

HEALTH AND STRESS

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HOW TO LOSE WEIGHT AND KEEP IT OFF, SAFELY, AND PERMANENTLY

Key Words: Fatty acids, leptin, obesity in children and teens, stress hormones and "middle-aged spread", Body Mass Index, bioimpedance, DEXA, glycemic index

An unsolicited message from slim 445@yahoo.com has popped up in my e-mail several times over the past few months for "The Most Powerful Anti-Obesity Drug Ever Discovered"; but that's not all. This marvelous medication is also described as "The Age Reversal Miracle Of The 21st Century, The Ultimate Anti-Aging Therapy, Cosmetic Plastic Surgery In A Bottle, and Metabolic Liposuction Vacuuming Off Excess Body Fat!"

Sounds extravagant, but as the letter goes on to explain, "These are statements from physician researchers - as they try to find appropriate words to describe some of the amazing health benefits they have noted and documented in their clinical research with this incredible substance."

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I also just received a "Become slimmer, Lose weight, 100% Guaranteed" offer from gogetter20@yahoo.com. It promises that you can "Lose 2 to 14 inches of fat PERMANENTLY and SAFELY in only 1 HOUR, 100% Guaranteed!" You can do this in the privacy and comfort of your own home using specially formulated mineral body wraps costing less than twenty bucks, compared to the \$75-\$150 some salons charge for this same service.

These and other products promising permanent weight loss regularly rake in small fortunes for their manufacturers. Americans are so obsessed with rapid weight loss they will try anything that promises a quick fix. **At any given time, one in three women will be on some sort of weight loss diet.** About 50 million people will go on some sort of weight reduction regimen this year with various diets, commercial programs, special foods, prescription and non-prescription drugs, exercise equipment, etc. If any of these approaches were effective, there would be no need for any others, and certainly no need for new approaches. **Why is it so difficult to lose weight and keep it off?**

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Why Quick Weight Loss Diets Fail

To understand why rapid weight loss diets don't last, it is necessary to reemphasize some of the points discussed in our recent Newsletter. Firstly, following almost any diet faithfully for two or three weeks will result in losing five or more pounds. Much of this is water, and significant weight loss progressively grinds to a halt. Most dieters tend to give up after a few weeks because of lack of sustained weight loss or annoying side effects. High protein-high fat diets can precipitate an attack of gout, renal colic, or gallbladder disease in susceptible individuals, and many others quit because of boredom.

It is also important to reiterate that **probably 95 percent of dieters who are successful in achieving their goals are unable to keep those unwanted pounds off** for any extended period of time. Most will gain back everything they lost and often a few extra pounds. Nevertheless, many will go back on the very same diet or try some newer one, only to experience similar results. When this pattern of recurrent weight loss followed by weight gain occurs on a frequent basis, it can put a severe strain on the cardiovascular system. Such "yo-yo" dieting may also increase risk for gallbladder disease.

America's obsession with weight loss can be readily illustrated by looking at the weekly *The New York Times* Best Seller book list ratings. You will invariably find one or more weight loss books in the top ten listings in both the hardcover and paperback categories, and that has been true for the past forty years. It is equally certain that after a month or two, all of these top sellers will be replaced by other books promoting different programs and philosophies. Every few years, some are resurrected with a slightly new spin, as has happened with the Atkins diet and its variants.

Rapid weight loss diets don't work because the body will vigorously resist any attempt to disrupt what it perceives to be normal; it will do so with a vengeance if the shift is sudden. If your temperature, blood pressure or blood sugar is too high or too low, adaptive responses that have been exquisitely honed over millions of years of evolution are automatically evoked to restore the status quo and preserve life. If you gain weight your metabolism increases to burn off more calories. During weight loss, metabolic activities slow down so that fewer calories are expended. Regardless of whether your weight goes up or down, your body will do everything in its power to return to whatever weight it considers to be normal for you at that moment.

