggers your pituitary gland to secrete **adrenocorticotropic hormone** (ACTH) into your blood.
3. ACTH travels through the bloodstream and reaches the outer zone of each adrenal gland (located on top of each kidney). ACTH causes the adrenal glands to secrete **cortisol,** your body's main stress hormone.

   At the same time, nerve signals from your brain and spinal cord reach and stimulate the central zone of each adrenal gland. Both adrenals respond by releasing **epinephrine** (also called *adrenalin*) and **norepinephrine,** two additional stress hormones that ready the body for quick action.
4. Traveling inside the bloodstream, cortisol reaches specific *target cells* within the body fat and within several organs, including the liver and intestines. Cortisol quickly triggers target cells to convert stored fat, protein, and carbohydrate molecules into glucose. Soon, more glucose is circulating in the blood, supplying the whole body—especially the brain and skeletal muscles—with the extra energy needed to respond to the stressor.
5. The epinephrine and norepinephrine released into the blood rapidly reach target cells in the heart, lungs, stomach, intestines, sense organs, and muscles. Along with signals from sympathetic nerves, these additional stress hormones ready the vital organs in ways that promote survival: fleeing from or confronting the threat. This physiological reaction is called the **fight-or-flight response.**

If you have ever jammed on the brakes to avoid an accident, you have probably felt a jolt of

eustress Stress based on positive circumstances or events; can present an opportunity for personal growth

distress Stress based on negative circumstances or events, or those perceived as negative; can diminish wellness

adrenocorticotropic hormone A hormone secreted by the pituitary gland that causes adrenal glands to secrete cortisol

cortisol Your body's main stress hormone, secreted by the cortex or outer layer of the adrenal glands located on top of the kidneys. Stimulates the sympathetic nervous system; can also damage or destroy neurons

epinephrine Also called *adrenaline;* one of two stress hormones released by adrenal glands that readies your body for quick action by stimulating sympathetic nerves

norepinephrine One of two stress hormones secreted by adrenal glands that readies your body for quick action by increasing arousal

fight-or-flight response A physiological reaction induced by nervous and hormonal signals that readies the heart, lungs, brain, muscles, and other vital organs and systems in ways that promote survival: fleeing from or confronting a threat

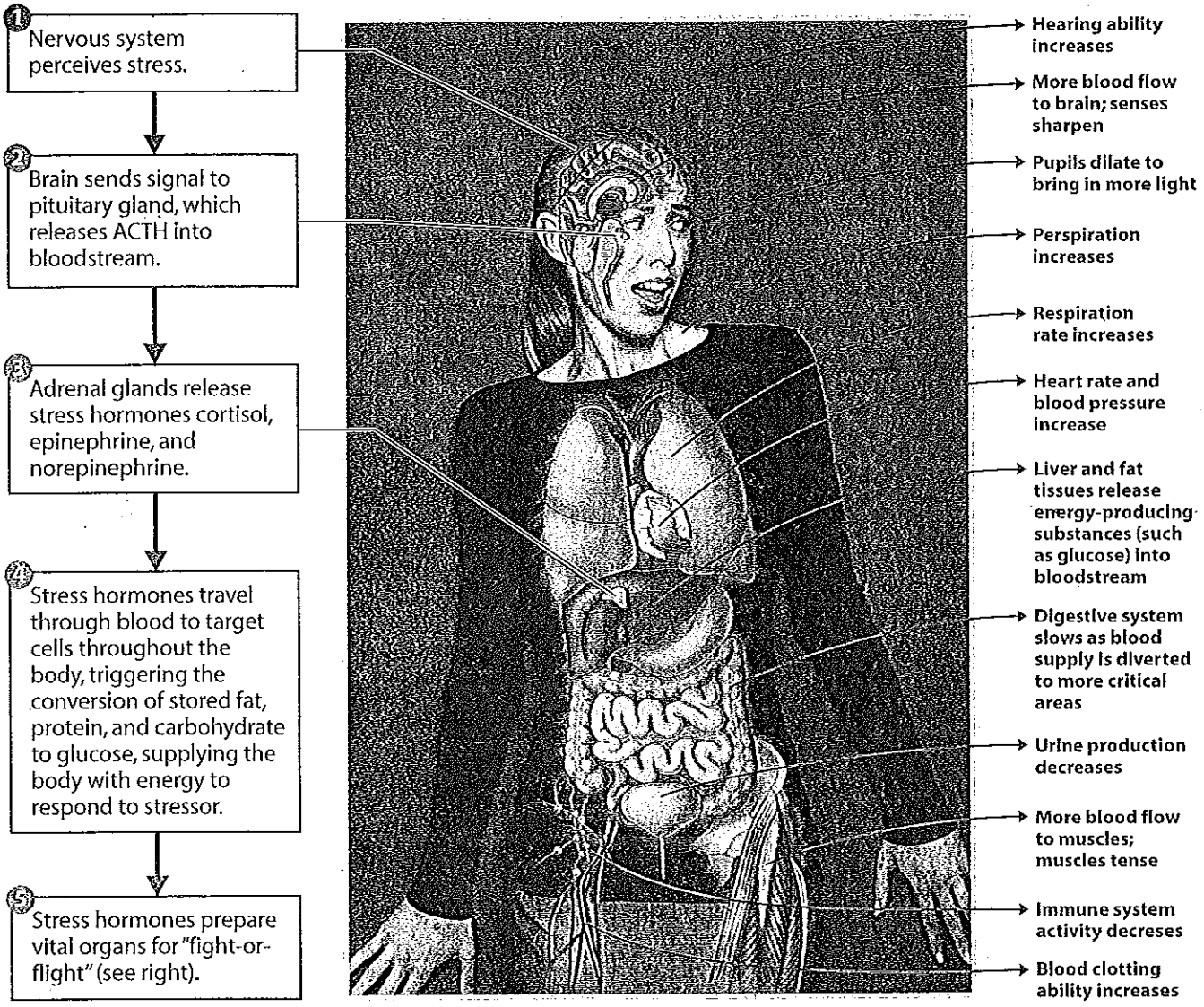


FIGURE 10.1
The stress response.

epinephrine. As part of the fight-or-flight response, your pupils dilate, enabling you to see more clearly. The air passages in your lungs also dilate, allowing more oxygen to enter. Your heart beats faster and pumps more blood to your muscles and brain. Your sweat glands release more sweat, and blood is directed away from your hands and feet toward your large muscles and body core; this can make your hands feel cold and clammy. Your digestive action slows or stops, and your bladder function slows, since neither process is crucial to short-term survival. Primed in all these ways, your body is ready to handle the stressor. Confronted by a car speeding toward you, your fight-or-flight response could save your life. Faced with financial hardship or excessive work pressures for years on end, your stress response can become chronic and start to harm your health.

After a perceived stressor subsides, your nervous system returns the body to its "normal" state with slower heartbeats, normal breathing rate, normal digestion, and so on. The stress-reduction techniques you will learn later deliberately encourage the body's return to this more relaxed state.

WHY DOES STRESS CAUSE HARM?

