

### Objectives

- To get information about the food nutrients, its sources and functions
- To know importance of Balanced Diet
- To know about energy sources for Sportsmen.
- To know energy requirements according to sports and information regarding diet.
- To know importance of maintaining balanced water level of sportmen.
- To know the relationship between diet and behaviour.

Diet is an important factor for good health. Adequate diet is essential for the growth of the body and good health. In fact, it is the food that fuels your body to function smoothly. Your health depends on the diet you take.

The food we eat is called diet. Your diet majorly includes cereals, legumes, oilseeds, vegetables, fruits, milk, dairy products, eggs, meat, fish, oil, ghee, sugary substances, spices, etc. Although there are many types of nutrients, the

basic nutrients are minerals and water. The proportion of each of these components varies according to the quantity of the substance. The process of taking nutrients into the body and using them is called 'nutrition'. Nutrition is the study of nutrients in food.

### Need of Diet and Nutrition

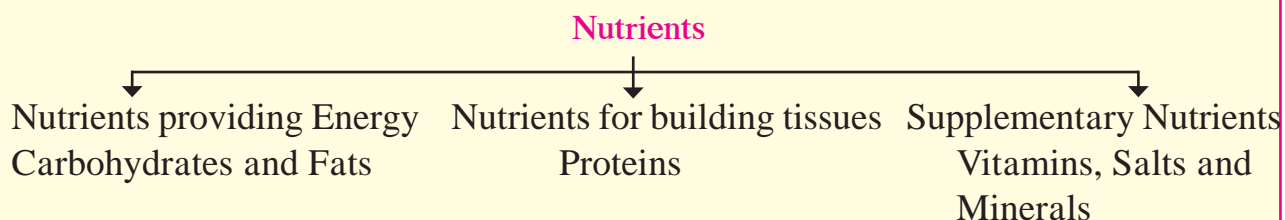
- \* Energy for physical effort and movement.
- \* For functions of cells, tissues and glands.
- \* Growth and development of the body.
- \* To maintain body temperature.
- \* To develop immunity in the body.

### Classification of Nutrients :

We receive many components from food which are called as nutrients. The nutrients are classified into two groups:

- 1. Staple Nutrients / Macro-Nutrients:** Carbohydrates, Protein and Fats are main nutrients and are required in higher quantities in the body.
- 2. Micro Nutrients:** Vitamins, Minerals these are required in lesser quantities in the body. These are called as Micro-Nutrients.

### Classification of Nutrients according to its functions



## Carbohydrates:

They perform important function of supplying energy to the body. From one gram of carbs one receives four kilocalories of energy. From the total energy required for the body one should receive 55-60 % from Carbohydrates.

We get carbohydrates From the following foods Cereals like Cow, rye, millet, maize, rice, etc. One gets carbohydrates from Fruits like mangoes, grapes, bananas, apples, potatoes, sweet potatoes and milk and milk products. After digestion, they are converted into glucose. Excessive amounts of glucose are stored in the form of glycogen. When body is deprived of food, this glycogen is broken down and re-formed into glucose and the body gets the required energy.

## Protein:

It is essential for nourishment, growth and degeneration of the body as well as for strengthening the bones. 4 Kcal of energy is obtained from 1 gm of protein. About 15% of the total energy requirement should come from protein sources. Pulses, legumes, groundnuts, cashews, almonds, apricots, milk, dairy products, meat, fish, eggs are other sources of protein.

### Did you know?

One requires sufficient energy for daily routine work, maintaining body temperature, metabolism and support growth process. The Protein from our

daily diet are made from amino acids. They are needed for many functions that living beings perform. Nearly half of your body Protein are in form of muscles. The quality of the Proteins depends on the amount of essential amino acids available in the food.

## Fats:

Fats are essential for energy production, controlling body temperature, lubrication of the joints and nourishment of the body. About 25-30% of the total energy you need should come from Fats sources. Oilseeds, Coconut, Oil, Ghee, Butter, Milk, Meat, Fish and Fish Oil are the main sources of Fats. Nine kcal of energy is derived from one gram of Fats.

