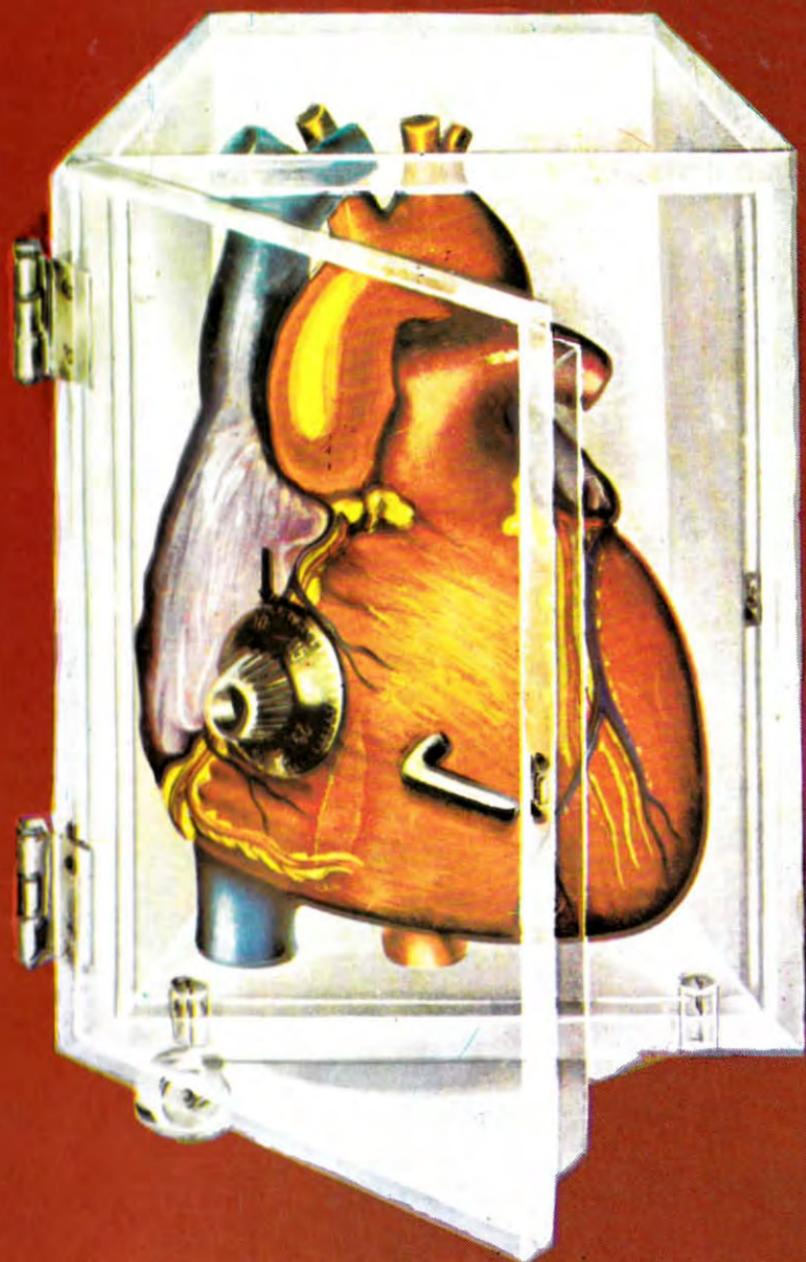
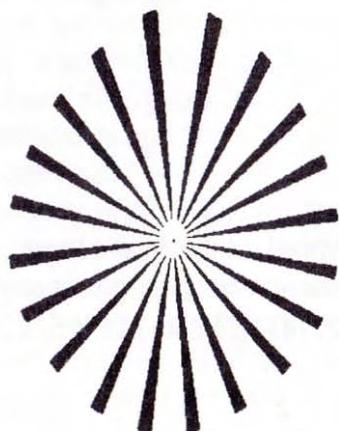


HEART DISEASE AND MEDITATION



Raja Yoga protects heart

Heart Disease And Meditation



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1. Preface

The 20th century is described as the age of anxiety and stress. The modern man is constantly facing symbolic stress. This stress and strain of day-to-day life affects one's bodily organs through several psycho-physical mechanisms. The progress of medical science has helped us to conquer diseases like plague, smallpox, etc., but stress-related diseases are rapidly increasing. Among the several Psychosomatic diseases, the cardiovascular disorders are quite significant. In the United States and some other developed countries, it has become a number one killer. Maximum number of people die due to heart diseases than any other disorder. In recent years, there has been increased awareness for heart diseases. In order to prevent the occurrence of heart diseases and to manage them effectively, there is a need to educate common man, intellectuals and family physicians to know various aspects of these diseases.

Scientific researches have shown that there are definite factors which predispose a person to cardio-vascular diseases. The report of an Expert Committee convened by WHO indicates that life-style and behaviour are important catalysts in causing and preventing heart diseases. Eight main factors are considered responsible for heart diseases. These factors are :

- 1) Stress and strain of life
- 2) tobacco
- 3) High Cholesterol Diet
- 4) Type A personality
- 5) Lack of exercise
- 6) High blood pressure
- 7) Diabetes 8) Heredity.

Out of these eight factors, except heredity, all other seven factors are man-made and are life-style factors. All these seven factors are preventable.

RajaYoga Meditation is a simple and scientific technique to elicit relaxation response, to change one's attitude and transform life-style. Hence practice of Raja Yoga plays a significant role in preventing and managing heart diseases. Raja Yoga is not a

replacement for the conventional medicine but it is an auxiliary means which helps synergistically to the conventional medicine.

This book brought out by Medical Wing of Raja Yoga Education and Research Foundation of Brahma Kumaris Ishwariya Vishwa Vidyalaya deals with the impact of different risk factors on heart and the methods of preventing them.

Fifty per cent of the deaths in developed countries and slightly less percentage of deaths in developing countries are caused by coronary heart diseases and cerebro-vascular diseases. It is hoped that this booklet would be of great help in preventing such diseases.



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2. Introduction

About 30 million people are suffering from cardio-vascular and related diseases in India. It is more common in developing countries. It needs more attention because the incidents of heart attacks are increasing. Especially in the early thirties and forties, which is the period when most people make hard efforts for high achievements, the seeds of this disease are sown in adolescence when life-style, eating habits, smoking, personality etc., are formed. The fat deposits keep on increasing gradually for another 15 to 30 years to such an extent that they create arterial obstruction to a great extent and this leads to coronary heart diseases.

To prevent the occurrence of heart disease, a preventive programme should begin right in childhood. This is called 'Primary Prevention'. Proper steps are necessary for avoiding or for getting rid of the risk factors. Heredity is almost unavoidable and cannot be overcome completely but it can at least be minimised by controlling other risk factors.

When the specific type of pain occurs due to exertion or at rest due to the obstruction of coronary arteries, the steps of 'Secondary Prevention' are necessary. At this stage the pathological changes which have already taken place cannot be regressed. Hence one should put efforts of secondary prevention but, remember, it is only the second best. The object of secondary prevention is to prevent further deterioration of the situation.

The steps of secondary prevention include the following :

1. Relieving the tension or the stress and strain of life.
2. Reducing unnecessary burden and responsibilities.
3. Transforming the attitudes and belief systems so as to reduce anxiety and excitement.
4. Totally avoiding intake of tobacco and alcohol.
5. Treatment of high blood pressure and diabetes.
6. Overcoming obesity.
7. Light regular exercises (avoid undue physical strain and exertion).

8. Practice of relaxation and positive thinking.

3. Fear of Heart Disease

Mr. Batliwala* experienced pain in the region of the heart on the left side of the chest. He was extremely frightened, thinking that he had got heart attack. He rushed to the hospital nearby. After thorough examination and E.C.G., it was found that his heart was perfectly normal. The doctor assured him that his heart was normal and there were no signs of heart disease. Yet he had a fear that he had heart disease, because his three elder brothers had got heart attack around the same age. Like Mr. Batliwala, many people fear that they have a heart attack although their heart is perfectly normal. People who have anxiety and unidentified tension sometime develop such fear, one may get with such thoughts. In order to differentiate these two conditions, remember the following facts :

1. Heart pain is usually felt in the middle of the chest. It is usually not associated with the palpitation (hearing ones own heart-beats)

2. The common pain left over the heart is more frequently due to the fear and anxiety. In such cases, palpitation, cold and sweaty hands are also found.