Why is chronic stress harmful? Two insightful models help explain how sustained stress can cause damage over time.

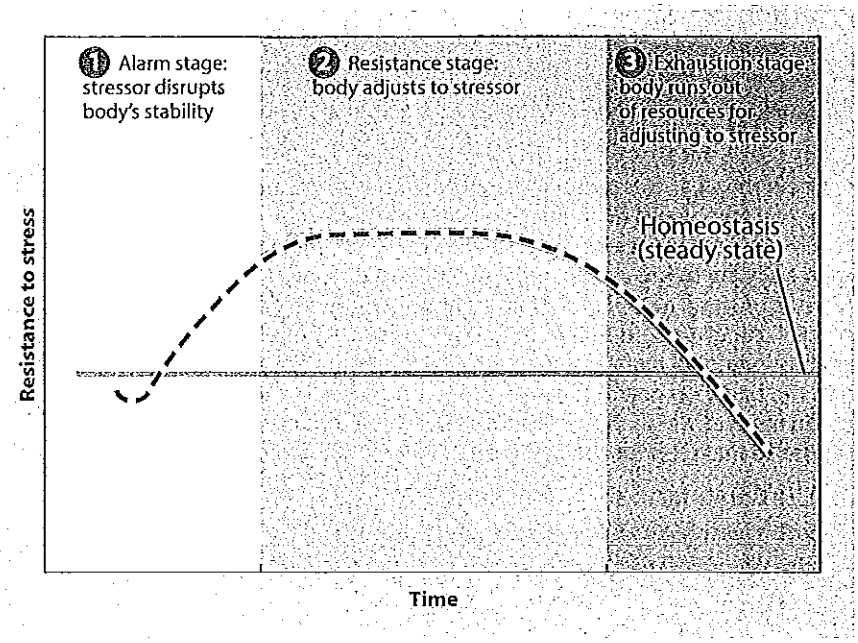


FIGURE 10.2
Hans Seyle's general adaptation syndrome.

THE GENERAL ADAPTATION SYNDROME

In the 1930s, biologist Hans Selye studied the response of laboratory rats to painful physical or emotional stressors. He discovered that a wide variety of stressors—such as extreme heat, extreme cold, forced exercise, or surgery—all seemed to provoke the same general set of changes in the rats' bodies. Selye proposed a model he called the **general adaptation syndrome (GAS),** based on the reactions of the rats he observed.

Central to Seyle's GAS model is the idea that stress disrupts the body's stable internal environment, or *steady state.* Physiological mechanisms work to keep internal conditions (such as body temperature, blood-oxygen content, blood pH, and blood sugar levels) within certain "normal" ranges. Life scientists use the term **homeostasis** to describe the body's steady state. Seyle's general adaptation syndrome characterizes the stages of the body's response to stress as follows:

1. In the *alarm stage,* a stressor disrupts the steady state and triggers a *fight-or-flight response.* The body starts adapting to the stressor, but the effort can lower one's resistance to injury or disease (see Figure 10.2).[4]
2. In the *resistance stage,* a person's physiology and behavior adjusts, and resistance builds to the stressor. The body establishes a new level of homeostasis, despite the continued presence of the stressor.
3. In the hypothetical *exhaustion stage,* the body runs out of resources to successfully adapt to the stressor, resulting in physiological harm in the form of reduced immunity and increased susceptibility to physical or mental illness.

The general adaptation syndrome recognized that sustained stress can take a toll on wellness. However, scientists have since modified Seyle's concept of an "exhaustion stage" and the idea that illness results from running out of resources to adapt to a stressor. Rather, they now believe that over time, the stress response *itself* can damage the body and increase one's risk of developing illness, as we will examine in the next section.

ALLOSTATIC LOAD

Today's stress researchers use the term **allostasis** to describe the many simultaneous changes that

general adaptation syndrome (GAS) A historical model proposed by Hans Selye attempting to explain the body's stress response, consisting of alarm, resistance, and exhaustion stages

homeostasis A state of physiological equilibrium wherein various physiological mechanisms maintain internal conditions (such as pH, salt concentration, and temperature) within certain viable ranges

allostasis The many simultaneous changes that occur in the body to maintain homeostasis

CASE STUDY

Cory

"I knew this year was going to be a challenge—transferring to a new school and taking upper-level classes. But the first month actually went okay. I liked my classes, my dad seemed to be doing better, and I got used to getting by on 5 hours of sleep each night. Then sometime in the middle of fall, I caught a cold that didn't go away for 4 weeks! I was coughing all night, could barely pay attention in class, and did badly on one of my midterms. That, of course, just made me feel worse. Now I feel like I need to work even harder to make up for the bad grade."

1. List Cory's main sources of stress. Which would you classify as *eustress* and which would you classify as *distress*?
2. How might Hans Seyle have used general adaptation syndrome to explain what is happening with Cory?
3. How might the allostatic load model explain what is happening with Cory?
4. What are your own major sources of stress? How are you dealing with them?

occur in the body to maintain homeostasis, and they use the term **allostatic load** to refer to the long-term wear and tear on the body that is caused by prolonged allostasis.[5]

Allostatic load can result if your body's ability to shut off the stress response (after a stressor has disappeared) is impaired, allowing high levels of stress hormones to remain in the bloodstream. It can also develop when your body releases too *few* stress hormones and cannot mount an adequate stress response.[6] And it can build up if you experience a sustained string of stressful events over a long period of time. A classic example of a consequence of allostatic load is the development of stress-induced high blood pressure (hypertension.) As you will see shortly, chronically high blood pressure can damage arteries and increase one's risk of developing cardiovascular disease.[7]

A person's behavior and choices can also result in allostatic load. For example, some people respond to stress by exercising more, meditating, getting extra sleep, and avoiding drugs and alcohol. Others respond by exercising less, staying up late, drinking more, or starting smoking or taking drugs. Such counterproductive measures can result in allostatic load and increase one's susceptibility to developing illness.

allostatic load The long-term wear and tear on the body that is caused by prolonged allostasis

WHAT KINDS OF HARM CAN STRESS CAUSE?

Studies indicate that 40 percent of deaths and 70 percent of disease in the United States are related, in whole or in part, to stress.[8] The list of ailments related to chronic stress includes heart disease, diabetes, cancer, headaches, ulcers, low back pain, depression, and the common cold.

STRESS AND CARDIOVASCULAR DISEASE RISKS

Perhaps the most studied and documented health consequence of unresolved stress is cardiovascular disease (CVD). Research on this topic has demonstrated the impact of chronic stress on heart rate, blood pressure, heart attack, and stroke.[9] Historically, the increased risk of CVD from chronic stress has been linked to increased plaque buildup due to elevated cholesterol, hardening of the arteries, alterations in heart rhythm, and increased and fluctuating blood pressure. Recent research also points to metabolic abnormalities, insulin resistance, and inflammation in blood vessels as major contributors to heart disease.[10] In the past 15 to 20 years, researchers have identified direct links between the incidence and progression of CVD and stressors such as job strain, caregiving, bereavement, and natural disasters.[11] Whatever the mechanism, the evidence is clear that stress is a significant contributor to CVD morbidity and mortality.