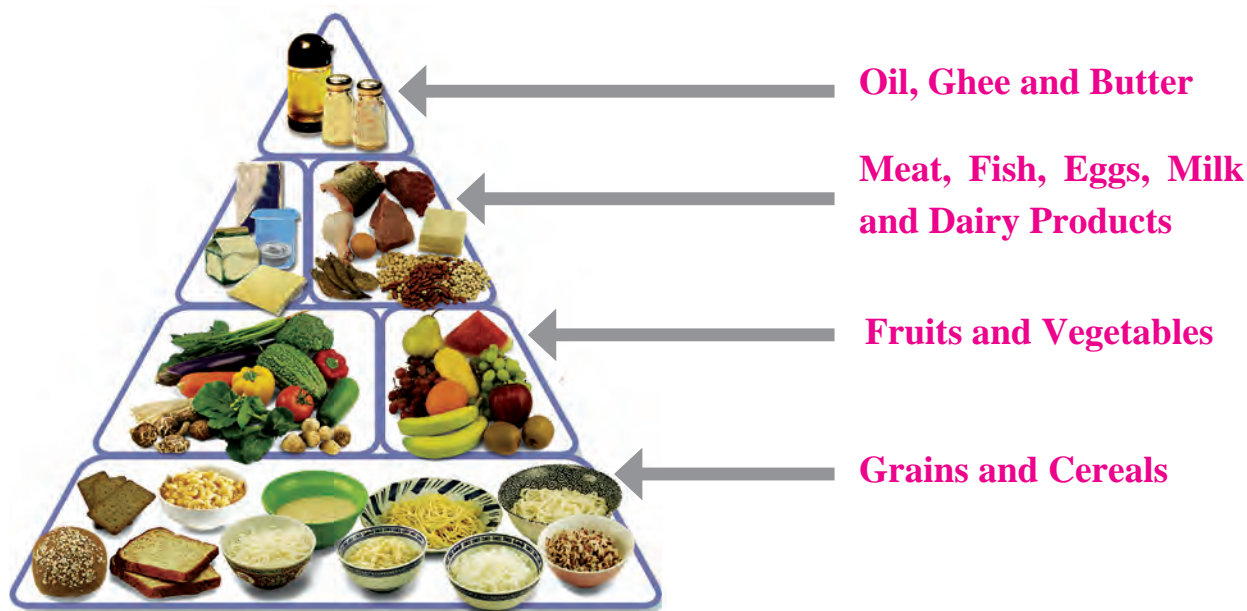
## Minerals:

Minerals are required for good health and growth of body, teeth, bones and nerves. Green leafy vegetables, legumes, cashews, almonds, dates, sesame, pulses, eggs, meat, fish, marine and other sources are rich in minerals like calcium, phosphorus, iron, iodine, potassium, copper, magnesium, sodium, etc.

## Vitamins:

Vitamins are essential nutrient for proper growth and development of the body. Lack of vitamins leads to many disorders. The body receives the required vitamins from a wide variety of vegetables and fruits such as green leafy vegetables, broken grains, bananas and animal products like eggs, milk, butter, meat and fish.

## Food Pyramid



### Types of Vitamins:

**1. Fat soluble Vitamins:** A, D, E and K

**2. Water Soluble Vitamins:** (B1, B2, B3, B5, B6, B7, B9, B12) and vitamin C

### Water:

Body contains 65-70% water which is essential to maintain the body temperature. Water is essential for digestion, absorption and to transport essential nutrients and also for excretion.

### Balanced Diet:

A Diet consisting of a variety of different types of food and nutrients like carbohydrates, proteins, fats, vitamins, minerals and water in adequate amounts for good health is balanced diet.

