WEIGHT MANAGEMENT

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A. INTRODUCTION TO WEIGHT MANAGEMENT

Weight reduction is usually recommended for obese individuals, and for overweight persons with other health risk factors (such as, hypertension, hyperlipidemia , noninsulin-dependent diabetes, family history of diabetes, women with a history of gestational diabetes or with a baby born large for gestational age). Weight reduction is also recommended for overweight individuals with heart disease, gout, gallbladder disease, and in situations where excessive weight imposes a functional burden (that is, chronic obstructive pulmonary disease, congestive heart failure, osteoarthritis of the spine, hips, or knees).

Obese children and teens should avoid restrictive diets and weight loss efforts in favor of increased activity and moderation in food intakes, allowing them to "grow into" their body weights, excessive television viewing can contribute to undesirable weight gains in young people. Although an overweight childhood or adolescence does not necessarily guarantee obesity later on in life, about 30% of obese adults developed the condition during childhood (before age 18), and 80% to 85% of obese teens eventually become obese adults. Obesity beginning early in life tends to involve a significant amount of fat cell hyperplasia, making it more difficult to control than excess weight gained later in life.

Obesity is a multifactorial problem which has no single distinct cause. Only some 5% of obesity occurs secondary to a specific disease, such as a tumor of the hypothalamus, Cushing's syndrome, or Prader-Willis syndrome. Most obese conditions are due to an undetermined combination of individual genetic familial, environmental, physiological, and psychological factors.

B. OBESITY

Obesity and overweight are not synonymous terms, yet most individuals who are 20% or more overweight are obese, and body weight at this level constitutes an established health risk. Individuals who weight 10% to 20% above the recommended range are not necessarily obese or overfat, since the body's weight may be largely composed of muscle tissues and / or bone. Some normal weight individuals are actually over fat, that is, the percent of body fat is undesirably high although the body weight is not above the recommended range.

Obesity is a state in which there is a generalized accumulation of excess adipose tissue in the body leading to more than 20 percent of the desirable weight. Obesity invites disability, disease and premature death. Excess body weight is a hindrance, leading to breathlessness on moderate exertion and predisposes a person to diseases like atherosclerosis, high blood

pressure, stroke, diabetes, gall bladder diseases and osteoarthritis of weight bearing joints, varicose veins.

A certain amount of "adipose," that is, fat tissue, is important for insulation of the body from heat, cold, and mechanical shock; to serve as a energy supply when glycogen reserves are depleted and food intake is delayed; and for protection against environmental stresses. The obese are more prone to hypertension, hyperlipidemia, noninsulin-dependent diabetes, arthritis, and other chronic diseases. Obese men have a higher mortality rate from cancers of the colon, rectum, and prostate; obese women from cancers of the gallbladder, billiary passages, breast (postmenopausal), uterus, and ovaries, obese individuals may have shorter than normal life spans.

Usually obesity is due to positive energy balance. That is, the intake of calories is more than the expenditure of calories.

Etiology

Genetic factors: Genetic inheritance probably influences 50-70 percent a person's chance of becoming fat more than any other factor. A genetic base regulates species differences in body fat and sexual differences within a species. Within families the chance is 80 percent if both parents are obese, only 10 percent if neither parent is obese. A mutation in the human gene for the B3 receptor in adipose tissue, involved in lipolysin and thermogenesis markedly increase the risk of obesity.

Age and Sex: It can occur at any age in either sex as long as the person is under positive energy balance.

Eating habits: Certain eating habits may lead to obesity.

1. Nibbling between meals is common among housewives and is a potential cause for obesity.
2. Some may eat faster taking less time for chewing, therefore they tend to consume more food.
3. Obese persons respond to external cues to eat rather than internal hunger signals. They eat when it is mealtime or when they are surrounded by tasty foods instead of when they are hungry.
4. Housewives who are fond of cooking variety of foods or persons who are working in the kitchens may become obese.
5. Business executives who frequently attend business lunches have more chance of becoming obese.
6. Housewives who do not want leftover foods to be thrown out may consume forcibly and put on weight.
7. Some persons eat more food when they are unhappy as a compensation mechanism.

Physical activity: Obesity is found in persons who lead sedentary lives and pay less importance to physical activity. Though obesity can occur at any age, this is more common

during middle age when physical activity decreases without corresponding decrease in food consumption.

Endocrine factor: Obesity is found in hypothyroidism, hypogonadism and Cushing's syndrome. Obesity is common at puberty, pregnancy and menopause, suggesting endocrine may be a factor in obesity.

Trauma. Obesity may follow due to damage to the hypothalamus after head injury because it is not able to regulate appetite or satiety.

Prosperity: Obesity is common in prosperous countries like UK, USSR and USA and people from higher socio-economic status of developing countries. They have the purchasing power and availability of surplus food. Obesity is rare in primitive societies and wild animals. Civilisation has brought plentiful supply of appetising foods, concentrated foods and variety of foods in the market.

Clients must be willing to devote much time and long-term effort in order to change lifestyle habits that have contributed to the weight problem. Clients who are not ready to examine and discuss these issues should be encouraged to wait until the time is right before beginning to make changes.

Crash diets, gimmicky fads and schemes may cause temporary weight loss due to an increase in eating awareness and a forced change in habits, yet any results are impermanent. As soon as the diet is forsaken, any lost weight is regained – usually with additional poundage. Long-term weight control requires a permanent sense of awareness and lifelong habit change. Only temporary weight loss and certain undesirable side effects-will be accomplished with erratic bursts of drastic caloric restriction.

Focus should be on nonweight goals such as improved health and fitness, and increased self-esteem. Success is more likely when goals are reasonable and allow for a gradual adjustment in lifestyle.