SPOTLIGHT

STRESS AND DEPRESSION

Stress and depression have complicated interconnections based on emotional, physiological, and biochemical processes. Prolonged stress can trigger depression in susceptible people, and prior periods of depression can leave individuals more susceptible to stress.[1]

The *physical* links between stress and depression are strong. During the stress response, the body is flooded with cortisol and with chemicals called *cytokines*. These factors promote inflammation as part of the body's immune response. Researchers think that exposure to both kinds of chemicals can damage or kill neurons in a part of the brain called the *hippocampus* and can alter nerve transmission within the brain. One result of hippocampal damage is impaired learning and memory.[2] Another is the onset of depression symptoms in genetically susceptible individuals.[3] Research confirms that loss of hippocampal neurons is present in many who suffer depression.[4]

Realizing the important interconnections between stress and depression can help you take appropriate steps to handling one or both. Because stress and depression symptoms overlap, applying the stress-management techniques outlined in this chapter may help alleviate depression. If depression symptoms become severe enough to interfere with studying or other aspects of daily life, you should seek help. Potential sources are the student health service, the campus counseling center, a doctor or mental health professional in your community, and your local depression or suicide hotline.

Sources:

1. M. A. Ilgen and K. E. Hutchison, "A History of Major Depressive Disorder and the Response to Stress," *Journal of Affective Disorders* 86, no. 2–3 (June 2005): 143–50.
2. F. A. Scorza and others, "Neurogenesis and Depression: Etiology or New Illusion?" *Review of Brazilian Psychiatry* 27, no. 3 (September 2005): 249–53.
3. See reference 1.
4. Prentiss Price, "Stress and Depression," *All About Depression* (September 9, 2004), www.allaboutdepression.com; David G. Myers, *Psychology*, 5th ed. (New York: Worth Publishers, 1998).

STRESS AND THE IMMUNE SYSTEM

A growing area of scientific investigation known as **psychoneuroimmunology (PNI)** explores the intricate relationship between the mind's response to stress and the immune system's ability to function effectively. Research suggests that too much stress over a long period can negatively regulate various aspects of the cellular immune response.[12] Whereas a short-term stress response is usually protective, prolonged fight-or-flight depresses the immune system. During prolonged stress, elevated levels of adrenal hormones (like cortisol) destroy or reduce the ability of certain white blood cells, known as killer T cells, to aid the immune response. When killer T cells aren't working correctly, the body becomes more susceptible to illness.

STRESS AND THE MIND

Stress may be one of the single greatest contributors to mental disability and emotional dysfunction in industrialized nations. Studies have shown that the rates of mental disorders, particularly depression and anxiety, are associated with various environmental stressors, including divorce, marital conflict, and economic hardship (see **Spotlight: Stress and Depression**).[13]

In severe cases, an individual's response to stress may develop into **post-traumatic stress disorder (PTSD).** PTSD generally develops within the first hours or days after a traumatic event, but in some cases symptoms do not begin until months or years later. Traumas that can trigger PTSD include wartime experiences, rape, near-death experiences in accidents, witnessing a

psychoneuroimmunology (PNI) Science of the interaction between the mind and the immune system

post-traumatic stress disorder (PTSD) An acute stress disorder caused by experiencing an extremely traumatic event

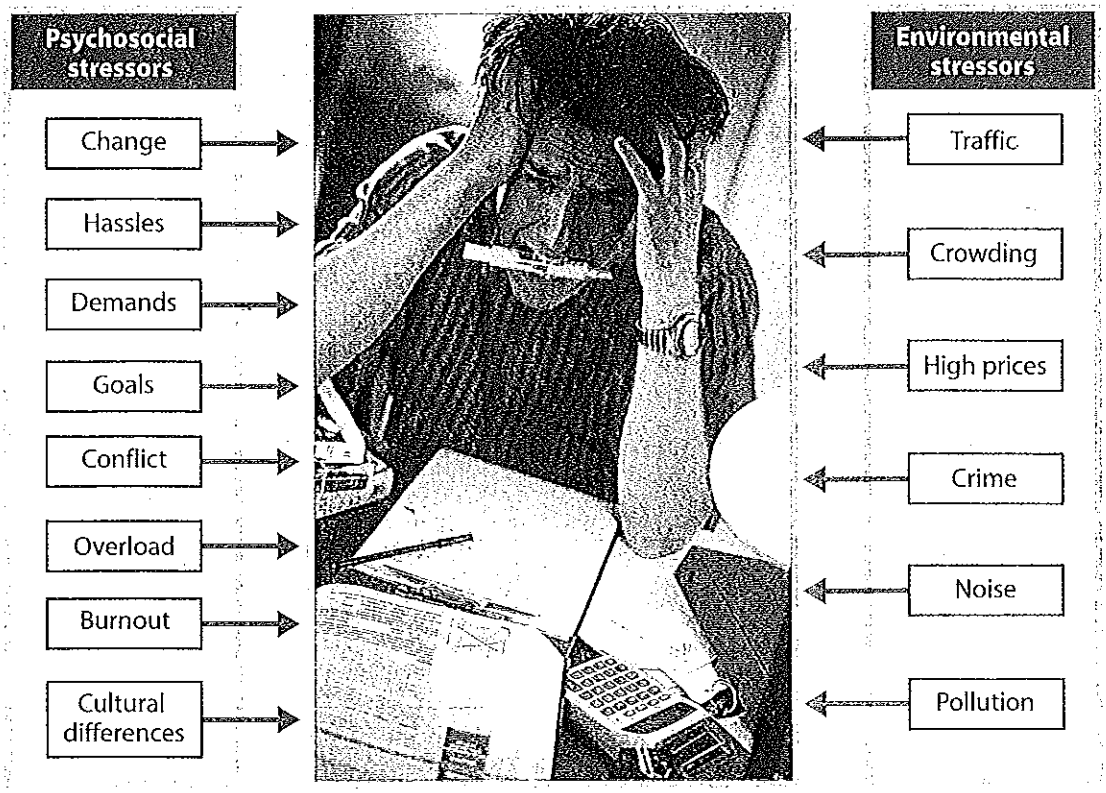


FIGURE 10.3
Stressors are often psychosocial or environmental in nature.

murder or death, being caught in a natural disaster, or a terrorist attack.

WHAT ARE THE MAJOR SOURCES OF STRESS?

College students tend to experience different stressors depending on age, sex, and year in school. First-year students, for example, primarily feel academic pressure.[14] Female freshmen also tend to report dieting and weight gain as stressful, while male students worry more about being underweight, relationship issues, and substance use (drugs, alcohol).[15] In addition, nontraditional students may experience other sources of stress, as described in the box **Understanding Diversity: Stress in Traditional and Nontraditional Students.**

What are your main sources of stress? Examining the many psychological, social, and environmental causes of stress may help you identify them (Figure 10.3).

