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Obesity

Robert H. Eckel, MD



We are living in a time of an overweight/obesity epidemic. Overweight/obesity is not only a problem for adults: Recent data in children as young as 2 years old throughout adolescence have indicated a 3-fold increase in the prevalence of overweight. Why the epidemic? Is it too much food or too little activity? The consumption of large portions of foods that are high in calories (fats, carbohydrates, or both) and reduced physical activity—mostly in the workplace for adults and in and after school for children/adolescents—work together to protect us from the “harsh environment,” which is no longer a threat for most of us. Certainly, our genetic makeup has not changed in several decades.

When body mass index (BMI; weight in kilograms divided by height in meters squared [kg/m^2]) is used as a reflection of fatness, only 35% of adult Americans have a healthy BMI, $<25 \text{ kg}/\text{m}^2$, whereas approximately 30% are obese, as defined by a BMI of more than $30 \text{ kg}/\text{m}^2$. For individuals with a BMI between 25.0 and $30.0 \text{ kg}/\text{m}^2$ (overweight), excess body fat is not always present, particularly in physically trained people. Moreover, in

women in whom excess adipose tissue is distributed below the waist (pelvis), the relationship between fatness and cardiovascular disease risk may be minimal. A waist circumference of more than 40 inches in men and more than 35 inches in women usually indicates an excess of intra-abdominal (visceral) fat and raises additional health concerns (Figure). For Asians, the definitions for obesity as determined by BMI and waist circumference need to be adjusted downward.

Relationship of Overweight and Obesity to Risk Factors for and Incidence of Cardiovascular Disease

Being overweight or obese usually concerns us because of the way we look, but the health issues related to excess fat should be the priority. When the BMI exceeds $25 \text{ kg}/\text{m}^2$, diabetes mellitus, hypertension, and disorders of lipid metabolism (including higher concentrations of blood cholesterol and triglycerides and lower levels of HDL [“good”] cholesterol) are seen more frequently. Recent evidence also indicates that blood proteins called cytokines, which indicate an inflammatory condition, are elevated in individ-

uals with overweight/obesity. It also appears that these cytokines can be made in fat tissue and released into the bloodstream, where they can have potentially adverse effects on other organs in the body. Although the exact contribution of these cytokines to cardiovascular disease (heart attack, congestive heart failure, stroke) remains uncertain, many of the conventional risk factors for cardiovascular disease associated with being overweight or obese, such as diabetes, hypertension, and the lipid disturbances, are related to the levels of blood cytokines.

Weight Loss for Life

Treating overweight/obesity is a life-long goal, not just for a season. The critical ingredients of a successful program combine good nutritional habits with increasing amounts of physical activity and behavior modification. One thing we have learned from the “fad” diet approach is that although weight loss can be accomplished over short intervals, long-lasting effects are difficult to sustain. This is not really a failure per se, but it does relate to the important fact that once the overweight/obese condition has been in place for years, the brain regulates

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The Venus of Willendorf (circa 20 000 to 30 000 BC). This work of art has been considered by some to be a true-life depiction of obesity.

your metabolism around this weight (body fat) and tries to defend it against permanent reduction. This type of biological regulation may have been advantageous during periods in history when food was less available.

Despite the lack of success of “crash diets,” an intelligent and evidence-based approach to weight reduction can be achieved long term¹ and can predict a lifestyle that will reduce the likelihood of a heart attack, heart failure, or stroke. Keep in mind that you do not need to achieve a weight that is identical to that when you graduated from high school. Just losing about 10% of your weight can have a tremendous beneficial effect on the risk factors related to cardiovascular disease.

Nutrition

How many servings of fruits and vegetables do you eat each day? How many servings of whole grains do you eat every day? How many servings of fish do you eat each week? You might question how this relates to weight reduction, but the important take-away

point is that we need to start with the quality of our nutrition before we turn to reducing caloric intake. The goal is 5 or more servings of fruits and vegetables and 6 or more servings of whole grains per day, with 1 serving of fatty fish (for example, salmon or tuna) each week.

