Weight Management

By Dr. Pratayksha

Shree Skin Care & Slimming Centre

INDEX

About us

We are an emerging health care & slimming center established in 2006. We have achieved tremendous success in the field of curing disorders like obesity, Blood Pressure, All type of Skin disorders and Diabetes with Homeopathic medical science.
The foundation of the centr was laid by Dr.Pratayksha Bhardwaj, His work has been recognised by many Indian and international organizations in the field of skin care & slimming.

Shree Skin Care was earlier founded by Smt. S. L. Bhardwaj in 1983. She is a beauty therapist and has broken all the barriers in her profession. She has achieved the milestone of 25 years in this hygienic profession. She specially diagnoses skin problems like pimples, acne, black heads, blemish marks & other general skin

Diseases.

On other side she is a social worker. She is active life member of Indian Red Cross Society from last five years.She also conducts camps for skin care from time to time and educate people about skin care.

We are unique in terms that we have incorporated traditional homeopathy medical science with the modern diagnostic approach. We make it sure that we provide treatments which are effective, natural but without any slightest side effects.

Our goal has been to keep you in the best of your health so that you can be ready for whatever life has to offer.

We have achieved tremendous results in slimming like 12 Kgs. in period of 25 days and losing 5 kgs. in 20 days have become our benchmark and that too with completely natural methods and exercises & no side effects.

We deliver results and are committed to our work. We understand how important good health is.Our motto is " The Patient First"

Why I, chose obesity as a subject

I, myself is the biggest example of success of our weight loss program. I had tried everything including gymn, dieting, exercising and all possible ways of weight loss available to me but nothing seemed to work. Then I studied and created this unique method which helped me to lose 23 Kgs. weight in just 6 months

when I was myself treading on hard in life to loose weight i was facing lack of proper resources & ways of reduction. Tired of non-effective ways of gyms and others around I became hopeless that I would be able to lose weight ever. Then gave it a fresh start with my own natural & herbal ways along with active exercise and proper diet control. The results were terrific. My weight loss was the major inspiration for me to open up this venture & I got dedicated to make people loose their extra & unwanted weight."

"Thinking that when I can lose weight why can't I help others suffering from same disorder. I started with a single room of my mother's beauty clinic. Today I am able to

put smile on distressed & cynical faces suffering with obesity."

"Tried in my own way to usher in the mantra of "Look Good & Feel Great". Nothing gave me a bigger high than to see the glow on a patient's face who, acouple of months ago came to me dejected and with no confidence. My dedicated staff helps the members to recreate that persona. With this idea I have set up this institute with the help of my mom. Thereby me and all my team members welcome you to Shree Skin Care & Slimming Center, Yamuna Nagar with a humble hope that we can once again bring back smiles & confidence in one & all. Thanks a lot."

Conservative management of body weight…

It refers to the disliking of body weight

The conservative management of obesity has three main goals:

- a mildly hypocaloric diet
- increased exercise
- behaviour modification

general strategies to help people achieve and maintain a healthy weight

- Diet
  - base meals on starchy foods such as potatoes, bread, rice and pasta,

choosing wholegrain where possible

- eat plenty of fibre-rich foods - such as oats, beans, peas, lentils, grains, seeds, fruit and vegetables, as well as wholegrain bread, and brown rice and pasta
- eat at least five portions of a variety of fruit and vegetables each day, in place of foods higher in fat and calories
- eat a low-fat diet and avoid increasing your fat and/or calorie intake
- eat as little as possible of:- fried foods- drinks and confectionery high in added sugars- other food and drinks high in fat and sugar, such as some take-away and fast foods
- eat breakfast
- watch the portion size of meals and snacks, and how often you are eating
- for adults, minimise the calories you take in from alcohol

- Activity

- make enjoyable activities - such as walking, cycling, swimming, aerobics and gardening - part of everyday life
- minimise sedentary activities, such as sitting for long periods

watching television, at a computer or playing video games
- build activity into the working day - for example, take the stairs instead of the lift, take a walk at lunchtime

weight loss programmes are recommended only if they:

- are based on a balanced healthy diet
- encourage regular physical activity
- expect people to lose no more than 0.5-1 kg (1-2 lb) a week

- programmes that do not meet these criteria are unlikely to help people maintain a healthy weight in the long term
- people with certain medical conditions - such as type 2 diabetes, heart failure or uncontrolled hypertension or angina - should check with their general practice or hospital specialist before starting a weight loss programme.

Chapter 1

Aetiology

Energy balance is a fundamental principle of physics that regulate weight gain and loss. An organism will stock fat when absorbing more energy through feeding than what it consumed by physical activity and its basal metabolism.The opposite is also true: reducing calorie intake and increasing physical activity creates a negative balance that translates into weight loss.

Even when admitting that the main cause of obesity is an inadequacy between energy intake and expenditure, there remains a lot to be learned in order to properly manage the epidemic. Research is barely shedding light on the mysteries of this complex disorder. In Canada, between 1981 to 2004, daily calorie intake got up of 17%, that is 381 calories per day.

The theory may sound simple, but reaching and maintaining a healthy weight remains difficult in the present environment. Research on the influence of physiological, behavioural and environmental factors on energy balance is essential to the

development and implementation of effective prevention and treatment programmes.

Despite significant recent advancements made towards unraveling the complexity of obesity, there still remain a large number of unanswered questions. The available data suggest that multiple systems regulate energy homeostasis. Familial clustering and the high concordance of body weight among monozygotic twins provide strong evidence for a genetic component to human obesity and a number of genes associated with human obesity have been identified. Research must advance knowledge within and across these domains in order to understand the interactions of known homeostatic mechanisms, recognize new ones, and place these into the context of the human-environment interface.

The obesity epidemic did not occur overnight. Obesity and overweight are chronic conditions. Overall there are a variety of factors that play a role in obesity. This makes it a complex health issue to address.

- Overweight and obesity result from an energy imbalance. This involves eating too many calories and not getting enough physical activity.
- Body weight is the result of genes,

metabolism, behavior, environment, culture, and socioeconomic status.

- Behavior and environment play a large role causing people to be overweight and obese. These are the greatest areas for prevention and treatment actions.

Overweight and obesity are a result of energy imbalance over a long period of time. The cause of energy imbalance for each individual may be due to a combination of several factors. Individual behaviors, environmental factors, and genetics all contribute to the complexity of the obesity epidemic.

Oesity has reached epidemic proportions in India in the 21st century, with morbid obesity affecting 5% of the country's population. India is following a trend of other developing countries that are steadily becoming more obese. Unhealthy, processed food has become much more accessible following India's continued integration in global food markets. Indians are genetically susceptible to weight accumulation especially around the waist. While studying 22 different SNPs near to MC4R gene, scientists have identified a SNP (single nucleotide polymorphism) named rs12970134 to be mostly associated with waist circumference

States	Males (%)	Males rank	Females (%)	Females rank
India	**12.1**	**14**	**16**	**15**
Punjab	30.3	1	37.5	1
Kerala	24.3	2	34	2
Goa	20.8	3	27	3
Tamil Nadu	19.8	4	24.4	4
Andhra Pradesh	17.6	5	22.7	10
Sikkim	17.3	6	21	8
Mizoram	16.9	7	20.3	17
Himachal Pradesh	16	8	19.5	12
Maharashtra	15.9	9	18.1	13
Gujarat	15.4	10	17.7	7
Haryana	14.4	11	17.6	6
Karnataka	14	12	17.3	9
Manipur	13.4	13	17.1	11
Uttarakhand	11.4	15	14.8	14
Arunachal Pradesh	10.6	16	12.5	19
Uttar Pradesh	9.9	17	12	18
Jammu and Kashmir	8.7	18	11.1	5
Bihar	8.5	19	10.5	29
Nagaland	8.4	20	10.2	22

States	Males (%)	Males rank	Females (%)	Females rank
Rajasthan	8.4	20	9	20
Meghalaya	8.2	22	8.9	26
Orissa	6.9	23	8.6	25
Assam	6.7	24	7.8	21
Chattisgarh	6.5	25	7.6	27
West Bengal	6.1	26	7.1	16
Madhya Pradesh	5.4	27	6.7	23
Jharkhand	5.3	28	5.9	28
Tripura	5.2	29	5.3	24

Chapter 3

How Obesity Measured

Measuring the exact amount of a person's body fat is not easy. The most accurate measures are to weigh a person underwater or in a chamber that uses air displacement to measure body volume, or to use an X-ray test called Dual Energy X-ray Absorptiometry, also known as DEXA. These methods are not practical for the average person, and are done only in research centers with special equipment.

There are simpler methods to estimate body fat. One is to measure the thickness of the layer of fat just under the skin in several parts of the body. Another involves sending a harmless amount of electricity through a person's body. Results from these methods, however, can be inaccurate if done by an inexperienced person or on someone with extreme obesity.

Because measuring a person's body fat is difficult, health care professionals often rely on other means to diagnose obesity. Weight-for-height tables, used for decades, have a range of acceptable weights for a person of a given height. One problem with these tables is that there are many versions, all with different weight ranges. Another

problem is that they do not distinguish between excess fat and muscle. According to the tables, a very muscular person may be classified obese when he or she is not. The Body Mass Index (BMI) is less likely to misidentify a person's appropriate weight-for-height range.

B.M.I.

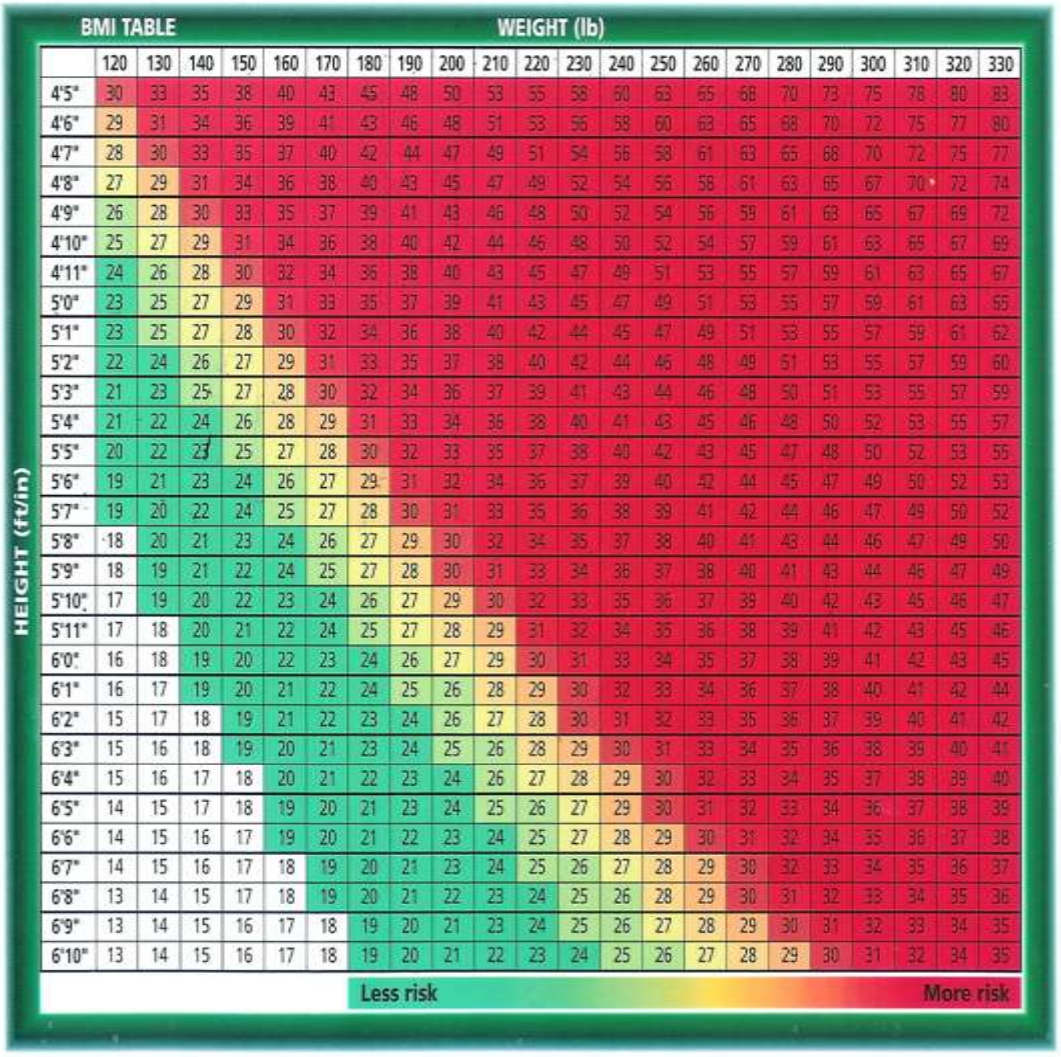
The BMI is a tool used to assess overweight and obesity and monitor changes in body weight. Like the weight-for-height tables, BMI has its limitations because it does not measure body fat or muscle directly. It is calculated by dividing a person's weight in pounds by height in inches squared and multiplied by 703.

Men and women can have the same BMI but different body fat percentages. As a rule, women usually have more body fat than men. A bodybuilder with a large muscle mass and low percentage of body fat may have the same BMI as a person who has more body fat. However, a BMI of 30 or higher usually indicates excess body fat

. Table 1: Body Mass Index

B.M.I. =weight / Height in cm2

Body Mass Index and Risks of Overweight



BMI TABLE

HEIGHT (ft/in) \ WEIGHT (lb)	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	300	310	320	330
4'5"	30	33	35	38	40	43	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83
4'6"	29	31	34	36	39	41	43	46	48	51	53	56	58	60	63	65	68	70	72	75	77	80
4'7"	28	30	33	35	37	40	42	44	47	49	51	54	56	58	61	63	65	68	70	72	75	77
4'8"	27	29	31	34	36	38	40	43	45	47	49	52	54	56	58	61	63	65	67	70	72	74
4'9"	26	28	30	33	35	37	39	41	43	46	48	50	52	54	56	59	61	63	65	67	69	72
4'10"	25	27	29	31	34	36	38	40	42	44	46	48	50	52	54	57	59	61	63	65	67	69
4'11"	24	26	28	30	32	34	36	38	40	43	45	47	49	51	53	55	57	59	61	63	65	67
5'0"	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63	65
5'1"	23	25	27	28	30	32	34	36	38	40	42	44	45	47	49	51	53	55	57	59	61	62
5'2"	22	24	26	27	29	31	33	35	37	38	40	42	44	46	48	49	51	53	55	57	59	60
5'3"	21	23	25	27	28	30	32	34	36	37	39	41	43	44	46	48	50	51	53	55	57	59
5'4"	21	22	24	26	28	29	31	33	34	36	38	40	41	43	45	46	48	50	52	53	55	57
5'5"	20	22	23	25	27	28	30	32	33	35	37	38	40	42	43	45	47	48	50	52	53	55
5'6"	19	21	23	24	26	27	29	31	32	34	36	37	39	40	42	44	45	47	49	50	52	53
5'7"	19	20	22	24	25	27	28	30	31	33	35	36	38	39	41	42	44	46	47	49	50	52
5'8"	18	20	21	23	24	26	27	29	30	32	34	35	37	38	40	41	43	44	46	47	49	50
5'9"	18	19	21	22	24	25	27	28	30	31	33	34	36	37	38	40	41	43	44	46	47	49
5'10"	17	19	20	22	23	24	26	27	29	30	32	33	35	36	37	39	40	42	43	45	46	47
5'11"	17	18	20	21	22	24	25	27	28	29	31	32	34	35	36	38	39	41	42	43	45	46
6'0"	16	18	19	20	22	23	24	26	27	29	30	31	33	34	35	37	38	39	41	42	43	45
6'1"	16	17	19	20	21	22	24	25	26	28	29	30	32	33	34	36	37	38	40	41	42	44
6'2"	15	17	18	19	21	22	23	24	26	27	28	30	31	32	33	35	36	37	39	40	41	42
6'3"	15	16	18	19	20	21	23	24	25	26	28	29	30	31	33	34	35	36	38	39	40	41
6'4"	15	16	17	18	20	21	22	23	24	26	27	28	29	30	32	33	34	35	37	38	39	40
6'5"	14	15	17	18	19	20	21	23	24	25	26	27	29	30	31	32	33	34	36	37	38	39
6'6"	14	15	16	17	19	20	21	22	23	24	25	27	28	29	30	31	32	34	35	36	37	38
6'7"	14	15	16	17	18	19	20	21	23	24	25	26	27	28	29	30	32	33	34	35	36	37
6'8"	13	14	15	17	18	19	20	21	22	23	24	25	26	28	29	30	31	32	33	34	35	36
6'9"	13	14	15	16	17	18	19	20	21	23	24	25	26	27	28	29	30	31	32	33	34	35
6'10"	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	34	35