But how does the body determine what is normal? **Some people appear to be able to eat as much as they want and still stay skinny while others complain that they seem to gain weight if they just look at food.** Most of us would lose between four and eight pounds after a month of 1200 calories a day. However, a few would show little change or might actually even gain weight. In the absence of any difference in physical activity or medical disorder, why are there such discrepancies?

After we stop growing, whether we will be fat or skinny is largely determined by our set point for weight but there is considerable individual variation. Set points are inherited, remain fairly fixed for life, and are not affected by altering food intake or physical activity. They can be circumvented if you understand how they are able to control weight.

Our Set Point For Weight Control

Exactly what is a set point and how can it control weight? In a refrigerator, it's the point you set on the thermostat to maintain the temperature you want. A thermometer measures the temperature in the refrigerator and a wire sends this information to a controlling device that is also connected to a motor that produces cold air. The controlling device constantly compares the actual temperature with the temperature setting you have arbitrarily selected. If these are not the same, the motor is programmed to either generate more cool air or to stop producing it.

The set point for weight is more complicated because the feedback received is obviously not your actual weight. Something else must determine whether a message will be sent to tell you to either eat more or stop eating. Various theories have been proposed suggesting that excess food causes an increase in either blood sugar or temperature that somehow signals the hypothalamus to speed up metabolism. One of the most popular explanations is that the concentration of fatty acids in the blood, which correlates with total body fat, stimulates the hypothalamus, which makes more sense. The demonstration of receptors for glucose, temperature, and fatty acid levels in hypothalamic control centers supports each of these theories. It is possible that all these factors play some role in determining how our set point regulates appetite and the rate of metabolic activities. In addition, leptin, a hormone manufactured and secreted by fat cells, (adipocytes) may have important influences.

When we consume more calories than we expend, fat cells increase in size and/or number so that this excess energy can be stored for future use. This was essential for primitive man who would have perished without the availability of such reserves when food was unavailable for days. **When food was abundant, our ancestors gorged themselves until satiety signals told them that fat stores had been replenished. We no longer respond to these messages because starvation is uncommon and fat stores are rarely depleted.**

During the lengthy course of human evolution, numerous adaptive changes have been progressively made to insure survival. The various immediate and automatic "fight or flight" responses to acute stress are obvious examples and all of these once had some useful purpose. Quickened coagulation minimized blood loss from laceration or internal hemorrhage, pupillary dilation increased range of vision, blood was shunted away from the gut to the large muscles of the extremities to provide greater strength in combat or speed to get away from a scene of potential peril, etc. Those without such capabilities would be less likely to escape life threatening situations and would eventually perish. Only the fittest would survive to eventually pass these traits on.

The problem is that it takes Mother Nature a long time to catch up and some of these responses now make no sense at all. If you are severely frightened you may experience "goose flesh", or the hair on the back of the neck "stand up". What good does that do? It certainly doesn't help you deal with the problem more effectively. The stimulation of an aroused cat's same arrector pili muscles causes the "flying fur" on its arched back, which makes it look more ferocious to an assailant; the bristling quills of the porcupine provide a very effective means of defense.

Some responses to stress are now not only useless but dangerous. Contemporary stress is no longer some life threatening physical encounter with a predator or hostile tribe once a month, but irritating emotional hassles that often occur several times a day. Unfortunately, we still have cave man responses that cause increased blood pressure, clot formation, and shunting of blood away from the gut. These reactions don't help when you're stuck in a traffic jam or arguing on the phone. Repeatedly invoked, it is not hard to see how they could lead to a heart attack, stroke, or peptic ulcer. Understanding the original purpose of various stress responses provides insight into how the weight set point evolved. This information may not enable us to change it, but it can help us to bypass it to promote weight loss.

