INTRODUCTION

A health paradox exists in modern America. On the one hand, many people who do not need to lose weight are trying to. On the other hand, most who do need to lose weight are not succeeding. The percentage of Americans whose health is jeopardized by too much weight is increasing. Thus, consideration of voluntary weight loss must encompass a continuum from persons of normal or low weight who wish to lose weight for cultural, social, or psychological reasons to severely overweight persons who suffer clear adverse medical consequences. Being overweight can seriously affect health and longevity. It is associated with elevated serum cholesterol, elevated blood pressure, and noninsulin-dependent diabetes mellitus. Excessive weight also increases the risk for gallbladder disease, gout, coronary heart disease, and some types of cancer and has been implicated in the development of osteoarthritis of the weight-bearing joints.

Body mass index (BMI, weight [kilograms]/height [meters squared]) is a widely used means to define overweight. (See Table 1 to convert height and weight into BMI.) Although there is agreement about the general range of BMI that constitutes a "healthy" weight, agreement on an exact range has not been established; the range varies according to age and gender, for example. Ideally, healthy weight would fall within a range of BMI levels at which morbidity and mortality rates are lowest, and "overweight" would be the BMI level at which adverse effects increase. Government and scientific groups have suggested slightly different desirable ranges of BMI, extending from 19 to 27 for adults through middle age. Obese persons have an abnormally high proportion of body fat. Most overweight persons are obese.

Approximately one quarter to one third of adults in the United States are classified as overweight, depending on the BMI cut point used. The prevalence of overweight has increased during the last two decades. The prevalence is disproportionately high in many populations, especially in women, the poor, and members of some ethnic groups.
The underlying causes of overweight are unknown. The basic mechanism is an imbalance between caloric intake and energy expenditure, but why this imbalance occurs is unclear. Evidence suggests that overweight is multifactorial in origin, reflecting inherited, environmental, cultural, socioeconomic, and psychological conditions. Increasing physiologic, biochemical, and genetic evidence suggests that overweight is not a simple problem of will power, as is sometimes implied, but is a complex disorder of appetite regulation and energy metabolism. Many persons have a chronic tendency for becoming overweight that needs lifelong attention. Many persons attempting to lose weight use methods such as caloric restriction, exercise, behavior modification, drugs, or combinations thereof, with or without medical supervision. Some attempts may be successful in the short term, but too often the weight lost is regained. Repeated weight gain and loss may have adverse psychological and physical effects.

To evaluate methods for voluntary weight loss and control, the National Institutes of Health (NIH) Nutrition Coordinating Committee and the Office of Medical Applications of Research held a technology assessment conference 30 March to 1 April 1992. The conference brought together scientists with expertise in obesity, clinical disciplines, nutrition, metabolism, epidemiology, biostatistics, behavior, exercise physiology, and other disciplines. Evidence for diet, exercise, behavior modification, and drug treatment was considered. Information from industry and other sources was evaluated, and opportunity was provided for public comment. Methods such as surgery, liposuction, and medical devices were not the focus, and some other important topics, including the economics and ethics of weight loss practices and regulatory issues, were not considered. Similarly, overweight and obesity in children could not be considered because the panel did not have adequate data.

The panel considered the evidence and agreed on answers to the following questions:

1. How often and in what ways do Americans try to lose weight?
2. How successful are various methods for weight loss and control? What are the attributes of and barriers to successful weight loss methods/approaches?
3. What are the short- and long-term benefits and adverse effects of weight loss?
4. What are the fundamental principles that should be used to select a personal weight loss and control strategy?
5. What should be the future directions for research on weight loss and control?

HOW OFTEN AND IN WHAT WAYS DO AMERICANS TRY TO loose WEIGHT?

Who Is Trying To Lose Weight?

The frequency and nature of weight loss efforts in the U.S. population were estimated from participant self-reports in four recent Federal surveys of health practices. Data from these surveys indicate that 33 percent to 40 percent of adult women and 20 percent to 24 percent of men are currently trying to lose weight, with an additional 28 percent of each group trying to maintain weight. Among women and men trying to lose weight, the reported time on a weight loss regimen in the past year averaged 6.4 and 5.8 months, respectively, and the number of attempts to lose weight in the past 2 years averaged 2.5 and 2.0
Weight loss efforts were not restricted to persons with high BMI. The percent trying to lose weight varied with age (lower in the youngest and oldest persons), increased with increasing education and family income and was positively related to BMI. The percent of men trying to lose weight varied with race (highest in Hispanic men and lowest in African-American men). In women, the percent trying to lose weight did not differ by race even though a higher proportion of African-American and Hispanic women are overweight than of white women.