- \* A balanced diet provides good nutrition to the body.
- \* One gets the required amount of calories on a daily basis. As a result, one gets better physical and mental health.

- \* Develops the ability to work.

- \* Increases immunity

A normal sedentary Indian requires 2500 Kcal energy. The individual should get his energy from 55-60% Carbohydrates, 10-20% Protein and remaining 25-30 % from Fats. Adequate balanced diet is required for the athletes so that they do not get tired due to the energy expended for daily exercise and practice and the energy needs to be replenished faster.

### Diet Plan for Athletes:

The most important factor in achieving the highest level of performance for any player is the weight of the player. Similarly, the performance depends upon the amount of body fat and water, the capacity of muscles, respiratory and circulatory system. Diet depends on factors such as the game of the athlete, his weight, his age, level of training and environment. It is important for the athlete

to increase the amount of carbohydrates in the diet in order to produce an abundant amount of glucose. This is because the extra glucose is transformed into glycogen. At the same rate at which energy is used by the muscles, the same amount of energy is supposed to be generated which depends on capacity of muscles, ATP produced in muscles and similar processes. Glucose and Glycogen produces ATP. Athletes involved in sports requiring more muscles and efficiency should consume high-carb foods in larger quantities in their diet.

Only 5 to 15% of the total energy required by the body is derived from protein. Even if you exercise or play until you get tired, it does not affect your protein metabolism. Athletes require protein to develop muscles during training period.

In recent times an increase is seen in the use of these vitamin supplements for weight gain. However, according to physicians, such forms are harmful to the body. This can have a direct effect on the brain. Therefore, the diet should be proper. It is beneficial for the players as well as the general public to have a diet without taking any shortcuts. So don't neglect diet.

### **Types of Sports and Energy requirements**

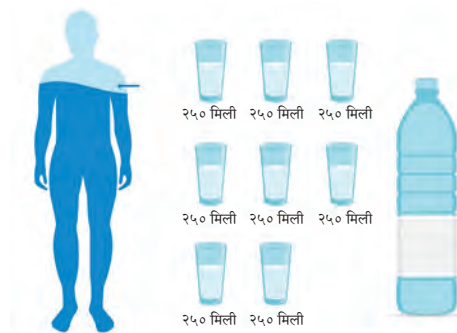
The need for energy increases according to the type of sport including more movement and more physical fitness. Athletes need to meet their

increased energy needs by taking adequate amounts of nutrients in their diet to enhance their performance. Athletes put in a lot of effort during training and they spend more calories.

Players work hard while training and much calories are used for energy. If more calories are being spent, then the same amount of calories should be consumed by the players. The proportion of nutrients i.e. Carbohydrates, Proteins, Fats, Vitamins and Minerals should be increased considering the increase in expenditure of Calories.

### **Water Balance in the Body**

After activity there is increase in body temperature and to decrease the temperature, the body sweats. Even if the sweating is appropriate mechanism to decrease the body temperature one needs to take care that he doesn't get dehydrated due to the loss. The water loss due to sweating causes fatigue. If there is decrease in 2% body weight during activity it results in decreased muscular function and water needs to be replenished whenever athlete has the opportunity i.e. pre-during-post competition and also during breaks. It is beneficial for athletes to consume glucose water, lemon juice and sports drinks to prevent fatigue and generate energy. To prepare Sports drink at home add 1 tbsp salt + 4 spoon glucose + half lemon to 1 litre of water. It is important to consume adequate amount of water in sports of high sweating and high temperature.



## Better Health through Diet

To achieve better health through Diet below mentioned things can be done:

- \* The diet should be for health rather than for taste.
- \* The duration between meals should not be less than three hours and more than 6 to 8 hours.
- \* Dinner should be easy to digest. The duration between dinner and sleep should be minimum two hours.
- \* Food should be fresh, hot and liquid/watery.
- \* Include protein rich diet in case you are performing strengthening exercises.
- \* Give priority to foods that are rich in fibre in your diet.
- \* Your diet should include 25-30 gm sprouted pulses.
- \* Consuming water in the morning, buttermilk in the afternoon and milk at night is beneficial for better health.