Less risk — More risk

	NORMAL						OVERWEIGHT					OBESE										EXTREME OBESITY		
BMI	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42
Height (Feet-Inches)	**Weight** (Pounds)																							
4'10"	91	96	100	105	110	115	119	124	129	134	138	143	148	153	158	162	167	172	177	181	186	191	196	201
4'11"	94	99	104	109	114	119	124	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208
5'00"	97	102	107	112	118	123	128	133	138	143	148	153	158	163	168	174	179	184	189	194	199	204	209	215
5'01"	100	106	111	116	122	127	132	137	143	148	153	158	164	169	174	180	185	190	195	201	206	211	217	222
5'02"	104	109	115	120	126	131	136	142	147	153	158	164	169	175	180	186	191	196	202	207	213	218	224	229
5'03"	107	112	118	124	130	135	141	146	152	158	163	169	174	180	186	191	197	203	208	214	220	225	231	237
5'04"	110	116	122	128	134	140	145	151	157	163	169	175	180	186	191	197	204	209	215	221	227	232	238	244
5'05"	114	120	126	132	138	144	150	156	162	168	174	180	186	192	198	204	210	216	222	228	234	240	246	252
5'06"	118	124	130	136	142	148	155	161	167	173	179	186	192	198	204	210	216	223	229	235	241	247	253	260
5'07"	121	127	134	140	146	153	159	166	172	178	185	191	198	204	211	217	223	230	236	242	249	255	261	268
5'08"	125	131	138	144	151	158	164	171	177	184	190	197	204	210	216	223	230	236	243	249	256	262	269	276
5'09"	128	135	142	149	155	162	169	176	182	189	196	203	210	216	223	230	236	243	250	257	263	270	277	284
5'10"	132	139	146	153	160	167	174	181	188	195	202	209	216	222	229	236	243	250	257	264	271	278	285	292
5'11"	136	143	150	157	165	172	179	186	193	200	208	215	222	229	236	243	250	257	265	272	279	286	293	301
6'00"	140	147	154	162	169	177	184	191	199	206	213	221	228	235	242	250	258	265	272	279	287	294	302	309
6'01"	144	151	159	166	174	182	189	197	204	212	219	227	235	242	250	257	265	275	280	288	295	302	310	318
6'02"	148	155	163	171	179	186	194	202	210	218	225	233	241	249	256	264	272	280	287	295	303	311	319	326
6'03"	152	160	168	176	184	192	200	208	216	224	232	240	248	256	264	272	279	287	295	303	311	319	327	335
6'04"	156	164	172	180	189	197	205	213	221	230	238	246	254	263	271	279	287	295	304	312	320	328	336	344

Adapted from: George Bray, Pennington Biomedical Research Center, *Clinical Guidelines on the Identification, Evaluation, and Treatment of Overweight and Obesity in Adults: The Evidence Report*, National Institutes of Health, National Heart, Lung, and Blood Institute, September 1998.

You can use the above table to determine your BMI. Find your height in the left-hand column labeled "Height." Move across to your weight. The number at the top of the column is the BMI for that height and weight. Pounds have been rounded off.

A BMI of 25 to 29.9 is considered overweight. A person with a BMI of 30 or higher is considered obese. Please review your findings with your health care provider if your BMI is outside of the normal range.

Chapter 4

Body Fat Distribution

Health care professionals are concerned not only with how much fat a person has, but also where the fat is located on the body. Women typically collect fat in their hips and buttocks, giving them a "pear" shape. Men usually build up fat around their bellies, giving them more of an "apple" shape. Of course, some men are pear-shaped and some women become apple-shaped, especially after menopause.

Excess abdominal fat is an important, independent risk factor for disease. Research has shown that waist circumference is directly associated with abdominal fat and can be used in the assessment of the risks associated with obesity or overweight. If you carry fat mainly around your waist, you are more likely to develop obesity-related health problems.

Women with a waist measurement of more than 35 inches and men with a waist measurement of more than 40 inches may have more health risks than people with lower waist measurements because of their body fat distribution.

Chapter 5

What causes obesity

Obesity occurs when a person consumes more calories from food than he or she burns. Our bodies need calories to sustain life and be physically active, but to maintain weight we need to balance the energy we eat with the energy we use. When a person eats more calories than he or she burns, the energy balance is tipped toward weight gain and obesity. This imbalance between calories-in and calories-out may differ from one person to another. Genetic, environmental, and other factors may all play a part.

Genetic Factors

Obesity tends to run in families, suggesting a genetic cause. However, families also share diet and lifestyle habits that may contribute to obesity. Separating genetic from other influences on obesity is often difficult. Even so, science does show a link between obesity and heredity.

Environmental and Social Factors

Environment strongly influences obesity. Consider that most people in the United States alive today were also alive in 1980, when obesity rates were lower. Since this

time, our genetic make-up has not changed, but our environment has.

Environment includes lifestyle behaviours such as what a person eats and his or her level of physical activity. Too often Americans eat out, consume large meals and high-fat foods, and put taste and convenience ahead of nutrition. Also, most people in the United States do not get enough physical activity.

Environment also includes the world around us—our access to places to walk and healthy foods, for example. Today, more people drive long distances to work instead of walking, live in neighbourhoods without sidewalks, tend to eat out or get "take out" instead of cooking, or have vending machines with high-calorie, high-fat snacks at their workplace. Our environment often does not support healthy habits.

In addition, social factors including poverty and a lower level of education have been linked to obesity. One reason for this may be that high-calorie processed foods cost less and are easier to find and prepare than healthier foods, such as fresh vegetables and fruits. Other reasons may include inadequate access to safe recreation places or the cost of gym memberships, limiting opportunities for physical activity. However, the link between low

socioeconomic status and obesity has not been conclusively established, and recent research shows that obesity is also increasing among high-income groups.

Cultural Factors

An individual's cultural background may also play a role in his or her weight. For instance, foods specific to certain cultures that are prepared with a lot of fat or salt may hamper one's weight-loss efforts. Similarly, family gatherings offering large amounts of food may make it difficult to pay attention to proper portion control and serving sizes. Lastly, research has shown that individuals originally from countries other than the United States have difficulty adjusting to the calorie-rich foods offered here. These individuals may not be able to prepare food with the ingredients they would use in their native countries.

Although you cannot change your genetic makeup, you can work on changing your eating habits, levels of physical activity, and other environmental factors. Try these ideas:

- Learn to choose sensible portions of nutritious meals that are lower in fat.
- Learn healthier ways to make your favorite foods.

- Learn to recognize and control environmental cues (like inviting smells or a package of cookies on the counter) that make you want to eat when you are not hungry.
- Have a healthy snack an hour or two before a social gathering to prevent overeating. Mingle and talk between bites to prevent eating too much too quickly.
- Engage in at least 30 minutes of moderate-intensity physical activity (like brisk walking) on most, preferably all, days of the week.
- Take a walk instead of watching television.
- Eat meals and snacks at a table, not in front of the TV.
- Pay attention to why you are eating. Determine if you are eating because you are actually hungry or because you are bored, depressed, or lonely.
- Keep records of your food intake and physical activity.

Other Causes of Obesity

Some illnesses may lead to or are associated with weight gain or obesity. These include:

- Hypothyroidism, a condition in which the thyroid gland fails to produce enough thyroid hormone. It often results in lowered metabolic rate and loss of vigor.
- Cushing's syndrome, a hormonal disorder caused by prolonged exposure of the body's tissues to high levels of the hormone cortisol. Symptoms vary, but most people have upper body obesity, rounded face, increased fat around the neck, and thinning arms and legs.
- Polycystic ovary syndrome, a condition characterized by high levels of androgens (male hormone), irregular or missed menstrual cycles, and in some cases, multiple small cysts in the ovaries. Cysts are fluid-filled sacs.

A doctor can tell whether there are underlying medical conditions that are causing weight gain or making weight loss difficult.

Lack of sleep may also contribute to obesity. Recent studies suggest that people with sleep problems may gain weight over time. On the other hand, obesity may contribute to sleep problems due to medical conditions such as sleep apnea, where a

person briefly stops breathing at multiple times during the night. Certain drugs such as steroids, some antidepressants, and some medications for psychiatric conditions or seizure disorders may cause weight gain. These drugs may slow the rate at which the body burns calories, stimulate appetite, or cause the body to hold on to extra water. Be sure your doctor knows all the medications you are taking (including over-the-counter medications and dietary supplements). He or she may recommend a different medication that has less effect on weight gain.

Chapter 3

What are the consequences of obesity

Health Risks

Obesity is more than a cosmetic problem. Many serious medical conditions have been linked to obesity, including type 2 diabetes, heart disease, high blood pressure, and stroke. Obesity is also linked to higher rates of certain types of cancer. Men who are considered obese are more likely than nonobese men to develop cancer of the colon, rectum, or prostate. Women who are considered obese are more likely than nonobese women to develop cancer of the gallbladder, uterus, cervix, or ovaries. Esophageal cancer has also been associated with obesity.

Other diseases and health problems linked to obesity include:

- Gallbladder disease and gallstones.
- Fatty liver disease (also called nonalcoholicsteatohepatitis or NASH).
- Gastroesophagealreflux, or what is sometimes called GERD. This problem occurs when the lower oesophageal sphincter does not close properly and stomach contents leak back—or reflux—into the oesophagus.

- Osteoarthritis, a disease in which the joints deteriorate. This is possibly the result of excess weight on the joints.
- Gout, another disease affecting the joints.
- Pulmonary (breathing) problems, including sleep apnea, which causes a person to stop breathing for a short time during sleep.
- Reproductive problems in women, including menstrual irregularities and infertility.

Health care professionals generally agree that the more obese a person is, the more likely he or she is to develop health problems.

Psychological and Social Effects

Emotional suffering may be one of the most painful parts of obesity. American society emphasizes physical appearance and often equates attractiveness with slimness, especially for women. Such messages may make people considered overweight feel unattractive.

Many people think that individuals who are considered obese are gluttonous, lazy, or both. This is not true. As a result, people who are considered obese often face prejudice or discrimination in the job market, at school, and in social situations. Feelings of rejection, shame, or depression may occur.

Body fat and metabolic syndrome

The metabolic syndrome is a constellation of metabolic risk factors that consist of the following

Atherogenicdyslipidemia [serum elevations of triglycerides, apolipoprotein B (apo B), and small low-density lipoprotein (LDL) particles plus low high-density lipoprotein (HDL) cholesterol]

Elevated blood pressure

Elevated glucose associated with insulin resistance

Prothrombotic state

Proinflammatory state

Many of these factors can be identified through special testing but are not measured in clinical practice. Recently the National Cholesterol Education Program Adult Treatment Panel III report proposed a simple scheme for the routine diagnosis of metabolic syndrome. According to this scheme, a diagnosis of metabolic syndrome can be made if a person has three of the following five features:

Increased waist circumference (≥102 cm in men and ≥ 88 cm in women)

Elevated triglycerides (≥150 mg/dl)

Reduced HDL cholesterol (<40 mg/dl in men and < 50 mg/dl in women)

Elevated blood pressure (≥130/85 mm Hg or on treatment for hypertension)

Elevated glucose (≥100 mg/dl)

When the waist circumference is 102 cm or more in men or 88 cm or more in women, the term abdominal obesity can be applied. The advantage of measuring waist circumference is that an excess abdominal fat is correlated more closely with the presence of metabolic risk factors than total body fat. The cut points for defining abdominal obesity are arbitrary. For susceptible individuals, lesser accumulations of abdominal fat can precipitate or aggravate metabolic risk factors. This is particularly so in certain populations; for example, in Asian populations lower waist circumference cut points have been identified to define abdominal obesity.

Patients with diabetes (fasting glucose ≥ 126 mg/dl) are said to have the metabolic syndrome if two other features are present. If a person qualifies for the metabolic syndrome under Adult Treatment Panel III criteria, measurement of a 2-h postprandial glucose may uncover a diagnosis of diabetes (2-h glucose ≥ 200 mg/dl) or impaired glucose tolerance (IGT) (2-h glucose 140–199 mg/dl) (The presence of IGT indicates an increased risk for type 2 diabetes Additional testing can provide confirmation of the metabolic syndrome. Confirmatory

biomarkers for this syndrome include high levels of fasting insulin, 2-h postprandial insulin, apo B, increased small LDL particles, C-reactive protein (CRP), fibrinogen, and plasminogen activator inhibitor (PAI)-1. The clinical utility of detecting these additional abnormalities beyond confirmation of the syndrome is uncertain, although investigations are underway to evaluate potential utility. For example, the presence of elevated CRP may indicate a greater risk for acute coronary syndromes

A disputed area in the relation of obesity and metabolic syndrome concerns the role of insulin resistance. Most persons with multiple metabolic risk factors are insulin resistant. This observation led to the concept that insulin resistance is the cause of the metabolic syndrome .This concept in turn generated an alternative term for the metabolic syndrome, namely the insulin resistance syndrome. Various pathogenic schemes have been proposed to explain the connection between insulin resistance and metabolic risk factors. There is no doubt that insulin resistance is a risk factor for IGT and type 2 diabetes. A causal relationship between insulin resistance and

other metabolic risk factors is less certain. Moreover, the interaction between obesity and defects in insulin signaling is so complex that it is so far not possible to disentangle the two. For example, obesity causes insulin resistance, whereas insulin resistance seemingly exacerbates the adverse effects of obesity. A strong case can be made for a role of genetic forms of insulin resistance being a contributor to the metabolic syndrome in the general population. On the other hand, there is little doubt that increasing prevalence of overweight/obesity is mainly responsible to the rising prevalence of the metabolic syndrome in the United States and worldwide

Our understanding of the relation between obesity and metabolic risk factors is growing rapidly. This understanding is based on the discovery of multiple products released from adipocytes. In the presence of obesity, these products are released in abnormal amounts. Each of these products has been implicated in the causation of one or another of the metabolic risk factors. The following is a list of the factors most implicated in the development of metabolic syndrome

Nonesterified fatty acids (NEFAs)

Inflammatory cytokines

PAI-1

Adiponectin

Leptin

Resistin

Current concepts of the relation of each of these products to metabolic risk factors can be reviewed.

Previous SectionNext Section

NEFA.

Obese persons release increased amounts of NEFAs into the circulation. NEFAs are derived by lipolysis of adipose tissue triglycerides. The greater the amount of fat in adipose tissue, the more the amounts of NEFAs released will be. This greater release of NEFAs proceeds despite the higher insulin levels that are present in obese persons. Even though high insulin levels suppress adipose tissue lipolysis, they cannot reduce NEFA release to normal in obesity. NEFAs are the primary source of nutrient energy in the fasting state. With obesity, however, NEFA flux exceeds tissue needs, and defense mechanisms must come into play. The consequences of these defense mechanisms undoubtedly contribute to metabolic risk factors.

Excessive influx of NEFAs into muscle leads to insulin resistance. The mechanisms whereby increased fatty acids in muscle cause insulin resistance have not been fully elucidated. Randle *et al.* early postulated that excess fatty acids inhibit glucose oxidation (glucose-fatty acid cycle). Recent research suggests that muscle levels of diacylglycerol are raised, which stimulates the serine

phosphorylation of the insulin receptors and thereby inhibits normal insulin signaling. Other mechanisms have been proposed and may play a role. The resulting insulin resistance in muscle predisposes to hyperglycemia; the latter becomes clinically manifest in those persons to acquire a defect in insulin secretory capacity.