3. If a person develops pain in the area of the heart after hearing the news that a famous person or a relative or a neighbour had heart disease, it is more likely that the pain is due to psychological reasons.

4. If the pain increases on movement or changing position and more pain is experienced on pressing the area, it is likely that pain is muscular.

5. It is a misconception that heart trouble develops due to gas. It is not possible because gas develops in the stomach and intestines. And, moreover, heart is quite a strong organ which can't be effected by the gas.

* The true name is changed to maintain confidentiality.

4. Stress and Strain of Life

Mental tension, emotional disturbances, stress and strain of life, etc. are the number one risk factor for heart diseases. Racing ambitions, hurry and worry of modern life directly affects man's cardio-vascular system. Mind is like a jockey and heart is like a horse. If the jockey whips, the horse races fast. Similarly, when mind is tense, the heart over-functions. Modern man tends to run with time and, in turn, pays a very heavy price in the form of heart diseases.

4.2 Psycho-physiological Explanation

Although modern man no longer faces physical threat to survival yet he responds to the day-to-day psychological stress by flight mechanism although it is not required. Stress abnormally disturbs one's cardio-vascular functioning. This effect can be understood through several mechanisms of heart control.

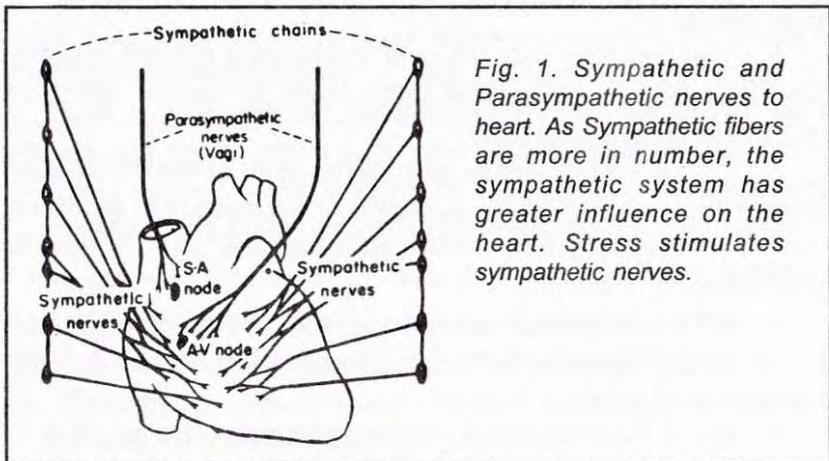


Fig. 1. Sympathetic and Parasympathetic nerves to heart. As Sympathetic fibers are more in number, the sympathetic system has greater influence on the heart. Stress stimulates sympathetic nerves.

4.2.2 Autonomic System

The heart is well supplied by both sympathetic and parasympathetic nerves (Fig. 1). These nerves affect heart in two ways 1) by changing the heart rate and 2) By changing the

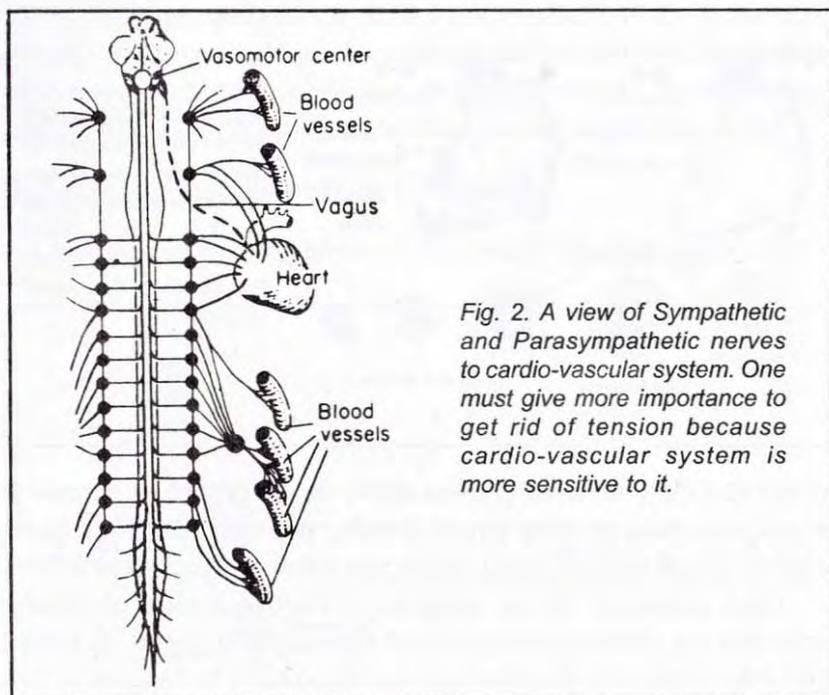


Fig. 2. A view of Sympathetic and Parasympathetic nerves to cardio-vascular system. One must give more importance to get rid of tension because cardio-vascular system is more sensitive to it.

strength of contraction of the heart. The effect of sympathetic innervation is much more powerful than parasympathetic nerves (Fig. 2). In response to stress, sympathetic system is over activated which leads to increased heart rate, and blood pressure. This rise in blood pressure can be very damaging because of two primary effects 1) Increased work load on the heart and 2) Damage to the arteries themselves by the excessive pressure.

Heart muscles, like skeletal muscles, hypertrophy when its work-load increases. In hypertension, the very high pressure against which left ventricle must beat, causes it to increase in weight to as great as 300 to 400 gms. Instead of the usual weight of 150 gms. This increase is not accompanied by quite as much increase in coronary blood supply as there is increase in muscle tissue itself. Therefore, relative ischemia of the left ventricle develops. The hypertension which becomes serious enough that the person develops angina pectoris. Also, the very high pressure

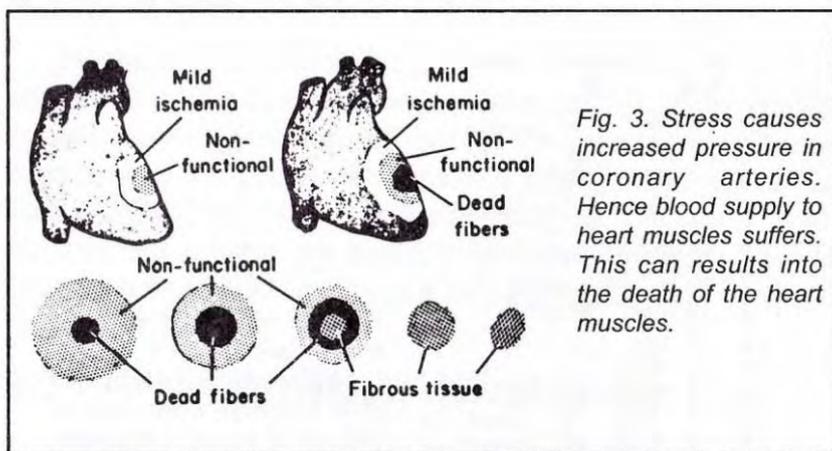


Fig. 3. Stress causes increased pressure in coronary arteries. Hence blood supply to heart muscles suffers. This can result into the death of the heart muscles.

in the coronary arteries causes rapid development of coronary arteriosclerosis so that hyper-tensive patients tend to die of coronary occlusion at much earlier ages than do normal persons.

High pressure in the arteries not only causes coronary sclerosis but also sclerosis of blood vessels throughout the body. The arteriosclerotic process causes blood clots to develop in the vessels. Therefore these vessels frequently thrombose, or they rupture and bleed with resultant destruction of local areas of brain tissue.

Hemorrhage of the vessels which destroys large areas of the kidneys and, therefore, causes progressive deterioration of the kidneys and further exacerbation of the hypertension. Hence a vicious circle results. During severe emotional crisis, strong stimulation of sympathetic nervous system can cause very severe and acute elevation of arterial pressures, sometimes to diastolic level as high as 150 mm of Hg, and systolic pressure about 350 mm of Hg. If such state results more frequently, then this can cause great damage to one's heart (Fig. 3) and other bodily organs.

