

## **OBESITY MANAGEMENT**

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***Dr. SHATRUNJAY M. KOTE, Ph.D., Assistant Professor,  
M.S.M's. College of Physical Education, Khadkeshwar, Aurangabad (M. S.)***

### **Obesity:**

Obesity is becoming more and more of a problem in the world. It is related to a number of diseases including diabetes, coronary heart disease, hypertension, stroke, liver ailments and mechanical difficulties [particularly back and front problem]. As a consequence life expectancy is significantly reduced among the obese population. 'Bustirk' in addressing the question, "who is fat?" claims that obesity is difficult to define in quantitative terms. Obesity refers to the above average amount of fat contained in the body, this in turn being dependent upon liquid content of each fat cell and on the total number of fat cells.

Obesity often begins early in childhood and, if this occurs, the chances for adult obesity are three times greater compared to children of normal body mass. Until recently, the major cause of obesity was believed to be overeating. There are obviously other factors operative such as genetic, environmental, social and perhaps racial influences, eating patterns, food packaging, body image and biochemical differences related to resting metabolic rate, dietary induced thermo genesis, level of cellular adenosine tri phosphate [ATP], Lipoprotein lipase, and other enzymes and metabolically active brown adipose tissue.

It is difficult to portion the cause[s] of obesity into distinct categories because the cause[s] probably overlaps. There is some confusion as to whether being overweight without being over fat is related to excess risk for cardiovascular disease. Although it has been argued that a moderate excess in body fat is not, in itself, harmful, a report from the National Institutes of health, concluded that obesity should be viewed as a disease, because there are multiple biologic hazards at surprisingly, low levels of excess body fat that represents only 5 to 10 pounds above 'desirable body weight'.

### **The following are health related correlates of obesity:**

1. Impairment of cardiac function, due to an increase in the hearts mechanical work, and to autonomic and left ventricular dysfunction.
2. Hypertension and stroke.
3. Diabetes, as about 80% of adult-onset diabetics is overweight.
4. Renal disease.
5. Gall bladder disease.
6. Pulmonary diseases and impaired function due to the effort to move the chest wall.
7. Problems in administration of anesthetics during surgery.
8. Osteoarthritis, generative joint disease, and gout.
9. Abnormal plasma liquid and lipoprotein concentrations.
10. Menstrual irregularities. and

## 11. An enormous psychological burden.

Another way to determine and classify obesity is to measure the size and number of fat cells. Adipose tissue increases in two ways: Existing fat cells are enlarged or filled with more fat—a process called “fat cell hypertrophy”, or the total number of fat cells is increased—a process called “fat cell hyperplastic”. Weight loss with accompanying fat reduction by either way often normalizes Serum cholesterol and triglyceride and has a beneficial effect on blood pressure.

When obese adults reduce body size, there is a decrease in fat cell size but no change in cell number. Cell number increases fairly rapidly during the first year of life. Although the precise causes for fat cell development are poorly understood, it does appear that certain practices can affect fat cellular.

An often-asked question concerning weight loss is, “where on the body do changes occur when weight is lost?” The answer is from all over the body, but if the intensity, volume of training is increased the ratio of trunk was found two times greater to extremities.

### **WEIGHT CONTROL:**

The composition of the diet influences the efficiency at which the body converts and stores excess calories as fat. Only about 3% of the calories in ingested fat are required to convert these excess calories to stored body fat, whereas 25% of the calories in carbohydrate are ‘burned in the conversion process. Simply stated, it is easier for the body to make fat from dietary fat than from equivalent caloric excess in the form of carbohydrate. Consequently shifting the diet’s composition towards higher carbohydrates would result in less fat gain. To prevent an increase in body mass and fat because of a caloric disequilibrium, an effective program of weight control must establish a balance between energy input and energy output.

A review of the scientific literature dealing with body mass in obese persons reveals that initial success in modifying body composition has little relation to the long-term effects of maintaining desired body size and shape. The energy balance equation states that body mass remain constant when caloric intake equals caloric expenditure. Any caloric imbalance on the energy output or input side of the equation causes the body mass to change.

### **There are three ways to “unbalance” the energy balance equation:**

- (1) Reduce caloric intake below daily energy requirements
- (2) Maintain regular food intake and increase energy expenditure through additional physical activity above daily energy expenditure and
- (3) Combine methods (1) and (2) by decreasing daily food intake and increasing energy expenditure.

When considering the sensitivity of the energy balance equation in regulating overall energy balance, we note that if caloric intake exceeds output by 100 kcal per day, the surplus number of calories consumed in a year would be 365 days X 100 kcal or 36500

kcal. Because 0.45 kg of fat contains about 3500 kcal (each pound of adipose tissue is about 87% fat or 395 gm  $\times$  9 kcal per gram = 3555 kcal per pound), this is equivalent to a gain of 4.7 kg of fat in one year. On the other hand, if daily food intake is reduced by just 100 kcal and energy expenditure is increased 100 kcal by jogging 1 mile each day, and then the caloric deficit is equivalent to a reduction of about 9.5 kg or 21 pound of fat in one year.