A self-administered questionnaire of a nationally representative sample of high school students showed that 44 percent of female and 15 percent of male students were trying to lose weight; 26 percent of female and 15 percent of male students were trying to keep from gaining weight.

Reasons For Weight Loss Efforts

Americans try to lose weight for several reasons. Many seek to improve their self-images. These people may or may not be overweight or have physical or emotional health problems caused by their weight; in fact, some are of normal or even low weight. Some persons are severely overweight by current medical standards and attempt to lose weight to reduce their risk for weight-related health problems. Some persons who are not severely overweight also attempt weight reduction to improve their perception of their health. Another reason involves our society's discrimination against overweight individuals. Some of these persons attempt weight reduction to gain greater acceptance.

Concerns about future and current health, fitness, and appearance were cited frequently by survey respondents as the most important reasons for trying to lose weight. Health concerns were cited more frequently by persons with higher BMI; appearance and fitness concerns were cited more frequently by persons with lower BMI. Appearance was more important than fitness to women, whereas the reverse was true for men. Other reasons cited included trying to lose weight gained after smoking cessation or pregnancy.

Methods Used for Weight Loss

The four national surveys asked about weight loss methods, each in slightly different ways. Among women trying to lose weight, 84 percent were eating fewer calories, and 60 percent to 63 percent were increasing physical activity. Among men trying to lose weight, 76 percent to 78 percent were eating fewer calories and 60 percent to 62 percent were increasing their physical activity. Use of these methods varied with race, education, income, and age.

In another survey of adults, diet and exercise were the most frequently cited methods for both men and women attempting weight loss, each at a frequency of more than 80 percent. Vitamins, meal replacements, over-the-counter products, participation in a weight loss program, and diet supplements were cited by both sexes in decreasing order from 28 percent to 3 percent. The methods used varied with BMI.

Students reported using the following weight loss methods in the week preceding the survey: exercise (51 percent of females and 30 percent of males), skipping meals (49 percent and 18 percent), using diet pills (4 percent and 2 percent), and self-induced vomiting (3 percent and 1 percent). The percentage of students who reported ever using these methods was generally much higher: exercise (80 percent of
females and 44 percent of males), diet pills (21 percent and 5 percent), and vomiting (14 percent and 4 percent).

HOW SUCCESSFUL ARE VARIOUS METHODS FOR WEIGHT LOSS AND CONTROL? WHAT ARE THE ATTRIBUTES OF AND BARRIERS TO SUCCESSFUL WEIGHT LOSS METHODS/APPROACHES?

Understanding of the likelihood of success is a key element in making informed choices from among the dietary, exercise, and behavioral options for weight loss. In this section, these various weight loss methods are discussed with respect to their effectiveness in facilitating weight loss.

For most weight loss methods, there are few scientific studies evaluating their effectiveness and safety. The available studies indicate that persons lose weight while participating in such programs but, after completing the program, tend to regain the weight over time. Further, there are examples where weight loss strategies have caused medical harm. Thus, the panel cautions that before individuals adopt any weight loss program, the scientific data on effectiveness and safety be examined. If no data exist, the panel recommends that the program not be used. The lack of data on many commercial programs advertised for weight loss is especially disconcerting in view of the large number of Americans trying to lose weight and the over $30 billion spent yearly in America on weight loss efforts. Some research data and considerable anecdotal information support successful short-term loss for some users of these programs; however, data are limited on the proportion of persons who complete programs, how much weight they lose, and their success in maintaining the weight loss.

Considerable diversity in response exists within each of the broad categories of weight loss strategies. Success rates can be expected to vary according to initial weight, the length of the treatment period, the magnitude of weight loss desired, and the motivation for wanting to lose weight. The effectiveness of unsupervised efforts to lose weight is difficult to judge because of limited data on strategies, compliance, and follow-up. Surveys indicate that many overweight persons have tried to lose weight on multiple occasions; because many of these persons presumably are using these unsupervised strategies, their long-term success rates may be low.

Dietary Change

Dietary change is the most commonly used weight loss strategy. Methods range from caloric restriction to changes in dietary proportions of fat, protein, and carbohydrate or use of macronutrient substitutes. Short-term success for some of these methods has been documented, but information on long-term
effectiveness and safety up to 5 years is limited. Appropriate dietary programs can have positive health effects on factors other than weight loss.