Utilizing The Wisdom Of The Body

Our responses to different degrees of food deprivation and feeding were also designed to be useful or life preserving measures in prehistoric times. Primitive man led a hunter-gatherer existence for millennia and ate whenever food was available, especially if it were meat or something that would spoil. Food that had been stockpiled was probably consumed when additional energy would be needed for some demanding physical task. There was no breakfast, lunch, and supper, and one meal a day was more likely the rule. During extended periods of deprivation or starvation, mechanisms designed to reduce caloric expenditure were set into motion and energy came from fat stores. Conversely, when food was abundant, calories were burned more rapidly during binging and any excess was stored as fat.

Those who could do this more efficiently were the ones most likely to survive to pass these traits along to future generations. This is why many concentration camp victims on few rations remained alive and why some individuals can go for more than a week without food and still function fairly well. On the other hand, as with certain "fight or flight" responses, some of these traits that were once life saving may have now boomeranged.

When you get up in the morning, you may have had nothing to eat for twelve hours. If you skip breakfast or just have a cup of coffee you may for practical purposes starve for another four or five hours. As far as the body is concerned, this is a signal that you need to conserve calories to survive and it does everything it can to insure this. When you have dinner at seven or later, you may pile the calories on, since after all, "I haven't had a thing to eat all day." Now your body believes that you need energy to fight some battle and gears itself for this purpose. But what usually happens is that instead of engaging in any physical activity, you plop down in a chair to surf the web or watch TV for several hours, and then go to bed. **All the calories poised to be used for work are therefore diverted to fat depots in the body and stored for future use.**

Unless you are subjected to sustained starvation or prolonged physical activity, those fat stores will gradually increase rather than periodically be depleted. I was reminded of this during the late 1950's, when the Army had a crackdown on obesity. While physical requirements were fairly strict on entry, many senior officers were no longer fit for fighting a decade or so later. Those who were grossly overweight were ordered to correct the problem by the time of their next annual physical if they wanted to avoid being discharged.

The results were disappointing. Many insisted that although they had faithfully followed their weight reduction diet for several months, they had only lost two or three pounds. In a few who had been hospitalized and placed on a 1000 calorie diet, hospital records seemed to support their stories, and some actually gained. I was in charge of the Endocrine section of the Department of Metabolism at Walter Reed at the time. Since it was impossible to rule out the possibility that some hormonal disturbance was the cause of their problem or that they were cheating, some of the most stubborn or suspicious cases were admitted to our Metabolic Ward 38 for further investigation and observation.

They were placed under constant surveillance and everything they consumed on their 1000 calorie diet was carefully measured and analyzed. They also received a thorough physical examination and an extensive endocrine and metabolic workup to rule out any thyroid or other hormonal disturbance. While regular exercise was encouraged it was not mandated. Physical activity and water intake were the only relevant variables. After one month, sure enough, most of our "prisoners" failed to demonstrate any appreciable weight loss, although those who exercised did a little better.

Nobody knew anything about set points in those days, but I do recall that many had a family history of obesity. For reasons which will be explained later, **I gave a few patients the same amount of food, but substituted dinner for breakfast. Without any change in total calories, they now began to lose weight.**

Flunking On Fitness And Exercise

Although everybody has been made aware of the benefits of regular exercise, recent surveys show that 60 percent of Americans get little or no exercise. As Jackie Mason noted:

"Everyone talks fitness and keeps eating more. And they keep sitting down more. Every time I ask someone, 'Do you exercise?' they say, 'Well, I try to exercise.' They start with the word 'try.' They will say to me 'I try to exercise four times a day.' I ask, 'Well how many times do you actually exercise?' and they say, 'Maybe once a month.' I guess simply trying to exercise is so tiring they feel that they have exercised already simply from thinking about it."

He is right on target, and there are really few excuses not to exercise. You can jog, try brisk walking, join a gym or health club, or work out at home with all kinds of computerized treadmills, stationary bikes and other exercise equipment. Despite all these options, things are getting worse rather than better. In 1991, 23 percent of the population was able to satisfy the Surgeon General's recommended 30 minutes of physical activity three or four times a week. By 1997, only 15 percent could meet this standard. Over this same period, the number of obese people more than 30 pounds over their ideal body weight increased 50 percent.