Learning the approximate caloric values of common foods is one part of the education process, but food choices should not be based solely on caloric contents. Compulsive calorie counting is counterproductive. Preplanned menus should only be used to illustrate meal planning possibilities within certain caloric ranges. A predetermine diet will only serve to shift the responsibility away from the dieter onto the diet itself. Dieters need to learn how to be in control of their own eating practices, and to rely on themselves to choose foods wisely.

Many individuals use food for reasons unrelated to physical needs (for example, to relieve boredom, reduce anxiety, or alleviate stress). Clients to should explore their emotional connection to food and to determine psychological reasons for eating and overeating. To be in control of eating behaviors, clients need to be able to listen to and trust body signals, and to understand the difference between physical and emotional hunger.

Theories on obesity

Fat cell theory: The number of fat cells are determined early in life to provide space to store fat. Once they have been formed, fat cells have a tendency to remain full of fat. Total number

of fat cells are set early in life, supporting the notion that juvenile onset obesity was caused by an increase in the number of fat cells while adult-onset is caused by increased in the size of fat cells. The number of fat cells can increase in adult life and that the numbers of fat cells also actually diminish as the result of sustained weight loss. People with a large number of fat cells have more difficulty in losing body weight than those with fewer fat cells.
Set point theory: Each person has an ideal biological weight or set point, once body weight reaches this point, a whole set of signals is produced that influences the person's food intake to maintain this weight. Research has shown that risk for medical problems is related to the size of the fat cells present more than the number of fat cells or the person's weight.

C. ASSESSMENT OF OBESITY

There are several methods used worldwide to establish a correct weight, over weight and obesity. Such methods include :

- Height weight range.
- Brocas Index.
- Body mass index.
- Body fat measurement (skin fold)
- Others.

Each of these methods are indicative, and are to be used separately and individually, since they differ marginally from each other in conclusion. Therefore to come to an assessment, use any one method.

1) Height Weight Range

a) Normal Weight and Height of Indian Children (6-18 years)

Age Years	Weight (kg)		Height (cm)	
	Male	Female	Male	Female
6	22.1	21.4	118.9	117.3
7	24.5	24.8	123.3	122.7
8	26.4	26.1	127.9	126.8
9	30.0	29.7	133.6	132.3
10	32.4	33.5	138.5	138.5
11	35.3	36.5	143.4	144.4
12	38.8	42.6	148.9	150.3
13	42.9	44.4	154.9	153.0
14	48.3	46.7	161.7	155.1
15	52.2	48.2	165.3	155.3
16	55.4	49.8	168.4	155.4
17	59.0	49.9	168.9	156.4
18	62.0	50.0	169.4	157.2

- For each weight a range of 2 kgs may be provided in addition to the above to account

for body structure difference.

- In European children a further 2 kg is allowed due to larger structure.

b) Height Weight Chart of Indian Adults

Height		Male		Female	
Cms.	**Inches**	**Min. Kgs**	**Max.Kgs**	**Min. Kgs**	**Max.Kgs**
152	5'-0"	55	65	45	55
155	5'-1"	56	66	46	56
157	5'-2"	57	67	47	57
160	5'-3"	58	68	48	58
162	5'-4"	59	69	49	59
165	5'-5"	60	70	50	60
167	5'-6"	61	71	51	61
170	5'-7"	62	72	52	62
172	5'-8"	63	73	53	63
175	5'-9"	65	74	54	64
177	5'-10"	65	75	55	65
180	5'-11"	66	76	56	66
182	6'-0"	67	77	57	67

- European adults are allowed 5 kgs additional due to larger structures.

% Body weight in excess	Degree of Obesity
10% above standard weight	Over weight
20% above standard weight	Obese
50% above standard weight	Severely obese
100% above standard weight	Grossly obese

2) Brocas Index

The formula for Brocas index is, height in centimeters minimum 100 is equal to ideal weight in kgs. For example if an individual's height is 163 cms or (1.63 Mtrs), then minimum 100 from the height and in case the weight is in excess of 63 cms, the person is considered overweight. This method is extensively used as a rough measurement of being overweight. Thereafter 20% above ideal weight is considered obese.

3)BodyMassIndex

In this method the weight in kgs is divided by the height in Mtrs x 2 – i.e. Wt in Kilogram

For example if an individual is 95 kilogram in weight and has a height of 1.80 mtrs, the calculation is – 95 kilograms / 1.80 x 2 (3.60 mtrs) = 26.38

Grading of BMI is as follows.
Not obese < 25 and below
Grade I obesity 25 – 29.9
Grade II obesity 30 – 40
Grade III obesity 40 > and above

4) Skin fold pinch test

Various skin fold calipers have been devised such as the harpenders calipers, the large calipers and also the MRNL calipers to measure total body subcutaneous (under the skin) fat. The skin fold is measured at the tricep (back of the arm) abdomen, above the hip, subscapular upper back and the bicep ie mid arm and the total of the four measurements in millimeter (MM) and the evaluation in read as percentage of body fat as against the following table.

Total skin fold measurement in mm	% of total body fat
15 – 45 mm	8 – 22%
46 – 75 mm	23 – 30%
76 – 150 mm	31– 40%
151 – 170 mm	41– 45%

upto 22% body fat is normal and acceptable for males, up to 30% is acceptable for female. Grade I obesity is evaluated upto 40% fat and grade II obesity is evaluated upto 45% fat.

5) Other simple methods include for example the mirror test:

In this; you may simple stand nude in front of a mirror to self-assess whether or not you are fat. In the belt test, you simply measure your stomach at the navel, and if it is larger than your upper chest measurement (above the breast in ladies) then you are over fat in the abdomen. In the pinch test you simply pinch the roll of flesh in the abdomen region and in case it is more than 1 inch thick, it is indicative of being over fat.

