

## Draft Study Materials



# YOGA THERAPY ASSISTANT

(Qualification Pack: Ref. Id. HSS/Q4001)

**Sector: Health Care**

**(Grade XI)**



**PSS CENTRAL INSTITUTE OF VOCATIONAL EDUCATION**  
 (a constituent unit of NCERT, under Ministry of Education, Government of India)  
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## Preface

Vocational Education is a dynamic and evolving field, and ensuring that every student has access to quality learning materials is of paramount importance. The journey of the PSS Central Institute of Vocational Education (PSSCIVE) toward producing comprehensive and inclusive study material is rigorous and time-consuming, requiring thorough research, expert consultation, and publication by the National Council of Educational Research and Training (NCERT). However, the absence of finalized study material should not impede the educational progress of our students. In response to this necessity, we present the draft study material, a provisional yet comprehensive guide, designed to bridge the gap between teaching and learning, until the official version of the study material is made available by the NCERT. The draft study material provides a structured and accessible set of materials for teachers and students to utilize in the interim period. The content is aligned with the prescribed curriculum to ensure that students remain on track with their learning objectives.

The contents of the modules are curated to provide continuity in education and maintain the momentum of teaching-learning in vocational education. It encompasses essential concepts and skills aligned with the curriculum and educational standards. We extend our gratitude to the academicians, vocational educators, subject matter experts, industry experts, academic consultants, and all other people who contributed their expertise and insights to the creation of the draft study material.

Teachers are encouraged to use the draft modules of the study material as a guide and supplement their teaching with additional resources and activities that cater to their students' unique learning styles and needs. Collaboration and feedback are vital; therefore, we welcome suggestions for improvement, especially by the teachers, in improving upon the content of the study material.

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Module 1	Introduction of Yoga Part-I
<b>Introduction</b>	
<b>Learning Outcomes</b>	
After completing this module, you will be able to:	
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<b>Module Structure</b>	
Session 1: Introduction of Yoga	
<b>Session 1: Introduction of Yoga</b>	
<p><b>Historical background of yoga in various facts</b></p> <p>The word Yoga is derived from Sanskrit word 'Yog', which means 'Jod' in Hindi or 'Joining' in English. This is joining of 'Jivatam' (Human) with 'Parmatma' (God). Through the practice of Yoga, one can have Self-realisation and achieve God. 'Yog' word became Yoga in English.</p> <p>For a simple person, Yoga is another form of physical exercise. By doing physical exercises, one can develop only body muscles. But through Yoga, one achieves the conditioning of even all the internal organs like - heart, brain, spleen, liver, lungs, intestines, etc. Apart from these vital organs, through Yoga all the glands, like - thyroid, pituitary and penial gland of the brain, function better.</p> <p>The science of Yoga has its origin thousands of years ago, long before the first religion or belief systems were born. According to Yogic lore, Shiva is seen as the first yogi or ādiyogi and the Several thousand years ago, on the banks of Lake Kanisarovar in the Himalayas, ādiyogi poured his profound knowledge into the legendary saptarishis or "seven sages". These sages carried this powerful Yogic science to different parts of the world including Asia, the Middle East, northern Africa and South America. Interestingly, modern scholars have noted and marvelled at the close parallels found between ancient cultures across the globe. However, it was in India that the Yogic system found its fullest expression. Agastya, the saptarishi who travelled across the Indian subcontinent, crafted this culture around a core Yogic way of life.</p> <p>Yoga is widely considered as an "immortal cultural outcome" of the Indus-Saraswai Valley Civilisaion daing back to 2700 BC – and has proven itself to cater to both material and spiritual uplift of humanity. A number of seals and fossil remains of Indus-Saraswai Valley</p>	



Civilisation with Yogic motifs and figures performing Yoga sādhanā suggest the presence of Yoga in ancient India. The seals and idols of Mother Goddess are suggestive of TantraYoga.

## History and Evolution of Yoga

There are many theories associated with Yoga. It is mentioned in Rig Veda, and its evidence was found in the oldest civilization of Indus-Saraswati, which is considered to be more than 5000 years old (3000 B.C.), it means Yoga is older than 5000 years. It was invented by 'Rishi Munis' for doing meditation, but apart from that, it has a very good effect on the body. During the journey of more than 5000 years, Yoga evolved in many forms. As explained earlier, mainly it has following four paths -

- Janan Yoga
- BhaktiYoga
- KarmaYoga
- RajYoga

After Veda Period, the great 'Maharishi Patanjali' created systems in Yoga. He created text which was named as 'Patanjali Yog Sutrās'. Although many other Sages or 'Rishis' contributed in the development of Yoga, but the effect of 'Maharishi Patanjali' is greatest. Due to that evolution of Yoga is divided into the following periods -

1. Pre-Patanjali Period (Before 500 BC)
2. Patanjali Period (500 BC to 800 AD)
3. Post Patanjali Period (800 AD onwards)

**1- Pre-Patanjali Period (Before 500 BC)** - It is also called as Veda Era since all Veda and Upanishads were written during this period.

Veda - These are the text which contains hymns, philosophy, and guidance for life. These are written in Sanskrit, which is considered to be the mother of all languages. The writer of Vedas are unknown, and it is considered to be the oldest written documents by a human. There are four Vedas -

- 1- Rigveda
- 2- Yajurveda
- 3- Atharvaveda
- 4- Samveda

**Upanishads** - Meaning of Upanishads is 'Sitting down on feet' which means getting 'shiksha' or education. These are the essence of Vedas. There are more than 200 Upanishads available.

**2- Patanjali Period (500 BC to 800 AD)** - Maharishi Patanjali compiled all Yoga in a book called 'Yog sutras'. This book has total 196 sutras or formula. The Book has four segments, called - Samadhi Pada, Sadhana Pada, Vibhuti Pada, Kaivalya Pada. Samadhi Pada - In this segment Patanjali explains about Samadhi.

Sadhana Pada - In this segment he explains about meditation.

Vibhuti Pada - In this segment Patanjali explains about yoga.

Kaivalya Pada - In this segment Patanjali explains the connection of yoga with Body, mind, and soul. There are many exercises explained in this segment which can unite all of these.

**3- Post-Patanjali Period (800AD onwards)** - Period after Patanjali Period, which covers current period also, is called Post-Patanjali period. After Patanjali, there were many Yogis and Sants, who developed Yoga. With their own personal style, they created a new form of Yoga, but the basic form of Yoga is same in all the styles.

### **Journey of Yoga from India to the World**

Modern Yoga is also called 'Hath Yoga' or physical Yoga. This is also related to 'Kundalini Yoga' which is part of 'Raja Yoga'. Modern Yoga is a mix of all the four paths of Yoga and gives more stress on postures. For getting complete benefits of Yoga, one should have a holistic approach towards it, even without any religious inclination. Journey of Yoga from India to the World For many, the practice of yoga is restricted to Hatha Yoga and Asanas (postures). However, among the Yoga Sutras, just three sutras are dedicated to asanas. Fundamentally, hatha yoga is a preparatory process so that the body can sustain higher levels of energy. The process begins with the body, then the breath, the mind to the inner self.

Yoga is also commonly understood as a therapy or exercise system for health and fitness. While physical and mental health is natural consequences of yoga, the goal of yoga is more far-reaching. "Yoga is about harmonizing oneself with the universe. It is the technology of aligning individual geometry with the cosmic, to achieve the highest level of perception.

Yoga does not adhere to any particular religion, belief system or community; it has always been approached as a technology for inner well-being. Anyone who practices yoga with involvement can reap its benefits, irrespective of one's faith, ethnicity or culture. Traditional Schools of Yoga: Different Philosophies, Traditions, lineages and Guru-shishya traditions of Yoga lead to the emergence of different Traditional Schools of Yoga e.g. Janan-yoga, Bhakti-yoga, Karma-yoga, Dhyana-yoga, Patanjali-yoga, Kundalini-yoga, Hatha-yoga, Mantra-yoga, Laya-yoga, Raja-yoga, Jain-yoga, Buddha-yoga, etc. Each school has its own principles and practices leading to ultimate aim and objectives of Yoga.