4.2.3 Kidneys

The kidneys like most other tissues of the body are strongly supplied by sympathetic nerves to cause release of a

Vasoconstriction substance, called 'angiotensin'. The angiotensin, in turn, increases total peripheral resistance and also increases aldosteron secretion by the adrenal cortex. Thus, renin, angiotensin can cause hypertension during emotional crisis.

4.2.4 Higher Nervous Control

In the reticular substance of the lower third of pons and upper

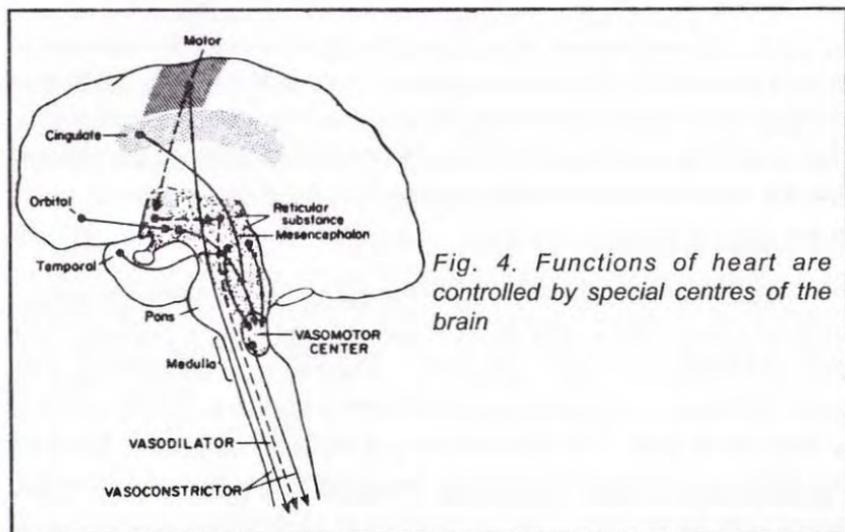
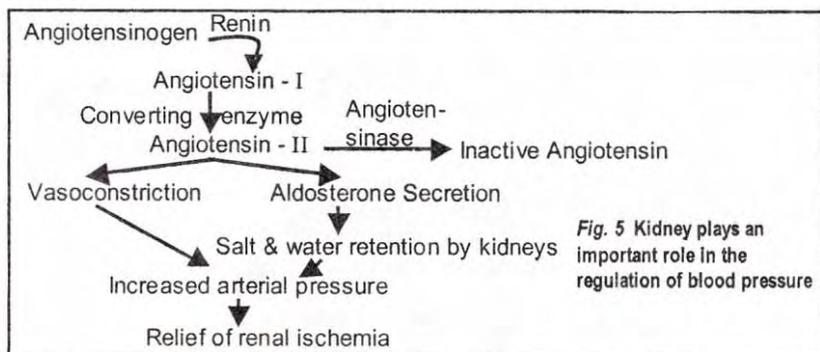


Fig. 4. Functions of heart are controlled by special centres of the brain

two-thirds of the medulla, vasomotor centre is located laterally. These centres have powerful effect on the muscles of the heart (Fig. 4). The lateral portion of the vasomotor centre transmits excitatory impulses of the sympathetic nerve and the degree of sympathetic stimulation can alter the long term regulation of arterial pressure. For instance, experiments have shown that when the sympathetic nerves to the kidneys are stimulated continuously for several weeks, renal retention of fluid occurs and causes high arterial pressure as long as sympathetic stimulation of the kidney persists to cause chronic elevation of arterial pressure. During emotional crisis, the kidneys secrete the higher level of an enzyme, called Renin (Fig 5). The Renin, in turn, acts on the plasma protein fibre to the heart while the



medical portion of the vasomotor centre transmits impulses through the parasympathetic fibre of the vague nerve to heart to decrease the heart activity. Emotional stress through vasomotor centre creates disturbances in the activity of the heart.

4.2.5 Dual Effect

Usually, whenever any part of the sympathetic nervous system is stimulated, the entire system or at least major portions of it are stimulated at the same time. Hence, norepinephrine and epinephrine are almost always released by the adrenal medulla at the same time. The different organs are stimulated directly by the different nerves. Therefore, the organs are stimulated in two ways simultaneously. The two means of stimulation support each other and one can actually substitute the other, for example, destruction of the direct pathways to the organs does not abrogate existence of the organs because norepinephrine and epinephrine are still released into the circulating fluids and indirectly cause stimulation. Likewise, total loss of the two adrenal medulla usually has little significant effect on the sympathetic nervous system because direct pathways can still perform all the necessary duties. Thus the dual effect provides the safety factors; no mechanism substitutes for the other when the second is missing.

But unfortunately in the modern man, under symbolic stress, both the factors are operating which result into overtone of the sympathetic activity which increases the burden of cardio-vascular system.

If we take the practical levels of epinephrine and

norepinephrine the normal resting rate of secretion by the adrenal medulla is about 0.2 microgram per kg per min. of epinephrine and about 0.07 microgram per kg per min. of norepinephrine. These quantities are considerable enough to maintain the blood pressure almost upto the normal level even if the direct pathways to cardio-vascular system are removed. Therefore, it is obvious that much of the overall tone of the sympathetic nervous system results from basal secretion of epinephrine and norepinephrine and, in addition, to that from sympathetic nervous system.

In mild, stable or in labile or essential hypertension, there is evidence of hyper kinetic circulation. Episodes of raised blood pressure in labile hypertension are intermittent and readily provoked by emotional and sympathetic nervous system arousal, in response to personally meaningful environmental stimuli eliciting an attitude of vigilance, uncertainty, anger, fear and physiological preparedness for fight or flight. Due to these effects, cardio-vascular system is very much susceptible to stress. Presently, there are more than 30 million Americans with essential hypertension.

4.3 How to Handle Stress?

Understanding the effects of stress on heart is one thing and doing something about stress is another. Conventional psychologists have suggested a number of stopgap measures to reduce stress, but none of them gets at the root cause of stress; they merely seek to ameliorate currently stressful circumstances. Some of these ideas have been to change jobs, to find more leisure, to find someone to talk to about one's trouble, to take up a hobby, to change one's lifestyle and so on. The more perceptive doctors counsel the making of deeper psychological changes; to be honest with oneself and others, to act with maturity and to make decisions firmly, to give up artificial crutches like alcohol and drugs and to increase one's personal strength.

All of those goals may be good, yet the question remains how does one get the inner strength even to make those changes? And how does one get the peace and clarity of mind to

realize what steps are really necessary and possible to effect those changes? And how does one get the flexibility to live even in what may be considered 'stressful' circumstances since it is not always possible to change external conditions without feeling distressed by them.

That is where the efficacy of RajaYoga in treatment comes in. It is not based on changing anything external, but rather one's internal responses to external demands. Thus, the treatment is useful to everyone in all circumstances. Moreover, just a few days of practice is sufficient to achieve mental and physical relaxation which in turn is enough to allow one to focus perception and venation towards understanding and curing the personality factors which enter into stress production. That understanding is increased further by application of the spiritual knowledge on which meditation is based.

4.3.2 Relaxation Response

The value of relaxation has also been documented medically. A neuropsychiatrist of California, Late Dr. David Fink, wrote thus in this connection : 'Relaxation stops in emotions that prod the interbrain and forebrain into misbehaviour. Skill as well as good health depend upon relaxation'. Thus, relaxation is the first step towards good health.

External events themselves generally do not raise mental tension. Rather, it is the repeated thinking over of an event ('I can't believe the boss said that to me what nerve he actually said that') – the repetition going on both consciously and unconsciously, awake and asleep – which raises mental tension levels to dangerous heights.

The control over the mind achieved through Raja Yoga practice makes us able to halt this repeated brooding over stressful events. We become able to easily re-charge our mental energies into positive and even blissful directions, and to intuit solutions to stress-causing events which are life-enhancing for all concerned, rather than negative or destructive towards self or others.

4.3.3 Transformation of Attitudes

We know that under the same set of circumstances, one person, may become anxious while another can remain cheerful. The difference has to do with attitude towards the event and more with one's general personality and understanding of life. By gaining spiritual insight into the laws of human actions and interactions, our attitudes towards life-situations naturally tend to become tolerant, positive and creative. This gives us the means to retain stability and peace of mind even under adverse conditions.