Influx of excess NEFAs into the liver increases the triglyceride content of the liver (fatty liver).Fat accumulation in the liver seemingly produces insulin resistance as it does in muscle. Reduction in insulin action in liver allows for enhanced glyconeogenesis and increased hepatic glucose output; this will accentuate hyperglycemia in those patients who have reduced insulin secretory capacity. Increased fat in the liver also promotes development of atherogenicdyslipidemia. It provides a stimulus for increased formation and secretion of very LDL (VLDL) particles. The result is higher serum levels of triglyceride, apo B, and small LDL particles. High serum triglycerides reduce HDL-cholesterol concentrations through exchange of VLDL triglycerides with HDL cholesterol esters. HDL-cholesterol lowering is accentuated by an increase in

synthesis of hepatic lipase that occurs in people with obesity-induced fatty liver; lipase degrades HDL particles, converting large HDL into small HDL.

An important but unresolved question is whether high NEFA levels contribute to higher blood pressure or a proinflammatory state. Hypotheses have been developed to link higher NEFA levels to higher blood pressures. Whether the link is causal remains to be determined. Moreover, accumulation of fat in the liver has been reported to be associated with increased hepatic synthesis of PAI-1, fibrinogen, and inflammatory cytokines, the key mediators of the prothrombotic and proinflammatory states.

Inflammatory cytokines.

Adipose tissue synthesizes and secretes TNFα, IL-6, and other cytokines. The production of these cytokines is increased in obese persons. This increased synthesis may interfere with the action of insulin to suppress lipolysis; if so, this would represent insulin resistance of adipose tissue. Obese persons in addition have elevated circulating cytokines; so far, it is uncertain whether these circulating cytokines have systemic effects, *i.e.* promoting insulin resistance in muscle ,increased synthesis of

acute-phase reactants in the liver (CRP and fibrinogen), or activation of macrophages in atheromatousplaques.It is possible increased release of acute-phase reactants from liver may be the result entirely of lipid accumulation in this organ.

PAI-1.

Adipose tissue synthesizes PAI-1, too. Reports suggest that abdominal adipose tissue is more active in PAI-1 synthesis than lower-body adipose tissue .A fatty liver may be another source of PAI-1. The resulting high PAI-1 levels in obese persons together with the high plasma fibrinogen observed in such persons contributes to a prothrombotic state.

Other adipose tissue products.

Several other products of adipose tissue may influence development of the metabolic syndrome. Their precise role, however, remains to be fully determined.Adiponectin is one potentially important product .This substance has been reported to have antiinflammatory and antiatherogenic properties. Obese persons generally have low levels of adiponectin and hence may be deprived of its protective effects against the metabolic syndrome. Leptin also may play a systemic role beyond being an adipose tissue-derived appetite suppressant. Whether the systemic effects of leptin are direct or secondary to its action on the central nervous system is currently being debated. Regardless, this hormone has been reported to have a beneficial effect on the liver to protect against fatty liver .Its mechanism may be to enhance fatty acid oxidation in the liver. Finally, resistin is an adipose tissue-derived hormone that seemingly opposes the action of insulin .Whether it has a physiological role in humans has not yet been determined.

Obesity-induced metabolic syndrome as a multidimensional risk factor for ASCVD and type 2 diabetes

Several recent reports indicate that the presence of the metabolic syndrome is associated with increased risk for both ASCVD and type 2 diabetes. Persons with the metabolic syndrome have at least a 2-fold increase in risk for ASCVD, compared with those without .Risk for type 2 diabetes in both men and women is increased about 5-fold . The risk for diabetes is highest in those with impaired fasting glucose or IGT. Once a patient develops type 2 diabetes, risk for ASCVD is enhanced. Not only is relative risk for coronary heart disease (CHD) raised by 2- to 3-fold, but once CHD becomes manifest in a patient with diabetes, the prognosis for survival is greatly reduced .In addition, diabetes is accompanied by microvascular disease, which is a common cause of chronic renal failure. The relationship between the metabolic risk factors and development of ASCVD is complex and certainly not well understood. Nonetheless, a brief review of hypothesized mechanisms may be of interest.

Atherogenicdyslipidemia.

This condition is characterized by an increase in elevated triglycerides (and increased VLDL particle number), increased small LDL particles, and low HDL cholesterol .It is commonly present in obese persons. The increased number of VLDL and LDL particles accounts for the increased level of total apo B usually observed with atherogenicdyslipidemia. The atherogenic potential of each lipoprotein abnormality has long been a topic of great interest but one that is not fully resolved.

For many years triglyceride-rich lipoproteins (TGRLPs) were thought not to be atherogenic. Nonetheless, there is growing evidence that smaller TGRLP (remnant lipoproteins) are in fact atherogenic.This evidence comes from studies in laboratory animals, patients with genetic disorders causing remnant accumulation, metaanalysis of epidemiological studies, and clinical trials .TGRLPs as a class are a mixture of lipoproteins, and it has been difficult to differentiate between atherogenic and nonatherogenic forms of TGRLPs.

Nonetheless, there is a growing consensus among investigators that TGRLP fraction definitely contains atherogenic lipoproteins.

The LDL particles associated with the metabolic syndrome and atherogenicdyslipidemia tend to be small and dense. A theory widely held is that smaller LDL particles are more atherogenic than larger LDLs Smaller LDLs may filter more readily into the arterial wall. They further may be more prone to atherogenic modification. Even so, not all investigations are convinced that small LDL particles are unusually atherogenic, compared with other apo B-containing lipoproteins. Nonetheless, when small LDLs are present, the total number of lipoprotein particles in the LDL fraction usually is increased .Most researchers will agree that the higher the number of LDL particles present, the higher will be the atherogenic potential. In other words, small LDL particles are often a surrogate for an increased LDL particle number.

A simple strategy for assessing the sum of atherogenic particles is measurement of either LDL+VLDL cholesterol (non-HDL cholesterol) or total apo B In persons with metabolic syndrome and

atherogenicdyslipidemia, both LDL+VLDL cholesterol and total apo B typically are elevated. These measurements should be used increasingly both in risk assessment and as targets of therapy in persons with the metabolic syndrome.

A low HDL level is another characteristic of atherogenicdyslipidemia.As a risk predictor, a low HDL rivals an elevated total apo B (or VLDL+LDL cholesterol). This fact has led to the concept that HDL is intimately involved in the atherogenic process. The theories abound as to the mechanisms whereby HDL is antiatherogenic, *e.g.* enhanced reverse cholesterol transport, antiinflammatory properties, ability to protect against LDL modification, among others. Although HDL in fact may be directly antiatherogenic, it also is a marker for the presence of other lipid and nonlipid risk factors. Obesity itself reduces HDL levels ,and obese patients with metabolic syndrome and atherogenicdyslipidemia almost always have low HDL levels. Thus, the association between low HDL and ASCVD risk is complex and the various components of this association are difficult to differentiate. Regardless of mechanism,

however, the presence of a low HDL level carries strong predictive power for development of ASCVD.

Elevated blood pressure.

Obese persons have a higher prevalence of elevated blood pressure than lean persons. Moreover, a higher blood pressure is a strong risk factor for cardiovascular disease (CVD) Well-known complication of hypertension are CHD, stroke, left ventricular hypertrophy, heart failure, and chronic renal failure. Yet some reports suggest that the elevated blood pressure accompanying obesity is less likely to produce CVD than when it occurs in lean persons. The implication is that obesity-induced hypertension is not particularly dangerous to the cardiovascular system. This concept generally is not accepted by the hypertension community, nor was it supported by the Framingham Heart Study

Elevated plasma glucose.

There is no question that persons with diabetes are at increased risk for ASCVD. In epidemiological studies, the onset of diabetes is accompanied by increased risk for ASCVD, suggesting that hyperglycemia *per se* is atherogenic. Limited data that directly address the question of whether hyperglycemia accelerates the development of atherosclerosis are available. Nonetheless, one recent study indicated that intensive diabetes therapy in type 1 diabetes is accompanied by a reduction in intima-media thickness of carotid arteries. Although this finding is consistent with epidemiology, it generally has not been possible to demonstrate an atherogenic potential of hyperglycemia in animal models. Moreover, whether the hyperglycemia of type 1 diabetes promotes atherogenesis has been uncertain. The major cause of death in persons with type 1 diabetes is CVD; even so, it is possible that most atherosclerotic disease develops later in the course of the disease after development of chronic renal failure and hypertension.

A variety of mechanisms have been proposed whereby hyperglycemia might promote atherosclerosis Examples include

nonenzymatic glycosylation of lipids and proteins, pathogenic effects of advanced glycation products, increased oxidative stress, activation of protein kinase C, and microvascular disease of the vasa vasorum of the coronary arteries. All of these potential mechanisms are of interest, but so far, none has been shown to play a direct role in atherogenesis; most likely all are involved in one way or another. But a fundamental question remains to be answered, namely whether hyperglycemia is directly atherogenic.

Another possibility is that insulin resistance *per se* is independently atherogenic. In prospective studies, the presence of insulin resistance is associated with increased ASCVD risk But in persons with insulin resistance, confounding by other known risk factors makes it difficult to be certain that insulin resistance (or resulting hyperinsulinemia) is directly atherogenic If so, the mechanisms for such an effect are entirely speculative at this time.

Prothrombotic state.

Obesity is accompanied by a large number of coagulation and fibrinolytic abnormalities This suggests that obesity induces a prothrombotic state. What is not known at present is how a prothrombotic state will either promote the development of atherosclerosis or participate in the development of acute ASCVD events. Perhaps the most attractive candidate for enhanced atherogenicity associated with coagulation and fibrinolytic abnormalities is endothelial dysfunction. It is believed by many workers that endothelial dysfunction is somehow involved in the atherogenic process .Several pathways have been proposed; so far, however, none of these have been substantiated. Perhaps more likely, the obesity-induced procoagulant and antifibrinolytic factors contribute to a worsening of acute coronary syndromes. Thrombosis occurring with plaque rupture or erosion is a key element in determining the severity of the syndrome. If normal coagulation and fibrinolysis are impaired at the time of plaque rupture or erosion, then a larger thrombus should form. An attractive hypothesis is that acute plaque disruption is common, but only when thrombosis is large is there a significant acute coronary syndrome. If so, such could

make the presence of a prothrombotic state important for determining the clinical outcome.

Proinflammatory state.

The cardiovascular field has recently shown great interest in the role of inflammation in the development of ASCVD. The basic concept is that atherogenesis represents a state of chronic inflammation. It is characterized by lipid-induced injury that initiates invasion of macrophages followed by proliferation of smooth muscle cells. All of these processes are classic features of chronic inflammation albeit occurring at a very slow rate. The finding that elevations of serum CRP carry predictive power for the development of major cardiovascular events led to the concept that advanced and unstable atherosclerotic plaques are in an even higher state of inflammation than stable plaques .It is of interest that obese persons and particularly those with the metabolic syndrome also have elevated levels of CRP. This finding has suggested that obesity is a proinflammatory state and is somehow connected with the development of unstable atherosclerotic plaques. So far, however, a mechanistic connection has not been made. The

associations are suggestive, but how elevations of CRP associated with obesity could promote or precipitate major cardiovascular events is not clear. This lack of identified mechanism does not rule out a causative connection. But so far the connection has not been uncovered.

Obesity is a major underlying risk factor for ASCVD. It is associated with multiple ASCVD risk factors, and it also is a risk factor for type 2 diabetes. Diabetes itself is a cardiovascular risk factor. Despite the strong association between obesity and ASCVD, the mechanisms underlying this relationship are not well understood. Our understanding of the connection between obesity and vascular disease is complicated by a plethora of possibilities. Obesity acts on so many metabolic pathways, producing so many potential risk factors, that it is virtually impossible to differentiate between the more important and less important. The possibilities for confounding variables are enormous. This complexity provides a great challenge for basic and clinical research. It also raises the possibility for new targets of therapy for the metabolic syndrome. With this said, the fundamental challenge is how to intervene at the public health level to

reduce the high prevalence of obesity in the general population. This approach offers the greatest possibility for reducing the cardiovascular risk that accompanies obesity.

Abbreviations: apo B, Apolipoprotein B; ASCVD, atherosclerotic cardiovascular disease; BMI, body mass index; CHD, coronary heart disease; CRP, C-reactive protein; CVD, cardiovascular disease; HDL, high-density lipoprotein; IGT, impaired glucose tolerance; LDL, low-density lipoprotein; NEFA, nonesterified fatty acid; PAI, plasminogen activator inhibitor; TGRLP, triglyceride-rich lipoprotein; VLDL, very LDL.

Chapter 6

Weight Management

Weight management means keeping your body weight at a healthy level.

- Balanced diet
- Exercise and weight loss
- Tips for losing weight

A BALANCED DIET

- Do not eat meat more than once a day. Eat fish and poultry more often than red or processed meats because they are less fattening.
- Avoid frying food. Fried food absorbs the fats from the cooking oils, increasing your dietary fat intake. Instead, bake or broil food. If you do fry, use polyunsaturated oils, such as

corn oil.

- Cut down on your salt intake. Limit table salt, or flavor intensifiers that contain salt, such as monosodium glutamate (MSG).
- Include adequate fiber in your diet. Fiber is found in green leafy vegetables, fruit, beans, bran flakes, nuts, root vegetables, and whole-grain foods.
- Do not eat more than 4 eggs per week. Although they are a good source of protein, and they're low in saturated fat, eggs are very high in cholesterol.
- Choose fresh fruit for dessert, rather than cookies, cake, or pudding.

- Eat a well-balanced diet. Too much of anything -- calories or a particular type of food -- has its drawbacks.
- Follow the recommendations of the food guide pyramid

Exercise and weight loss

How much exercise you need to make a difference in your weight depends on how much you eat and what activity you are doing. A medium-sized adult would have to walk more than 30 miles to burn up 3,500 calories, the equivalent of one pound of fat. Although that may seem like a lot, you don't have to walk the 30 miles all at once. Walking a mile a day for 30 days will achieve the same result, as long as you don't eat more than usual.

If you eat 100 calories a day more than your body needs, you will gain approximately 10 pounds in a year. You could lose the weight or keep it off by doing 30 minutes of moderate exercise daily. The combination of exercise and diet is the best way to control your weight.

AEROBIC EXERCISE

Aerobic exercise is exercise in which you are continuously moving a large muscle group such as in your arms legs and hips for a period of time. Your heart rate gets faster and your breathing becomes deeper and faster.

All adults should get 2 1/2 hours of aerobic exercise spread out over a week, but should be done for at least 10 minutes

at a time.

If you have not been active, start slowly and build up over weeks or even months. Walking can be a good exercise to start with.

Every week increase the time you spend with the activity, do it more often or add a second activity. You can increase the speed of your activity or the difficulty of the activity, such as going up hills.

STRENGTHENING

All adults should do exercises to strengthen the muscles at least two days a week. These activities can include push-ups, situps, using resistance bands, or lifting weights. Make sure to do exercises that work on all the parts of your body.

If you are doing a regular program of strength training (weight lifting), your muscles will get bigger. It is possible that your overall weight will increase, because muscle weighs more than fat. However, your clothes will probably fit better and your body will be more toned. Your body composition is a better indicator of your overall health than the number on the scale.

If proper technique is followed, most people of any age can safely lift weights. It is important, however, to check with your doctor before you start to train with weights. Also, consult an experienced personal trainer or coach prior to beginning a weight lifting program. This can help prevent injuries and the loss of muscle strength and endurance that occurs with bed rest and inactivity.

Look for other activities house activities that improve strength or endurance, such as gardening.

Those recovering from heart attacks can benefit greatly from supervised cardiac rehabilitation programs.

Making a Commitment

The decision to keep fit requires a lifelong commitment of time and effort. Exercising and eating right must become things that you do without question, like bathing and brushing your teeth. Unless you are convinced of the benefits, you will not succeed.

Patience is essential. Don't try to do too much too soon and don't quit before you have a chance to experience the rewards. You can't regain in a few days or weeks what you have lost in years of sedentary living, but you can get it back if you keep at it. And the prize is worth the price.