PSYCHOSOCIAL SOURCES OF STRESS

Interactions with others, expectations we and others have of ourselves, and the social conditions we live in force us to readjust constantly. Some key psychosocial factors are:

Change Alterations from your normal routine can cause stress. The greater the change and your necessary adjustments to it, the more stress and the greater the potential impact on your immune system.[16] Certain kinds of life events predict increased risk for stress-related illness. Knowing them can help, as you'll discover in ***Lab10.1***.

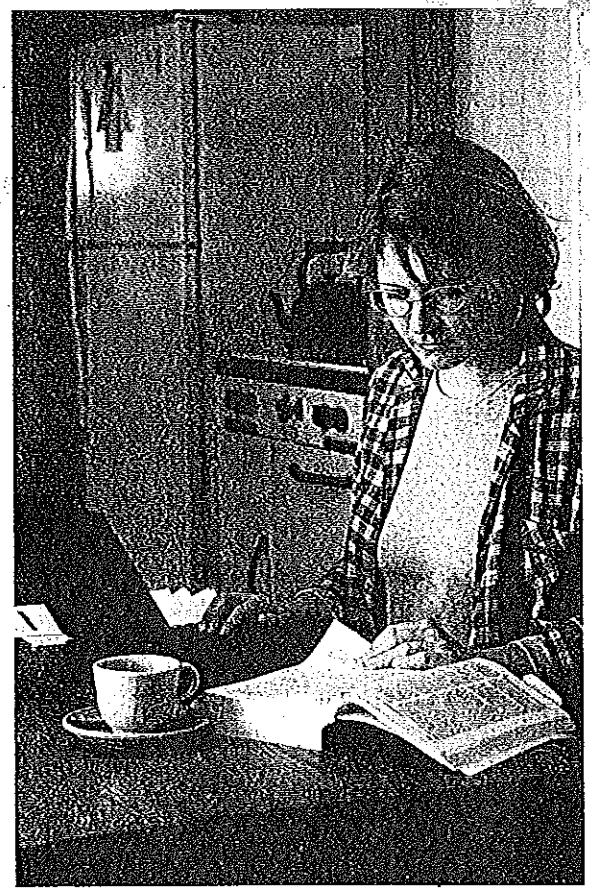
Hassles Petty annoyances and frustrations may seem unimportant if taken one by one: getting stuck in a long line at the bookstore, for example, or finding out that a school administrator has lost all your paperwork. However, minor hassles can build to major stress, if you perceive them negatively and let the feelings mount.[17] Regular release through stress management can counter this buildup.

UNDERSTANDING DIVERSITY

STRESS IN TRADITIONAL AND NONTRADITIONAL STUDENTS

As currently defined, *traditional students* are 18 to 24 years old, go right to college after high school, and are fully or partially supported by parents. *Nontraditional students* are 25 or older; have interrupted their educational sequence with working, traveling, or military service; are often married with children; and are self-supporting. Researchers have found notable differences in the way students in the two categories experience stressors at college.

Traditional students tend to experience stress mainly from course work, academic performance, and relationships.[1] Nontraditional students tend to be more stressed by juggling family responsibilities and schoolwork, commuting from off-campus, working at jobs, and feeling less involved with fellow students and detached from the institution they attend.[2] Research shows that wives or husbands who are supportive about the time demands on their college student spouses can help buffer some of the stress. According to those same studies, college and university counselors can and should play an increasingly important role in helping both traditional and nontraditional students overcome their unique stressors and thus complete their degrees.[3]



Sources:

1. H. Li and W. Kam, "Types and Characteristics of Stress on College Campus," *Psychological Science* 25, no. 4 (2002): 398–401.
2. Dawna-Cricket-Martita Meehan and Charles Negy, "Undergraduate Students' Adaptation to College: Does Being Married Make a Difference?" *Journal of College Development* (September–October 2003): 567–78.
3. Ibid.

Performance Demands We experience stress when we must speed up, intensify, or alter our behavior to meet higher standards or unfamiliar demands. We can lessen the impact of such demands by setting priorities and realistic deadlines.

Inconsistent Goals and Behaviors The negative effects of stress can be magnified when we don't match our goals with our actions. For instance, you may want good grades, and your family may expect them. But if you party and procrastinate throughout the term, your goals and behaviors are inconsistent. Behaviors that are consistent with your goals—for example, studying harder and partying less to achieve good grades—can help alleviate stress.

Conflict Conflict occurs when we have to choose between competing motives, behaviors, or impulses, or when we must face incompatible demands, opportunities, needs, or goals. For example, what if your best friend wanted you to help her cheat on an exam, but you didn't feel right about it? College students often experience stress because their own developing set of beliefs conflicts with the values they learned from their parents.

Overload and Burnout Time pressure, responsibilities, course work, tuition, and high expectations for yourself and those around you—coupled with a lack of support—can lead to *overload:* a state of feeling overburdened, unable to keep up, and longing for escape. Overload pushes some students toward depression or substance abuse; others respond by using stress-management tools to alleviate tension before it piles up. Unrelieved overload can lead to *burnout,* a state of stress-induced physical and mental exhaustion. Teachers, nurses, and law enforcement officers, for example, experience high levels of burnout, and highly pressured professionals often apply stress-management techniques to avoid reaching this point.

Try it NOW! **Feeling overwhelmed? Experiencing overload? Think Triple A—that is, the three As of coping: avoid, alter, and abolish.**

- **If your school workload is causing distress, you may choose to *avoid* taking more than 15 credits, *alter* your schedule so that you attend classes in the morning when you are most alert, or *abolish* a few of your social events to devote more time to studying.**

Environmental Sources of Stress

Environmental stress results from events occurring in the physical environment. For example, people living in crowded urban environments tend to experience stress from traffic, housing density, a high cost of living, crime, noise, and pollution. Meanwhile, people living in rural areas may experience different stresses, including transportation difficulties, limited employment opportunities, reduced availability of services, and greater impact from weather and climatic events such as floods, fires, and tornadoes.

RACIAL, ETHNIC OR CULTURAL ISOLATION

Imagine what it would be like to come to campus and find yourself isolated, lacking friends, and ridiculed on the basis of who you are or how you look. Often, those who act, speak, or dress differently face additional pressures that do not affect more "typical" students. Students perceived as different—whether due to race, ethnicity, religious affiliation, age, physical handicap, or sexual orientation—may become victims of subtle and not-so-subtle forms of bigotry, insensitivity, harassment, or hostility.

appraisal The interpretation and evaluation of information provided to the brain by the senses

INTERNAL SOURCES OF STRESS

When you perceive that your coping resources are sufficient to meet life's demands, you experience little or no stress. By contrast, when you perceive that life's demands exceed your coping resources, you are likely to feel strain and distress.

Low Self-Esteem and Self-Efficacy

Several coping resources influence your **appraisal** of stress. Two of the most important are *self-esteem* and *self-efficacy.* Self-esteem is a sense of positive self-regard, or how you feel about yourself. Self-efficacy is a belief or confidence in personal skills and performance abilities. Researchers consider self-efficacy one of the most important personality traits that influence psychological and physiological stress responses.[18] Low self-esteem or low self-efficacy can lead you to feel helpless to cope with the stress in your life.