Estimation of Weight Loss

Adipose tissue in adults consists of about 75 percent fat, 23 percent water, and small amounts of protein and mineral salts. Each kilogram of adipose tissue represents 7,700 kcal (1 pound = 3,500 kcal). An individual who consumes 100 kcal in excess daily ingests an excess of 3,000 kcal by the end of 1 month. Theoretically, this would result in a weight gain of 0.4 kg monthly, or 4.8 kg (about 10 lb) in a year. The weight gain from consistently overeating by this amount over a 5 to 10 year period would be considerable. It requires about 2 tea spoons of butter, or two 1-inch squares of fudge, or an oatmeal cookie to supply the additional 100 kcal each day.

Conversely, the loss of 1 kg of adipose tissue means that the diet would be deficient by 7,700 kcal for the total time period of the weight loss. A young woman requiring 2,000 kcal a day to meet her energy needs who consumes a diet that supplies only 1,200 kcal has a weekly deficit of 5,600 kcal, and the predicted adipose tissue loss would be 5600 7,700 or 0.7 kg (1.6 pounds).

Weight loss does not always follow the predicted straight line for several reasons :

1. The type of diet may influence losses. On very low carbohydrate diet rapid weight loss occurs initially due principally to losses of sodium, potassium, and water; on more conventional diets, such losses are less conspicuous.
2. As weight loss continues, the basal metabolic rate per unit of active tissue mass declines, resulting in a slower rate of weight loss.
3. The energy cost of activity decreases as a function of lower body weight.

In weight control efforts, individual eating practices and levels of physical activity function together determine body weight and body fat. The ultimate goal of any weight loss program should be the establishment of permanent lifestyle changes in both food consumption and physical activity patterns for the attainment and maintenance of healthful body weight and fat.

No single approach will prove successful for all overweight individuals. The factors that contribute to one person's obesity may differ from the conditions that influence another's weight problem. Thus, a weight control plan must be individualized to incorporate personal weight-related problems, needs, behaviors and lifestyle practices.

An effective weight loss plan will satisfy individual nutrient needs, induce gradual steady weight loss, and assist in permanent maintenance of healthy weight.

D. REDUCING DIET

The person should be put in negative energy balance ideally 500-1000 calories less than their RDA. An ideal reduction of 500g – 1 kg / week is approved. Once the target is fixed, progress should be checked once a month. Usually 3 kg are lost in the first month largely due to utilization of carbohydrate store and water. Reducing diets should provide adequate amounts of proteins, vitamins and minerals.

E. LOW CALORIE METHOD

1. Weight

Your weight should conform to your height as per the height / weight chart. If necessary, you should reduce by a combination of exercises and diet.

2. Calories

Your maximum calorie intake should not exceed your current weight in kgs x 24. This is your Sedentary Metabolic rate.

a) If you are to lose weight, do an hours exercise daily and reduce your calorie intake of between 1000 – 1500 calories daily.
b) Do not reduce your calorie intake by more than 500 calories daily from your maximum intake e.g., (weight = 80 kgs, therefore maximum calorie intake = 80 x 24 = 1920; therefore, prescribed reduction = 1920 – 500 = 1420 calories).
c) Do not go below 1000 Calories ever.
d) When you achieve your correct weight, you consumption of calories should be correct weight x 24 and you must continue your daily exercise.
e) Do 1 hour 500 Calorie exercise output daily.

3. Diet

Sample diet plan of 1500 Calorie below

SAMPLE DIET INDIA

Meal	Item	Total Calories
Bed Tea	1 cup tea with no sugar	20
Breakfast	2 Chappatis 1 katori Curry, OR 1 Masala dosa / 2 idlis	275
Lunch	1 cup Cooked rice, OR 3 Chappatis 1 cup Dal / Sambar 1 cup Curry 1 cup Salad / Curd 1 Fruit	600
Evening Tea	1 cup Tea with milk, no sugar	20
Dinner	1 cup Cooked rice, OR 3 Chappatis 1 cup Dal or Sambar 1 cup Curry 1 cup Salad / Curd	500
Nightcap	1 cup Milk	75

Principles of dietetic management

Low calorie, normal protein, vitamin and mineral (except sodium), restricted carbohydrate, restricted fat and liberal fluid, high fiber diets are given in such cases.

Energy. About 20 kcal per kg ideal body weight is prescribed for a sedentary worker and 25 kcal for moderately active worker. A diet that provides 800 to 1000 kcal below the daily requirement leads to loss of 3 to 4 kgs monthly. This gradual loss does not result in severe hunger, nervous exhaustion and weakness that often accompany drastic reduction regimens. For most men 1400 to 1600 kcal is a satisfactory level and for women 1200 to 1400 kcal are indicated diets that supply 1000 kcal or less are rarely necessary except for individuals who are bedfast. In many elder persons satisfactory weight loss is achieved only when energy

intake is limited to 1000 to 1200 kcal this is because of their reduced basal metabolism and reduced physical activity.

Proteins. About 0.8-1g of protein/kg body weight is prescribed for tissue repair and for specific dynamic action.

Carbohydrates. High carbohydrate content foods like potatoes and rice are restricted. Sugar which gives empty calories should be totally avoided. Fruits rich in carbohydrate like Banana, Mango, custard apple etc. should be avoided or taken in moderation.

Fat. Low fat or no fat diet should be given as calories are reduced. Foods rich in fat-like nuts and oil seeds should be avoided. Skim milk should be the choice. Vitamins and Minerals. With prolonged restriction of fats, there is likely to be a restriction of fat soluble vitamins A and D which may be supplemented. A multivitamin preparation iron, salts and possibly calcium are indicated for diets containing 1000 kcal or less. Calories restricted diets for obese children may be planned with increasing mineral and vitamin requirement in mind.

For these reasons diets used for them are usually less restricted. Restriction of sodium as common salt is helpful in weight reducing diet as excess sodium predisposes to retention of fluid.

