Status of the Year 2000 Health Goals for Physical Activity and Fitness

In *Healthy People 2000*, the national strategy for improving the health of the American people by the year 2000, lifestyle factors such as physical inactivity are major determinants of chronic disease and disability. Despite the documented benefits of exercise in enhancing health and reducing the risk of premature death, only 1 of the 13 physical activity and fitness objectives of *Healthy People 2000* has been met or exceeded. Although progress toward 5 objectives for the year 2000 has been made, 3 objectives are actually farther from attainment. Coronary heart disease death rates (Objective 1.1) have declined, and the prevalence of overweight people (Objective 1.2) has increased. Overall physical activity in adults (Objectives 1.3 and 1.4) and strengthening and stretching activities in children (Objective 1.6) have increased, but reduction in the percentage of sedentary persons (Objective 1.5) has showed no change. The proportion of the population adopting sound dietary practices combined with regular physical activity to attain appropriate body weight (Objective 1.7) has declined. Even though participation in daily school physical education (Objective 1.8) has shown a decline during the past several years, students who are enrolled in physical education classes are spending more time performing physical activities (Objective 1.9). The proportion of work sites offering employer-sponsored physical activity and fitness programs (Objective 1.10) has increased substantially, surpassing the year 2000 goal. Data to update progress for increasing physical activity levels of children (Objectives 1.3–1.5), community exercise facilities (Objective 1.11), clinician counseling about physical activity (Objective 1.12), and improvement in personal self-care activities (Objective 1.13) are not yet available. [Francis KT. Status of the year 2000 health goals for physical activity and fitness. *Phys Ther*. 1999;79:405–414.]

**Key Words:** Physical activity; Physical therapy profession, professional issues.

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Regular physical activity has long been regarded as an important component of a healthy lifestyle. Regular physical activity can play an important role in both prevention and treatment of cardiovascular disease, hypertension, non-insulin-dependent diabetes mellitus, stroke, some types of cancer, osteoporosis, and depression, as well as in improving a person’s lipid profile.1–6 Despite the research and widespread recognition of a positive association between regular physical activity and health and well-being, American adults have remained predominately inactive for the past two decades.7–10 The decrease in energy expenditure from physical activity noted in all spheres of societal endeavors, including work, transportation, and home maintenance, is thought to be the result of the increased availability of labor-saving technologies and equipment.11 Many individuals spend most of their working days predominately inactive, sitting in front of computer screens. The availability of a wide range of technological developments in the entertainment realm, such as television, videos, and computer games, has created powerful inducements to remain sedentary in leisure time.12,13 Moreover, although many people have enthusiastically embarked on vigorous exercise programs at one time or another, most people do not sustain their participation.14 Approximately 50% of individuals who start an aerobic exercise program stop within the first 6 months.14

Unfortunately, the mounting evidence that adults are inactive is in addition to increasing concerns that a large percentage of American children and adolescents are less physically fit than is desirable and that Americans may be in the midst of a youth fitness crisis.15–17 Researchers have contended for more than 3 decades that a large percentage of American children are less physically fit than is desirable.18,19 This contention is supported by reports that school-aged children have more body fat and weigh more than children did 20 years ago.20–22 More alarming is the observation that as many as 60% of children in the United States exhibit at least one modifiable adult risk factor for coronary heart disease (CHD) by the age of 12 years23 and that the risk-factor status continues into adulthood.24,25 Among the more prevalent CHD risk factors that have been found to continue into adulthood is physical inactivity.24,25

Berlin and Colditz,26 in a 1990 meta-analysis of the relationship between physical activity and CHD, compared coronary events (ie, angina, myocardial infarction, CHD death) in people with and without jobs linked to physical activity. These investigators reported there was an inverse dose-response ratio between coronary events and level of physical activity. This ratio was higher for the vigorous activity group than for the sedentary group. They concluded that a sedentary lifestyle nearly doubled the risk for heart attack. After a review of over 40 studies that detailed associations between physical activity and CHD, the Centers for Disease Control and Prevention (CDC) concluded that physical inactivity is, by itself, an important risk factor for the development of CHD, with a relative risk ratio of 1.9 in sedentary people as compared with active people.27

