



Health Psychology

Chapter No. 15

Exercising

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Exercising

What is exercising?

Exercise is the performance of some activity in order to develop or maintain **physical** fitness and overall health. Frequent and regular **physical exercise** is an important component in the prevention of some diseases such as heart disease, cardiovascular disease, Type 2 diabetes and obesity.

Types of Physical Activity

- ✚ **Isometric exercise** involves contracting muscles against an immovable object.
Although the body does not move in isometric exercise, muscles push hard against each other or against an immovable object and thus produce increases in strength.
➤ **Example:** Pushing hard against a solid wall is an example of isometric exercise.
- ✚ **Isotonic exercise** requires the contraction of muscles and the movement of joints.
Weight lifting and many forms of calisthenics fit into this category. Older people can profit from isotonic exercise, but many people in a weight-lifting program are bodybuilders interested in improving the appearance of their body rather than improving health.
- ✚ **Isokinetic exercise** is similar to isotonic exercise, except that isokinetic exercise involves exerting effort to move muscles and joints against a variable amount of resistance. Isokinetic exercise is an important adjunct in physical rehabilitation, helping injured people to regain strength and flexibility with more safety than other types of exercise.
- ✚ **Anaerobic exercises** require short, intensive bursts of energy but no increased amount of oxygen use. This form of exercise includes short-distance running, some calisthenics, softball, and other exercises that require intense, short-term energy.
- ✚ **Aerobic exercise** is any exercise that requires dramatically increased oxygen consumption over an extended period of time. Aerobic exercise includes jogging,


walking at a brisk pace, cross-country skiing, swimming, cycling, and other activities that increase oxygen consumption.

Reasons for Exercising

People exercise for a variety of reasons, some that are consistent with good health and some that are not. Reasons for adhering to a physical activity program include physical fitness, weight control, cardiovascular health, increased longevity, protection against cancer, prevention of osteoporosis, control of diabetes,

Physical Fitness

Fitness has both organic and dynamic aspects.

 **Organic fitness** is the capacity for action and movement that is determined by inherent characteristics of the body. These organic factors include genetic endowment, and health limitations.

 **Dynamic fitness** arises through physical activity, whereas organic fitness does not.

Two components of physical fitness are

1. Muscle strength
2. Muscle endurance.

Muscle strength is a measure of how strongly a muscle can contract. This type of fitness can come from isometric, isotonic, isokinetic, and to a lesser extent, anaerobic exercise. All these types of exercise have the capability to increase muscle strength because they involve contracting muscles. Slow and sustained stretching exercises promote muscle flexibility.

Flexibility

Flexibility is the range-of-motion capacity of a joint. The types of exercises that develop muscle strength and muscle endurance generally do not improve flexibility.

Aerobic Fitness

Of all the types of physical activity, aerobic exercise contributes most to cardiorespiratory fitness. When people acquire aerobic fitness, they improve cardiorespiratory health in several ways. First, they increase the amount of oxygen available during strenuous exercise, and second, they increase the amount of blood pumped with each heartbeat.

Weight Control

Obesity continues to be a worldwide problem. Many people adopt a sedentary lifestyle, spending much of their time watching television, viewing videos, playing computer games, surfing the Internet, and talking on cell phones. There is a link between these two phenomena, as research shows that physical activity contributes to weight control.

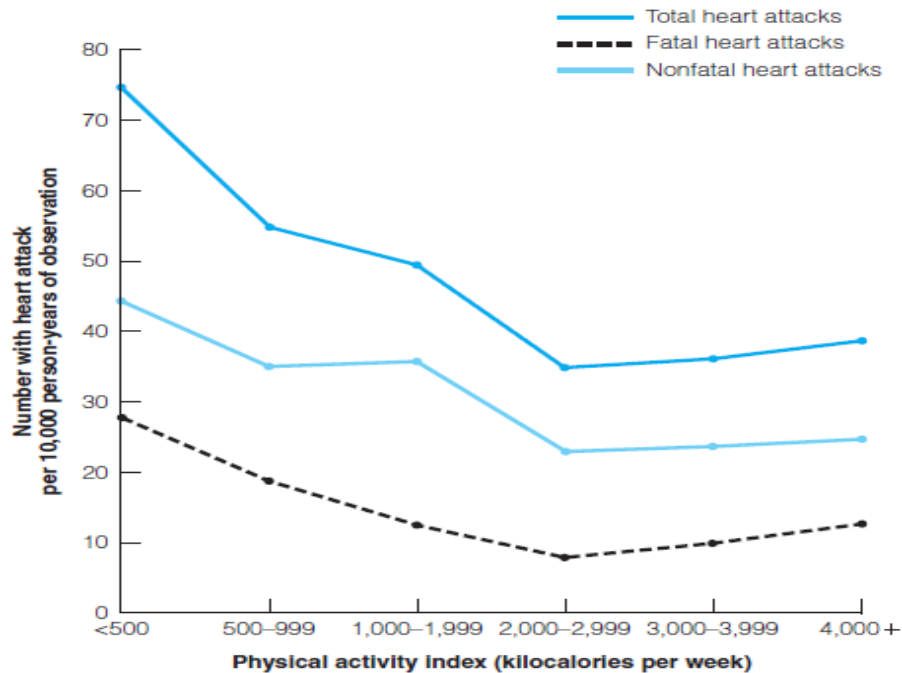
Inactive people who are concerned about weight and who have recently stopped smoking should strongly consider beginning a physical activity program.