Fluid. Fluids can be taken liberally as healthy kidneys excrete extra fluids. Also a glass of water before meals helps to cut down food intake

F. LOW FAT / HIGH FIBRE METHOD

High fiber

A menu loaded with high-fiber foods is generally very filling yet low in calories. For instance, five apples have about the same caloric content as a small candy bar. High – fiber items also absorb a lot of water, which makes you feel full and they appear and feel bulkier too, which psychologically can make you think that you are eating more food than your actual caloric intake. Furthermore, fiber-rich foods such as carrots, raw spinach, and wholegrain breads require more chewing than lighter foods. They take longer to eat, which will help you eat less, too. Another major way that fiber appears to contribute to weight loss and overall health is through its absorption-delaying property. That a long – term high-fiber diet slows the absorption of an intake of glucose.

High fiber low calorie foods like green leafy vegetables, fruits, vegetable salads, whole grain cereals and pulses can be included in the diet. Inclusion of high fiber foods in diets for obese has many advantages. They are 1. Low in calorie density. 2. Foods like greens provide many vitamins and minerals (which are difficult to meet with restricted food) 3. Give satiety 4. Help in regulating bowel movements 5. Reduce blood cholesterol 6. Promote chewing and decreases rate of ingestion. Higher intake of fiber automatically cut down fat and calories. British Nutrition Foundation (1990) has established the effectiveness of dietary fiber intake in achieving significant reducing in body weights without any side effects. Low fat high fiber method.

Limit fat (grams) to between 15-30 gms per day.
Eat at least 30-75 grams of fibre per day.
Drink at least 1 cup dairy food daily. (skimmed milk, curd etc.)
Eat at least 2 cups of fresh fruit or vegetable daily.
Avoid refined sugars & alcohol.
Do not exceed 1500 calories, do not go below 1000 calories per day.
Utilize 500 calories per day for exercise (i.e. 1 hour of exercise).

SAMPLE DIET

Meal	**Item**	**Fat (gm)**	**Fibre (gm)**
Early Morning	One cup juice	0	0
Breakfast	Two chapatis	0	6
	One cup vegetables	0	8
	One cup milk	1	0
Lunch	One cup cooked rice	0	6
	One cup lentils	0	10
	One cup curry (veg.)	0	8
	One cup salad	0	8
	One fruit	0	8
Tea	One cup tea	1	0
Dinner	Two chapatis	0	6
	One cup dal		10
	*One meat curry	10	0
	One cup salad	0	8
	One cup curd	8	0
	*Two spoons oil for cooking	10	0
	(Total)	**30**	**78**

FAT & FIBRE CONTENT IN DAILY FOODS

Item	**Fat (gm)**	**Fibre (gm)**	**Item**	**Fat (gm)**	**Fibre (gm)**
Almonds 1 cup	72	16	Bread Wheat 1 Pc	1	3
Apple 1 cup	0	8	Vegetable Clear Soup 1 cup	0	0
Apple juice 1 cup	0	0	Soup Non-Veg. Clear 1 cup	1	0
Banana 1	0	2	Soup Thick Veg 1 cup	0	2
Beans Baked 1 cup	1	10	Soup Thick Non-veg 1 cup	5	0
Beans Cooked 1 cup	0	12	Butter 1 tsp	5	0
Beef Lean 1 cup (60z)	32	0	Butter Milk Whole 1 cup	8	0
Beef Medium 1 cup (60z)	50	0	Butter Low Fat 1 cup	0	2
Beer 1 Glass	0	0	Cabbage 1 cup	0	4
Beet Root 1 cup	0	6	Carrot 1 cup	0	4
Biscuit 1 Pc	5	1	Cashewnut 1 cup	32	4
Bread White 1 Pc	1	1	Cauliflower 1 cup	2	2
Cereal Bran 1 cup	2	22	Jelly (1tsp)	0	0

Ceral Flatus 1 cup	0	6	Lamb Lean (1cup) (60z)	24	0
Cheese Cottage 1 cup	8	0			
Cheese Whole 1 cup	36	0	Lamb Medium (1cup) (60z)	50	0
Chicken With Skin 1 cup (60z)	20	0	Lettuce (1cup)	0	4
Chicken No Skin 1 cup (60z)	6	0	Liquor (Rum/Whisky/Gim) (1Peg)	0	0
Chocolate 1 Pc	18	0	Nuts	60	9
Chilli-Tomato Sauce 1 tbsp	0	1	Mango 1 piece	0	6
Corn 1 cup	0	4	Fish (1cup) (60z)	24	0
Crab Meat 1 cup (60z)	20	0	Margarine (1tsp)	4	0
Cream 1 tbsp	5	0	Mayonnaise (1tsp)	4	0
Cucumber 1 cup	0	2	Milk Whole (1cup)	5	0
Dates 1 cup	0	8	Milk Skimmed (1cup)	1	0
Egg 1 Pc	5	0	Mushroom (1cup)	0	8
Bacon (1 Stip)	2	0	Noodles (1cup)	2	3
Tomato (1Pc)	0	2	Oil Vegerable (1tsp)	5	0
Tomato juice (1cup)	0	1	Onion (1cup)	0	8
Walnuts (1cup)	64	8	Orange (1Pc)	0	4
Watermelon (1cup)	0	4	Orange Juice (1cup)	0	0
Wine (1cup)	0	0	Papaya (1cup)	0	2
Yoghurt (1cup)	8	0	Peanut Butter (1tsp)	8	1
Vegetale Salad Mixed (1cup)	0	8	Peanuts (1cup)	72	12
Egg White 0 0	0		Pear (1Pc)	1	4
Brinjal (1cup)	0	4	Peas (1Pc)	0	10
Flour Wheat (1cup)	0	18	Pineapple (1cup)	0	4
Flour White (1cup)	0	4	Pork Lean (1cup) (60z)	16	0
Fruit Cocktail (1cup)	0	8	Pork Medium (1cup) (60z)	46	0
Fruit Juice (1cup)	0	0	Potato (1cup)	0	12
Grapes (1 cup)	0	4	Rice Brown (1cup)	0	6
Greens (1cup)	0	8	Rice White (1cup)	0	2
Ham (1cup) (60z)	26	0	Sasauge (1cup) (60z)	36	0
Honey (1tsp)	0	0	Soyabean (1cup)	6	12
Ice Cream (regular)	16	0	Spinach (1cup)	0	4
Jam (1tsp)	0	0	Sugar (1tsp)	0	0