WEIGHT LOSS TIPS

One pound of fat contains approximately 3,500 calories, so to lose one pound a week, a person should consume approximately 3,500 fewer calories per week. This can be done by reducing the daily intake by 500 calories per day (500 x 7 days will provide a deficit of 3,500 calories per week). To lose 2 pounds per week, a deficit of 1,000 calories per day is required.

If this seems impossible, remember that physical activity also contributes significantly to weight loss. The deficit of 500 to 1,000 calories can come from a combination of increased physical activity and reduced intake on a daily basis.

Therefore, you don't need to experience significant food deprivation. The lowest intake per day recommended for women is 1,200 calories, unless they are in a medically-supervised, very low-calorie regimen which may have a daily level of 500 to 800 calories per day.

The lowest level recommended for men is 1,500 calories per day. A very low-calorie diet can also be used by males if they are in a medically-supervised program.

Tips for preventing weight gain:

- Avoid foods that are high in fat and sugar.
- Reduce how much alcohol you drink.
- Avoid stress, frustration, and boredom.
- If you are depressed, seek medical treatment.

Avoid a sedentary lifestyle by increasing your activity level:

- Perform aerobic exercise for at least 30 minutes a day, 3 times a week .
- Increase physical activity by walking rather than driving.
- Climb stairs rather than using an elevator or escalator.
- Always talk to your health care provider before starting an exercise program.

FAD DIETS

A fad diet is one that makes unrealistic promises. Most fad diets are very low in carbohydrates and in calories, causing fluid loss from the body, which indicates a loss of weight on the scale. Once the body gets rehydrated with water, the weight will come right back.

Evaluation of a fad diet:

- Is the diet medically and nutritionally safe? Get an opinion from a physician and a registered dietician.
- Red flags for fad diets include: overemphasis on a specific food group or groups, limited food choices, and a "calories do not count" approach.

These are ways to decide whether to use a diet or not. If there is no nutritionally or medically reliable information provided, and if there are no statistics to back the claims, then it is not a good diet to consider. Remember, if it sounds too good to be true, then it probably is.

For weight loss to be successful, here is a summary of basic guidelines:

- Aerobic physical activity will assist in increasing muscle tissue which will burn more calories. You should plan on 20-minute sessions at least 3 times per week.
- Gradual changes in eating habits will help encourage a permanent lifestyle change.
- A slow weight loss of 1 or 2 pounds a week, until the desirable body weight is reached, is best.

Chapter 7

Our Weight loss treatment by alternative ways ……..

Exercise exercise you need to make a difference in your weight depends on how much you eat and what activity you are doing. A medium-sized adult would have to walk more than 30 miles to burn up 3,500 calories, the equivalent of one pound of fat. Although that may seem like a lot, you don't have to walk the 30 miles all at once. Walking a mile a day for 30 days will achieve the same result, as long as you don't eat more than usual.

If you eat 100 calories a day more than your body needs, you will gain approximately 10 pounds in a year. You could lose the weight or keep it off by doing 30 minutes of moderate exercise daily. The combination of exercise and diet is the best way to control your weight.

AEROBIC EXERCISE

Aerobic exercise is exercise in which you are continuously moving a large muscle group such as in your arms legs and hips for a period of time. Your heart rate gets faster and your breathing becomes deeper and faster.

All adults should get 2 1/2 hours of aerobic exercise spread out over a week, but should be done for at least 10 minutes at a time.

If you have not been active, start slowly and build up over weeks or even months. Walking can be a good exercise to start with.

Every week increase the time you spend with the activity, do it more often or add a second activity. You can increase the speed of your activity or the difficulty of the activity, such as going up hills.

STRENGTHENING

All adults should do exercises to strengthen the muscles at least two days a week. These activities can include push-ups, situps, using resistance bands, or lifting weights. Make sure to do exercises that work on all the parts of your body.

If you are doing a regular program of strength training (weight lifting), your muscles will get bigger. It is possible that your overall weight will increase, because muscle weighs more than fat. However, your clothes will probably fit better and your body will be more toned. Your body composition is a better indicator of your overall health than the number on the scale.

If proper technique is followed, most people of any age can safely lift weights. It is important, however, to check with your doctor before you start to train with weights. Also, consult an experienced personal trainer or coach prior to beginning a weight lifting program. This can help prevent injuries and the loss of muscle strength and endurance that occurs with bed rest and inactivity.

Look for other activities house activities that improve strength or endurance, such as gardening.

Those recovering from heart attacks can benefit greatly from supervised cardiac rehabilitation programs.

Making a Commitment

The decision to keep fit requires a lifelong commitment of time and effort. Exercising and eating right must become things that you do without question, like bathing and brushing your teeth. Unless you are convinced of the benefits, you will not succeed.

Patience is essential. Don't try to do too much too soon and don't quit before you have a chance to experience the rewards. You can't regain in a few days or weeks what you have lost in years of sedentary living, but you can get it back if you keep at it. And the prize is worth the price.

Chapter 8

R.M.R or B.M.R.

BMR and RMR are estimates of how many calories you would burn if you were to do nothing but rest for 24 hours. They represent the minimum amount of energy required to keep your body functioning, including your heart beating, lungs breathing, and body temperature normal.

- BMR stands for Basal Metabolic Rate, and is synonymous with Basal Energy Expenditure or BEE. BMR measurements are typically taken in a darkened room upon waking after 8 hours of sleep; 12 hours of fasting to ensure that the digestive system is inactive; and with the subject resting in a reclining position.
- RMR stands for Resting Metabolic Rate, and is synonymous with Resting Energy Expenditure or REE. RMR measurements are typically taken under less restricted conditions than BMR, and do not require that the subject spend the night sleeping in the test facility prior to testing.

Most people searching the internet for information on their metabolic rate search for BMR because the term is so widely used. In fact, as explained in the Technical

Notes, below, RMR is likely to be more appropriate for your needs and is the more accurate estimation.

However, if you are looking for an estimate of how many calories you need or burn in a day, we suggest that you not use BMR or RMR at all. We suggest that you calculate the actual activities that you perform in a 24 hour period as described in Calculating Daily Calorie Needs.

We Do the Math

The BMR & RMR Calculator will calculate your BMR and RMR for you. And don't worry if you measure yourself in pounds, feet or centimeters, or even stones, we'll convert the numbers to fit the equations.

We explain the equations in detail in the Technical Notes, below. But whether or not such details interest you, you might find a few observations about them interesting:

- When your age goes up, your BMR and RMR go down.
- When your height goes down, your BMR and RMR go down.
- When your weight goes down, your BMR and RMR go down.

This means that as you get older, shorter, and lose weight, your BMR and RMR will go down and you will need to eat less or

exercise more to maintain your current weight. Oh my, it's tough getting old. At least as we get older we get wiser. Well, hopefully.

Using the Calculations

As BMR and RMR only represent resting energy expenditure, an adjustment must be made to reflect your activity level. This is done by multiplying your BMR or RMR by an activity factor (McArdle et al 1996). Note that the following activity factors also take into account The Thermic Effect of Food:

Activity Factor	Category	Definition
1.2	Sedentary	Little or no exercise and desk job
1.375	Lightly Active	Light exercise or sports 1-3 days a week
1.55	Moderately Active	Moderate exercise or sports 3-5 days a week
1.725	Very Active	Hard exercise or sports 6-7 days a week4
1.9	Extremely Active	Hard daily exercise or sports and physical job

Use of these activity factors produces a very rough estimate, and there are many different opinions on what these activity factors should be. So again, we suggest that you calculate the actual activities that you perform as described in Calculating Daily Calorie Needs.

And when you do, note that calculations made with the Activity Calculator reflect the total number of calories burned during the period of time calculated.Therefore when calculating how many calories you need or burn in a day, do not add your BMR or RMR.

Technical Notes

BMR and RMR Equations

Equations have been developed to estimate BMR and RMR when testing is not practical. We use the Harris-Benedict equation for BMR, and the Mifflin equation for RMR.

The Harris-Benedict equation has been the standard for decades and is still the most widely used for estimating BMR. This is why we offer it to our users. However, numerous studies have shown it to be inaccurate for a number of reasons:

- According to today's test standards the Harris-Benedict equation does not estimate BMR, but rather RMR. This

is because the test subjects did not spend the night at the test facility.

- The test subjects used to develop the Harris-Benedict equation did not include an adequate representation of obese people, nor of younger and older people. These omissions continue to become more significant as populations become older and heavier.
- While all equations for predicting energy expenditure only make estimates, the Harris-Benedict equation typically overestimates by 5% or more.
- Since the Harris-Benedict equation was first published in 1919, a number of studies have attempted to improve it. Of these, none has been shown to produce more accurate results than the Mifflin equation we use for calculating RMR.
- For further details please refer to Validation of several established equations for resting metabolic rate in obese and nonobese people, Journal of the American Dietetic Association, September 2003, David C. Frankenfield, et al.

The Harris-Benedict equation for BMR:

- For men: (13.75 x w) + (5 x h) - (6.76 x a) + 66
- For women: (9.56 x w) + (1.85 x h) - (4.68 x a) + 655

The Mufflin equation for RMR:

- For men: (10 x w) + (6.25 x h) - (5 x a) + 5
- For women: (10 x w) + (6.25 x h) - (5 x a) - 161

Where:

w = weight in kg
h = height in cm
a = age

Body Composition

The equations do not take into account body composition, a measure of the percentages of muscle and fat composing your body. It is therefore less accurate if you have a non-typical amount of muscle. This is because muscle burns calories, while fat does not.

A person with an above average amount of muscle will have a higher BMR or RMR than calculated; a person with a below average amount of muscle will have a lower BMR or RMR than calculated.

The vast majority of our users will never read this far into these notes, and they will do just fine using the calculators so long as they remember that the calculations are only estimates. But for those who want to fully understand how the calculators work, we would like to clarify one last point.

As explained in How the Activity Calculator Works, the calculator does not make use of your BMR or RMR calculations in calculating calories burned. Instead, it uses a constant based on your weight alone. Thus the parameters for sex, age and height are ignored in calculating calories burned.

It is therefore somewhat of an "apples and oranges" disparity to compare your BMR or RMR calculation with your calories burned calculations. You can see the discrepancy by calculating Sitting - quietly for 24 hours. Ideally, this calculation would equal your RMR.

Perhaps it is beginning to sound as if the calculators are flawed. While it is true that they only make estimates, we believe that they are the most accurate you will find. Something we do that is unique is to explain how they work, inaccuracies and all.

Chapter 9

Green Tea

Tea consumption has its legendary origins in China of more than 4,000 years ago.[8] Green tea has been used as both a beverage and a method of traditional medicine in most of Asia, including China, Japan, Vietnam, Korea and Thailand, to help everything from controlling bleeding and helping heal wounds to regulating body temperature, blood sugar and promoting digestion. A book written in the Tang Dynasty of China is considered one of the most important in the history of green tea.

Green tea is made solely from the leaves of *Camellia sinensis* that have undergone minimal oxidation during processing. Green tea originates in Chinaand has become associated with many cultures throughout Asia. It has recently become more widespread in the West, where black tea is traditionally consumed. Many varieties of green tea have been created in countries

where they are grown. These varieties can differ substantially due to variable growing conditions, horticulture, production processing, and harvesting time.

Over the last few decades green tea has been subjected to many scientific and medical studies to determine the extent of its long-purported health benefits, with some evidence suggesting that regular green tea drinkers may have a lower risk of developing heart disease and certain types of cancer. Although green tea does not raise the metabolic rate enough to produce immediate weight loss, a green tea extract containing polyphenols and caffeine has been shown to induce thermogenesis and stimulate fat oxidation, boosting the metabolic rate 4% without increasing the heart rate.

According to a survey released by the United States Department of Agriculture in 2007, the mean content of flavonoids in a cup of green tea is higher than that in the same volume of other food and drink items that are traditionally considered of health contributing nature, including fresh fruits, vegetable juices or wine. Flavonoids are a group of phytochemicals in most plant products that are responsible for such health effects as anti-oxidative and anticarcinogenic functions. However, based on the same USDA survey, the content of

flavonoids may vary dramatically amongst different tea products.

Green tea is processed and grown in a variety of ways……

depending on the type of green tea desired. As a result of these methods, maximum amounts of polyphenols and antioxidants are retained, giving maximum green tea benefits. The growing conditions can be broken down into two basic types - those grown in the sun and those grown under the shade.

The green tea plants are grown in rows that are pruned to produce shoots in a regular manner, and are generally harvested three times per year. The first flush takes place in late April to early May. The second harvest usually takes place from June through July, and the third picking takes place in late July to early August

Sometimes, there will also be a fourth harvest. It is the first flush in the spring which brings the best quality leaves, with higher prices to match. Processed green teas, known as "aracha" are stored under low humidity refrigeration in 30 or 60 kg paper bags at 0-5°C (32-41°F). This aracha has yet to be refined at this stage, with a final firing taking place before blending, selection, and packaging takes place. The leaves in this state will be re-fired

throughout the year as they are needed, giving the green teas a longer shelf life and better flavor. The first flush tea of May will readily store in this fashion until the next year's harvest. After this re-drying process, each crude tea will be sifted and graded according to size. Finally, each lot will be blended according to the blend order by the tasters and packed for sale

Chapter 10

Brewing and serving

Green tea leaves steeping in a gaiwan

Steeping is the process of making a cup of tea; it is also referred to as brewing. In general, two grams of tea per 100ml of water, or about one teaspoon of green tea per five ounce cup, should be used. With very high-quality teas like gyokuro, more than this amount of leaf is used, and the leaf is steeped multiple times for short durations.

Green tea steeping time and temperature varies with different tea. The hottest steeping temperatures are 81°C to 87°C (180°F to 190°F) water and the longest steeping times two to three minutes. The coolest brewing temperatures are 61°C to 69°C (140°F to 160°F) and the shortest times about 30 seconds. In general, lower-quality green teas are steeped hotter and longer, while higher-quality teas are steeped cooler and shorter. Steeping green tea too hot or too long will result in a bitter, astringent brew, regardless of the initial quality. It is thought that excessively hot water results in tannin chemical release, which is especially problematic in green teas, as they have higher contents of these. High-quality green teas can be and usually are steeped multiple times; two or three

steepings is typical. The steeping technique also plays a very important role in avoiding the tea developing an overcooked taste. The container in which the tea is steeped or teapot should also be warmed beforehand so that the tea does not immediately cool down. It is common practice for tea leaf to be left in the cup or pot and for hot water to be added as the tea is drunk until the flavour degrades.

With increasing pressure on maintaining the way one looks for both purposes of beauty and health, many people are looking towards weight loss techniques. However, most people cannot visit high-tech gymnasiums and undertake weight loss programs because of their work schedules and busy lives. This is where weight loss with diet modification and mild exercise comes into play. Green tea has been used as a mean for weight loss for hundreds of years because of its medicinal properties. However, drinking green tea alone for weight loss will have any major benefit. It is advisable that one should try and incorporate a healthy lifestyle in order to reap the weight loss benefits of green tea.

Chapter 11
Green Tea and Weight Loss

Green tea accelerates the process of weight loss because it contains an ingredient called polyphenols which effectively dissolves the triglyceride deposits in the body. Although triglycerides are important for the body as they are the source of energy but excessive triglyceride deposits lead to fat storage in the body.

It has also been seen that polyphenols contain epigallocatechingallate or EGCG which accelerates a person's metabolism. The metabolic rate decides how a body responds to weight loss techniques. Therefore, green tea accelerates weight loss by increasing the metabolic rate which in turn benefits from exercising regimes. The two combine to lead to weight loss.

The caffeine content in green tea along with EGCG aid weight loss by triggering a process called thermogenesis. Thermogenesis is the process by which heat is produced in organisms which uses calories and it is estimated that the thermogenesis from drinking at least 5 cups of green tea leads to the burning of 80 calories.
Green tea boosts the endurance level of a person which means that now a person can exercise for longer durations to aid weight loss. Green tea stimulates the liver and muscle cells to use fatty acids which provide increased energy. The effect of green tea on endurance has been tested on lab rats and it has been seen that after consuming green tea the rats could swim for longer durations without being exhausted.