Weight loss at the end of relatively short-term programs can exceed 10 percent of initial body weight; however, there is a strong tendency to regain weight, with as much as two thirds of the weight lost regained within 1 year of completing the program and almost all by 5 years. Importantly, however, a small percentage of participants do maintain their weight loss over more extended periods. Key aspects of the evaluation of programs are their duration and dropout rates. The duration of most programs appears to be from several weeks to a few months. Dropout rates can be as high as 80 percent and seem to vary considerably.

Two levels of caloric restriction are commonly used. The low-calorie diet (LCD) of about 1,000 to 1,500 calories (approximately 12 to 15 Kcal/kg body weight) per day may involve a structured commercial program with formulated and calorically defined food products or guidelines in selecting conventional foods. The very-low-calorie diet (VLCD) at 800 (approximately 6-10 Kcal/kg body weight) or fewer calories per day is conducted under physician supervision and monitoring and is restricted to severely overweight persons. Both diets may produce adverse side effects, including excessive loss of lean body mass. Attempts to use VLCD's in unsupervised settings have been associated with severe complications. In the short term, VLCD's produce greater weight loss than do LCD's; however, with both types of programs, participants tend to return to preprogram weight within 5 years.

There is evidence that altering the proportion of the calories in the diet from fat, carbohydrate, and protein can have a limited effect on weight loss; however, the effects appear to be quite small in comparison with the direct effect of caloric restriction.

Exercise

Weight loss that can be achieved by exercise programs alone is more limited than that which can be obtained by caloric restriction. However, exercise has beneficial effects independent of weight loss, including increased high-density lipoprotein cholesterol and an increase in lean body mass. Further, exercise can be an important adjunct to other strategies and can, if continued, diminish the tendency for rapid postprogram weight gain. The amount of weight lost through exercise usually ranges from 4 to 7 pounds. This amount is usually in addition to that lost through caloric restriction.

Behavior Modification

Behavior modification involves (1) identifying eating or related life-style behaviors to be modified, (2) setting specific behavioral goals, (3) modifying determinants of the behavior to be changed, and (4) reinforcing the desired behavior. The goal of behavior treatment is to modify eating and physical activity habits, typically focusing on gradual changes. Behavior modification can be undertaken through group or individual sessions, under the guidance of professional or lay personnel, and alone or in conjunction with other approaches.

When used alone, the typical program takes about 18 weeks and can generate a 1- to 1.5-pound/week weight loss. Typically about one third of this weight will be regained at the end of 1 year and most regained by 5 years. As with other methods, however, a small percentage of participants are able to
maintain weight loss over an extended period.

**Drug Treatment**

In carefully controlled research programs, treatment with investigational drugs has been effective in producing weight loss. Combined with some degree of caloric restriction, weight loss with these drugs can be equivalent to that from VLCD's over comparable periods. Some studies show that prolonging use can result in a slowing of weight loss and eventually a weight plateau. Long-term benefits and complications need to be evaluated.

Phenylpropanolamine, an over-the-counter appetite suppressant approved by the Food and Drug Administration, has some efficacy in producing weight loss. The long-term benefit of this drug is not well documented, and as with other over-the-counter preparations, there is potential for its misuse.

**Combination Therapies**

Dietary and exercise changes, and these changes reinforced by behavior modification, are the most frequently used combination therapies. Combining changes in diet and exercise can lead to greater short-term weight loss than changes with either alone. Further, behavior modification appears to help extend the interval before weight is regained, especially if contact between the program deliverers and participants is continued and maintenance strategies are used.

**Attributes and Barriers**

In general, successful programs are those based on realistic goals that involve a caloric deficit leading to a slow, steady weight loss. Success requires a diet that can be adhered to long enough to reach the goal. Developing new dietary practices that could lead to a lifetime of weight control is also important. Other attributes of successful programs involve preparing the person to deal with high-risk emotional and social situations, self-monitor progress, solve problems, reduce stress, and maintain continual professional contact. Barriers to success include lack of feelings of self-efficacy, failure to lose weight early, premature termination of diet modifications or exercise or both, and lack of social and professional support. Serious underlying social or psychological problems such as depression also can be barriers to success.

The effectiveness of the different weight loss programs may vary among different cultural groups; however, the data to evaluate this possibility are limited. As these programs are studied further, it is important to consider that some may also be effective in preventing overweight.
WHAT ARE THE SHORT- AND LONG-TERM BENEFITS AND ADVERSE EFFECTS OF WEIGHT LOSS?