Physical inactivity is important not only as an independent risk factor, but also because it contributes to the detrimental aspects of other risk factors.8,27,28 Moreover, because more people are at risk of physical inactivity than any other single risk factor for chronic disease, the public health burden is especially great.8,9

Health Burden of a Sedentary Lifestyle

There are nearly 1.5 million myocardial infarctions and 500,000 deaths per year, for a total cost in medical care and lost productivity of $109 billion.29 In 1990, poor dietary factors combined with physical inactivity ranked second among the top 9 nongenetic factors contributing to deaths in the United States.30 Over 300,000 deaths, approximately 14% of total US deaths, were estimated to be attributable to these risk factors.30 Only tobacco use contributed to more deaths (400,000).30 The cost of mortality from CHD due to physical inactivity alone has been estimated to be $5.7 billion per year.31 Among the diverse risk factors for CHD, only elevated serum cholesterol (≥200 mg/dL) has a higher economic estimated mortality cost.31

Paffenbarger et al32 have estimated that the population attributable risk (PAR) for CHD mortality associated with physical inactivity is 14%. In comparison, they estimated the PAR to be 20% for hypertension, 13% for

Widespread use of the year 2000 objectives by states, localities, and the private sector will provide a base of experience upon which to build.
cigarette smoking, and 20% for a positive family history of premature parental death.

Population attributable risk is a method of estimating the proportion of a public health burden that is caused by a particular risk factor. For example, if we consider inactivity as a causal risk factor, the PAR allows estimation of the percentage of deaths from CHD that theoretically would not occur if everyone were physically active. The excess number of cases is the difference between the total cases that occur and the estimated number of cases that would occur if the risk factor were absent. This difference, divided by the total number of cases and multiplied by 100, gives the percentage of absent. This difference, divided by the total number of cases that would occur if everyone were physically active. The excess number of cases is the difference theoretically would not occur if everyone were physically active.

Powell and Blair, in study using PAR quantitative analyses, estimated that sedentary living is responsible for about one third of deaths due to CHD, colon cancer, and diabetes. These investigators suggested that, if everyone were highly active, the death rate from these 3 diseases would be only two thirds of the current rate. They predicted that, if 50% of the America’s sedentary population became more active, even if they were irregular participants (those engaging in some physical activity but less than the recommended amount to increase aerobic capacity), potentially 21,800 fewer deaths would result from these 3 diseases. Greater reductions would occur if irregular physical activity participants became regular participants (those engaging in more than 30 minutes of physical activity at least 5 days a week). If only half of all irregular physical activity participants became regular participants, mortality from these causes could potentially fall by 41,800 deaths per year.

**Strategies to Enhance Physical Activity**

In response to the accumulated research and the widespread recognition that physical inactivity is a major public health issue, the US Public Health Service included physical activity and fitness in the nation’s first major health initiative to improve the health and well-being of Americans. The first phase of the government’s strategy to improve the health of Americans began in 1980 with the report *Promoting Health/Preventing Disease: Objectives for the Nation,* which proposed a coordinated approach to the improvement of health during the decade of the 1980s. This report set forth 226 measurable goals in 15 priority areas under the general headings of “Preventive Services,” “Health Protection,” and “Health Promotion.” Examples of the objectives that were to be accomplished by 1990 were the following: increasing the proportion of children and adolescents participating in regular physical activity, increasing the proportion of children and adolescents participating in daily school physical education programs, increasing the proportion of adults participating in regular vigorous physical exercise, and increasing the proportion of people over the age 65 years engaging in physical activities such as walking. Despite the overall success of this first initiative, there were shortfalls in the area of physical activity and fitness. Of the 11 proposed physical activity objectives, only the 4 objectives that pertained to improvements of surveillance and evaluation efforts were accomplished. None of the broader objectives pertaining to improvements of physical activity among the various age groups were accomplished.