Green tea is a beneficial item that people trying to lose weight should include in their diet. However, it is important to remember that just by drinking green tea one cannot lose weight. Exercise and a healthy diet are equally important for the body to have metabolism in order to burn calories and let fat deposits.

Calorie in Indian Food

Chapter 12

Green Tea: Fat Fighter

Black tea, oolong tea, and green tea come from the same *Camellia sinensis* plant. But unlike the other two varieties, green tea leaves are not fermented before steaming and drying.

Most teas contain large amounts of polyphenols, which are plant-based substances that have been shown to have antioxidant, anticancer, and antiviral properties.

However, green tea is particularly rich in a type of polyphenols called catechins. These substances have also been shown to have anti-inflammatory and anticancer properties, but recent research in animals show that catechins may also affect body fat accumulation and cholesterol levels.

In this study, researchers looked at the effects of catechins on body fat reduction and weight loss in a group of 35 Japanese

men. The men had similar weights based on theirBMI(body mass index, an indicator of body fat) and waist sizes.

The men were divided into two groups. For three months, the first group drank a bottle of oolong tea fortified with green tea extract containing 690 milligrams of catechins, and the other group drank abottleofoolongteawith22milligramsof catechins.

During this time, the men ate identical breakfasts and dinners and were instructed to control their calorie and fat intake at all times so that overall total diets were similar.

After three months, the study showed that the men who drank the green tea extract lost more weight (5.3 pounds vs. 2.9 pounds) and experienced a significantly greater decrease in BMI, waist size, and total body fat.

In addition, LDL "bad" cholesterol went down in the men who drank the green tea extract.

The catechin content varies by amount of green tea used and steeping time. But general recommendations, based on previous studies on the benefits of green tea, are at least 4 cups a day. Green tea extract supplements are also available.

Researchers say the results indicate that catechins in green tea not only help burn calories and lower LDL cholesterol but may also be able to mildly reduce body fat.

"These results suggest that catechins contribute to the preventi

Chapter 13

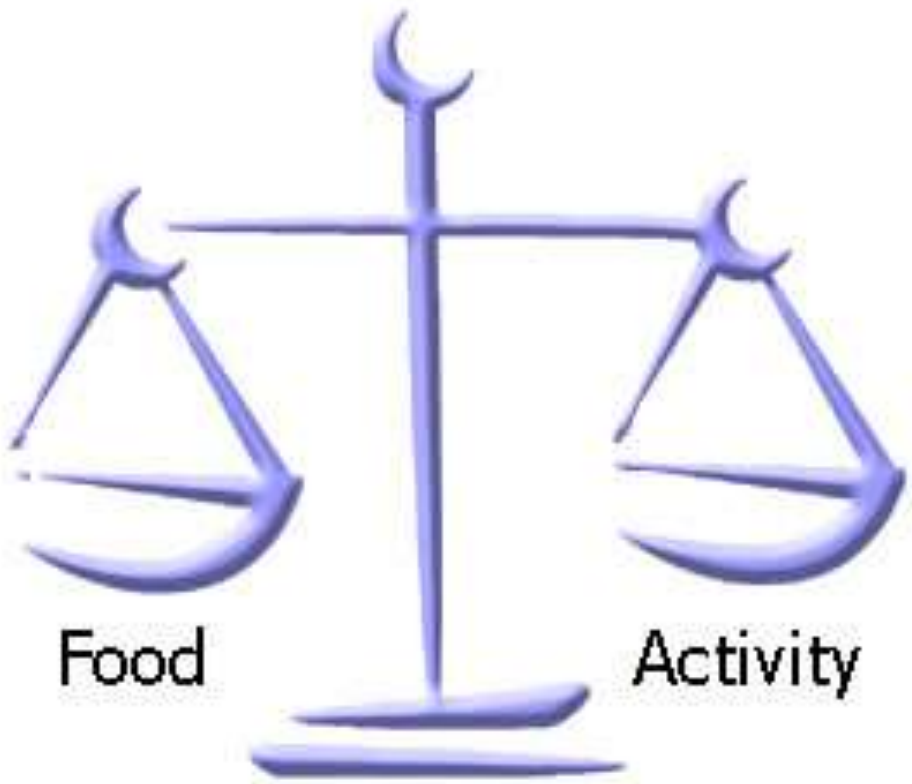
Weight Maintenance after weight reduction

There is a general perception that almost no one succeeds in long-term maintenance of weight loss. However, research has shown that ≈20% of overweight individuals are successful at long-term weight loss when defined as losing at least 10% of initial body weight and maintaining the loss for at least 1 y. The National Weight Control Registry provides information about the strategies used by successful weight loss maintainers to achieve and maintain long-term weight loss. National Weight Control Registry members have lost an average of 33 kg and maintained the loss for more than 5 y. To maintain their weight loss, members report engaging in high levels of physical activity (≈1 h/d), eating a low-calorie, low-fat diet, eating breakfast regularly, self-monitoring weight, and maintaining a consistent eating pattern across weekdays and weekends. Moreover, weight loss maintenance may get easier over time; after individuals have successfully maintained their weight loss for 2–5 y, the chance of longer-term success greatly increases. Continued adherence to diet and exercise strategies, low levels of depression and disinhibition, and medical triggers for weight loss are also associated with long-term success. National Weight

Control Registry members provide evidence that long-term weight loss maintenance is possible and help identify the specific approaches associated with long-term success.

SUCCESSFUL WEIGHT LOSS MAINTENANCE

The perception of the general public is that no one ever succeeds at long-term weight loss. This belief stems from Stunkard and McLaren-Hume's 1959 study of 100 obese individuals, which indicated that, 2 y after treatment, only 2% maintained a weight loss of 9.1 kg (20 lb) or more More recently, a New England Journal of Medicine editorial titled *Losing Weight: An Ill-Fated New Year's Resolution* echoed the same pessimistic message.



The purpose of this paper is to review the data on the prevalence of successful weight loss maintenance and then present some of the major findings from the National Weight Control Registry (NWCR), a database of more than 4000 individuals who have indeed been successful at long-term weight loss maintenance.

DEFINING "SUCCESSFUL WEIGHT LOSS MAINTENANCE"

Wing and Hill proposed that successful weight loss maintainers be defined as "individuals who have intentionally lost at least 10% of their body weight and kept it off at least one year." Several aspects of this definition should be noted. First, the definition requires that the weight loss be

intentional. Several recent studies indicate that unintentional weight loss occurs quite frequently and may have different causes and consequences than intentional weight loss.

Thus, it is important to include intentionality in the definition. The 10% criterion was suggested because weight losses of this magnitude can produce substantial improvements in risk factors for diabetes and heart disease. Although a 10% weight loss may not return an obese to a non-obese state, the health impact of a 10% weight loss is well documented. Finally, the 1-y duration criterion was proposed in keeping with the Institute of Medicine criteria.Clearly, the most successful individuals have maintained their weight loss longer than 1 y, but selecting this criterion may stimulate research on the factors that enable individuals who have maintained their weight loss for 1 y to maintain it through longer intervals.

PREVALENCE OF SUCCESSFUL WEIGHT LOSS MAINTENANCE

There are very few studies that have used this definition to estimate the prevalence of successful weight loss maintenance. McGuire et al reported results of a random digit dialing survey of 500 adults, 228 of whom were overweight or obese [body mass index (BMI) ≥27 kg/m^2] at their maximum nonpregnant weight. Of these 228, 47 (20.6%) met the criteria for successful weight loss maintenance: they had intentionally lost at least 10% of their body weight and maintained it for at least 1 y. On average, these 47 individuals had lost 20.7 ± 14.4 kg (45.5 lb; 19.5 ± 10.6% from maximum weight) and kept it off for 7.2 ± 8.5 y; 28 of the 47 had reduced to normal weight (BMI <27 kg/m^2).

Survey data such as these have the perspective of a person's entire lifetime and thus may include many weight loss attempts, some which were successful and some unsuccessful. It is more typical to assess "success" during one specific weight loss bout. In standard behavioral weight loss programs, participants lose an average of 7–10% (7–10 kg) of their body weight at the end of the initial 6-mo treatment program and then maintain a weight loss of ≈5–6 kg (5–6%) at 1-y follow-up. Only a few studies have followed participants for longer intervals; in these studies, ≈13–20%

maintain a weight loss of 5 kg or more at 5 y. In the Diabetes Prevention Program, ≈1000 overweight individuals with impaired glucose tolerance were randomly assigned to an intensive lifestyle intervention. The average weight loss of these participants was 7 kg (7%) at 6 mo; after 1 y, participants maintained a weight loss of ≈6 kg (6%), and, at 3 y, they maintained a weight loss of ≈4 kg (4%). At the end of the study (follow-up ranging from 1.8 to 4.6 y; mean, 2.8 y), 37% maintained a weight loss of 7% or more.

Thus, although the data are limited and the definitions varied across studies, it appears that ≈20% of overweight individuals are successful weight losers.

THE NATIONAL WEIGHT CONTROL REGISTRY

Although it is often stated that no one ever succeeds in weight loss, we all know some people who have achieved this feat. In an effort to learn more about those individuals who have been successful at long-term weight loss, Wing and Hill established the National Weight Control Registry in 1994. This registry is a self-selected population of more than 4000 individuals who are age 18 or older and have lost at least 13.6 kg (30 lb) and kept it off at least 1 y. Registry members are recruited primarily through newspaper and magazine articles. When individuals enroll in the registry, they are asked to complete a battery of questionnaires detailing how they originally lost the weight and how they now maintain this weight loss. They are subsequently followed annually to determine changes in their weight and their weight-related behaviors.

The demographic characteristics of registry members are as follows: 77% are women, 82% are college educated, 95% are Caucasian, and 64% are married. The average age at entry to the registry is 46.8 y. About one-half of registry members report having been overweight as a child, and almost 75% have one or two parents who are obese.

Participants self-report their current weight and their maximum weight. Previous studies suggest that such self-reported weights are fairly accurate (slightly underestimating actual weight.In the NWCR, participants are asked to identify a physician or weight loss counselor who can provide verification of the weight data. When, in a subgroup of participants, the information provided by participants was compared with that given by the professional, the self-report information was found to be very accurate.

Participants in the registry report having lost an average of 33 kg and have maintained the minimum weight loss (13.6 kg) for an average of 5.7 y. Thirteen percent have maintained this minimum weight loss for more than 10 y. The participants have reduced from a BMI of 36.7 kg/m^2 at their maximum to 25.1 kg/m^2 currently. Thus, by any criterion, these individuals are clearly extremely successful.

Previously, we reported information about the way in which registry participants lost their weight ; interestingly, about one-half (55.4%) reported receiving some type of help with weight loss (commercial program, physician, nutritionist), whereas the others (44.6%) reported losing the weight entirely on their own. Eighty-nine percent reported using both diet and physical activity for weight loss; only 10% reported using diet

only, and 1% reported using exercise only for their weight loss. The most common dietary strategies for weight loss were to restrict certain foods (87.6%), limit quantities (44%), and count calories (43%). Approximately 25% counted fat grams, 20% used liquid formula, and 22% used an exchange system diet. Thus, there is variability in how the weight loss was achieved (except that it is almost always by diet plus physical activity).

The earliest publication regarding the registry documented the behaviors that the members (n = 784) were using to maintain their weight loss. Three strategies were reported very consistently: consuming a low-calorie, low-fat diet, doing high levels of physical activity, and weighing themselves frequently. Recently, a fourth behavior was identified: consuming breakfast daily. Each of these behaviors is described below. Registry members reported eating 1381 kcal/d, with 24% of calories from fat. In interpreting their data, it is important to recognize that 55% of registry members report that they are still trying to lose weight and to consider that dietary intake is typically underestimated by 20–30%. Thus, registry members are probably eating closer to 1800 kcal/d. However, even with this adjustment, it is apparent that registry members maintain

their weight loss by continuing to eat a low-calorie, low-fat diet.

More recently, we have examined other aspects of their diet. Of particular interest is the fact that 78% of registry members report eating breakfast every day of the week. Only 4% report never eating breakfast. The typical breakfast is cereal and fruit. Registry members also report consuming 2.5 meals/wk in restaurants and 0.74 meals/wk in fast food establishments.

Another characteristic of NWCR members is high levels of physical activity. Women in the registry reported expending an average of 2545 kcal/wk in physical activity, and men report an average of 3293 kcal/wk . These levels of activity would represent ≈1 h/d of moderate-intensity activity, such as brisk walking. The most common activity is

walking, reported by 76% of the participants. Approximately 20% report weight lifting, 20% report cycling, and 18% report aerobics.

Registry members also reported frequent monitoring of their weight. More than 44% report weighing themselves at least once a day, and 31% report weighing themselves at least once a week. This frequent monitoring of weight would allow these individuals to catch small weight gains and hopefully initiate corrective behavior changes.

The vigilance regarding body weight can be seen as one aspect of the more general construct of cognitive restraint (ie, the degree of conscious control exerted over eating behaviors). Registry members are asked to complete the Three Factor Eating Inventory ,which includes a measure of cognitive restraint. Registry members scored high on this measure (mean of 7.1), with levels similar to those seen in patients who have recently completed a treatment program for obesity, although not as high as eating-disordered patients. These findings suggest that successful weight loss maintainers continue to act like recently successful weight losers for many years after their weight loss.

FACTORS ASSOCIATED WITH WEIGHT REGAIN

Registry participants are followed over time to identify variables related to continued success at weight loss and maintenance. Findings from the initial follow-up study indicated that, after 1 y, 35% gained 2.3 kg (5 lbs) or more (7 kg on average), 59% continued to maintain their body weight, and 6% continued to lose weight.

Participants who regained weight (>2.3 kg) were compared with those who continued to maintain their body weight to examine whether there were any baseline characteristics that could distinguish the two groups. The single best predictor of risk of regain was how long participants had successfully maintained their weight loss .Individuals who had kept their weight off for 2 y or more had markedly increased odds of continuing to maintain their weight over the following year. This finding is encouraging because it suggests that, if individuals can succeed at maintaining their weight loss for 2 y, they can reduce their risk of subsequent regain by nearly 50%.

Another predictor of successful weight loss maintenance was a lower level of dietary disinhibition, which is a measure of periodic loss of control of eating. Participants who had fewer problems with disinhibition [ie, scores <6 on the Eating

Inventory subscale were 60% more likely to maintain their weight over 1 y. Similar findings were found for depression, with lower levels of depression related to greater odds of success. These findings point to the importance of both emotional regulation skills and control over eating in long-term successful weight loss.

Several key behavior changes that occurred over the year of follow-up also distinguished maintainers from regainers. Not surprisingly, those who regained weight reported significant decreases in their physical activity, increases in their percentage of calories from fat, and decreases in their dietary restraint. Thus, a large part of weight regain may be attributable to an inability to maintain healthy eating and exercise behaviors over time. The findings also underscore the importance of maintaining behavior changes in the long-term maintenance of weight loss.

Triggering events

Another variable that has been examined in the registry is the presence of a "triggering event" leading to participants' successful weight loss. Most registry participants reported a trigger for their weight loss (83%). Medical triggers were the most common (23%), followed by reaching an all time high in weight (21.3%), and seeing a picture or reflection of themselves in the mirror (12.7%).

Because medical triggers have been shown to promote long-term behavior change in other areas of behavioral medicine, we examined whether individuals who reported medical triggers were more successful than those who reported nonmedical triggers or no triggers. A medical trigger was defined broadly and included, for example, a doctor telling the participant to lose weight and/or a family member having a heart attack. Findings indicated that people who had medical reasons for weight loss also had better initial weight losses and maintenance. Specifically, those who said they had a medical trigger lost 36 kg, whereas those who had no trigger (17.1%) or a nonmedical trigger (59.9%) lost 32 kg. Medical triggers were also associated with less regain over 2 y of follow-up. Those with medical triggers gained 4 kg (≈2 kg/y), whereas those with other or no medical

triggers gained at a significantly faster rate, averaging 6 kg in both groups.