FOODS TO RESTRICT OR AVOID:

The individual who learns to select foods in appropriate amounts from the exchange lists do not require specific lists of foods to avoid. For some persons, however, it may help create calorie consciousness if listings of concentrated foods are provided. Part of the success of a reducing diet depends upon learning to be content with smaller portions of food and less concentrated foods. Some of the foods in the following list are permitted in specified amounts in the exchange lists, but others are best avoided altogether.

High-Fat Foods : butter, margarine, cheese, chocolate, cream, ice cream, fat meat, fatty fish, or fish canned in oil, fried foods of any kind such as doughnuts and potato chips, gravies, nuts, oil, pastries, and salad dressing.
High – Carbohydrate Foods : breads of any kind, candy cake, cookies, corn, cereal products such as macaroni, noodles, spaghetti, pancakes, waffles, sweetened or dried fruits, legumes such as lima beans, navy beans, dried peas, potatoes, sweet potatoes, honey, molasses, sugar, syrup, rich puddings, sweets.

Beverages: All fountain drinks, including malted milks and chocolates, carbonated beverages of all kinds, rich sundaes, alcoholic drinks, sweetened drink mixes.

G. BEHAVIOUR MODIFICATIONS

This is based on the premise that excessive food intake is a learned response that can be changed. By means of this concept the individual learns to focus attention on the environmental factors that influence his or her food intake and gradually to modify these so that a change in eating habits and subsequent weight loss occurs.
Initially, the client is asked to keep a detailed record of food intake and activity patterns. From this, the client and counselor identify problem areas and outline strategies to overcome them. Emphasis is on changing eating patterns rather than on caloric intake or pounds lost. For example, if the problem is too much unstructured eating, such as frequent snacking while watching television, knitting or other activities might be recommended as a diversion. Some techniques that have been used successfully to control food intake include (1) eating only at specified times and places; (2) learning to eat more slowly; (3) omitting other activities, such as reading or watching television while eating; (4) using smaller plates and placing portions directly on the plate rather than serving family style; (5) use of a reward system; and so on. Individualized stepwise behavioral changes are sought.

TIPS ON WEIGHT MANAGEMENT

1. Dieting is a life time commitment and not done on a crash basis.
2. For weight loss, Calories intake should not exceed 1500 cal./ day and should not go below 1000 cal. per day.
3. Total calories intake should be less than total calories expenditure per day to lose weight.
4. In order to do this, one should exercise lightly at least once or twice every day.
5. Exercises should be done after 1 to 1 hours alliterative meal.
6. Exercises should be both aerobic and Music forming.
7. Weight / measurement should be taken weekly at the same time every week.
8. All meals including breakfast should be eaten.
9. No snacks should be eaten in between.
10. If hungry in between meals, drink water/eat fibrous foods.
11. Water may also be drunk during meals.
12. Avoid eating sugars, soft drinks, cakes etc.
13. Avoid too much dairy products including cream, butter and cheese.
14. Avoid fried food and oily foods.

15. Avoid alcohol.
16. Eat sufficient complex carbohydrates such as bread, potatoes, rice, chapatis, etc.
17. Eat sufficient green vegetables and fruits for roughage.
18. Preferably use a small plate and avoid 2nd helpings.
19. Maintain meal timings.
20. Enlist the support of your family and friends and remember that dieting is a life commitment and not a sporadic activity.
21. Eat a light-dinner, medium lunch, heavy breakfast.

H. DIETARY COUNSELLING

Motivation and Psychologic Support : A diet prescription is worthless unless the client has some motivation for losing weight, such as the maintenance or recovery of health. The client must have the capacity for self-discipline, patience, and perseverance.

Although the motivation must come from within the client, the physician, nurse, and dietitian can be of immeasurable help toward initiating this motivation, and subsequently by providing encouragement and guidance at frequent follow-up visits. The client needs to understand that a calorie intake in excess of needs is the cause of overweight and that weight loss is accomplished only when the calorie intake is reduced below the client's needs. But this explanation is not enough. The client also needs to gain insight into the reasons he or she is overeating, and to work at correcting these.

Counseling and Group Sessions: Individual counseling is essential to determine the goals that are realistic for the client and to initiate dietary regimen that is appropriate for the client's food habits and patterns of living.
Group sessions are effective; in group sessions people compare their progress, share their problems in adhering to diets, and exchange ways to vary diets. When groups are formed, it is important that professional guidance is available from a physician, dietitian, or nurse. Each individual joining such a group should first be evaluated by the physician to determine his or her fitness for weight reduction.

Essential Knowledge: The dieter needs to understand that weight loss is accompanied by a reduction in the metabolic rate. This may explain the decreased rate of weight loss with time that many persons experience in spite of careful adherence to a calorie restricted diet. Further calorie restriction or increased energy expenditure will be required to continue weight loss. The importance of moderate regular exercise as an essential part of any weight reduction program should be pointed out to the clients.

Protein control, taught by means of measuring cups, spoons, food models, or actual foods, is essential. Although a given diet is planned for a specific calorie level, it must be expected that the daily calorie intake may vary by as much as 200 to 300 kcal because of variations in food composition as well as in the precision of measurements.