In September 1990, the Secretary of the US Department of Health and Human Services, Louis W Sullivan, released *Healthy People 2000,* the national objectives for health promotion and disease prevention for the year 2000. The year 2000 objectives were built upon the 1990 objectives with an increased emphasis on health outcomes other than premature mortality, which reflected a new appreciation for the prevention of disability and morbidity that impair quality of life.

The *Healthy People 2000* initiative set forth 3 broad goals to be accomplished by the year 2000, challenging the nation to (1) increase the life span of healthy life for Americans, (2) reduce health disparities among Americans, and (3) achieve access to preventive services for all Americans. To achieve these goals, *Healthy People 2000* established 300 measurable objectives to be accomplished in 22 priority areas for “Health Promotion,” “Health Protection,” and “Clinical Preventive Services” (Table).

Because of the strong association between physical activity and optimal health, it is no wonder that physical activity and fitness was placed as the first priority of the health promotion goal. Thirteen of the *Healthy People 2000* measurable objectives addressed physical activity and fitness, with 2 additional objectives that targeted improvements in health status related to chronic diseases or conditions that are linked to lack of physical activity. Progress reviews addressing specific priority groups have been conducted periodically by the Public Health Service. The most recent progress review of the physical activity and fitness objectives was published in November 1997. The remaining discussion in this article will focus on the status of these objectives and the progress made toward achieving a more physically active US population.

**Objective 1.1: Reduce CHD-related deaths to no more than 100 per 100,000 people.**

Among the 13 physical activity and fitness objectives proceeding toward the year 2000 target is the reduction in CHD rate, which has been steadily declining since 1987. The 1987 baseline of 135 CHD-related deaths...
per 100,000 people decreased to a rate of 114 recorded in 1993 (Fig. 1). Although this rate of decline looks promising for meeting the overall goal of no more than 100 CHD-related deaths by the year 2000, slower progress is being made to decrease deaths among African Americans. Among African Americans, there were 168 deaths per 100,000 people in 1987, 156 deaths in 1991, and 154 deaths in 1993, which is still far from the target of 115 deaths established for the year 2000.

Objective 1.2: Reduce overweight to a prevalence of no more than 20% among people aged 20 years and older and no more than 15% among adolescents aged 12 to 19 years.

For people aged 20 years and older, overweight is defined as having a body mass index (BMI) greater than or equal to 27.8 for men and 27.3 for women. For adolescents, overweight is defined as having a BMI greater than or equal to 23.0 for males aged 12 to 14 years, 24.3 for males aged 15 to 17 years, 25.8 for males aged 18 to 19 years, 23.4 for females aged 12 to 14 years, 24.8 for females aged 15 to 17 years, and 25.7 for females aged 18 to 19 years. The BMI is calculated by dividing weight (in kilograms) by the square of height (in meters).

Overweight is associated with a host of adverse health outcomes and places a severe burden on the US health care system. It is also a condition known to be resistant to intervention. This resistance to intervention is evidenced in Figure 2 by the lack of progress shown in reducing the percentages of overweight adults and children. Despite improvements in the American diet, the prevalence of individuals who are overweight has increased rather than decreased and is moving farther away from the year 2000 target of 20% for adults and 15% for adolescents. Today, 1 in 5 teenagers and 1 in 3 adults are overweight. Because of the relatedness of Objectives 1.3, 1.4, and 1.5, they will be discussed together.

Objective 1.3: Increase to at least 30% the proportion of people aged 6 years and older who engage regularly, preferably daily, in light to moderate physical activity for at least 30 minutes per day.