Type A Personality So-called "Type A" personalities are characterized as hard-driving, competitive, time-driven perfectionists. "Type B" personalities, in contrast, are more relaxed, noncompetitive, and more tolerant of others. Historically, researchers believed that people with Type A characteristics were more prone to heart attacks than their Type B counterparts.[19] Researchers today believe that personality types are more complex than previously thought—most people are not one personality type all the time, and other variables must be explored.

According to psychologist Susanne Kobasa, *psychological hardiness* may negate self-imposed stress associated with Type A behavior. Psychologically hardy people are characterized by control, commitment, and an embrace of challenge.[20] People with a sense of control are able to accept responsibility for their behaviors and change those that they discover to be debilitating. People with a sense of commitment have good self-esteem and understand their purpose in life. People who embrace challenge see change as a stimulating opportunity for personal growth. The concept of hardiness has been studied extensively, and many researchers believe it is the foundation of an individual's ability to cope with stress and remain healthy.[21]

What stresses do you face, and how heavily are they affecting you? Lab 10.1 charts many common sources of stress for college students and others. Completing this lab will help you measure your current stress level and start learning some helpful stress-reduction strategies.

WHAT ARE EFFECTIVE TOOLS FOR STRESS MANAGEMENT?

Most college students do best with a low-key, multipronged approach to stress management.

EXERCISE AND PHYSICAL ACTIVITY

Improving your overall level of fitness may be the most helpful thing you can do to combat stress. Interestingly, research shows that exercise actually *stimulates* the stress response,[22] but that a well-exercised body adapts to the *eustress* of exercise, and as a result is able to tolerate greater levels of *distress* of all kinds. Compared to an unfit person, a fit individual develops a milder stress response to any given stressor.[23] Research also shows that exercise reduces both psychosocial stress and metabolic disturbances leading to belly fat, high blood pressure, high blood cholesterol, and vascular disease.[24]

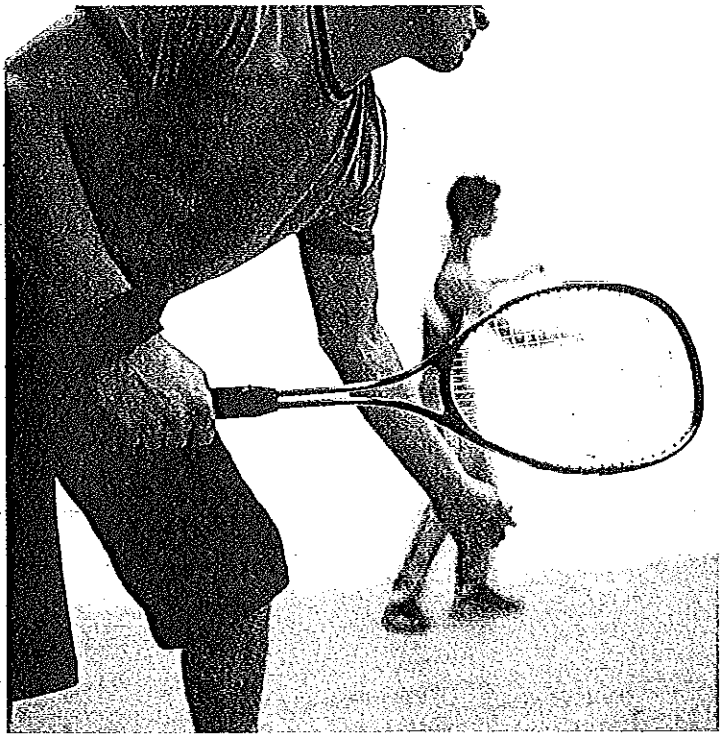
Many physical activities relieve the feeling of stress and tension, while others—especially those that involve competition, high skill levels, or physical risk—may add to your stress load. Some activities are high in one value and low in the other, but many can build fitness and promote relaxation at the same time. The trick is to balance exercise, fun, and recreational activities in your free time so that you can stay fit and reduce chronic stress.

BASIC WELLNESS MEASURES

Many of the habits you cultivate to improve your wellness can also fight the negative effects of stress.

Eating Well Eating nutrient-dense foods rather than fast foods and junk foods gives you more mental and physical energy, improves your immune responses, and helps you stay at a healthy weight. Undereating, overeating, or eating nutrient-poor foods can contribute to your stress levels by diminishing your overall wellness. Most claims about vitamins and supplements that reduce stress are unsupported. Vitamin and mineral supplementation beyond your daily requirements may only add to your stress—financial stress, that is!

Getting Enough Sleep Sleep is a central wellness component. As explained in the box **Spotlight: Sleep, Performance, and Stress,** sleep loss hinders learning, memory, academic work, and physical performance. It can also depress mood and prompt feelings of stress, anger, and sadness. *Sound* sleep is important, too. Some people find that inexpensive earplugs or eye masks from a drugstore block sleep-disturbing sound and light. Others require a quieter, darker room or more considerate roommates to solve their sleep problems.



Avoiding Tobacco and Alcohol Both drinking and smoking can disrupt sleep patterns during the night. The nicotine in tobacco is highly addictive and acts as a mild stimulant. Tobacco use also impairs normal breathing and diminishes your ability to fight off colds and other infections.

CHANGING YOUR BEHAVIORAL RESPONSES

Realizing that stress is harming your fitness, wellness, relationships, or productivity is often the first step toward making positive changes. Start by assessing all aspects of a stressor, examining your typical response, determining ways to change it, and learning to cope. Often, you cannot change the stressors you face: the death of a loved one, the stringent requirements of your major, stacked-up course assignments, and so on. You can, however, change your reactions to them, and in so doing, help manage your stress.

Assess the Stressor List and evaluate the stressors in your life. Can you change the stressor itself? If not, you can still change your behavior

SPOTLIGHT

SLEEP, PERFORMANCE, AND STRESS

Sleep experts suggest that 18- to 20-year-olds need about 8.5 to 9.25 hours of sleep per night, while adults over 21 need about 7 to 9 hours of sleep (depending on individual physiology.)[1] In the 1980s, college students got an average of 7 to 7.5 hours of sleep per night. Today, however, that has slid to between 6 to 6.9 hours. In addition, the typical student sleeps less at the end of a semester than at the beginning due to the accumulation of assignments and exams.[2]

Losing an hour or two of sleep actually does matter, even to young, active, healthy college students. Research shows that sleep loss degrades learning and memory, physical performance, and mood in both young and older adults. One piece of evidence for this is a German study that presented students with a math puzzle to work out. Most of those who "slept on it" realized a shortcut to solving the problem by morning and could solve the task much more quickly. Three-quarters of those who didn't "sleep on it" failed to intuit the way to a faster, simpler solution.[3] This was the first scientific proof that sleep can promote insight and problem solving.

