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Introduction

The short answer to the question, “What Causes Obesity?” is that when the human body takes in more calories than it burns off, it gains weight. Conversely, when the human body takes in fewer calories than it needs to sustain itself during physical activity, it loses weight. When caloric intake and burn off are in balance, weight is stable.

It is a seemingly simple calculus. However, the basic question is too simplistic. While the physics of the body are readily understandable, the factors that contribute to gaining weight are more complex. These contributing factors can be classified into those which we have some control over and those which we do not have control over.

What Is A Calorie?

Almost all papers and discussions about obesity contain several references to calories. Usually the reference is in the context of calories taken in by the body in relation to the calories burned by the body during physical activity. Food labels required by the Food and Drug Administration reference “total calories” and “calories from fat”, and then provide more information as to the types of fats the calories originate in.

Calories cannot be seen, they are a form of measurement. Just as you cannot “see” pounds or degrees of temperature, you cannot “see” calories. A calorie is a measure of energy. It is applied in discussions of metabolism. A calorie is the common unit that is used to measure the energy value of food and the energy used by the body to maintain its normal functions of life. Thus, the point that has been made repeatedly is that if the body takes in more calories (units of food energy) than it burns off through physical activity; the body tends to gain weight. That is because the body stores the unused calories as fatty tissue, and the body gains weight from the stored fat.

As a general observation, consuming approximately 3,500 calories more than what the body needs for physical activity results in a weight gain of about 1 pound of fat. What is important to understand is that a calorie is a calorie no matter what the food source of that calorie is. Nor does it matter whether the calorie comes in a liquid form or a solid food form, a calorie is a calorie.

It is true that some foods contain more or fewer calories per serving size than do other foods, and there is readily available information to allow one to compare the caloric value of foods to each other. Favoring or disfavoring one type of food over another is not an effective strategy for weight control.

While this relationship is relatively easy to comprehend, it is more difficult to apply in real life. People do not have a good frame of reference for calories in the context of actual food that they eat. Moreover, it is harder to gain a perspective on the number of calories being consumed as one eats a variety of foods. And, finally, it is almost impossible for most people to understand how many calories are being burned during physical activity.

It is hard to stay in balance when you don’t know what you’re balancing.

We have been very careful to use the term “physical activity” rather than “exercise” so that it is not erroneously concluded that only exercise will work to burn off calories. “Physical activity” is a much broader set of behaviors than just “exercise”. It includes occupational work, household chores and activities, and recreational exercise. It would be unfortunate if people concluded that physical activity was synonymous with exercise or sports and shied away from becoming active because of that association.

As a general principle, regular physical activity is good for overall health. Not only does the physical activity burn up calories rather than letting them convert to fat, it contributes to strong bones, increased muscle tissue, reduces the risk of hypertension, keeps joints limber, and works to help the individual (particularly the elderly) maintain balance and reduce falls. It is important to understand that physical activity does not have to be strenuous in order to be beneficial. Moderate physical activity also benefits the body and health.

Contributing Factors

We noted in the introductory comments that there are contributing factors over which one has no control and contributing factors over which one may have some control or influence. The following information identifies the most important contributing factors and then discusses each.

Genetics

Do genetics play a role in the tendency of the body to gain weight? It appears that there is now enough scientific evidence to conclude that, for some people, genetics may play a significant role in weight gain. However, it is far from clear that a genetic tendency or predisposition is destiny.

We noted in another topic paper (“*What Are The Health Risks Associated With Obesity?*”) that there is good evidence that humankind may possess a “thrifty gene”, but we hastened to point out that much research is yet to be done on the genetics of weight gain.

It has been widely reported that weight problems seem to run in families, and that a child is likely to be overweight if his or her parents are overweight. Evidence from twin, adoption and family studies strongly suggests that biological relatives exhibit similarities in body weight. Genetic factors also are beginning to be understood with respect to the degree of effectiveness of diet and physical activity interventions for weight reduction. However, families also share lifestyle, eating and other behaviors that can be significant contributors to weight gain. It has been reported that a person has an 80% chance of becoming obese if both biological parents are obese; a 40% chance of becoming obese if only one parent is obese; and less than a 10% chance of becoming obese if neither parent was obese. Although genetics partially determine who will be obese, it should not be concluded that genetic heritage alone is the cause of obesity.

