Weight Management

Key Points

- The most common cause of "creeping obesity," or typical adult weight gain, is a gradual decrease in daily activity, on the average of two pounds weight gain per year.

- There are approximately 3,500 calories in a pound of body fat. The American College of Sports Medicine recommends that weight loss be no more (no faster or more rapid) than two pounds per week, or a total deficit of 7,000 calories per week.

- One of the few times when the number of fat cells can be increased (hyperplasia) is during early adolescence.

  - Android obesity is characterized by an overabundance of fat in the middle of the body, gynoid obesity is characterized by an overabundance of fat in the hips, buttocks, and thighs. Android obesity has a greater risk for coronary artery disease and other health problems, but is easier to lose. Gynoid obesity is more difficult to lose, but the health risks are comparatively lower.

  - A high risk waist:hip ratio for young males is anything above 0.94, while a high risk waist:hip ratio for young females is anything above 0.82. Older males become high risk when the waist:hip ratio exceeds 1.0, and older females become high risk when the waist:hip ratio exceeds 0.90.

- Dieters should set short-term as well as long-term goals.

- Those who are severely over-weight, over age 40, or with health problems should first seek physician clearance before beginning their weight loss program.

- Water intake is key to success of the diet.

- Use girth measurements (waist, hips, chest, thigh, etc.) instead of the scale to monitor progress.
- Participate in daily aerobic exercise or sustained physical activity.

- Engage in resistance training.

- Determine daily energy needs and daily caloric intake and seek to achieve a negative energy balance. Most of us underestimate the amount of food we actually eat.

- The daily diet should not drop below 1,200 calories per day. If you can not meet your weight loss goals on at least 1,200 calories, you will need to add exercise to achieve the negative energy balance you desire.

- Decrease fat intake to less than 30% of the daily calories, decrease saturated fat to no more than 10% of the day's calories.

- Keep protein intake moderate. Protein should comprise about 15% of the daily calories, or from 0.8 to 1.5 grams of protein per kilogram of body weight.

- Decrease intake of refined sugars.

- It takes time to gain weight, and it takes time to lose weight...there is an elastic effect...and success is achieved through long-term commitment.

- Eat the majority of your daily calories before evening.

- Make diet and exercise a permanent part of your lifestyle.

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Reading Comprehension

Reading: Chapter 9
Define the following terms:
- resting metabolic rate
- weight cycling
- binge eating
- restrained eating theory
- body image
How do genetic and environmental factors influence a person's weight? Discuss each of the following as they relate to weight management:

- portion sizes
- fat calories
- complex carbohydrates
- simple sugars
- protein
- eating habits
- physical activity
- thoughts and emotions

Supplemental Knowledge

As mentioned previously, despite tragic rises in the incidence of disordered eating behavior, weight control remains the most common weight-related American health concern. Most of us lead a pretty easy life, in terms of physical work, and most of us have access to a lot of tasty calories relatively cheaply obtained. In a sense, it is a wonder we are not worse off than we are, as the research indicates the most common cause of "creeping obesity," or typical adult weight gain, is a gradual decrease in daily activity (caloric cost) as the years progress, on the average of two pounds weight gain per year.

There are approximately 3,500 calories in a pound of body fat, and so two pounds of this would be 7,000 calories that we don't need – either too much in or not enough burned off. Seven thousand divided by 365 days in the year equals only slightly more than 19 calories per day...about the cost of climbing two flights of stairs.

There is often evidence to show that our body maintains a "set-point" regarding body weight, or a certain concept of how heavy we should be. We can skip a few meals without changing our body weight, and, in the reverse manner, we can eat way too much on Thanksgiving or Christmas without any permanent weight gain. In order to lose weight long term, we have to convince the body – through a regime of long-term diet and exercise – that our "set point" should really be set at a lower weight. So-called "crash diets" or "starvation diets" only convince the body that it is having trouble achieving the "set-point" it has previously established, triggering strong cravings for the missing food, and when someone leaves the diet the weight rapidly comes back to the "set point."

Other things complicate our weight control, just as there are many reasons why we eat. Food is more than a source of energy, it is also very frequently a social function, and sometimes a means of handling emotional stress. Genetics plays a tremendous role in weight control, as each of us has a genetic predisposition to a certain body composition.
and metabolic rate. Each of us is born with a certain number of fat cells, for example, and weight gain or loss centers around filling or emptying these cells. You can easily see that the person with a larger number of cells is going to have greater difficulty in controlling his or her weight, and this is one of the reasons why the statistics indicating that American youngsters are growing increasingly heavier is so disturbing. One of the few times when we can increase the number of fat cells (hyperplasia) beyond what we were given at birth is during early adolescence, and young men and young women who grow up too heavy are much more likely to add fat cells and have a greater degree of difficulty controlling their weight their entire adult life (although the capacity for the body to adapt and change with proper diet and exercise can be truly remarkable.)