In the words of Dr. Fink (from his book, 'Relief from Nervous Tension') : "Your attitudes are the higher-ups, the big shots in your mental life. They are the habits that sit in the driver's seat. When you can boss them you are in the control of your life. You become invulnerable and nothing can hurt you".

Or in words of the pioneer in stress research, Dr. Hans Selye : "Rather than relying on drugs and other techniques, I think there is a better way to handle stress. Attitude determines whether we perceive any experience as pleasant or unpleasant."

"I have found the fundamentals of Raja Yoga Meditation extremely beneficial for developing the positive attitudes. For example, if someone gets angry or criticizes a RajaYogi, he thinks, 'We all are actors in the world drama, playing a definite role allotted to us. I should not worry about the activities of others. I must try to play the role given to me in the best manner. When he behaves according to his nature, I also should behave according to my original nature of being a peaceful and loving soul. I remain detached and peaceful because I am just an observer of various scenes of the world drama. Whatever percentage of truth lies in the criticism, I must accept and change myself'. If a near relative dies, then, under stress, caused by bereavement he thinks, 'This is an event, where the actor has just changed his costume (body) for playing another role. He has left the present body and will take another body to play his role. Indeed, the Soul is eternal, indestructible and immortal. Thus the soul whom I love is not dead. The soul still continues to play

its role somewhere else. I must not feel sad about the event. On the contrary, I should send good wishes and vibrations of peace."

4.3.4 Importance of Positive Thinking

Nineteen hundred years ago, there lived a Roman Emperor named Marcus Aurelius. On his long marches and military campaigns, he sat by his camp-fire noting down his thoughts. These thoughts were gathered together in a book titled "The Meditations of Marcus Aurelius". One of the greatest heritages from antiquity and one of the significant things that this wise man said is this, "Your life is what your thoughts make of it."

The great thinker of United States of America, Ralph Waldo Emerson said, "A man is what he thinks about all day long."

If you expect failure and think about diseases, you are going to get them. Transform your attitudes and thoughts and you will transform the quality of life you are living. Transform your negative thoughts into positive ones and every thing will change into inner peace, prosperity and positive health.

Dr. Frederic Tilney, one of the outstanding brain-specialists of France declares, "We will, by conscious command, evolve cerebral centres which will permit us to use powers that we now are not even capable of imagining." The same truth is described, in a different way, by Dr. Jean Houston, president of the Association of Humanistic Psychology, "We are just beginning to discover the virtually limitless capacities of the mind."

Power of positive thinking is amazing as the case of Mrs. Sunita illustrates, she was a 24 years old woman, suffering from severe tension. She had tensions after her husband had an irreparable brain-damage. For the following five years, he was completely bed-ridden. In the beginning, she selflessly cared for him, hoping that he would improve. But as many years passed by without any sign of improvement, she gradually became hopeless and tense. Thrice she had thought of committing suicide. Her mother-in-law brought her to the Local Brahma Kumaris Centre. At first, she was reluctant to come, but when the teacher there listened to her problems sympathetically, she continued

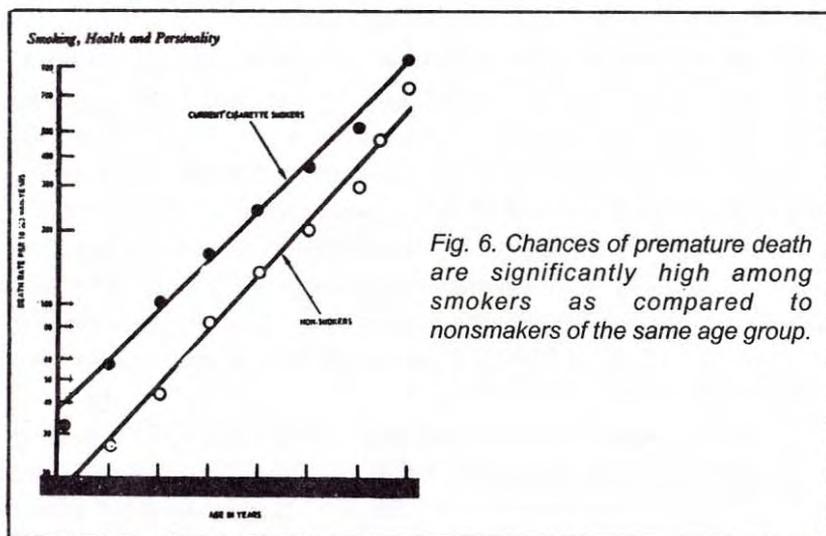
her visits.

The teacher showed her how to give powerful spiritual vibrations with the help of positive thinking and Raja Yoga to help her husband. When the laws of action and reaction (*karma*) were explained to her in detail, her mind became very calm, peaceful and positive. The art of positive thinking completely recovered her out of the anxiety and tension. When the positive thinking based on the understanding of spiritual knowledge helped Mrs. Sunita to relieve the real severe stress, why can it not benefit millions of people suffering from imaginary fears, worries and anxiety?

In the modern world, millions of people are causing themselves one or the other heart disease through negative thinking. As one gets up in the morning, the first thought about failure and tensions occurs to one's mind, "I'm not sure, I may fail. They might hurt me. They might not like me. I will not be able to express myself. I might lose my job. Something bad will probably happen if I do this. I know, I will feel awful if I say that. I won't be able to live myself." Generally, most people possess such mind as is always loaded with thoughts of failure and uncertainty. And little wonder that they suffer from what medical scientists call 'free floating anxiety'. This is not a one day affair but many years of experience.

5. Effects of Tobacco on Heart and How to Overcome Them?

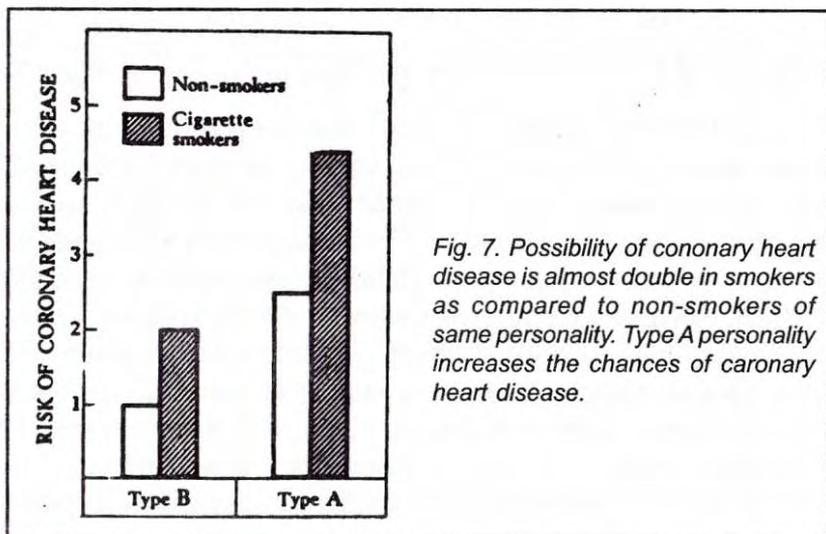
Smoking increases the level of epinephrine and norepinephrine in blood which increases blood pressure (Fig. 6). The Tobacco smoke contains Carbon monoxide (CO) and Nicotine which increases the need of oxygen by heart muscle whereas carbon monoxide decreases oxygen carrying capacity of blood. Moreover, Nicotine has adverse effect on plasma lipids, platelets and coagulation of blood. These mechanisms greatly increase the chances of cardio-vascular diseases. The death due to coronary heart diseases is 70% more in a smoker than a non-smoker (Fig. 7). Among the males in age group 40 to 54, the probability of premature death is 300% more among smokers.



5.2 Mechanism of Action

In three different ways, cigarette-smoking can affect one's cardio-vascular system and can cause sudden death.

Firstly, nicotine stimulates sharp release of adrenaline. Generally adrenaline is secreted in response to sudden excitement or fear. Such reactions increase heart-rate. Blood-



pressure rises because arteries contract to shift the blood flow towards muscles and other organs involved in fight or flight reactions. During such episodes in unhealthy heart, uncontrolled muscle contractions, known as ventricular fibrillation, result. Another possible effect on heart is acute spasm of the coronary arteries and subsequent cardiac arrest.