The Centers for Disease Control and Prevention has an excellent paper entitled “*Obesity and Genetics: What We Know, What We Don’t Know and What It Means*” that has some very helpful comparative tables. In order to access and review this paper, please use the following link:
<http://www.cdc.gov/genomics/info/perspectives/files/obesknow.htm>

The research continues, and CNN reported on October 30, 2002 that a research firm in Salt Lake City reported that its researchers had found a gene that directly causes obesity. Myriad Genetics has named the gene *HOB*, the abbreviation for Human Obesity 1. The researchers suspect that the gene may also be associated with diabetes. To review the CNN report, use the following link:
<http://www.cnn.com/2002/HEALTH/diet.fitness/10/30/gupta.fat.gene.otsc/>

A very good discussion of the role of genetics can be found in another paper published by the Centers for Disease Control and Prevention entitled, “*Genomics and Disease Prevention, Public Health Perspectives, Obesity and Genetics*”, and it is available through the following link:
<http://www.cdc.gov/genomics/info/perspectives/files/obesedit.htm>

Metabolism

Along with genetic predispositions, the ability of the body to metabolize foods differs among individuals, and it may change over the span of one’s lifetime. Scientists refer to the “basal metabolic rate” which is the minimum energy required to maintain normal body functions. The rate of metabolism is important in the study of obesity because individuals vary. Some people naturally use more calories than do other people.

Metabolism refers to all the physical and chemical processes within the body that create and use energy, and includes the digesting of food and nutrients, the eliminating of waste through urine and feces, breathing, circulation of blood, and regulating body temperature.

Human metabolism is not a perfect biological activity. Not all of the food that we ingest is used by the body to power our muscles and critical life systems. Some of the food that we eat is also used to create heat in a process known as “thermogenesis.” Some of the energy available from the food that we eat goes to the manufacturing of heat rather than directly to the muscles and other energy needs. Some researchers believe that some obese people have a deficiency in the metabolic process so that they produce less heat from food than other people. If the additional

calories are not metabolized into heat, then they become “available” for running the body’s engine or to be deposited as fat. Further genetic research may shed more light on this suspicion.

Metabolism is probably influenced by genetic heritage, and as research continues on genetic predispositions to obesity it is likely that new discoveries concerning human metabolism will also be made.

Diet

Food in the United States and most of developed world is plentiful, inexpensive and tastes good. It is easy to get more food than is needed to sustain a reasonable life. In addition to having a plentiful food supply, Americans have come to associate portion size with economic value. There have been many articles written criticizing the sale of “super sized” portions of food at restaurants, amusement parks, movie theaters, and so on. There may be some accuracy to these criticisms, but the critics overlook the strong desires of the consumer. Menus have options so the consumer can choose what he or she eats, and can control the size of the portions that are ordered.

Not only is food plentiful in America and in most developed countries, it is plentiful in a variety of types. We have moved beyond fairly commonplace food stuffs to grocery stores stocked with ethnic and cultural foods, pre-packaged foods, frozen foods, and so on. Advanced food technologies have made it possible to have many foods year round rather than on a seasonally available basis. Foods are imported to the United States from many countries, and our foods are exported to many countries as well. Transportation and preservation advances have made it possible to have fresh seafood on a daily basis in the most landlocked regions of the country. Grocery stores and specialty food markets are not the only providers of food to take advantage of these technologies. Restaurants have broadened their menus to include a great variety of foods, and there are many, many cuisine specialized restaurants.

