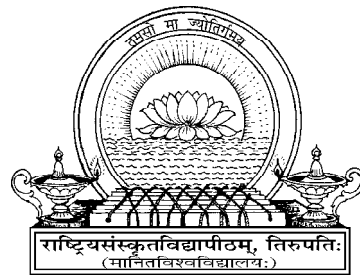


**3<sup>rd</sup> Electives**  
**Yoga & Meditation (Optional)**

**SASTRI/B.A II YEAR**  
**Part II - Paper - II**

**BASIC MEDICAL SCIENCES**  
*(ANATOMY,PHYSIOLOGY & BIO-CHEMISTRY)*

**YOGIC TEXTS AND BHAGAVADGITA**  
*(Patanjali Yogasutra Chapter II (Sadhana Pada),*  
*Bhagavadgita Chapter-VI (Dhyana Yoga)*



***Directorate of Distance Education***

National Sanskrit University  
(Erstwhile Rashtriya Sanskrit Vidyapeetha, Tirupati)  
Accredited at 'A' level by NAAC  
Tirupati - 517 507 (A.P.)



# CHAPTER 1

## AN INTRODUCTION TO HUMAN BODY

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The human being is a very complex multi cellular organism. The study of human body is divided under two major headings.

1. Anatomy
2. Physiology

**1. Anatomy:-** It is the study of the structure of the body as a whole, as also the study of its individual parts and their relation to one another.

**2. Physiology:-** It is concerned with the way in which the various parts work and how they are integrated to produce a coordinated action of the whole body.

A cell is the smallest functional unit of an organism. Groups of cells having the same physical characteristics and performing similar specialized functions are described as tissues. Various types of tissues join to form an organ and a system consists of a number of such organs and tissues. Although each system carries out one or more of the vital functions of the body, none of the systems can exist in isolation because of specialization of cells.

The human body consists of the following systems:-

**1. Skeletal systems:-** It consists of the body framework. It acts as the supporting structure and offers protection to other organs.

**2. Muscular system:-** The muscles are attached to the bones. They help to give the body its shape and power to move at will.

**3. Nervous systems:-** It serves to control and coordinate various parts of the body. It also makes an individual keenly aware of the environments in which he lives.

**4. Circulatory systems:-** It distributes the essential supplies of oxygen and nutrient materials to all the parts of the body and also removes the waste products from the body.

**5. Respiratory system:-** It supplies the body with oxygen from the atmosphere and at the same time disposes of carbon dioxide and water vapour from the body.

**6. Digestive system:-** It is concerned with the intake of food, its digestion and absorption.

**7. Excretory system:-** It removes waste products from the body. It comprises of the organs like kidneys, large intestine, skin, lungs, etc.,

**8. Endocrine system:-** It produces certain chemical substances through endocrine glands. These chemicals are termed as hormones and they regulate body processes.

**9. Reproductive system:-** It is the means by which life is transmitted from one generation to another in order to continue the life cycle on the earth.

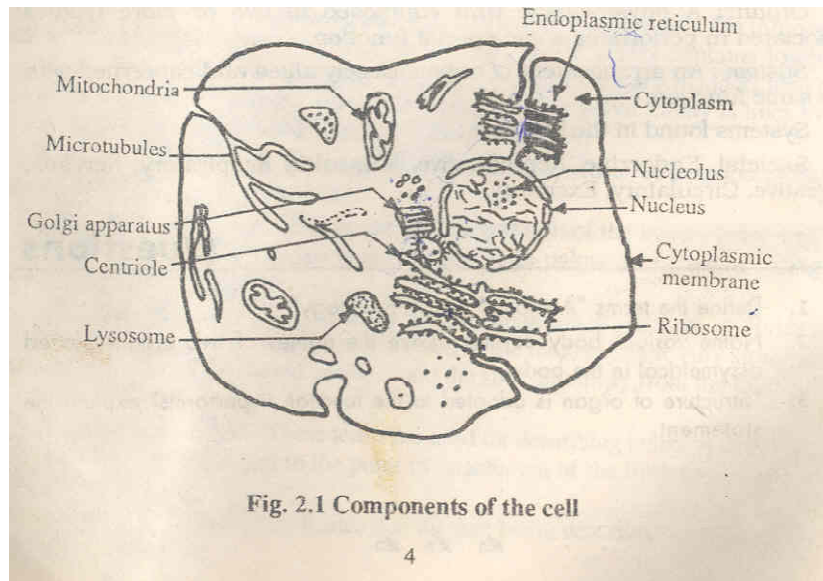
All these systems work as an integrated whole producing the coordinated effort necessary for the maintenance of health and well being.

### THE CELL STRUCTURE AND FUNCTION

The living body is made up of innumerable units or cells. The combination of a large number of cells is called a tissue. The tissues form organs and a combination of organs makes the whole living organism.

The cell theory was propounded by Schleiden and Schwann in 1839.

The chief organelles present in a cell are the cell membrane, the nucleus, mitochondria, endoplasmic reticulum, ribosome's, lysosomes, and Golgi bodies.



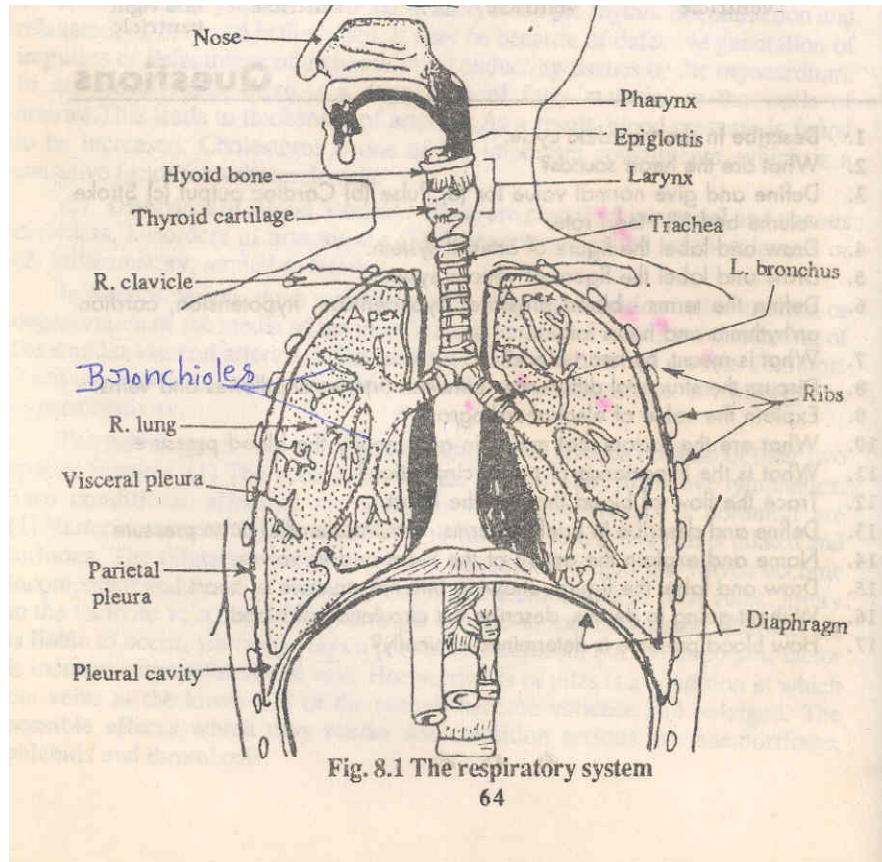
- 1. Cell membrane:-** The cell is enveloped by a thin membrane called the cell membrane or plasma membrane. It acts as a selective sieve through which certain substances are allowed to enter into the cell. It also helps in the transport outside the cell few other substances in the form of excretion.
- 2. Nucleus:-** This nucleus of the cell is easily seen under the microscope. Each cell has usually one nucleus. The nucleus is enveloped by the nuclear membrane. The nuclear membrane is not always continuous and may have openings, or connections with a network of membranes of the endoplasmic reticulum. The nucleus consists of nucleoplasm which contains various enzymes, lipids,  $Ca^{++}$ ,  $Mg^{++}$  ions, RNA and DNA.
- 3. Mitochondria:-** The mitochondria are the largest organelles in the cytoplasm. The mitochondrion is surrounded by a smooth outer membrane and by an inner membrane enclosing a fluid matrix. The fluid matrix contains the enzymes of the citric acid cycle.
- 4. Endoplasmic reticulum:-** The endoplasmic reticulum is a complex system of membranes present in the cytoplasm which may appear as continuations of the nuclear membrane and also as the cell membrane. An important enzyme present is glucose – 6 – phosphatase.
- 5. Ribosomes:-** The ribosome's are present on the rough surfaced reticulum. They contain about 50 percent RNA and 50% protein.
- 6. Golgi bodies:-** The Golgi bodies are closely related to the endoplasmic reticulum in structure and function. The proteins produced by the ribosome's are stored in the form of secretory granules in the golgi bodies. Pro-insulin produced from pre-proinsulin in the endoplasmic reticulum is transferred to the glogibodies where it is converted to insulin and packaged before secretion. The enzyme present here is alkaline phosphatase.

7. **Lysosomes:-** Lysosomes are present in the cytoplasm and may resemble mitochondria in shape and size. They are bound by a lipoprotein membrane and appear as bags filled with digestive enzymes.
8. **Centrosomes:-** These are apparent only when a cell is preparing to divide.
9. **Cytosol:-** No characteristic structure is assigned to this. Glucose, products of metabolism like urea and creatinine,  $\text{Na}^{++}$ ,  $\text{K}^+$ ,  $\text{Mg}^{++}$ ,  $\text{Ca}^{++}$  and phosphate are present in the cytosol.



## CHAPTER 2 RESPIRATORY SYSTEM

Energy is released from food material when it undergoes oxidation in the Cells. Oxygen is necessary for the process of oxidation. There is continuous interchange of gases (oxygen and carbondioxide) between organism and the external environments. A system of specialized structure performing this function is called “Respiratory system”.



### **The organs of the respiratory system are :-**

Nose, pharynx, Larynx, trachea, bronchi, bronchioles, two lungs and their coverings, pleura and muscles of respiration, diaphragm.

**Nose:-** It is the first respiratory passage through which incoming air passes and also out. Nose ensures warm, moistened and filtered air to the respiratory system. Particles of dust stick to the mucous in the nose.

**Pharynx and Larynx:-** These are the organs in the respiratory as well as the digestive systems. The air passing through nose is further moistened and warmed here in the pharynx. Larynx provides a passage for air between pharynx and the trachea. Responsible for producing sound here through vocal cords.

**Trachea, Bronchi, Bronchioles:-** The process of respiration is divided into two phases External respiration and internal respiration. During respiration the air flows along the trachea, Bronchi and Bronchioles to the alveoli.

**Diaphragm:-** It is a muscular flap which separates the thoracic cavity from the abdominal cavity.

**Lungs:-** Lungs are principal organs of respiration. They are two in number on each side, cone-shaped. The lungs are divided into lobes by tissues. The right lung has three lobes and left has two lobes and surrounded by a double serous membrane called pleura.

**Mechanism of Respiration:-** It is the process by which the lungs are expanded to take air in and the contracted to expel (expiration) it out. Respiration consists three phases:- (1) Inspiration (2) Expiration (3) pause per minutes (Retention). Sixteen to seventeen (16 to 17) cycles of these phases in normal adults. The main muscles of respiration, in normal quiet breathing are intercostal muscles and diaphragm.

**Physiology of Respiration:-** During external respiration air which contains oxygen is taken in and air flows along trachea and bronchial tubes to the alveoli, where it contacts with the blood in the pulmonary capillaries. Here oxygen passes across and is taken up by the hemoglobin of red blood cells. Then the blood is carried to the heart and is pumped in arteries for circulation to all parts of the body. Simultaneously, carbondioxide, which is waste product, passes across the membrane of the blood capillaries to the alveoli, from alveoli the air passes through the bronchial tubes to the trachea and is breathed out through nose and mouth. During internal respiration the blood, with its hemoglobin saturated with oxygen circulates throughout the body. Various tissues of the body take oxygen from rich hemoglobin and the blood receives the waste product of oxidation, i.e., carbondioxide.