Numerous factors have contributed to this progressive decline in physical activity. Some workers may spend 2 hours or more a day commuting to and from their jobs in cars or public transportation, which doesn't leave much spare time for exercise activities. The tremendous popularity of computers means more time sitting not only at work, but increasingly at home, where watching television also adds up to more hours of little physical activity, except for trips to the refrigerator.

Escalators, elevators, and motorized walkways discourage walking. Everything now seems to be motorized: electric golf carts, power windows in cars, motorized bicycles, and lawn mowers. Even scooters have now been added to the list and one would anticipate that future "advances" will increasingly lead to less muscular activity and more weight gain.

Health authorities are particularly concerned about obesity trends in children. While faulty diets and fast foods are a big factor, kids are also spending more and more time sitting as they surf the web, play video games, and watch TV, rather than engaging in energetic sports activities. According to the Centers for Disease Control, **60 percent of overweight five to ten-year olds already have at least one risk factor for a heart attack**, such as hypertension or an increased blood insulin concentration. A study of over 1200 preschool children presented at this year's annual meeting of the American Heart Association revealed that even in two year-old children, being overweight was associated with an elevated blood pressure. There has also been an alarming increase in adult onset non-insulin dependent diabetes in teenagers. As its name implies, this was formerly rarely seen in anyone before middle-age.

Physical activity increases the number of calories you burn and promotes the loss of body fat instead of muscle. People who include regular physical activity in their weight-loss programs are much more likely to keep their weight off than others who only change their diets. Any type of exercise ranging from vigorous running, swimming or sports activities to moderate workouts such as walking or gardening, will increase caloric expenditure. The secret of success is to make these activities an automatic, enjoyable part of your daily life. In addition to promoting weight loss, a regular exercise program can improve strength and flexibility, and reduce the risk of cardiovascular disease and diabetes.

Exercise can reduce fat and promote long term weight loss in other ways. Excess calories are stored in fat cells called adipocytes until they are needed as fuel. Exercise makes these cells much more sensitive to lipolytic hormones like adrenaline that break down fat. It also reduces the number of receptor sites for adenosine, a chemical that helps adipocytes retain fat. More importantly, **regular exercise provides a sense of control and well-being that reduces stress and the secretion of hormones like cortisol that can cause "pot bellies" and "middle-aged spread."**

How To Find Out If You Are Too Fat

Although they are frequently used as synonyms, being overweight and being too fat are not the same thing. It is important to distinguish between them since they may have different health consequences. In the old days, if you wanted to find out how overweight you were or how your weight compared with others, you consulted standard height and weight tables. The weight varied depending on whether you had a "small" or "large" frame. However, **large frame athletes might be "overweight" due to increased muscle mass and actually have less total body fat.** People are considered obese if they are 20 percent or more over "normal" body weight. For example, someone 6 feet tall could be overweight at 185 pounds and obese at 220 lbs. Someone 5'6" tall could be overweight at 155 pounds and obese at 185 lbs.

The Body Mass Index or BMI is a more accurate way to determine how overweight you are. To calculate your BMI :

- 1) multiply your weight in pounds by 703,
- 2) take your height in inches and square it,
- 3) divide this number into the first figure.

For example, if you weigh 140 lbs. and are 5 feet 7 inches (67 inches) tall, then

$$1) = 140 \times 703 = 98,420$$

$$2) = 67 \times 67 = 4,489$$

$$3) = 98,420 \text{ divided by } 4,489 = \text{BMI of } 22$$

Healthy BMI's can range from 19 to 24. A BMI of 25 or 26 means you need to lose weight, and 27 or higher suggests you could be headed for health problems. BMI values will tell you how overweight you are, but not whether those excess pounds are due to fat, as opposed to fluid retention or increased muscle mass. You can obtain a "guesstimate" of whether the problem is due to too much fat if you (1) measure waist circumference around the level of your navel, (2) measure the circumference of your hips over your buttocks, and (3) divide your waist measurement by your hip measurement. Anything over 0.80 for a female or 1.0 for a male means excess fat. For example, a 38-inch waist divided by a 44-inch hip measurement would equal 0.86.