Light to moderate physical activity is defined as activity that requires sustained, rhythmic muscular movements performed for at least 30 minutes per occasion, 5 or more times per week. An example is sustained walking. The intent of light to moderate physical activity is to generate calorie-burning activity from a health standpoint by emphasizing the importance of regular physical activity that can be sustained throughout the life span.

Objective 1.4: Increase to 20% the percentage of people aged 18 years and older and to at least 75% the proportion of children and adolescents aged 6 to 17 years who engage in vigorous physical activity that promotes the development and maintenance of cardiorespiratory fitness 3 or more times per week for 20 or more minutes per session.

Vigorous physical activities are defined as rhythmic, repetitive physical activities that use large muscle groups at 60% or more of the maximum heart rate for age.
Maximum heart rate equals roughly 220 beats per minute minus age.37

**Objective 1.5: Reduce to no more than 15% the proportion of people aged 6 years and older who engage in no leisure-time physical activity.**

Figure 3 shows that both Objective 1.3, which targets increased “moderate” physical activity, and Objective 1.4, which targets increased “vigorous” physical activity, are showing some progress. The percentage of adults performing moderate physical activity increased from 22% to 24% between 1985 and 1991, and the percentage of adults performing vigorous exercise increased from 12% to 16% over this same time period.38–41 In contrast, however, Figure 3 shows there has been no improvement in the percentage of adults who engage in leisure-time physical activity. The percentage of adults who do not engage in any leisure-time physical activity remained stagnant from 1985 to 1991 at 24%.8,9,40,41

With the inception of Healthy People 2000, the CDC determined that physical activity and fitness data for children and adolescents were limited. Recognizing the importance of adolescent health issues and the limited information in these areas, the CDC began the development of a comprehensive surveillance system in the late 1980s. The system, titled Youth Risk Behavior Surveillance (YRBS), was designed to monitor adolescent health behaviors in the US population and to track the progress toward achieving health objectives for the year 2000 by adolescents and young adults.49–52 The more recent YRBS surveys revealed that, since 1993, the percentage of all students reporting that they perform “vigorous exercise” has remained steady at approximately 64%, which is 11% below the 75% goal established for children and adolescents for the year 2000. “Vigorous exercise” is defined by the YRBS as activities that make the participants sweat and breathe hard for at least 20 minutes on 3 or more of the 7 days preceding the survey. Even though this percentage may appear auspicious because it is much higher than the 16% of adults who report performing vigorous exercise, participation in vigorous physical activity declines strikingly as children and adolescents get older.53 The 1995 YRBS survey revealed that between the 9th and 12th grades of school, there was a precipitous drop of almost 17% of adolescents who participated in regular vigorous physical activity.49,52 This trend was observed in both males and females.

**Objective 1.6: Increase to at least 40% the proportion of people aged 6 years and older who regularly perform physical activities that enhance and maintain muscular endurance and flexibility.**

Regular performance of physical activities that enhance and maintain muscular strength, muscular endurance, and flexibility generally requires participation in a variety of physical activities, because not all activities will satisfy all 3 factors.54 Because of the difficulty in categorizing and scoring details of strength, endurance, and flexibility in adults and due to the lack of investigative studies, no data are available to assess the progress of this objective.41

The 1995 YRBS survey, however, included questions that attempted to assess these statistics in children.49,52 This survey revealed that 53% of all students surveyed nationwide reported they had done stretching exercises (eg, toe touching, knee bending, leg stretching) on 3 or more of the 7 days preceding the survey (Fig. 4). Across the state surveys, prevalence rates ranged from 24.2% to 58.7% (median=49.7%). Similarly, 50.3% of students nationwide reported they had done strengthening exercises (eg, push-ups, sit-ups, weight lifting) on 3 or more...
of the 7 days preceding the survey. Prevalence rates ranged from 25.8% to 57.4% (median = 46.4%) across the state surveys. In addition to diet modification, initiating and maintaining regular physical activity is an important component of an effective weight control strategy. Physical activity facilitates weight control by increasing energy expenditure and by preventing the loss of lean body mass that often occurs with dieting. In addition, participation in physical activity by people who are overweight can positively influence metabolic status through improved insulin sensitivity and decreased levels of blood lipids. Despite these benefits, the proportion of the population adopting sound dietary practices combined with regular physical activity to attain appropriate body weight has declined rather than increased toward the goal of 50% participation established for the year 2000 (Fig. 5). In 1993, only 17% of males and 19% of females had adopted these practices which, is a decline of 10% from the 1985 baseline values of 25% and 30%, respectively. Because of the relatedness of Objectives 1.8 and 1.9, they will be discussed together.