A couple of other things need to be covered before we move to a "how-to" discussion of weight management. First, the body loses and gains fat overall, it is not normal to gain or lose fat in "spot reduction," which is usually translated into a desire to leave fat in one area (such as the breasts) and lose fat in other areas (such as the hips). It comes off in the same pattern it came on. It should also be noted that not all forms of obesity are created equal. Android obesity is characterized by an overabundance of fat in the middle of the body, the classic "pot belly" more common in men (although not exclusive to the male gender). Gynoid obesity is characterized by an overabundance of fat in the hips, buttocks, and thighs, and is more common in women than in men. Because the fat stores in the abdomen are more active, triglycerides and fatty acids are moving in and out of the bloodstream more often, which makes this form of obesity a greater risk for coronary artery disease and other health problems. On the other hand, this mobility makes abdominal fat (android obesity) easier to lose. The fat stores in the lower body are more stable, so it is more difficult to lose this fat, although the health risk of this kind of obesity is comparatively lower (although by no means risk free).

The tendency towards android obesity is summarized in the "waist-to-hip ratio," which is calculated by taking the circumference measurement of the waist at the narrowest portion of the waist between the lowest ribs and the umbilicus (belly button), and the hip circumference at the widest portion of the hips, including the girth of the buttocks. The waist measurement divided by the hip measurement is the waist:hip ratio. A high risk waist:hip ratio for young males is anything above 0.94, while a high risk waist:hip ratio for young females (given the relatively wider structure of the bones of the female pelvis) is anything above 0.82. Older males become high risk when the waist:hip ratio exceeds 1.0, and older females become high risk when the waist:hip ratio exceeds 0.90.

In their perpetual quest to shed a few pounds, Americans have routinely flocked from one fad diet to another. Many of these diets have some scientific basis behind them, but often they take only one scientific principle to an extreme, and extremes are always unhealthy. In our discussion of weight management, we will review the most commonly-accepted scientific principles...the distilled experience of literally thousands of exercise and nutrition scientists world-wide.

Principle #1: Set short- and long-term goals. Weight loss takes a long time: The maximum rate of safe and effective weight loss is only two pounds per week (and one pound per week is much more realistic). Weight loss in excess of two pounds per week is
likely to be nothing more than a loss of plasma (water) and will almost assuredly be re-
gained.

Set short-term goals, things which can be accomplished in a week or two, and
attach rewards to their accomplishment. If you stick to your program for two weeks, go to
the movies or buy that CD you've been wanting. Weight loss goals of over five pounds
tend to be too large to tackle in one goal-cycle without becoming discouraged.

Principle #2: Obtain medical clearance. As discussed in the first section of this
course, if you are over 40 years old, if you have a pre-existing medical condition, if you
have been experiencing chest pain or unexplained dizziness/fainting, if you have been
inactive for a long period of time, OR if you are severely over-weight, you should consult
your physician before beginning any exercise program.

Principle #3: Drink lots of water. The sensation of thirst and the sensation of
hunger are very closely related – often we think we are hungry when it is really fluid we
crave. And most Americans don't drink enough water: Current recommendations are at
least eight glasses of water per day (remember, that's water, not diet soft drinks).

Principle #4: Don't trust the scale. Few things are more discouraging than to "be
good" for two or three weeks on a diet and exercise program, only to step on the scale and
find no change in the reading. In addition to the elastic principle, discussed below, there
is also the tendency to add muscle tissue early in an exercise program, counterbalancing
fat loss.

Girth measurements (waist, hips, chest, thigh, etc.) usually respond faster than
weight, and a shrinking waistline can provide you with the reinforcement you are looking
for without playing up-a-pound, down-a-pound games with the scale.

Principle #5: Participate in daily aerobic exercise or sustained physical activity. It
does not have to be high-intensity work (indeed, if you have not been exercising regularly,
you should not engage in high-intensity training), but you should accumulate at least 30
minutes of sustained physical activity on all but one or two days of the week. Brisk
walking is the most common weight loss exercise, but any rhythmic, sustained activity
that is approved by your physician is acceptable (e.g., jogging, cycling, swimming, etc.) It
should be noted that most overweight people do not eat more than those of a healthy
weight – very often they actually eat less. The biggest difference between the overweight
and the healthy weight segments of our society (besides genetics) is not diet, it is physical
activity.

Principle #6: Engage in resistance training. Resistance training – either weight
lifting or calisthenics – provides the body with the stimulus it needs to retain lean body
mass (muscle). Normally, the body will burn muscle tissue in preference to fat tissue, an
effect contrary to most dieters' wishes. This does not need to be high intensity work – if
you are not accustomed to lifting weights it should not be high intensity work – but you
should lift or perform calisthenics for about a half hour, using every major muscle group
of the body, two or three times per week.
Principle #7: Determine your daily energy needs. In the absence of more scientific measurements, daily energy needs can be estimated from the following equations:

First = Calculate Basal Energy Expenditure
(1 kg = 2.205 pounds; 1 inch = 2.54 cm)

Men BEE = 66 + (13.7 * W in kg) + (5 * H in cm) - (6.8 * A in years)

Women BEE = 665 + (9.6 * W in kg) + (1.8 * H in cm) - (4.7 * A in years)

Second = Multiply the BEE by an Activity Factor to determine daily energy needs

<table>
<thead>
<tr>
<th>Activity Level</th>
<th>Activity Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bed Rest</td>
<td>1.2</td>
</tr>
<tr>
<td>Sedentary</td>
<td>1.3</td>
</tr>
<tr>
<td>Normally Active</td>
<td>1.5</td>
</tr>
<tr>
<td>Very Active</td>
<td>1.75</td>
</tr>
<tr>
<td>Extremely Active</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Third = Calculate the energy expended during daily exercise

Fourth = Calculate the Estimated Total Daily Energy Expenditure

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TDE = (BEE \times AF) + \text{Exercise}
\]

Principle #8: Determine the number of calories you eat each day. Most people fail to acknowledge all of the calories they take in.