These findings are intriguing because they suggest that the period following a medical trigger may be an opportune time to initiate weight loss to optimize both initial and long-term weight loss outcomes.

Dieting consistency

The topic of dieting consistency was also recently examined in the registry. Participants were asked whether they maintained the same diet regimen across the week and year, or if they tended to diet more strictly on weekdays and/or nonholidays. Few people said they dieted more strictly on the weekend compared with the rest of the week (2%) or during holidays compared with the rest of the year (3%). Most participants reported that their eating was the same on weekends and weekdays (59%) and on holidays/vacations and the rest of the year (45%). The remaining groups reported that they were stricter during the week than on weekends (39%) and during nonholiday times compared with holidays (52%).

We evaluated whether maintaining a consistent diet was related to subsequent weight regain after 2 y. Interestingly, results indicated that participants who reported a consistent diet across the week were 1.5

times more likely to maintain their weight within 5 lb over the subsequent year than participants who dieted more strictly on weekdays. A similar relationship emerged between dieting consistency across the year and subsequent weight regain; individuals who allowed themselves more flexibility on holidays had greater risk of weight regain. Allowing for flexibility in the diet may increase exposure to high-risk situations, creating more opportunity for loss of control. In contrast, individuals who maintain a consistent diet regimen across the week and year appear more likely to maintain their weight loss over time.

Recovery from relapse

We also examined different patterns of weight change among registry participants followed over time. We were particularly interested in evaluating whether participants who gained weight between baseline and year 1 were able to recover over the subsequent year. We found that few people (11%) recovered from even minor lapses of 1–2 kg. Similarly, magnitude of weight regain at year 1 was the strongest predictor of outcome from year 0 to 2. Participants who gained the most weight at year 1 were the least likely to re-lose weight the following year, both when "recovery" was

defined as a return to baseline weight or as re-losing at least 50% of the year 1 gain.

Although participants gained weight and recovery was uncommon, the regains were modest (average of 4 kg at 2 y), and the vast majority of participants (96%) remained >10% below their maximum lifetime weight, which is considered "successful" by current obesity treatment standards.

These findings, nonetheless, suggest that reversing weight regain appears most likely among individuals who have gained the least amount of weight. Preventing small regains from turning into larger relapses appears critical to recovery among successful weight losers.

Chapter14

Success Stories

Jernail Singh

I believe, Shree Skin Care & Slimming Center is the best place to reduce your weight without any harmful exercises and starvation. I lost 12 Kgs. of weight in just one month by their innovative treatment and guidance. I enjoy my life better now than ever before.I really thankfull to Dr.Pratayksha and his team for guide me to become slimm and more active in my daily life.

Mona Sharma

Before coming to Shree Skin Care &Slimminmg Center I really thought that I would never lose weight nor gain my lost confidence. After losing 18kgs at Shree Skin Care & Slimming Center I would say that I rediscovered myself and now live my life with much more enthusiasm. It happened so easily by their treatment.

Neha chawla

You can see thamerical done by DrPratayksha .I still can't belive it. I have reduce 15kg weight in just 45days.I have regained my lost confidence.It feels like I,have got a new birth.

SandeepRozer

Shree Slimming has brought a tremendous change in my life.It has helped me in improving my personality.

Previously ,I feel shy in going outside but DrPratayksha and his team ,who has incredibly put their effort in bringing desirable change in my life. He had a great source of motivation for me .I have reduced 32kg weight in just 3 months.

Chapter 15

Varieties of green tea

Chinese green tea

Province

- JunshanYinzhen (Silver Needle tea), known as one of the ten most famous Chinese Teas, is one variety of Yellow Tea, like the Huo Mountain Yellow Buds and the Mengding Yellow Buds. It is cultivated on Junshan Island, Yueyang City, Hunan Province.

  Zhejiang Province is home to the most famous of all teas, Xi Hu Longjing, as well as many other high-quality green teas.

- **Longjing**

  Maybe the most well-known green tea in China. It originates in Hangzhou, the capital of Zhejiang Province. Longjing in Chinese literally means *dragon well*. It is pan-fried and has a distinctive flat appearance. The tasteless frying oil is obtained from tea seeds and other plants. Falsification of Longjing is very common, and most of the tea on the market is in fact produced in SichuanProvinceland hence not authentic Longjing.

- **Hui Ming**

  Named after a temple in Zhejiang.

- **Long Ding**

  A tea from Kaihua County known as *Dragon Mountain*.

- **Hua Ding**

  A tea from Tiantai County, named after a peak in the Tiantai mountain range.

- **Qing Ding**

  A tea from Tian Mu, also known as *Green Top*.

- **Gunpowder**

  A popular tea also known as *zhuchá*. It originates in Zhejiang but is now grown elsewhere in China.
  This tea is also the quintessential ingredient in brewing Moroccan green tea with fresh mint.

Province

A plate of Bi Luo Chun tea, from Jiangsu Province in China

- **Bi Luo Chun**

  A Chinese famous tea also known as *Green Snail Spring*, from Dong Ting. As with Longjing, falsification is common and most of the tea marketed under this name may, in fact, be grown in Sichuan.

- **Rain Flower**

  A tea from Nanjing.

- **Que She (Tongue of golden altar sparrow)**

  originate in Jin Tan city of Jiangsu Province.

- **White Cloud**

Province

Camellia sinensis, the tea plant

Fujian Province is known for mountain-grown organic green tea as well as white tea and oolong tea. The coastal mountains provide a perfect growing environment for tea growing. Green tea is picked in spring and summer seasons.

- **Jasmine tea (Mo Li Hua Cha)**

  A tea with added jasmine flowers.

- **Mao Feng tea**

  Meaning "furry peak".

- **Cui Jian**

  Meaning "jade sword".

Hubei Province

- **Yu Lu**

  A steamed tea also known as *Gyokuro (Jade Dew)* in Japanese, made in the Japanese style.

Henan Province

An example of a Chinese green tea, called Mao Jian.

- **Xin Yang Mao Jian**

  A Chinese famous tea also known as *Green Tip,* or *Tippy Green.*

Jiangxi Province

- **Chun Mee**

  Meaning "precious eyebrows"; from Jiangxi, it is now grown elsewhere.

- **Gou GuNao**

  A well-known tea within China and recipient of numerous national awards.

- **Yun Wu**

  A tea also known as *Cloud and Mist.*

Anhui Province

Anhui Province is home to several varieties of tea, including three Chinese famous teas. These are:

- **Da Fang**

  A tea from Huangshan also known as *Big Square suneet*.

- **HuangshanMaofeng**

  A Chinese famous tea from Huangshan.

- **Liuan Leaf**

  A Chinese famous tea also known as *Melon Seed*.

- **HouKui**

  A Chinese famous tea also known as *Monkey tea*.

- **Tun Lu**

  A tea from Tunxi District.

- **Huo Qing**

  A tea from Jing County, also known as *Fire Green*.

- **Wuliqing**

  Wuliqing was known since the Song dynasty. Since 2002 Wuliqing is produced again according to the original processing methods by a company called Tianfang. Zhan Luojiu a tea expert and professor at the

Anhui Agricultural University who relived its production procedure.

- **Hyson**

  A medium-quality tea from many provinces, an early-harvested tea.

Sichuan Province

- **Zhu Ye Qing**

  Also known as *Meng Ding Cui Zhu* or *Green Bamboo*.

- **Meng Ding Gan Lu**

  A yellowish-green tea with sweet aftertaste.

Japanese green tea

Japanese green tea

Genmaicha

Green tea (*Ryokucha*) is ubiquitous in Japan and therefore is more commonly known simply as "tea" (*ocha*). It is even referred to as "Japanese tea" (*nihoncha*) though it was first used in China during the Song Dynasty, and brought to Japan by Myōan Eisai, a Japanese Buddhist priest who also introduced the Rinzai school of Zen Buddhism. Types of tea are commonly graded depending on the quality and the parts of the plant used as well as how they are processed.[12] There are large variations in both price and quality within these broad categories, and there are many specialty green teas that fall outside this spectrum. The best Japanese green tea is said to be that from the Yame (*yame*) region of Fukuoka Prefecture and the Uji region of Kyoto[*citation needed*]. Shizuoka Prefecture produces 40% of raw tea leaf.

- ***Gyokuro*** (Jade Dew)

  Gyokuro is a fine and expensive type that differs from *Sencha* in that it is grown under the shade rather than the full sun for approximately 20 days. The name "Gyokuro" translates as "jade dew" and refers to the pale green color of the infusion. The shading causes the amino acids (Theanine) and caffeine in the tea leaves to increase, while catechins (the source of bitterness in tea, along with caffeine)

decreases, giving rise to a sweet taste. The tea also has a distinct aroma.

- ***Kabusecha*** (covered tea)

  Kabusecha is made from the leaves grown in the shade prior to harvest, although not for as long as *Gyokuro*. It has a more delicate flavor than *Sencha*. It is sometimes marketed as Gyokuro.

- ***Sencha*** (煎茶, decocted tea)

  The first and second flush of green tea made from leaves that are exposed directly to sunlight. This is the most common green tea in Japan. The name describes the method for preparing the beverage.

  - ***Fukamushicha*** (long-steamed green tea)

  Sencha, which, in the processing of the leaves, has been steamed two times longer than usual Sencha, giving it a deeper color and producing a fuller flavor in the beverage.

- ***Tamaryokucha*** (lit. ball green tea)

  Tamaryokucha has a tangy, berry-like taste, with a long almondy aftertaste and a deep aroma with tones of citrus, grass, and berries. It is also called *Guricha*.

- ***Bancha*** (coarse tea)

  Lower grade of *Sencha* harvested as a third- or fourth-flush tea between summer and autumn. *Aki-Bancha* (autumn Bancha) is not made from entire leaves, but from the trimmed unnecessary twigs of the tea plant.

- ***Kamairicha*** (pan-fired tea)

  Kamairicha is a pan-fired green tea that does not undergo the usual steam treatments of Japanese tea and does not have the characteristic bitter taste of most Japanese tea.

- By-product of Sencha or Gyokuro

  - ***Kukicha*** (stalk tea)

  A tea made from stems, stalks, and twigs. *Kukicha* has a mildly nutty, and slightly creamy sweet flavor.

  - ***Mecha*** (buds and tips tea)

  Mecha is green tea derived from a collection of leaf buds and tips of the early crops. *Mecha* is harvested in spring and made as rolled leaf teas that are graded somewhere between *Gyokuro* and *Sencha* in quality.

  - ***Konacha***(coarse) powdered tea)

Konacha is the dust and smallest parts after processing *Gyokuro* or *Sencha*. It is cheaper than *Sencha* and usually served at Sushi restaurants. It is also marketed as *Gyokuroko*or *Gyokurokocha*.

- Other
  - ***Matcha*** (powdered tea)

A fine ground tea made from *Tencha*. It has a very similar cultivation process as *Gyokuro*. It is expensive and is used primarily in the Japanese tea ceremony. *Matcha* is also a popular flavor of ice cream and other sweets in Japan.

  - ***Genmaicha*** (brown rice tea)

Bancha (sometimes *Sencha*) and roasted *genmai* (brown rice) blend. It is often mixed with a small amount of *Matcha* to make the color better.

  - ***Hōjicha*** (roasted tea)

A green tea roasted over charcoal (usually *Bancha*).

  - ***Tencha*** (milling tea)

Half-finished products used for *Matcha* production. The name indicates its intended eventual milling into matcha. Because, like gyokuro, it is cultivated in shade, it has a sweet aroma. In its

processing, it is not rolled during drying, and tencha therefore remains spread out like the original fresh leaf.

- ***Aracha*** (raw green tea)

Half-finished products used for *Sencha* and *Gyokuro* production. It contains all parts of the tea plant.

- ***Shincha*** (a new tea)

First flush tea. The name is used for either *Sencha* or *Gyokuro*.

- ***funmatsucha*** (instant powdered tea)

Milled green tea, used just like instant coffee. Another name for this recent style of tea is *"tokeruocha,"* or "tea that melts."

Other green teas

- Green tea from Ceylon
- Kahwah

Research and health effects

This section **may need to be rewritten entirely to comply with Wikipedia's quality standards**, as **more weight is placed on this section when compared to the other sections. This greater weight is undue unless this section is**

actually more important, in which case it should be moved to the top of the article and perhaps divided into sub-sections, such as heart effects, brain effects, etc..

Health effects of tea

Green tea contains salubriouspolyphenols, in particular catechins, the most abundant of which is epigallocatechingallate (EGCG). Green tea also contains carotenoids, tocopherols, ascorbic acid (vitamin C), minerals such as chromium, manganese, selenium or zinc, and certain phytochemical compounds. It is a more potent antioxidant than black tea,[15] although black tea has substances that green tea does not such as theaflavin.

In vitro, animal, preliminary observational, and clinical human studies suggest that green tea can reduce the risk of cardiovascular disease, dental cavities, kidney stones, and cancer, while improving bone density and cognitive function. However, the human studies are inconsistent.

Green tea consumption is associated with reduced heart disease in epidemiological studies. One study has shown that it can reduce total and "bad" (LDL) cholesterol by decreasing cholesterol absorption in the gut. However, other several small, brief

human trials found that tea consumption did not reduce cholesterol in humans.[*citation needed*] In 2003 a randomized clinical trial found that a green tea extract with added theaflavin from black tea reduced cholesterol.

A study performed at the University of Birmingham showed that average fat oxidation rates were 17% higher after ingestion of green tea extract than after ingestion of a placebo. Likewise, the contribution of fat oxidation to total energy expenditure was also significantly higher by a similar percentage following ingestion of green tea extract. This implies that ingestion of green tea extract can not only increase fat oxidation during moderately intensive exercise but also improve insulin sensitivity and glucose tolerance in healthy young men.

A study performed at the Queen Margaret University, Edinburgh looked at the effects of short-term green tea consumption on a group of students between the ages of 19–37. Participants were asked not to alter their diet and to drink 4 cups of green tea per day for 14 days. The results showed that short-term consumption of commercial green tea reduces systolic and diastolic Blood Pressure, fasting total cholesterol, body fat and body weight. These results suggest a role for green tea in decreasing established potential cardiovascular risk

factors. This study also suggests that reductions may be more pronounced in the overweight population where a significant proportion are obese and have a high risk of cardiovascular disease.

In a study performed at the Israel Institute of Technology, it was shown that the main antioxidant polyphenol of green tea extract, EGCG, when fed to mice induced with Parkinson's and Alzheimer's disease, helped to protect brain cells from dying, as well as 'rescuing' already damaged neurons in the brain, a phenomenon called neurorescue or neurorestoration. The findings of the study, led by Dr. Silvia Mandell, were presented at the Fourth International Scientific Symposium on Tea and Human Health in Washington D.C., in 2007. Resulting tests underway in China, under the auspices of the Michael J. Fox Foundation, are being held on early Parkinson's patients.

A study [21] performed at the National institute of Chemistry in Ljubljana, Slovenia, demonstrated that EGCG from green tea inhibits an essential bacterial enzyme gyrase by binding to the ATP binding site of the B subunit. This activity probably contributes to the antimicrobial activity of green tea extract and may be responsible for the effectiveness of green tea in oral hygiene.

In a recent case-control study of the eating habits of 2,018 women, consumption of mushrooms and green tea was linked to a 90% lower occurrence of breast cancer.

A recent study on rats at the University of Hong Kong, published in the February issue of Journal of Agricultural and Food Chemistry, found that the catechins in green tea were absorbed by the lens, retina and other parts of the eye. The absorbed catechins reduced oxidative stress in the eye for up to 20 hours, suggesting that green tea may be effective in preventing glaucoma and other diseases of the eye.

Chapter 16

Scientific studies about green tea

2011 research by the Linus Pauling Institute at Oregon State University found that EGCG in green tea has a powerful ability to increase regulatory T cells in the body and boost the immune system and suppress autoimmune disorders.

According to research reported at the Sixth International Conference on Frontiers in Cancer Prevention, sponsored by the American Association for Cancer Research, a standardized green tea polyphenol preparation (Polyphenon E) limits the growth of colorectal tumors in rats treated with a substance that causes the cancer. "Our findings show that rats fed a diet containing Polyphenon E are less than half as likely to develop colon cancer," Dr. Hang Xiao, from the Ernest Mario School of Pharmacy at Rutgers University, noted in a statement.