<b>Yoga</b>	A type of Yoga Path
<b>Ayurveda</b>	Ancient Indian Science of medicines
<b>Ashtanga</b>	One of the major Yoga path, which has eight limbs
<b>Asana</b>	Body Posture in Yoga
<b>Bandha</b>	Internal Lock which is used during yoga
<b>Chakra</b>	Seven energy centers of Body
<b>Dhyan</b>	Practice of controlling and focusing the mind and process of self-awakening
<b>Dosh</b>	Body types as per Ayurveda, Pitta (Fire), Vata (Air) and Kapha (Earth) Hatha
<b>Mudra</b>	Hand Gesture during Yoga Practice
<b>Mantra</b>	Groups of words, chanted for creating positive environment
<b>Nadi</b>	This is an Energy channel as per Vedic Believes, in which 'Prana' flows
<b>Dhyan</b>	Practice of controlling and focusing the mind
<b>Om</b>	The original universal syllable as per Vedic believes
<b>Pranayama</b>	Breathing exercises in Yoga Practices
<b>Samadhi</b>	A state of meditation
<b>Sadhana</b>	Spiritual discipline for getting Siddhi
<b>Shodhna</b>	A purification process in Hatha Yoga
<b>Sutras</b>	Classical text for Yoga
<b>Svadyaya</b>	Self Study
<b>Ujjayi</b>	Sound of breath

**Table no. 1 of Yoga Terminology**

**Principles of Yoga:**

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Following are the Yoga Principles -

- Non-violence (*Ahimsa*)
- Truthfulness (*Satya*)
- Righteousness (*Asteya*)
- Wisdom (*Brahmacharya*)
- Simplicity (*Aparigraha*)
- Worship of the spiritual goal (*Ishvara-pranidhana*)
- Sacrifice the ego (*Shaucha*)
- Self-discipline (*Tapas*)
- Reading (*Svadhya*)
- Contentment (*Santosha*)

**Non-violence (*Ahimsa*)** - No killing of other beings. To be meek and peaceful.

**Truthfulness (*Satya*)** - Live in the truth. Basically, be honest with yourself and others. Also there should be no little lies of convenience. A lie is permissible only in well-justified situations, for example, if you can save the life of another human being with a lie. A Yogi is silent whenever in doubt. Those who consistently live in the truth, radiate truth. Their fellow men trust them.

**Righteousness (*Asteya*)** - Neither stealing nor cheating. A Yogi is always honest. He does not seek unwarranted advantages, but he is looking for a fair trade.

**Wisdom (*Brahmacharya*)** - Live in the spiritual light. Do not serve the money but your inner happiness. Be centered in your inner happiness and peace.

**Simplicity (*Aparigraha*)** - Be moderate in external enjoyment and consumption. A spiritual person lives modestly outwardly and inwardly rich. A Yogi uses his energy, not in outer actions but lives so peaceful that it turns inward and cleanses his body from the inside. One day, he lives permanently in the spiritual light.

**Worship of the spiritual goal (*Ishvara-pranidhana*)** - So that we do not lose our spiritual path, it is necessary that we remind ourselves again and again about our spiritual goal. We can worship any image (Goddess, Shiva, Patanjali), we can bow before a statue (Buddha, Jesus, Shiva) or speak a mantra (prayer).

**Sacrifice the ego (*Shoucha*):** Practicing shoucha in yoga involves letting go of the need for recognition, validation, and control. It means letting go of attachment to the results of your actions and surrendering to the present moment without judgment or expectation.

Through yoga asanas (physical postures), pranayama (breath control) and meditation, practitioners develop awareness and mindfulness, which helps dissolve the ego. As the ego diminishes, one can experience a deep sense of peace, unity, and interconnectedness with all beings.

**Self-discipline (*Tapas*):** A burning effort under all circumstances to achieve a definite goal in life. Leading a disciplined life is the key with 3 aims including for the body, for the mind and through speech.

**Reading (Savdhyaya):** Through education or daily reading it brings out the best in a person, changes his outlook towards life and makes him realize that the whole creation is only for worship, not for enjoyment. There is no preaching in this because one heart speaks to another. The knowledge gained from this is carried into the bloodstream and incorporated as part of one's life.

**Contentment (Santosh):** Santosh is contentment, it means that there is bliss surpassed. When man is complete he feels his duty to god is performed and he loves god. Individuals will be content when the spirit does not waver in the wind of desire.

## Modern Principles

As all beings evolve, so has the practice of Yoga. In recent times, Yoga has grown to encompass newer principles that form the base of its practices. These four basic principles underline the holistic approach of Yoga in modern times.

**1st principle:** Human body is a holistic entity comprised of various interrelated dimensions inseparable from one another and the health or illness of any one dimension affects the other dimensions.

**2nd Principle:** Individuals and their needs are unique and therefore must be approached in a way that acknowledges this individuality and their practice must be tailored accordingly.

**3rd Principle:** Self-empowering; the student is his or her own healer. Yoga engages the student in the healing process; by playing an active role in their journey toward health, the healing comes from within, instead of from an outside source and a greater sense of autonomy is achieved.

**4th Principle:** The quality and state of an individual's mind is crucial to healing. When the individual has a positive mind-state healing happens more quickly, whereas if the mind-state is negative, healing may be prolonged.

### Fundamental principles of yoga

#### The Five Major Principles of Yoga

Yoga is a way of life. Yoga is a science, not a religion, of uniting the mind, body and soul. It is also an art of living the right way. The techniques of Yoga are very practical, so they can always be applied. This is the reason why Yoga has been practiced for thousands of years and is still valid today. This practical science can be broken down into five major principles.

**Apart from being a way of life, it is also considered a practical science with five principles at its core:**



### 1. Proper Exercise (*Asanas*)

Proper exercise is necessary to keep the body healthy, strong and flexible. The physical exercises or postures in Yoga are called *asanas*. *Asanas* are gentle stretches that help in lubricating the joints, muscles, tendons, ligaments, and other parts of the body. They also help to improve circulation, release tension in the body, increase flexibility and tone the nervous system. *Asanas* are meant to be performed in a slow, relaxed and methodical manner. In addition to developing the physical body, the mind is also impacted in a positive way. Most people find it difficult to calm the mind. We start with *asanas* to help start the process of calming the mind and to create a good foundation for the next steps.

### 2. Proper Breathing (*Pranayama*)

Due to our modern lifestyles most of us forget how to breathe. At best, our breathing becomes very shallow. All the cells and tissues in our bodies thrive on oxygen. With out an adequate supply of oxygen, our cells and tissues become weak, leading to diseases. Deep breathing provides an abundance of oxygen, which keeps the cells and tissues healthy. Upon exhalation, we expel impurities from our bodies. Lack of exhaling deeply does not remove enough impurities from our bodies. Shallow breathing then does not supply enough oxygen and does not expell enough impurities. The result is a toxic system, which is a perfect environment for diseases to form. With proper breathing techniques (*pranayama*) we can teach the body to breathe again. *Pranayama* not only purifies the system, but it also helps to connect the body to the solar plexus area where a tremendous potential energy is stored. This vital energy or *prana* is then released, rejuvenating the body and mind. The benefits of *pranayama* greatly outweigh those of *asanas*, so it is important to incorporate *pranayama* in one's regular practice.

### 3. Proper Relaxation (*Savasana*)

In these times we are measured by how much we can achieve and in the least amount of time. This causes us to be in constant motion. This constant motion then causes our bodies and minds to be overworked and stressed. Proper relaxation is yet another important factor we must incorporate into our regular practice in order to allow the body and mind to recharge and rejuvenate. Rest and relaxation helps to calm the whole system. When we are in this state it is sometimes difficult to calm the system and even sleeping becomes difficult and doesn't help. Yogic



relaxation techniques or *savasana* helps to calm the system by retraining the mind and body to relax.

#### **4. Proper Diet and Nutrition**

What we eat has a subtle impact on our health and wellbeing. For a number of reasons, a plant-based diet is optimal for good health. It enables the body to maximize the benefit from food, air, water as well as sunlight. It is also easy to digest and promotes good health. A Yogic diet is simple, natural and wholesome. Since the food we eat has a subtle impact, a Yogic diet helps to achieve better health as well as a sharp, yet calm mind.