Although there seems to be little doubt that overweight individuals have increased risk for morbidity and mortality, it does not immediately follow that weight loss reduces that increased risk. Understanding the health consequences of weight loss requires data on what happens to those who have lost weight. Such data should derive from either observational studies of persons who by self-report or measurement have lost weight or clinical trials in which how the weight was lost is known. Much of the longer term data come from observational studies because follow-up in trials has generally been short; however, clinical trials would provide clearer evidence of the relationship between weight loss and health.

The incidence and severity of noninsulin-dependent diabetes mellitus and hypertension in overweight persons are reduced by weight loss. Recent studies have shown that a diet and exercise program leading to weight loss can prevent the onset of hypertension and that the same may be true for diabetes mellitus. Persons with diabetes who can lose weight will improve glycemic control and may eliminate their need for oral agents. Similarly, randomized trial data indicate that weight loss in hypertensive patients is also associated with significant reductions in blood pressure and the need for continued drug therapy. Weight loss also affects other risk factors for cardiovascular disease: The positive effects on lipid and lipoprotein levels are well documented. Given the high likelihood that weight will be regained, it remains to be determined whether these time-limited improvements confer more permanent health benefits.

Among very obese individuals, weight loss has been followed by greater functional status, reduced work absenteeism, less pain, and greater social interaction. The prevalence and severity of sleep apnea also can be substantially reduced by weight loss, but monitoring for weight regain is important.

Very-low-calorie diets and fasting are associated with a variety of short-term adverse effects. Patients frequently report fatigue, hair loss, dizziness, and other symptoms, but these appear to be transitory. More serious is the increased risk for gallstones and acute gallbladder disease during severe calorie restriction. Serious complications such as cardiac arrhythmias or death, seen in early studies, have largely been eliminated by enriching diets with high-quality protein, minerals, and electrolytes.

Data on short-term adverse health effects of weight loss come from programs that only include overweight persons. Some of these effects may be greater in persons who are not overweight but are severely restricting calories. Laboratory evidence suggests that weight loss in lean persons leads to a greater proportional loss of lean body mass than in severely overweight persons and may well increase adverse effects such as fatigue.

Participants in formal weight loss programs may reduce baseline depression and anxiety, but only if they successfully lose weight. Little is known about the emotional impact of lesser degrees of success or of failure. There also is increasing evidence that mildly to moderately overweight women who are dieting may be at risk for binge-eating without vomiting and purging. Whether involvement in a well-designed dietary modification program increases the risks for bulimia is unknown and in need of careful study.
The evidence that reductions in mortality follow weight loss is meager. Most epidemiologic studies suggest that weight loss is associated with increased mortality, although in most of these studies the reason for weight loss is not known. Intentional weight loss during healthy states cannot be distinguished from that associated with illness, psychosocial distress, or other reasons. Finally, the fact that many people who stop smoking gain weight complicates the interpretation of the data on weight gainers and weight losers. Thus, although the data on higher mortality are provocative, they are not sufficiently conclusive to dictate clinical practice. Specific research efforts to address this question are urgently needed.

Data on the health effects of repeated weight gains and losses, or weight cycling, are also inconclusive. Weight cycling appears to affect energy metabolism and may result in faster regaining of weight, but the evidence that cycling has longer term negative effects on psychological and physical health needs confirmation.

Although currently used weight-reducing drugs appear to be safe in controlled studies, the studies are short term and have involved populations where the potential for abuse may be low. The fact that many adolescents and young adults use over-the-counter preparations urges further study of their safety in real-world use.

WHAT ARE THE FUNDAMENTAL PRINCIPLES THAT SHOULD BE USED TO SELECT A PERSONAL WEIGHT LOSS AND CONTROL STRATEGY?

A fundamental principle of weight loss and control is that for almost all people, a lifelong commitment to a change in lifestyle, behavioral responses, and dietary practices is necessary. Whether one should make this commitment depends partially on the risks and benefits of losing weight compared with those of not losing weight. The more an individual's BMI exceeds the healthy range, the higher the risk for medical problems and the greater the need for weight reduction. Weight loss is indicated for persons with current health problems that can be lessened by weight loss (such as sleep apnea, hypertension, or noninsulin-dependent diabetes mellitus). Finally, for persons near the upper limit of the healthy weight range, a weight control program may be appropriate to prevent further increases.