Secondly, cigarette smoking affects coronary arteries and the main arteries leading to the brain. This effect too can cause sudden death. In athero-sclerosis artery walls become clogged with fatty deposits, causing a reduction of blood-flow. If a main coronary artery gets completely blocked, death is usually sudden. Thrombus or an embolus may cause such a block.

Thirdly, aneurysm of aorta or the circle of Willis at the base of brain, caused due to smoking, may become fatal.

5.3 Combination of Alcohol and Tobacco

Tobacco and alcohol, both are dangerous for one's heart. Many people who smoke also take alcohol (Fig. 8). This combination have synergistic effect and create manifold harm than their individual influence. The persons who are prone to hypertension and drink more than 60 cc of alcohol a day stand the risk of high blood pressure, stroke and heart attack.

Functions of liver suffer in alcoholics. The clearing of fat from blood is impaired. Hence lipids clog the blood stream.



Fig. 8. Those smokers who also take alcohol suffer from hazardous effects because tobacco and alcohol have synergistic effects.

Simultaneously, chemicals from cigarette increase coagulation of blood. This mechanism increases the chances of thrombus formation in coronary blood vessels.

Liver identifies alcohol as a foreign substance and metabolizes 95% of it into other chemicals. Liver can clear only 15 cc of pure alcohol per hour. Alcoholic's liver spends its precious hours in such work which remarkably reduces its capacity of doing other important metabolic functions. Tobacco contains 4000 different chemicals. Hydrogen cyanide, carbon monoxide, nitrogen dioxide gases, four dozen compounds such as bezopyrene and radioactive polonium are some of them. These toxic substances remain many more hours in blood stream in smokers who also take alcohol. Prolonged influence of these toxins on blood vessels and tissues remarkably increases the harmful effects.

5.4 Quit Tobacco

One should get rid of Tobacco completely. There is nothing like consuming less amount, because if you are consuming less amount in your spare time due to any reason, you may tend to increase the amount. Several individual and collective efforts will save the people from the menace of tobacco and prevent heart disease.

There can be two methods leading to de-addiction of tobacco.

First : To stop tobacco consumption completely and immediately. This is the best method.

Second : For those who can't give up tobacco completely and immediately, gradual reduction in the consumption of Tobacco finally leading to complete withdrawal is also possible.

There are a few simple means by which Tobacco consumption in the form of smoking can be reduced.

1. Don't inhale the gas deeply. By this method one can reduce 40-50% of absorption of Tobacco.

2. Smoke only half a cigarette, by this method another 50% can be reduced.

3. Don't keep the cigarette between the lips continuously

while you smoke a cigarette, but put the cigarette between the lips only when you want to inhale. This method reduces the absorption by another 10-20%.

4. Try to postpone the tobacco intake at least by one hour. Whenever you have an urge to consume tobacco tell yourself that you will take it after one hour. To your surprise you will find that most of the time the urge will completely disappear within one hour.

For those persons who are not able to abstain from tobacco for some reasons or the other, therapeutic methods can be used under the supervision of trained doctors.

5.4.2 Aversion Therapy

A more safe and widely accepted method is to associate tobacco consumption with mild aversive electronic stimulus. Electronic stimulus is preferred because this aversive stimulus can be controlled and can be given in a clinical set-up.

After two or three weeks of aversion therapy, the person develops a conditioned response and even a thought of taking tobacco can arise an aversive feelings towards tobacco.

5.4.3 Experience Oriented Aversion

In this method, a person is told to smoke several cigarettes as fast as possible. After a few cigarettes the person develops unpleasant side effects like perspiration, increase in heart rate, giddiness etc.. Such an unpleasant experience convinces the person about the harmful effects of tobacco.

5.4.4 After Effects of Withdrawal

Tobacco doesn't cause much physical dependence, like heroine, morphine etc., no physical withdrawal symptoms are observed. It causes psychological dependence. The following effects are observed for a variable duration.

Dis-satisfaction : According to psychoanalytic theory people who have stopped their development at oral phase, tend to derive satisfaction by keeping something in their mouth. Some smokers also fall into these category. When a person stops smoking, his

source of satisfaction is withdrawn; hence, he feels dissatisfied.

Loneliness : Some people feel lonely as if they have lost a companion.

Short-temperdness : It has been a very common observation that the person gets annoyed on petty matters as his tolerance power is reduced.

Craving : For almost six months or one year, once in a week or so the person gets the urge to consume tobacco, but this urge lasts for only few minutes.

5.4.5 Factors Responsible for De-addiction

Addiction to tobacco is a chronic disease. Relapse rate is very high. Still there are several factors which help in de-addiction.

a) Inner Motivation

In order to get rid of addiction to tobacco, external motivating factors may help but as soon as the external motivation factors are removed the person may once again become a victim to this harmful habit.

b) Not due to Fear

Fear is a weak motivating factor. Hence, one should not decide to quit tobacco owing to any fear of disease or being afraid of someone. Fear do help in the beginning but for long-term effects, one's inner desire to give up tobacco is essential.

c) Pledge in Front of Others

Rather than just taking the decision for de-addition with oneself, it is better to take the pledge before others. This should not be done for any publicity or external show. Giving up tobacco should be an internal decision. If others know that now onwards you are not going to take tobacco, you will not fall back due to small reasons.

d) Self Suggestions

Give self suggestions several times in a day regarding hazards

of tobacco and long-term benefits of de-addiction. Apart from information given in this book, give suggestions about the following two aspects.

1. Your cigarette smoking is hazardous to your near and dear ones also. Your near and dear ones are passive smokers.
2. If you give up tobacco now, after several years chances of suffering from diseases are almost equal to non-smokers. Hence it is high time that you decide to give up tobacco.

e) Role of Yogic Techniques

Will-Power : Practice of Yoga or Meditation helps to increase will-power and power of tolerance. Hence a person is able to face the mild psychological effects of withdrawal easily.

f) Relaxation and Satisfaction

Inner satisfaction gained through yoga-practice helps to overcome the feelings of loneliness and hence a person is able to give up the hazardous habit without much difficulty.

In a research study 'Medical Wing of Raja Yoga Education and Research Foundation' examined 181 persons who were addicted to tobacco before they were introduced to Raja Yoga Meditation. Out of 181 persons, 74% were able to get rid of addiction to tobacco within a month. Another 19% gave up their addiction within three months. Thus 93% were free from the addiction just within three months. This study strongly implies the use of Raja Yoga for de-addiction.

g) Action at Community Level

In order to reduce incidents of tobacco-addiction some steps are necessary at the community level also.

Education : Community at large and specifically the youth must be educated about the harmful effects of tobacco and the methods to be adopted to overcome it.

h) Ban Smoking in Public Places

As cigarette smoking is hazardous to others also it should be

banned in public places. Such steps help smokers to control, and postpone the urge.

i) Advertising of Tobacco Products be Banned

When there is no doubt about the hazards of tobacco, its advertising must be banned. The small statutory warning has no place in front of a huge motivating advertisement. Due to such steps, government may suffer for a short duration but, in the long run, the government will benefit economically also.

j) Steps by Medical Associations

Different medical associations should pass resolutions against tobacco consumption and advise their members not to smoke.

6. Diet for Prevention of Heart Disease

The World health Organization's expert committee on prevention of coronary heart disease considered proper diet as the principal area of action for the prevention of Heart Diseases. In order to reduce the level of blood cholesterol several recommendations were made by the WHO.

1. Saturated fatty acid should contribute no more than ten percent of the total energy intake.

2. Only twenty to thirty per cent of the total energy should be provided by any type of fat.

3. The salt intake should be less than 5 gm. per day. This is particularly useful in lowering incidents of hypertension.

4. Weight should not be more than 20% of the average as per one's height, age, sex etc..

5. Stop alcohol consumption or reduce it considerably.

The above suggestions give importance to the consumption of foods of plant origin i.e. Vegetarian Diet. Non-vegetarian Diet contains high level of saturated fatty acids.

The fat from vegetarian source like corn oil, saffola contains poly unsaturated fats which slightly tend to lower blood cholesterol.

The second type of fat called mono-unsaturated fats is found in plants like groundnut oil, til oil, olive oil. Mono-unsaturated

fats have almost no or very little effect on blood cholesterol.

