

The Use and Abuse of Tobacco

LEARNING OBJECTIVES

After completing the study of this concept, you will be able to:

- ▶ Identify the most widely used forms of tobacco and the contents of tobacco products that contribute to negative health outcomes.
- ▶ Describe the negative health and economic costs of cigarette and cigar smoking and smokeless tobacco use.
- ▶ Describe secondhand smoke and identify the negative health consequences of secondhand smoke exposure.
- ▶ Understand trends in the prevalence of tobacco use.
- ▶ Identify important factors contributing to recent reductions in tobacco use in the United States.
- ▶ Describe efforts by the tobacco industry to maintain higher rates of smoking.
- ▶ Identify effective prevention and intervention approaches designed to reduce rates of tobacco use.

Tobacco use is the number one cause of preventable disease and is associated with the leading causes of death in our culture.



Tobacco is the number 1 cause of preventable mortality in the United States. It is linked to most of the leading causes of death, and it leads to various other chronic conditions. Although rates of smoking in the United States have decreased in recent decades due to better awareness and a changed social norm concerning smoking and tobacco use, smoking is still a major public health problem. Today, 45 million adults in the United States smoke (approximately 22 percent of men and 17 percent of women). Worldwide, 6 million people die annually from smoking, with an estimated 8 million by the year 2030. According to a recent Gallup poll, most smokers (75 percent) would like to quit but find the grip of nicotine difficult to escape. This concept reviews the health risks of tobacco use and provides practical guidelines for quitting.



Tobacco and Nicotine

Tobacco and its smoke contain over 400 noxious chemicals, including 200 known poisons and 50 carcinogens. Tobacco smoke contains both gases and particulates. The gaseous phase includes a variety of harmful gases, but the most dangerous is carbon monoxide. This gas binds onto hemoglobin in the bloodstream and thereby limits how much oxygen can be carried in the bloodstream. As a result, less oxygen is supplied to the vital organs of the body. While not likely from smoking, overexposure to carbon monoxide can be fatal. The particulate phase of burning tobacco includes a variety of carbon-based compounds referred to as tar. Many of these compounds found in tobacco are known to be **carcinogens**. Nicotine is also inhaled during the particulate phase of smoking. Nicotine is a highly addictive and poisonous chemical. It has a particularly broad range of influence and is a potent psychoactive **drug** that affects the brain and alters mood and behavior.

Nicotine is the addictive component of tobacco.

When smoke is inhaled, the nicotine reaches the brain in 7 seconds, where it acts on highly sensitive receptors and provides a sensation that brings about a wide variety of responses throughout the body. At first, heart and breathing rates increase. Blood vessels constrict, peripheral circulation slows down, and blood pressure increases. New users may experience dizziness, nausea, and headache. Then feelings of tension and tiredness are relieved.

After a few minutes, the feeling wears off and a rebound, or **withdrawal**, effect occurs. The smoker may feel depressed and irritable and have the urge to smoke again. **Physical dependence** occurs with continued use. Nicotine is one of the most addictive drugs known, even more addictive than heroin or alcohol.

Smokeless chewing tobacco is as addictive (and maybe more so) as smoking and produces the same kind of withdrawal symptoms. Chewing tobacco comes in a variety of forms, including loose leaf, twist, and plug forms. Rather than being smoked, the dip, chew, or chaw stays in the mouth for several hours, where it mixes well with saliva and is absorbed into the bloodstream. Smokeless tobacco contains about seven times more nicotine than cigarettes, and more of it is absorbed because of the length of time the tobacco is in the mouth. It also contains a higher level of carcinogens than cigarettes.

Snuff, a form of smokeless tobacco, comes in either dry or moist form. Dry snuff is powdered tobacco and is typically mixed with flavoring. It is designed to be sniffed, pinched, or dipped. Moist snuff is used the same way, but it is moist, finely cut tobacco in a loose form and is sold in tea-bag-like packets.

The Health and Economic Costs of Tobacco

Tobacco use is the most preventable cause of death in our society. The 1964 landmark Surgeon General's report first called attention to the negative health consequences of smoking. It is now well established that tobacco use is the leading cause of death in the United States (accounting for nearly one in five of all deaths), contributing to 7 of the 10 leading causes of death. It is estimated that between 80 and 90 percent of all deaths related to lung cancer and obstructive lung disease are caused by smoking, and risk for coronary disease and stroke is two to four times higher among smokers. Further, new information about health risks continues to emerge. For example, a recent study found that risk for Alzheimer's disease was 157 percent higher among heavy smokers relative to nonsmokers. Another recent study provides the strongest evidence to date that smoking increases risk for breast cancer, particularly for women who begin smoking earlier in life. Thus, the number of diseases resulting from tobacco use is much more extensive than previously thought (see Figure 1).

One way to highlight the health risks associated with smoking is to examine the health benefits associated with smoking cessation. Estimates suggest that reducing serum cholesterol to recommended levels can increase life expectancy by about 1 week to 6 months. In contrast, smoking cessation may increase life expectancy by 2½ to 4½ years. The earlier people quit, the more years of life they save, with roughly 3 years saved for those who quit at 60 years of age, 6 years for those who quit at 50, and 9 years for those who quit at 40. The most effective way to reduce health risks associated with smoking is clearly

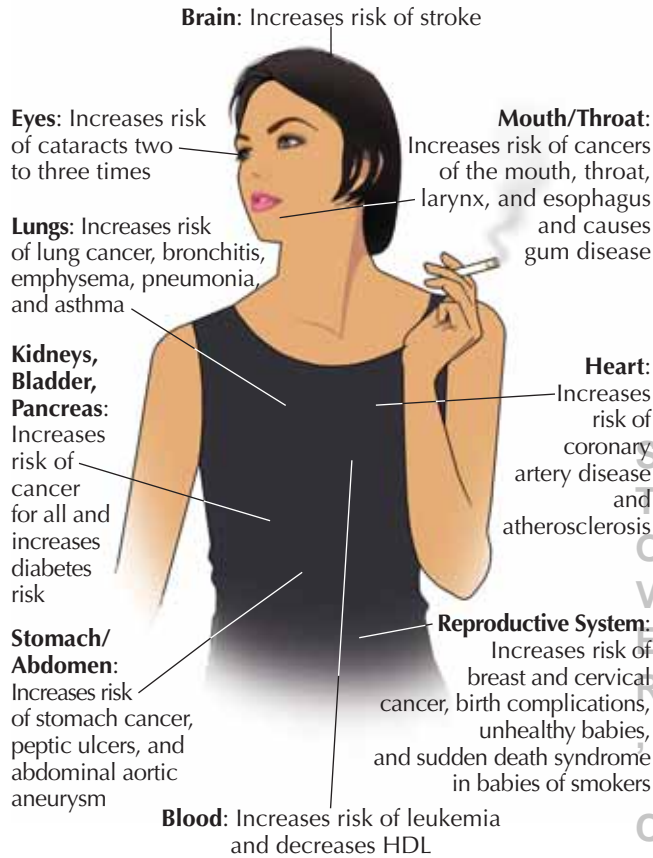


Figure 1 ► Unhealthy effects of smoking.

to quit; however, reducing how much one smokes also makes a difference. In one study, rates of lung cancer dropped by 27 percent among those who reduced their smoking from 20 or more to less than 10 cigarettes a day.

Smoking has tremendous economic costs. In addition to the cost of human life, smoking in the United States causes more than \$193 billion in annual health-related economic losses (\$97 billion in productivity losses and \$96 billion in health-care expenditures). Over and above the costs at the societal level, there are significant financial costs for the individual, particularly with increased taxes on tobacco products. In an effort to help smokers appreciate the financial burden of smoking, the American Cancer Society has a tool on its website that allows users to see how much they spend on cigarettes. For someone who smokes a pack a day for 10 years, the total would be more than \$20,000 based on current average cigarette prices.

The health risks from tobacco are directly related to overall exposure. In past years, tobacco companies denied there was conclusive proof of the harmful effects of tobacco products. Now, in the face of overwhelming

medical evidence, tobacco officials have finally conceded that tobacco is harmful to health. It is now clear that the more you use the product (the more doses), the greater the health risk. Several factors determine the dosage: (1) the number of cigarettes smoked; (2) the length of time one has been smoking; (3) the strength (amount of tar, nicotine, etc.) of the cigarette; (4) the depth of the inhalation; and (5) the amount of exposure to other lung-damaging substances (e.g., asbestos). The greater the exposure to smoke, the greater the risk.

While risks clearly increase with the amount of exposure, recent studies suggest that even low levels of smoking have negative consequences. Unfortunately, while overall rates of smoking have decreased in recent years, rates of nondaily smoking have increased. These “chip-pers” or “social smokers” have lower risk relative to regular smokers, but there are negative health consequences of even low levels of smoking. For example, one study found that smoking one to four cigarettes per day nearly triples the risk of death from heart disease. Short-term physical consequences of smoking include increased rates of respiratory infections and asthma, impairment of athletic performance, and reduced benefits and enjoyment associated with recreational exercise.

Cigar and pipe smokers have lower death rates than cigarette smokers but are still at great risk.

Cigar and pipe smokers usually inhale less and, therefore, have less risk for heart and lung disease, but cigarette smokers who switch to cigars and pipes tend to continue inhaling the same way. As the number of cigars smoked and the depth of smoke inhalation increase, the risk for death from cigar smoking approaches that of cigarette smoking. Cigar and pipe smoke contains most of the same harmful ingredients as cigarette smoke, sometimes in higher amounts. It may also have high nicotine content, leading to no appreciable difference between cigarette and pipe/cigar smoking with respect to the development of nicotine dependence. Cigar and pipe smokers also have higher risks for cancer of the mouth, throat, and larynx relative to cigarette smokers. Pipe smokers are especially at risk for lip cancer.

Carcinogens Substances that promote or facilitate the growth of cancerous cells.

Drug Any biologically active substance that is foreign to the body and is deliberately introduced to affect its functioning.

Withdrawal A temporary illness precipitated by the lack of a drug in the body of an addicted person.

Physical Dependence A drug-induced condition in which a person requires frequent administration of a drug in order to avoid withdrawal.

Secondhand smoke poses a significant health risk.

When smokers light up they expose those around them to **secondhand smoke**. Secondhand smoke is a combination of **mainstream smoke** (inhaled and then exhaled by the smoker) and **sidestream smoke** (from the burning end of the cigarette). Because sidestream smoke is not filtered through the smoker's lungs, it has higher levels of carcinogens and is therefore more dangerous. Although the negative consequences of secondhand smoke have been known for some time, a 2006 Surgeon General's report established in detail the health dangers of secondhand smoke. The following are the six major conclusions from the report (see Surgeon General's website):

- Millions in the United States are exposed to secondhand smoke despite progress in tobacco control.
- Secondhand smoke exposure leads to disease and early death.
- Infants and children are especially at risk of illnesses related to secondhand smoke.
- Adult secondhand smoke exposure contributes strongly to heart disease and lung cancer risk.
- Even brief secondhand exposure is harmful.
- Eliminating secondhand smoke indoors protects against harm, while separation of smoking and nonsmoking spaces does not.

connect
VIDEO 2



Awareness about the risks of secondhand smoke has contributed to changed social norms.

Women and children are especially susceptible to the negative effects of secondhand smoke.

Adolescents exposed to secondhand smoke may have five times the risk of developing metabolic syndrome, which increases risk for heart disease, stroke, and diabetes, and they are also at increased risk of becoming smokers themselves. Secondhand smoke can have a negative impact even when smokers try to protect children from exposure. A recent study found that babies of parents who only smoked outdoors had levels of cotinine (a nicotine by-product) seven times higher than babies of nonsmokers. This has been attributed to “thirdhand” smoke that may cling to clothing and hair. These findings have led to public health efforts to involve pediatricians in smoking cessation efforts, as parents generally see their child's pediatrician more often than their own doctor. Parents may also be more responsive to the message if they learn that smoking can hurt their children.

While not technically considered secondhand exposure, smoking during pregnancy harms a developing fetus. Children of smoking mothers typically have lower birth weight and are more likely to be premature, placing them at risk for a host of health complications. There is also a well-established relation between maternal smoking and risk for sudden infant death syndrome (SIDS). Finally, children of mothers who smoke are at increased risk for later physical problems (respiratory infections and asthma) and behavioral problems (attention deficit disorder). The best way to reduce risk for pregnant mothers and their children is for women to quit smoking altogether. However, there is some evidence that reductions in smoking also have benefits.