**Vital capacity:-** It is the volume of air that passes into and out by the Lungs during forcible inspiration and expiration is 3 to 5 liters.

**Tidal volume:-** Amount of air inspired and expired in an ordinary quiet breathing volume is 500 ml.

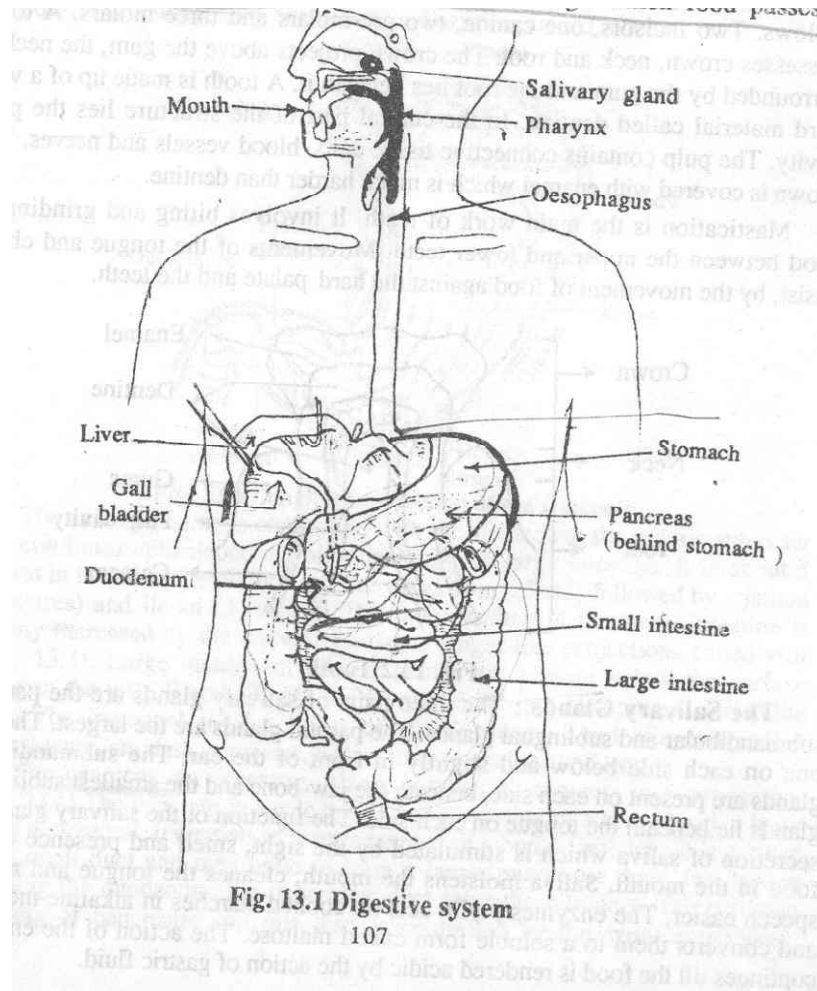
**Residual volume:-** Amount of air remain in the lungs after powerful expiration is about 1200 ml to 1500 ml.

**Inspiratory Reserve Volume :-** It is amount of air that can be breathed in and above the tidal volume, by the deepest possible inspiration, It is estimated to be about 1800 to 2000ml.

**Expiratory Reserve Volume :-** It is the amount of air that can be breathed out after a quite expiration by the most forcible expiration. It is equal to about 1400ml.

## DIGESTIVE SYSTEM

The cell life requires essential materials for growth, for carrying out other structural activities and as a source of energy for activities. The energy comes through food. The food That we eat contains complex substances. It is necessary to convert these complex substances into simple form so that cells can utilize it. The conversion of complex food into simple form so that it is easily absorbed in the blood is described as digestion. Digestive system is concerned with the intake of food, its digestion and absorption. The alimentary canal consists of the following parts.



Mouth, Pharynx, Oesophagus, Stomach, Small and Large Intestine, rectum and anal canal.

In addition to the mouth contains the teeth, which masticate the food, and the tongue, which assists the taste and swallowing several salivary glands and group of glands pour important digestive fluids into the alimentary tract. This alimentary tract begins at the mouth and terminates at the anus.

The entire alimentary canal is lined by mucous membrane from the lips to the end of the oesophagus called epithelium. From the stomach to the anal canal it is composed of columnar cells.

## PROCESS OF DIGESTION

During the processes of digestion food is broken down into simple substances, which can be absorbed until used by the cells of the body tissues. The various changes in the character of food are brought about by the activity enzymes contained in the different digestive fluids. The substances have a specific action – they select and act on one type of food and have no effect on other types.



**The Oesophagus :** Is a muscular tube 23 to 25 cm., long, reaching from the pharynx above, to the cardiac orifice of the stomach.

#### **SALIVARY GLANDS AND SALIVA:**

Saliva is a watery, alkaline fluid. The action of saliva is both physical and chemical. By its physical action it moistens the mouth, cleanses the tongue and makes speech easier. It lubricates the food in the mouth and makes swallowing easier, and by moistening the food it dissolves particles, so that the chemical action upon these is facilitated.

The chemical action of saliva is due to a permanent ptyalin which is an alkaline medium acts on sugar and cooked starches, and converts them to a soluble form called maltose.

#### **ABDOMINAL CAVITY:**

The abdomen is the largest cavity in the body. Below the diaphragm, above the brain of the true pelvis.

The greater part of the alimentary canal, the stomach, and small and large intestines.

The liver occupies the right upper part, lying beneath the diaphragm, (and overlapping the stomach and the first part of the small intestines.) The gall bladder lies beneath the liver.

The pancreas lies behind the stomach and the spleen lies near the tail of the pancreas.

#### **FUNCTION OF STOMACH**

The stomach acts as a temporary reservoir for food thus allowing the digestive juices to act on food. It also produces gastric juice which contains water, mineral salts, mucus, hydrochloric acid, enzymes viz., Pepsinogen, rennin and the intrinsic factor. Water in the gastric juice further liquefies the swallowed food. Hydrochloric acid acidifies the food and stops the action of salivary ptyalin. It also converts pepsinogen to the active enzyme pepsin and kills many microbes which may be harmful to the body. Pepsin converts proteins into peptones and rennin changes soluble caseinogen from the milk to insoluble casein which in turn is converted by pepsin into peptones. Rennin is present in gastric juice of infants only. The mucus in the gastric juice prevents mechanical injury to the stomach wall by lubricating the contents. Absorption takes place in the stomach to a limited extent. Water, glucose, alcohol and some drugs are absorbed through the walls of the stomach into the venous circulation.

#### **THE SMALL INTESTINE:**

The small intestine is a tube which is probably about 8 feet long in life. When the muscle has lost its tone it becomes 20 feet.

The small intestine lies in the umbilical region of the abdomen and is surrounded by the large intestine.

Duodenum :- the first 25 cm., of the small intestine, is shaped like a horseshoe; the curve encircling the head of the pancreas. The bile and pancreatic ducts open into the duodenum.

#### **FUNCTION OF THE SMALL INTESTINE:**

These are digestion and absorption of the chyme from the stomach. The contents of the duodenum are alkaline. Two important digestive fluids are passed into the duodenum by ducts, the bile from the liver and pancreatic juice from the pancreas.

Bile necessary for the digestion of fat. Pancreatic juice contains three digestive enzymes which act respectively on all three classes of food it is alkaline. Amylase digests carbohydrates. Trypsin digests proteins.

Lactase splits lactose into glucose and galactose, which is then converted into glucose in the liver. Maltase converted into maltose.

The absorption of digested food takes place entirely in the small intestine .

### **THE LARGE INTESTINES:**

The large intestine or colon, which is about of 1.5m (5 feet) long, in continuous with small intestine. The food passing through the small intestine enters the large intestine. In the large intestine, absorption of water continues till semisolid consistency is achieved. Mineral salts and some drugs are also absorbed into blood capillaries from the large intestine the large intestine exhibits a wave of strong peristalsis only at long intervals. This forces its contents into the descending and pelvic colon and finally to the anus.

The large intestine does not take part in the digestion or absorption of food.

**Defaecation:** The act of defaecation is a matter of habit. Some people defaecate before breakfast some after. Some defaecate ones a day of more often.

### **CIRCULATORY SYSTEM**

There are three types of blood circulations in the human body, viz., (i) Greater circulation or systemic circulation; (ii) Pulmonary circulation of lesser circulation; and (iii) Portal circulation.

- (i). **Greater Circulation:** The oxygenated blood from the left ventricle is forced into aorta. The aorta divides and redivides to form arteries, arterioles and finally the blood capillaries. The walls of blood capillaries are very thin. Hence, oxygen and food material from the blood in the capillaries is passed to the tissue fluid. It is then supplied to the body cells. The same set of blood capillaries collect the waste material from the body cells. They unite to form venules. Different venules unite to form veins. The veins pour their blood content either into superior venacava or inferior venacava. These venacava bring the deoxygenated blood to the right atrium of heart. This course of blood from left ventricle to the right atrium is called greater circulation.
- (ii). **Pulmonary Circulation:** The deoxygenated blood from the right ventricle is forced into the pulmonary artery. The pulmonary artery divides into two branches each carrying blood to right and left lungs. In the lung tissue, the artery divides and redivides to form a net of blood capillaries surrounding the alveoli. Thus, the blood in blood capillaries and oxygen in the alveoli are separated by a double layer of flat epithelium (one layer is due to wall of blood capillary and another due to wall of alveoli). This membrane is called alveolar capillary membrane. The oxygen from alveoli diffuses through this membrane and passes to the blood in the capillaries. The carbon dioxide from blood capillaries diffuses into alveoli. Thus, the exchange of gases occurs in the lungs causing oxygenation of blood. The oxygenated blood from right and left lung is collected by four pulmonary veins and poured into the left atrium. This course of blood from right ventricle to the left atrium is called pulmonary circulation. As it is related only with oxygenation of blood occurring in the lungs, it is called lesser circulation.

- (iii). **Portal Circulation:** The venous blood from the digestive organs such as small intestine, stomach and pancreas is collected by the portal vein. It, instead of pouring its content into inferior venacava, pour it into the liver. The portal vein is formed by joining together the veins such as splenic vein from spleen, inferior mesenteric from rectum and colon, superior mesenteric vein from small intestine, gastric vein from stomach and cystic vein from gall bladder. In this way, blood with a high concentration of nutrient materials goes to the liver first. The liver is supplied with oxygenated blood by hepatic artery. Thus, the oxygenated and deoxygenated blood carried into the liver is mixed and further collected by hepatic veins which pour it into inferior venacava. This course of blood through the liver is called portal circulation.

In general, venous blood passes from the tissues to the heart by the most direct route. The only exception is the blood passing from abdominal part of the digestive system and spleen, in which case, it initially passes via liver and then to the heart via inferior venacava. Because of this 'portal circulation', nutrients present in the blood from digestive organs are modified in the liver. This helps in the regulation of these materials to other parts of the body.

## THE NERVOUS SYSTEM

It is true that different systems, each performing a fundamental function, together constitute a human body. But the fact that all the systems are entirely dependent on each other must be appreciated. The nervous system links these various systems co-ordinates all their activities and ensures the integrity of the organism. It regulates the activities of the different organs and of the entire organism. In conjunction with endocrine system, it controls the function of the human body.

The nervous system is divided into

- (1) The Central Nervous System consisting of brain and spinal cord, and
- (2) The Peripheral Nervous System consisting of : (a) 31 pairs of spinal nerves arising from spinal cord, (b) 12 pairs of cranial nerves arising from brain and (c) the autonomic nervous system which is divided into: (i) Sympathetic nervous system, (ii) Parasympathetic nervous system.