The third type of fat is saturated fats. This type of fat is solid at room temperature. Non-vegetarian food contains this type of fat in high percentage.

Some vegetarian food like butter, ghee, milk cream, Coconut oil, Dalda or Vanaspati contains saturated fats. This type of fat tends to increase the blood cholesterol and hence it should be minimised for the prevention of heart disease.

6.2 Reducing Excess Body Weight

For young adult male, average weight should be equal to his height in inches. Hence, if your height is 5 ft. 6 inches (66 inches), your weight can be 66 kgs. After the age of 35, few kg. more is also normal. For female, average weight can be four / five kgs. less than her height in inches. If your height is 5 ft. 3 inches (63 inches) your weight could be 58-59 kgs. This is the rough calculation which one can do by oneself. For accurate figure one can refer the standard charts.

For reduction of weight the best way is to have fibre, low calorie diet and some exercise a few hours after meals or on an empty stomach.

Walk a mile after supper has no scientific basis. After meals your digestive system needs more blood supply. If you do exercise immediately after meals, muscles get more blood supply and digestive system suffers. Half an hour of light exercise in the morning is enough for a slightly obese person. If you have more than ten kgs. of excess weight, exercise for half-an-hour twice a day or one hour in the morning is necessary. Check your weight twice in a week in the mornings on the same weighing machine. You can lose three to four kg. in a month very easily. If you are not losing, then think that your intake of calories in the form of food is not less than your expenditure of calorie. Due to the physical activity you need to reduce your food-intake and increase the physical activity and exercise. Keep in mind the following simple facts for losing excess weight.

1. Ghee, cream, ice-cream, sweets, chocolates etc., contain

lots of calories. Hence, you should completely stop them if you want to lose weight.

2. Chapatis, bread, biscuits etc., contain moderate calories; hence, try to reduce their intake to some extent.

3. Different types of dal and skimmed milk contains proteins, vitamins and minerals; hence, do take them in moderation.

4. Vegetables, except potatoes and sweet potatoes contain very little calories, high fibre, minerals and vitamins. Hence consume plenty of such vegetable. If you can't digest raw vegetable, boiled vegetables can be taken. Fruits, except bananas, sapota, mangoes, contains less calorie and can be taken in moderation.

5. Water does not contain any calories. You can take plenty of water one hour after meals. It also helps in removing excretory products. At least take ten glasses of plain water daily.

7. Personality Factors

The most influential and widely tested hypothesis linking casual psychosocial variables and the occurrence of coronary heart diseases is that formulated by Friedman and Rosenman.

They asserted that a pattern of behaviour defined type A, distinguishes coronary prone persons, and has predictive value for the development of coronary heart disease and its complications. The type A behaviour pattern features aggressiveness, competitiveness, drive for success, restlessness, impatience, a subjective sense of time urgency, abruptness of speech and gesture, and a tendency to hostility. People relatively lacking these behaviour characteristic have been designated to type B. Type A behaviour is exhibited by persons who are constantly engaged in a struggle to achieve, to outdo others, and to meet deadlines. It is not synonymous with life stress, nor does it represent a response to life stress. Rather it constitutes a habitual behavioural state whose precursors have been observed in children. Parental attitudes characterized by escalating performance may influence children to develop a chronic type A behaviour pattern. Studies have shown that men

exhibiting the pattern tend to have elevated plasma triglyceride and cholesterol values, a hyper-insulinemic response to a glucose challenge. Extreme type A persons have an increased diurnal secretion of noradrenaline. Extreme type A persons have increased serum level of corticotrophin and a reduced serum level of growth hormone, and they show accelerated clotting. Preliminary reports indicate that young type A males show more marked heart rate and blood pressure responses to challenging perceptual motor and cognitive tasks than to type B persons.

Data available at this time indicate that type A behaviour pattern may be the final overt manifestation of different motives, and that its role in the development of coronary heart disease may be co-determined by such factors as the degree to which it is in variance with the person's basic personality. Further, the extent to which striving is rewarded with success may also prove to be significant. There is little doubt that the cause of coronary heart disease is multifactorial, and that certain psychological and social factors represent no more than a set of contributory casual variables, interacting in a still unknown but complete fashion with biological and biochemical factors.

Many people who are frustrated in their life externally try to show that they are satisfied. While achieving this goal they suppress their subconscious feelings. Such feelings increase the load on cardio-vascular system. Many persons who have failed in their lives try to internalize the failure. Outwardly, they look peaceful and contented persons, but subconsciously they are extremely dissatisfied. Those who feel angry but don't express anger towards others turn it towards themselves leading to high blood pressure.

7.2 Personality Transformation

Transforming the type A behaviour into type B behaviour is crucial for the prevention of heart attack. Here are some suggestions that can help.

Never expect yourself to do everything perfectly. There is pleasure in doing the work itself rather than doing it perfectly. The

perfectionism is paralysing, it makes you immobile. God is perfect in everything, but we, as humans, should not keep very high standard in everything we do. Such desires are very much unhealthy for one's heart. Try to make your work enjoyable rather than creating deadlines for completing the work perfectly. There is nothing wrong in keeping deadlines but if it is not met, don't feel anxious or nervous. In most of the work, doing it is much more significant than succeeding. Aim for 'good' performance instead of 'the best'. If we look at ourselves objectively one can do his best only once in lifetime, aiming to do 'best' in everything is senseless. Perfectionism also reduces the productivity, when our goals are more realistic, we feel more relaxed and at ease. Such a state of well-being increases concentration power and productivity. We need not become careless.

Some people feel miserable because they count their life by their mistakes and shortcoming. Everyone has the right to be wrong because unless we make mistakes the ability to learn new things will be very much reduced. There is advantage in becoming perfectionist that you will not be criticised or fail in work you do. But the cost is very high. Your growth, ability for adventure and the opportunity to live life to the fullest will become a dream.

Compulsive perfectionists consider that success is the only acceptable standard. If the standard is little less than perfection, he would feel guilty and reject himself leading to low self-esteem. Thomas Edison, the great scientist, has given the highest number of discoveries to the world. During his efforts to discover light, he failed more than hundred times. Someone asked Edison, "Don't you feel disgusted after so many unsuccessful experiments?" The answer given by Edison is worth remembering. He said, "After these experiments, I have discovered that these elements on which I have experimented are not useful to produce light. There is need to experiment on some other elements. This knowledge, I have gained, is also a success." There is an unseen success in every failure. Dr. Wayne Dyer, the author of a nationally famous bestseller, *Your Erroneous Zones*, says, 'Nothing fails

like success' because we don't learn anything from it. Success increases our ego and superstition. This does not mean that one should not aim for success. One can aim to have success but at the same time if failure results one should be ready to accept it gracefully and learn new lesson from it so that similar mistake will not be repeated in future.

Try to assess the way in which you have spent your life's time. Rather than counting quantity, count quality. It is more satisfying to do few things well rather than craving to do everything.

Don't load your diary with too many appointments and projects with unnecessary deadlines. Don't think that you must complete this project before 15th to 30th December. Try to get up 30 minutes earlier in the morning. This will help you to prevent unnecessary rushing. Give some margin for your appointments too. Work but in relaxed manner. Try to save your mental energy by getting rid of worries and anger for small matters. Meditation helps to achieve these objectives by relaxing the various systems of one's body and transforming the attitudes towards the way in which life must be spent.

8. Need for Physical Exercise

In developing countries, especially in rural areas where prolonged physical activity is often necessary for survival, incidents of heart disease are much less. Sedentary Life-style can cause heart disease in two ways :

1. It reduces the energy expenditure and, hence, fat gets accumulated. The excess fat gets deposited in the arteries leading to obstruction. Similar changes occur in the coronary blood vessels, affecting the muscles of heart.

2. The relaxation of mind and body that is achieved after physical activity is missing in the person, having sedentary life-style. Hence he becomes more prone to heart diseases.

Although evidence about the link of sedentary life-style to the heart disease is not very strong as the other risk factors, it at least implies that regular physical activity should be encouraged

as a significant factor for the prevention of cardio-vascular diseases.

Due to modernization of work and transport facility, the physical activity is greatly reduced. Exercise which is essential for physical health must be done as a part of leisure time activity. One should recognise the importance of active recreation.