“Steven Blair and Tim Church (2004) claimed that such an exercise program would be at least as effective as dieting in controlling weight and much better than dieting in changing the ratio of fat to muscle tissue. Exercise does not produce much weight loss through burning calories.”

- **Example:** 15 minutes of walking or cycling to and from work can be enough to reduce both cardiovascular mortality and all-cause mortality. However, the amount of exercise necessary to prompt weight loss is far greater.

Physical Activity and Cardiovascular Health

Nowadays, most people recognize the health benefits of physical activity. This knowledge, however, did not exist until relatively recently. During the early years of the 20th century, physicians often advised patients with heart disease to avoid strenuous physical activity, based on the belief that too much physical activity could damage the heart and threaten a person's life.



Other Health Benefits of Physical Activity

1. Protection Against Cancer
2. Prevention of Bone Density Loss
3. Control of Diabetes
4. Psychological Benefits of Physical Activity

Psychological Benefits of Physical Activity

1. Decreased depression
2. Reduced anxiety
3. Buffer against stress
4. Better cognitive functioning

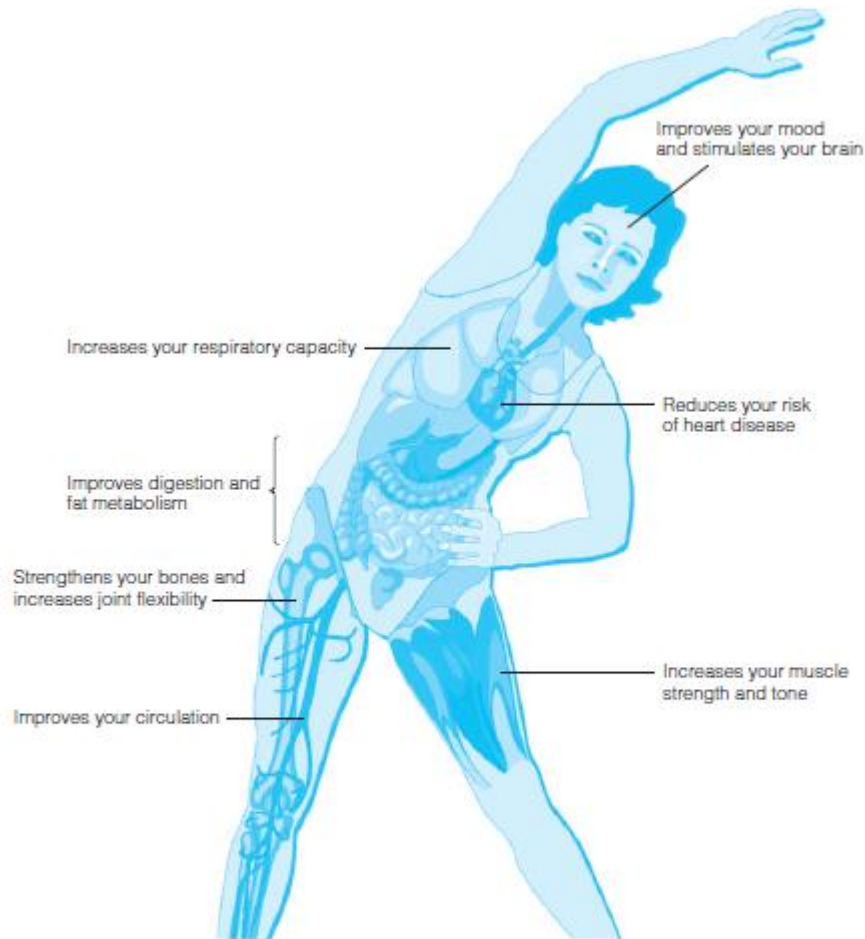


FIGURE 15.2 Some of the physical and psychological benefits of exercise.

Source: *An invitation to health* (7th ed., p. 498), by D. Hales, 1997, Pacific Grove, CA: Brooks/Cole. Copyright © 1997 by Brooks/Cole Publishing Company. Reprinted by permission.