The Central Nervous System (CNS) and the Autonomic Nervous System (ANS) can be distinguished as follows:

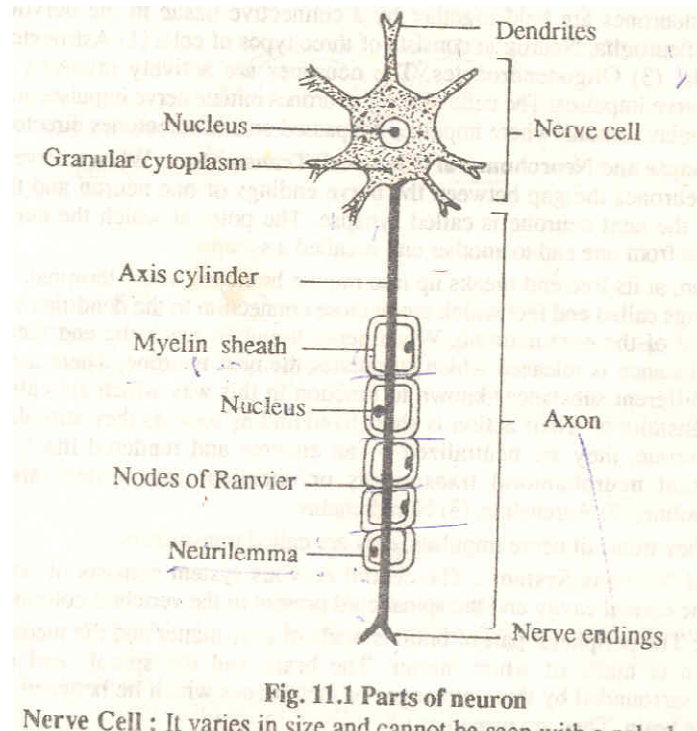
### ***Central Nervous System (CNS)***

1. It is related with sensory and motor activity.
2. It enables a person to adjust with external environment.
3. The functions of CNS occur according to the will power of the person.
4. It supplies nerves to skeletal muscles (motor nerves) and sensory nerves carry impulses from sense organs to brain.

### ***Autonomic Nervous System (ANS)***

1. It is related with the activity of the heart, various glands, and the smooth muscles.
2. It enables the person to adjust with internal environment.
3. The functions of ANS do not occur according to the will power of the person.

4. It supplies nerves to smooth muscles of visceral organs e.g. ureters, uterine tubes, bronchi, trachea etc. and heart and glands.



Nerve Cell : It varies in size and cannot be seen with a naked eye.

The nervous tissue consists of a vast number of units called neurons. The neurons are the structural and functional units of the nervous system.

**Parts of Neuron:** Each neurone consists of nerve of nerve cells and its processes called axon and dendrites. The processes are nothing but the projections of the cytoplasm.

**Nerve Cell:** It varies in size and cannot be seen with a naked eye. A nerve cell consists of a central large nucleus and cytoplasm containing granules. Granules are made up of a chemical transmitter which transmits the impulse. They form the grey matter of the nervous system and are found at the periphery of the brain, centre of the spinal cord, in groups called ganglia outside the brain and spinal cord, and as a single cell in the wall of organs.

**Axon:** It is called nerve fibre. It has a central long axis. Axon is covered with a sheath of fatty material called myelin or medullary sheath. The axon which is not covered with myelin, is called non-myelinated nerve fibre. Myelin is a deposition of fat covered with neurolemma. It:

1. acts as a insulator,
2. protects the axon from pressure of injury, and
3. speeds up the flow of nerve impulses through the axon. The myelin sheath is absent at intervals along the length of the axon and near its branching end. The breaks in the myelin sheath are called the nodes of Ranvier and their presence contributes to the rapid transmission of nerve impulses along myelinated fibres.

The axon carries nerve impulses away from the cell and are usually longer than dendrites.

**Dendrites:** They are nerve fibres which carry impulses towards nerve cell. They have the same structure as that of axon, but they are usually shorter and branching. Each neurone has many dendrites.

All the neurones are held together by a connective tissue in the nervous tissue called neuroglia. Neuroglia consists of three types of cells (1) Astrocytes, (2) Microglia, (3) Oligodendrocytes. The neurones are actively involved in conducting nerve impulses. The cells of some neurones initiate nerve impulses and some act as 'relay stations' where impulses are passed on and sometimes directed.

Sympathetic and Parasympathetic nervous system acts on organs Negatively and Positively. For example, if sympathetic increases sweating another system decreases. If sympathetic system gives relaxation of muscles, parasympathetic increases the movements. If sympathetic increases heart rate, parasympathetic decreases heart rate. Like that these two systems act on various organs differently.

## ENDOCRINE SYSTEM

Endocrine glands are also called "Ductless glands" because the secretions which they produce do not leave the glands through a duct but pass directly from the cells into the blood stream. The secretions are called hormones. (HORMONES)

The secretion of hormones by other endocrine glands is mostly controlled by pituitary gland. Hence, it is called master gland of the body.

### Important Endocrine glands are:-

- |                          |                       |
|--------------------------|-----------------------|
| (1) Pituitary            | (2) Thyroid           |
| (3) Parathyroid          | (4) Adrenal (ADRENAL) |
| (5) Islets of Langerhans | (6) Ovaries           |
| (7) Testes               | (8) Pineal            |

- (1) **Pituitary Gland:-** It is situated at base of the brain and connected to the hypothalamns.  
**Hormones:-** G.H.- Growth Hormones, TSH - Thyrotrophic hormone, ACTH – Adrenocorticotrophic hormone, FSH – Follicle Stimulating Hormone, LH – Luteinising Hormone, Lactogenic Hormone (prolactin), Gonadotrophic Hormones, etc.,  
**Physiological role:** It stimulates growth controls thyroid gland – stimulates its (thyroid) secretions. Pituitary controls adrenal glands, it stimulates the overian follicle to produce mature ovum, stimulates mamary glands to secrete milk after delivary. It promotes contraction of Uterine muscles during the birth of body. It increases the water reabsorption by kidneys and pressor effect stimulates involuntary muscles.  
**Hypo Secretion:-** Before puberty it leads to dwarfism. After puberty the hypose cretion causes trophic changes in the gonads, thyroid and Adrenal glands.  
**Hyper Secretion:-** Before puberty it cause Gigantism. After puberty it causes Acromegaly in which the bone and soft tissues of organs thickens.
- (2) **Thyroid Gland:-** It is situated in the neck in front of trachea. It has two lobes  
**Hormones:-** (a) Thyroxine (b) Triiodothyronine  
**Physiological role:-** It is necessary for the development of melanocytes which gives the

skin its colour. These hormones are essential for mental and physical growth, healthy skin, hair, nerve health.

**Hypo Secretion:-** Hypo secretion of thyroid hormones lead to Myxedema (The general metabolic rate is low, skin becomes thick, dry, pulse is slow).

**Hyper Secretion:-** It causes increase in metabolic rate, weight loss, eye balls protrude – also called graves disease (or) exophthalmia ophthalmic.

(3) **Parathyroid Glands:-** Small glands two each side of thyroid glands in the neck on the posterior side.

**Hormones:-** Thyrocalcitonin, parathormone

**Physiological role:-** Controls the amount of calcium in the blood, It releases calcium from bone into blood. It also increases absorption of calcium from intestine.

**Hypo secretion:-** Causes decrease in blood calcium level (Hypo calcemia).

**Hyper secretion:-** Calcium in bones decreased – bone diseases – kidney stones – kidney failure.

(4) **Adrenal Glands:-** Two adrenal glands are situated on the upper pole of each kidney.

**Hormones:-** Corticosterone, Glucocorticoids, Androgen, Progesterone, Adrenaline, Noradrenaline.

**Physiological role:-** Responsible for changing glycogen to glucose – shifts carbohydrate metabolism to fat metabolism It causes reabsorption of sodium in the kidneys. Promotes protein anabolism. Maintains electrolyte balance in the body. Responsible for development and maintenance of Secondary sexual characters in Male and Female, etc., .

**Hypo secretion:-** Patient becomes weak – kidney failure – blood pressure, etc., .

**Hyper secretion:-** Blood pressure etc.,.

(5) **Islets of Langerhans:-** These cells are irregularly distributed throughout the pancreas.

**Hormones:-** Insulin – Glucagon .

**Physiological role:-** It reduces blood glucose level, promotes glucose to glycogen – promotes storage of fat.

**Hypo secretion:-** Hypoglycemia (Sugar is low)

**Hyper secretion:-** Increases sugar levels in the blood. Weight loss, skin – mouth – tongue becomes dry.

(6) **Ovaries in female:-** One on each side of Uterus.

**Hormones:-** Oestrogen, Progesterone.

**Physiological role:-** Maintains nutrition and mature size of female reproductive organ – develops ovum.

**Hypo / Hyper secretions:-** Excessive ovarian function.

Diminishing Ovarian function characterised by late onset of menstrual – tendency to become obese.

(7) **Testes in Male:-** Situation:- In Scrotum

**Hormones:-** Testosterone.

**Physiological role:-** develops secondary sex characteristics in male.

- (8) **Pineal Gland:-** Situated near the corpus collosum in the brain.  
**Hormones:-** Unknown  
**Physiological role:-** Develops gonads by influencing the release of gonadotrophic hormones from anterior lobe of Pituitary gland.

### VALUES OF VITAMINS-PROTEINS-CARBO HYDRATES.

Nutrition is defined as food at work in the body. There are several kinds of works done by food. Nutrition Acts as body building material. Provides energy. The body also uses food to regulate its activities; eg-regulation of the heart beat, regulation of body temperature, removal of waste products from the body, muscle contraction, control of water balance, clotting of blood, etc., Food appears in many forms such as cereals, pulses, fruits, vegetables, milk and milk products and flesh foods. All these foods are made up of a large number of components called nutrients and can be grouped into six main classes –(1) water (2) proteins (3) carbohydrates (4) Fats (5) Minerals (6) Vitamins.

**Body Building Nutrients:-** Proteins, minerals and water come in this category. They are used in forming muscles, blood, hair and other tissues.

**Energy giving Nutrients:-** Carbohydrates and fatty foods come in this category. Proteins may also be used as the source of energy. This however, happens only when enough energy is not available from carbohydrates and fats.

The largest part of the protein in Indian diet comes from cereals and pulses. Animal proteins like milk products, eggs, fishes and meat also act as source of proteins.

The most common sources for carbohydrates are starch, sugar and cellulose. Fatty foods like vegetable oils, vanaspati, butter, ghee, nuts, oils, etc.

**Regulating Nutrients:-** Many nutrients work together to regulate the functions of the body. This is true of proteins, minerals, water and vitamins.