Some clients ask about including cocktails and wine in their diets. If the physician permits these beverages, the client needs to know that each gram of alcohol supplies 7 kcal and that the calorie value of the beverage must be taken into consideration. A glass of dry table wine

provides fewer calories than a cocktail. Usually an alcoholic beverage is restricted to one serving daily.

A single dinner in a restaurant can nullify careful adherence given to a diet for several days. Usually it is possible to select a clear soup, broiled or roasted meat without sauces, vegetables without sauces, and salad without dressing. Meat portions are likely to be larger than those allowed and the dieter will need to restrict intake to that allowed. The diet will not be exceeded too much if one foregoes the rolls, butter, and dessert. Many restaurants have menu selections suitable for dieters for every dieter there are occasions when the limitations of the diet are exceeded, and such breaks in the dieting pattern should be anticipated. Each day gives an opportunity to being again toward the goal of desired weight.

Exercise:-

Even before cutting calories or changing your eating habits try this, this changes your body chemistry and helps burn fat more quickly and efficiently. Infact it will be the single most important component of your permanent, Weight loss plan. What is this miracle – exercise it is Aerobic exercise, performed atleast 30-45 minutes every day. Brisk walking; jogging, swimming, cycling and aerobic dances are all popular forms of aerobic exercise. They quickly get the blood flowing, the metabolism and temperature rising and the fat going.

CALORIES UTILIZED IN EXERCISE

Activity	**Calories used per hour approx**
Sleeping	75
Sitting	100
Office work	150
Walking	250
Free Hand Exercise / Yogasanas	300
Gardening	300
House Work	300
Manual Labour	350
Gym Exercises	400
Cycling	450
Tennis	450
Badminton	450
Squash	450

Swimming	550
Running	550

Benefits of Aerobic Exercise:

1. Exercise is the best way to start a weight control program, as one needs to feel good about oneself, you need to feel strong and feel in control of your body again. Many of the reaction and changes that will take place when one begins losing weight and changing metabolism are very subtle, but the effect of exercise on your body and mind is flattening in comparison. No matter how long it has been since you last exercised, your strength and endurance will grow faster than you would imagine.

2. Changes your body metabolism and build more muscle mass; which is vital to the conversion of fat to energy. This is the real key to weight loss.

3. Increased activity : There is a proven link between obesity and a sedentary lifestyle that contains little or no vigorous exercise. Those who weight the most are the one's who move the least. Therefore, to avoid obesity or to lose weight is simply not to allow your daily food intake to exceed energy output. For example, physically trained individuals burn more fat than sedentary folks. Thus one can actually change body metabolism to a system that burns up fat faster by increasing your daily activity level and building muscle mass.

4. Continuous Moderate Exercise: When one exercises fat is the last to be burned when a person exercises for just 10 minutes only a small fraction of the body fuel consumed in supplied by fat deposited in our cells. What we are burning is primarily glucose or blood sugar. But with additional exercise, the body begins to use glycogen, a carbohydrate that is stored mainly in the liver and muscle cells and readily converted to glucose, however the body's storage of glycogen is limited. Fat, which has twice the energy potential of glucose takes a lower and longer level of activity and oxygen; to ignite so if the body fat stores need to be mobilized, one has to exercise for longer periods of time. The longer your exercise, the more fat you will burn therefore moderate exercise for prolonged time is a more efficient way of reducing body fat.

5. Staying Power: Increased Metabolic rate: Apart from making a direct dent in to the fat stores; exercise trims off fat by raising one's basic metabolic rate. For example if one has performed an aerobic exercise for 45 minutes to an hour; – heart rate is increased; there is increased circulation, increased body temperature and induced sweating. All this activity translates to an increased metabolic rate of up to 25 percent above normal (resting rate). The benefits don't stop there, the body metabolism will remain above normal for up to 6 hours after exercising helping you to burn an increased number of calories all the time.

6. More Muscle Mass: A second key factor affecting BMR is the amount of muscle mass. Muscle tissue is very dynamic, it requires more energy for maintenance and also consumes a lot more energy or calories when actives. Muscle cells have the capacity to utilize 50 times more energy while converting from a resting condition to a vigorous – use condition. Also the

special muscle enzymes ensure such rapid calories burning. So if you want to get rid of body fat then one needs to consider the amount and condition of your body muscle mass. And the o nly way to increase muscle tissue is through exercise. Dieting will do nothing to improve muscle tissue, and starvation diet will even deplete muscle tissue. Exercise will also increase the number of calorie – metabolizing enzymes within the muscle. Thus if an increase in BMR is desired, while resting and when active; one needs a significant amount of muscle in the body, and one has to keep those muscles strong and healthy through regular exercise.

7. Activity energy cycle : A cycle exists involving activity, energy, oxygen circulation, and the body's utilization of fat. Many overweight people and people on a diet do not have much energy and thus do not feel like exercising. They probably have slowed-down rate of metabolism as well. Now a slow metabolism doesn't produce much energy because it is primarily storing fat rather than burning it for energy. The act of storing fat requires little or no oxygen, while much oxygen is needed to burn fat.

A sedentary person's body circulates much less oxygen than an active person's. and perhaps the amount of oxygen reaching the cells is one of the factors that determine whether fat will be stored or burned. In turn, if the fat is stored, no ready energy is produced… which induces a person to be less active…which causes less oxygen to be circulated…which burns less fat… which produces less energy…which produces less activity, and so forth. And after sitting at the office all day, you don't have much energy and so you sit in front of the TV all evening, continuing to perpetuate this low-energy, sedentary cycle.

The reverse of this cycle may explain why some people can stay thin although they seem to eat everything in sight and have tremendous amounts of energy. It may be that their system is adjusted to continually burning fat rather than storing it. This gives them extra energy, which helps to motivate them to keep exercising every day.