In an extensive survey reported in *Parade Magazine* on November 16, 2003, the survey respondents reported that the most important factor in deciding what foods to eat was flavor. The respondents also reported eating more ethnic foods than in the past. A full 15% of the respondents reported significant increases in selecting ethnic foods, with Italian and Mexican cuisines ranking as the two favorite ethnic menus. It is not suggested, nor should it be concluded, that these cuisines are less healthy than other cuisines. Nor should it be concluded that the advent of time-saving convenience foods are somehow less healthy than foods that must be cooked or otherwise prepared. These same respondents, by a two-thirds response, reported that they consciously look for healthy ingredients when purchasing these foods.

Labels on food that is purchased are very important. Many foods are marketed as being “low-fat”, “fat-free”, “reduced-fat”, “diet”, “healthy” and so on. It is not uncommon for many of these foods to have as high, if not higher, a fat content as the foods that they are competing against. The report issued by the Federal Trade Commission “*Weight Loss Advertising: An Analysis of Current Trends: A Federal Trade Commission Staff Report (September 2002)*” which was cited in our discussion paper, *What Are The Health Risks Associated With Obesity?* is a particularly important report in regard to the legitimacy of these claims. A particularly useful portrayal of what these terms mean can be found in a brochure prepared by Food and Drug Administration entitled “*Getting Specific*”. This information defines what the various terms really mean, and is available by using the following link:

<http://www.fda.gov/fdac/graphics/foodlabelspecial/pg32.pdf>

There have been calls for more labeling from some activist groups. Some of these groups have genuinely positive motives, but some groups are clearly attempting to advance either a

competitive market agenda or a litigation strategy based on “mislabeling.” Labeling information can be an important part of consumer education, but simply adding information of questionable use or validity does not advance consumer decision making. It is far from clear that the current labels approved by the Food and Drug Administration are inadequate if the consumer actually reads them. For a good explanation of how to read and use food labels, please follow this link to the Food and Drug Administration’s educational brochure on food labels:
<http://www.cfsan.fda.gov/~dms/foodlab.html>.

It is true that the amount of fat in the American diet has increased. From 1910 to 1984, the amount of fat in a typical meal increased from 27% to 44%. Then, during the period 1984 to the late 1990’s, the amount of fat decreased from the 44% to 34% - closer in line with what it had been in previous generations. The problem is that fat contains about twice the number of calories as do protein or carbohydrates. But consumers today have many more choices as to the foods that they select, the portions sizes that they prefer and they have access to a multitude of informational resources that describe the nutritional value of almost any food they are interested in.

Lifestyle

The discussion of lifestyle is a very broad one indeed. It includes many, many different aspects of daily living. We will discuss the more relevant ones on an individual basis throughout this paper.

Busy at a Busy Rate

Americans are pressed for time. Families have changed dramatically in modern times, and it is futile to compare them to the families of a generation or more ago. Both parents usually work, and it is not uncommon that their job demands encroach on personal and family time. Kids are involved in school and other activities and it is not uncommon for these activities to interfere with traditional meal times and menus.

In the November 16, 2003 *Parade Magazine* article cited earlier, the researcher reported that ease of meal preparation was a significant issue for many people. Nine of ten respondents to the survey reported that they purchased convenience foods, and 25% reported that they intentionally use more timesaving food products than they did just two years previously. “Convenience” foods were defined as those that take less than 30 minutes to prepare, and ranged from “take-out, bring it home” to frozen foods that are packaged for quick preparation to complete frozen meals.

Of particular interest in the report was that respondents were apt to note that even though the convenience foods might be more expensive to purchase, the savings in preparation time was more than worth the difference. A good example of what is occurring in American homes is the statistic reported in the survey that Americans spent approximately 49 minutes preparing a weeknight dinner ten years ago. Now, that preparation time has been reduced to 31 minutes. Even weekend dinners, such as traditional Sunday dinners, have an average preparation of 37 minutes.

Given the hectic pace of American life, it is very unlikely that we will see a return to large scale, time consuming meal preparation.