## Diet and Behaviour

The conduct, thoughts and health of a person is the way he takes his diet. The diet we take determines the chemical

state of the blood. According to the research of Ayurveda and Yoga, human is considered to be meritorious.

- \* **Satvik / Satvogun:** Enthusiasm, perseverance, toughness, Calm attitude, stability, etc.
- \* **Rajas / Rajogun:** instability, volatility, anger, hatred, inflammation, etc.
- \* **Tamisik / Tamogun:** lazy, sleepiness, aggressive nature, greed, jealousy, etc.

These are three qualities of human behaviour and similarly the food we eat contains three qualities.

- \* **Satvik / Satvogun:** All sweet fruits, green leafy vegetables, vegetables, milk, ghee, honey, almond, pista and dates.
- \* **Rajas / Rajogun:** legumes, fried foods, jaggery, sugary and fine flour
- \* **Tamisik / Tamogun:** stale food, all meat, eggs, alcohol, tobacco and drugs.

For quality behaviour the individual should intake Satvik Diet. Considering the negative effects the Tamsik Diet is to be avoided.



**Satvik  
food**



**Rajas  
food**



**Tamisik  
food**





## Exercise

### Q1. Fill in the blanks

1. Intake of Nutrients into the body and using it means .....
2. From 1 gm of Protein ..... Kcal energy is received.
3. Players performing strengthening exercises should increase proportions of ..... in their diet.
4. Normal sedentary individual requires ..... Kcal energy daily.

### Q2. Write only names

1. Factor regulating body temperature

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2. Fat Soluble Vitamins

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3. Energy-rich compound formed from Glucose

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4. Nutrient important for stronger bones

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### Q3. Match the Following

Part A	Answers	Part B
1) Sprouted Food	(.....)	a) Temperature Control
2) Fried Food	(.....)	b) <i>Amrutann</i>
3) Water	(.....)	c) Vitamins
4) Micro-Nutrients	(.....)	d) <i>Vishann</i>

### Q4. Answer in brief

1. Write the process to prepare Sports Drink at home.

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2. Write importance of Balanced Diet.

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3. On which factors the diet of Sportsmen depends?

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4. Classify Nutrients according to their functions.

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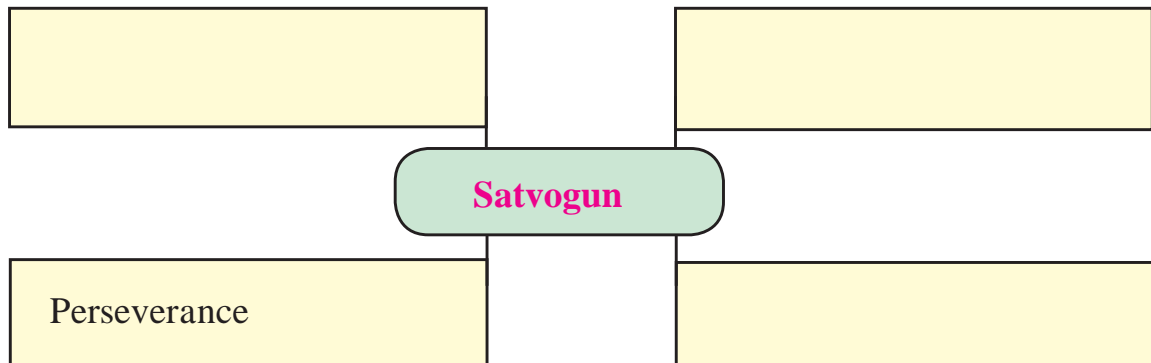
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**Q5. Complete the following Diagram.**



**Supplementary Exercise:**

- 1) Get information about different crops and food through internet.
- 2) Collect detailed information about Balanced diet.