Secondhand smoke exposure may also negatively impact mental health.

A recent study using a national survey found a significant relation between cotinine levels, an indicator of secondhand smoke exposure, and depression. Among those who never smoked, risk for depression was substantially increased for those exposed to cigarette smoke in their home or at work. Other recent studies show that secondhand smoke increases the risk of memory problems among the elderly.

The health risks of smokeless tobacco are similar to those of other forms of tobacco.

Some smokers switch to smokeless tobacco, thinking it is a safe substitute for cigarette, cigar, and pipe smoking. While smokeless tobacco does not lead to the same respiratory problems as smoking, the other health risks may be even greater because smokeless tobacco has more nicotine and higher levels of carcinogens. Because it comes in direct contact with body tissues, the health consequences are far more immediate than those from

Table 1 ► Health Risks of Smokeless Tobacco

Smokeless tobacco increases the risk for the following:
• Oral cavity cancer (cheek, gum, lip, palate); it increases the risk by 4 to 50 times, depending on length of time used
• Cancer of the throat, larynx, and esophagus
• Precancerous skin changes
• High blood pressure
• Rotting teeth, exposed roots, premature tooth loss, and worn-down teeth
• Ulcerated, inflamed, infected gums
• Slow healing of mouth wounds
• Decreased resistance to infections
• Arteriosclerosis, myocardial infarction, and coronary occlusion
• Widespread hormonal effects, including increased lipids, higher blood sugar, and more blood clots
• Increased heart rate

smoking cigarettes. One-third of teenage users have receding gums, and about half have precancerous lesions, 20 percent of which can become oral cancer within 5 years. Some of the health risks of smokeless tobacco are listed in Table 1.

The Facts about Tobacco Usage

At one time, smoking was an accepted part of our culture, but the social norm has changed. While smoking has always been a part of our culture, the industrialization and marketing in the middle of the 20th century led to tremendous social acceptance of smoking. As odd as it may sound, cigarettes were once provided free to airline passengers when they boarded planes. The release of the Surgeon General’s report on smoking in 1964, aggressive and well-funded antismoking campaigns, and increases in cigarette prices have contributed to reductions in smoking in the United States.

Since the 1950s, the prevalence of smoking has steadily declined from a high of 50 percent. Based on data from the National Health Interview Survey, rates of smoking in the United States dropped from 25 percent in the late 1990s to 19 percent in 2010. Rates among young people (high school students) have dropped even more dramatically, from 36 percent to 20 percent. Unfortunately, decreases in smoking rates have slowed

considerably. Based on slow rates of decline in recent years (see Figure 2), it will take renewed efforts to meet the Health People 2020 goals of 16 percent for youth and 12 percent for adults. Although there is still much work to be done in the United States, the current situation is much more positive than for many other countries. While rates have been decreasing in the United States, they have been increasing in many others, particularly developing countries. Prevalence rates in China and many European countries greatly exceed those in the United States.

The use of smokeless tobacco is not as prevalent as smoking, but the National Institute on Drug Abuse estimates that nearly 9 million Americans (mostly males) have used smokeless tobacco in the past month. Young people are among the most frequent users, with 13.4 percent of high school boys reporting smokeless tobacco use. Unfortunately, decreases in smokeless tobacco use since the 1990s have been smaller than the decreases in smoking, and recently there have been increases in smokeless tobacco use. Between 2002 and 2008, the number of new smokeless tobacco users increased by 47 percent.

Most tobacco users begin “using” during adolescence and find it hard to quit. The initiation of smoking is viewed as a pediatric problem by most public health experts. Data from the National Survey on Drug Use and Health indicate that roughly 3,800 adolescents initiate cigarette use each day, with over 1,000

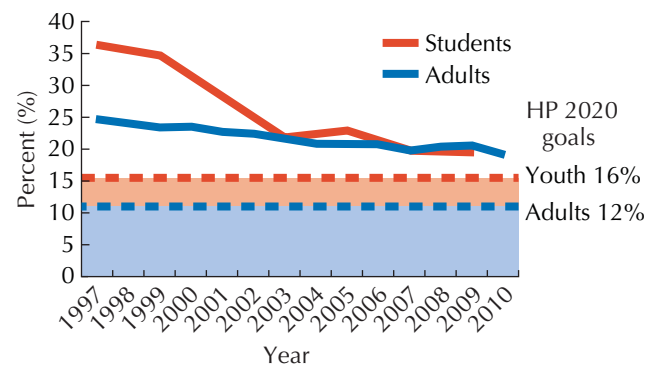


Figure 2 ► Trends in cigarette smoking.
Source: Centers for Disease Control and Prevention.

Secondhand Smoke A combination of mainstream and sidestream smoke.

Mainstream Smoke Smoke that is exhaled after being filtered by the smoker’s lungs.

Sidestream Smoke Smoke that comes directly off the burning end of a cigarette/cigar/pipe.

becoming daily smokers by age 18. Most adult smokers began smoking before age 21, and this group finds it particularly difficult to break the habit later in life.

Although most regular smokers begin in adolescence, a significant number start later in life, particularly during early adulthood (18–25). Unfortunately, the number of new smokers over age 18 increased from 600,000 in 2002 to 1 million in 2010. Smoking rates among college students are slightly lower than rates among high school seniors (16 versus 19 percent reported that they smoked in the past 30 days), and the rate is dramatically lower than the overall rate among young adults (about 22 percent). Smokeless tobacco use also begins early in life. Almost 50 percent of users report that they started before the age of 13, and initiation of smokeless tobacco use has nearly doubled between 2002 and 2008. The media play a role in promoting and preventing tobacco use (Figure 3). Much of the blame for tobacco use among youth is attributed to media campaigns of tobacco companies that target this age group. Lawsuits filed against tobacco companies have played an important role in decreased smoking rates in the United States. Money from state settlements have helped to fund smoking prevention programs and public education campaigns. The lawsuits also prevented companies from direct marketing to anyone under the age of 18. These lawsuits have also had an impact on public opinions of tobacco companies. Documents uncovered from the files of tobacco companies, during litigation against the companies, have contained incriminating evidence that has undermined the reputation of tobacco companies and contributed to unfavorable public attitudes.

Public policy can affect tobacco use. A number of states have passed special tax laws to fund anti-tobacco efforts. In addition to efforts at the state level, in 2009 federal taxes were raised from \$.39 to \$1.01 a pack. These tax increases have contributed to the dramatic decreases in smoking in recent years. There is, however, wide variability in state taxes resulting in prices of more than \$10 a pack in areas of New York, compared to prices of about \$5 a pack in many other states. Higher state tax rates have been shown to help reduce smoking rates.

Public health campaigns and policies influencing access have also been very effective in reducing smoking. Four states that have aggressive anti-tobacco campaigns reported a 43 percent decrease in tobacco use—double that reported by other states. According to the Substance Abuse and Mental Health Services Administration (SAMHSA), recent efforts to cut down on tobacco sales to minors have also been extremely effective. Rates of selling to minors decreased dramatically between 1997 and 2008, falling from 40.1 to 9.9 percent. Unfortunately, rates of sales to minors increased for the first time in 2009 (by 1 percent). The overall reductions in access have been correlated to usage so the policies have clearly had a positive



Figure 3 ► Warning label images.

Source: U.S. Food and Drug Administration.

effect. Bans on indoor smoking have also been important for reducing access and exposure. A total of 35 states now ban smoking in all restaurants, 30 ban smoking in bars, and 31 ban smoking in the workplace. A total of 25 states plus the District of Columbia are now smoke-free in all three settings. Including local bans by cities and counties, there are now over 21,000 indoor smoking laws in the United States. For additional information on smoking bans and policies, see A Closer Look.

Fortunately, recent efforts to limit exposure to secondhand smoke seem to be paying off. A recent review confirms that public smoking bans decrease rates of heart attacks. Researchers reviewed studies conducted in the United States, Canada, and Europe, and found that heart attack rates fell 17 percent within a year after implementing smoking bans. Although workplace smoking bans have focused on keeping smokers from smoking at work, employers have begun to encourage employees who smoke to quit altogether. Smokers suffer from more physical and mental health problems at a cost to



A CLOSER LOOK

Cigarette Taxes and Indoor Smoking Bans

Increased taxes and public smoking bans have contributed to overall decreases in smoking in the United States, but not all states have effectively used these approaches. In particular, states referred to as the “tobacco states” have shown considerably smaller decreases in smoking relative to most other states. The economy of these states is strongly tied to tobacco crops, creating competing interests between economic success and public health. An examination of tobacco taxes and smoking bans by state demonstrates that these states have made less of an effort to curb smoking rates.

How can states with a financial interest in tobacco become more engaged in public health efforts to reduce smoking rates? Should the federal government require taxes or allow states to decide?

connect
ACTIVITY

employers via higher health-care premiums. The CDC estimates the cost for smoking at over \$3,000 per smoker per year, including lost productivity and medical bills. Many employers, including the World Health Organization, now refuse to hire smokers, and many companies include smoking cessation in employee assistance programs to encourage smokers to quit. Recent evidence suggests that such programs can pay off for employers in as little as 2 years.



In the News

Battle over Cigarette Labels

In 2009, the Family Smoking Prevention and Tobacco Control Act was passed, giving the Food and Drug Administration (FDA) the authority to regulate tobacco products. One of the first major regulations was to ban the use of the terms *light*, *low tar*, or *mild* on cigarette labels. The tobacco companies have tried to work around the new regulation by using different colored packages for their *light* cigarettes and informing consumers about how to identify them. The second major regulation proposed by the FDA was to require graphic images accompanied by new warnings about the dangers of smoking on all cigarette packs. In June 2010, the FDA approved nine new labels (see Figure 3

for examples) that would cover half of each cigarette pack. The new labels were scheduled to take effect by October 2012. However, the tobacco industry fought back with a lawsuit and a U.S. district judge issued an injunction to block the implementation of the labels, stating that the FDA decision violated the First Amendment rights of tobacco companies. The FDA has since appealed this decision but the appeals process is likely to take years and may ultimately reach the Supreme Court.

Should the FDA be allowed to require these graphic labels on cigarette packs?

connect
ACTIVITY

HELP Health is available to Everyone for a Lifetime, and it's Personal

In the United States, most states have passed laws that ban smoking in workplaces, restaurants, and bars. Some states such as California have pushed for even more legislation that bans smoking in parks, beaches, and other outdoor spaces.

Do you support legislation to prevent smoking in most public places, including outdoor spaces?

connect
ACTIVITY

Tobacco companies are finding new ways to recruit tobacco users.

As expected, the tobacco industry has fought back after the many legal settlements. Since that time, the industry has nearly doubled its budget for advertising and promotions, with spending on advertising estimated at over \$10 billion per year. Tobacco companies have also provided discounts to offset increased taxes and are introducing new products and packaging to entice young smokers. For example, companies have released a form of dissolvable tobacco that comes in a candy-like pill form (e.g., Camel Orbs or Marlboro Snus). The pill dissolves and the user swallows the dissolved tobacco. Several companies have introduced “e-cigarettes,” electronic cigarettes that produce a puff of vapor containing nicotine and other additives. Critics have argued that e-cigarettes contain known carcinogens and should have the similar warning labels and regulations. Policies banning the sale and use of e-cigarettes have already been

connect
VIDEO 3

S
T
O
V
E
R
,
C
A
R
O
L
I
N
A
2
3
1
3
T
R

initiated. With a ban on obvious marketing to adolescents, tobacco companies' best legal target for promoting their products is now college students and other young adults. One approach they use to reach this audience is industry-sponsored parties at bars and nightclubs. In a national study of college students, nearly 1 in 10 reported attending industry-sponsored events. Students who had not smoked in high school but attended industry-sponsored events where free cigarettes were provided were nearly twice as likely to begin smoking.



Various factors influence a person's decision to begin smoking. The reasons for starting smoking are varied, but are strikingly similar to reasons given for using alcohol and other drugs (see Table 2). Many young women begin smoking because they believe it will help them control their weight and negative mood states. Some current smokers fear they will gain weight if they quit. Also, those who smoke report higher levels of stress, and stress has been shown to be a maintaining factor among current smokers and a barrier to quitting among those who want to stop smoking. The stress-management approaches introduced in the previous concept may help with managing stress more effectively during attempts to quit.