The lack of time also explains the phenomenon of “eating on the run.” Americans often must eat their meals very quickly in order to get on to something else that they must do. Sometimes it is work related, sometimes it involves social activities, and sometimes it involves family

scheduling. Whatever the reason, eating fast often results in a person eating more than is needed because the person does not feel “full.”

There is a difference between *hunger* and *appetite*. Hunger is when your body tells you that it is time to eat. Sometimes the body signals you through stomach growling or that somewhat empty or gnawing feeling in your stomach. That is a natural process of the body getting your attention to feed it.

Appetite, on the other hand, is the desire to eat. Much of appetite is learned behavior, and it can be triggered by social events, certain kinds of foods, aromas and so on.

Satiety is the point when you have eaten enough food, and the body signals you that it is full, or satisfied. When the stomach fills with food, it releases hormones that travel through your blood system to the brain. The hormones carry the information that you are full, and for the brain to turn off the hunger signals.

Returning for a moment to the points about genetics. Some researchers have come to believe that for some people there might be a genetic interference with the ability of the body to signal the brain that it is full.

Whatever the cause, it is generally agreed that if we eat too fast for the hormones to signal the brain in a timely manner, we are likely to overeat and that leads to more caloric intake than we probably would have had.

Aging

We have all heard the references made to “middle-aged spread”. Is there anything to it? Yes, somewhere in time after we enter our 40’s, we look in the mirror and discover that someone tied a bit of a paunch around our middle while we were sleeping.

For women, the body begins to change between the mid- 30’s and the mid-50’s. Some of the changes are aging related. Some of the changes are likely associated with the transition out of the child bearing years when estrogen begins to decrease. Experts disagree on how much the weight gain is due to aging and how much it might be associated with the onset of menopause. Women also experience weight gain with pregnancy. After each pregnancy, a woman’s weight increases an average of 4-6 pounds over her weight before she became pregnant. It is often difficult for her to lose this additional weight and return to her pre-pregnancy weight.

For a good discussion of women’s health issues associated with aging, including weight gain, please use the following link to a superb series of reports prepared by the staff of the Mayo Clinic: <http://www.mayoclinic.com/invoke.cfm?objectid=7878C26C-47F2-4F1F-BF04FCEB2D9C6589&locID>

But the aging process does not affect just women, it affects men as well. Middle-aged spread seems to be a condition that is somewhat immune from being thwarted – even among serious adult athletes. Paul Williams of the Ernest Orlando Lawrence Berkeley National Laboratory conducted a study of more than 4,500 male runners who were under the age of 50. He was interested in determining whether participation in vigorous physical activity (such as running) could offset the seemingly inevitable weight gain that occurs with age. He learned as a result of the study that waist-line growth in middle-aged men is going to happen whether they exercise

vigorously or not. This finding is not a justification for discontinuing or avoiding physical activity because it was also shown that even though it becomes increasingly difficult to remain thin that those who exercise will be leaner than those who do not exercise.

Williams also looked at men over the age of 50 in a separate review. He found that the men in this group (slightly more than 2,000) seem to gradually lose their muscle mass as they age. Waist size increased among this group as well even though they were continuing to run for physical activity.

Williams published his study and results in the *American Journal of Clinical Nutrition* in 1997, and his work has been cited in other studies. To review the abstract of the article, please use this link:

http://www.ajcn.org/cgi/content/abstract/65/5/1391?maxtoshow=&HITS=10&hits=10&RESULTFORMAT=&author1=Williams&fulltext=weight+gain&searchid=1070554724418_5864&stored_search=&FIRSTINDEX=0&sortspec=relevance&journalcode=ajcn .

This work is important because it is known that increases in fat throughout the abdomen are a significant indicator of other potential health problems. For a more complete discussion of this topic, please refer to our discussion paper “*What Is Obesity?*”

The other very useful observation that came from the Williams study is that the guidelines for physical activity should be adjusted for age. As we age, we need to increase the amount of physical activity beyond that which was satisfactory at a younger age. Some of the weight gain and waist-size increases can be offset by increasing the exercise routine and regimen.