It is not only how much excess fat you have but where it is located that is important.

Increased abdominal fat deposits and "middle-aged spread" that contribute to an apple-shaped figure appear to be more dangerous. Such individuals are at greater risk for heart disease, stroke, diabetes, and certain cancers, compared to others just as heavy with pear-shaped silhouettes due to fatty buttocks. As a result, there has been more emphasis on trying to determine whether you are too fat as opposed to just being overweight, and where this extra fat is located. Many of the more sophisticated techniques which were previously limited to health clubs are now available for home use. Skin calipers can measure the thickness of a fold of flesh on the back of the arm, below the shoulder blade and at other body sites. By subtracting the proportion of the fold that is skin, the remainder is the amount of fat. An estimate of total percent body fat can be made from a combination of measurements taken from various sites; there are charts showing normal values at different locations. Various bioimpedance devices that send a mild current of electricity through tissues can be used to measure body fat. The amount of electricity that is conducted between two electrodes depends on how much water there is in the body, which is related to how much fat is present.

Since muscle is denser than fat, another way to accurately gauge total body fat is to weigh a person underwater. The difference between regular weight and underwater weight reflects the different qualities of fat and lean tissue, and makes it possible to calculate the percent of body fat. This procedure is generally considered to be the most accurate of all body composition measures, but requires special equipment and professional analysis. It may soon be replaced by Dual X-Ray Absorbiometry (DEXA). This newer technology uses low-energy X-rays to scan the entire body. Because fat, muscle and bone have different densities, they can be separated on the X-ray film, and body composition is then calculated by computer. This technique may soon become the new standard not only for measuring body fat, but also muscle and bone.

How To Lose Successfully And Safely

Losing weight permanently is undoubtedly difficult, but not as impossible as most people have been led to believe. The National Weight Council Registry is a large database of people who have lost at least 30 pounds and kept it off for more than a year. Most of those surveyed said that the motivation to lose weight must come from within. Simply having the desire to lose weight is not enough. They had all tried numerous times before, but it was only when they had the ambition to eat less and exercise more that they succeeded. The difference between desire and ambition is will power.

One useful way to help develop will power is to establish a goal that is realistic as well as meaningful, to increase your chances of succeeding. Most people who go on diets want to lose as much as they can as quickly as they can. Sudden weight loss is rarely sustained because it is mostly fluid rather than flesh and its rapid return leads to a lack of motivation to continue. Our bodies resist any change in the status quo, especially if it is sudden or very rapid. It is particularly important to recognize the significance of this when it comes to losing weight.

People who are overweight or obese didn't get that way in a few weeks or even a few months. In fact, if you tried to gain twenty or thirty pounds in a month you would probably have a difficult time for the same reason that quick weight loss doesn't last. If you were a passenger in a car cruising along at 20 m.p.h. that rapidly accelerated to 50, you would feel as if you were racing; but if you were doing 80 and suddenly slowed down to 50, it will now seem like you are crawling. However, if you were to speed up or slow down very gradually over several minutes with your eyes closed to block out any visual cues, it would be difficult to detect any change or to know what your speed was.

That's a useful analogy. While the body resists any change in the status quo, it has a range of "normal" for the concentration of sugar and other chemicals in the blood, temperature, blood pressure, etc. Changes within these ranges evoke little reactions because they are not considered threats. The same is true for slow weight changes.