### VITAMINS

<b>Vitamin</b>	<b>Sources</b>	<b>Physiological role</b>	<b>Deficiencies diseases</b>
(1). Fat Soluble (i) A	Milk ,butter ,eggs ,fish-liver ,oils ,green vegetables(pro vitamins)	A factor in decreasing susceptibility to skin infection Preserving general health & vigor ,Effecting chemistry necessary for Vision , promotion growth.	Failure to gain Weight ,susceptibility To exophthalmia, night blindness, dry skin ,impaired epithelial tissues , increase incidents of skin (toad skin) ,ear and sinus infection , inflammation and infection of alimentary and urinary tracts , degenerative changes in nervous tissues.
(ii) D	Egg ,yolk , Whole milk , butter , fish –liver, ,oils	A factor in well –developed bone and teeth ,calcium and phosphorus metabolism	Rickets (in children ) Osteomaiaacia (in adults ) ,bone demineralisation.
(iii) E	Seeds of plants , eggs ,lettuce , spinach ,meat.	A factor in normal gestation in rats	Sterility in rats
(iv) K	Wide distribution, especially green leaves	A factor in normal functioning of liver and normal clotting time	Delayed clotting time
<b>(2) Water Soluble</b> (i) B (thiamine)	Whole –grain cereals , legumes , eggs , pork	A factor in normal carbohydrate metabolism. Maintenance of normal appetite, digestion , absorption .	Beriberi ,polymerises ,stunted growth of children , lowered appetite , reduced intestinal motility.
(ii) B <sub>2</sub> (Riboflavin)	Milk ,eggs green vegetable , liver ,heart.	A factor in tissue respiration .	Dermatitis , peliegra well-defined eye lesions
(iii) Niacin	Liver , Milk ,Poultry production	Essential in metabolic processes that release energy	Low nutritional level



Vitamin	Sources	Physiological role	Deficiencies diseases
(iv) B <sub>6</sub> (Pyridoxine pyridoxal pyridoxamine)	Whole –gain cereal , yeast , milk , eggs , pork ,liver , legumes	A factor in normal metabolism of facts , amino acids	Dermatitis (experimental pellagra in rats) Nervousness , irritable and insomnia.
(v) B <sub>12</sub> (Cyanocobal amine)	Liver ,Kidney ,meat milk ,cheese Egg ,yolk , kidney ,liver, yeast ,bean ,meat heart	A factor in fed Blood cell formation , Essential for synthesis of acetyl coenzyme A metabolism of facts carbohydrate and certain amino acid	Anaemia  Rarely occur in man
(vi) Pantothenic acid	Fresh green leafy vegetables , liver ,legumes .	A factor in functioning of enzyme system essential in metabolic process –growth and development	Anaemia
(vii) Folic acid	Fresh green leafy vegetables, liver , legumes	A factor in red blood cell formation	Low nutritional level , fragility of capability networks
(viii) C Ascorbic	Citric fruits (raw or canned) tomatoes (raw or canned) broccoli	Normal integrity of capability . Normal development of teeth and maintenance of health of gums .Healing of wounds and protection against infections	Securvy and possibly predisposition to dental caries and systematic type of pyorrhea

Vitamin –two – (1) **Fat soluble** - A ,D , E, K      (2) **Water Soluble** - B<sub>1</sub> B<sub>2</sub> B<sub>6</sub> B<sub>12</sub> - C

## PROTEINS

These are present in cytoplasm as well as the cell membrane of the cells, useful for cell constitution. These are essential for bodybuilding, maintenance and repair of body tissues, produces energy.

**Classification of Proteins:-** Proteins are classified in to three groups:-

- (a) Simple proteins
  - (b) Conjugated proteins
  - (c) Derived proteins
- (a) **Simple proteins:-** These are Albumin's, Globulins, Glutelins, Prolamines, Histones, Protamines. These proteins available in egg albumin, serum albumin, milk and soyabean albumin, corn, barley, etc.,
- (b) **Conjugated proteins:-** These are the proteins are having
- (i) Nucleoproteins
  - (ii) Glycoproteins
  - (iii) Chromoproteins
  - (iv) Phosphoproteins
  - (v) Lipo
  - (vi) Metalloproteins
- (c) **Derived proteins:-** These are
- (i) Proteans
  - (ii) Metaproteins
  - (iii) Coagulated proteins

## CARBOHYDRATES

The subject of carbohydrates is important in the study of biochemistry. Glucose is the 'Sugar of life' and is required for energy. Fructose also contributes to meeting the energy needs of the body. Galactose forms part of the lactose of breast milk and some complex lipids like cerebrosides. Ribose and deoxyribose are important sugars contained in nucleic acids. Starch is the major constituent of our food while sucrose and lactose also have dietary value. Glycogen is a reserve carbohydrate stored in the liver and the muscles.

**Classification of carbohydrates:-**

1. Monosaccharides
  2. Disaccharides and Oligosaccharides.
  3. Polysaccharides.
1. **Monosaccharides:-** are simple sugars. Physiologically important monosaccharides are:-
- (a) trioses:- Glyceraldehyde and dihydroxy acetone
  - (b) Tetroses:- Erythrose
  - (c) Pentoses:- Ribose, deoxyribose, xylose
  - (d) Hexoses:- Glucose, fructose, galactose and mannose.
2. **Disaccharides and Oligosaccharides:-** Some examples of disaccharides are lactose, maltose and sucrose.
3. **Polysaccharides:-** They are mostly insoluble in water and tasteless. If the polysaccharides is made up of only one type of sugar, it is referred to as a homoglycan, Eg., Glycogen, starch, insulin. If different sugars or sugar derivatives go to make up a polysaccharide, the latter is called a heteroglycan, Eg. Heparin, hyaluronic acid, chondroitin sulphate.

Blood is a fluid connective tissue circulated in the body. It consists of blood cells suspended in intercellular fluid called blood Plasma. The total volume of blood formed about 1/12 of the weight of about 5 liters.

The volume of blood is constant in health, it is regulated osmotic pressure in the vessels and in the tissues.

***Composition of Blood***

Blood serum or plasma is made up as follows

Water = 91.0%

Protein = 8.0% (Albumin, globulin, pro-thrombin, fibrinogen)

Salts = 0.9% (Sodium chloride, sodium bicarbonate, salts of calcium, phosphorus, magnesium and iron)

The balance is made up of a number of organic materials- glucose, fats, urea, uric acid, creatinin, cholesterol and amino acids.

The plasma also carries Gases – Oxygen and carbondioxide

***Blood Cells***

1. Erythrocytes or red blood cells.
2. Leucocytes or white blood cells.
3. Thromobocytes or platelets.

***Erythrocytes or Red Blood Cells:-***

RBC are as small circular bi-concave disc shaped. They are about 50,00,000 red cells in each cubic millimeter of blood, Red cells need protein gets from amino acids and also need iron. So in balanced diet some iron is required for their replacement. Women required more iron as some iron is lost in menstrual flow.

In pregnancy the requirement are greater to supply iron for the developing foetus and for the milk in lactation.

The red cell originates in bone marrow in small bones and sternum.

The average life of a red blood cell is about 120 days. The cells then worn out. When the bleeding occurs red cells, with their oxygen – carrying hemoglobin are lost. Hemoglobin falls to 40 or below, a blood transfusion may be needed.

**Hemoglobin:**

It is a complex protein rich in iron. It has an affinity for oxygen, and combines with it forming oxyhemoglobin in the red cells. By means of this function oxygen is carried to the tissues from the lungs.

The amount of hemoglobin present in normal blood is about 15 gms per 100 ml., anything over 90 percent is considered normal if it falls 30 per one feels breathlessness, which ultimately anemia established.

## **BLOOD GROUPS :-**

Group AB  
Group A  
Group B  
Group O

### ***On considering donors of blood***

Group AB may give blood to AB  
Group A to A and AB  
Group B to B and AB  
Group O is a Universal donor for all groups.

### **Recipients**

Group AB is a universal recipient  
Group A may receive blood from groups A and O  
Group B may receive blood from groups B and O  
Group O may receive blood from groups B and O

## **WHITE BLOOD CELLS OR LEUCOCYTES**

These are transparent, not coloured 6,000 to 10,000 each cubic millimeter of blood.

### ***Function of The White Blood Cells:***

The granulocytes and monocytes play a very important part in protecting the body from microorganisms.

- a. Surround any area which is infected or injured
- b. Take in living organisms and destroy them
- c. Remove other materials, such as bites of dirt, splinter of wood etc.

### ***Blood Platelets or Thrombocytes:***

1/3 of red blood cells size. There are 3,00,000 of them in each cubic millimeter of blood. They play an important role in control of bleeding after injury and the clotting of blood.

### ***Blood Plasma:***

Blood plasma is a straw colored fluid, slightly alkaline in reaction. Composition is same as R.B.C

Water – 91.0%  
Protein – 8.0%  
Salts – 0.9%

### ***Plasma proteins:***

**Albumin:-** there are normally 3 to 5mg of albumin in each 100 ml of blood. It has three functions. They are

- a. It is responsible for osmotic pressure which maintains the blood volume
- b. Many special substances are carried in combination with the albumin and
- c. It provides protein to the tissues.

## **COAGULATION OF BLOOD - BLOOD CLOTTING**

When blood has been shed, it quickly becomes sticky and soon sets as a red jelly, this jelly or clot contracts and a straw colored fluid called serum is squeezed out from it.

Insoluble fibrin threads gets as fibrogen. The process of clotting may be expressed by the formula :-

Prothrombin + Calcium + Thromboplastm = Thrombin

Thrombin + Fibrinogen = Fibrin

Fibrin + Blood cells = Clot

Prothrombin is made in the liver, vitamin K is necessary for its production.

### **ANTI COAGULATION:**

It is restored (a) by cold (b) by being kept in a vessel coated with paraffin wax because blood needs to be in contact with a surface that can be wet by water before it will clot. (c) by the addition of potassium citrate or sodium citrate which removes calcium salts normally presents.

### **SUMMARY OF BLOOD FUNCTION – FUNCTIONS OF BLOOD :-**

1. To act as transport system of the body. Carrying all chemical substances, oxygen and other nutrients and carrying carbondioxide and other waste products.
2. The red cells convey oxygen to the tissues and remove some of the CO<sub>2</sub>
3. The white cells provide many of the protective substances and by phogocytic action some of the cells protect the body against bacteria.
4. The plasma distributes proteins needed for tissue formulation. It serves the tissues fluid by which all cells receive nourishment, and forms the vehicle by which waste matter is conveyed to the various excretory organs for elimination.
5. The internal secretions, hormones and enzymes are conveyed from organ to organ by means of the blood.

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**PART B**  
**CHAPTER 1**  
**KRIYA YOGA OR PREPARATORY YOGA**

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Yoga is one of the six orthodox systems of Indian philosophy. Yoga has been defined as the inhibition of the function of the mind, brought about by practice and freedom from attachment.

Aspirants to Yoga may be divided into three classes:

1. ARuruksu (Mandhas) - One aspiring to climb.
2. Yunjana (Madhyamas) - One actually engaged in the Practice.
3. Yogarudha (Uttamas) - One who has attained Yoga.

Yogarudha will attain Yoga through Abhyasa and Vairagya (Practice & attachment) where as Yunjanas will attain Yoga through Kriya Yoga (preparatory Yoga).

In the Second chapter of Yoga Darsana of Patanjali, there is discussion on Kriya Yoga.

It is said 'तपः स्वाध्यायेश्वरप्रणिधानानि क्रियायोगः' means 'Tapas' - austerity, 'Svadhyaaya' - self contemplation, self-study of scriptures and finally the self-evaluation and 'Isvara-Pranidhana' - complete dedication to Lord and His devotion.

In the eight limbs of Yoga (Astanga Yoga), the second limb is Niyama. The five practices enumerated under the title of Niyama are 'Sauca' and 'Santosa', besides the three 'Tapas' 'Svadhyaaya' and 'Isvara-Pranidhana', which we are going to discuss below.

By performing this Kriya yoga there are two uses, 1. to enable the Yogin to proceed towards the attainment of Samadhi. 2. do away completely or to minimize troubles, technically known as the Klesas. It is said in Yogadarsana :-

‘समाधिभावनार्थः क्लेशतनूकरणार्थश्च’

Let us discuss each step from Kriya Yoga :-

- i. Tapas
- ii. Swadyaya
- iii. Iswara Pranidana

**i. Tapas**

The tapas is the entire preparation necessary for the accomplishment of dharma (duty) and vidya.. (knowledge). By Tapas, the mind, speech and Indriyas are purified. Fasts and all religious observances that are laid down in Dharma Sastras and the rules of Yama and Niyama, Asana, Pranayama, etc., come under Tapas. By the performance of Tapas, all Klesas (afflictions) and impurities can be destroyed. According to Gita, the Tapas is three types :- १. शरीरिकतपः, २. वाक्तपः, ३. मानसतपः.