But the chances are that your metabolism is changing as well. Your metabolism has begun to slow, and the amount of muscle in your body is also beginning to decrease. We know that muscle burns more calories than does fat, so as muscle begins to decrease the amount of caloric burn off decreases as well. And, it appears that no one is really immune.

A recently published study conducted under the auspices of the Agricultural Research Service of the US Department of Agriculture seems to verify the hypothesis that metabolism slows down as we age. The study suggests that the gradual loss of certain muscle cells can partially explain why we burn fewer calories when we are rest as we age. Burning fewer calories can contribute to weight gain. For a review of the abstract of this study, please use the following link:
<http://www.ars.usda.gov/is/pr/2001/010111.htm> .

This study, along with the Williams work and other research, does suggest that continuing physical exercise as we age can be a significant offset to any natural tendencies to gain weight. While weight gain may not be preventable, it can be managed or affected by physical activity.

Illness, Injury and Prescription Drugs

Some illnesses or injuries can also change your metabolism. It has been documented that individuals with spinal cord injuries do have a tendency toward lowered metabolism and weight gain because of the injury. For an excellent review of this issue, please refer to the work done by Craig Hospital researchers at <http://www.craighospital.org/SCI/METS/weightGain.asp> .

Other illnesses can contribute to weight gain. However, it appears that fewer than 2 percent of all cases of obesity can be traced to a medical cause, such as low thyroid function, excess production

of hormones by the adrenal glands (Cushing's syndrome) or other hormonal imbalances. As noted earlier in this discussion paper, a low metabolic rate may be a contributor to weight gain but it is rarely a cause of obesity.

Drugs such as steroids and antidepressants are known to contribute to weight gain. About one-third of people who take amitriptyline or imipramine gain weight. Fewer people gain weight with other antidepressants such as desipramine or trazodone. Schizophrenia medications such as chlorpromazine and thioridazine can contribute to weight gain, as can corticosteroids, and medications used to control seizures.

Mental Health

Psychological factors such as depression, low self-esteem, anxiety, eating disorders such as “binge” eating, surviving a trauma (sexual, a death of a close loved one, marital, etc.), alcohol abuse, etc. can contribute to weight gain. Many of these psychological factors may contribute to a cycle of overeating because of the condition, and the condition of being overweight contributes to the feelings of low self-esteem, depression, and so on.

Although it is not much discussed, obesity and the mental health of children can be a serious problem. Depression is the most often encountered emotional effect of being obese that affects children. It has been reported in several studies that ridicule and prejudice against the obese often starts as early as age 3 or 5. Even before an obese child reaches kindergarten, he or she may have been the subject of social ostracism and rejection. Rejection and ostracism then add to the cycle of weight gain because such children are less likely to participate in physical activities such as games and sports, and resort to “alone” activities such as passive interaction with electronic media such as TV’s or computers.

Dieting As a Cause of Weight Gain

Even though it seems counterintuitive, dieting in an improper manner can lead to weight gain. Nearly one-third of Americans report that they are “dieting” on any given day. In the *Parade Magazine* survey, a full two-thirds of the respondents reported making decisions to substitute lower-fat foods, and about 60% purchase the low-fat version of the foods that they normally buy. About one-half reported that they no longer purchase certain products because of the high fat content of the food.

As noted in the work done by the Federal Trade Commission and other organizations, Americans are prone to “yo-yo” dieting – an on and off again syndrome. This yo-yo dieting can actually cause the individual to gain more weight during the “off” or rebound portion of the cycle, particularly if the diet did not include a physical activity component. It is very important to distinguish between a “diet” and a “weight-management” program. A diet helps you decide what and how much to eat, while weight management programs generally include physical activity and behavior change in addition to your dietary plan.

When a person loses weight on a diet, he or she loses both muscle and fat. When the individual goes off the diet and begins to eat again, there is less muscle to burn up the calories. It then is even easier for the body to gain weight because more of the calories will find their way into fat tissue than into muscle. The more the yo-yo dieting occurs, the more the fatty tissue will build up.