Sleep deprivation can also increase feelings of stress, anger, and sadness. These emotional states can, in turn, make sleeping even harder. Feeling extremely stressed out and having a negative emotional response to that stress is, in fact, the best predictor that a student will have sleep problems.[4] Loneliness and limited social contacts are also correlated with higher stress levels and poorer sleep.[5]

Poor sleep is defined as getting fewer-than-recommended hours of sleep, having irregular bedtimes and rising times, and experiencing interrupted sleep. To improve your sleep and adopt better sleep habits,

- go to bed and wake up at as regular a time as possible;
- sleep in a room that is as quiet and dark as possible;
- get regular exercise but not too close to bedtime;
- avoid caffeine in the afternoon or evening;
- avoid taking naps;
- sleep where it is cool (not cold) and ventilated (but not drafty);
- avoid excess alcohol.

Sources:

1. National Sleep Foundation, "How Much Sleep Is Enough?" 2005. www.sleepfoundation.org.
2. J. Hawkins and P. Shaw, "Self-Reported Sleep Quality in College Students: A Repeated Measures Approach," *Sleep* 15, no. 6 (December 1992): 545–9.
3. Bruce Bower, "Sleeper Effects," *Science News* 165 (January 24, 2004): 53–54.
4. L. A. Verlander, J. O. Benedict, and D. P. Hanson, "Stress and Sleep Patterns of College Students," *Perceptual Motor Skills* 88, no. 3, pt. 1 (June 1999): 893–8.
5. S. D. Pressman and others, "Loneliness, Social Network Size, and Immune Response to Influenza Vaccination in College Freshman," *Health Psychology* 24, no. 3 (May 2005): 297–306.

and reactions to reduce the levels of stress you experience. For example, if you have a heavy academic workload, such as five term papers due for five different courses during the same quarter or semester, make a plan to start the papers early and space your work evenly so you can avoid panic over deadlines and all-night sessions to finish papers on time.

Change Your Response If something causes you distress—a habitually messy roommate, for example—you can (1) express your anger by yelling; (2) pick up the mess yourself but then leave a nasty note; or (3) use humor to get your point across. Your first inclination may be counterproductive, so stop and ask yourself, "What will I gain from this approach?" Then think through the most effective choice. This technique requires practice and emotional control but reaps a large benefit.

Cognitive Coping Strategies Thinking things through before acting may help you avoid destructive or ineffective responses to potentially stressful events. Forethought and planning can also

help you tolerate increasingly higher stress levels while limiting physical and mental wear and tear.

Prepare *Before* Stressful Events Preparing yourself for an event that you know will be stressful can diminish its impact. For example, suppose you are nervous about giving a speech. Practicing in front of friends or taping yourself with a video camera may help you find and correct rough spots, and in turn, lower your levels of stress during the actual speech. The important thing is making the effort to plan and prepare.

Downshift You may experience stress because you want to "have it all": a college diploma, a successful career, a family, a wide circle of friends, possessions, status in the community, and so on. But many people are starting to **downshift:** to step back to a simpler life by, for example, moving from a large urban area to a smaller town, from a hectic high-pressure career to a quieter one, or by scaling back to fewer, less-expensive possessions.

Consider some immediate and longer-term steps for simplifying your life:

- List and prioritize your goals. What must you do to reach your selected goals?
- Learn to say no. Decide who you want and need to spend time with, and which requests you can and cannot accommodate.
- Write out a financial plan for paying off credit cards and existing debt, and avoid unnecessary spending.
- Choose a career that you enjoy for itself, not primarily for the salary it commands. Some lower-paying jobs are less stressful and allow more free time for relaxation.
- Establish a savings plan, no matter how small; having a reserve for emergencies and future plans can ease tension.
- Clean drawers, closets, and desktops of clutter. Having fewer unnecessary, unused items means keeping track and taking care of that much less.

SEEKING SOCIAL SUPPORT

Making, keeping, and spending time with friends is a central stress-management tool that helps protect you against harmful stressors. Social interactions are such important buffers against the effects of stress that a person who is well-integrated socially is only half as likely to die from any cause at any age than is a person with few or no sources of social support.[25] This makes social connections a factor as large as being a nonsmoker versus a smoker! Married people are healthier and live longer than single or divorced people, and researchers attribute most of this effect to stress reduction.[26] Compared to students with a network of friends, lonely students experience more stress, poorer moods, and lower quality sleep.[27]

While friends can be important stress reducers, people sometimes need the help of a counselor or support group. Most colleges and universities offer counseling services at no cost for short-term crises. Clergy, instructors, and dorm supervisors also may be helpful resources. If university services are unavailable or if you are concerned about confidentiality, most communities offer low-cost counseling through mental health clinics. You may also be able to find and join a stress-reduction program or stress support group through one of these professional resources. Many individual counselors and stress-reduction classes teach tools like relaxation breathing, progressive muscle relaxation, mindfulness meditation, and cognitive stress reduction techniques to help you learn to change your thinking, behavior, or emotions. These help control your experience of stress and actually reduce stress hormone levels, and by so doing, slow the heart rate, relax the muscles, boost immunity, and help balance brain chemistry.

RELAXATION TECHNIQUES

Relaxation techniques tend to focus the mind and breathing while the body remains fairly stationary. Here are some of the most popular examples.

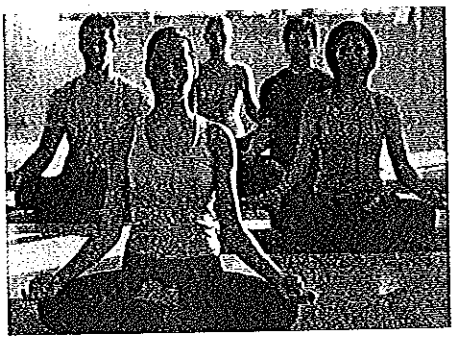
Relaxation Breathing When we're tense, we often breathe shallowly in the upper chest or even hold our breath, but this kind of breathing can increase anxiety.[28] **Relaxation breathing**—inhaling deeply, rhythmically, and involving the abdominal muscles—can help relieve tension and increase oxygen levels in the blood. This, in turn, can boost energy and sharpen thinking. Relaxation breathing, also called

downshifting Forging new values that include stepping back to a simpler life

relaxation breathing Inhaling deeply and rhythmically, and expanding then relaxing the abdomen; this breathing technique can help relieve tension and increase oxygen intake

TOOLS FOR CHANGE

MINDFULNESS MEDITATION



Meditation is a centuries-old practice that can promote relaxation, lessen damage from chronic stress, and help prevent stress-related illnesses. One of the easiest forms of meditation is called *mindfulness meditation,* which cultivates awareness, calms the body, and stops the mind from racing—at least for a while. You can start learning mindfulness meditation with 5-minute sessions, then build to frequent or daily sessions of 30 minutes or more. Many people find that meditating with a partner or in a small group helps reinforce their practice.

