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**Dr. Shyam Sundar Rath**  
Associate Prof. and Head,  
Department of Physical  
Education, Don Bosco College,  
Panaji, Goa, India

## Diet and nutrition their relations to weight control

**Dr. Shyam Sundar Rath**

### Abstract

Today at the dying moment of the 20<sup>th</sup> century, man becomes more conscious about their body fitness and weight control. Most of the people are interested to do exercise regularly and try to maintain their fitness and reduce their excess bodyweight. It is seen that the people are doing exercise at playfields, park not in a systematic manner. Proper guidance in every aspect is highly essential before doing exercise. So, a basic understanding of nutrition and its effects upon health and weight control is required as basic knowledge for all the people. It is fact that overweight or obese is one of the major risk factors in cardiovascular disease and it is also believed that inactivity is the prime cause of it. In this connection nutrition plays a significant role in maintaining proper weight control and preventing possible diseases. The main propose of this topic is to discuss diet and nutrition its relation to weight control for the people.

**Keywords:** Diet, Nutrition, weight control, exercises, amino acid, obesity.

### Introduction

Diet and nutrition plays a major role in our overall health. Today research in nutrition indicates that diet and nutrition often plays a crucial role in the development and progression of chronic diseases, cardio vascular disease, stroke, obesity, and high blood pressure. Nutrition provides energy, regulate body processes and nourish tissue. These major functions are essential for life. To maintain and achieve ideal body weight is a major public health challenge in all over the world. Individual with excess body weight not only experience substantial harm to their physical function, vitality and quality of life but also have an increased mortality rate and reduced life expectancy. Recent research provides that obesity is a complex disorder with multiple contributing factors like physiological, psychological, genetic, metabolic, hormonal, socio cultural, environmental etc. These factors acting together overtime can contribute to weight gain and obesity. To maintain body weight, energy intake and energy expenditure must be equal. When calories consumed are greater than energy expended, individual gain weight. When energy expenditure exceeds calorie intake, weight loss occurs. So, physical activity with proper balanced diet significantly contributes of any fat-loss programme. There is no short cut method and only dieting will not advisable for weight loss and obesity. Before attending physical activity the person must aware about FITT formula that is frequency, intensity, time and type of exercises he or she must do to control body weight.

### Food and Nutrition

The word nutrition is derived from the term 'nutricus' meaning to suckle at the breast. It signifies a dynamic process in which the food that is consumed is utilized for nourishing the body. Nutrition is all about the study about food and how our body use food as fuel for growth and daily physical activities. The council of Food and American Medical Association (AMA) defines nutrition as "the science of food, the nutrients and the substances therein, their action, interaction, and balance in relation to health and disease, and the process by which the organism ingests, digests, absorbs, transports, utilizes, and excretes food substances". Whereas the food is a composite mixture of various substances, the quantity of which may vary from a fraction of a gram in certain cases, to hundreds of grams in others. The term foodstuff is defined as "anything, which can be used as food". The six classes of food or nutrients are necessary for every human being. These nutrients are proteins, carbohydrates, fats, vitamins, minerals and water. The energy in a particular food depends on how much carbohydrate, protein and fat the food contains.

**Correspondence**  
**Dr. Shyam Sundar Rath**  
Associate Prof. and Head,  
Department of Physical  
Education, Don Bosco College,  
Panaji, Goa, India

The food has mainly three functions as (i) source of energy; (ii) regulate the body process and (iii) maintenance, repair and growth.

### **Classification of Foods**

The dietary constituents of food are proteins, fats, carbohydrates, vitamins, minerals and water. Most food contains all these factors in varying proportions. The human body is built up from these six constituents i.e., water 63%, protein 17%, fat 12%, minerals 7% and carbohydrates 1%.

### **Protein**

Protein is called bodybuilding food. It contains nitrogen in addition to carbon hydrogen and oxygen. They are combined in a structure called an amino acid. There are 20 different amino acids that are important in human nutrition. The body can synthesize some amino acids but cannot synthesize others. So it must be obtained directly from the diet. The eight amino acids the body cannot make are referred to as essential amino acids. These are isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan and valine. Out of eight amino acids two of the essential amino acids lysine and tryptophan, are poorly available in plant sources. Thus strict vegetarians should make their special diet plan considering these two amino acids which is highly required. The main functions of proteins are (i) for body building (ii) for repairs and maintenance of body tissue. (iii) For synthesis of certain substance like antibodies, plasma proteins, hemoglobin, enzymes and hormones. There are two main dietary sources of proteins (a) animal sources: eggs, milks, meat, fish, etc. (b) plant sources: pulses, cereals, nuts, beans etc. The daily requirement of protein varies from person to persons apart from age sex and physiological state. Most nutritionist suggests that an adult should take 0.9 grams of protein per kilogram of his body weight. For example if the body weight of the adult is 75kg, the daily requirement of protein is 67.5 grams. One-gram protein gives about 4kcal of energy.