Some people are prone to trying “crash” diets for one reason or another. Crash diets bring other potential problems besides the yo-yo effect. Crash diets can eliminate so many calories and essential nutrients that health problems, such as vitamin deficiencies, can develop. Nor is fasting an effective strategy. Most of the weight loss associated with fasting comes from the loss of water, and that can result in other health problems.

Considering the number of people who report that they are “dieting” and the amount of money that is spent on various diet schemes, it seems obvious that dieting alone is not going to be a successful strategy. National statistics indicate that almost 95% of the people who lose weight while on a diet regain that weight (and sometimes more) within 3 to 5 years.

Lack of Physical Activity

This category of contributors to weight gain is almost so large as to be a discussion paper of its own. America is a technological society, and we have developed many, many kinds of technologies to make our labor easier, safer and more productive; to make our entertainment more enjoyable; and to be increasingly mobile as individuals. Technological support systems are ubiquitous in our society, and are so commonplace as to nearly defy recognition.

Work

The increase in technological work support systems is staggering. No longer do farmers cultivate with horse drawn plows, they use tractors and combines. No longer do warehousemen stack boxes by hand, they use forklifts to move massive pallets. No longer do men dig ditches by hand, they use powerful backhoes. No longer do we climb stairs, we use elevators, escalators and hoists. No matter what the physical labor, there is now some sort of technological innovation to make it easier.

These changes have not been all bad. Workplaces are safer and injuries have been reduced. Workers are far more productive with the aid of machinery than they would be working by hand. Products are more uniform and are cheaper. Among the positive changes technology has brought about is the enabling of individuals who are disabled and thereby allowing them to undertake careers that would have been foreclosed to them because of their physical limitations.

Home

The use of technology to store and prepare food has allowed both adult members of the family to become jobholders. Technology has made the old divisions of labor in families obsolete. One adult is no longer required to run the home.

Even household chores are mechanized through the use of vacuum cleaners, snow blowers, powered appliances, dishwashers, washing machines, dryers, power self-propelled lawnmowers (some of which the operator can ride) and so on. As noted in preceding sections, even food preparation technologies have contributed to the ease of eating, and often eating too much. There is an extremely provocative study entitled “*Why Have Americans Become More Obese?*” written by Harvard University economists David Cutler, Edward Glaeser and Jesse Shapiro, and published in January, 2003. In their study, the authors offer some pretty sound economic analysis that food preparation and preservation technologies that result in savings of time has led to an over consumption of the end product – food. For a copy of this very interesting study, please follow this link: <http://post.economics.harvard.edu/hier/2003papers/HIER1994.pdf>

There is some pretty sound long standing economic theory to support the authors. When something becomes cheaper (when measured by money or effort), demand increases and more quantities are consumed. However, that should not be considered an economic or market imperative. Demand is a function of many factors besides cost and price. Tastes and preferences of the consumers are also extremely important and the market tends to reflect the changes in tastes as can be seen from any number of products and services.

Our home based entertainment has become dependent upon super modern television sets, and complete home entertainment systems that rival many commercial enterprises. The introduction of computers, Internet and digital cable systems has furthered the development of an independent home/work/entertainment environment.

The prevalence of television, electronic entertainment and computers is particularly telling upon children and adolescents. According to the Surgeon General, 43% of adolescents watch more than 2 hours of television each day.

One of the most comprehensive surveys conducted on the use of electronic media by children was conducted as a joint effort by the Henry J. Kaiser Family Foundation and the Children's Digital Media Centers. Their report, "*Zero to Six: Electronic Media In The Lives Of Infants, Toddlers and Preschoolers*" was released in the fall of 2003, and is available through the Kaiser Family Foundation website by using the following link:

<http://www.kff.org/entmedia/entmedia102803pkg.cfm>. This report follows on two previous reports issued by the Kaiser Family Foundation entitled "*Children and Video Games*" and "*Teens Online*", both issued in the fall of 2002. Both are available on the Kaiser Family Foundation website.