1. शरीरिकतपः (Austerity of the body) :- This type of Tapas consists in worship of the Supreme Lord, the Brahmanas, the spiritual master, and superiors like the father and mother and in cleanliness, simplicity, celibacy and non violence. It is said :-

‘देवद्विजगुरुप्राज्ञपूजनं शौचमार्जवम्।  
ब्रह्मचर्यमहिंसा च शारीरं तप ऊच्यते ॥’

2. वाक्तपः (Austerity of speech) :- This Tapas consists in speaking words that are truthful, pleasing, beneficial and not agitating to others, and also in regularly reciting vidic literature. The same said :-

‘अनुद्वेगकरंवाक्यं सत्यं प्रियहितं च यत्।  
स्वाध्यायाभ्यसनं चैव वाङ्मयं तप ऊच्यते ॥’

3. मानसतपः (Austerity of Mind) :- This kind of Tapas is consists in satisfaction, Simplicity, gravity, self-control and purification of one's existence. The same :-

‘मनः प्रसाद सौम्यत्वं मौनमात्मविनिग्रहः।  
भावसंशुद्धिरित्येतत् तपो मानसमुच्यते ॥’

Penance (Tapas) is to tolerate the pairs of opposities - ‘दुःखं त्वत्तद्द्वन्द्वंशौ’ . The pairs of opposities are hunger and thirst, heat and cold, Standing and sitting, etc., Tapas also includes performance of Vratas (Pledges). While explaining Ashtanga Yoga, Sage patanjali, said all the impurities can be removed by penance by so perfection of the body and the senses can be achieved -

‘कायेन्द्रियसिद्धिरशुद्धिज्ञयात्तपसः’ .

Kena Upanishad describes the three pillars of the entire structure of Brahmanvidya or Spiritual Science as Tapas - Austerity, Dama - Self - restraint, Karma-Action. The Trio of Tapas, Brahmacharya and Satya has been repeatedly emphasized in Prasnopanishad V.3 and other Upanishads.

So, Tapas is one of the necessary element to attain perfection.

## ii. Svadhyaya

Self-contemplation, Self-study of Scriptures and the process of Self-evaluation is Svadhyaya. The self-contemplation is also known as Japa. Japa consists in reciting the Sacred syllable 'AUM', the name of Lord.

‘स्वाध्यायः मोक्षशास्त्राणामध्ययनं प्रणवजपोवा’

Self-study of scriptures, the vedas & upanishad, including the other literature associated with scriptures. This repeatedly reading of the sacred passages influences thoughts, takes away the fickle of mind, ennoble the soul and removes malices and evils.

The term Svadhyaya also means self-evaluation. A Kriya - Yogin is not worried about his past, cares about future., he is a creature of the present. He doesn't permit others to assess him. He is ever progressive. He knows his weakness, and he is also conscious of the thorns that he would be meeting on his path.

By following Svadhyaya, the Gods, the Rshis and other Siddha purushas come to the vision of the yogi, helps in further progress and show the suitable path of perfection -

‘स्वाध्यायादिष्टदेवतासंप्रयोगः’ .

## iii. ISVARA PRANIDHANA

Isvara-Pranidhana is the surrender of the lower self at the citadel of Higher self, known as the

'Brahma -puri', the Metropolis of Lord. 'ईश्वरप्रणिधानं तस्मिन्परमगुरौ सर्वकर्मार्पणम्' one has to dedicate all his actions and fruits of actions is called Isvarapranidhana.

Isvara-Pranidhana is one of the alternate means of attaining Samadhi or the transcendental super consciousness. It is said in Yogadarsana - 'ईश्वरप्रणिधानाध्वा'.

Isvara is distinguishable from us - so he is called as purusha visesha (Special purusha) who remains unbound and unclung to pains and sufferings, to actions, to the fruits of actions, and to the tendencies left there after. This Lord - Isvara is Omniscient; the depth of his knowledge is unfathomable. He is the teacher of the rishis. AUM (pranava) is the symbol of Isvara. Surrounding to God, Isvara, is the surest way of obtaining concentration and there by liberation. God of yoga, Isvara, is not the creator, preserver or destroyer of this world. He can not give liberation but removes obstacles in the upward progress of the devotees. So, by Isvarapranidana Samadhi can be attained - the same is said :- 'समाधिसिद्धिरीश्वरप्रणिधानात्॥'.

## CONCLUSION

Those who are unable to attain Yoga through Practice and Non-attachment (Adhyasa & Vairagya) can also attain Yoga through the practice of Kriya-Yoga, which we have discussed above.

\* \* \*

## KLESAS OR AFFLICTIONS OF MIND

In the second aphorism of Patanjali Yogadarsana, there is a discussion on Kriya Yoga or Preparatory Yoga. There are two benefits by performing this Kriya Yoga, one is to attain Samadhi and another one is to minimize troubles, technically known as Klesas. The same is said :- :

'समाधिभावनार्थः वलेशतनूकरणार्थश्च'

The afflictions (Klesas) are five kinds. They are 'अविद्यास्मितारागद्वेषाभिनिवेशाः क्लेशाः'. Ignorance, egoism, attachment, hatredness, clinging to life are afflictions of the mind.

Avidya (ignorance) is the field of those that follow (other four klesas), whether they are in a dormant (प्रसुप्त), thinned out (तनु) overpowered (विच्छिन्न) or expanded (उदार) condition.

'अविद्या क्षेत्रमुत्तरेषांप्रसुप्ततनुविच्छिन्नोदारणाम्'

Avidya is the field or source for the four klesas, viz., Asmita, Raga, Dvesha and Abhinivesa. These four afflictions are only modifications or varieties of Avidya only. These Klesas have four stages :-

1. Dormant (प्रसुप्तावस्था) :- This is the stage in which they are (Klesas) are hidden like the tree in the seed. Videhas & Prakritilayas have got this stage.
2. Thinned out (तनु) :- In this stage they are (Klesas) in an attenuated condition like a thin thread. Yogins who practice have got this stage. They thinout one evil vasana by developing the counter-current good vasanas. Anger can be thinout by developing mercy, love and forgiveness, etc.,



3. Overpowered (विच्छिन्न) :- In this stage Klesas are in an overpowered for the time being like the fight between wife and husband. At first we find out hatred vritti between them and after sometime means as soon as fight is over we find love vritti.
4. Expanded (उदार) :- In this stage the klesas are very powerful. Their operation will be in full force.

There is another avastha called Dagdha Avastha where in the Klesas are fried out like burnt seeds. This we can find in Yogis who reached Asamprajnata Samadhi.

### AVIDYA

Ignorance is taking non eternal as eternal, impure as pure, pain as happy, non self as self.

‘अनित्याशुचिदुःखानात्मसु नित्यशुचिसुखात्मख्यातिरविद्या’

By undisturbed discriminative knowledge we can remove Avidya.

*Non eternal as eternal* :- Thinking that earth is eternal, the sky with the moon and stars is eternal, the Gods are immortal. Some of the Sadhakas do Sadhana (practice) for such thing due to Avidya.

*Impure as pure* :- The wise know for certain the body to be impure on account of its source, seed, sustenance, perspiration, destruction and the necessity of keeping it constantly clean with mud, herbs, water, etc.,

स्थानाध्वीजादुपषृम्भान्निस्यन्दान्निधनादपि।

कायमाधेयशौचत्वात्पण्डिताह्यशुचिं विदुः ॥

But due to Avidya some think that body is pure instead of impure.

*Pain as happy* :- All is pain for the sagacious Soul (yogi, who is in the grade of great) because of the counter actions in the functions of Energies (Gunas) - ‘परिणामतापसंस्कारदुःखेर्गुणवृत्तिविरोधान्दुःखमेवसर्वविवेकिनः।’ But due to Non - Science (Avidya) many people say that this Jagat (universe) is happy though Jagat is with full of pain.

*Non-self as self* :- Believing the body, Mind and non self organs as Atma(Self) is due Avidya.

### ASMITA

‘दुग्दर्शनशक्त्योरेकात्मतेवास्मिता’ Egoism is the identification of the seer with the power of the seeing.

The self is the power of Seeing; the thinking substance (Intellect) is the power by which one sees. The transformation of these two into an apparent identity is said to be the affliction called Egoism (Asmita).

### RAGA

सुखानुशयी रागः

Attachment is the attraction to pleasure.

For example We love money. We are attached to money, because we can get various objects that can give us pleasure, through money. This is due to previous experience regarding such enjoyments.

## DVESHA

दुःखानुशयी द्वेषः

Aversion (Hatredness द्वेषः) is that which dwells on pain. Dvesha is the root cause for human sufferings. Wars, splits, quarrels, murders, etc., are due to Dvesha. Jealousy is the intimate companion of Dvesha.

## ABHINIVESA

स्वसवाही विदुषोऽपि तथारूढोऽभिनवेशः अभिनवेशः ।

Abhinivesa is the strong desire for life. The fear of death exists in both learned and ignorant, which cannot be explained by Prathyaksha or Sabda pramanas. The past experience of pain of death is there in our chitta. Therefore we are afraid of death in this life. This is the reason for the strong desire for life.

## HOW WE CAN DESTROY THESE AFFLICTIONS?

It is said 'ध्यानहेयास्तद्वृत्तयः' Through Meditation, we can destroy the Modifications (five Klesas) of the mind. By following Kriya Yoga contents - Tapas - Austerity, Svadhyaya - self-study, Isvarapranidana - self surrounding to God one can minimize these klesas but by Meditation all the klesas can be destroyed. Good and bad actions is born of lust, avarice, forgetfulness and anger. It is to be experienced in the seen Birth or is to be experienced in the unseen Births.

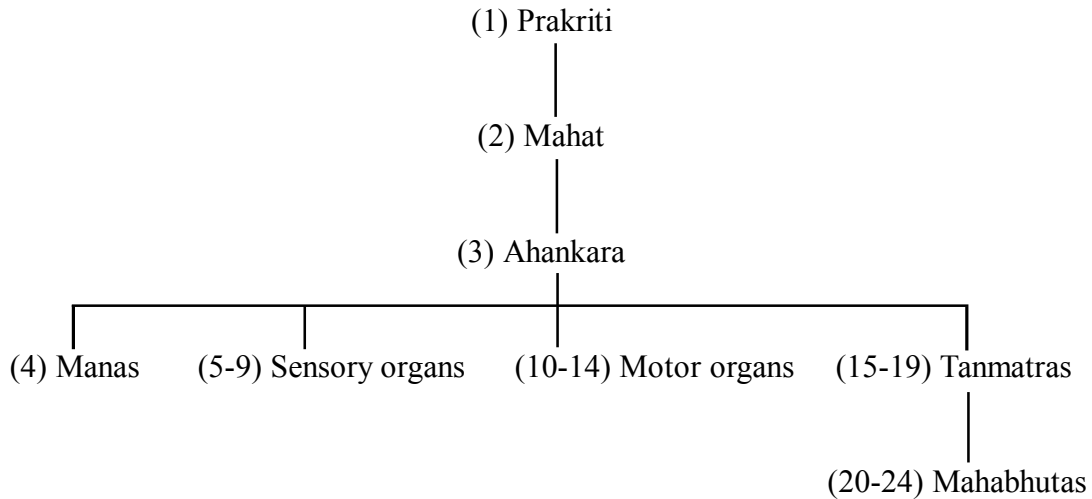
'वलेशमूलाः कर्माशयो दृष्टादृष्टजन्मवेदनीयाः'. The Klesas if not completely uprooted would lead to three consequences - Jati - life state, Ayu-life period, Bhoga - life experience - 'सतिमूले तद्विपाको जात्यायुर्भोगाः' Ayu is decided for the Jati, for the species and not for the particular person. For man, normal expectancy of life is hundred years or so, For Dog, the expectancy of life would be eight to ten years and a cow may live for 20 years, etc., Regarding Jati, it is understood that Ayu fixed. So also Bhoga - Enjoyments also fixed based on Jati. Bhoga depends on the limitations placed on organs of perception and enjoyment. Bhoga or the cardinal satisfaction depends on the type of sense organs have been given to you in a particular species. the Organs of perception and cardinal satisfaction in a bat or a cat are different from those given to man, cow, or a horse. Sheep does not enjoy the music in the same sense as the man does. Bats are capable hearing and transmitting those wavelenghts of sound which normally are beyond the reach of human ear-cats and owls have very sensitive eyes which enable them to see quite a lot in the range which we call darkness. Dogs have a remarkable sense of smell, which makes them fine police dogs. In that senses, the range of satisfaction is fixed up when one happens to be born in a articular living species. Jati, Ayu, Bhoga are possessed of the fruits of pleasure and pain on account their orgination in virtue and vice.