Aside from the national health objectives established in the year 2000 health goals, more than 20 major reports have been published in the past 5 years calling for the establishment or improvement of effective school health programs. The percentage of high school students engaged in daily school physical education (PE), however, has declined since 1991 (Fig. 6). In 1991, 42% of students attended PE class daily; in 1995, the percentage had decreased to 25.4%. In addition, a recent survey disclosed that the percentage of students attending PE class daily dropped as students progressed from the 9th grade (41.2%) to the 12th grade (12.9%). The 1995 YRBS survey of high school students revealed that, of the students who attended PE class, an average of 69.7% reported exercising for 20 or more minutes during the class period.

1.10: Increase the proportion of work sites offering employer-sponsored physical activity and fitness programs as follows: 50 to 99 employees, 20%; 100 to 249 employees, 35%; 250 to 749 employees, 50%; 750 or more employees, 80%.

A key business issue for most employers today is maximizing productivity and competitiveness. One aspect of being competitive is controlling benefit costs, with
special emphasis on the growing segment of health benefits. Double-digit annual increases in the cost of medical benefits represent one the major financial challenges for businesses. In 1980, the national average cost per employee for medical benefits was $968, compared with $1,740 per employee in 1985 and $3,250 per employee in 1990.60 Health promotion and wellness programs at work are based on the premise that healthy workers will cost less in terms of sick time and absenteeism while giving more of themselves to the company.61 Therefore, companies are motivated to use methods that decrease costs while increasing profits.62,63 The workplace is a logical location for health promotion activities because employees spend nearly 30% of their time at work.64 Work-site fitness programs may eliminate some of the traditional barriers to physical activity by providing information, incentives, flex time, and access to programs, equipment, and facilities.65,66

From 1980 to 1991, there were 24 studies evaluating the health and, in some cases, the cost benefits of comprehensive health promotion and disease prevention programs in the work site.59 Between 1991 and 1993, there were an additional 24 studies.59 Every one of the studies that analyzed cost-effectiveness or cost benefits indicated a positive return.59,67,68 Figure 7 shows that business has been quick to assimilate this information, as evidenced by the growth in the number of companies implementing health and wellness programs in the work site. Work sites with 50 or more employees were surveyed in 1985 and in 1992 to assess the extent to which they offer activities to promote fitness. Figure 7 shows that the percentage of programs more than doubled for work sites employing 50 to 99 employees, 100 to 249 employees, or 250 to 749 employees. Work sites surveyed that employed more than 750 workers showed an increase of 29%. All of the gains in each category have exceeded the goals established for the year 2000.41

1.11: Increase community availability and accessibility of physical activity and fitness facilities.

Recognizing that the participation in regular physical activity depends in part on the availability and proximity of community facilities and conducive environments, Healthy People 2000 proposed increasing hiking, biking, and fitness trails from 1 per 71,000 people to 1 per 10,000 people.37 The goal also proposed increasing public swimming pools from 1 per 53,000 people to 1 per 25,000 people and acres of park and recreation open space from 1.8 per 1,000 people to 4 per 1,000 people. No data, however, are yet available to determine the progress toward these objectives.

1.12: Increase to at least 50% the proportion of primary care providers who routinely assess and counsel their patients regarding the frequency, duration, type, and intensity of each patient’s physical activity practices.