#### **5. Positive Thinking and Meditation**

Our mind is what drives our body. A calm and steady mind is required to keep our bodies in optimal condition. Positive thinking helps to purify the mind and experience inner peace. When we shift our focus from negative thoughts to positive thoughts, it changes our perception of the world around us. We start to see things in a more positive light and negative situations stop affecting us in a strong way. Along with positive thinking, incorporating a regular meditation practice helps to keep the mind clear and focused.

All of the above is what Yoga is all about. It is not just about some poses. The idea is to have optimal physical and mental health, which then helps us to navigate life in a more graceful manner.

#### **International yoga day**

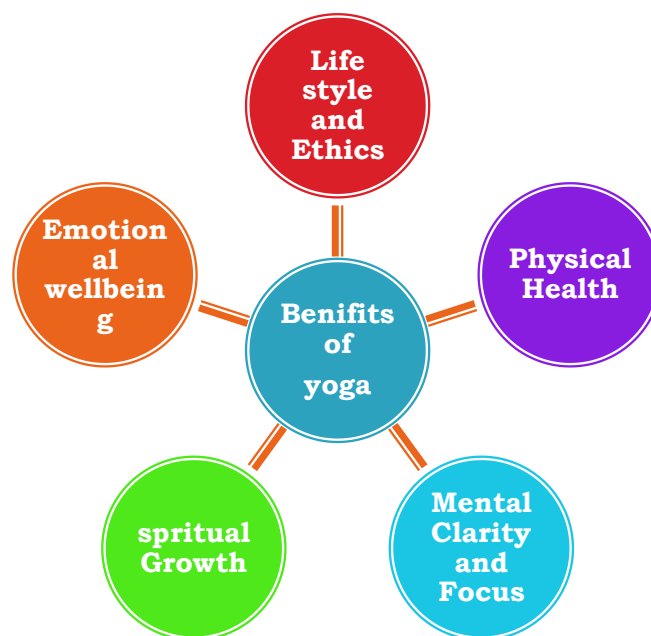
The idea of an international day to recognize and respect the practice of yoga was first made on 27<sup>th</sup> September 2014 by the Prime Minister of India, Narendra Modi at the UN General Assembly. It was he who proposed the date of this day as it falls in the Summer Solstice of the Northern Hemisphere. This day marks the beginning of the summer season and is also the longest day of the year. Afterwards on 11<sup>th</sup> December 2014, the United Nations declared 21<sup>st</sup> June as International Yoga Day. The proposal was approved by 175 member states. Yoga Day highlights the importance of Yoga and the benefits it has on our mind and soul. If practiced often, yoga can boost up your energy level, help you maintain a healthy weight and improve your body posture. Participating in Yoga activities and meditation can help in enhancing your mental health.

#### **Significance of yoga**

Good health is the right of every human being. But this right depends on individual, social and environmental factors. Along with environmental or social factors to a large extent, we can develop a better immune system and a better perception of oneself so that other conditions do not affect us adversely and we can achieve good health. Health is a positive concept. Positive health does not mean merely freedom from disease, but it also include a jubilant and energetic feeling of well-being with an amount of general resistance and capacity to easily cultivate immunity against specific offending agents. Yoga is one of the most powerful drugless system of treatment. It is having its own concept of wellness which has been scientifically understood and presented by many. Yoga can be adopted as lifestyle for promoting our physical and mental health. Yoga, if introduced at the school level, would help to inculcate healthy habits and lifestyle to achieve good health. The aim of yoga thus, at the school level, is to encourage a positive and healthy lifestyle for physical, mental and emotional health of children. Yoga helps in the development of strength, stamina, endurance and high energy at physical level. It also empowers oneself with



increased concentration, calm, peace and contentment at mental level leading to inner and outer harmony.



**Fig. 1.1: Diagram of Benifits of Yoga**

## **NATURE OF DISEASE**

### **1. THE NATURE OF THE DISEASE**

If the disease is minor it will undoubtedly get cured rapidly. However, if the disease takes a major form it will require a prolonged practice of Yoga. If a patient suffering from Spondylitis has a minor problem of neck pain and suffers from neck pain only if he works for three to four hours in a leaning condition such Spondylitis can be cured merely within four to six days. If the patient suffers from terrible pains in the neck making neck movement impossible it will take several months for relief from the disease.

### **2. LIFE OF THE DISEASE**

Once a disease enters the body it does not leave the body quickly. Just as patient ages, so does the disease, which acquires its own age measureable in months and years. The longer the existence of the disease in the body, the longer will be the period for emancipation from the disease. This is so because as time passes the disease enroots itself more strongly in the body. Hence it requires heavier efforts and a longer time to eradicate the disease from the body. We can conclude that the period for suppression of the disease is directly proportionate to the length of time of existence of the disease in the body.

### **3. INTENSITY OF THE DISEASE**

If the intensity of the disease is greater than its life, treatment will take a long time for cure. For instance, if the first heart attack itself is very severe, the patient will need a fairly long time to recover from it. If the attack is not so severe, the period of treatment will be less. While estimating the period for recovery from a disease, the intensity of that disease is one of the prime factors to be taken into consideration.

#### 4. THE CONSTITUTION OF THE PATIENT

Another factor essential in the process of liberation from the disease is the original constitution of the patient. The actual efforts for recovering from the disease are made by the body itself. The therapies are a helping hand to the bodily efforts. Hence if the patient is originally weak, the period of treatment will be greater. Most diseases cannot cling to persons with strong constitutions for long and their bodies are able to rid themselves of disease rather quickly. Acquiring a sound physical condition is immensely useful in all efforts to treat disease. We know that many times a doctor's treatment also includes energy tonics in addition to remedial medication. The purpose is the same.

#### 5. THE MINDSET OF THE PATIENT

Another factor that is very effective in the process of remedial treatment is the mental state or the outlook of the patient. At times this factor may even preside over all other factors. If a patient is in tender state of mind they will not be able to recover quickly. If a patient believes s/he is not going to recover from this disease, chances are that they will not. The mind's power governs the body. Hence the first step in the process of freedom from the disease is often to change the mindset of the patient. Providing a positive outlook towards their case and a sense of confidence in treating them will improve the odds of success. Without this confidence the patient's body will not respond to treatment. This change in perception may again take a short or long tie according to the patient's spared is position and nature.

Many a disease can be cured with appropriate practice of Yoga so long as the Yogic processes supporting the treatment have been prescribed. Certain Yogic processes have to be avoided in particular diseases to avoid greater trouble. The regular course of Yoga is also helpful in curing some of these diseases without the need for a specific prescription of Yogic processes and without contraindications. They need not avoid any Yogic processes in their practice and such individuals need not be treated as patients. They can join the regular practice of Yoga along with the other students. Basic courses like Yoga Sopan, Yoga Pravesh, and Yoga Parichay are useful for troubles like indigestion, constipation and diabetes in the primary stage.

Some diseases get cured automatically without any treatment and also without the practice of Yoga. In such instances general yoga courses can be taught so that the patient can acquire sound health. Such students initially approach Yoga for the purpose of treatment and after feeling the positive results they continue to practice and may even go on to teach Yoga in general society.

#### Scope of Yoga therapy Assistant

By seeing the benefits of Yoga, career opportunities in this field are increasing in India as well as in abroad also. After pursuing yoga courses, you can work in health clubs, yoga & pilates studios, special needs centre, private gym and in individual clients homes.

***“After became a yoga instructor, you would usually be self-employed by running your own yoga school.”***

For the Yoga Professionals, there are several job options available both in the government & private sectors. You can also self-employed by opening your own yoga center.

Yoga also opens various jobs in the given field such as research, management, hospital, academic, administrative, consultation, etc. The government has made it compulsory to have a Yoga teacher in every school.