People who smoke cigarettes also tend to use alcohol, marijuana, and hard drugs. Alcohol has often been considered a gateway to other drug use, and marijuana is often thought of as a gateway to other drugs, such as cocaine and heroine. Although tobacco use has been studied less extensively as a gateway drug, there is strong evidence that smoking is associated with increased risk for the use of both alcohol and illicit drugs. The combination of smoking and drinking is particularly common in college students. Results of a nationally representative study of college students indicated that 97 percent of college smokers drink, while other national data report that 80 percent of all college students drink. Those who drink also report higher levels of smoking. Rates of smoking among college drinkers range from 44 to 59 percent (compared with a national

Table 2 ► Why Young People Start Using Tobacco

- Peer influence
- Social acceptance
- Desire to be “mature”
- Desire to be “independent”
- Desire to be like their role models
- Appealing advertisements

average rate of under 30 percent). The combination of alcohol use and smoking poses an even greater risk to physical health.

The addictive nature of nicotine makes it difficult to quit using tobacco. Salient examples of the power of nicotine addiction are high rates of continued use among those with serious smoking-related health consequences and low rates of success for quit attempts. In a study in 15 European countries, over half of adults who suffered from serious medical problems known to be associated with smoking (e.g., heart attack, bypass surgery) continued to smoke 1 year later. Data from the CDC found that more than half of the 45 million smokers in the United States in 2010 had tried to quit in the past year. Unfortunately, most of these attempts were unsuccessful. Most people make many attempts before they succeed. Withdrawal symptoms and cravings for nicotine are often cited reasons for failed quit attempts. Many former smokers report nicotine craving months and even years after quitting. The good news is that when you quit you may feel better right away and your body will heal. You will feel more energetic, the coughing will stop, you will suddenly begin to taste food again, and your sense of smell will return. Your lungs will eventually heal and look like the lungs of a nonsmoker.



TECHNOLOGY UPDATE

Social Media Applications for Smoking Cessation

The American Cancer Society introduced a new quitting program designed specifically for teens. The program includes a dedicated website (teen.smokefree.gov), texting support, and a smartphone application. Teens can connect with a counselor using instant messaging or their cell phones, and the website provides links to support groups through social networking sites, including Facebook and Twitter. To reduce defensiveness that is common in young people, the content of the webpage is designed to promote autonomy rather than lecturing to teens. For example, one of the slogans on the site is “We’re not going to tell you what to do.” The hope is that a program tailored to the unique developmental needs of teens will encourage more young people to quit early, before they become lifelong smokers.

Do you think that this type of Web-based program will be more attractive to young people?



Your risk for lung cancer will return to that of the non-smoker in about 15 to 20 years. If you aren't successful at first, keep trying, as most people eventually succeed (about 50 million adults in the United States are former smokers).

Exercise and medication can also help you quit.

Recent studies suggest that regular physical activity can reduce the health risks of smoking in two important ways. First, among smokers, those who regularly exercise may be at decreased risk for the development of cardiovascular disease due to improved peripheral blood flow. Perhaps more importantly, physical activity reduces the likelihood of relapse among those who quit. Nicotine replacement products (patches, gum, nasal sprays) and medications such as Zyban, have helped some smokers quit, but others fail to benefit from their use. Luckily, new options are becoming available. The drug Chantix, recently approved by the FDA, works differently than other products on the market by partially activating nicotinic receptors in the brain, which helps reduce the rewarding properties of smoking and decreases craving for nicotine. In one clinical trial, relative to a placebo, participants who received Chantix were roughly 2.5 times more likely to sustain abstinence for 6 months. Table 3 provides additional strategies that can increase your chances of quitting.

Table 3 ► Strategies for Quitting Smoking

- You must want to quit. The reasons can be for health, family, money, and so on.
- Remind yourself of the reasons. Each day, repeat to yourself the reasons for not using tobacco.
- Decide how to stop. Methods to stop include counseling, attending formal programs, quitting with a friend, going “cold turkey” (abruptly), and quitting gradually. More succeed with “cold turkey” than with the gradual approach.
- Remove reminders and temptations (ashtrays, tobacco, etc.).
- Use substitutes and distractions. Substitute low-calorie snacks or chewing gum, change your routine, try new activities, and sit in nonsmoking areas.
- Do not worry about gaining weight. If you gain a few pounds, it is not as detrimental to your health as continuing to smoke.
- Get support. Try a formal “quit smoking” program for professional help and seek support from friends and relatives.
- Consider a product that requires a prescription, such as a nicotine transdermal patch (Zyban) or nicotine chewing gum.
- Develop effective stress-management techniques. The single most frequently cited reason for difficulty in quitting smoking is stress.



Strategies for Action

Although quitting is ultimately up to you, that does not mean you have to do it alone. A number of national organizations provide telephone hotlines to help those trying to quit smoking. These include the American Cancer Society (1-877-YES-QUIT), the National Cancer Institute (1-877-44U-QUIT), and the CDC (1-800-QUIT-NOW). In addition, an online smoking program sponsored by several federal agencies is now available at www.smokefree.gov. The U.S. Public Health Service (USPH) has published a consumer's guide to quitting smoking. It has determined that the following five factors are associated with the likelihood of success:

1. Get ready.
2. Get support.
3. Learn new skills and behaviors.
4. Get medication and use it correctly.
5. Be prepared for relapse and difficult situations.

Lab 18A will help you evaluate your potential risks for smoking. If you are a smoker, an honest assessment of your background and exposure to tobacco is an important first step to quitting.

The USPHS consumer guide provides a list of questions you may want to ask yourself as you prepare to quit. This exercise may help you increase your motivation to change and decrease the likelihood of a relapse. You may want to talk about your answers with your health-care provider.

1. Why do you want to quit?
2. When you tried to quit in the past, what helped and what did not?
3. What will be the most difficult situations for you after you quit? How will you plan to handle them?
4. Who can help you through the tough times? Your family? Friends? Your health-care provider?
5. What pleasures do you get from smoking? In what ways can you still get pleasure if you quit?

Web Resources

American Cancer Society www.cancer.org
 American Heart Association www.americanheart.org
 Americans for Non-smokers' Rights www.no-smoke.org
 Campaign for Tobacco Free Kids www.tobaccofreekids.org
 Dr. Koop—Tackling Tobacco Abuse www.drkoop.com-search/tobacco
 National Center for Chronic Disease Prevention and Health Promotion: Tobacco Information and Prevention Source www.cdc.gov/tobacco
 Quitnet—a Free Resource to Quit Smoking www.quitnet.com
 Smoking Cessation Health Center from WebMD www.webmd.com/smoking-cessation
 Tobacco News and Information from Tobacco.org www.tobacco.org
 You Can Quit Smoking, Consumer Guide, U.S. Public Health Service www.surgeongeneral.gov/tobacco
 You Can Quit Smoking Now www.smokefree.gov

Suggested Readings

Bandiera, F. C., et al. 2010. Secondhand smoke exposure and depressive symptoms. *Psychosomatic Medicine* 72:68–72.
 Centers for Disease Control and Prevention. 2011. Trends in Current Cigarette Smoking among High School Students and Adults, United States, 1965–2010. Centers for Disease Control and Prevention. Available at www.cdc.gov/tobacco/data_statistics/tables/trends/cig_smoking/index.htm
 Johnston, L. D., et al. 2011. *Monitoring the Future: National Survey Results on Drug Use, 1975–2010, Volume I: Secondary School Students*. Ann Arbor, MI: Institute for Social Research.

Kaczynski, A. T., et al. 2008. Smoking and physical activity: A systematic review. *American Journal of Health Behavior* 32(1):93–110.
 Meyers, D. G., J. S. Neuberger, and J. He. 2009. Cardiovascular effect of bans on smoking in public places: A systematic review and meta-analysis. *Journal of the American College of Cardiology* 54:1249–1255.
 Rusanen, M., et al. 2011. Heavy smoking in midlife and long-term risk of Alzheimer Disease and Vascular Dementia. *Archives of Internal Medicine* 171:333–339.
 Substance Abuse and Mental Health Services Administration. 2011. *Results from the 2010 National Survey on Drug Use and Health: Summary of National Findings* (NSDUH Series H-41, HHS Publication No. (SMA) 11-4658). Rockville, MD: Substance Abuse and Mental Health Services Administration.
 Teague, M. L., et al. 2011. *Your Health Today: Choices in a Changing Society*. 3rd ed. New York: McGraw-Hill Higher Education, Chapter 13.
 U.S. Department of Health and Human Services. 2012. *Preventing Tobacco Use among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, GA: U.S. Department of Health and Human Services.
 Warner, K.E., et al. 2010. Tobacco control policy in developed countries: Yesterday, today, and tomorrow. *Nicotine & Tobacco Research* 12(9):876–887.
 World Health Organization. 2011. *WHO Report on the Global Tobacco Epidemic, 2011: Warning about the Dangers of Tobacco*. Geneva, Switzerland: World Health Organization.
 Xue, F., et al. 2011. Cigarette smoking and the incidence of breast cancer. *Archives of Internal Medicine* 171:125–133.

Healthy People

2020

The objectives listed below are societal goals designed to help all Americans improve their health between now and the year 2020. They were selected because they relate to the content of this concept.

- Reduce secondhand-smoke exposure.
- Increase the number of current smokers who try to quit.
- Reduce smoking during pregnancy.
- Increase the percentage of smoke-free homes.
- Reduce initiation of tobacco use among youth.
- Increase state and federal taxes on tobacco products.

- Reduce teen exposure to tobacco advertising.
- Increase tobacco screening in health-care settings.
- Increase indoor smoking bans in public places.

A key national goal is to reduce rates of smoking in young people as most chronic smokers begin in adolescence. Progress has been made toward this goal, but declines in youth smoking have slowed in recent years. What approaches do you think are likely to be most effective in preventing initiation of tobacco use in youth?

Lab 18A Use and Abuse of Tobacco

Name

Section

Date

Purpose: To understand the risks of diseases (such as heart disease and cancer) associated with the use of tobacco or exposure to tobacco by-products

Procedure

1. Read the Tobacco Use Risk Questionnaire (Chart 1).
2. Answer the questionnaire based on your tobacco use or exposure.
3. Record your score and rating (from Chart 2) in the Results section.

Results

What is your tobacco risk score? (total from Chart 1)

What is your tobacco risk rating? (see Chart 2)

Chart 1 Tobacco Use Risk Questionnaire

Circle one response in each row of the questionnaire. Determine a point value for each response using the point values in the first row of the chart. Sum the numbers of points for the various responses to determine a Tobacco Use Risk score.

Categories	Points					
	0	1	2	3	4	
Cigarette use	Never smoked		1–10 cigarettes a day	11–40 cigarettes a day	>40 cigarettes a day	
Pipe and cigar use	Never smoked	Pipe—occasional use	Cigar—infrequent daily use	Cigar or pipe—frequent daily use	Cigar—heavy use	
Smoking style	Don't smoke		No inhalation	Slight to moderate inhalation	Deep inhalation	
Smokeless tobacco use	Don't use	Occasional use: not daily	Daily use: one use per day	Daily Use: multiple use per day	Heavy use: repetitious, multiple use daily	
Secondhand or sidestream smoke	No smokers at home or in workplace	Smokers at workplace but not at home	Smokers at home but not workplace	Smokers at home and at workplace		
Years of tobacco use	Never used	1 or less	2–5	6–10	>10	

Note: Different forms of tobacco use pose different risks for different diseases. This questionnaire is designed to give you a general idea of risk associated with use and exposure to tobacco by-products.

Chart 2 Tobacco Use Risk Questionnaire Rating Chart

Rating	Score
Very high risk	16+
High risk	7–15
Moderate risk	1–6
Low risk	0

Conclusions and Implications

1. In several sentences, discuss your personal risk. If your risk is low, discuss some implications of the behavior of other people that affect your risk, including what can be done to change these risks. If your risk is above average, what changes can be made to reduce your risk?

2. In several sentences, discuss how you feel about public laws designed to curtail tobacco use. Discuss your point of view, either pro or con.