A study published in the September 13, 2006 issue of the Journal of the American Medical Association concluded "Green tea consumption is associated with reduced mortality due to all causes and due to cardiovascular disease but not with reduced mortality due to cancer." The study,

conducted by the Tohoku University School of Public Policy in Japan, followed 40,530 Japanese adults, ages 40–79, with no history of stroke, coronary heart disease, or cancer at baseline beginning in 1994. The study followed all participants for up to 11 years for death from all causes and for up to 7 years for death from a specific cause. Participants who consumed 5 or more cups of tea per day had a 16 percent lower risk of all-cause mortality and a 26 percent lower risk of cardiovascular disease ("CVD") than participants who consumed less than one cup of tea per day. The study also states, "If green tea does protect humans against CVD or cancer, it is expected that consumption of this beverage would substantially contribute to the prolonging of life expectancy, given that CVD and cancer are the two leading causes of death worldwide."

A study in the February 2006 edition of the American Journal of Clinical Nutrition concluded "A higher consumption of green tea is associated with a lower prevalence of cognitive impairment in humans."

In May 2006, researchers at Yale University School of Medicine weighed in on the issue with a review article that looked at more than 100 studies on the health benefits of green tea. They pointed to what they called an "Asian paradox," which refers to lower rates of heart disease and cancer in Asia

despite high rates of cigarette smoking. They theorized that the 1.2 liters of green tea that is consumed by many Asians each day provides high levels of polyphenols and other antioxidants. These compounds may work in several ways to improve cardiovascular health, including preventing blood platelets from sticking together (this anticoagulant effect is the reason doctors warn surgical patients to avoid green tea prior to procedures that rely on a patient's clotting ability) and improving cholesterol levels, said the researchers, whose study appeared in the May issue of the *Journal of the American College of Surgeons*. Specifically, green tea may prevent the oxidation of LDL cholesterol (the "bad" type), which, in turn, can reduce the buildup of plaque in arteries, the researchers wrote.

A study published in the August 22, 2006 edition of Biological Psychology looked at the modification of the stress response via L-Theanine, a chemical found in green tea. It "suggested that the oral intake of L-Theanine could cause anti-stress effects via the inhibition of cortical neuron excitation."

In a double-blind, randomized, placebo-controlled trial conducted by Division of Cardiovascular Medicine, Vanderbilt University Medical Center, Nashville, Tennessee; 240 adults were given either theaflavin-enriched green tea extract in form of 375 mg capsule daily or a placebo.

After 12 weeks, patients in the tea extract group had significantly less low-density lipoprotein cholesterol (LDL-C) and total cholesterol (16.4% and 11.3% lower than baseline, $p<0.01$) than the placebo group. The author concluded that theaflavin-enriched green tea extract can be used together with other dietary approaches to reduce LDL-C.

A study published in the January, 2005 edition of the American Journal of Clinical Nutrition concluded "Daily consumption of tea containing 690 mg catechins for 12 wk reduced body fat, which suggests that the ingestion of catechins might be useful in the prevention and improvement of lifestyle-related diseases, mainly obesity."

According to a Case Western Reserve University School of Medicine study published in the April 13, 2005 issue of the Proceedings of the National Academy of Sciences, antioxidants in green tea may prevent and reduce the severity of rheumatoid arthritis. The study examined the effects of green tea polyphenols on collagen-induced arthritis in mice, which is similar to rheumatoid arthritis in humans. In each of three different study groups, the mice given the green tea polyphenols were significantly less likely to develop arthritis. Of the 18 mice that received the green tea, only eight (44 percent) developed arthritis. Among the 18 mice that did not receive the

green tea, all but one (94 percent) developed arthritis. In addition, researchers noted that the eight arthritic mice that received the green tea polyphenols developed less severe forms of arthritis.

A German study found that an extract of green tea and hot water (filtered), applied externally to the skin for 10 minutes, three times a day could help people with skin damaged from radiation therapy (after 16–22 days).

A study published in the December 1999 American Journal of Clinical Nutrition found that "Green tea has thermogenic properties and promotes fat oxidation beyond that explained by its caffeine content per se. The green tea extract may play a role in the control of body composition via sympathetic activation of thermogenesis, fat oxidation, or both."

In lab tests, EGCG, found in green tea, was found to prevent HIV from attacking T-Cells. However, it is not yet known if this has any effect on humans.

A study in the August, 2003 issue of a new potential application of Cellular and Molecular Life Sciences found that "a new potential application of (–)-epigallocatechin-3-gallate [a component of green tea] in prevention or treatment of inflammatory processes is suggested"

However, pharmacological and toxicological evidence does indicate that green tea polyphenols can in fact cause oxidative stress and liver toxicity in vivo at certain concentrations. This would imply that consumers should exercise caution when consuming herbal products produced from concentrated green tea extract. Other evidence presented in the review cautions against the drinking of green tea by pregnant women.

A more frequent consumption of green tea was associated with a lower prevalence of depressive symptoms in a Japanese study. Researchers conducted a cross-sectional study in 1,058 community-dwelling elderly Japanese individuals 70 years of age. The prevalence of mild and severe depressive symptoms was 34.1 percent and 20.2 percent, respectively. After adjustment for confounding factors, the odds ratios for mild and severe depressive symptoms when higher green tea consumption was compared with green tea consumption of 1 cup/d were: 2 to 3 cups green tea/d and 4 cups green tea/d. Similar relations were also observed in the case of severe depressive symptoms.

A 2004 study found that components of green tea (catechins) were effective against the parasite Trypanosomacruzi, which causes Chagas' disease, a major disease in South and Central America.

In a paper published by researchers from Western University, California in the November of issue of the Journal of American Diabetic Association, the following plus points of green tea were observed.

- Green tea while keeping the HDL level intact did however decrease the LDL and total cholesterol levels in subjects as compared to the control group.
- For an effective dosage of 145–3000 mg of green tea antioxidant concentrate per day, the measurable change in the cholesterol level of the subjects was seen within 3 weeks.

Unproven claims

Green tea has been credited with providing a wide variety of health benefits. However, many of these claims have not been validated by scientific evidence.

- The prevention and treatment of cancer. See also flavonoid and cancer.
- Treating multiple sclerosis.
- Some green tea drinkers restrict their intake as it contains caffeine. Too much caffeine can cause nausea, insomnia or frequent urination.

United States Food and Drug Administration

The article *Tea: A Story of Serendipity* appeared in the March 1996 issue of the United States Food and Drug Administration Consumer Magazine and looked at the potential benefits of green tea. At that time the FDA had not done any reviews of the potential benefits of green tea and was waiting to do so until health claims were filed. The FDA has since denied two petitions to make qualified health claims as to the health benefits of green tea.

On June 30, 2005, in response to "Green Tea and Reduced Risk of Cancer Health Claim", the FDA stated: "FDA concludes that there is no credible evidence to support qualified health claims for green tea consumption and a reduced risk of gastric, lung, colon/rectal, esophageal, pancreatic, ovarian, and combined cancers. Thus, the FDA is denying these claims. However, the FDA concludes that there is very limited credible evidence for qualified health claims specifically for green tea and breast cancer and for green tea and prostate cancer, provided that the qualified claims are appropriately worded so as to not mislead consumers."

On May 9, 2006, in response to "Green Tea and Reduced Risk of Cardiovascular Disease", the FDA concluded "there is no credible evidence to support qualified health claims for green tea or green tea extract and a reduction of a number of risk factors associated with CVD."

However in October 2006, the FDA approved an ointment based on green tea. New Drug Application (NDA) number N021902, for kunecatechins ointment 15% (proprietary name Veregen) was approved on October 31, 2006, and added to the "Prescription Drug Product List" in October 2006. Kunecatechins ointment is indicated for the topical treatment of external genital and perianal warts.

Possible drug interactions

A 2009 study at the University of Southern California using mouse models showed that several of the polyphenolic ingredients of green tea, such as EGCG, can bind with the anticancer drug bortezomib, significantly reducing its bioavailability and thereby rendering it therapeutically useless. This chemical reaction between EGCG and bortezomib is highly specific and depends on the presence of a boronic acid functional group in the bortezomib molecule. Dr. Schönthal, who headed the study, suggests that consumption of green tea, concentrated green tea extract, and other green tea products (such as EGCG capsules) be strongly contraindicated for patients undergoing bortezomib treatment. Use of green tea in conjunction with anticoagulants may result in reduced effectiveness; there is a correlation between the quantity of tea consumed and the method of production may affect the amount of Vitamin K.[*citation needed*]

Caffeine

Unless specifically decaffeinated, green tea contains caffeine.

Safety of green tea extract

: Epigallocatechingallate#Drug Interactions

In 2008 the US Pharmacopeia reviewed the safety of green tea extract. It found 216 case reports, 34 on liver damage, of which 27 were categorized as possible and 7 were categorized as probable. Potential for adverse effects is increased when extracts are used, in particular on an empty stomach

Chapter 17

Obesity in children

Obesity means having too much body fat. It is not the same as overweight, which means weighing too much. A person may be overweight from extra muscle, bone, or water, as well as too much fat.

Both terms mean your weight is higher than what is thought to be healthy for your height.

This article discusses obesity in children.

Causes, incidence, and risk factors

When children eat more than they need, their bodies store the extra calories in fat cells to use for energy later. If this pattern continues over time, and their bodies do not need this stored energy, they develop more fat cells and may develop obesity.

Infants and young children are very good at listening to their bodies' signals of hunger and fullness. They will stop eating as soon as their bodies tell them they have had enough.

But sometimes a well-meaning parent tells them they have to finish everything on their plate. This forces them to ignore their fullness and eat everything that is served to them.

Some people may use food to reward good behavior or seek comfort when sad.

These learned habits lead to eating no matter if we are hungry or full. Many people have a very hard time breaking these habits.

The family, friends, schools, and community resources in a child's environment reinforce lifestyle habits regarding diet and activity.

Children are surrounded by many things that make it easy to overeat and harder to be active. Watching television, gaming, texting, and playing on the computer are activities that require very little energy. They can take up a lot of time and replace physical activity. And, when children watch television, they often crave the unhealthy high-calorie snacks they see on commercials. See also: Screen time and children

The term eating disorders refers to a group of medical conditions that have an unhealthy focus on eating, dieting, losing or gaining weight, and body image. Obesity and eating disorders often occur at the same time in teenage girls and young-adult women who may be unhappy with their body image.

Certain medical conditions, such as hormone disorders or low thyroid function,

and certain medications, such as steroids or anti-seizure medications, can increase a child's appetite. Over time this increases their risk for obesity.

Signs and tests

The health care provider will perform a physical exam and ask questions about your child's medical history, eating habits, and exercise routine.

Blood tests may be done to look for thyroid or endocrine problems, which could lead to weight gain.

Child health experts recommend that children be screened for obesity at age 6. Your child's body mass index (BMI) is calculated using height and weight. A health care provider can use BMI to estimate how much body fat your child has.

However, measuring body fat and diagnosing obesity in children is different than measuring these things in adults.

Chapter18

Treatment for child obesity

SUPPORTING YOUR CHILD

The first step in helping your child get to a healthy weight is to consult with their doctor. The doctor can help to set healthy goals for weight-loss and help with monitoring and support.

Try to get the whole family to join a weight-loss plan, even if weight loss is not the goal for everyone. Weight-loss plans for children focus on healthy lifestyle habits. A healthy lifestyle is good for everyone.

Having support from friends and family may also help your child lose weight. See also: Supporting a child with weight loss

CHANGING YOUR CHILD'S LIFESTYLE

Eating a balanced diet means you child consumes the right types and amounts of foods and drinks to keep their body healthy.

- Know what size portions are child should eat to meet your body's needs for nutrients, without getting too much of some and not enough of others.

- Stock your pantry and refrigerator with healthy foods. See also: Healthy grocery shopping
- Choose a variety of healthy foods from each of the food groups and eat foods from each group at every meal.
- Learn more about eating healthy and eating out.

Choosing healthy snacks and drinks for your children is important, but can be a challenge. See also: Snacks and sweetened drinks - children

- Fruits and vegetables are good choices for healthy snacks. They are full of vitamins and low in calories and fat. Some crackers and cheeses also make good snacks.
- Avoid junk-food snacks like chips, candy, cake, cookies, and ice cream. The best way to keep kids from eating junk food or other unhealthy snacks is to not have these foods in your house.
- Avoid sodas, sport drinks, and flavored waters, especially ones made with sugar or corn syrup. These drinks are full of calories and can lead to weight gain, even in active children. If needed, choose beverages with artificial (manmade) sweeteners.

Children should not watch more than 2 hours of TV a day. This can be difficult

because watching TV is part of their daily routine. See also: Screen time and children

Children should have many chances to play, run, bike, and play sports during the day. Experts recommend they get 60 minutes of moderate activity every day. Moderate activity means you breathe and your heart beats faster than normal. If your child is not athletic, find ways to motivate your child to be more active. See also: Exercise and activity - children

WHAT ELSE TO THINK ABOUT

You may see ads for supplements and herbal remedies that claim they will help with weight loss. But many of these claims are not true, and some of these supplements can have serious side effects. Talk to your health care provider before giving them to your child.

Weight loss drugs are not recommended for children.

Bariatric surgery is currently being performed for some children, but only after they've stopped growing. See also: Weight-loss surgery in children

Complications

A child who is overweight or obese is more likely to be overweight or obese as an adult. Obese children are now developing health problems that used to be seen only in adults. When these problems begin in childhood, they often become more severe when the child becomes an adult.

Children with obesity are at risk for developing these health problems:

- High blood glucose (sugar) or diabetes
- High blood pressure (hypertension)
- High blood cholesterol and triglycerides (dyslipidemia or high blood fats)
- Heart attacks due to coronary heart disease, congestive heart failure, and stroke later in life
- Bone and joint problems -- more weight puts pressure on the bones and joints. This can lead to osteoarthritis, a disease that causes joint pain and stiffness.
- Stopping breathing during sleep (sleep apnea). This can cause daytime fatigue or sleepiness, poor attention, and problems at work.

Obese girls are more likely not to have regular menstrual periods.

Obese children often have low self-esteem. They are more likely to be teased or bullied, and they may have a hard time making friends.

Chapter 19

Obesity and Type 2 Diabetes

More than 80 percent of people with Type 2 diabetes, the most common form of the disease, are obese or overweight. Data from the **Centers for Disease Control and Prevention (CDC)** National Health and Nutrition Examination Survey III shows that two-thirds of adult men and women in the U.S. diagnosed with Type 2 diabetes have a **body mass index (BMI)** of 27 or greater, which is classified as overweight and unhealthy.

Type 2 diabetes develops when either the body does not produce enough **insulin** in the blood or cells ignore the insulin produced. As obesity diminishes insulin's ability to control blood sugar, there is an increased risk of developing diabetes because the body begins overproducing insulin to regulate blood sugar levels. Over time, the body is no longer able to keep

blood sugar levels in the normal range.

Eventually the inability to achieve healthy blood sugar balance results in the development of Type 2 diabetes. Furthermore, obesity complicates the management and treatment of Type 2 diabetes by increasing insulin resistance and glucose intolerance, which makes drug treatment for the disease less effective.

Obesity and Heart Disease

Overweight and obese people have an increased incidence of heart disease, and thus fall victim to heart attack, congestive heart failure, sudden cardiac death, angina, and abnormal heart rhythm more often than those that maintain a healthy body mass index.

Obesity often increases the risk of heart disease because of its negative effect on **blood lipid** levels, which increase in obese patients and then, in turn, increase **triglyceride** levels and decrease high-density lipoprotein – which is also known as HDL or "good cholesterol."

People with an excessive amount of body fat have higher levels of triglycerides and low-density lipoprotein – which is also known as LDL or "bad cholesterol" – as well as lower levels of HDL cholesterol in the blood. This recipe creates optimal conditions for developing heart disease.