**Some job titles are:**

- Yoga Instructor
- Yoga Therapist
- Yoga Advisor
- Yoga Specialist
- Yoga Practitioner
- Yoga Teacher
- Research Officer- Yoga and Naturopathy
- Yoga Aerobic Instructor
- Yoga Consultant
- Publication Officer (Yoga)
- Yoga Manager

**Top Recruiters:**

- Government & Private Schools
- Yoga and Naturopathy colleges or institutions
- ESIC General Hospital Naroda Ahmedabad
- Hyatt Hotels Corporation
- Central Council for Research in Homoeopathy
- Centre Research Centers
- Resorts

**Duties of a Yoga Instructor:**

- Design courses & lesson plans.
- Analyze the fitness level & requirements of all participants.
- Demonstrate and perform all yoga exercises to participants.
- Design safe and comprehensive yoga programs for various participants.
- Monitor participant performance and recommend different yoga exercise.

**Some benefits of Yoga are:**

- Yoga helps back pain
- Yoga relaxes one to sleep better
- Yoga improves stress, balance, flexibility
- Yoga can ease arthritis symptoms
- Yoga helps you manage stress
- Yoga can help you lose weight
- Yoga helps you mentally

**Essential role and responsibilities of Yoga Therapy Assistant: -  
life style management as per yogic needs for diabetics**

**1) Good Thinking**

For physical concerns, Yoga Therapists are trained to think about the whole body. In a world full of never-ending specialization, Yoga Therapists are uniquely positioned to see connections that others may miss. In practice, this often involves strengthening or stretching structures seemingly unrelated to one another. The result is a whole body approach to healing that often has amazing results.

**2) Time management**

Yoga therapy sessions are often an hour, sometimes more. Unlike healing professions that are constrained to short sessions because of insurance and other factors, Yoga Therapists have the time needed to take in your full story. It makes

us well positioned to see connections that others simply don't have the time to make. Sometimes we not only need practices to help heal us, we also need someone to help us connect the dots in our daily life. Are we getting enough sleep? Do we need to re-think our medications? Are we unknowingly creating stressors that can be cut out? A Yoga Therapist is able to take in your entire picture and help you make beneficial shifts that others often miss.

### **3) Education Not Dependence**

The goal of the Yoga Therapist is to educate people so that they may heal themselves. Working with a Yoga Therapist should leave a client feeling empowered to self-assess as part of their healing process. Independence from the Yoga Therapist is the goal.

### **4) Commitment to Relationship**

Yoga is relationship. Yoga Therapists understand that relationship is a key part of any healing process. This mostly applies to our relationship with ourselves, but it also applies to the therapist/client relationship. A Yoga Therapist is a friend on the path entrusted with a certain role and a good therapist is committed to a relationship that benefits all involved. When working with a Yoga Therapist, a client should always feel on equal ground within the confines of healthy boundaries.

### **5) One Stop Shopping**

Yoga therapy is interested in all aspects of the self: the physical body, pranic body, mental states and emotions, the unconscious workings of the mind, the heart and its connection to all. Yoga Therapists are trained in practices to facilitate healing connection and balance within all of these parts. For many, this holistic approach can alleviate suffering across the spectrum of their experience. This may eliminate or reduce the need to obtain help from different individuals which is often important since the cost in both money and time can be overwhelming, especially when working with chronic conditions such as sciatica, arthritis or scoliosis to name a few.

## **Activities**

## **Check Your Progress**

## Module 2

## Basic Human Anatomy and Physiology

### Introduction

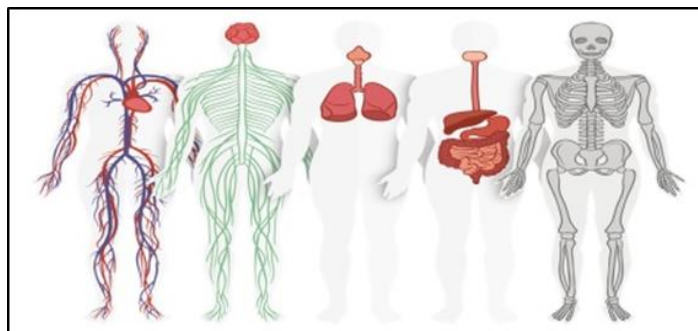
The excitement of understanding about body parts and its functions has developed from the beginning of life when humans have experienced hunger and thirst at birth. A trained Home Health Aide can understand the demands of a normative adjunct medical condition, only if it is aware of the basic structure and function of the human body. This unit provides brief knowledge about basic human structure and various body systems and the role of nutritional food in the growth and development of human body.

#### Anatomy

It is a branch of medical science in which deals with the structure of human body and the functional relation of different parts to each other is known as Anatomy. Human anatomy is basic essential science of human body structure, size and shape. It is very important for understanding the functions of the body. The human anatomy is divided into gross anatomy and micro anatomy. Gross anatomy in which the study of human organ is grossly that can be seen with the general vision by the naked eye. Micro anatomy in which the deep study of human structure and organs that are made up tissue and cells and use of microscopic examination scale for study. and also called cytology and histology. Cyto-cell and histo-tissue logy-study.

#### Physiology

It is a branch of medical science in which relates to the study of the functions of organs and explains how different organ and system are work together. All organs functioning as a single unit is called physiology. Human physiology is the science of the physical, mechanical and biochemical functions of normal human tissues and organs. Anatomy and physiology is closely interrelated subjects of study. Anatomy – the study of structure and Physiology – the study of organs functioning. This helps in the studies of disease known as pathophysiology.



**Fig. 1.2: Diagram of the Human body organ system**

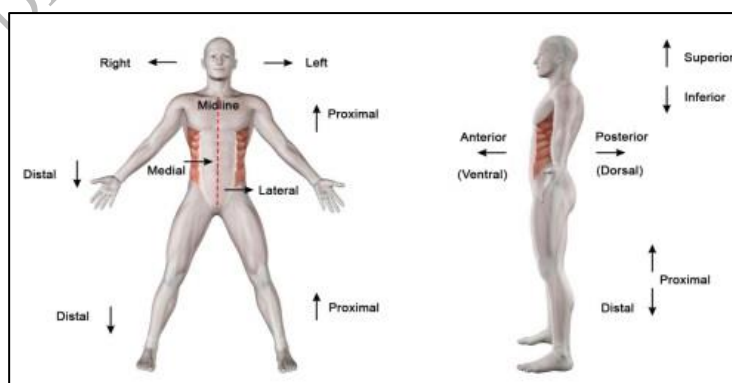
There are medical terms which are used in the study of anatomy and physiology:

- |                    |   |                                    |
|--------------------|---|------------------------------------|
| • Histology        | - | In which the study of Tissues      |
| • Cytology         | - | Study of Cells                     |
| • Myology          | - | Study of body Muscles              |
| • Osteology        | - | Study of Bones                     |
| • Arthrology       | - | Study of Joints                    |
| • Neurology        | - | Study of Nervous System            |
| • Splanchnology    | - | Study of Visceral Organs           |
| • Cardiology       | - | Study of heart                     |
| • Dermatology      | - | Study of skin                      |
| • Endocrinology    | - | Study of the endocrine gland       |
| • Gastroenterology | - | Study of the stomach and intestine |
| • Gynecology       | - | Study of the female genital organ  |
| • Ophthalmology    | - | Study of the eye                   |
| • Urology          | - | Study of the renal system          |
| • Hepatology       | - | Study of the liver                 |
| • Hematology       | - | Study of the blood                 |

The specific Anatomy terminology is helpful of medical health workers have a general methods of identify without any confusion. Often chosen to highlight the relative location and structure and the human anatomy can be described as per the following:

**Median Line:** The central plane which divides the body into two halves i.e. right and left.

- |             |   |   |
|-------------|---|---|
| Medial      | : | Nearby to the median line.                                  |
| Lateral     | : | Away from the median line.                                  |
| Anterior    | : | Towards the front surface of the body, also called Ventral. |
| Posterior   | : | Towards the back surface of the body, also called Dorsal.   |
| Superior    | : | Nearer to the head, also called skull.                      |
| Inferior    | : | Nearer to the foot, also called Caudal.                     |
| Proximal    | : | Position that is closer from the trunk of the body.         |
| Distal      | : | Position that is further from the trunk of the body.        |
| Superficial | : | Nearer to the skin and surface.                             |
| Deep        | : | Deeper from the skin and surface.                           |



**Fig. 1.3: Region of human body**

## Learning Outcomes



After completing this module, you will be able to:

- 

## Module Structure

Session 1: Human Cell And Tissue

Session 2: Human Anatomy & Physiology

## Session 1: Human Cell And Tissue

### Composition of Body

The human body is organized into different levels that start from very small and basic and come together to form the whole body whose different parts work together. This can be seen as a kind of 'ladder' which is much more complex than the original. At the simplest level, a body consists of atoms.