Hazards of Physical Activity

Although physical activity can enhance physical functioning, reduce anxiety, stress, and depression, and improve cognitive functioning, it also poses hazards to one's physical and psychological health. Some athletes over train to the point of staleness and, as a consequence, suffer from negative mood, fatigue, and depression (Tobar, 2005).

In addition, some highly active people suffer from exercise-related injuries.

- **For example**, Tara Costa suffered a fractured tibia during her training for the Ironman Triathlon (Costa, 2010). Other people allow exercise to assume an almost addictive importance in their lives. In this section, we look at some of these potential hazards related to physical activity.

TABLE 15.1 Reasons for Exercising and Research Supporting These Reasons

Reasons for Exercising	Findings	Principal Source(s)
Weight control	Obesity can be reduced through exercise; 60 to 90 minutes a day may be necessary.	Hill & Wyatt, 2005; Jakick & Otto, 2005
Weight control	Exercise is as effective as dieting; sculpting the perfect body won't work.	Blair & Church, 2004; Wood et al., 1988
Heart disease and aerobic fitness	Light to moderate exercise provides sufficient protection.	Baerens et al., 2004; Paffenbarger et al., 1978
	Both physical fitness and physical activity have a dose-response relationship with aerobic health.	Blair et al., 2001
	Walking confers benefits for older people.	Murphy et al., 2007
Stroke	Active women reduce risk of stroke.	Hu et al., 2000
	Inactive people are more likely to have strokes.	Krump et al., 2007
	Physical activity can reduce two types of stroke.	Wendel-Vos et al., 2004
All-cause mortality	Nurses' Health Study reviewed 37 prospective cohort studies.	Oguma et al., 2002
Cholesterol level	Exercise increases HDL and decreases LDL.	Hausenloy & Yellen, 2008; Szapary et al., 2003
	Exercise reduces LDL and triglycerides.	Leon & Sanchez, 2001
	Low fitness is related to high cholesterol in children and adolescents.	Andersen et al., 2008; Eisenmann et al., 2007
	Exercise relates to low cholesterol in children.	Sääkslahti et al., 2004; Tolfrey, 2004; Tolfrey et al., 2000
Cancer	Meta-analyses show inverse relationship between exercise and cancer of various sites.	Miles, 2007; Thune & Furberg, 2001
	Exercise reduces risk for lung cancer, with a stronger relationship for women.	Tardon et al., 2005
	Exercise may protect against both tumor initiation and growth.	Rogers et al., 2008
	Physical activity helps people with cancer manage the effects of cancer treatment.	Quist et al., 2006; Speck et al., 2010
Bone density loss (osteoporosis)	Exercise helps build bone mass in children and adolescents.	Hind & Burrows, 2007
	Retired male athletes retain much of bone mineral density.	Nordström et al., 2005
	High-impact activity can delay loss of bone minerals in women.	Valmionpää et al., 2005
	Low-impact activities are not as effective as high-impact exercise.	Pakombaro, 2005; Wayne et al., 2007; Zelnicker et al., 2007
Diabetes	Exercise improves insulin resistance.	Plasqui & Westerterp, 2007
	Exercise lowers risk for Type 2 diabetes.	Jeon et al., 2007
	Exercise can help in managing Type 2 diabetes.	Kavodjian et al., 2007



Exercise Addiction

Some people become so involved with exercise that they ignore injuries to continue exercising or allow their exercise regimen to interfere with other parts of their lives such as work or family responsibilities. Others may think these people have an exercise addiction, but their behavior may not match the description of an addiction. A high level of commitment to exercise is not the same as addiction. Some people's exercise habits reflect a high degree of commitment, whereas others fit the description of dependence, showing a strong emotional attachment to exercise and exhibiting withdrawal symptoms such as depression and anxiety when prevented from exercising. Committed exercisers tend to have rational reasons for their exercise behavior such as extrinsic rewards, whereas addicted exercisers tend to use exercise as a way to manage negative emotions and problems in their lives. Obligatory exercisers share several characteristics with people with eating disorders, especially anorexia.

- **For example**, they continue their chosen activity even when they are injured, continuing behavior that is harmful and even self-destructive. They also show a progressive self-absorption, with a great deal of concentration on internal experiences. Many people who are anorexic experience a compulsion to exercise excessively. This observation prompted the proposal that teenage female anorexics and addicted male runners are analogous; both show the need for mastery of the body, unusually high expectations of self, tolerance or denial of physical discomfort and pain, and a single-minded commitment to endurance.