Contraindications to nonsupervised weight loss exist for severely overweight persons, pregnant or lactating women, children, persons over the age of 65, and those with medical conditions that make such an undertaking dangerous. A trained physician or other health professional should assess contradictions and screen for preexisting eating disorders or underlying psychological problems. For persons at high medical risk, a properly trained physician should be involved in a multidisciplinary approach to care throughout the weight loss process. Diets of 800 or fewer calories per day should not be undertaken without medical supervision and monitoring because of attendant health risks.

For those within the healthy weight range who desire to lose weight for other reasons, such as improved
appearance or sense of well-being, the decision to lose weight should take into account the difficulty of the task as well as the potential adverse physical and psychological effects of weight loss regimens. These effects include the risk of poor nutrition, possible development of eating disorders, effects of weight cycling, and the sometimes serious psychological consequences of repeated failed attempts to lose weight.

No matter how much weight one would like to lose, modest goals and a slow course will maximize the probability of both losing the weight and keeping it off. In setting goals, it should also be recognized that even in highly structured, medically supervised plans, the dropout rate is often high, and even for those who complete the program, maximum weight loss rarely exceeds 10 percent of the initial body weight. The rate of weight loss in these plans is generally less than 1.5 pounds per week. In addition, if the pattern of eating and activity is not permanently altered after the conclusion of the structured portion of such programs, most participants will regain lost weight over the next 1 to 5 years. In less structured or self-monitored settings, the degree of weight loss and maintenance is unknown. These realities should help an individual avoid disappointment by providing guidelines for reasonable goals for how much weight one wants or needs to lose, how fast one wants to lose it, and how long weight loss can be maintained. These facts also should help one recognize that, for most people, achieving body weights and shapes presented in the media is not a reasonable, appropriate, or achievable goal, and thus the failure to do so does not represent a weakness of will power or character. Other characteristics to consider in setting weight loss goals include weight history, the weights of biological relatives, the outcomes of past weight loss efforts, and the individual's emotional profile.

Important considerations when choosing a weight loss method or program include personal food preferences; the desire for structure in the program; and the degree of support in the home, workplace, or a chosen group. Logistic details to consider include time; money (for the costs of programs and special diet foods or supplements); transportation; and the ability to integrate the eating pattern of the dieter with others in the home, particularly if the dieter is a primary food preparer.

In evaluating a weight loss method or program, one should not be distracted by anecdotal "success" stories or by advertising claims. Information about program success that should be obtained includes

- the percentage of all beginning participants who complete the program
- the percentage of those completing the program who achieve various degrees of weight loss
- the proportion of weight loss that is maintained at 1, 3, and even 5 years
- the percentage of participants who experienced adverse medical or psychological effects and the kind and severity.

Valid and reliable statistics of this kind are important but not routinely provided by commercial diet plans or programs. Such data, preferably in the form of peer-reviewed published studies, should be available for all supervised programs, including those based in hospitals or clinics.

Additional information on program characteristics that should be obtained includes

- the relative mix of diet, exercise, and behavior modifications
- the amount and kind of counseling: individual and closed groups (membership does not change except by attrition) are both more successful forms of counseling than open groups (in which members may come and go)
- the nature of available multidisciplinary expertise (including medical, nutritional, psychological,
physiologic, and exercise)
- the training provided for relapse prevention to deal with high-risk emotional and social situations
- the nature and duration of the maintenance phase
- the flexibility of food choices and suitability of food types, and whether weight goals are set unilaterally or cooperatively with the program director.

The most important feature of a successful weight loss program is maintenance of stable weight or of reduced weight. In formal programs, continued regular contact with a supervising professional may be necessary to maintain weight loss. In any case, new eating behaviors must be learned and adopted, which can be difficult. These behaviors include modifying quantity and kinds of food, and possibly developing a different attitude toward eating and toward oneself. Therefore, an individual weight loss method should be based not merely on weight loss goals but should become part of a general long-term approach, the goal of which is better health. This goal should reflect accepted guidelines for healthful eating. Even though a caloric deficit must be achieved, the diet must provide all essential nutrients. A regular exercise regimen, which could be as simple as walking, is essential both to better health as well as long-term weight loss maintenance.

Methods whose primary goal is short-term rapid or unsupervised weight loss, or that rely on diet aids such as drinks, prepackaged foods, or pharmacologic agents but do not include education in and eventual transition to a lasting pattern of healthful eating and activity, have never been shown to lead to long-term success. It has been fairly said that such programs fail people, not vice versa. Recognition of this by society and individuals and a focus on approaches that can produce health benefits independently of weight loss may be the best way to improve the physical and psychological health of Americans seeking to lose weight.