Obesity and Hypertension

Blood pressure is the force of blood pushing against the walls of the arteries as the heart pumps out blood.
Hypertension,or high blood pressure, greatly raises your risk of heart attack, stroke or kidney failure.

Being overweight or obese increases the risk of developing high blood pressure. In fact, blood pressure rises as body weight increases. Losing even 10 pounds can lower blood pressure—and losing weight has the biggest effect on those who are overweight and already have hypertension.

Chpter 20

Obesity and Metabolic Syndrome

Obesity adversely impacts existing **endocrine** and **metabolic** disorders. In fact, one out of every five overweight people is affected by the **metabolic syndrome**, or "Syndrome X26."

Metabolic syndrome is one of the fastest growing obesity-related health concerns in the United States and is characterized by a cluster of health problems including obesity, hypertension, abnormal lipid levels, and high blood sugar.

Patients with **polycystic ovary syndrome (PCOS)**, **Cushing's syndrome** and other conditions have an increased risk of developing metabolic syndrome.

According to the **Centers for Disease Control and Prevention (CDC)**, the metabolic syndrome affects almost one quarter (22 percent) of the American

population – an estimated 47 million people. The assemblage of problems characterized as comprising the metabolic syndrome can increase a patient's risk for developing more serious health problems, such as diabetes, heart disease, and stroke.

Chapter 21

Obesity and Polycystic Ovary Syndrome (PCOS)

The majority of patients diagnosed with **polycystic ovary syndrome (PCOS)**, the most common hormonal disorder in reproductive-age women, are either overweight or obese35.

The syndrome is associated with an accumulation of incompletely developed follicles in the ovaries and is characterized by irregular menstrual cycles, multiple ovarian cysts, and excessive hair growth. PCOS is a leading cause of infertility and is a significant cause of insulin resistance – and thereby a major factor in increasing a woman's risk of developing diabetes.

Overweight adolescent girls are also susceptible to developing PCOS. **Hyperinsulinemia** – or excessive insulin in the blood – insulin resistance, and being overweight are all associated with PCOS in adolescents. Common characteristics among post-pubertal adolescents and adults with PCOS include excessive hair growth, irregular menses and cystic or non-cystic acne.

Chapter 22

Obesity and Reproduction/Sexuality

Obesity in men has been associated with reproductive hormonal abnormalities, sexual dysfunction, and infertility. In women without **polycystic ovary syndrome (PCOS)**, obesity also compromises reproductive outcomes.

Obesity and Dyslipidemia

Obesity has a negative effect on lipid levels

in the blood, which often lead to the development of a condition known as **dyslipidemia**. Dyslipidemia, a primary risk factor for coronary artery disease, occurs when LDL cholesterol (bad cholesterol) and triglyceride levels are high and HDL cholesterol (good cholesterol) is low. Physicians often attribute this abnormal shift in lipid levels to weight gain. Losing weight, conversely, has an opposite effect. Weight loss of about 20 pounds has been shown to:

- Reduce LDL levels by 15 percent.
- Reduce triglyceride levels by 30 percent.
- Increase HDL by eight percent.
- Reduce total cholesterol levels by 10 percent.
- Obesity and Thyroid Conditions

Childhood Obesity

Obesity in childhood continues to grow in prevalence among adolescents in the United States. In some states, obesity is found in nearly forty percents of children. It is estimated that one-third of children born in 2000 will develop obesity-related diabetes, half of which will be in the Latino and

African American communities.

Childhood obesity causes liver, lung, heart and musculoskeletal complications as well as psychological ones. Grass root efforts at changing urban planning, legislation, and school practices need to be employed to help stem the tide of obesity. Lifestyle change is the most effective treatment, but the hardest to implement. As a result of higher childhood obesity rates, more and more adolescents are subjecting themselves to gastric banding.

Chapter 23

Obesity and Thyroid Conditions

Thyroid hormones drive metabolism, which is why it is often assumed that there is a direct link between obesity and the thyroid gland. It is true that individuals with an overactive thyroid gland (hyperthyroidism or thyrotoxicosis) typically will lose weight, and those with underactive thyroids (hypothyroidism) will

tend to gain weight, but a direct or strong correlation of obesity with deficient thyroid function is uncertain as the medical literature provides conflicting conclusions.

In some studies, thyroid function is perfectly normal in obese individuals compared to normal weight controls, while other studies show a clearly higher frequency of mild ("subclinical") to moderate hypothyroidism in obese children and adults. Additional studies will be required to illuminate the relationships between the brain-thyroid axis, the metabolic syndrome, thyroid dysfunction, and obesity.

Chapter 24

Hormonal Imbalance

Hormones are the chemical messengers in the body that travel the bloodstream to the organs and tissues. They slowly work and affect many of the body's processes over time. Endocrine glands, which are special groups of cells, make hormones.

There are many endocrine glands in the body with the main ones being the pituitary gland, thyroid, thymus, adrenal glands, and the pancreas. Hormones are dominant and it only requires a small amount of them to cause significant changes throughout the body. Both men and women produce hormones in the same areas with one exception, the sexual organs. Additional male hormones are produced in the testes while women's are produced in the ovaries.

If hormone imbalance is left untreated it can result in serious medical conditions like diabetes. If the imbalance is taking place in the pituitary glands, growth disorders are possible and will require treatment of a growth hormone. It is possible that the imbalance could also cause an overproduction of growth hormones and cause medical conditions such as gigantism and acromegaly. There are approximately 6,000 endocrine disorders that result

because of hormone imbalance. An imbalance of hormones is experienced at different times during life. As the body changes from childhood to adulthood, puberty is experienced by both male and females. Women will then again experience a change later in life after their childbearing years have been passed. Hormonal imbalance is defined as chemical messengers which regulate our body's systems and that are no longer functioning properly. This dysfunction can be an overproduction or an underproduction of specific hormones. The primary hormone that causes these changes is estrogen.

Estrogen and progesterone

A hormonal imbalance occurs as a reaction to the elevated level of estrogen and lowered level of progesterone within a woman's body. Estrogen is naturally produced by the ovaries and is the female hormone necessary for normal sexual development. It also works to regulate the menstrual cycle to prepare and maintain the body during childbearing years. Estrogen is dominant during the follicular phase of the menstrual cycle. Progesterone is dominant during the luteal phase of the menstrual cycle by the corpus luteum, and is needed for implantation of the fertilized egg. Later in life, the ovaries begin to decrease their production of estrogen and progesterone,

causing symptoms of hormone imbalance to develop. Estrogen replacement therapy is a common treatment for hormone imbalance. Frequently, only estrogen is replaced. Some health care providers, especially alternative medicine practitioners, feel it is important to supplement progesterone as well, as the balance between estrogen and progesterone is important. Estrogen dominance, in which there is too much estrogen relative to progesterone, can cause infertility, PMS, menstrual problems, abdominal weight gain, and possibly increased risk of breast cancer.

Causes

There are multiple causes for hormone imbalance, but the majority of cases are experienced due to estrogen dominance or increased amounts of estrogen in the body and not enough of progesterone. Common causes include birth control pills, stress, overuse of cosmetics, and non organic animal products. Other medical causes include genetics, obesity, and tumors. Other causes include lack of exercise, pregnancy, lactation, autoantibody production, and a sedentary lifestyle. Of all of these causes, obesity is the number one medical cause for hormone imbalance while pregnancy is the number one lifestyle change that causes the condition.

Symptoms

Some of the symptoms experienced during hormone imbalance are shared by

- male
- female,

while some are more specific to each gender.

Some of the most commonly shared symptoms include

- fatigue,
- skin problems

- acne,
- mood swings,
- weight problems,
- diminished sex drive, and
- no memory.

If the reactions become more severe then we run into actual hormone allergy where we find a group of more serious disorders. The disorders include

- arthritis,
- chronic fatigue syndrome,
- fibromyalgia,
- anxiety attacks.
- urinary tract infections,
- increased dryness in the mouth, eyes,
- genitalia,
- Abnormal heartbeat can also be experienced.

The majority of these symptoms are experienced due to menopause.

Menopause

Menopause is the permanent end of menstruation and fertility, defined as occurring 12 months after your last menstrual period. It is the time in a woman's life when the ovaries stop producing eggs and the body doesn't produce the same amount of progesterone or estrogen. Menstruation is less frequent and eventually stops altogether. It is a biological process that is natural and is not a medical illness. Hormonal imbalance is the cause for the physical and emotional experiences associated with menopause. These symptoms include hot flashes, broken sleep patterns or insomnia, and changes in sexual response. There is no need for prevention of menopause, but there are steps that can be taken to prevent specific side effects. Regular exercise, calcium and vitamin D supplements, a low-fat diet, and controlling blood pressure and cholesterol levels are recommended.

Treatment for hormone imbalance

It is important to understand all the risks and benefits of hormone replacement therapy (HRT). Patients with a history of active or past breast cancer, blood clots, liver disease, pregnancy, or endometrial cancer should talk with a physician before

using an over the counter or prescription therapy. There are two main types of HRT. The first is estrogen replacement. It is available in tablet form, cream, or a patch. It is administered alone and is given in the lowest dose possible to relieve symptoms. The second type of therapy is a combination of estrogen and progesterone. It is commonly known as HRT combination therapy. These two hormones are given continuously for the shortest time possible to reduce the risk for possible side effects. Side effects of treatment include irregular spotting, breast tenderness, fluid retention, headaches, dizziness, and blood clots or stroke.

Alternatives to HRT

Patients that are worried about these side effects can use natural products that can be bought over the counter. Diet and exercise have also been proven effective against the symptoms of menopause. As the body goes through these changes, adjusting diet and a person's level of activity will promote healthy bones and reduce the risk of heart disease as well.

Improper use of hormones

A dangerous or fatal hormone imbalance can occur in those who use anabolic steroids. While the endocrine system is developing, use of these hormones can result in a hormone imbalance that causes an increase in aggressive behavior, mood swings, or developmental disorders. Steroid use is required for some patients, but should only be administered and taken under the care of a health professional to reduce these risks.

Chapter 24

Salt and obesity

Introduction

Obesity is an increasing problem in the UK. A third of all British adults will be obese by 2012 if current trends continue, equating to 13 million people. Obesity is defined as a Body Mass Index over 30. Male obesity in the UK has increased from 13.2% in 1993 to 23.1% in 2005 while obesity amongst women has increased from 16.4% to 24.8% over the same period.1 Obesity amongst children is also a problem, increasing from 10.9% in 1995 to 18.0% in 2005 amongst boys aged 2-15. Amongst girls of the same age group obesity has increased from 12.0% to 18.1%.

Obesity is huge health burden and is associated with many health conditions. These include diabetes, hypertension, cardiovascular disease, sleep apnea and shortness of breath. In 2002, the direct cost of treating obesity was between 45.8 and £49.0 million pounds and the indirect cost (treating consequences) was around 1 billion pounds.

Who is at risk of obesity?

Everyone is at risk of obesity if they consume an unhealthy diet or have an unhealthy lifestyle. However, those most at risk include ex-smokers, people of black African descent, inactive individuals and children (or adults) who also have a high intake of sugared-soft drinks.

How does salt contribute?

Whilst salt is not a direct cause of obesity it is a major influencing factor through its effect on soft drink consumption. Salt makes you thirsty and increases the amount of fluid you drink. 31% of the fluid drunk by 4-18 year olds is sugary soft drinks2 which have been shown to be related to childhood obesity.

It has been estimated that a reduction in salt intake from 10 g/d to the WHO recommended level of 5 g/d would reduce fluid consumption by ≈350 mL/d. A study which

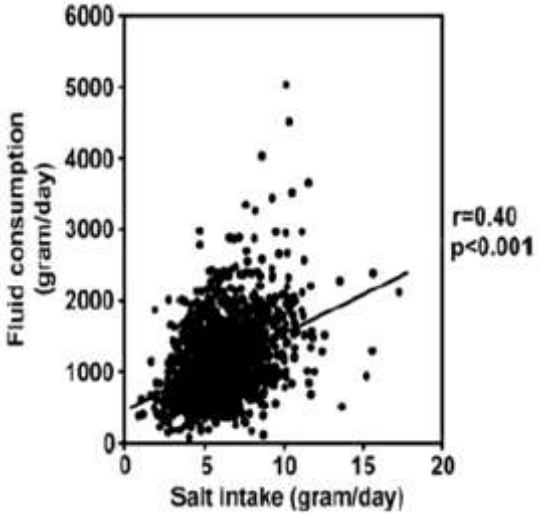


Figure 1- *Relationship between salt intake and fluid consumption in children and adolescents. Source:*

analysed the sales of salt and carbonated beverages in the USA between 1985 and 2005 showed a close link between the two, as well as a parallel link with obesity.	*He et al, 2008*
An analysis of the NDNS for young people (4 – 18years) showed salt intake was associated with both fluid intake and sugar-sweetened soft drink consumption. A reduction in salt intake by 1 g/d was found to be	

associated with a difference of 100g/day in total fluid and 27 g/d in sugar-sweetened soft drinks. This demonstrates that salt intake is an important determinant of total fluid and sugary soft drink consumption in children. Reducing salt intake could therefore be important in reversing the current trend of increasing childhood obesity.

Current Salt Intake and Dietary Advice

Almost everyone in the UK (and the rest of the Western world) eats too much salt. The daily recommended amount is no more than 6 grams a day; the current average salt intake is 8.6g a day although many people are eating more than this.

People with or considered at risk of obesity should ensure that they keep their salt intake below the recommended maximum of 6g. This can be achieved by simple changes, such as consuming less processed foods and checking product labels before purchase.

To further reduce your risk of obesity you should make sure you eat at least 5 portions of fruit/vegetables per day, increase the amount of exercise you do (at least 30 minutes, 5 times a week) and reduce the amount of saturated fat, fat, sugar and calories that you eat.

Company Profile

We shree slimming tea's corporation always look forward in future but in the boundaries of nature means we always use herbal products with new fashioned & innovative style, so our present & next generation love's to use natural products in their own taste.

We deals in herbal tea, slimming tea extracts, green tea powder & extracts & other tea products ,soaps, designer soaps, handmade soap, herbal soaps, handmade shampoos, herbal shampoos. We also deal in specialized herbal laxatives. The main quality of our product is that they all are made from totally natural extracts. Even in bulk orders we can customize the product (their ingredients, name embossed on the soap, fragrance & shape) as per customer requirement.

We are No1 Instant tea, soap, shampoo & laxative manufacturing company with latest equipment

&

Having our own chain of weight management & Laser Institutes in India or even in out of India.

With ultra modern weight reduction & laser treatment techniques

We are the first weight management company in North who are certified & awarded by many national & international organizations, like

We are the 1st I.S.O.9001:2008 certified company not just in service, even in products also.

We are 1st HACCP Certified Company (Certificate of food safety & quality assurance)

We are the only company who are the certified member of ILA of India. (Indian Laser Association)

Having our own laser specialist.

We are the only weight management company who are supervising under two time's gold medallist doctor who are specialised in weight management.

We are the only company having a bench mark of 5 kg weight reduction in just 20 days even in any medical problem & in any age.

We are 1st weight reduction company who are having a clients from the age of 5 year up to 86year old.

We are the 1st company having 99.9% results with 100% satisfied clients.

We are the 1st company who believe in relationship because we have members who joined us three/four/five years back

Dr Pratayksha Bhardwaj

Dr.Pratayksha Bhardwaj is a well known personality in weight reduction system. He him Self a legend. He has been won two times gold medal in weight management. He has been establish this company by his own honesty & hardworking. The foundation of Shree Slimming Tea's Corporation is laid by Dr.Pratayksha,He is also one of the biggest example of his weight management programme. He lost 28kg in the period of 5 - 6months by own made slimming

tea composition without any side effect. He belongs to very small-town, Jagadhri (Haryana).He has been started his journey from a single room & now he has been set-up many franchise & dealerships in metro cities. His magical & tremendous achievements told his success stories! He won many awards in weight management field from national & international organisations.

As his name "Pratayksha", he proves that

"Fact doesn't required proof to stand correct."

Or

"Pratayksha ko parman ki kya Awayashakta"

...END...