What these reports show very clearly is that the American homes are literally overflowing with electronic media equipment. This includes televisions, computers, DVD players, video game consoles and so on. Nearly all children from birth to age six live in households where these gadgets proliferate. Over half of these preschool children have 3 or more televisions in their homes, and 36% have a TV in their bedroom. Nearly twice as many children live in a home with Internet access than have a newspaper subscription.

Bearing in mind that this survey was done of preschoolers, there were some pretty astonishing findings. Two-thirds of these children live in homes where the TV is on at least half the time even if no one is watching. Nearly half the parents reported that they would use the TV to occupy the child while they did something else. But these preschoolers are not just watchers. They are actively engaged in interacting with the media. Over three-fourths turn the TV on themselves. More than two-thirds ask for a specific program. And nearly two-thirds use the remote to change channels and programs. There are more statistics related to these preschoolers and their interaction with DVD's, computers, and so on. When compared to playing outdoors or reading, these children spend an average of nearly two hours a day in front of a screen, whether it is TV or computer. That is almost the same amount of time as they spend playing outdoors, and is 3 times the amount of time spent reading or being read to.

However, before jumping to the conclusion that all this exposure is inherently bad, some of the interaction is for educational purposes. It is not all just entertainment. There are more and more educational programs and resources both on TV and through Internet access that the children are using on a regular basis. To be sure, children (and adolescents as well) are using the electronic interfaces in a more frequent and sophisticated manner.

But all of these advances have one thing in common. They lessen the required physical activity necessary to perform tasks, and they often require only a passive involvement or minor (click the mouse) activity to manage them.

Outside Entertainment

Americans have an almost unlimited number of recreational opportunities available to them. The investment in public parks, natural areas, golf courses, multi-purpose playing fields, sports complexes, swimming facilities, bicycle paths, hiking and walking trails, tennis courts, basketball courts, downhill and cross-country skiing and more is unprecedented in human history. A great many of these opportunities are also accessible to the disabled community so that they can participate in activities that had been formerly unavailable to them.

Yet we find ourselves using these facilities and participating in recreational activities episodically more than on a routine basis. According to the Surgeon General, 40% of American adults do not engage in any leisure time physical activity. The National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) has reported that only 22% of American adults get the recommended regular physical activity, and that 25% get no physical activity of any kind during their leisure hours. Again, the issue of available personal time plays an exceedingly important role.

There is one area of modern life that seems to have developed in a particularly counterproductive way. Increased concerns for the physical safety of children have led many parents, community groups and organizations to discourage outdoor play and activities unless the children can be accompanied by a supervising adult. Children play, and if they cannot play outside they will play inside the home, child care center, school, church or other facility. It is unfortunately the case that children who play indoors are not as physically active as those who play out of doors.

The Centers for Disease Control and Prevention published an extremely good report in August, 2002 entitled "*Barriers to Children Walking and Biking to School – United States, 1999*" as part of its ongoing series of Morbidity and Mortality Weekly Reports. To review this important study and report, please follow this link:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5132a1.htm>

Concluding Thoughts

We once thought that people became overweight simply because they ate too much or they just ate the wrong foods. We now know that is not right. Some people do eat more than they should given the level of physical activity that they engage in. Some people have special challenges brought on by genetics, by their metabolism, by their medical condition and growing older. What is becoming clear is that individuals whose BMI's fall into the category of being severely obese most likely did not get there simply by overeating. It is more likely that these people have one or more of the contributors that cannot be controlled by balancing their food intake and their physical activity. That is not to say that such a balance would not be useful or important, it is to say that they most likely need professional medical intervention to assist them in their weight loss efforts.

But even small successes in weight loss are beneficial. According the Surgeon General, a loss of as little as 5% to 15% of body mass or weight can alleviate many of the ailments that are associated with obesity. Weight loss results in lower blood pressure and lower blood sugars. Clearly, weight loss can improve the outlook for developing Type II diabetes.