### Cell

Just like the buildings are built of bricks, our body is made of unit structures called cells. Cells are specialised to form various tissues and organs of the body. So it is necessary to know briefly about the structure of the cell. The cell is the basic unit of body structure. It is outer layer of cell membrane like a brick of a wall which is the outer covering. Mitochondria is also called power house of cell. All cells for its living and functioning needs food, water and oxygen. The cells metabolizes food and oxygen, they release carbon dioxide and other wastes. The cell consists of a cell membrane. It surrounds the cell and helps to hold its shape. The nucleus is the control center. It directs the cell's activities. The cytoplasm surrounds the nucleus. Organelles are structures that are suspended in the cytoplasm. Protoplasm refers to all structures, substances and water within the cell. Generally human cell containing organelles have their own membrane covering the cytoplasmic fluid and organelles present inside the cell are:

### In Animal Cell

A cell is a mass of living material enclosed by a wall called cell membrane. It has the following parts.

**Cell membrane:** Forms the outer wall for the cell. Exchange of substances takes place between the protoplasm inside and tissue fluid outside the cell.

**Protoplasm:** Is the mass of living substance inside the cell membrane. It consists of small globular and more solid portion called the Nucleus near the middle and fluid component called cytoplasm.

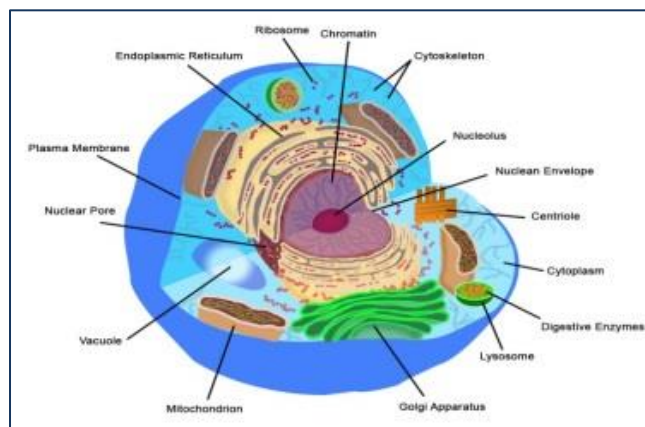
**Cytoplasm:** Is a jelly like substance consisting chemically of protein, lipids, inorganic salts, water and cell inclusions. Cytoplasm presents the appearance of a net work called spongioplasm; the more fluid portion which occupies the meshes of the reticulum is called the hyaloplasm. The pigment granules, fat globules, watery fluid in vacuoles and glycogen present in the protoplasm constitute the paraplasm.

**Centrosome:** Is a small spherical mass of protoplasm and lies near the nucleus. One or two minute particles called centrioles are present in its interior. These play an important part in cell division.

**Chondriosomes:** Consist of minute particles of rods, granules or filaments called mitochondria. They are the store-houses of energy.

**Golgi bodies:** Consists of a groups of canal like structures near the nucleus. Protein synthesized in the cell is concentrated or processed here for secretion.

**Endoplasmic reticulum:** It is a network of membranous structure scattered throughout the cytoplasm. These are concerned with protein synthesis.



**Fig.1.4: Animal cell**

### **The Nucleus**

It is a round or oval mass in the protoplasm. Usually four distinct parts may be differentiated in the nucleus.

- Nuclear membrane bounds the nucleus and separates it from the cytoplasm.
- Nucleoplasm is the fluid component containing granules called chromatin.
- Nucleolus is a highly refracting body in the nucleoplasm.
- Chromatin granules, when condensed, form rod like structures called chromosomes. These chromosomes carry the genes which carry hereditary characters of the individuals. There are 46 chromosomes in the human cell.
- Protection.
- Absorption.
- Secretion.
- Sensory reception.
- During the process of growth and maintenance cells divide to form new generations. This process of reproduction mainly takes place in two ways in the human body.
- Mitosis: Here the cell divides into 2, each of which have the same number of chromosomes and other structures.
- Meiosis: The result of this type of division is 4 cells. This type of division takes place in germ cells and the resulting cells have only half the number of chromosomes.

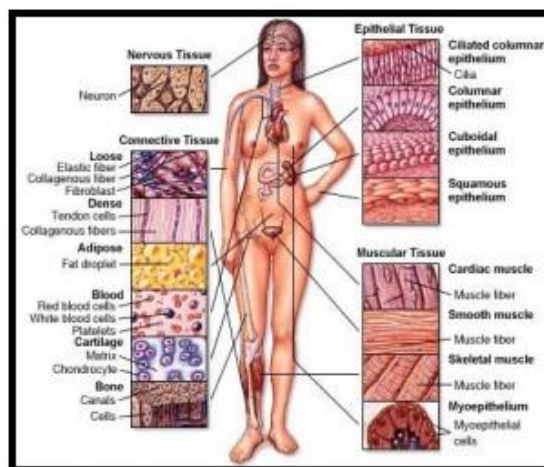
### *Basic Tissues*

Human body consists of billions of cells. They are derived from the single fertilized egg cell in the mother's womb. The fertilized egg cell divides and re-divides and differentiates to form various tissues, organs and systems of the body. As development of the individual proceeds, groups of cells become differentiated from one another and are built up in different patterns to form the tissues of the body, in which the constituent cells are immobilized. There are five widely distributed basic tissues which are built up, in varying proportions, to form the organs within



the body, the body wall and the appendages of the body. These primary tissues are:

1. Epithelial tissue
2. Connective tissue
3. Sclerous tissue
4. Muscular tissue
5. Nervous tissue



**Fig. 1.5: Tissues of human body**

### 1. Epithelium tissue

Consists of a layer of cells lying on a basement membrane made up of connective tissue. Epithelium covers the surface of the body or lines the interior of hollow organs. Epithelium with the subjacent connective tissue form a functional unit called a membrane. Epithelium consisting of a single layer of cells is called simple epithelium. When contains many layers it is called stratified epithelium and is protective in function. Simple epithelium is classified according to the shape of its cells as follows:

- ◆ Columnar epithelium-tall cells, secretory or absorptive in function;
- ◆ Cuboidal-short and broad cells;
- ◆ Squamous epithelium-flat and thin cell.

### 2. Connective tissue

Consists of fibres in a ground substances (cement). The fibres are of mainly three types: -

- a) Collagen fibres which give tensile strength,
- b) Elastic fibres which give elasticity and
- c) Reticular fibres.

Apart from these, the connective tissue contains different cell types like fibroblasts which produce the connective tissue fibres, plasma cells, macro phages, fat cells etc. Connective tissue exists in different densities in different parts of the body.

### 3. Sclerous tissue

Consists of bones and cartilages. Bone is hard, rigid and forms the most of the skeletal system of the body. Bones contain bone cells called osteocytes, fibrous tissue and inorganic salts, mainly phosphate of calcium. Bones subserve the following important functions:

- Give support to the body.
- Act as lever for the action of muscles.

- Provide the sites of formation of blood cells.
- Act as storehouses of calcium.

There are 206 bones in the body. These together constitute (1) axial skeleton forming an axial support to the body and (2) an appendicular skeleton supporting the limbs. These bones are joined by ligaments forming the Interior of bones is filled by a soft tissue called bone marrow. This marrow is of yellow or red variety. Red marrow produces the blood cells. In the adult red marrow is present only in certain bones like sternum (breast bone), ribs, vertebrae etc.

Vertebral column forming the main component of axial skeleton is of smaller segments called vertebrae, Above vertebral column is joined to the skeleton of the head and face called skull.