The following specific steps work for many beginning and experienced meditators.[1]

1. In a quiet place, sit cross-legged on the floor or upright in a chair, back straight but not stiff.
2. With eyes closed, breathe in slowly and fully and notice the sensation of air moving in and out of your nose, breathing passages, and lungs. Focus carefully on the abdomen rising. Then breathe out and note the abdomen falling. It helps some people to say silently, "Rising, rising . . . falling, falling . . ."
3. As you sit, you will inevitably experience sounds, smells, tastes, and other sensations. As they come up, notice them and label them (for example, "hearing, hearing . . ."). Then, gently return your concentration to your breathing and the rising and falling of your abdomen.
4. As you sit, your mind will inevitably become active with thoughts, images, plans, or worries. Notice them and label them (for example, "thinking, thinking . . .") and then return your focus to your breathing.
5. After meditating, open your eyes. Rise slowly and carefully, being aware of all the small changes in posture, movement, and effort.

Source: Sayadaw U Pandita Bhivamsa, "The Way to Practice Vipassana Meditation," www.Realization.org, May 20, 2000.

diaphragmatic breathing, is easy and can be done sitting in a chair or lying down, alone or in a small group, and for a few minutes or for a half hour or more. The object is to expand the chest fully by drawing downward with the diaphragm and outward with the abdomen, then releasing fully. Yoga, tai chi, meditation, and most other relaxation techniques rely on this or some similar form of deep, rhythmic breathing.

Progressive Muscle Relaxation **Progressive muscle relaxation (PMR)** identifies tension stored in the muscles and releases it, muscle group by muscle group. To do PMR, lie down in a quiet, comfortable place and devote 10 or 20 minutes to gradually letting go of accumulated stiffness and tension in the affected muscles. ***Lab10.2*** teaches a simple method of tensing then relaxing isolated muscle groups. It will also teach you the specific order of muscle groups to follow. You can do this alone or in a group as a way to relax and refresh yourself fully. Some people also use it as a means of falling asleep.

progressive muscle relaxation (PMR) A stress-management technique that identifies tension stored in the muscles and releases it, one muscle group at a time

biofeedback A stress-management technique that teaches you to alter automatic physiological responses such as body temperature, heart rate, or sweating; uses a machine to monitor such responses and measure the success of conscious control attempts

Meditation There are dozens of forms of meditation, but most involve sitting quietly for 15 to 30 minutes and focusing on deep breathing. Some involve assuming a particular posture like sitting cross-legged with back straight and hands resting gently on the thighs. Researchers have confirmed that meditation reduces the stress response and boosts the immune response.[29] Meditation also shifts brain activity from the right prefrontal lobe, associated with unhappiness, anger, and distress, and toward the left prefrontal lobe, associated with happiness and enthusiasm. The box **Tools for Change: Mindfulness Meditation** presents one of the easiest-to-learn meditation techniques.

Biofeedback **Biofeedback** involves monitoring physical stress responses such as brain activity, blood pressure, muscle tension, or heart rate with a special machine and then learning to consciously alter these responses. Biofeedback is effective for several stress-related conditions, including high

blood pressure, headaches, irritable bowel syndrome, and asthma.[30]

Hypnosis **Hypnosis** trains people to focus on one thought, object, or voice and to become unusually responsive to suggestion. A qualified hypnotherapist can implant a suggestion that directs a patient to resist habits such as smoking or overeating or to lessen phobias such as fear of snakes or air travel. The patient then learns to induce a state of self-hypnosis as a way to relax deeply and reinforce the behavioral changes.

People who get regular physical exercise and also practice one or more of these relaxation methods—relaxation breathing, progressive muscle relaxation, meditation, biofeedback, and hypnosis—can achieve very effective relief from stress symptoms.[31] Many will also see improvement in medical conditions that are worsened by stress.

MANAGING YOUR TIME, THOUGHTS, AND EMOTIONS

The world presents us with plenty of stressors. But we create some of our own as well through our ineffective time-management habits and our ways of thinking and reacting to events. Habits are learned behaviors, and you can *unlearn* or replace them with new habits that serve you better in managing stress. Here is what to aim for.

Manage Your Time Time—or our perceived lack of it—is one of our biggest stressors. If you learn to handle demands in a more streamlined, efficient way, you can leave more time for other things, such as studying and having fun. The following tips can help:

- **Assess how you spend your time.** How do you spend the 168 hours in your week? Try keeping a time journal for 1 week. Tabulate the time you spend in productive pursuits, the time spent relaxing, and the time you may be wasting. Look for ways to tip the balance toward productivity.
- **Prioritize your tasks.** Make a daily "to do" list of things you must do today, must do soon, or could do later, if at all. Rank and assign deadlines to the more important tasks.
- **Single-task or multitask when appropriate.** It is usually unproductive to try to make phone calls, clean the bathroom, and write your term paper all at once. Term papers are singular tasks. Save multitasking for things that take less concentration such as doing the laundry and paying bills.
- **Break up big tasks.** Divide big tasks like finishing a term paper into smaller segments, then allocate a certain amount of time to each piece. If you find yourself floundering in a task, move on and come back to it when you are refreshed.
- **Clean your desk.** Periodically weed out unneeded papers and file the useful ones in separate folders. Try to handle papers just once: When bills come in, for example, take care of them immediately. Promptly read, respond to, file, or toss the other mail into the recycle bin.
- **Accommodate your natural rhythms.** Schedule activities to coincide with the time you are at your best. If you are a morning person, study and write papers in the morning, and take breaks when you start to slow down.
- **Avoid overcommitment.** Set your school and personal priorities and don't be afraid to say no to things you cannot or should not agree to do.
- **Avoid interruptions.** When you have a project that requires total concentration, schedule uninterrupted time. Go to a quiet room in the library or student union where no one will find you. Shut off your cell phone and let it take messages.
- **Reward yourself.** When you finish a task early, take a break and do something enjoyable that helps you recharge and refresh your energy levels.

Manage Your Thinking Our "negative scripts" about ourselves contribute to our stress. When we see ourselves as unable to cope (that is, when we have low self-efficacy), we tend to handle life's problems and stresses more poorly. You can change negative scripts to more positive ones, however, and in the process reduce your stress responses. Successful stress management involves developing and practicing self-esteem skills, such as applying positive thinking and examining self-talk to reduce negative and irrational responses. Focus on your current capabilities rather than on past problems.

Here are specific actions you can take to develop better mental skills for stress management:

- **Worry constructively.** Don't waste time and energy worrying about things you can't change or events that may never happen.

hypnosis A medical and psychiatric tool that trains people to focus on one thought, object, or voice and to become unusually responsive to suggestion.

- **Perceive life as changeable.** If you accept that change is a natural part of living and growing, the jolt of changes will become less stressful.
- **Consider alternatives.** Remember, there is seldom only one appropriate action. Anticipating options will help you plan for change and adjust more rapidly.
- **Moderate your expectations.** Aim high but be realistic about your circumstances and motivation.
- **Don't rush into action.** Think before you act. Tolerate mistakes by yourself and others. Rather than getting angry and stressed by mishaps, evaluate what happened, learn from them, and plan to avoid future occurrences.
- **Live simply.** Eliminate unnecessary possessions and obligations.
- **Take things less seriously.** Think about the times that you have spent getting all worked up about some perceived interpersonal slight, or concerns over what others may think or say. Lighten up—try to keep the real importance of these things in perspective. Ask yourself: How much will this matter in two weeks? Six months?