We also need to think about the quantity of our nutrition. For an individual with an average level of physical activity, eating approximately 500 calories fewer than usual each day is 1 pound lost each week. Thus, with no change in the amount of physical activity, which we do not recommend, eating 250 calories fewer per day would predict approximately a 25-pound weight loss in 1 year. This amount of weight reduction would be just 2 sugar-containing sodas fewer every day, but you cannot make up for this with other sources of calories. Remember, as you lose weight, you will have a tendency to try to do this.

Use the following formula to estimate your energy (calorie) needs to maintain weight¹:

1. Multiply current weight in pounds _____ $\times 10 =$ **Base Calories** _____.
2. Multiply current weight in pounds _____ $\times 3$ (if not active), $\times 5$ (if moderately active), or $\times 8$ (if very active) = **Activity Calories** _____.
3. Add Base Calories + Activity Calories = **Total Calories to Maintain Weight** _____.
4. If you are older than 50 years of age, subtract 10% of that total [Total Calories to Maintain Weight – (Total Calories to Maintain Weight $\times 0.01$)] _____ = **Total Adjusted Calories** _____.

Physical Activity

If you have a history of heart failure or have experienced a recent heart attack or stroke, then you need to discuss an exercise regimen with your physician before starting a weight-loss program. A good way to assess your current level of activity is to use a pedometer to measure the number of steps you walk each day.

Pedometers are inexpensive and readily available. A moderate level of activity is between 5000 and 7000 steps per day. You need to increase this number slowly over weeks to months—for example, by an extra 500 steps every week. During the same interval, try to increase the duration of your daily activity to 60 minutes each day. Even if you are not losing weight, being fit benefits your health. Although exercise can help in weight reduction, reducing your caloric intake is the most important part of losing weight. Once your weight is down, physical activity is extremely important in sustaining the benefit of weight loss. Estimates of the number of calories burned in 30 minutes of a variety of activities are shown in the Table.¹

Behavior Modification

Expect that while you lose weight there will be times when the scale does not change, and learn from these times. Once you have reached your goal weight, if left to nature, you will regain some or all of the weight you lost. Acceptance of this fact is the beginning of your success: You need to realize that you cannot return to the eating habits or level of inactivity of the past. Pick up on clues that you are falling back into your old ways. Keep track of your day-to-day behaviors, be accountable to the scale, and make adjustments in your lifestyle when the weight starts to go up. Get support from your family, friends, groups who share your struggles with overweight/obesity/weight regain, and, of course, healthcare providers such as your physician, dietician, or trainer. In the end, the need and drive to sustain the new habits you have learned for a lifetime and to prevent the adverse consequences of excessive body fat come from you. Successful and sustained weight loss can be accomplished,² and there are places for you to go for sound information and help along the way.^{3,4} Here’s wishing you the best of results to follow.

Estimates of the Number of Calories Burned in 30 Minutes of a Variety of Activities

Activity	Your Weight			
	≈150 lb	≈175 lb	≈200 lb	≈225 lb
Baseball and softball	141	165	188	212
Basketball	282	329	376	423
Bicycling	163	190	217	244
Billiards and bowling	98	114	130	147
Canoeing (at 21/2 mph)	98	114	130	147
Cleaning windows	135	158	180	203
Desk work	68	79	90	102
Football	270	315	360	405
Gardening	195	228	260	293
Golfing (carrying clubs)	165	193	220	248
Golfing (riding in a power cart)	98	114	130	147
Gymnastics	135	158	180	203
Hiking and backpacking	204	238	272	306
Ice and field hockey	273	319	364	410
Ice and roller skating	195	228	260	293
Jogging (at 5 mph)	270	315	360	405
Jumping rope	375	438	500	563
Mowing (pushing a light power mower)	135	158	180	203
Mowing (riding lawn mower)	98	114	130	147
Racquetball	375	438	500	563
Raking leaves	165	193	170	248
Running (at 5 1/2 mph)	317	370	422	475
Sewing and knitting	68	79	90	102
Skiing (cross-country)	350	408	467	525
Skiing (light downhill)	225	263	300	338
Soccer	270	315	360	405
Square dancing	225	263	300	338
Swimming	194	227	259	291
Tennis (singles)	234	271	310	349
Tennis (doubles)	165	193	170	248
Walking (strolling at 1 mph)	68	79	90	102
Walking (at 5 mph)	225	263	300	338

These figures are for comparison purposes only.

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