In the middle of the back of the neck is a vertical depression called nuchal furrow. Its lower end presents a bony elevation produced by the spine of 7th cervical vertebra. This can be used as a landmark to count the spines at the lower levels. A horizontal line corresponding to the highest point of iliac crest corresponds to 4th lumbar vertebra. This plane can be used to count the vertebrae from below.

#### 4. Muscular tissue

Muscle is the contractile tissue which by its contraction results in various movements of the body like:

- movements of different joints;
- peristaltic movements, respiratory movements,
- uterine contraction etc. and
- pumping of the heart.

**There are three types of muscles:**

**Skeletal muscle:** Here the muscle cells or fibres have many nuclei and show transverse striations. They are mostly voluntary. Each muscle is surrounded by a connective tissue sheath called epimysium. Within each muscle bundles of muscle fibres are surrounded by another sheath called perimysium.

**Cardiac muscles:** Present only in the heart. It is involuntary. Its fibres are also striated but branched and they join with that of adjacent fibre. Each cell in the fibre has one nucleus.

**Smooth muscle:** It is involuntary. It forms the muscular wall of the organs in the body. Muscle fibre has a single nucleus and is in the centre. Fibres are spindle shaped.

#### 5. Nervous tissue

Nervous tissue consists of neurons and connective tissue. Connective tissue of nervous system is called neuroglia. Neuron consist of cell body and its processes called nerve fibres. Nerve fibres are of two types-

- Dendrites which carry the impulses to the cell body and
- Axons which carry the impulses away from the cell body.

Nervous system consists of a central nervous system and peripheral nervous system. Central nervous system includes brain and spinal cord.

**Central Nervous System:** Brain is situated in a bony case called cranium. It is surrounded by three protective covering from within outwards they are pia mater, arachnoid mater and dura mater. It contains larger blood vessels supplying the brain and a fluid called cerebrospinal fluid. Cerebrospinal fluid provides a floating medium for protection and partly gives nutrition.

Brain is continued down into the vertebral canal as the spinal cord as far as the level of lower border of 1st lumbar vertebra. Coverings of the brain also continued around the spinal cord as far as the level of lower border of 2nd sacral vertebra.

There are 12 pairs of cranial nerves attached to the brain and 31 pairs of spinal nerves attached to the spinal cord.

### Activities

1. The teacher should give the students an assignment on the diagram of the animal cell in the classroom.
2. The teacher should take the students to the anatomy lab and organize a group discussion on human cell and tissue.

### Check Your Progress

#### A. Fill in the Blanks

1. The cell is the basic unit of .....
2. The outer layer of cell membrane like a .....
3. .... is also called power house of cell.
4. The study of human tissue is called .....
5. Brain is situated in a bony case called .....

#### B. Multiple Choice Questions

1. Study of cells is .....
  - a. Mycology
  - b. Osteology
  - c. Cytology
  - d. Arthrology
2. The cells metabolize food and oxygen they release .....
  - a. CO<sub>2</sub> and other wastes
  - b. O<sub>2</sub> and energy
  - c. Nitrogen and wastes
  - d. All the above
3. Which organelle is not found in human cell?
  - a. Cytoplasm
  - b. Centrosome
  - c. Chloroplast
  - d. Golgi bodies

4. Chromosomes are present in human cells.
  - a. 23 Chromosomes
  - b. 46 Chromosomes
  - c. 21 Chromosomes
  - d. 47 Chromosomes
5. Functions of the human cells.
  - a. Protection
  - b. Absorption
  - c. Secretion and sensory reception
  - d. All the above
6. Which type of division are four cells.
  - a. Mitosis
  - b. Meiosis
  - c. Nucleus
  - d. Protoplasm
7. All tissues except one are...
  - a. Epithelial
  - b. Connective
  - c. Nucleus
  - d. Sclerous
8. There are all types of connective tissue except one.
  - a. Collagen fibres
  - b. Elastic fibres
  - c. Reticular fibres
  - d. Nerve fibres
9. Skeletal muscles are....
  - a. Voluntary muscle
  - b. Involuntary muscle
  - c. Both a & b
  - d. None of the above

**C. Match the Column A and B**

**Column A**

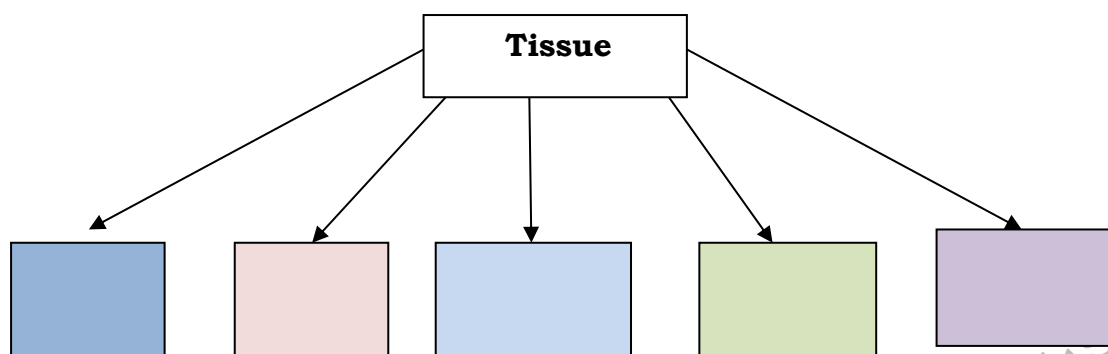
1. Epithelium tissue calcium
2. Connective tissue
3. Sclerous tissue tissue
4. Smooth muscles
5. Nervous tissue
6. Cardiac muscles

**Column B**

- a. Act as store house of
- b. Present on the heart
- c. Neurons and connective
- d. Reticular fibres
- e. Involuntary muscle
- f. Stratified

**D. Write the Short Answer Questions**

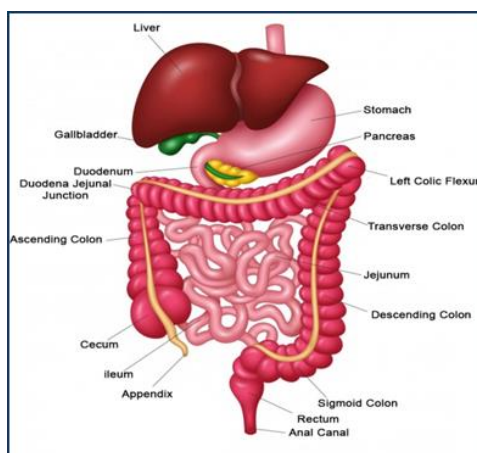
1. Define the human cell and tissue.
2. Write the functions of animal cell.
3. Write a short note on following parts of animal cell.
4. Write the important functions of sclerous tissue.
5. Write short note on nervous tissue.

**E. Write the Name of the Primary Tissues****Session 2 : Human Anatomy & Physiology****Organ System**

Digestive system deals with the reception of food and with the preparation of it for assimilation by the body. Alimentary canal consists of following parts: Mouth, Pharynx, Oesophagus Stomach, Small and Large Intestine. The entire alimentary canal is lined by mucous membrane. During the process of digestion food is broken down into simple substances which can be absorbed and used by the cells of the body tissues. These various changes in the food are brought about by the fermentation or by activity of the enzymes contained in different digestive fluids.

**The Mouth**

The mouth is an oral cavity at the beginning of alimentary canal. It consists of two parts an outer vestibule and the inner cavity Of the mouth. Vestibule is the space between the gums and teeth inside and the lips and cheeks outside. Cavity of the mouth is bounded at the sides by maxillary bones, the teeth and lower jaw. Mucous membrane of the mouth is very vascular. Beneath the mucous membrane lie tiny glands, which secrete mucous. Palate consists of two parts, anterior hard palate formed by bone and posterior soft palate formed by fibrous tissue and muscles covered by mucous membrane. Its movements are controlled by its own muscles.