\* \* \*

## HEYA-HEYAHETU-DRASHTA-DRUSYAM-HANOPAYA, VIVEKAKHYATI

Kapila is the founder of Sankhya System. Sankhya maintains a clear cut dualism between Purusha and Prakriti and further maintains the Plurality of the purushas and is silent on God. The System is predominantly intellectual and theoretical. Right knowledge is the knowledge of the separation of the purusha from Prakriti yoga, as the counterpart of Sankhya, means action or practice and tells us how the theoretical metaphysical teachings of Sankhya might be realized in actual practice. Being known this it is understood that former (Sankhya) is theoretical and latter (yoga) is practical aspect of the same teaching.

According to Sankhya Evolution is the play of 24 principles.



The 25th principle is purusha, untouched by this evolution.

Prakriti and purusha are absolute and independent. First product of the evolution is Mahat (Buddi). This is distinguished from consciousness Purusha alone is pure consciousness. Buddhi being the evolute of Prakriti, is material. The senses, the mind and the ego function for buddhi or Intellect which functions directly for the Purusha. Its functions are said to be ascertainment and decision. Here from Buddhi Ahankara is produced. Ahankara produces the notion of the 'I' and 'Mine'. Manas or Mind is the subtle and Central sense organ. It can come into contact with the several sense organs at the same time. Sankhya assigns to manas the important function of Synthesising the sense data into determinate perceptions, passing them on to the ego, and carrying out the orders of the ego through the motor organs.

Five Tanmatras of sensory organs are :-

1)Sight, 2)Smell, 3)Taste, 4)Touch, 5)Sound

Five sensory organs are :-

1)Eyes, 2)Nose, 3)Tongue, 4)Skin, 5) Ears

Five Motor organs are :-

1)Speech, 2)Prehension, 3)Movement, 4)Excretion, 5)Reproduction

Five Mahabhutas are :-

1)Earth, 2)Water, 3)Fire, 4)Air, 5)Ether

Purusha needs Prakriti for enjoyment as well as for liberation, for Samsara as well as for kaivalya. Liberation means complete cessation of all sufferings and three pains -

1. Adhyatmika - It is due to intra-organic psychological causes - includes mental and bodily sufferings.
2. Adhibhautika - It is due to extra organic natural causes like men, beasts, birds, thorns, etc.,
3. Adhidaivika - It is due to Super natural causes like planets, elemental agencies, ghosts and demons, etc.,

Having understood about evolution and Karma Siddanta Viveki (yogi) concludes that "All is pain" and tries to escape pain that is yet to come through "Yoga Marga". 'अनागतं दुःखं हेयम्' ।

In this connection, patanjali, while explaining about Karmasiddhanta and its results it is said that due to Samyoga of Drashta and Drusya this Dukha arises. 'द्रष्टृदृश्ययोः संयोगो हेयहेतुः' Here Drashta - Seer is the Self conscious and Drusya - is distinguished from consciousness. The correlation of seer and the object of Sight is the cause bondage. Here object of sight exists for the sake of the experience and the liberation of the self. Drusyam is composed by प्रकाशक्रियास्थितिशीलम् - brightness, activity and inertia, भूतेन्द्रियात्मकम् - Gross elements and organs. This object of sight is भोगापवर्गार्थम् - For the enjoyment and for Liberation of seer. Drashta - seer is - दृशिमात्रः शुद्धः अपि प्रत्ययानुपश्यः. Purusha is the soul, the self, the spirit, the subject, the knower. It is neither senses nor brain nor mind nor ego. It is itself pure consciousness. It is silent witness, the neutral seer, the peaceful, eternal. It is beyond time, space, change and activity. It is uncaused, eternal, all-pervading. So it is called - निस्त्रैगुण्य, उदासीन, अकर्ता, केवल, मध्यस्थ, साक्षी, द्रष्टा, ज्ञाता, etc.,

The very purpose of Drusya - object of sight is only for the sake of the Self-Seer. 'तदर्थ एव दृश्यस्यात्मा' If Seer get Liberated though the object of sight never deteriorates because it is common to others those who have not yet Liberated - 'कृतार्थं प्रतिनष्टमाप्यनष्टं तदन्यसाधारणत्वात्'.

Undifferentiated Consciousness (अविद्या) is the reason for this correlation (संयोग). Unwavering discriminative discernment is the means of attaining escape - 'विवेकख्यातिरविप्लवा हानोपायः'.

Ashtanga yoga is one of the way to attain discriminative knowledge between purusha and Prakriti. By following Ashtanga yoga destruction of Mental, physical and intellectual impurities arises and light of wisdom shines which leads to discriminative knowledge between purusha and Prakriti which is very essential to attain Samadhi. Sage Patanjali said the same :-

'योगाङ्गानुष्ठानादशुद्धिक्षयेज्ञानदीप्तिराविवेकख्यातेः ।' .

\* \* \*

## ASHTANGA YOGA

Sage patanjali in the Yogasutras second chapter Sadanapada explained about Ashtanga Yoga. By Practising kriya yoga one can attain Samadhi and can minimize Klesas and through Dhyana afflictions - (Klesas) can be removed. If Klesas are not completely uprooted would lead to three consequences -

(1) Life state - Jati (2) Life period -Ayu (3) Life experience - Bhoga. These Jati, Ayu, Bhoga are possessed of the fruits of Pleasure and pain on account of their origination in virtue and vice. So Viveki (yogi) Knowing about Karma Siddhanta concludes that "All is pain" and tries to escape the pain that is yet to come through "Yoga Marga". Here this pain - Dukha is due to Union of purusha with Prakriti - द्रष्टृदृश्ययोः संयोगो हेयहेतुः'. So, undisturbed discriminative knowledge between Purusha and Prakriti is Hanopaya - way to attain Isolation or Liberation - 'विवेकख्यातिरविप्लवा हानोपायः ।'. According to Sankhya philosoply Union of Purusha and Prakriti is Evolution and Separation of Prakriti and Purusha is Liberation. This kind of VivekaKhyati Discriminative Knowledge can be gained by following Ashtanga yoga. In this reference Sage Patanjali explained about Ashtanga yoga and said that by following Ashtanga Yoga all the impurities that relates to Mind, Body and Intellect can be removed through which the discriminative knowledge between Purusha and Prakriti can be achieved. It is said -

‘योगाङ्गनुष्ठानादशुद्धिक्षये ज्ञानदीप्तिराविवेकख्यातेः’

The eight accessories of yoga are :-

1. Yama - Restraint or moral commandments
2. Niyama - Observances
3. Asana - Posture
4. Pranayama - Control of Breath
5. Prathyahara - Withdrawl of the Senses
6. Dharana - Concentration
7. Dhyana - Contemplation
8. Samadhi - Super conscious state of Trance.

Patanjali said - ‘यमनियमासनप्राणायामप्रत्याहारधारणध्यानसमधयोऽष्टवङ्गानि’. Here first five steps are called 'Bahiranga Yoga' and last three steps are called 'Antaranga Yoga'. The eight accessories of yoga described above are like the eight steps in the path of Raja Yoga. They all should be practised in the order given. One will not be benefitted if we take to the practice of Asanas, Pranayana without Practising Yama, Niyama and other steps which are very foundation of yoga. So, by following Ashtanga Yoga destruction of Mental, Physical and Intellectual impurities arises and light of wisdom shines which leads to discriminative knowledge between Purusha and Prakriti, which is very essential to attain liberation. So, in Yoga darsana Ashtanga Yoga plays major role through which seer can be understood by suppressing mental modifications.

Let us discuss each step :-

1. Yama - moral commandments. Yama contains five steps :-
  - (a). Ahimsa - Non-violence
  - (b). Satya - Truthfulness
  - (c). Asteya - Non-Stealing

- (d). Brahmacharya - Celibacy
- (e). Aparigraha - Abstinence from greed.

**(a). Ahimsa - (Non-violence)** - Ahimsa is not just to kill or to wound. Scriptures say that not to kill or even hurt any living being in any way by speech-mind-action. Ahimsa is main for all other Yamas and Niyamas, it is said :- ‘तत्राहिंसा सर्वदा सर्वभूतानामनभिद्रोहः।’ one who is firmly (strongly) established in Ahimsa even rivals also becomes friends. The same said - ‘अहिंसाप्रतिष्ठायांतत्सन्निधौ वैरत्यागः’.

**(b). Satya - (Truthfulness)** - Vyasa said ‘सत्यं यथार्थं वाङ्मनसे यथा दृष्टं यथा श्रुतं तथा वाङ्मनश्चेति’ - What ever seen - heard must be followed mentally and vocally. The words one speaks should not harm any creature and has to produce happiness and joy to all. The words should be pleasing, beneficial and not agitating. One who is established in Truthfulness all actions of the Sadhaka will be fruit filled.

‘सत्यप्रतिष्ठायांक्रियाफलाश्रयत्वम्’

**(c). Asteya - (non-stealing)** स्तेयमशास्त्रपूर्वकं द्रव्याणां परतः स्वीकरणम् – तत्प्रतिषेधः पुनरस्पृहारूपम् अस्तेयमिति - due to desires the idea of stealing arises. So, one who is firmly established in non-stealing all the gems and wealth comes to him.

‘अस्तेयप्रतिष्ठायांसर्वरत्नोपस्थानम्’

**(d). Brahmacharya - (celibacy)** - ‘ब्रह्मचर्यं गुप्तेन्द्रियाणां संयमः’ means if a man saves seminal fluid his body becomes brilliant and fragrant and takes Brahmachari near to Brahma-God. One who is firmly established in Brahmacharya vigour can be gained. The same said - ‘ब्रह्मचर्यं प्रतिष्ठायां वीर्यलाभः।’

**(e). Aparigraha** - It is said :- ‘विषयाणामार्जनरक्षणक्षयसंगहिंसा – दोषदर्शनादिस्वीकरणमपरिग्रहः।’ - So, परिग्रह is a process expecting and occupying belongings that belongs to others. This can be attained - (अपरिग्रह) easily by developing detachment on all. By doing so the Sadhaka acquires the knowledge of past - present - future. ‘अपरिग्रहस्थैर्ये जन्मकथन्तासम्बोधः’

Some people say - "I will not kill human being, I will not kill in a holy place, I will not kill on the fourteenth day (chaturdasi, etc.,) and I will not kill anybody any where except battles". But yamas are Mahavrata - greatest vows. These yamas have no exceptions and are must under all circumstances yamas must to be followed by all kinds of people without limitations of race - place - time and purpose. It is said :-

‘जातिदेशकालसमयानवच्छिन्नाः सार्वभौमामहाव्रतम्।’.

**2. Niyamas:-** Niyamas - self purificators - disciplines are also five kinds.

- (a). Saucha - Cleanliness
- (b). Santosha - Contentment
- (c). Tapas - Austerity

- (d). Svadhyaya - Self study  
 (e). Isvarapranidhana - Dedication to God.

(a). **Sauca - (Cleanliness)** :- This sauca is two types :-

1. External
2. Internal

External purity will be achieved by mud - water etc, internal purity by purifying mind with सत्य, ज्ञान, etc., by doing this external sauca, the sadhaka shows detachment on his own body without comparing with others. The same said :- 'शौचास्वाङ्गजुगुत्सापरैरसंसर्गः।' By internal purity puremind, concentration, control of organs and self realisation can be attained.