To summarize, there are three optimum ways in which exercise increases fat utilization: 1) it causes more fat to be consumed; (2) it increases the metabolic rate as much as 25 percent for up to 6 hours after exercise; and 3) it builds more muscle mass, which requires more energy just to maintain

8. Conditioning Heart Range Formula: While exercising, it is very important to maintain your conditioning pulse. Several methods can be used to determine the maximum heart rate and, from that, to determine the conditioning pulse range. At that level of exercise you are burning energy efficiently by processing a high level of oxygen to mobilize the fat. You are also exercising – and thus strengthening – your heart.

The most accurate way to pinpoint your conditioning pulse range is to take a treadmill exercise stress test administered by a technician and a doctor.

There is a second and fairly reliable method of determining your maximum heart rate by using the following formula. Subtract your age from the number 220 – this will give you the estimated maximum heat rate for most people your age. Then take 70 to 85 percent of either your true maximum heart rate as determined on the treadmill or your estimated maximum heart rate. These figures then represent the lower and upper limit of your conditioning range.

Every time you exercise, frequently check to see that your pulse is staying within that range. Do this by locating your pulse at he carotid pulse point in the neck as the figure illustrates. Then count the beats for 6 seconds. Simply multiply this number by 10 to get your pulse per minute.

For example, if you are 30 years old, subtract your age from 220. That gives you 190, your estimated maximum heart rate. Then take 70 percent of 190 and 85 percent of 190 to give you 133 and 161. You should perform your aerobic exercise with sufficient intensity to maintain your pulse rate between those two figures for at least 30 minutes.

As you become more physically fit over the months, you probably will have to move a little faster in order to keep your pulse rate within that range. But remember that there is no value in exceeding your maximum conditioning pulse rate. For sedentary people, it even can be dangerous. It will also throw your body into an anaerobic state in which no fat will be burned. In an anaerobic state, no oxygen is being used. Fat can only be utilized in the presence of oxygen.

I. COMMON MISCONCEPTIONS

Exercise and Increased Appetite

One misconception many people have about exercise. Most people think that the more you exercise, the hungrier you will become and the more you will eat. Actually, in some ways exercise is an appetite suppressant. Exercise stimulates the production of glucagons (a hormone), which raises the blood-sugar level, which reduces symptoms of hunger. Therefore, exercise is helpful in controlling eating if we exercise before a meal.

Spot Reduction

Another misconception is the concept of spot reducing; there is really no such thing. A person can spot build a muscle, but one cannot spot reduce fat. The only way to remove fat from specific area of the body is through plastic surgery. Otherwise, the only method of reducing the amount of fat on your body is to exercise and to consume fewer calories. Therefore, the best type of exercise for weight loss is the exercise that steadily consumes the most calories – and that's aerobic exercise. Vigorous aerobic exercise is a better method of consuming calories than, say leg lifts or sit-ups. In general, it burns more calories per minute, and most people will perform an aerobic exercise much longer than they will a spot exercise.

Another reason spot reducing isn't feasible is that fat is in a dynamic process with the body – certainly not nearly as dynamic as muscle, but nonetheless, dynamic. This means that fat is deposited and removed on a daily basis all over your body. By exercising your thighs, however, there is no guarantee that the body will choose to burn up the fat in that area. What you are really exercising and affecting is the thigh muscle. A perfect example to illustrate this concept is a baseball pitcher who uses his right arm to pitch. A well-known study showed that the pitcher's right arm had the same amount of fat as the less exercised left arm. Thus, we should be concerned only about reducing the total amount of fat on our bodies, and aerobics is your best bet for that.

Starvation Diets

It is a very common myth that skipping will help in faster weight reduction. Research has proven that skipping meals and resorting to starvation diets will propel your body into a "starvation / shutdown" mode of metabolism. By lowering and metabolism, this type of diet actually makes it more difficult for your system to burn off stored fat and much easier to gain back even more than you lost! One of the fundamentals of survival is to maintain a small supply of standby energy to live off of during adverse conditions such as famine. This involves storing a reserve of fat in the body.

In general, people need at least 1,000 calories daily in order to function normally, even if they are sedentary. And depending on age, body type, and activity level, many people need twice as many calories. The body cannot switch from receiving 1,500 or 2,000 calories per day to suddenly receiving only 500 calories per day without experiencing a pretty good jolt to the system.

But the reason we can temporarily adjust to a zero intake of calories is that our metabolism almost immediately changes into a state akin to hibernation. Metabolically speaking, our energy-producing system starts shutting down.

This kind of metabolism also begins converting most of the food that we consume into fat. Normally, our bodies use much of our food intake to repair body tissues and to convert into a ready energy source. Confronted with a starvation situation, however, our systems want to store fat because; ounce for ounce, fat contains more calories than does muscle tissue. This it is a richer energy source.

It doesn't take long for our bodies to fall into a shutdown or storage type of metabolism. Simply reduce your caloric intake to below 1,000 or 900 calories, or significantly reduce the number of calories your body is accustomed to receiving, and within a day or two your metabolism will lower and change. Within a week, your system will be locked tightly into a decreased basal metabolic rate. The body first converts any incoming food into fat in order to build up an emergency energy source.

This decrease in the metabolic rate, combined with a lack of any ready energy coming into the body in the form of an adequate supply of food, produces a host of unpleasant symptoms. These include fatigue, light headedness, weakness, occasional nausea, and a lack of enthusiasm for life. Even after several days on the kind of diet that increases the ketones in the blood, a person's mental processes are often impaired and slowed down.

Another condition produced by starvation diet is ketosis. Although ketosis may reduce your appetite, it also makes you weak and reduces your ability to exercise. Starvation ketosis occurs when there is a serious lack of glucose in the blood, forcing the body to depend too heavily on its fat reserves for energy. The way that most healthy bodies deal with a build-up

of ketones is to excrete them in the urine. But this eliminates a lot of water and important minerals as well. And again, this water loss constitutes a great deal of your initial weight loss.