**Fig. 1.6: Alimentary Canal and Associated Organs**

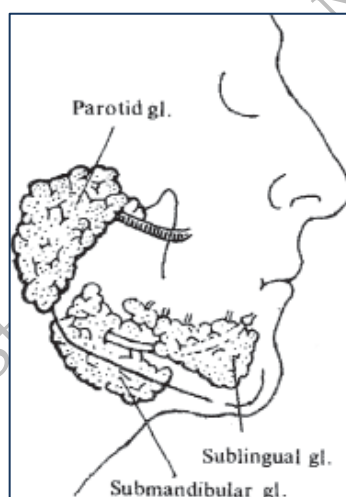
Teeth are used to cut the food in the mouth. In the child there are 20 temporary or milk teeth, ten in each jaw, named from the mid line on each side, two incisors, one canine, two molars. In the adult permanent teeth are 32 - 16 in each jaw-named from the centre, two incisors, one canine, two premolars, three molars.

A tooth possesses (a) crown, projecting beyond the gum, (b) root, surrounded by the gum and (c) neck, at the junction between the two. Mastication is the process of biting and grinding of food between the upper and lower teeth.

### Salivary glands

These are the glands which secrete the saliva. They are composed of groups of sac-like alveoli, like the bunches of grapes which constitute the lobules of the gland. Parotid glands are the largest salivary glands. They lie one on each side below and in front of the ear. Secretion of the parotid gland is carried by the parotid duct which opens on the oral surface of the cheek opposite the crown of upper 2nd molar tooth.

Submandibular glands are the next largest glands. They lie one on each side beneath the lower jaw-bone, and they are about the size of a walnut. Their secretion is poured into the mouth through submandibular or wharton's duct which opens into the floor of the mouth.



**Fig. 1.7: Salivary Glands**

### Pharynx and Oesophagus

Pharynx is musculomembran passage lying behind the nose, mouth and larynx. It is about 5" long. Tonsils are collections of lymphoid tissue in the lateral walls of oropharynx. They are permeated with blood vessels, lymph vessels and contain masses of lymphocytes. Surface of the tonsil is covered by mucous membrane.

Oesophagus is a muscular tube connecting the pharynx to the stomach. It is 9 to 10" long. In the neck it lies behind the trachea and in front of vertebral column. It passes through the diaphragm which is a muscular partition between thoracic and abdominal cavities and enters the abdomen to open into the stomach. The remaining larger part of the alimentary canal is present in the abdomen.

### Abdomen

The abdomen is the lower part of the trunk. Upper part of the trunk is the thorax. Abdominal cavity is bounded above by diaphragm and below by the pelvic brim. In front and at the sides it is bounded by abdominal muscles, iliac bones and the lower ribs, at the back by vertebral column and some muscles. Below the abdominal cavity is continuous with pelvic cavity. Contents of the abdomen: The main organs that occupy the abdominal cavity are the greater part of alimentary canal, liver, pancreas, spleen, kidneys.

Liver occupies upper and right part of the abdomen just beneath the diaphragm. It overlaps the stomach and first part of small intestine. Gall bladder lies on the under surface of the liver in a depression.

Pancreas lies across the posterior abdominal wall behind the stomach. The spleen lies near the tail of pancreas. Kidneys and adrenals lie on each side of the vertebral column. From the kidneys ureters pass downwards through the abdomen. In addition abdomen also contains lymph glands and vessels, nerves, peritoneum and fat.

### **Stomach**

Stomach is the most dilatable portion of alimentary canal. It lies in the epigastric region. Stomach consists of an upper part called fundus which normally contains air. Below the fundus is the main body and a lower horizontal part, the pyloric portion. Its communication with the oesophagus and its opening into intestine is the pyloric orifice.

Gastric glands are also present with distinct peptic cells producing pepsinogen and oxyntic cells producing HCl. The pepsinogen is converted to pepsin by the action of HCl. Partly digestion of food takes place in the stomach.

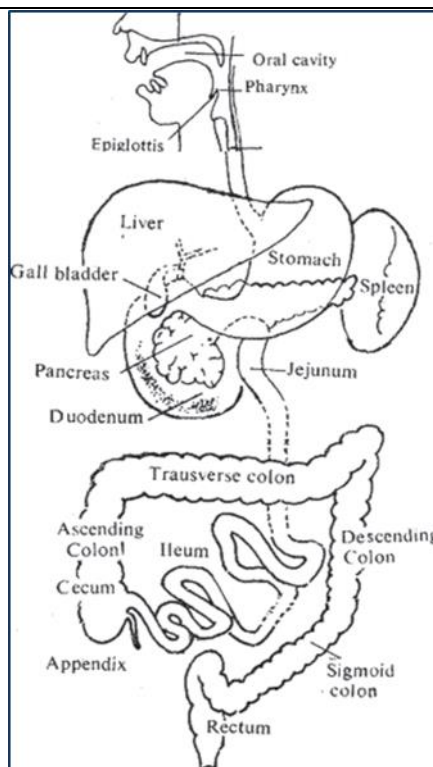
### **Small Intestine**

Small intestine is a tube of about 18 feet long in life. In the cadaver it is about 20 feet due to the loss of tone of the muscle. It starts from the pyloric orifice of the stomach. The junction between the two being guarded by pyloric sphincter. Small intestine terminates at the ileocolic junction where it joins the large intestine.

#### ***Small intestine is divided into three parts.***

Duodenum is the first 10 inches of the small intestine. It forms a C-shaped curve which encircles the head of pancreas. Bile and pancreatic ducts open into the duodenum on a small projection called major duodenal papilla.





**Fig.1.8: Diagram of Digestive System**

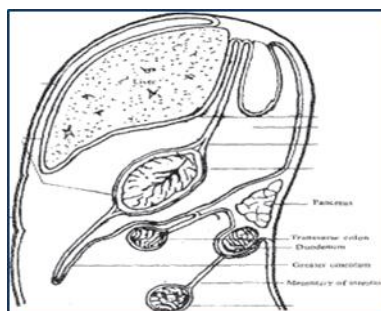
### Large Intestine

Large intestine or colon is about 5 feet long. It is continuous with the small intestine. It receives the residual food from the ileum.

Rectum is the lowest 5 inches of the large intestine and ends in the anal canal. It ends in an aperture called the anus. Rectum and anal canals are empty except during the passage of faeces.

### Peritoneum

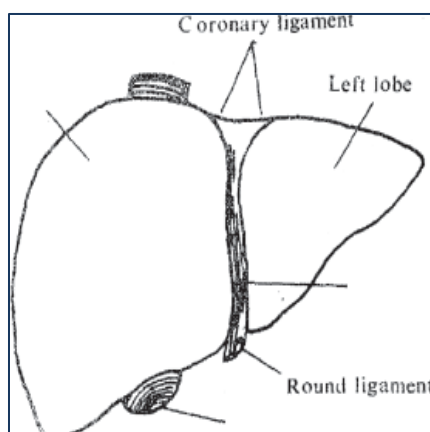
Peritoneum is the largest of the serous membranes in the body. It is double layered, one layer lining the walls of abdominal cavity is the parietal layer, the other layer covering the organs in the abdomen is called visceral layer. Both the layers are continuous with each other. Potential space between these two layers is called the peritoneal cavity or sac. In the male it is a closed sac. In the female the uterine tubes open into the peritoneal cavity.





**Fig. 1.9: Peritoneum****Liver Anatomy**

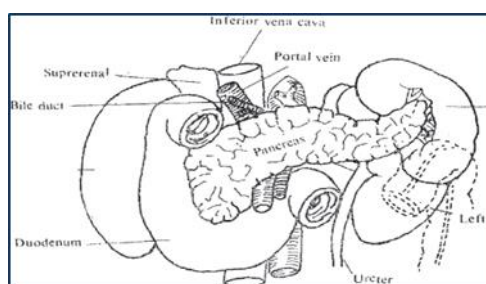
The liver is the largest gland in the body, situated in the upper most part of the abdominal cavity on the right side below the diaphragm. It is largely protected by the ribs. It is about 3 lbs in weight. Liver consists of two main lobes, right and left. The upper surface is convex and lies beneath the diaphragm. A longitudinal fissure separates the right and left lobes. Large number of vessels within the liver are united together by connective tissue. Liver has a double blood supply by means of hepatic artery and portal vein. The hepatic artery supplies the oxygenated blood and Portal vein brings the blood rich in nutrients. Bile capillaries collect the bile from the liver cells and unite to form the bile.