‘सत्त्वशुद्धिसौमनस्यैकग्रयेन्द्रियजयात्मदर्शनयोग्यत्वानि च’

(b). **Santosha - (Contentment)** :- 'सन्तोषः सन्निहितसाधनादधिकस्यानुपादित्सा' contentment means not earning more than what one is needed. It is a state in which the aspirant satisfies with what he is having by developing detachment nature 'सन्तोषादनुत्तमसुखलाभः' ।

(c). **Tapas - (Austerity)** :- 'तपो द्वन्द्वसहनम्' द्वन्द्वश्च जिघत्सापिपासे, शीतोष्णे, स्थानासने means austerity is the power to treat opposite pairs equally either in hunger - thirst, cold - heat, happiness - unhappiness, etc., By practising austerity all the impurities will be removed and perfect body - senses can be attained. 'कायेन्द्रियसिद्धिरशुद्धिक्षयात्तपसः।' ।

(d). **Svadhyaya - (self study)**:- 'स्वाध्यायः मोक्षशास्त्राणामध्ययनं प्रणवजपोवा' Svadhyaya means studying and following sastras - scriptures - upanishads or chanting the sacred syllable "AUM" - "Pranava" which shows us the path of liberation. By perfectly following this Svadhyaya the sadhaka gets beloved God's realisation. 'स्वाध्याया दिष्टदेवतासम्प्रयोगः।' ।

(e). **Isvarapranidhana :- (dedication to God)** It is said :- 'ईश्वरप्रणिधानं तस्मिन्परमगुरौ सर्वकर्मार्पणम्' means one has to dedicate all his actions and fruits of actions to God is called Isvarapranidhana. By doing so सम्प्रज्ञातसमाधि can be attained patanjali said :- 'समाधिसिद्धिरीश्वरप्रणिधानात्।' ।

**3. Asana** - After acquiring perfection in Yama and Niyama the yoga sadhaka has to enter in to the third limb i.e., Asana. It is said steady and comfortable is the Asana - 'स्थिरसुखमासनम्'. These are as follows - padmasana, Svastikasana, Bhadrasana, Siddhasana, etc., patanjali is not fastidious in respect to these postures. In this opinion any pose that is conducive to control the mind, which is not strenuous to the body limbs, and in which a yogin can sit for a sufficient time is the posture prescribed to him. Accepting these conditions, yogin can choose suitable posture for his purpose. When efforts cease the posture is completed, so that there is no agitation of the body. Or the mind-stuff comes into a balanced state with reference to Ananta (vasuki, the lord of serpents) and produces the posture. Ananta - the chief of Serpents, who upholds the globe of the earth upon his thousand very steady hoods, with him, the mind-stuff comes in to a balance state and produces the posture. It is said, 'प्रयत्नशैथिल्यानन्तसमापत्तिभ्याम्' As a result of mastering the postures he (yogi) is not overcome by the extremes by cold-heat, etc., - 'ततो द्वन्द्वानभिघातः।' । Posture is also explained in Vishnupurana [vi. 7.39] as "Having assumed a posture so as to possess the excellences

of the decent- posture and the other [postures].

**4. Pranayama:-** Prana means breath-respiration. Ayama means expansion. Pranayama helps to extend breath and its control. It is true that one can have control on sensualities on the one hand and on mental perturbations on the hand by practising breathing controls. Inspiration - Expiration - Restraint are three processes involved in pranayama. Inspiration is the sipping (taking in) in of the outerwind; expiration is the expulsion of the internal air of the lungs. Restraint of the breath is the cutting off of the flow of these two, the absence of both kinds (Inspiration and Expiration). According to patanjali - Pranayana means - "Separation of (control over) the movements of inspiration and expiration is pranayama". Patanjali enumerated four types of pranayamas :-

1. Bahya - External
2. Aabhyantara - Internal
3. Stamba - Stationary
4. Kevala Kumbhaka - consists in throwing and holding the out-breath out and throwing and holding in-breath in.

First three - External, Internal and confining operations are regulated by space, time and number so that breath-control becomes long and subtle.

The sutras of patanjali regarding pranayama are :-

१. 'तस्मिन्सति श्वास प्रश्वासयोर्गतिविच्छेदः प्राणायामः'
२. 'बाह्याभ्यन्तरस्तम्भवृत्तिर्देशकालसंख्याभिः परिदृष्टो दीर्घसूक्ष्मः'
३. 'बाह्याभ्यन्तर विषयाक्षेपी चतुर्थः'

By practicing pranayama the action (karma) which covers the Intellective knowledge, is destroyed. The covering is that by which the sattva of the thinking - substance is covered, in other words, hindrances and evil. It is said :- 'ततः क्षीयते प्रकशावरणम्'. "The Effulgent Essence, being covered by the network of the senses full of extreme ignorance, is engaged by that action alone in vice" of the yogi, this action which is the covering of this luminosity and is the origin of re-birth, becomes feeble by the practice of breath-control and fades away every moment. Breath control it self is the greatest penance, which destroys impurities so that brilliancy of knowledge is manifested. By the practice of pranayama the capability of the mind for concentration is secured - 'धारणासु च मनसः योग्यता'. Manu also [vi.72] says :- "By restraints of breath one should burn up defects". Prana and mind are inter linked. Fluctuation of Prana leads to fluctuation of mind. So, whenever prana moves then chitta also moves. When prana doesnot move then chitta stays still. So, by restraining the Vayu - air, the yogi attains steadiness. This is also accepted by Hathayaga and also said :-

चले वाते चलं चित्तं, निश्चले निश्चलं भवेत् ।

योगी स्थाणुमवाप्नोति ततो वायुं निरोधयेत् ॥

The breathing process is directly connected to the brain and CNS (Central Nervous System) and it is one of the most vital processes in the body system. It has also some connection with the hypothalamus, the brain centre which controls emotional responses. The hypothalamus is responsible for transforming perception into cognitive experience. Erratic breathing sends erratic impulses to this centre and thus creates disturbed response. If the nadis are impure the vital air doesnot pass in the middle channels of nadis. So, the attainment of perfection becomes



difficult. By getting victory over prana, the nadis work properly. When the nervous impulses are steady and rhythmic, the brain functions are regulated and the brain waves become rhythmic. So, Prana plays important role on yoga.

**5. Prathyahara** - The word prathyahara literally means "taking back" or "reversing". According to patanjali, prathyahara referred to the sense organs or Indriyas; they have a natural tendency to rush to their sensualities (Vishayas); eye rushes to the enjoyment of colour and form; ear rushes to enjoy melodies and tones; tongue craves to enjoy tastes and flavours; the nose rushes towards smells and perfumes; and the organ of touch towards soft and sweet embraces. Each organ has a duty to perform, but each is attached to a sensuality characteristic of its own. Prathyahara consists in distracting the sense organs from their sensualities -

‘स्वविषयासंप्रयोगे चित्तस्य स्वरूपानुकार इवेन्द्रियाणां प्रत्याहारः’.

Vishnu purana [vi. 7.43] says :- "A man skilled in yoga, having restrained the organs attached to, the various things, sound and so forth, should make there initiate the mind-stuff, in that he is intent upon the withdrawal of the senses".

Patanjali in relation to prathyahara said that the sense organs or Indriyas in respect to the control over sensualities, become very well aligned with the activity of the citta or mind in its essential form. Swirling of citta or mind is not Svarupa or essential form; a mind free from perturbations is the mind in its essential form. What ever is pleasanter is the sensuality (vishaya) it leaves behind a shadow of vasana (the evil longing), which finally becomes the cause of bondage.

A man who has practised pranayana would find it easier to accomplish prathyahara. Prathyahara leads to "better" or "Sreyas" is "Vidya" or "Science"; and the other that leads to pleasanter or "preyas" is "avidya" or "nescience" - Kathopavishad - II.4

By practising prathyahara one can acquire a complete control over the sense organs - ‘ततः परमावश्यतेन्द्रियाणाम्।’.

**6. Dharana** :- Fixing of the citta or mind at one place is dharana or concentration - ‘देशबन्धश्चित्तस्यधारणा’, concentration is the confinement of the mind in a place. The confinement of the mind by each operation, is such places as the navel sphere, the lotus of the heart, the head, the shining part, the forepart of the nose, the forepart of the tongue, etc., or in any external object which leads to Samadhi; is the concentration. In yoga Sutras first chapter, patanjali, explained methods for the steadiness of the mind from 32nd sutra to 40th sutra. By following such methods Dharana can be attained.

**7. Dhyana** :- The continuous flow of mind towards the prathyaya or goal is dhyana or meditation - contemplotation. Just as river continuously flows into a sea, similarly, the entire consciousness of the self starts continuously flowing towards God, the Higher Self. When so happens, it is dhyana. Sankhya sutras (III. 30) defined dhyana as :- "Removal of attachment is Dhyana". Probably the same thing meant - dhyana consists in rendering mind free from attachments.

It Dharana disturbances may take but in Dhyana no disturbances. It is said :-

‘तत्र प्रत्ययैकतानता ध्यानम्’ . Continuous flow untouched by any other cognition is meditation.

**8. Samadhi :-** There is essential difference between dhyana and samadhi. In the state of dhyana- the mind of contemplator (dhyata), the act of contemplation (Dhyana), and the object to which the contemplation is directed (dhyeya)-all these three remain distinct, where as in the state of samadhi, all the three merge into each other.

Just as a ball of iron, placed in a red hot furnace becomes red at the final stage that it becomes indistinguishable from the red hot appearance of the furnace, similarly, in the state of Samadhi, the yogin forgets himself, he forgets even where he is, he becomes completely absorbed in his lord. Here in Samadhi the object of Meditation vanishes and subject (truth) alone shines -

‘तदेवार्थमात्रनिर्भासं स्वरूपशून्यमिव समाधिः’

That dhyana, verily, is samadhi, in which artha (the meaning of the object) alone shines and the intrinsic form or svarupa disappears. In this transcendental state, thinker gets absorbed in the thought, and the activity of mind ceases, as if it has become one with the object of meditation. Then this stage is called Spiritual Absorption.

**Conclusion :-** In the eight limbs of the yoga discussed above first five steps are known as Bahiranga Yoga - external and last three are known as Antarang Yoga - internal.

Externals (Bahirangas)	Internals (Antarangas and also Samyama)
Yama	Dharana
Niyama	Dhyana
Asana	Samadhi
Pranayama	
Prathyahara	

The internals are to be given preference over the externals, though the externals cannot be avoided; Bahiranga or externals constitute the earlier stage, whilst the antaranga or internals constitute the next higher stage, the superior are Dharana, Dhyana and Samadhi three together constitute Samyama or coconciliation. (त्रयमेकत्र संयमः) Having practised this sort of Samyama, one very easily acquires prajna or divine intellect - Eternal Truth.

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## CHAPTER 2

### DHYANA YOGA - BHAGAVAD - GITA - CHAPTER - VI - SUMMARY

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#### GREATNESS OF DHYANA YOGA AND DHYANA YOGI

Bhagavadgita is Universally renowned as the jewel of India's spiritual wisdom. Bhagavad Gita's Seven hundred concise verses provide a definitive guide to the science of Self-realisation. Indeed, no work even compares in its revelations of man's essential nature, his environment and Ultimately, his relationship with God. The purpose of Bhagavad Gita is to deliver mankind from thenescience of material existence. Bhagavad Gita was spoken to liberate one from the bodily conception of life. Mukti or liberation means freedom from material consciousness.