### **Fat**

Fat is also known as lipids are found in foods and in our body. The fat can be categorized into three main groups such as triglycerides, cholesterol and phospholipids. All our body fat or fat contains in the food are usually referring to triglycerides. More than 95 percent of our body fat is in the form of triglyceride. Phospholipid and cholesterol make up the remaining 5 percent of fat in the diet. Phospholipids are a component of all cells and it exist many types in our body. Cholesterol is also very important to the body and it can be manufactured in the body like phospholipids. So, both are not treated as essential nutrients. Too much eating saturated fat raises our blood cholesterol level and that is one of the major causes of coronary heart disease. Fat contain carbon, hydrogen and oxygen and are composed of fatty acids. One gram fat contains about 9 calories of energy. Fat are essential for the absorption of vitamins A, D, E, K and it provides us energy. It also works as a heat insulator to protect body against cold weather. Fat in the body provides support to various organs like heart, kidney and intestine. There are two main sources of fat (i) Animal sources; meat, milk, egg yolks, crabs etc. (ii) Vegetable sources: edible oils and ghee.

### **Carbohydrate**

Carbohydrates are the chief sources of energy of our body. It classified as monosaccharides, disaccharides or polysaccharides. Monosaccharides carbohydrate contains a single 6-carbon sugar molecule. It is the glucose, which can

be oxidized and used directly by the body energy, or it may be broken down into glycogen stored in liver and muscles. Disaccharide carbohydrate contains two 6- carbon sugar molecules, which include maltose, sucrose and lactose. Polysaccharide carbohydrate contains three or more 6- carbon sugar molecules, which include the starches. Starch is found in potatoes cereal and bread product such as rice, corn, wheat and barley. Carbohydrates are found in all foods and more in grains, fruits and vegetable. Carbohydrates are the body's main source of energy.

### **Vitamins**

Vitamins are complex chemical substances that are essential for human life. Vitamins are divided into two groups i.e. water and fat soluble. Vitamin A, D, E and K come under fat soluble and vitamins B and C comes under water soluble vitamin. Each vitamin has a specific function to perform and deficiency of any such vitamin causes specific disease. Vitamins help in the maintenance of proper health and normal growth. It stimulates and gives strength to digestive and nervous system. It prevents and cures various diseases caused by the deficiency. The vitamin A deficiency for an extended period can cause blindness and lack of niacin can cause mental illness.

### **Minerals**

Minerals are inorganic substances that are vital to many body functions. It helps to build strong bones, teeth, helps nervous systems transmit messages, maintain water balance in the body and muscles functions. Minerals like vitamins provide no energy. It not only found in bones, teeth, muscles, cells, tissues, and body fluids but they also are present in vitamins, hormones and enzymes. The most important minerals those required for maintenance of health are: calcium (1.5%), potassium (0.35%), sulfur (0.25%), sodium (0.15%), chlorine (0.15%), magnesium (0.05%), iron (0.004%), copper (0.00015%) and iodine (0.00004%). It is important to note that exercise and work especially in hot climates can alter the body's balance for certain minerals such as sodium, chloride, potassium, calcium, magnesium and phosphorous. It is also essential that the depleted minerals should be replaced by diet or through supplementation. Iron supplementation is essential for young adult women during their menstrual period.

### **Water**

Water like vitamins and minerals is classified as non-energy nutrient. It has several important function in human body. It is the medium for all body chemical process to take place. It also assists in forming plasma, digestion of foods, glandular secretion and in waste elimination. Water is lost in body through the skin in urine as water vapor in breathing, in faces. The daily consumption of water required to our body is six to eight glasses. Our body replace the water is around 2.5 to 3 liters during prolonged work in heat so the person should take 100 to 200 ml of water in every 15 to 20 minutes. Water makes up about 60 percent of the body's weight and is considered the most essential nutrient.