S
T
O
V
E
R
,
C
A
R
O
L

2
0
1
3
T
S

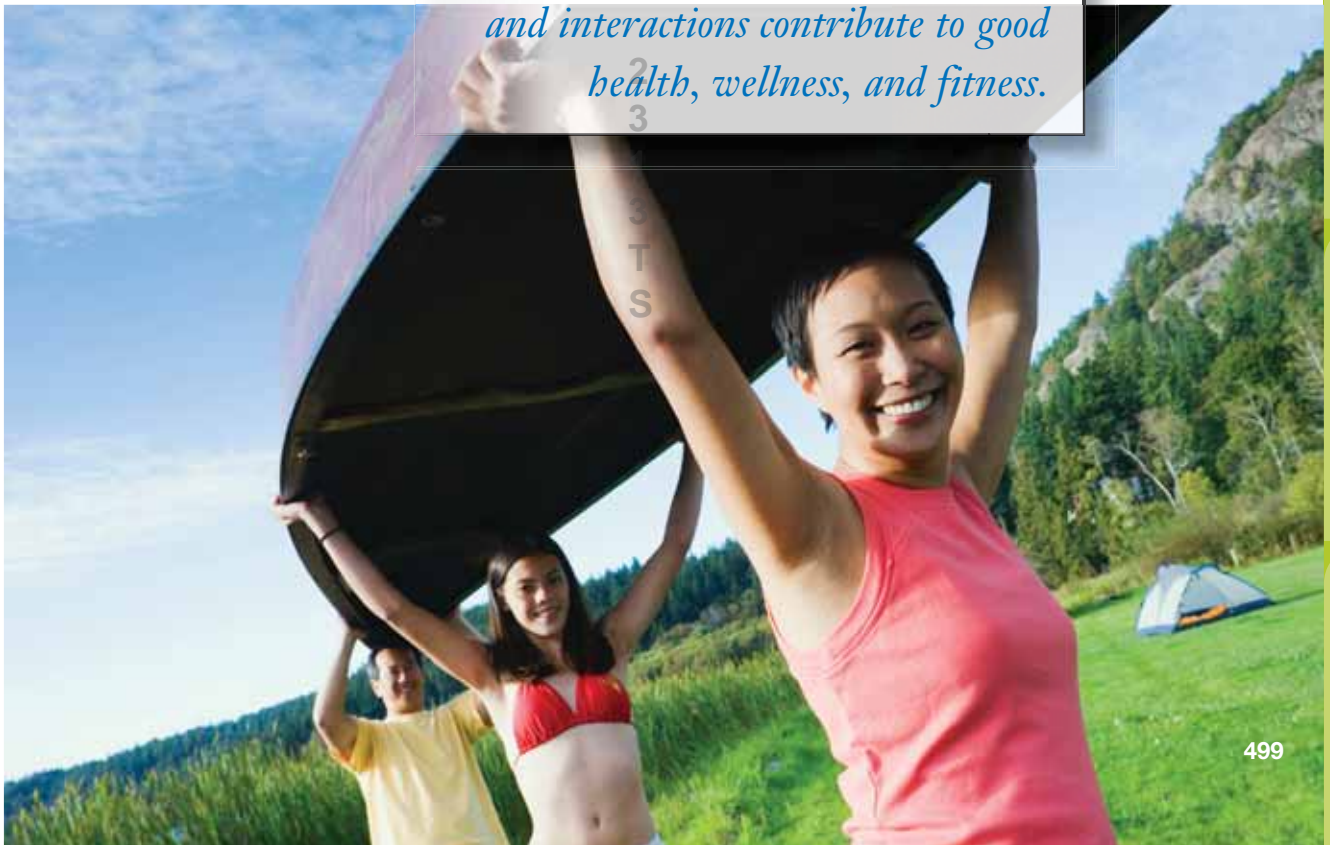
Toward Optimal Health and Wellness: Planning for Healthy Lifestyle Change

LEARNING OBJECTIVES

After completing the study of this concept, you will be able to:

- ▶ Assess inherited health risks.
- ▶ Describe how to access and use the health-care system effectively.
- ▶ Explain the importance of environmental influences on lifestyle (as well as the impact of our lifestyles on our environment).
- ▶ List the key healthy lifestyles that influence health and wellness.
- ▶ Explain how personal actions and interactions influence the adoption of healthy lifestyles.
- ▶ Apply behavioral skills to plan and follow personal health and fitness programs.

In addition to healthy lifestyles, other factors such as heredity, health care, the environment, cognitions and emotions, and personal actions and interactions contribute to good health, wellness, and fitness.



The broad vision of Healthy People 2020 is to create “a society in which all people live long, healthy lives.” Two major missions of the 2020 objectives are “to identify nationwide health improvement priorities and increase public awareness and understanding of the determinants of health, disease, and disability and the opportunity for progress.” The first concept in this book introduced you to a model that explained the many factors influencing health, wellness, and fitness (see Figure 1). The focus of this book has been on changing factors over which you have control. For this reason, much of the discussion has centered on changing lifestyles, because lifestyles impact health, wellness, and fitness more than any of the other factors. As shown in the figure, you have the most control over the lifestyles you lead, reasonable control over your cognitions/emotions, some control over your environment and use of health care, but relatively little control over heredity factors. This final concept provides information about these other factors and overall strategies for optimizing your health.



Understand Inherited Risks and Strengths

Learn about your family health history and take stock of inherited risk. Many health conditions and risks are linked to or influenced by your genetics. If members of your immediate or extended family have had specific diseases or health problems, you may have a greater risk or likelihood of the same condition. Your DNA contains the instructions for building the proteins that control the structure and function of all the cells in your body. Abnormalities in DNA can provide the wrong set of instructions and lead to faulty cell growth or function. There are clear genetic influences on risks for obesity, cardiovascular disease risk factors, diabetes, and many forms of cancer. At present it is not possible for people to truly know their genetic risk profile, but it may be possible in the future with more comprehensive genetic testing.

Take action to diminish risk factors for which you have a predisposition. As mentioned, research shows strong familial aggregation of certain chronic

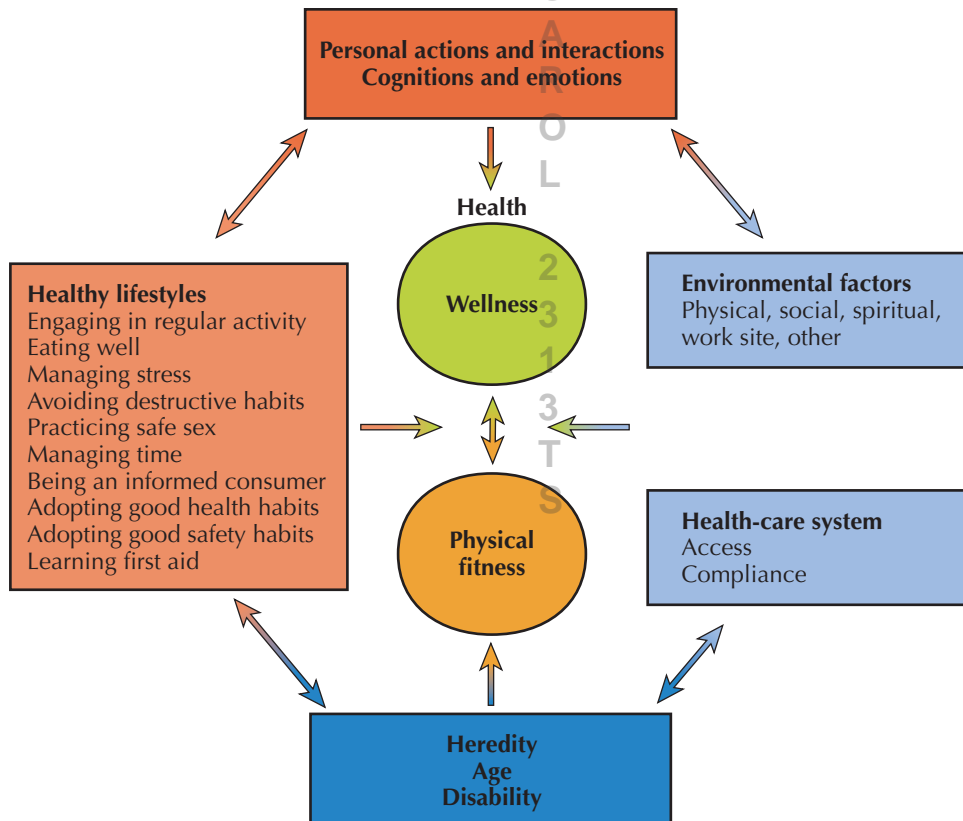


Figure 1 ▶ Determinants of health, fitness, and wellness.

disease risk factors (e.g., obesity, diabetes, cholesterol, blood pressure) as well as some cancers. While you cannot change your heredity risks, you can take steps to reduce your risks for certain inherited conditions. Specifically, adopting healthy lifestyles may significantly reduce inherited risks for certain diseases. A recent study computed obesity risk scores based on the presence or absence of 32 genes known to increase weight status. The genetic risk score was associated with an individual's inherited risk for being overweight but risk was influenced by lifestyle behaviors. An active lifestyle (marked by the presence of a brisk daily walk) reduced the genetic influence by 50 percent while a sedentary lifestyle (marked by watching television four hours a day) increased the genetic influence by 50 percent. Eating a healthy diet, managing stress, and not smoking are other key lifestyles that would likely contribute to lowering inherited risks for disease.

Use the Health-Care System Effectively

Follow sound medical advice and recommendations.

The medical system can provide individuals with supportive, personalized health care, but people have to seek consultation and follow advice for it to be effective (see Table 1). Some basic strategies for accessing the medical system effectively are summarized below:

- **Get medical insurance.** People who think they save money by avoiding the payment of insurance premiums place themselves (and their families) at risk and may not really save money.

Table 1 ► Facts about Personal Physicians and Health Insurance

- More women than men have a regular physician.
- More than half of young men have no personal doctor.
- Three times more women than men have visited a doctor in the past year.
- Women are more aware of health issues than men.
- Nearly half of men wait a week or more to see a doctor when ill.
- Many men see sickness as “unmanly.”
- Married men see doctors more frequently than single men because their wives prompt them.
- Lack of health insurance results in fewer doctor's visits, less frequent health screening, and less access to prescribed medicine.

- **Investigate and then identify a hospital and regular doctor.** Check with other physicians you know and trust for referrals. Check with your state medical board and national directories (e.g., Directory of Board Certified Medical Specialists, www.abms.org) for specialist certifications or fellowships. Choose an accredited emergency center near your home and a hospital that is accredited and grants privileges to your personal doctors.
- **Get periodic medical exams.** Do not wait until something is wrong before you seek medical advice. A yearly preventive physical exam is recommended for adults over the age of 40. Younger people should have an exam at least every 2 years.
- **Follow appropriate screening recommendations.** Many illnesses and chronic conditions can be effectively treated if they are identified early in the disease process. Following cancer screening guidelines is particularly important (e.g., mammograms for women and prostate tests for men). Breast and testicular self-exams are also important for detection.
- **Ask questions.** Do not be afraid to speak up. Prepare questions for doctors and other medical personnel. The American College of Surgeons suggests several questions before surgeries: What are the reasons for the surgery? Are there alternatives? What will happen if I don't have the procedure? What are the risks? What are the long-term effects and problems? How will the procedure impact my quality of life and future health?
- **Understand effects of medications.** Seek out information about medicines and supplements so you understand their intended effect. Read the inserts that come with the medicine and ask your doctor and pharmacist about correct dosage and information concerning when to take the medication. The FDA recently simplified drug inserts to help you understand the information that comes with medicine. Track your medicine and supplement use and share it with your physician.
- **Consider potential side effects of medicines you take.** Most medications are tested for use with certain populations and they may not be safe or effective for all people. Consider the safety and potential risks. Side effects from preventable adverse reactions to medicines account for more than 1.5 million deaths each year. When medicine is prescribed, ask for details. Ask why the medicine was prescribed and the nature of side effects. Ask if the medicine interacts with other medicines or supplements.
- **If you have doubts about medical advice, get a second opinion.** As many as 30 percent of original diagnoses are incorrect or differ from second opinions. Don't worry about offending your doctor by getting another opinion. Good doctors encourage this.



In the News

Does Zinc Help with Treatment of the Common Cold?