Dieting for weight loss creates disequilibria in the energy balance equation by reducing energy intake. A starvation diet or “therapeutic fast” may be recommended in cases of severe obesity where body fat exceeds 40 to 50 % of body mass. One can crash of large amounts of body mass in a relatively short time period by simply not eating, but this success, however, is short-lived and eventually the urge to eat out and body mass is regained. The reason for this failure lies in “set points”. The proponent of a “set point-theory” argue that the body has an internal control mechanism, a set point, probably located deep within the brain’s lateral hypothalamus, that drives the body to maintain particular level of body fat. The futility of repeated cycles of weight loss and weight gain, the so-called yo-yo effect is shown in food efficiency studies in which efficiency evaluated by the ratio of body mass change to ingested calories. Although the set point theory may be unwelcome news for those who possess a set point that is tuned “too high” the good news, according to the set point advocates, is that sustained, vigorous exercise may lower the set point towards a more desirable level.

This view of obesity is overall simplistic as available evidence indicates that excess weight gain throughout life often closely parallels reduced physical activity rather than an increased caloric intake. To some extent, regular physical activity appears to contribute to the normal functioning of the brain’s feeding control mechanisms. Regular aerobic exercise, even without dietary restrictions, brings about favorable changes in body mass and body composition. When considering exercise for weight control, factors such as frequency, intensity and duration, as well as the specific form of exercise must be considered. Because of 0.45 kg of body fat contains approximately 3500 kcal, the exercise program must establish this negative caloric balance to bring about a 0.45 kg fat loss. Generally, the total energy expended is the most important for weight loss.

For moderately obese children adults, combinations of regular exercise and diet often considerably more flexibility in achieving a negative caloric balance and accompanying fat loss than either exercise alone or diet alone. Clearly physical activity can be used by itself, or in combination with mild dietary restriction, to create an effective loss of body fat. When caloric intake is below the daily energy requirement, the initial decrease in body mass occurs primarily from water loss and corresponding depletion of the body’s carbohydrate reserves; with further weight loss, a larger proportion of body fat and protein is metabolized to supply the caloric deficit created by restricting food intake or increasing physical activity.

**The results of the prior studies that have evaluated various approaches to establish a caloric imbalance can be summarized as follows:**

1. Exercise combined with dietary restriction is a more effective approach for achieving a long-term negative caloric balance as compared with exercise or diet alone.
2. During the first few days of weight reduction, the rapid weight loss is due primarily to a loss in body water and carbohydrates; larger periods of weight reduction one associated with a substantially greater loss of fat per unit of weight loss.
3. Water intake should not be restricted when beginning weight reduction because this can precipitate dehydration but no additional fat loss.
4. Undesirable psychological and medically related problems may occur with prolonged caloric restriction maintained below minimal energy requirements.
5. Weight loss by diet alone causes a significant loss of muscle mass. Exercise protects against lean tissue losses; thus, more of the weight lost is fat.

**FIND YOUR FRAME SIZE**

<b>SEX</b>	<b>HEIGHT WITHOUT SHOES</b>	<b>ELBOW BREADTH FOR MEDIUM FRAME</b>
<b>MEN</b>	5'1" – 5'2"	2&1/2" – 2&7/8"
	5'3" – 5'6"	2&5/8" – 2&7/8"
	5'7" – 5'10"	2&3/4" – 3"
	5'11" – 6'2"	2&3/4" – 3&1/8"
	6'3" – UP	2&7/8" – 3&1/4"
<b>WOMEN</b>	4'9" – 4'10"	2&1/4" – 2&1/2"
	4'11" – 5'2"	2&1/4" – 2&1/2"
	5'3" – 5'6"	2&3/8" – 2&5/8"
	5'7" – 5'10"	2&3/8" – 2&5/8"
	5'11" – UP	2&1/2" – 2&3/4"

## FIND YOUR WEIGHT IN POUNDS

SEX	HEIGHT (Without Shoes)	WEIGHT IN POUNDS (Without Clothes)		
MEN	Feet' Inches''	SMALL FRAME	MEDIUM FRAME	LARGE FRAME
	5'1''	123-129	126-136	133-145
	5'2''	125-131	128-138	135-148
	5'3''	127-133	130-140	137-151
	5'4''	129-135	132-143	139-155
	5'5''	131-137	134-146	141-159
	5'6''	133-140	137-149	144-163
	5'7''	135-143	140-152	147-167
	5'8''	137-146	143-150	150-171
	5'9''	139-149	146-158	153-175
	5'10''	141-152	149-161	156-179
	5'11''	144-155	152-165	159-183
	6'0''	147-159	155-169	163-187
	6'1''	150-163	159-173	167-192
	6'2''	153-167	162-177	171-197
	6'3''	157-171	166-182	176-202
WOMEN	4'9''	99-108	106-118	115-128
	4'10''	100-110	108-120	117-131
	4'11''	101-112	110-123	119-134
	5'0''	103-115	112-126	122-137
	5'1''	105-118	115-129	125-141
	5'2''	108-121	118-132	128-144
	5'3''	111-124	121-135	131-148
	5'4''	114-127	124-138	134-152
	5'5''	117-130	127-141	137-156
	5'6''	120-133	130-144	140-160
	5'7''	123-136	133-147	143-164
	5'8''	126-139	136-150	146-167
	5'9''	129-142	139-153	149-170
	5'10''	132-145	142-156	152-173
	5'11''	135-148	145-159	155-176