<table>
<thead>
<tr>
<th>Calories Source</th>
<th>Per Gram Calories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fat</td>
<td>9</td>
</tr>
<tr>
<td>Protein</td>
<td>4</td>
</tr>
<tr>
<td>Carbohydrates</td>
<td>4</td>
</tr>
</tbody>
</table>

\[
\% \text{ FAT} = \frac{\text{Calories from fat (FAT g \times 9)}}{\text{Total calories}}
\]

\[
\% \text{ CHO} = \frac{\text{Calories from carbohydrates (CHO g \times 4)}}{\text{Total calories}}
\]

\[
\% \text{ PRO} = \frac{\text{Calories from protein (PRO g \times 4)}}{\text{Total calories}}
\]

Principle #9: Achieve a negative energy balance. The primary reason why anyone sees success on any diet is the ability to achieve a negative energy balance – to take in fewer calories than they expend; to expend fewer calories than they take in.
One pound of fat is equal to 3,500 calories. To lose a pound of fat per week requires an average daily deficit of 500 calories. This can be achieved through either adding exercise or decreasing food intake, but the most effective method is a combination of both (e.g., 250 calories from exercise, 250 calories food restriction).

One word of caution, the daily diet should not drop below 1,200 calories per day. If you can not meet your weight loss goals on at least 1,200 calories, you will need to add exercise to achieve the negative energy balance you desire.

Principle #10: Decrease fat intake to less than 30% of the daily calories. We need some fat in the diet to remain healthy, perhaps 10% to 15% of the total calories, but too much fat is unhealthy for a number of reasons. In particular, saturated fat (fat from animal products such as meat, butter, etc.) should be no more than 10% of the day's calories.

Principle #11: Keep protein intake moderate. Protein should comprise about 15% of the daily calories, or from 0.8 to 1.5 grams of protein per kilogram of body weight. While some people who have been profoundly overweight for a long period of time have experienced weight loss on high-protein diets in a medically-supervised setting, the weight of scientific evidence does not support high-protein diets for the general population.

Principle #12: Decrease intake of refined sugars. Most of the criticism of "carbohydrates" in some fad diets is more correctly directed at refined sugars. Complex carbohydrates from grains and vegetables are not in the same realm as table sugar or high-fructose corn syrup – for that matter, neither are natural "sugars" occurring in fruits and dairy products.

Complex carbohydrates – grains, cereals, fresh fruits and vegetables – should be the mainstay of the diet for reasons which are far too numerous to detail here. At the same time, legitimate criticism is directed at the tendency for some people to take in up to half their calories in the form of sugared soft drinks, sugared pastries, sugared candy, etc. While the specific recommendation is to eat these things "sparingly," this might be interpreted to one or two sweet treats per day (including sugared soft drinks).

Principle #13: Factor in the elastic effect. The body is designed to maintain homeostasis, or the way things are. It is difficult to effect change in the body in any direction. A marathon runner who stops running and starts eating donuts will not immediately gain weight, and an overweight person who begins walking and cutting calories will not immediately lose weight. And the older you are, the longer the elastic effect seems to be – at least in terms of weight loss. As a general rule, you should plan on sticking with your program one week for every decade of life before you can expect to see an effect. For example, a forty-year-old man would normally have to spend his first month on a healthy diet and exercise program before overcoming the elastic effect and beginning to see marked changes in his body composition.

Other behaviors, such as cutting back on sodium (a very healthy behavior, but a topic for another day), avoiding sweets, cutting back on meat, etc., tend to be the hardest
to maintain during the first six weeks of abstinence. In about six weeks, salty foods begin to taste too salty, and dietary control is much easier.

Principle #14: Eat the majority of your daily calories before evening. Who started the practice of eating light meals during the day when we are using energy, and then eating a big meal two or three hours before going to bed? Studies have shown that those who eat breakfast are markedly healthier (and, on average, weigh less) than those who skip breakfast, and many people have experienced weight loss through nothing more complex than substituting a "normal" dinner with a "light" dinner (such as soup and/or salad). Others recommend switching the three "big" meals of the day for six snack-sized "meals" as a means of controlling appetite and losing weight.

Principle #15: Make diet and exercise part of your lifestyle. The biggest failing of "going on a diet" is the implicit assumption that one will someday "go off the diet" and return to the same dietary and exercise behaviors which started the trouble in the first place. Often the extent of the lifestyle change must include eating in new places, doing different kinds of leisure activities, even forming new friendships which reinforce your new diet and exercise behaviors.