Serious conditions may arise from ketosis as well. The acidity in ketones can change the pH of the blood to the extent of producing a diabetic-like state. An extreme rise of ketones in a diabetic can be fatal. Eating a sufficient amount of carbohydrates during a diet, however, will avoid the buildup of ketones, allowing your body to metabolize energy in a normal fashion.

Another disadvantage of starvation diets is that they cause a loss of protein. One reason this occurs is that specific cells in the body, including the brain cells and some of the bone marrow, require glucose for survival. At first these cells can utilize the glycogen and stored in the liver. But after a day or two, the liver runs out of glycogen and starts converting protein-which means your muscles-to glucose. The longer you stay on a starvation diet, the more muscle the body will be forced to use as a source of blood sugar for your brain.

The only way to counteract this phenomenon is to eat enough calories to prevent your body from switching to the starvation-metabolism made. It is also very helpful to exercise while losing weight, but, of course, a starvation diet leaves you too weak for vigorous activity.

Another reason starvation diets are a disaster is that, in the long run, you'll actually gain back more fat than you had before the diet. There are two main causes of this. First, the body goes into a starvation metabolism. Secondly remember what happens to the calories they are immediately converted into and stored as fat. This might actually leave you fatter than before because you will be gaining back fat, while you probably lost some muscle mass during you diet.

Consequently, you may end up with a greater percentage of body fat after than before the diet. Another reason against starvation and quick-term diets is that constantly going on and off such diets is stressful to your heart and liver. Research has shown that frequent weight losses and gains will increase the amount of blood fat (serum triglyceride) and cholesterol in the blood stream, which probably contributes to the risk of atherosclerosis and heart disease.

Another bad habit or approach to dieting that also can throw the body into a shutdown metabolism is skipping meals or eating only one big meal a day. If you skip breakfast, for instance, about17 or 18 hours pass without your feeding your body. This easily corresponds to the beginning of a fast. In addition, upon waking, your blood probably contains only between 80 and 120 milligrams of glucose in each 100 millilitres of blood. If you don't eat soon, your cells will have to begin drawing from the glycogen reserves stored in the liver in order to maintain that blood-sugar level. But as the glycogen stores are used up your glucose level may eventually fall below 70 milligrams, which will trigger a strong hunger response and possibly a craving for sweets to bring the glucose level up to normal.

Thus, if you skip breakfast, by midmorning your body is craving nourishment. Not eating can easily throw your system into a shutdown mode to begin conserving energy. Drinking coffee all morning on an empty stomach tends to further stimulate this response.

At coffee-break time, many people ward off their hunger pains with a pastry or donut. But what happens then? While this may help to postpone a shutdown metabolic reaction, it also

will stress your system by producing a sharp rise in blood sugar rather than the gradual increases you would get from a more balanced meal or from complex carbohydrates. The ingestion of simple sugars can also cause you to become more hungry 1or2 hours later. This occurs because a sudden intake of simple sugar (as is found in pastries and donuts) causes your blood-sugar concentrations to ruse rapidly above normal. In turn, this causes the pancreas to release insulin, which bathes the liver cells, which respond by removing the sugar from the blood to be stored as glycogen. The fat cells also absorb some of this excess sugar; they then convert the glucose into more fat!

All this action, coupled with another hour or two without food, soon causes your blood-sugar level to fall again. When lunchtime rolls around, you are ravenous, and it is even harder to stick to a moderate or sensible meal than if you had eaten a proper breakfast in the first place. Still, many determined souls will eat only a meager lunch consisting of something like a grapefruit and egg or just a low – calorie soft drink (many of which contain caffeine). And the blood-sugar concentration continues to drop.

At long last, dinner time arrives-the meal to which most eat to their hearts content. All these calories are ingested at a time when our activity level probably is lowest, the time most of us relax at the end of the day. Numerous studies have told us that people gain weight more readily be eating large meals later in the day, when we are more sedentary.

Eating five or six mini-meals per day is the best plan of action. By spreading your total caloric intake throughout the day, you can keep your energy level high and your metabolism active. Eating smaller meals won't stress your digestive system, either.

In addition, eating smaller meals won't place as many demands on your pancreas and other related organs as they work to maintain proper insulin balance. That is why this mini-meal eating schedule is used for many diabetics

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J. MAINTANANCE OF WEIGHT

To lose weight is not easy; to maintain the desirable level of weight is even more difficult. The calorie – restricted diet planned with regard for the client's pattern of living also provides the basis for building a maintenance diet. The client must learn that a change in food habits is essential not only for losing weight but to maintain desirable weight. Thus, additions of foods should be made judiciously until weight is being kept constant at the desired level. It is important for the client to weight at weekly intervals or so in order to be sure that the foods added are in appropriate amounts.

If foods added for maintenance are also selected from the daily food guide, the quality of the diet with respect to protein, minerals, and vitamins is thereby enhanced. On the other hand, the additions of concentrated high-calorie foods may be more difficult to control in amounts suitable for maintenance. For example, the sedentary person of middle age must continue to forego rich desserts and sweets except on rare occasions.

A more permanent solution for weight loss combines a high fiber low calorie diet with daily exercise and stress management techniques. The eating program should be nutritious and well-rounded but low in calories and fat. Consequently, it is an excellent eating regimen for any one from athletes to business persons from adolescents to senior citizens. The exercise or aerobic activity will improve your metabolism and help you burn up calories and fat faster. The stress management component will teach you to control those urges to binge on sweets and snacks when you are under pressure.

Thus a weight loss program involves an entire lifestyle change because maintaining your proper weight also involves changing from being a sedentary person to being an active one. And it means altering our eating patterns and reducing the stress in our lives. The greater goal is to become healthier, in becoming well. Losing weight will make you look more attractive, however, being well and healthy will give both internal and external benefits