## DAILY CALORIE NEEDS

CATEGORY	AGE IN YEARS	WEIGHT IN POUNDS	HEIGHT IN INCHES	ENERGY NEEDS (Calories)	RANGE (Calories)
<b>INFANTS</b>	Birth to 6 months	13	24	675	560-860
	06-12 months	20	28	950	725-1225
<b>CHILDREN</b>	01-03	29	35	4300	900-1800
	04-06	44	44	1700	1300-2300
	07-10	62	52	2400	1650-3300
<b>MALES</b>	11-14	99	62	2700	2000-3700
	15-18	145	69	2800	2100-3900
	19-22	154	70	2900	2500-3300
	23-50	154	70	2700	2500-3100
	51-75	154	70	2400	2000-2800
	76 +	154	70	2050	1650-2450
<b>FEMALES</b>	11-14	101	62	2200	1500-3000
	15-18	120	64	2100	1200-3000
	19-22	120	64	2100	1700-2500
	23-50	120	64	2100	1600-2400
	51-75	120	64	1800	1400-2200
	76 +	120	64	1600	1200-2000
<b>PREGNANT</b>				+ 300	
<b>NURSING</b>				+ 500	

## HEALTH QUESTIONNAIRE

1. Are you suffering from any chronic disease?
2. Do you frequently suffer from pains in your chest?
3. Do you have high blood pressure?
4. Do you often have headaches, feel faint or have spell of severe dizziness?
5. Have you had an operation or a serious illness in the last 6 months?
6. Are you presently suffering from, or recovering from an illness or injury?
7. Are you presently on any form of medication?
8. Are you presently being treated by a doctor?
9. Have you ever been unconscious as a result of an accident or from unknown causes?
10. Do you suffer from joint or bone pains?
11. Do you have serious difficulty with coordination or balance?
12. Have you suffered from the same injury (such as a sprained ankle) several times in the last 3 years?
13. Has your body weight changed by more than 5 Kg in the last 12 months?
14. Do you lack one of the following organs: Eye, Kidney, Oviduct, Testicle?
15. Are you over 35 and unaccustomed to vigorous exercises?

## **AVOID**

1. Sleeping during afternoons.
2. Taking stomach full meals at any given time.
3. Seeping directly in front of cooler or in AC rooms.
4. Eating oily stuff.
5. Eating confectionary or bakery products or dairy products.
6. Drinking cool water.
7. Eating curd.
8. Having more than 2 cups of tea or coffee during the day.
9. Alcoholic drinks.

## **ESSENTIALS**

1. Take Luke warm water with ½ lemon and 1 spoon honey in -1 glass – every day early morning immediately after brushing the teeth.
2. Spare at least 45 minutes for physical workout regularly.
3. Try to have Luke warm water whenever you feel thirsty.
4. Try to have maximum seasonal raw vegetables and fruits whenever you feel hungry.
5. Keep gap of at least 1 to 1 and half hour after dinner and before going to bed.
6. Drink 2 glasses of Luke warm water before going to bed.

## **TEST YOUR FITNESS**

### **HOW MOBILE ARE YOU?**

<b>How close you can get to the floor</b>	<b>How old your ligaments are</b>
You can put your hands flat on the floor	20 years old
You can touch the floor with your finger tips	30 years old
You can get within 10 centimeters	40 years old
The gap is 20 centimeters or more	50 years and older

### **HOW OLD IS YOUR HEART?**

<b>Pulse count per minute</b>	<b>How old your heart is</b>
60	20 years
65	30 years
70	40 years
75	50 years
80	60 years
85 plus	70 years

### **CHECK YOUR SENSE OF BALANCE**

<b>Time in seconds</b>	<b>Ability of balancing</b>
Over 51 seconds	20 years
41-50 seconds	30 years
31-40 seconds	40 years
25-30 seconds	50 years

Less than 25 seconds	Over 60 years
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### **CHECK YOUR RESPIRATORY SYSTEM**

<b>Distance of candle from your mouth</b>	<b>Respiratory age</b>
1.5 meters	20 years
1.25 meters	30 years
1 meter	40 years
0.75 meter	50 years
Up to 0.75 meters	Over 60 years

### **SUGGESTION FOR A 2500 KCAL WEEKLY TRAINING SCHEDULE**

<b>Kind of sport</b>	<b>Hours per week</b>
Jogging or walking	4 hours
Cycling	7 hours
Swimming	5 hours
Gymnastics	2.5 hours
Volleyball or basketball	5 hours
Rowing	4 hours

Apart from that, just keep your eyes and ears open. Can you read registration plates 70 meters away? Going for a walk, can you hear the wind ruffling the leaves equally well with both ears?