The lesson to learn is that you should **make a commitment to lose one pound a week.** It may not sound like much, but in six months, you will have lost 26 lbs. and 52 in a year. You will also be much more likely to keep this weight off because of the very gradual change in your status quo. Best of all, you probably won't have to make drastic alterations in your eating and exercise habits. As a result you can readily incorporate any changes into your daily lifestyle so that they become ingrained habits. The same is true for exercise. If you don't enjoy running around circles in a track or on a treadmill, you probably won't stick with it. Find something to do that is fun, like some sport or hobby that keeps you moving. Tennis, tending to a small garden, short bicycle rides, or a brisk walk a few days a week will do. You don't have to do it all at once and brief periods of activity are just as effective if there are enough of them. For example, take the stairs instead of the escalator or elevator, park your car in a far corner of the lot, or get off the bus one stop short of your destination.

Make changes gradually. If your goal is to exercise for 30 minutes three times a week and you have been inactive, start with 10 minutes twice a week and work your way up. When planning your menu, don't eliminate all the "bad" foods at once; you won't miss them as much. **Eat smaller meals more frequently with snack-size portions of fruits and vegetables,** which provide lots of fiber that help you feel full. Don't aim for perfection. Everyone slips up and splurges occasionally, and such lapses don't really make a difference in the long run. Weigh yourself once a week or two, not every day.

While you can go it alone, people who receive support from family or friends are much more successful not only in losing weight but in keeping it off. Your ability to adhere to any regimen will be particularly reinforced if there is someone who will join in your diet and exercise efforts. Strong social support is also a powerful stress buster, and **stress is the major reason people don't stick with weight loss programs.**

To Lose Weight, Remember Fiber, Fitness, Paupers, Princes, And Kings

When I entered private practice, there were relatively few physicians who specialized in treating obesity. The majority of those who did were suspect, particularly because they usually profited from the sale of their own questionable weight loss concoctions, diet aids, and theories. As a result, we had little to offer patients who complained that no matter how hard they tried to diet, it was impossible for them to lose weight. Medical school, internship, and residency training had taught us how to take care of all sorts of challenging medical problems, but there was nothing exciting about treating someone who was overweight. No diagnostic skill was required, and there was no magic treatment. All you had to do was eat less and exercise more, or preferably both. So we would give the patient a 1000 calorie diet provided by one of the drug companies and ask them to keep a diary of everything they ate, knowing full well that this was not the answer.

What intrigued me was that **almost every obese patient I saw would invariably say "I don't understand it doctor. I hardly eat anything for breakfast."** This was often supported by their food diaries which also seemed to confirm that they should have lost weight based on the total number of calories consumed daily for two weeks. While in high school, I spent my summers working on a farm in Vermont. The farmers got up early in the morning, had a huge breakfast of eggs, bacon, pancakes with syrup, bread lathered with butter, and sweet buns, had a modest lunch at noon, a sparse dinner around five or six, and generally retired before ten. They probably consumed close to 3000 calories a day, but I don't recall that any were obese or significantly overweight. My Walter Reed experiment substituting supper for breakfast and vice versa was based on this Vermont farm experience. Our results were recently replicated in a report revealing that eating light all day but having a large evening meal makes you store fat more readily. The subjects in this study were young, elite female athletes, not corpulent Army colonels. Despite reduced total daily caloric intake and vigorous daily physical exercise, they showed little or no weight loss and their fat deposits increased. Stress also causes increased fat storage, as explained in a forthcoming book co-authored with Dr. Carolyn C. Clark entitled *De-Stress -Weigh Less!*

The essential ingredients for weight loss are regular exercise and reduced stress and caloric intake. Where the calories come from and how they are utilized is also important. Carbohydrates vary in glycemic indices, i.e. how quickly they cause the blood sugar to rise and trigger an insulin response. High glycemic index foods hinder weight loss efforts. Foods also vary in their ability to provide a sensation of satiety, but eating lots of fiber and drinking lots of water will help to make you feel full. In addition, remember the adage "Eat breakfast like a king, lunch like a prince, and dinner like a pauper". It will not only keep you healthy, but also help to make you thinner.

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Editor-in-Chief

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