Injuries from Physical Activity

Excluding head-to-head challenges with cement trucks, what are the chances of experiencing injuries from exercise? Many people with a regular exercise program accept minor injuries and soreness as an almost inevitable component of their program. However, irregular exercise produces even more injuries and more discomfort, with “weekend athletes” accounting for a disproportional number of injuries. Musculoskeletal injuries are common, and the greater the frequency and intensity of exercise, the more likely it is that people will injure themselves. The Surgeon General’s report (USDHHS, 1996) found that about half of runners had experienced an injury during the past year. This review also found, as expected, that the injury rate was lower for walkers than for joggers and that previous injury is a risk factor for subsequent injury. Physical activity is the source of 83% of all musculoskeletal injuries, and at least one fourth of exercisers must interrupt their regimen because of such injuries. The decision to decrease exercise in response to injury is a wise one; “working through the pain” is an exercise myth that is associated with further injury. Cold temperatures can also be dangerous for outdoor exercising, but proper clothing can provide protection. Layered clothing for the body and gloves, hat, and even a face mask can protect against temperatures of 20°F.

Death during Exercise

Many patients who have had a heart attack go into cardiac rehabilitation programs that include an exercise program, which generally includes close supervision. Although these coronary patients are at elevated risk during exercise, the cardiovascular benefit they gain from exercising ordinarily outweighs the risk (USDHHS, 1996). Nevertheless, individuals diagnosed

with coronary heart disease should undertake exercise only with a physician's permission and under the supervision of specialists in cardiac rehabilitation. Under most circumstances, exercise shows benefits for the cardiovascular system, but for those with CVD and for those who have exercised heavily for years of their lives, this pattern of physical activity is a risk. Even young people may be vulnerable to sudden cardiac death during exercise). In children, adolescents, and young adults, the cause of sudden cardiac death is most often congenital heart abnormalities or arrhythmias (abnormal heartbeat patterns). Among adults, about 60% of sudden cardiac deaths are due to blood clots that precipitate heart attacks, the typical case of the most frequent cause death in the United States. Thus, most sudden deaths during exercise are those of individuals who had underlying cardiovascular problems, whether they knew it or not.

Reducing Exercise Injuries

Adequate caution can decrease the probability of injury. For people who have or are at risk for cardiovascular disease, supervised training is a wise precaution, especially when initiating an exercise program. Others, such as people who have been sedentary for a long time, may also benefit from supervision or training. With the guidance of a trainer, people will be less likely to attempt exercise that is inappropriate for their fitness level or to continue to exercise for too long as they start a program. In addition, an exercise professional will teach proper warm-up and stretching routines that are important in preventing injuries.

How Much Is Enough but Not Too Much?

TABLE 15.2 Current Physical Activity Recommendations

Age Group	Recommendation
Children and adolescents (aged 6–17)	1 hour of aerobic physical activity every day; most of this activity should be of moderate to vigorous intensity. Muscle-strengthening and bone-strengthening activity on at least 3 days per week.
Adults (aged 18–64)	2.5 hours of moderate-intensity aerobic activity per week, or 1.25 hours of vigorous-intensity aerobic activity per week. Muscle-strengthening activities on at least 2 days per week.
Older adults (aged 65 and older)	Same recommendations as for adults, or as much as abilities allow. Exercise that maintains or improves balance is recommended as well.

Improving Adherence to Physical Activity

Adherence to nearly all medical and health regimens is a serious problem (see Chapter 4), and exercise is no exception. Only 33% of adults in the United States get regular physical activity at either a moderate or vigorous intensity (USBC, 2011); the percentage is similar in the European Union (Sjöström, Oja, Hagströmer, Smith, & Bauman, 2006). For individuals who participate in prescribed exercise regimens, the dropout rates closely parallel the relapse rates reported in smoking and alcohol cessation programs.

Informational Interventions

Informational interventions seek to raise public awareness of the importance of physical activity and its benefits, as well as highlight opportunities to engage in exercise. These informational interventions take a variety of forms, ranging from mass media campaigns to “point-of-decision” prompts.

Behavioral and Social Interventions

Behavioral interventions attempt to teach people the skills necessary for adoption and maintenance of physical activity. Social interventions aim to create a social environment that makes adoption and maintenance of physical activity more successful. These types of interventions range from school-based physical education programs, to interventions designed to increase social support, to individually tailored health behavior change programs.

Environmental Interventions

Physical activity can be far easier and far more enjoyable if it takes place in a pleasing environment, such as a hike on a trail, a jog on a neighborhood sidewalk, or a stroll through a park. Thus, characteristics of a person's neighborhood can predict the likelihood of physical activity.

A large study of over 11,000 adults living in 11 different countries confirms the link between characteristics of neighborhood environments and physical activity. Thus, one way to increase levels of physical activity is through enhancing access to places that encourage physical activity. These kinds of interventions may include providing access to fitness equipment in the workplace or in community centers, creating trails, or improving park amenities and facilities. Environmental interventions do work, in terms of increasing the physical activity and fitness of those working or living nearby.