The common cold is one of the top causes of visits to the doctor and absenteeism from school and work. It is typically caused by the rhinovirus and there are no proven treatments. While colds may not be preventable, evidence has been accumulating on the benefits of taking supplemental zinc to shorten the length and severity of colds. A variety of products are available to provide supplemental zinc (e.g., Zicam), which is thought to work by slowing the replication of the virus. A respected Cochrane Review examined 25 years of research and concluded that zinc treatments are beneficial in reducing the duration and severity of the common

cold in healthy people when taken within 24 hours of onset of symptoms. A meta-analysis in the *Canadian Medical Association Journal* reviewed 17 controlled trials and reported that zinc shortened the duration of cold symptoms in adults by 2 to 3 days. Higher doses of zinc were also associated with better outcomes but surprisingly no effect was observed in children. The results are promising but additional trials are needed.

Would you consider using zinc supplements or do you need more evidence? Explain your answer and describe how you approach new health products or supplements that are being promoted.

connect
ACTIVITY

- **Make your wishes for health care known.** Have a medical power of attorney. This document spells out the treatments you desire in the case of severe illness. Without such a document, your loved ones may not be able to make decisions consistent with your wishes. Be sure your loved ones have a similar document so that you can help them carry out their wishes.

Become a wise health- and medical-care consumer.

Medical illiteracy and lack of health-care information are linked to higher than normal death rates. This is why improving medical literacy is such a high priority for public health officials. Some strategies for becoming a better health- and medical-care consumer are below:

- **Become familiar with the symptoms of common medical problems.** If symptoms persist, seek medical help. Many deaths can be prevented if early warning signs of medical problems are heeded.
- **Practice good hygiene.** The recent fears about dangerous versions of flu (e.g., H1N1) led to increased awareness about good hygiene. There was debate over whether regular hand washing impacts the spread of H1N1, but it is clearly the best defense against the common cold and other respiratory diseases. Always wash hands before preparing food or eating and after using the toilet, touching animals, handling garbage, coughing, or blowing your nose. Avoid sharing cups and utensils and use hand sanitizers when you don't have access to water.
- **Stay home when you are sick.** Most companies urge sick employees to stay home to prevent spreading illness to others. According to one survey, 40 percent of employees say they have gotten the flu at work. This is possibly because most workers feel guilty staying home or pressure to go to work even when sick. Sick workers are less productive, and working when sick lengthens recovery time.

S
T
O
V
E
R
C
H
O
S



Physical activity contributes to fitness, wellness, and quality of life.

- **Carefully review the credibility and accuracy of new health information.** As described in Concept 23, there are many examples of misleading claims and fraud in the health and fitness industry. Even news reports from credible scientific studies can exert too much influence on consumer decisions. It takes years for scientific consensus to emerge, so carefully review new health claims. (See In the News.)

Consider Environmental Influences on Your Health

Understand how environmental factors shape your behaviors. As described throughout the book, environmental factors influence your health and well-being. Experts in obesity research have coined the term *obesogenic environments* to specifically describe how aspects of our environment contribute to overeating and lack of physical activity. To live healthy, it is important to understand how environmental

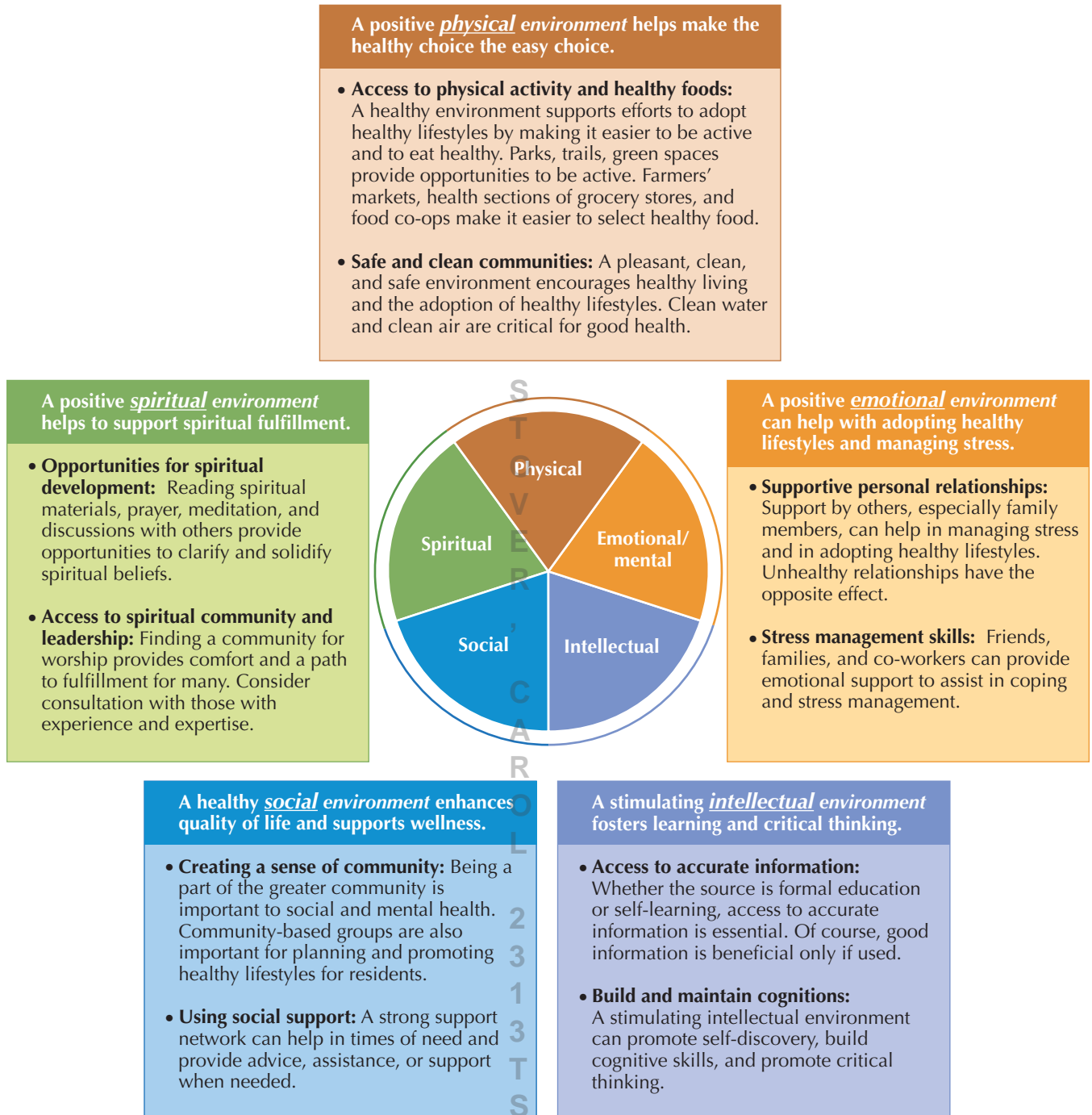


Figure 2 ► The influence of environmental factors on dimensions of wellness.

settings and factors influence our lifestyles. Figure 2 summarizes the broad impact of physical, spiritual, social, intellectual, and emotional environments on personal health and wellness. Specific environmental strategies that you can use for each dimension of wellness are listed below:

- **Strategies for the physical environment.** Living healthy in our modern society can be challenging, but this can

be overcome with good planning. Think ahead about ways to be sitting less during the day and how to add daily physical activity (e.g., commuting and walk breaks). Plan your meals and dining choices to ensure you can make healthier food choices. Avoid smoke-filled establishments, highly polluted environments, and use of toxic products.





A CLOSER LOOK

City, County, and State Health Ratings

Numerous organizations conduct surveys to determine which cities and states are the healthiest. All use indicators such as access to health care, percentage of people insured, health-care costs, resources (e.g., parks, work-site wellness programs), environmental quality, and personal fitness and health (e.g., percent of population that is overweight, access to fitness centers). Results vary depending on the organization doing the polling, the methods used to compile the data, and the indicators used. The rankings vary considerably but some consistent patterns emerge. In general, health status and wellness appear to be worst in the South. In contrast, health rankings tend to be higher in the West (i.e., mountain states), Midwest, and Northeast. A comprehensive review by the Robert Wood Johnson Foundation ranks the health of individual counties across the country based on objective health indicators. The Well-Being Index by Gallup-Healthways uses a detailed polling system to compare health status and well-being in states across the country. The American Fitness Index of the American College of Sports ranks cities based on availability and usability of physical activity resources.

Do you see any potential public health value by posting this type of information online?

connect
ACTIVITY

- **Strategies for the social and emotional environment.** Find a social community that accommodates your personal and family needs; get involved in community affairs, including those that affect the environment; build relationships with family and friends; provide support for others so that their support will be there for you when you need it; use time-management strategies to help you allocate time for social interactions.
- **Strategies for the spiritual environment.** Pray, meditate, read spiritual materials, participate in spiritual discussions, find a place to worship, provide spiritual support for others, seek spiritual guidance from those with experience and expertise, keep a journal, experience nature, honor relationships, help others.
- **Strategies for the intellectual environment.** Make decisions based on sound information, question simple solutions to complex problems, seek environments that stimulate critical thinking.

Choose to live and work in places that support healthy living. Environmental factors are often out of a person's control. However, you do have some autonomy regarding where you choose to live and work. If physical activity is important to you, find a community with parks and playgrounds and accessible sidewalks, bike paths, jogging trails, swimming facilities, a gym, or health club. Avoid environments that only have fast-food restaurants. Find a social environment that reinforces healthy lifestyles. If possible, work in businesses or settings that support healthy lifestyles. Ideally, the work environment should have adequate space, lighting, and freedom from pollution (tobacco smoke), as well as a healthy physical, social, spiritual, and intellectual environment. Considerable attention has been given recently to characteristics that define healthy work sites, communities, cities, and states (see A Closer Look). This is encouraging because the increased demand for healthy resources could lead to increased supply.

connect
VIDEO 3

Adopt and Maintain Healthy Lifestyles

Consider strategies for adopting healthy lifestyles.

Statistics show that more than half of early deaths are caused by unhealthy lifestyles. For this reason, changing lifestyles is the focus of this book. We emphasize priority healthy lifestyles such as being regularly active, eating well, managing stress, avoiding destructive behaviors, and practicing safe sex because they are factors over which we have some control, and if adopted, they have considerable impact on health, wellness, and fitness. (see Figure 1). Being an informed consumer is another healthy lifestyle emphasized in the book since it enables you to understand health information and take appropriate action. Other healthy lifestyles not emphasized in the book include adopting good health and safety habits and learning first aid. Examples of healthy lifestyles in these domains are highlighted in Table 2.

connect
VIDEO 4

Consider the impact of your lifestyle on the health of the environment.

The environment clearly influences your lifestyle, but your lifestyle can also have a damaging effect on the environment. Consider our use of fossil fuels. Burning fossil fuels has contributed to depletion of the ozone layer and the associated pattern of global warming. The changes in weather along with the pollution of our air and water compromise our agricultural systems, which in turn threatens our food and water supply. These are just a few examples of the complex

Table 2 ► Other Healthy Lifestyles

Lifestyle	Examples
<p><i>Adopting good personal health habits.</i> Many of these habits, important to optimal health, are considered to be elementary because they are often taught in school or in the home at an early age. In spite of their importance, many adults regularly fail to adopt these behaviors.</p>	<ul style="list-style-type: none"> • Brushing and flossing teeth • Regular bathing and hand washing • Adequate sleep • Care of ears, eyes, and skin • Limit exposure to loud sounds, including live and recorded music. • Limit sun exposure (e.g., wear protective clothing, hats, and sunglasses) and use sunscreen with high SPF to reduce exposure to ultraviolet rays from the sun.
<p><i>Adopting good safety habits.</i> Thousands of people die each year and thousands more suffer disabilities or problems that detract from good health and wellness. Not all accidents can be prevented, but we can adopt habits to reduce risk.</p>	<ul style="list-style-type: none"> • <i>Automobile accidents.</i> Wear seat belts, avoid using the phone while driving, do not drink and drive, and do not drive aggressively. • <i>Water accidents.</i> Learn to swim, learn CPR, wear life jackets while boating, do not drink while boating. • <i>Others.</i> Store guns safely, use smoke alarms, use ladders and electrical equipment safely, and maintain cars, bikes, and motorcycles properly.
<p><i>Learning first aid.</i> Many deaths could be prevented and the severity of injury could be reduced if those at the sites of emergencies were able to administer first aid.</p>	<ul style="list-style-type: none"> • Learn cardiopulmonary resuscitation (CPR). New research shows that chest compression alone saves lives even without mouth-to-mouth breathing. • Learn the Heimlich maneuver to assist people who are choking. • Learn basic first aid.