In this Dhyana Yoga chapter, Lord Krishna explains that the process of the eightfold yoga (Ashtanga Yoga) system is a means to control the mind and the senses. One who is unattached to the fruits of his work and who works his duties as the matter of duty is called (Sanyasi) mystic but not by simply ceasing to perform fire sacrifices (Agnihotra Yajnas). One who wishes to attain Dhyana Yoga the sadaka has to follow the path of Nishkama Karma Yoga (Action without expecting fruit). An elevated Yogi (yogarudha) attained that highest stage by renouncing all material desires. He, Dhyanyogi, neither acts for sense gratification nor engages in fruitive activities. The purpose of yoga system is to control the mind and to draw it away from attachment to sense objects. For man, mind is the cause of bondage and mind is the cause of Liberation. Mind absorbed in sense objects is the cause of bondage, and mind detached from the sense objects is the cause of Liberation. So, mind is the friend and enemy as well. Who conquers the mind, the mind is the best of friends, but for one who has failed to do so, his mind is the greatest enemy. The Sadhaka, who conquered the mind has already reached the Supremesoul and remains the same either in happiness and distress, heat and cold, honor and dishonor. A person, who established in self-realisation is called Yogi, when he is fully satisfied by virtue of acquired knowledge and realisation. He is self-controlled and he treats pebbles, stones or gold as the same. The same said :-

‘जितात्मनः प्रशान्तस्य परमात्मा समाहितः।  
शीतोष्णसुखदुःखेषु तथा मानावमानयोः ॥  
ज्ञानविज्ञानतृप्तात्म कूटस्थो विजितेन्द्रियः।  
युक्त इत्युच्यते योगी समलोष्ट्राश्मकाञ्चनः ॥’

The Yogi, who controls the mind and avoids all material desires said to be well established in yoga and the mind of yogi remains steady as a lamp in a windless place because the lamp there does not waver. By practice of yoga one becomes gradually detached from material concepts. This is the primary characteristic of the yoga principle and after this, one becomes situated in Trance or Samadhi, which means that the Yogi realises the Supremesoul through transcendental Mind and Intelligence. In the stage of perfection called Trance or Samadhi, one's mind is completely restrained from material mental activities by practice of yoga. Here yogi sees the self by the pure mind and relish rejoice in the self and satisfies with that whatever he has gained. Yogi at this stage never shakes even in the midst of greatest difficulty. In this way he achieves the highest perfection in yoga practice. Thus, the self controlled yogi, constantly engaged in

yoga practice becomes free from all material contamination and achieves the highest stage of perfect happiness. It is said :-

‘युञ्जन्नेवं सदात्मानं योगी विगतकल्मषः।

सुखेन ब्रह्मसंस्पर्शमत्यन्तं सुखमश्नुते ॥’

A true yogi observes self in all living beings and treats all livingbeing as the same. The mind is restless, turbulent, obstinate and very strong. undoubtedly very difficult to control the restless mind, but it is possible by suitable practice and by detachment. It is said :-

‘असंशयं महाबाहो मनोदुर्निग्रहं चलम्।

अभ्यासेन तु कौन्तेय वैराग्येण च गृह्यते ॥’

Even Patanjali also expressed the same :-

While explaining the suppression of modifications of mind (चित्तवृत्तिनिरोध) the suggested advice by Sage patanjali is

‘अभ्यास वैराग्याभ्यां तन्निरोधः’ इति ॥

The Unsuccessful yogi, reaches godly living entities, enjoys on the planets and again takes birth in to a family of righteous people or into a family of rich aristocracy to continue his Yoga Sadhana. Now again yogi at this life tries to make further progress in order to achieve complete success. And when the yogi engages himself with sincere endeavor in making further progress, being washed of all contaminations, the Ultimately, achieving perfection after many, many births of practice, he attains the Supreme goal. It is said :-

‘प्रयत्नाद् यतमानस्तु योगी संशुद्धिकिल्बिषः।

अनेकजन्मसंसिद्धस्ततो याति परां गतिम् ॥’

Dhyanayogi is much more greater than ascetic, empericist and greater than other yogis. It is said :-

तपस्विभ्योऽधिको योगी ज्ञानिभ्योऽपि मतोऽधिकः।

कर्मिभ्यश्चाधिको योगी तस्माद्योगी भवार्जुन ॥

So, Dhyana Yoga is greatest of all yogas and Dhyana yogi is greater of all yogis.

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## **ENVIRONMENT FOR MEDITATION - PLACE - SEAT - POSTURE - CONDITION OF MIND - METHOD OF MEDITATION**

Bhagavadgita provide a definitive guide to the Science of Self-realisation. The purpose of Bhagavadgita is to deliver mankind from the nescience of material existence. This Gita was spoken to liberate one from the bodily conception life.

In order to attain concentrated mind the Sadhaka should always remain in Seclusion and avoid disturbance by external objects. So, the place, environment, Seat, posture, condition of mind, method of meditation, etc, are very important. So, even in Geeta Krishna suggested such suitable atmosphere for Yoga sadhaka, who wish to attain Trance stage. Yogi should always engage his body, mind and self in relationship with the Supreme. Yogi should always live in alone farway from this Society without disires and feelings of possessiveness.

To practice Yoga, one should go to a clean and Secluded (lonely ) place and should lay kusa grass on the ground and then cover the grass with a deerskin and a soft cloth. This is recommended to avoid gravitation of power by the earth from the Dhyana Yogi. The seat should be neither too high nor too low and should be situated in a sacred place (eg-Prayaga, Kasi, Mathura, Brindavan, Hrishikesh, Haridwar, etc),. The Yogi should then sit on that seat to practice yoga, to purify the self by controlling his mind, senses and other activities by fixing mind on one point. Even Sage Patanjali also suggested - 'देशबन्धश्चित्तस्य धारणा' such places are - Navel Sphere, lotus of the heart, the head, the shining part, the fore part of the nose, the forepart of the tongue, etc., sage Patanjali recommended so many technigues for the steadiness of the mind. Even in Hathayoga also Yogi Swathmarama has outlined the ideal situation for Hatha yoga sadhana. Here yogi Swathmarama instructs the knowledge of hatha yoga only for (Rajayoga) the highest state of yoga - 'केवलं राजयोगाय हठविद्योपदिश्यते'. The recommende features of yoga hermitage are:- The room of Sadhana should have a Small door, without window, holes, Crackes, being neither too high nor too low. The room should be spotlessly clean, wiped with cow mannure and free from animals or insects. outside, there should be an open platform with a thatched roof, a well and a surrounding wall. The appearance of the hermitaga should be pleasant. Living in a place, being avoid of all thoughts the Sadhaka should be practised yoga in the way instructed by the Guru.

After acquiring such place and seat the yogi should sit in a said manner, i.e., the yogi should hold one's body, neck and head erect in a straight line and gaze steadily at the tip of the nose without moving here and there, avoiding fear, without gazind surroundings, following Brahmcharya (free from sex, rendering services to Guru, studying scriptures, engaging mind on Supreme), the yogi should meditate upon God within the heart as ultimate goal of life. The same said :-

समं कायशिरोग्रीवं धारयन्नचलंस्थिरः ।  
 सम्प्रेक्ष्य नासिकाग्रं स्वं दिशश्चानवलोकयन् ॥  
 प्रशान्तात्मा विगतभीर्ब्रह्मचारिव्रतेस्थितः ।  
 मनः संयम्य मच्चित्तो युक्त आसीतमत्परः ॥

In Ashtangayoga, Patanjali enumerated Asana as the third limb and defined 'स्थिरसुखमासनम्' 'Steady and comfortable is posture'. The main aim of sage Patanjali is 'चित्तवृत्तिनिरोधः' "Suppression of mental modifications". So, Sage Patanjali expressed such definition and not explained much more about asanas. In Hathayoga also for meditation narrated some asanas along with other cultural and relaxative asanas. Here also while explaining Swasthikasana Yogi Swathmara said :-

जानूर्वोरन्तरेसम्यककृत्वा पादतले उभे ।  
 ऋजुकायः समासीनः स्वस्तिकं तत्प्रचक्षते ॥

it means placing both soles of the feet on the inner side of the thighs, sitting equipoised with a straight body. This is called Swasthikasana. Though this is a steady sitting position, it (pose) affects the whole body. prana sakti is directed in particular manner suitable for meditation. The nadis are stimulated. These nadis carry energy to centres in the spinal column and the energy is distributed from there. If we sit in any meditative pose we can stimulate the main nadis. For meditation it is very important that the spinal column is straight so that nervous impulses can pass

freely to the brain.

So, the place, seat, pose, object for meditation are very important. Yoga practice is not meant for attaining any kind of material facility, it is enable the cessation of all material existence. So, by practicing constant control of the body, mind and other activities, the yogi attains the Trance stage - Supreme Spiritual Peace 'शान्तिं अचिरेणाधिगच्छति' ।

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## OBSTACLES AND FAVOURABLES OF YOGA SAID IN DHYANA YOGA

The Sadhaka while practising yoga faces so many obstacles, known as 'Antarayas'. These obstacles will not permit yogasadhaka to go forward in his Sadhana. In Geeta, Krishna said that - if one eats too much or eats too little, sleeps too much or does not sleep enough will not attain perfection in his field. It is said :-

‘नात्यश्नतस्तु योगोऽस्ति न चैकान्तमनश्नतः।

न चास्तिस्वप्नशीलस्य जाग्रतो नैव चार्जुन ॥’

sage Patanjali also said some obstacles of sadhaka. They are -

‘व्याधिस्त्यानसंशयप्रमादालस्याविरतिभ्रान्तिदर्शनालब्धभूमिकत्वानवस्थितत्वानि चित्तविक्षेपास्तेऽन्तरायाः ॥’ -

Diseases, Dullness, Doubt, carelessness, Laziness, worldimindedness or Sensuality, Mistaken Notion of Illusion, Missing the point, Instability - causing distractions of the Mind. These are the obstacles and pain, Despair, Tremor of the Body, excess Inhalation and Exhalation are the companions of the causes of Distraction. Here in yogasutas patanjali showed the remedy for Obstacles - to prevent these obstacles one should have intense practice on one subject or object and one should increase vairagya (Detachment). Hathayoga also listed over-eating, exertion, talkativeness, not following rules, company with common people and unsteadiness are six causes which destroy yoga. It is said :-

अत्याहारः प्रयासश्च प्रजल्पोऽनियमग्रहः।

जनसंगश्च लौल्यं च षड्भिर्योगो विनश्यति ॥ इति ॥

So, regulation of diet and sleep is recommended here in for the yogis. Mitahara is recommended for yoga Sadhaka. Mitahara means agreeable and sweet food, leaving one fourth of the stomach free and eaten as an offering to please shiva. This definition said in Hathayoga like this :-

सुस्निग्धमधुराहारश्चतुर्थाशिविर्जितः।

भुज्यते शिवसंप्रीत्यै मिताहारः स उच्यते ॥

The stomach should never be overloaded, it should be half filled with food, one quarter with water and one quarter with air. Here eating to please Shiva means that when taking food the yogi should not feel that he is eating for himself. He should cultivate the attitude that he is nourishing the body for its maintenance, so his consciousness can continue its process of unfoldment

and spiritual evolution. Here shiva is the inner consciousness, the atma according to Hathayogis. One should not sleep more than six hours per day. One who sleeps more than six hours out of twenty four hours is certainly influenced by the mode of ignorance. A person in the mode of ignorance is lazy and such a person can not perform yoga. So, sadhaka who is regulated in his habits of eating, sleeping, recreation and work can alleviate all material pains by practicing the yoga system. It is said :-

‘युक्ताहारविहारस्य युक्तचेष्टस्य कर्मसु।  
युक्तस्वप्नावबोधस्य योगो भवति दुःखहा ॥’

Hathayoga discussed six factors to succeed in yoga are - Enthusiasm, perseverance, discrimination, unshakable faith, courage, avoiding the company of common people are six causes bring success in yoga.

So, by following such rules and regulations and other techniques that are said, the yoga Sadhaka can overcome the obstacles and attains perfection in his Sadhana, atlast reaches the fouthmean of humanbeing i.e., Moksha certainly.

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