Children should be encouraged to take up physical activities that will continue throughout their life and do not depend on competitive groups.

The best exercise is brisk walking. Strenuous exercise is good for youth but for elderly people, where some changes have already taken place in the coronary arteries, light to moderate exercise is advised. The exercise has to be done regularly. Ten minutes of rhythmic deep breathing is also beneficial.

9. Control of High Blood Pressure

High blood pressure is found throughout the world. It is one of the major health problems. Uncontrolled high blood pressure is one of the important factors causing or precipitating stroke and coronary heart diseases. Blood pressure is increased to an abnormal level due to various psychosocial stress, smoking, high cholesterol diet. Etc..

Research studies have found that systolic blood pressure increased with advancement of age due to a response to the repeated symbolic stimuli coming from intrapersonal, interpersonal, and social environment. Experiments conducted on mice imply that such kind of stress increases the arterial pressure. Childhood experiences play an important role in developing such reactions. Only 5 to 10 per cent cases of high blood pressure are due to endocrine, renal or neurogenic disorders. It has been found that hypertension develops due to the repression of chronic anger resentment or hostility. Uncertainty, insecurity and fight or flight reactions can also precipitate such reactions. Increased activity of sympathetic nervous system and plasma-renin activity leads to hypertension.

Preventive measure should begin from childhood. They

include proper diet, exercise, balanced personality, freedom from tobacco and alcohol, positive thinking, relaxation practice etc. In the present world of competition, it has become a silent killer. Without any warning, blood pressure may increase to an abnormal proportions. Hence after the age of 35-40, blood pressure should be regularly checked. Treatment is necessary if it is above 135/80. Apart from reduction of weight, reduction of sodium intake and modifying the behaviour responsible for hypertension, relaxation, meditation, etc., are becoming popular for controlling hypertension.

10. Prevention of Diabetes Mellitus

A person having diabetes has greater chances of developing cardio-vascular diseases. Due to diabetes management of heart disease also becomes difficult. Moreover, diabetic patients have greater chance of developing complications after heart-surgery as compared to the normal persons.

Clinical studies, done by Hinkle and Wolf, imply that stress and strain predispose a diabetic patient to ketosis. How stress precipitate or cause diabetes can be explained by the following mechanisms.

1. A person, under stress, unknowingly tends to get satisfaction by over-eating. This increases the load on pancreas for insulin production. Such an over-stimulation of the pancreas can lead to diabetes in the long run. Many persons who are overweight are unknowingly passing through this phase.

2. Stress and strain increases the production of anti-insulin hormones. As their action is opposite to that of insulin, demands of insulin increases. After variable duration it can lead to insulin insufficiency and diabetes.

3. Stress directly stimulates the vague nerve innervation of the pancreas and, in turn, can precipitate diabetes.

Prevention and control of diabetes is essential for the prevention and management of heart disease.

11. Neuro-physiological Benefits of Raja Yoga

Having understood the risk factors responsible for heart

disease and benefits of Raja Yoga in overcoming them, it is now appropriate to discuss the neuro-physiological benefits of Raja Yoga.

Several studies done in the different countries have shown that practice of Raja Yoga Meditation helps the person to produce harmonious alpha or theta waves. Uniqueness of Raja Yoga is that such alpha waves are produced not only during the practice of meditation but even while doing mental arithmetic or other intellectual work. This means that a Raja Yogi is able to maintain the tranquility and harmony of the electrical activity of brain even during the day-to-day activities.

Sympathetic arousal is reduced during Raja Yoga practice. Hence the load on heart due to sympathetic arousal is also minimised and, in turn, one enjoys healthy cardio-vascular parameters.

The secretion of serotonin, a neuro-transmitter of brain is increased during meditation practice. It is natural tranquilizer of the body. Similarly the secretion of endorphines and enkephalines are also raised during yoga practice. These are natural pain killers. These changes in the level of serotonin and endorphines protect our heart from having the adverse effects of mental pressures, workload, pains and suffering of life.

The meditation practice reduces Basal, Metabolic Rate (B.M.R.) and increases skin resistance, increases peripheral blood flow, decreases O₂ consumption and CO₂ production and level of blood lactate. These physiological changes are opposite to the fight or flight response described by Walter B. Cannon.

11.2 Decreased Heart Rate during Raja yoga Practice

Method : 23 persons, practising Raja Yoga Meditation taught at Brahma Kumaris Ishwariya Vishwa Vidyalaya were examined before and during the practice of Raja Yoga Meditation. The group included males and females with variable experience of this kind of meditation. Trained medical practitioners examined their heart rate. Their heart rate was measured before meditation practice and twice during the practice of meditation after every fifteen

minutes.

Result : It was found that there was an overall decrease in heart rate during Raja Yoga practice are shown in Table No. 1. The mean heart rate before meditation was 75 per minute.

The mean heart rate after 30 minutes of meditation practice was 68 per minute.

Conclusion : During the practice of Raja Yoga Meditation, one's heart rate is significantly reduced (Fig. 10). This also implies that Raja Yoga Meditation helps to overcome nervousness and anxiety. Practice of meditation lowers the over activity of sympathetic nervous system. Hence it helps to reduce heart rate. As the heart rate is reduced, one is able to remain free from heart diseases.

11.3 Changes in Respiratory Rate during Raja Yoga Practice

Method : Twenty-five persons practising Raja Yoga meditation, for variable duration, were examined before and during Raja Yoga Meditation practice. The subjects included both males and females, having variable duration of experience with Raja Yoga practice. The purpose of experiment was explained to them in order to reduce unnecessary anxiety. The rate of respiration was noted by trained doctors before meditation. The subjects were requested to practise meditation for 30 minutes. During meditation after every fifteen minutes, respiratory rate was recorded. The mean respiratory rate is given in Table No. 2.

Results : In all subjects, respiratory rate was reduced on an average. The rate of respiration was reduced from 18 per minute to 12 per minute (fig. 9). The reduction in rate of respiration is beneficial to one's health and cardio-vascular system.

11.4 Effect of Raja Yoga on Blood Pressure

Method : Ten persons practising Raja Yoga for variable duration were selected at random. Their blood pressure was measured before meditation in sitting position. After explaining the purpose of the experiment, they were asked to practise meditation for thirty minutes. B. P. was measured by the trained doctors twice every fifteen minutes.

Result : There was a significant reduction in both systolic and diastolic blood pressure. The mean systolic B. P. reduction was 8 mm Hg and the mean diastolic blood pressure reduction was 6 mm Hg (Fig. 10). This implies that practice of Raja Yoga Meditation reduces sympathetic arousal leading to lowering of Blood Pressure which has beneficial effect on the heart.

Meditation transforms the whole attitude towards such diseases. Hence the people who are suffering from heart diseases are able to keep them cool and collected while undergoing medical care. It has been quite often observed that heart patients, who are calm and tranquil, the prognosis is far more better than those who are anxious, nervous or depressed. These observations imply that practice of meditation is useful mainly for the prevention of heart disease and it plays a significant role in the management of heart diseases.