Manage Negative Emotions and Anger

Stress management involves learning to identify emotional reactions that are based on irrational beliefs and negative self-talk. Identifying those can allow you to deal with the belief or emotion in a healthy and appropriate way.

Learning how to manage anger is particularly important. Anger can be constructive if it mobilizes us to stand up for ourselves or to accomplish something others think we are incapable of. However, a habit of responding angrily when our wants or desires are thwarted can be destructive. Because anger triggers the fight-or-flight response, people who manage anger poorly operate with the stress response turned on longer than necessary.

Hotheaded, short-fused people are at risk for health problems. Numerous studies show that anger can significantly increase the risk of heart disease. Stress hormones released during anger may constrict blood vessels in the heart or actually promote clot formation, which can trigger a heart attack.[32] Strategies for controlling and redirecting anger include learning to forgive and forget; practicing problem-solving techniques in place of complaining; seeking objective opinions and constructive advice from friends; anticipating situations that trigger your anger and brainstorming solutions in advance; learning to express your feelings constructively; learning to de-escalate from anger by taking deep breaths or counting to 10; and keeping a journal to observe your own reactions and progress in controlling anger.

SPIRITUAL PRACTICE

Several medical studies have discovered correlations between spirituality and wellness. For example, prayer elicits the same relaxation response attained through other stress-management techniques: lowered blood pressure, heart rate, breathing and metabolism, and a more vigorous immune response.[33] Spirituality is also correlated with a reduced *perception* of stress in one's life.

Developing one's spirituality can be more than just an internal process. It can also be a social process that enhances your relationships with others. The ability to give and take, speak and listen, and forgive and move on is integral to any process of spiritual development.

The above techniques are summarized in Figure 10.4.

CASE STUDY

Cory

"Life was getting ridiculous. I was exhausted but would have trouble falling asleep, so that was a vicious cycle. I gained weight because I stopped working out—which I used to do twice a week but just didn't have the time for anymore. And I caught another cold at the end of October. My dad started joking that he was healthier than I was! Something had to give, so I dropped my one elective—Spanish, which I love. And I started going back to the gym, which actually seemed to give me some energy back. I honestly think just those two things alone helped me to get through the rest of the semester. Now, if I can just ace my MCATs . . ."

1. What kinds of stress-related problems was Cory exhibiting?
2. Review the section on stress-management tools. Which strategies did Cory employ?
3. Which stress-management strategies do you use? What techniques seem to be the most effective for you?

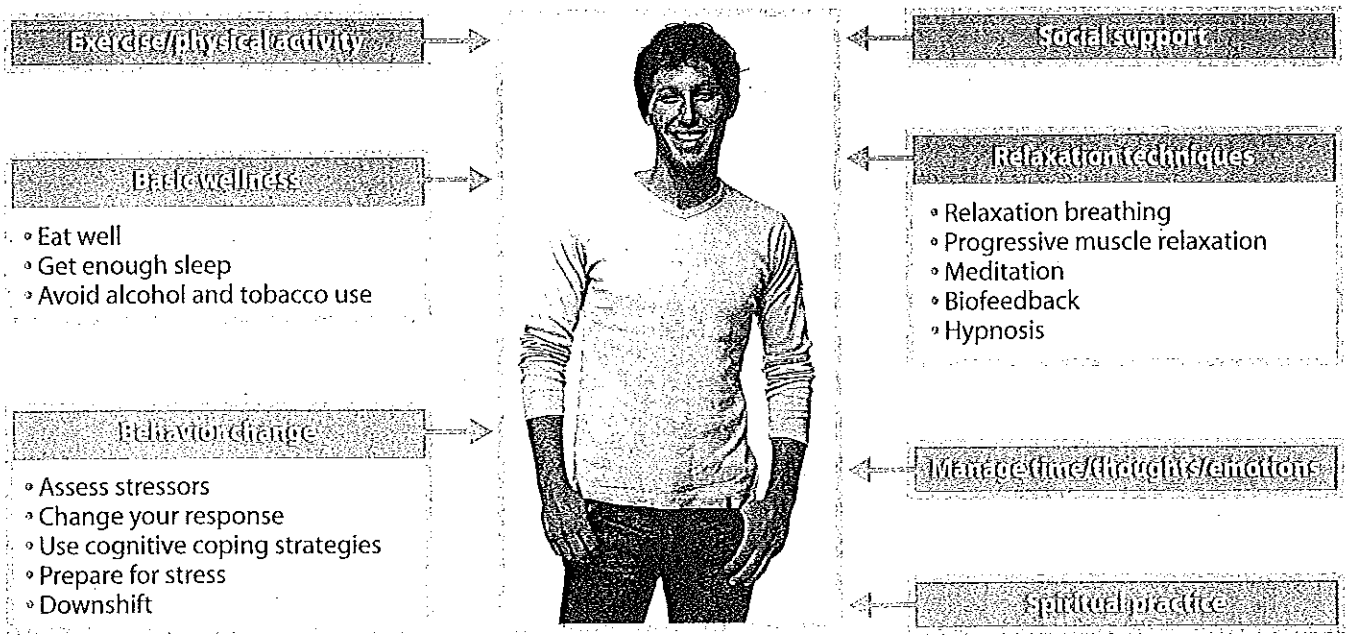


FIGURE 10.4

There are many effective techniques for helping you manage stress.

HOW CAN YOU CREATE YOUR OWN STRESS-MANAGEMENT PLAN?

You can use many of the fitness and wellness tools you read about in earlier chapters to help reduce your stress levels. These tools include self-assessment, drawing up a behavior change contract, and journaling.

STEP ONE: ASSESS YOURSELF

Lab 10.1 helps you assess situations that may leave you susceptible to stress. It also reveals signs of chronic stress. Using this information, target for change one or more behaviors that contribute to your increased stress.

Then, evaluate the behavior(s) you have chosen. Identify your stress-producing behavior patterns. What can you change now? What can you change in the near future?

STEP TWO: PLAN FOR CHANGE

Select one stress-producing behavior pattern that you want to change. Fill out the behavior change contract in Part V of ***Lab10.3***. As you learned earlier, your behavior change contract should include your long-term goal for change, your short-term goals, the rewards you will give yourself for reaching these goals, potential obstacles along the way, and strategies for overcoming these obstacles. Look for ways to apply wellness tools such as meditation, relaxation breathing, and progressive muscle relaxation (Lab 10.2).

STEP THREE: CHART YOUR PROGRESS

Chart your progress in your journal. At the end of a week, evaluate how successful you were in following your plan. What helped you be successful? What obstacles to change did you encounter? What will you do differently next week?

After you assess yourself, make a plan and revise it as needed. Are your short-term goals attainable? Are the rewards satisfying? Do you need to go beyond your own self-efforts and enlist the help of your peers or professionals? If you think you need professional support, start by consulting the student health service for advice and direction on finding suitable counselors, therapists, or stress-management support groups.