WHAT SHOULD BE THE FUTURE DIRECTIONS FOR RESEARCH ON WEIGHT LOSS AND CONTROL?

The panel often had inadequate or no data with which to answer the questions about voluntary weight loss and control methods. Because voluntary weight loss has important health implications and because Americans frequently attempt it, an appropriate scientific base must be developed to maximize the chance for all Americans to achieve a healthy weight.

Evidence suggests that the causes of overweight and obesity are multifactorial. Thus, an appropriate research base must span the entire spectrum of health research from genetic, biochemical, physiologic, and neurophysiologic to individual, community, and population investigations. Research is needed within and across these areas; the biomedical perspective should be incorporated into clinical trials and population studies.

Obesity in humans has a substantial genetic basis. Numerous animal models of obesity are attributable to defects in as yet unidentified genes. Molecular genetic technology now makes identifying such genes possible in both animals and humans. Characterization of the function of the gene products should
facilitate understanding of the biochemical, physiologic, and neural basis for regulation of body weight and body fat, the resting metabolic rate, and metabolic efficiency. Interactions between genetic makeup and environment or environment alone during early childhood may influence the development of obesity. Understanding basic mechanisms elucidated by gene analysis also may provide important new insights into environmentally induced weight gain.

Physiologic research is helping define weight loss mechanisms that may be useful in therapy. Mechanisms identified include suppressing appetite, inhibiting gastric emptying, blocking carbohydrate or lipid digestion, stimulating lipid oxidation, and increasing thermogenesis. These mechanisms should be explored with pharmacotherapeutic research. Further efforts should be made to identify other mechanisms. Elucidating the physiologic basis for body fat distribution is important because of its relation to health.

The paucity of well-designed, long-term clinical trials evaluating various methods for voluntary weight loss is disturbing. Particularly lacking are data on minority populations and persons who are mildly to moderately overweight. Long-term clinical trials will provide the most convincing evidence about the longer term health effects of weight loss. Methods to improve compliance with weight loss regimens and methods for long-term maintenance of weight control should receive investigative priority. More must be known about the relationship of binge-eating, dieting, and weight loss. Commercial weight loss programs should routinely compile data on participant characteristics, attrition rates, degree and duration of weight loss, and adverse effects for all participants.

Because several observational studies found weight loss was associated with increased mortality, further analysis of existing data sets and survival studies of persons losing weight voluntarily are urgently needed. Better studies are needed to clarify long-term psychological effects of voluntary weight loss. Physical and psychological outcomes of weight cycling deserve additional investigation.

Population studies are needed to determine better the range of healthy weights by age, gender, and ethnicity. The effects of obesity in childhood, obesity treatment and prevention in children, and long-term consequences of childhood obesity are important research priorities.

Research on the prevention of obesity and unhealthy weight gain is an area of critical need. Of special importance are prevention of unhealthy weight gain in certain minority populations and prevention of unhealthy dieting among adolescent women. Weight and voluntary weight loss practices are closely tied to cultural and societal attitudes toward weight and body image. Interdisciplinary research involving all types of behavioral scientists is necessary to develop and evaluate prevention programs that encourage Americans to adopt healthy eating habits and lifestyles that will affect lifelong control of weight. Methods must be developed to deal effectively with such problems as an unrealistically thin ideal among some women and an uncritical acceptance of dangerous overweight in certain cultures.
CONCLUSIONS

One quarter to one third of Americans are overweight; many have tried a variety of methods to lose weight, with limited success in retaining weight loss. In controlled settings, diets, behavior modification, exercise, and drugs produce short-term weight losses with reasonable safety. Unfortunately, most people who achieve weight loss with any of these programs regain weight. For many overweight persons, achieving and maintaining a healthy weight is a lifelong challenge.

Successful weight loss improves control of noninsulin-dependent diabetes mellitus and hypertension, reduces cardiovascular risk factors, and enhances self-image. Long-term health effects are much less clear. Several epidemiologic studies raise the possibility that weight loss is associated with increased mortality. The relevance of these findings to voluntary weight loss programs is not yet clear.

Survey evidence also confirms that many Americans who are not overweight, particularly young women, are trying to lose weight. This practice may have significant adverse physical and psychological health consequences.

Because of the importance of these issues, research on the biologic and social influences on weight and weight control and the health consequences of weight and weight loss should assume a high priority on the nation's health agenda.

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