EFFECT OF MEDITATION ON RESPIRATORY RATE

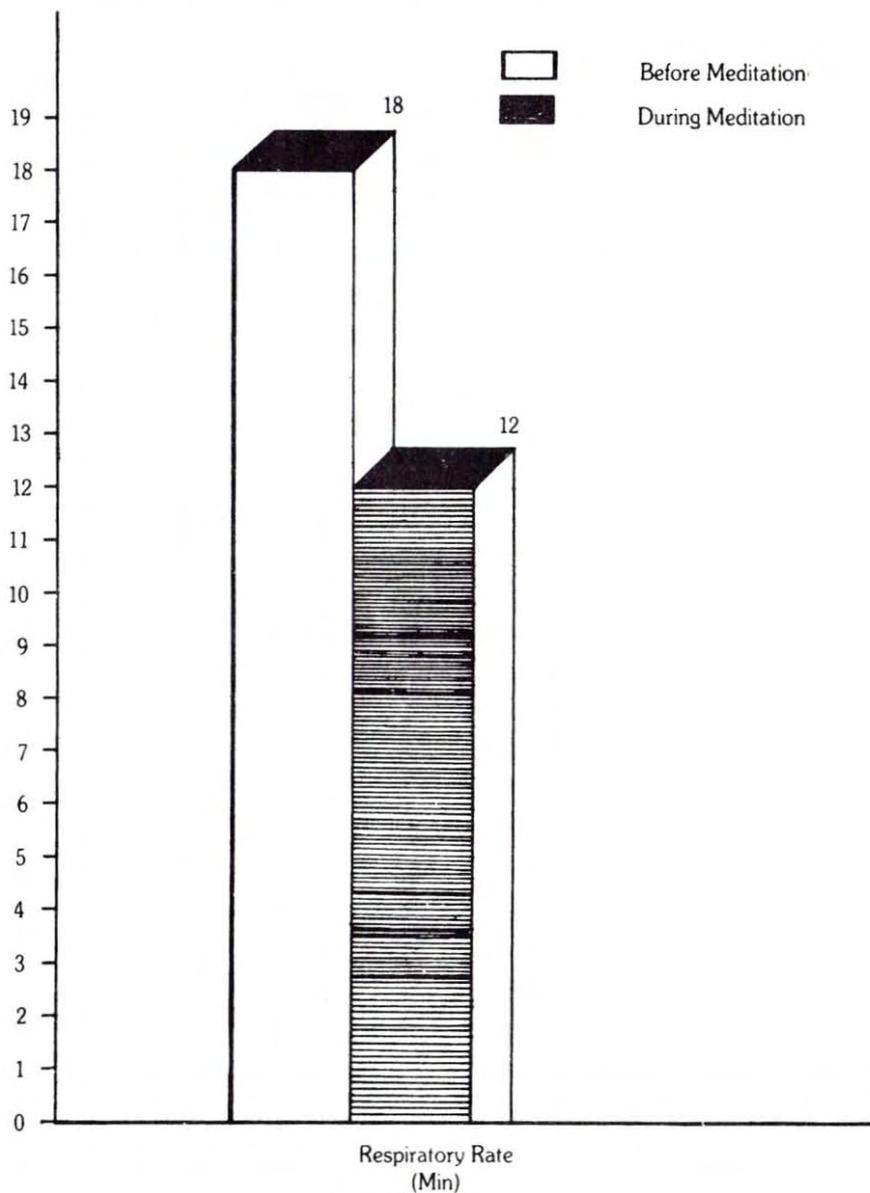


Figure-9

HEART RATE

SUBJECT	BEFORE MEDITATION	DURING MEDITATION After 15 Min.	DURING MEDITATION After 30 Min.	DIFERENCE
1.	73	70	70	3
2.	74	70	68	6
3.	76	74	72	4
4.	80	76	72	8
5.	72	66	64	8
6.	70	68	64	6
7.	73	70	68	5
8.	72	70	64	8
9.	76	72	70	6
10.	74	72	70	4
11.	79	76	72	7
12.	80	76	72	8
13.	78	74	70	8
14.	72	68	64	8
15.	74	70	68	6
16.	68	62	58	10
17.	78	74	72	6
18.	68	64	62	6
19.	76	70	70	6
20.	69	60	58	11
21.	82	78	76	6
22.	80	78	74	6
23.	78	76	70	8
TOTAL	1722	1634	1568	154
AVERAGE	74.869	71.043	68.173	6.685
	75	71	68	7

Table I.

RESPIRATORY RATE

SUBJECT	BEFORE MEDITATION	DURING MEDITATION	DURING MEDITATION	DIFERENCE PER/MIN
1.	17	13	11	6
2.	18	18	12	6
3.	19	18	15	4
4.	17	15	13	4
5.	16	16	10	6
6.	17	15	12	4
7.	19	18	12	7
8.	18	16	11	7
9.	19	15	12	7
10.	19	15	11	8
11.	18	15	14	4
12.	18	12	10	8
13.	16	14	9	7
14.	20	15	12	8
15.	20	18	12	8
16.	16	13	10	6
17.	20	17	12	8
18.	17	15	10	7
19.	16	14	10	6
20.	20	16	12	8
21.	19	13	11	8
22.	18	16	10	8
23.	17	14	14	6
24.	20	17	12	8
25.	18	15	12	6
TOTAL	452	398	289	165
AVERAGE	18.08	15.92	11.56	6.6
	18	16	12	6

Table 2.

MEAN CHANGES IN HEART RATE AND B.P. DURING MEDITATION

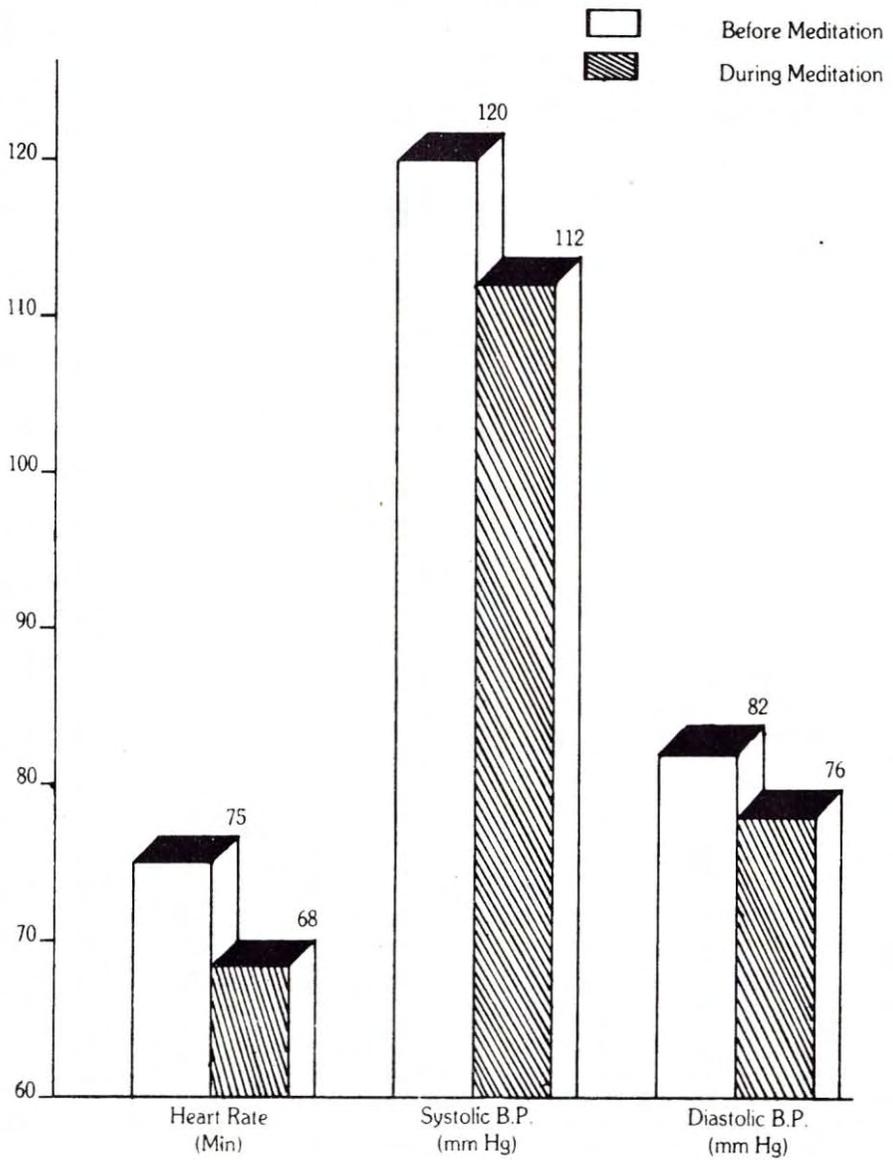


Figure 10

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Divine Invitation

In this book the usefulness of Raja Yoga Meditation in Prevention and Management of heart diseases is discussed. In order to have personal guidance to experience more deeply the benefits and achievements of Raja Yoga Meditation and spiritual knowledge, is offered by appointment and free of charge at any of the more than 6,000 Brahma Kumaris RajaYoga Centres around the world.

Brahma Kumaris Ishwariya Vishwa Vidyalaya is a Non-Governmental Organization, affiliated to U.N. and UNICEF has consultative status as a member of the Economic and Social Council of the U.N.. It has been awarded a peace medal and one International and five National peace messenger awards by U.N. for its positive contribution to the cause of "PEACE".

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