### **Calorie**

One calorie or kilocalorie represents the heat energy required to raise the temperature of kilogram of water by one degree of centigrade. Calorie is the unit of energy. We use calorie for measuring energy in the same manner as we measure height in meter or use kilogram for measuring weight of a thing. The heat required to raise the temperature of one liter of water by one degree centigrade has been defined as calorie.

**Weight control**

A person should not forget two components to the weight control equation that he or she consumes and the number of calories that he or she burns. The objective of weight control can be achieved a balance between the two. When imbalance does occur the body weight of the person either increases or decreases. For example, if the person take more calories required than his body then definitely body weight will increase and vice versa. An individual can increase and decrease his body weight in three ways (i) diet control, (ii) through exercise or manipulating the number of calories burned up and (iii) combination of both. The individual should not take very low calorie diets. This type of diet restriction not only decreases our resting metabolic rate (BMR) but it will also deprive the basic nutrients required for normal physiological functions of our body. Under no circumstances the women and men should reduce their diets below 1200 and 1500 calories respectively. One thing we should understand that the fat is gained over a period of months and years and not overnight. Equally, weight loss should be accomplished gradually and not suddenly. When weight loss is pursued by means of only dietary restrictions, there will always be a decrease in lean body mass (muscles protein, along with vital organ protein). The Loss of lean body mass is never desirable and suggested by exercise physiologist and trainer because it weakens the organs and muscles and slows down the metabolism. It is very important to know that in near fasting diets, up to 50 percentage of the weight loss can be lean body mass, and the other 50 percentage will be actual fat loss. When diet is combined with exercise, 98 percentage of the weight loss will be in the form of fat, and there actually be an increase in lean tissue. It is observed that most of the college going girl's students and housewives in our country prefer to reduce their body weight adopting the dieting method. No doubt they loss their weight soon and same time they tired and fed up after eating the same thing in their daily routine life. After few weeks or months again they revert back to their old eating habits, as a result they gained their weight quickly and sometimes more than their previous body weight. The regular exercise programme with caloric restrictions is the best method for weight reduction. In fact, majority of research in recent years has concluded that a combined exercise (progressive cardio-respiratory endurance type) with diet programme over a relatively longer period of time is the best method of losing weight. Again medical expert suggest that individual should not lost more than 8 to 10 kg in a year.

**Important points to remember before reducing the body weight**

1. Age/sex and their job work.
2. Knowledge about nutrition and balance diet (daily food requirement with calories values).
3. Body composition (body fat percentage).
4. Height/weight relation and the exact weight to be reduced.
5. Proper knowledge about exercise.
6. Warming up and cooling down process before and after exercise.
7. Intensity and volume of the training load.
8. Duration of their exercise programme and sequence of exercises.
9. Aliments if any and their remedial and therapeutic exercises.
10. Eat variety of vegetable and fruits.

11. Do not skip meals or go more than 3 to 4hours without eating.
12. Consult with a certified trainer before involved in weight loss programme.

**Recommendations to a lifetime weight management program**

1. Select enjoyable physical activities like aerobics, swimming, tennis, walking, jogging, recreational games, etc.
2. Physical activities burns calories and lead to weight loss.
3. Develop healthy eating patterns. Eat your breakfast, lunch and dinner in time.
4. Consult with a dietician before cutting your regular diet
5. Always avoid process food.
6. Modification of eating style (do not take any food in between your breakfast, lunch and dinner).
7. Know the energy balance equation. When energy expenditure equals with energy intake, the body maintain its weight. When energy expenditure is greater than energy intake, the body loses weight and when the energy expenditure is less than energy intake, the body gain weight.
8. Obesity sedentary lifestyle.
9. A body composition analysis allows for the assessment and percentage of fat and also motivates to participate regular exercise programme.
10. A lifestyle approach that includes regular physical activity and a nutritious diet is essential in achieving and maintaining healthy weight.

**Conclusion**

The diet is required for human growth, energy, and regulating body processes. There are six classes of essential nutrients. One of the most important features of nutritious diet is to obtain all required nutrients through a reasonable calorie. There are many food stuffs which contain more calories but nutritious value is very poor. So proper diet is required in our day today's life to meet nutritional requirements, promote health, support active lives and reduce risk factors of chronic disease. Nutrition plays a major role in our overall health. Heavy weight management includes a lifetime commitment to a healthy lifestyle. Two important factors are associated in maintaining and reducing excess body weight. The first is regular eating habits of nutritious diet or balanced diet and second is performing regular physical activities. The goal of physical activity related to achieving and maintaining a healthy body weight should be based on activities that are enjoyable and can be performed consistently.

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