Make it a priority to find ways to remain active throughout your life.

E
R

C
A
R
R
O
L
L

2
3
1
3
T
S

ecological systems going on in the world. There are a number of promising strategies being implemented to address these problems, including the use of alternative energy sources to reduce our consumption of fossil fuels. While technology can solve some of the problem, we cannot completely heal the environment without major efforts from large segments of the population. Individually we can't change the world, but if each person makes small changes, we can together have a big impact. For example, individual efforts to use your car less, recycle, and use less paper can add up to larger changes in society. See Technology Update for an example of a novel, fitness-related technology that may help to change awareness about lifestyles and the environment.

Importance of Personal Actions and Interactions

Consider strategies for taking action and benefiting from personal interactions. The diagram in Figure 1 includes a box labeled “Personal actions and interactions” at the very top of the image. It is at the top for a reason—ultimately, it is what you do that counts. You can learn everything there is to know about fitness, health, and wellness, but if you do not take action and take advantage of your interactions with people and your environments, you will not benefit. As described in this concept (and throughout the book), your actions and interactions have a major influence on all aspects of wellness.

TECHNOLOGY UPDATE

Sustainable Exercise Machines

Interest in energy conservation has led to the development of exercise equipment that harnesses the energy you expend. One leading company (Plug Out Fitness) sells lines of exercise equipment that track energy savings in addition to energy consumption—rather than expending calories you are producing watts! According to estimates from the company, an average exerciser can produce 50 watts of electricity per hour when exercising at a moderate pace. The company believes it may be possible to use that energy by transferring it into the electrical grid. The movement is still in its infancy but there are already sustainable gyms and sustainable dance clubs that are powered by the exercisers in the facility.

Can you envision a future in which human energy is captured and used as part of a more sustainable environment?

connect
ACTIVITY

Table 3 ► Actions and Interactions That Influence Wellness

Dimension of Wellness	Influential Factors
Physical wellness	Pursuing behaviors that are conducive to good physical health (being physically active and maintaining a healthy diet)
Social wellness	Being supportive of family, friends, and co-workers and practicing good communication skills
Emotional wellness	Balancing work and leisure and responding proactively to challenging or stressful situations
Intellectual wellness	Challenging yourself to continually learn and improve in your work and personal life
Spiritual wellness	Praying, meditating, or reflecting on life
Total wellness	Taking responsibility for your own health

Commit to using this information to help plan your approaches for healthy living. (See Table 3.) People who plan are not only more likely to act; they are also more likely to act effectively and more proactively. Many people put off health and wellness, believing they will eventually be able to get control over their lives and their lifestyles. Delaying action will only make it harder to change in the future. As noted in Concept 15, it is

much easier to maintain a healthy weight than it is to lose weight after it is gained. This applies to all aspects of healthy living. Do not put off until tomorrow what you can do today. The information in the book can help you create plans for healthy living, but the decision to follow them is up to you.

Consider your cognitions and emotions when planning strategies for action. Much of the information in this book is designed to help you make good decisions about health, wellness, and fitness. Using the guidelines presented throughout this book and using self-management skills can help you make good decisions. As noted in Concept 1, it is also important to consider your emotions when making decisions. Consider these guidelines:

- **Collect and evaluate information before you act.** Become informed before you make important decisions. Get information from reliable sources and consult with others you trust.
- **Emotions will influence certain decisions but should not detract from sound decision-making processes.** Fear and anger are two emotions that can affect your judgment and influence your ability to make decisions. Even love for another person can influence your actions. Get control of your emotions, or seek guidance from others you trust, before making important decisions in emotionally charged situations.
- **Resist pressure to make quick decisions when there is no need to decide quickly.** Salespeople often press for a quick decision to get a sale. Take some time to think before making a quick decision that may be based on emotion rather than critical thinking. Of course, some decisions must be made when emotions are charged (e.g., medical care in an emergency), but, when possible, delaying a decision can be to your advantage.
- **Use stress-management techniques to help you gain control when you must make decisions in emotionally charged situations.** Practice stress-management techniques (see Concepts 16 and 17) so that you can use them effectively when needed.
- **Honor your beliefs and relationships.** Actions and interactions that are inconsistent with basic beliefs and that fail to honor important relationships can result in reduced quality of life.
- **Seek the help of others and provide support for others who need your help.** As already noted, support from friends, family, and significant others can be critical in helping you achieve health, wellness, and fitness. Get help. Do what you can to be there for others who need your help.
- **Consider using professional help.** Most colleges have health center programs that provide free, confidential assistance or referral. Many businesses have employee

HELP Health is available to Everyone for a Lifetime, and it's Personal

Some people rely on personal trainers to help motivate them to stay active. Health coaches and life planners are increasingly common for helping people learn how to live healthy and balanced lifestyles. These support systems can be useful, but the hope is that you now have the background and insights to do these things on your own. Motivation and confidence are important for adopting and maintaining a healthy lifestyle but there are no shortcuts or ways to store up good health in the bank. Healthy lifestyles must be maintained over time to provide continued benefits.

Do you have the skills to take responsibility for your health, fitness, and wellness?



assistance programs (EAP), providing counselors who will help you or your family members find ways to solve a particular problem. Other programs and support groups help with lifestyle changes. For example, most hospitals and many health organizations have hotlines that provide referral services for establishing healthy lifestyles.

Consider your personal beliefs and philosophy when making decisions. Though science can help you make good decisions and solve problems, most experts tell you that there is more to it than that. Your personal philosophy and beliefs play a role. The following are factors to consider:

- **Clarify your personal philosophy and consider a new way of thinking.** Health, wellness, and fitness are often subjective. Making comparisons to other people can result in setting personal standards impossible to achieve. For example, achieving the body fat of a model seen on TV or performing like a professional athlete is not realistic for most of us. For this reason, the standards for health, wellness, and fitness in this book are based on health criteria rather than comparative criteria. Adhering to the HELP philosophy can help you adopt a new way of thinking. This philosophy suggests that each person should use health (*H*) as the basis for making decisions rather than comparisons with others. This is something that everyone (*E*) can do for a lifetime (*L*). It allows each of us to set personal (*P*) goals that are realistic and possible to attain.
- **Allow for spontaneity.** The reliance on science emphasized in this book can help you make good choices. But if you are to live life fully, you sometimes must allow yourself to be spontaneous. In doing so, the key is to be consistent with your personal philosophy so that your spontaneous actions will be enriching rather than a source of future regret.
- **Believe that you can make a difference.** As noted previously, you make your own choices. Though heredity and several other factors are out of your control, the choices that you make are yours. Believing that your actions make a difference is critical to taking action and making changes when necessary, allowing you to be healthy, well, and fit for a lifetime.



Strategies for Action

Develop and follow a plan for healthy living.

You do not have full control over health and wellness factors, but it is important to take control over those you can. In Concept 2, you learned about the six steps involved in planning for a healthy lifestyle change. The labs at the end of this concept help you to use these six steps. Lab 24A helps you identify areas in which you especially need to prepare for lifestyle changes. Lab 24B helps you prepare for making lifestyle change from the list presented in Figure 1. Lab 24C is designed to help you plan a personal physical activity program. This lab utilizes results compiled from the fitness-related concepts in the book and provides a culminating personal fitness plan.



Formal steps can become less formal with experience. The labs in this concept use a structured approach to self-assessment and planning. It is important to learn this

process but it is likely that you will eventually adopt less formalized procedures on your own. Few of us will go through life doing formal fitness assessments every month, writing down goals weekly, or self-monitoring activity daily. However, the more a person does self-assessments, the more he or she is aware of personal fitness status. This awareness reduces the need for frequent testing. For example, a person who does regular heart-rate monitoring knows when he or she is in the target zone without counting heart rate every minute. The same is true of other self-management skills. With experience, you can use the techniques less formally to manage your lifestyle in the future.



Web Resources

Academy of Nutrition and Dietetics www.eatright.org
 ACSMs American Fitness Index www.americanfitnessindex.org
 American College Health Association www.acha.org
 American Heart Association (search CPR)
www.americanheart.org
 CDC Healthy Places Network www.cdc.gov/healthyplaces/
 County Health Rankings–Robert Wood Johnson Foundation
www.countyhealthrankings.org
 Gallup–Healthyways Well-Being Index www.well-beingindex.com
 Healthfinder www.healthfinder.gov
 Healthy People 2020 www.healthypeople.gov/hp2020
 Mayo Clinic www.mayoclinic.com
 National Health Interview Survey www.cdc.gov/nchs/nhis.htm
 Prevention Institute www.preventioninstitute.org/
 Research America www.researchamerica.org
 U.S. Consumer Information Center <http://publications.usa.gov/USAPubs.php>
 World Health Organization www.who.int

Suggested Readings

Boehm, J. K., and L. D. Kubzansky. 2012. The heart's content: The association between positive psychological well-being and cardiovascular health. *Psychological Bulletin*. Published online April 12.

Bray, S. R. 2007. Self-efficacy for coping with barriers helps students stay physically active during transition to their first year at a university. *Research Quarterly for Exercise and Sport* 78(1):61–70.

Central Intelligence Agency. 2012. *The World Fact Book*. Washington, DC: CIA.

Duhigg, C. 2012. *The Power of Habit*. New York: Random House.

Eime, R. M. 2010. Does sports club participation contribute to health-related quality of life? *Medicine and Science in Sports and Exercise* 42(5):1022–1028.

Nagao, K., et al. 2007. Cardiopulmonary resuscitation by bystanders with chest compression only (SOS-KANTO): An observational study. *Lancet* 369(9565):920–926.

Qi, Q., et al. 2012. Genetic predisposition to dyslipidemia and type 2 diabetes risk in two prospective cohorts. *Diabetes* 61(3):745–752.

Qi, Q., et al. 2012. Weight-loss diets modify glucose-dependent insulinotropic polypeptide receptor rs2287019 genotype effects on changes in body weight, fasting glucose, and insulin resistance: The Preventing Overweight Using Novel Dietary Strategies trial. *American Journal of Clinical Nutrition* 95(2):506–513.

Steptoe, A., and J. Wardle. 2011. Positive affect measured using ecological momentary assessment and survival in older men and women. *Proceedings of the National Academy of Sciences* 108(45):18244–18248.

Taylor, S. 2011. *Health Psychology*. 8th ed. New York: McGraw-Hill.

Trust for America's Health. 2008. *Blueprint for a Healthier America*. Washington, DC: Trust for America's Health.
 Available at <http://healthyamericans.org/report/55/blueprint-for-healthier-america>

World Health Organization. 2009. *Global Health Risks*. Geneva: WHO. Available at www.who.int/publications/en

Xu, J., and R. E. Roberts. 2010. The power of positive emotions: It's a matter of life or death—Subjective well-being and longevity over 28 years in a general population. *Health Psychology* 29(1):9–19.

Healthy People

2020

The objectives listed below are societal goals designed to help all Americans improve their health between now and the year 2020. They were selected because they relate to the content of this concept.

- Attain high-quality, longer lives free of preventable disease, injury, and premature death.
- Achieve health equity and eliminate disparities.
- Create healthy social and physical environments.
- Promote quality of life across all stages of life.
- Increase public awareness and understanding of the determinants of health, disease, and disability.
- Improve the health literacy of the population.
- Increase percentage of college students receiving information on priority risk-behavior areas.
- Increase percentage of people with health-care providers who involve them in decisions about health care.
- Increase recycling and environmental health efforts.
- Increase proportion of adults who have social support.

Two of the primary national health goals are “attaining high-quality life (wellness)” and “attaining longer lives free of preventable disease, injury, and premature death.” In Concept 1, you reflected on these two goals. Reflect again on these goals. What can you do to achieve these two goals for you personally and what can people do in general to accomplish them?