Primary care providers have the potential to play an important role in promoting regular physical activity. In 1995, the primary care specialties of family practice, general practice, internal medicine, pediatrics, and obstetrics-gynecology accounted for 37.4% of the physicians in active patient care.69 Americans average 2.7 office visits per person per year, and 60% of these visits occur in a primary care setting.70 Because primary care providers offer a potentially attractive method for effecting large-scale change in activity habits of adults, Objective 1.12 was established in an attempt to increase to at least 50% of the proportion of primary care providers who appropriately assess and counsel their patients about physical activity.37 Healthy People 2000 baseline data (1988) indicated that physicians provided exercise counseling for about 30% of their sedentary patients.37 Figure 8 shows that, in 1992, 40% of interns reported routinely inquiring about exercise habits from their patients, whereas only 25% of interns formulated an exercise plan. Nurse practitioners were next in fre-
frequency of inquiring about an exercise program (30%), but only 14% of nurse practitioners formulated an exercise program. Even lower levels were evident among other groups of health care providers for both inquiry about exercise and formulation of an exercise program.

Among the different health care professionals, the physical therapist is in a unique position to maximize patient adherence to physical activity and influence a number of CHD risk factors through “physical activity counseling.” One of the most effective means by which a physical therapist can have an impact on the patient’s ability to change his or her health behavior is through integrating exercise counseling with regular patient care. Many physical therapists have additional skills in group exercise, leadership, and exercise program planning that lend themselves to the development of exercise programs.

A modest way for the physical therapist to begin this type of counseling is to emphasize the need for an increase in activities such as brisk walking. Brisk walking is more likely to achieve greater initial overall improvement in fitness than is a program requiring more strenuous and lifestyle-intrusive adaptations. Brisk walking also poses minimal risk of adverse effects. The only cost to the patient is the investment of time.

Objective 1.13: Reduce to no more than 90 per 1,000 people the proportion of all people aged 65 years and older who have difficulty in performing 2 or more personal care activities, thereby preserving independence.

Personal care activities are bathing, dressing, using the toilet, getting into and out of a bed or a chair, and eating. In 1995, Objective 1.13 was added as a shared objective with Objective 17.3 from the “Diabetes and Chronic Disabling Conditions” priority area. This addition occurred because physical activity can help older adults maintain their ability to perform activities of daily living and can preserve independence. Because of the newness of the objective, no data have been collected to determine the progress toward achieving this goal.

Conclusion
Physical activity is important for maintaining health and decreasing the risk of CHD. With only a little less than a year remaining to achieve the goals established for the year 2000, there remain a number of trends that signal a need for additional effort. Although there has been progress in the work-site fitness programs and modest progress in the goals to increase moderate and vigorous physical activity among adults, there has been no improvement in the reduction in the percentage of overweight individuals or the percentage of adults who engage in no leisure-time physical activity. The gap between the present status and the goals established for the year 2000 illustrates the scope of the task ahead and should generate concern about the health-related needs of the American public.

Sustained, coordinated efforts are needed to implement high-quality health promotion programs that emphasize physical activity to attain those objectives. Development of objectives for the year 2010 has already begun. This next set of national objectives will be distinguished from Healthy People 2000 by the broadened prevention science base, improved surveillance and data systems, and a heightened awareness of and demand for preventive health services that will affect the public’s health into the 21st century. The widespread use of the year 2000 objectives by states, localities, and the private sector will provide a base of experience upon which to build. More information about Healthy People 2010 developments and Healthy People 2000 activities are available on the Internet at http://odphp.osophs.dhhs.gov/pubs/hp2000. Also at this Web site is the guide “Developing Objectives for Healthy People 2010,” which describes the who, what, when, and how of the year 2010 initiative developmental process. Included in this publication are the names of people in federal and state agencies who coordinate Healthy People activities, as well as contact information for organizations and individuals who want to offer input into the developmental process.

References


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