Lab 24A Assessing Factors That Influence Health, Wellness, and Fitness

Name

Section

Date

Purpose: To assess the factors that relate to health, wellness, and fitness

Chart 1 Assessment Questionnaire: Factors That Influence Health, Wellness, and Fitness

Factor	Very True	Somewhat True	Not True At All	Score
Heredity				
1. I have checked my family history for medical problems.	3	2	1	<input type="text"/>
2. I have taken steps to overcome hereditary predispositions.	3	2	1	<input type="text"/>
Heredity Score =				<input type="text"/>
Health Care				
3. I have health insurance.	3	2	1	<input type="text"/>
4. I get regular medical exams and have my own doctor.	3	2	1	<input type="text"/>
5. I get treatment early, rather than waiting until problems get serious	3	2	1	<input type="text"/>
6. I carefully investigate my health problems before making decisions.	3	2	1	<input type="text"/>
Health-Care Score =				<input type="text"/>
Environment				
7. My physical environment is healthy.	3	2	1	<input type="text"/>
8. My social environment is healthy.	3	2	1	<input type="text"/>
9. My spiritual environment is healthy.	3	2	1	<input type="text"/>
10. My intellectual environment is healthy.	3	2	1	<input type="text"/>
11. My work environment is healthy.	3	2	1	<input type="text"/>
12. My environment fosters healthy lifestyles.	3	2	1	<input type="text"/>
Environment Score =				<input type="text"/>
Lifestyles				
13. I am physically active on a regular basis.	3	2	1	<input type="text"/>
14. I eat well.	3	2	1	<input type="text"/>
15. I use effective techniques for managing stress.	3	2	1	<input type="text"/>
16. I avoid destructive behaviors.	3	2	1	<input type="text"/>
17. I practice safe sex.	3	2	1	<input type="text"/>
18. I manage my time effectively.	3	2	1	<input type="text"/>
19. I evaluate information carefully and am an informed consumer.	3	2	1	<input type="text"/>
20. My personal health habits are good.	3	2	1	<input type="text"/>
21. My safety habits are good.	3	2	1	<input type="text"/>
22. I know first aid and can use it if needed.	3	2	1	<input type="text"/>
Lifestyles Score =				<input type="text"/>
Personal Actions and Interactions				
23. I collect and evaluate information before I act.	3	2	1	<input type="text"/>
24. I plan before I take action.	3	2	1	<input type="text"/>
25. I am good about taking action when I know it is good for me.	3	2	1	<input type="text"/>
26. I honor my beliefs and relationships.	3	2	1	<input type="text"/>
27. I seek help when I need it.	3	2	1	<input type="text"/>
Personal Actions/Interactions Score =				<input type="text"/>

Procedures

1. Answer each of the questions in Chart 1 on page 509. Consider the information in this concept as you answer each question. The five factors assessed in the questionnaire are from Figure 1, page 500.
2. Calculate the scores for heredity (sum items 1 and 2), health care (sum items 3–6), environment (sum items 7–12), lifestyles (sum items 13–22), and actions/interactions (sum items 23–27).
3. Determine ratings for each of the scores using the Rating Chart.
4. Record your scores and ratings in the Results chart. Record your comments in the Conclusions and Implications section.

Results		
Factor	Score	Rating
Heredity		
Health care		
Environment		
Lifestyles		
Actions/interactions		

Rating Chart			
Factor	Healthy	Marginal	Needs Attention
Heredity	6	4–5	Below 4
Health care	11–12	9–10	Below 9
Environment	16–18	13–15	Below 13
Lifestyles	26–30	20–25	Below 20
Actions/interactions	13–15	10–12	Below 10

Conclusions and Implications

1. In the space below, discuss your scores for the five factors (sums of several questions) identified in Chart 1. Use several sentences to identify specific areas that need attention and changes that you could make to improve.

2. For any individual item on Chart 1, a score of 1 is considered low. You might have a high score on a set of questions and still have a low score in one area that indicates a need for attention. In several sentences, discuss actions you could take to make changes related to individual questions.

Lab 24B Planning for Improved Health, Wellness, and Fitness

Name

Section

Date

Purpose: To plan to make changes in areas that can most contribute to improved health, wellness, and fitness

Procedures

- Experts agree that it is best not to make too many changes all at once. Focusing attention on one or two things at a time will produce better results. Based on your assessments made in Lab 24A, select two areas in which you would like to make changes. Choose one from the list related to health care and environment and one related to lifestyle change. Place a check by those areas in Chart 1 in the Results section. Because Lab 24C is devoted to physical activity, it is not included in the list. You may want to make additional copies of this lab for use in making other changes in the future.
- Use Chart 2 to determine your Stage of Change for the changes you have identified. Since you have identified these as an area of need, it is unlikely that you would identify the stage of maintenance. If you are at maintenance, you can select a different area of change that would be more useful.
- In the appropriate locations, record the change you want to make related to your environment or health care. State your reasons, your specific goal(s), your written statement of the plan for change, and a statement about how you will self-monitor and evaluate the effectiveness of the changes made. In Chart 3, record similar information for the lifestyle change you identified.

Results

Chart 1

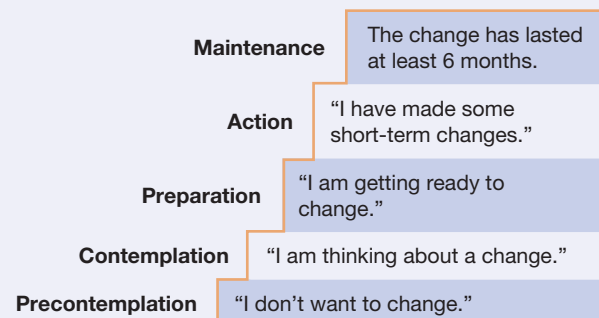
Check one in each column.

Area of Change	✓	Area of Change	✓
Health insurance		Eating well	
Medical checkups		Managing stress	
Selecting a doctor		Avoiding destructive habits	
Physical environment		Practicing safe sex	
Social environment		Managing time	
Spiritual environment		Becoming a better consumer	
Intellectual environment		Improving health habits	
Work environment		Improving safety habits	
Environment for lifestyles		Learning first aid	

Chart 2

List the two areas of change identified in Chart 1. Make a rating using the diagram at the right.

Identified Area of Change	Stage of Change Rating
1.	
2.	



Note: Some of the areas identified in this lab relate to personal information. It is appropriate not to divulge personal information to others (including your instructor) if you choose not to. For this reason, you may choose not to address certain problems in this lab. You are encouraged to take steps to make changes independent of this assignment and to consult privately with your instructor to get assistance.

Chart 3 Making Changes for Improved Health, Wellness, and Fitness

Describe First Area of Change (from Chart 1)

Step 1: State Reasons for Making Change

Step 2: Self-Assessment of Need for Change

List your stage from Chart 2.

Step 3: State Your Specific Goals for Change

State several specific and realistic goals.

Step 4: Identify Activities or Actions for Change

List specific activities you will do or actions you will take to meet your goals.

Step 5: Write a Plan; Include a Timetable

Expected start date:

Expected finish date:

Days of week and times: list times below days.

Mon. Tue. Wed. Th. Fri. Sat. Sun.

--	--	--	--	--	--	--	--

Location: Where will you do the plan?

Step 6: Evaluate Your Plan

How will you self-monitor and evaluate to determine if the plan is working?

Describe Second Area of Change (from Chart 1)

Step 1: State Reasons for Making Change

Step 2: Self-Assessment of Need for Change

List your stage from Chart 2.

Step 3: State Your Specific Goals for Change

State several specific and realistic goals.

Step 4: Identify Activities or Actions for Change

List specific activities you will do or actions you will take to meet your goals.

Step 5: Write a Plan; Include a Timetable

Expected start date:

Expected finish date:

Days of week and times: list times below days.

Mon. Tue. Wed. Th. Fri. Sat. Sun.

--	--	--	--	--	--	--	--

Location: Where will you do the plan?

Step 6: Evaluate Your Plan

How will you self-monitor and evaluate to determine if the plan is working?

S
T
C
V
E
R
,
C
A
R
O
L

Lab 24C Planning Your Personal Physical Activity Program

Name	Section	Date

Purpose: To establish a comprehensive plan of lifestyle physical activity and to self-monitor progress in your plan (note: you may want to reread the concept on planning for physical activity before completing this lab)

Procedures

Step 1. Establishing Your Reasons

In the spaces provided below, list several of your principal reasons for doing a comprehensive activity plan.

1.	4.
2.	5.
3.	6.

Step 2. Identify Your Needs Using Fitness Self-Assessments and Ratings of Stage of Change for Various Activities

In Chart 1, rate your fitness by placing an X over the circle by the appropriate rating for each part of fitness. Use your results obtained from previous labs or perform the self-assessments again to determine your ratings. If you took more than one self-assessment for one component of physical fitness, select the rating that you think best describes your true fitness for that fitness component. If you were unable to do a self-assessment for some reason, check the “No Results” circle.

Chart 1 Rating for Self-Assessments		Rating				
Health-Related Fitness Tests		High-Performance Zone	Good Fitness Zone	Marginal Zone	Low Zone	No Results
		1. Cardiovascular: 12-minute run (Chart 6, page 133)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Cardiovascular: step test (Chart 2, page 131)	2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Cardiovascular: bicycle test (Chart 5, page 133)	3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Cardiovascular: walking test (Chart 1, page 131)	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Cardiovascular: swim test (Chart 7, page 134)	3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Flexibility: sit-and-reach test (Chart 1, page 220)	S	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Flexibility: shoulder flexibility (Chart 1, page 220)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Flexibility: hamstring/hip flexibility (Chart 1, page 220)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. Flexibility: trunk rotation (Chart 1, page 220)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. Strength: isometric grip (Chart 3, page 190)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Strength: 1 RM upper body (Chart 2, page 188)		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Chart 1 Rating for Self-Assessments, *continued*

Health-Related Fitness Tests	Rating				
	High-Performance	Good Fitness	Marginal	Low	No Results
12. Strength: 1 RM lower body (Chart 2, page 188)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. Muscular endurance: curl-up (Chart 4, page 190)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. Muscular endurance: 90-degree push-up (Chart 4, page 190)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15. Muscular endurance: flexed arm support (Chart 5, page 190)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16. Fitness rating: skinfold (Chart 1, page 306)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17. Body mass index (Chart 7, page 311)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

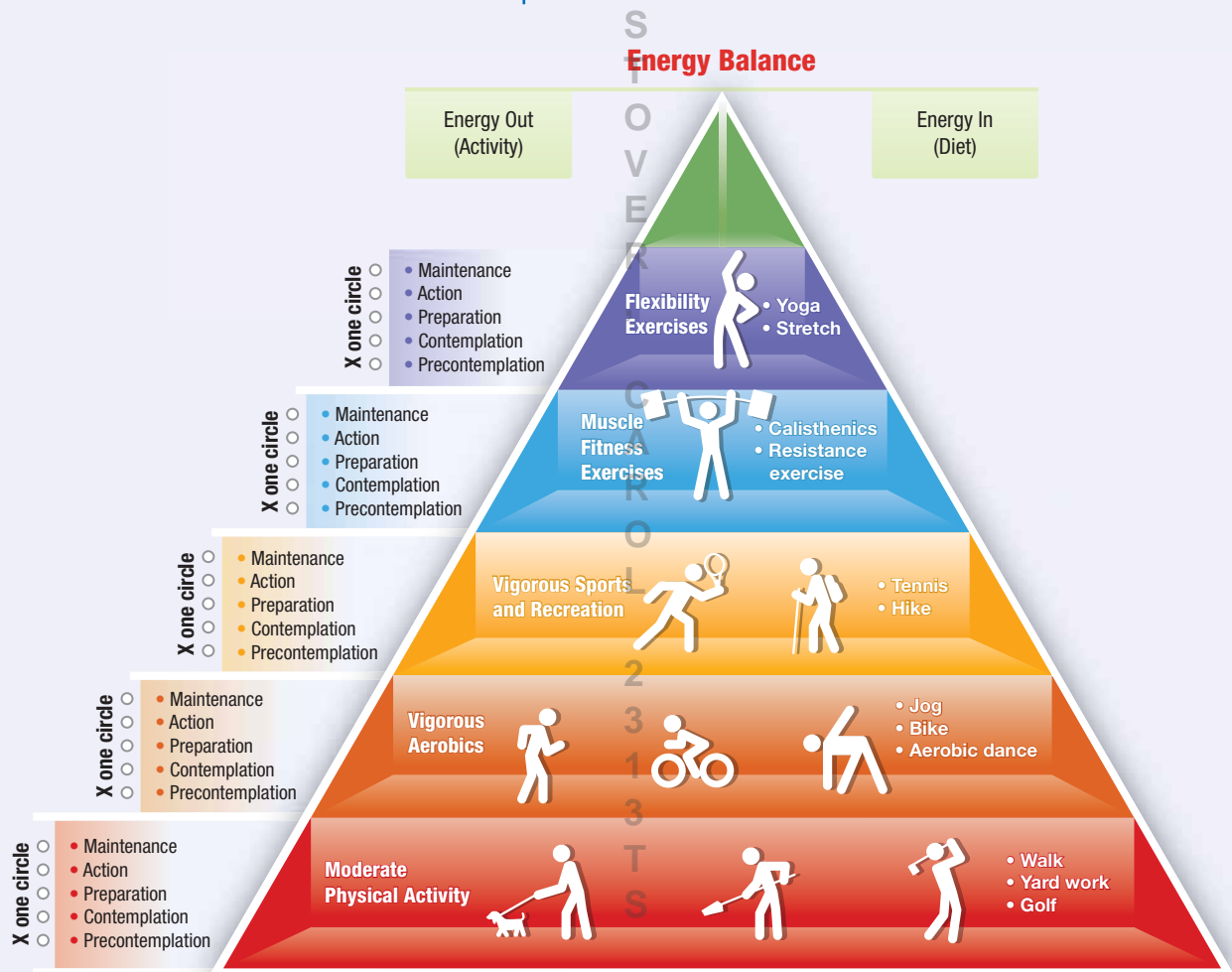
Skill-Related Fitness and Other Self-Assessments	STOVER, CARROLL	Rating				
		Excellent	Very Good or Good	Fair	Poor	No Results
1. Agility (Chart 1, page 281)	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. Balance (Chart 2, page 282)	2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. Coordination (Chart 3, page 282)	3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. Power (Chart 4, page 283)	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. Reaction time (Chart 5, page 283)	2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6. Speed (Chart 6, page 284)	3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. Fitness of the back (Chart 2, page 258)	1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8. Posture (Chart 2, page 261)	2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Summarize Your Fitness Ratings Using the Results Above	1 3 T S	Rating				
		High-Performance	Good Fitness	Marginal	Low	No Results
Cardiovascular		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Flexibility		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Strength		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Muscular Endurance		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Body fatness		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Skill-related fitness		Rating				
		Excellent	Very Good or Good	Fair	Poor	No Results
Skill-related fitness		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Posture and fitness of the back		<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Rate your stage of change for each of the different types of activities from the physical activity pyramid. Make an X over the circle beside the stage that best represents your behavior for each of the five types of activity in the lower three levels of the pyramid. A description of the various stages is provided below to help you make your ratings.

- Maintenance** "Regular participation for at least six months"
- Action** "Regular participation but less than six months"
- Preparation** "Some participation but not on a regular basis"
- Contemplation** "Thinking about doing this but have not done it yet"
- Precontemplation** "I don't want to change."



*150 minutes of moderate or 75 minutes of vigorous activity per week is recommended; moderate and vigorous activity can be combined to meet guidelines.

Avoid Inactivity

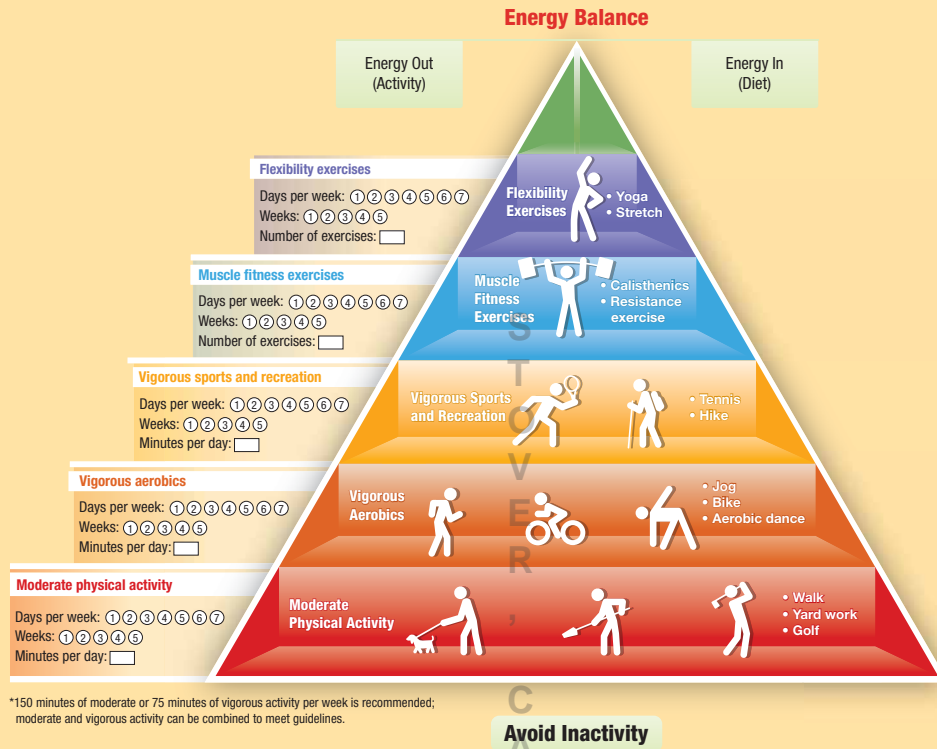
Source: C. B. Corbin

In Step 1, you wrote down some general reasons for developing your physical activity plan. Setting goals requires more specific statements of goals that are realistic and achievable. For people who are at the contemplation or preparation stage for a specific type of activity, it is recommended that you write only short-term physical activity goals (no more than 4 weeks). Those at the action or maintenance level may choose short-term goals to start with, or if you have a good history of adherence, choose long-term goals (longer than 4 weeks). Precontemplators are not considered because they would not be doing this activity.

Step 3. Set Specific Goals

Chart 2 Setting Goals

Physical Activity Goals. Place an X over the appropriate circle for the number of days and weeks for each type of activity. Write the number of exercises or minutes of activities you plan in each of the five areas.



Source: C. B. Corbin

Physical Fitness Goals (for People at Action or Maintenance Only). Write specific physical fitness goals in the spaces provided below. Indicate when you expect to accomplish the goal (in weeks). Examples include improving the 12-minute run to a specific score, being able to perform a specific number of push-ups, attaining a specific BMI, and being able to achieve a specific score on a flexibility test.

Part of Fitness	Description of Specific Performance	Weeks to Goal
<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 50%; height: 20px;" type="text"/>
<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 50%; height: 20px;" type="text"/>
<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 50%; height: 20px;" type="text"/>
<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 100%; height: 20px;" type="text"/>	<input style="width: 50%; height: 20px;" type="text"/>

Step 4. Selecting Activities

In Chart 3, indicate the specific activities you plan to perform from each area of the physical activity pyramid. If the activity you expect to perform is listed, note the number of minutes or reps/sets you plan to perform. If the activity you want to perform is not listed, write the name of the activity or exercise in the space designated as "Other." For lifestyle activities, active aerobics, and active sports and recreation, indicate the length of time the activity will be performed each day. For flexibility, muscle fitness exercises, and exercises for back and neck, indicate the number of repetitions for each exercise.

Chart 3 Lifetime Physical Activity Selections

✓	Lifestyle Activities	Min./Day	✓	Active Aerobics	Min./Day	✓	Active Sports and Recreation	Min./Day
	Walking			Aerobic exercise machines			Basketball	
	Yard work			Bicycling			Bowling	
	Active housework			Circuit training or calisthenics			Golf	
	Gardening			Dance or step aerobics			Karate/judo	
	Social dancing			Hiking or backpacking			Mountain climbing	
	Occupational activity			Jogging or running (or walking)			Racquetball	
	Wheeling in wheelchair			Skating/cross-country skiing			Skating	
	Bicycling to work or store			Swimming			Softball	
	Other:			Water activity			Skiing	
	Other:			Other:			Soccer	
	Other:			Other:			Volleyball	
	Other:			Other:			Other:	
	Other:			Other:			Other:	
	Other:			Other:			Other:	
	Other:			Other:			Other:	
✓	Flexibility Exercises	Reps/Sets	✓	Muscle Fitness Exercises	Reps/Sets	✓	Exercises for Back and Neck	Reps/Sets
	Calf stretch			Bench or seated press			Back saver stretch	
	Hip and thigh stretch			Biceps curl			Single knee to chest	
	Sitting stretch			Triceps curl			Low back stretch	
	Hamstring stretch			Lat pull down			Hip/thigh stretch	
	Back stretch (leg hug)			Seated rowing			Pelvic tilt	
	Trunk twist			Wrist curl			Bridging	
	Pectoral stretch			Knee extension			Wall slide	
	Arm stretch			Heel raise			Pelvic stabilizer	
	Other:			Half-squat skiing			Neck rotation	
	Other:			Lunge			Isometric neck exercise	
	Other:			Toe press			Chin tuck	
	Other:			Crunch or reverse curl			Trapezius stretch	
	Other:			Other:			Other:	
	Other:			Other:			Other:	
	Other:			Other:			Other:	

Step 5. Preparing a Written Plan

In Chart 4, place a check in the shaded boxes for each activity you will perform for each day you will do it. Indicate the time of day you expect to perform the activity or exercise (Example: 7:30 to 8 A.M. or 6 to 6:30 P.M.). In the spaces labeled “Warm-Up Exercises” and “Cool-Down Exercises,” check the warm-up and cool-down exercises you expect to perform. Indicate the number of reps you will use for each exercise.

Chart 4 My Physical Activity Plan

✓	Monday	Time	✓	Tuesday	Time	✓	Wednesday	Time
	Lifestyle activity			Lifestyle activity			Lifestyle activity	
	Active aerobics			Active aerobics			Active aerobics	
	Active sports/rec.			Active sports/rec.			Active sports/rec.	
	Flexibility exercises*			Flexibility exercises*			Flexibility exercises*	
	Muscle fitness exercises*			Muscle fitness exercises*			Muscle fitness exercises*	
	Back/neck exercises*			Back/neck exercises*			Back/neck exercises*	
	Warm-up exercises			Warm-up exercises			Warm-up exercises	
	Other:			Other:			Other:	
✓	Thursday	Time	✓	Friday	Time	✓	Saturday	Time
	Lifestyle activity			Lifestyle activity			Lifestyle activity	
	Active aerobics			Active aerobics			Active aerobics	
	Active sports/rec.			Active sports/rec.			Active sports/rec.	
	Flexibility exercises*			Flexibility exercises*			Flexibility exercises*	
	Muscle fitness exercises*			Muscle fitness exercises*			Muscle fitness exercises*	
	Back/neck exercises*			Back/neck exercises*			Back/neck exercises*	
	Warm-up exercises			Warm-up exercises			Warm-up exercises	
	Other:			Other:			Other:	
✓	Sunday	Time	✓	Warm-Up Exercises	Reps	✓	Cool-Down Exercises	Reps
	Lifestyle activity			Walk or jog 1–2 min.			Walk or jog 1–2 min.	
	Active aerobics			Calf stretch			Calf stretch	
	Active sports/rec.			Hamstring stretch			Hamstring stretch	
	Flexibility exercises*			Leg hug			Leg hug	
	Muscle fitness exercises*			Sitting side stretch			Sitting side stretch	
	Back/neck exercises*			Zipper			Zipper	
	Warm-up exercises			Other:			Other:	
	Other:			Other:			Other:	

*Perform the specific exercises you checked in Chart 3.

Step 6. Keeping Records of Progress and Evaluating Your Plan

Make copies of Chart 4 (one for each week that you plan to keep records). Each day, make a check by the activities you actually performed. Include the times when you actually did the activities in your plan. Periodically check your goals to see if they have been accomplished. At some point, it will be necessary to reestablish your goals and create a revised activity plan.

Results

After performing your plan for a specific period of time, answer the question in the space provided.

How long have you been performing the plan?

Conclusions and Implications

1. In several sentences, discuss your adherence to the plan. Have you been able to stick with the plan? If so, do you think it is a plan you can do for a lifetime? If not, why do you think you are unable to do your plan?

2. In several sentences, discuss how you might modify your plan in the future.

S
T
O
V
E
R
,
C
A
R
O
L

2
0
1
3
T
S

3. In several sentences, discuss your goals for your program. Do you think you will meet your goals? Why or why not?

S
T
O
V
E
R
,
C
A
R
O
L

2
3
1
3
T
S