**Fig. 1.10: The Liver from the Anterior****Gall-Bladder**

It is a pear-shaped membranous bag, lying in a fosse on the under surface of the liver. It is about 3 to 4 inches in length and holds about 50 ml of bile. Gall bladder stores the bile and concentrates it. Gall bladder and bile duct are supplied by branches of hepatic artery.

**Pancreas**

Pancreas is a soft, lobulated, greyish pink gland, 5 to 6 inches long. It is situated across the posterior abdominal wall. It extends from the duodenum to the spleen. Pancreatic juice and exocrine secretion secreted by the pancreas passes through the pancreatic duct which joins with the bile duct to form the hepatopancreatic duct and ampulla which open into the duodenum.

**Fig. 1.11: Abdominal Viscera**

Between the clusters of pancreatic alveoli there are irregular areas called Islets of Langerhans. The cells of the Islets secrete the insulin which directly pours into the adjacent enlarged blood capillaries. So this portion of the pancreas is the endocrine

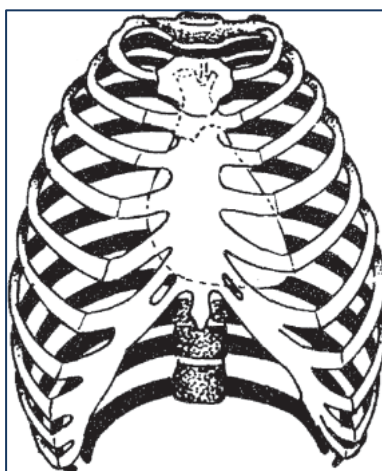
portion. This is mainly concerned with the secretion of insulin. Degeneration and dysfunction of Islet tissue leads to diabetes.

### Spleen

Spleen lies in the left hypochondriac region of the abdomen, between stomach and the diaphragm. It is a blood forming organ, it consists of lymphocytes and red blood corpuscles. In the adult it mainly functions as storage organ of blood cells. It is not very essential for the life.

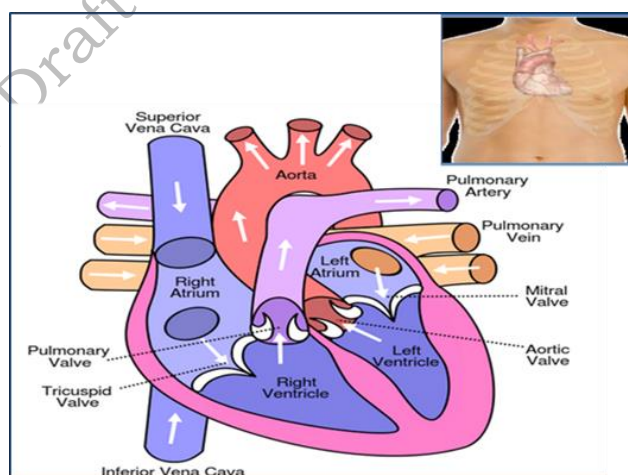
### Heart

The heart is a hollow, muscular organ of a somewhat conical form. It lies in the thorax between the two lungs and pleurae, posterior to the body of the sternum and adjoining parts of the cartilages of the ribs. One third of the heart lies on the right of the median plane; 2/3 of the heart lies on the left of the median plane. (Fig. 1.12). Size: In the adult, heart is about 280 grammes.



**Fig. 1.12: The Position of the Heart in Relation to the Sternum, Ribs and Costal Cartilages**

Base of the heart is directed backwards. Apex is directed downwards and forwards. In its interior it consists of 4 chambers. Two are receiving chambers called the atrium, other two are pumping chambers called ventricles.



**Fig. 1.13: The Interior of the Heart**

These chambers are separated by septa in the interior, the position of which is indicated on the surface of the heart grooves. These grooves contain the blood vessels supplying or draining the heart. Right portion of the heart that is right atrium and right ventricle contain the impure (Deoxygenated) blood. Left portion, that is, left atrium and ventricle contain the oxygenated blood. The right atrium

receives the blood mainly from the head, neck and upper limbs through a large vein called the superior vena cava. It also receives deoxygenated blood from the lower limbs, major part of the trunk and abdominal organs, through the inferior vena cava. Venous blood from the walls of the heart is brought to the right atrium by a vein called coronary sinus shown in Fig. 1.13).

The blood from the right atrium is pumped into the right ventricle through the right atrio ventricular opening. This communication between these two chambers is guarded by a valve which has three segments. So it is called tricuspid orifice. These segments or cusps of the valve prevent the back flow of blood from the right ventricle to the right atrium. From the right ventricle a large artery called pulmonary trunk arises but the junction between the two is called pulmonary orifice which is again guarded by pulmonary valve. This prevents the backflow of blood from the pulmonary trunk to the right ventricle. Pulmonary trunk divides into two pulmonary arteries, one for each lung.

Oxygenated blood from the lungs is returned to the left atrium by pulmonary veins. There are two such veins from each lung. Thus the 4 pulmonary veins open into the left atrium. Circulation of blood through the lungs constitutes the pulmonary circulation.

There are cusps which prevent the back flow of blood into left atrium. Left ventricle leads to the ascending aorta, the junction between the two is the aortic orifice guarded by aortic valve. Ascending aorta is the large artery which carries the blood from the heart to be distributed to various parts of the body, from where large veins bring the deoxygenated blood back to the right atrium. This constitutes the systemic circulation.

**The blood vessels** are the part of the systemic circulatory system that is transports blood in the whole body organs.

There are three major kinds of blood vessels:

- **Arteries** - which carry the oxygenated blood away from the heart to other organs
- **Veins** - this is carry deoxygenated blood from the capillaries to the heart
- **Capillaries** (Thinnest, smallest, located between Arteries and Veins) - which enable the exchange of certain chemicals, water and nutrients between the blood and the tissue cell.
- **Pulmonary artery carry** (CO<sub>2</sub>) deoxygenated blood and pulmonary vein is carry (O<sub>2</sub>) oxygenated blood. They are opposite artery and veins in circulatory system.

### Lymphatic System

Lymphatic system consists of lymph capillaries which drain the tissue fluid. Lymph capillaries unite to form lymph vessels. These lymph vessels drain the lymph to the great veins, at the root of the neck through lymph nodes. lymph vessel in the body is called thoracic duct which opens into a large vein called left bronchiole into phalic vein at the root of the neck.

### Respiratory System

Respiratory system includes the parts concerned with air passage and the lungs where gaseous exchange takes place shown in Fig.1.14.

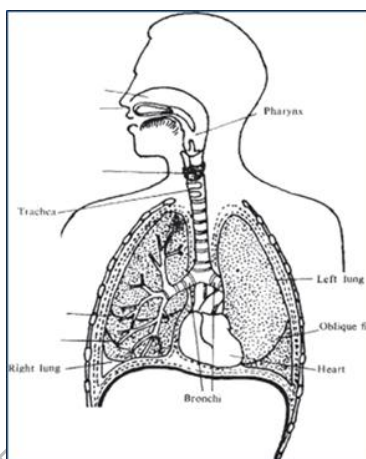
### Nasal passage and pharynx

Air entering the nose through the anterior nasal aperture passes through the nasal cavity and enters the nasopharynx. Hairs present near the apertures act as sieve to remove the dust and other foreign particles in the air. Uppermost part of nasal cavity is lined by olfactory epithelium supplied by olfactory nerves. This part perceives the odour or smell of the inspired air.

Air passes through the pharynx. Thus the lower part of the pharynx is the common passage for both food and air. From the lower part of the pharynx air enters the larynx through a slit like aperture called inlet of the larynx. This inlet is usually closed by epiglottis during the passage of food and thus prevents the food from entering into the larynx.

It is an organ of production of voice and air passage. Passage of air through this interval and vibration of vocal folds produces the voice.

Lungs are the respiratory organs. They are situated one in each half of the thoracic cavity. They are conical in shape and each is enclosed in a serous sac called the pleura. Pleuras are serous sacs covering the lungs and lining the thoracic wall.



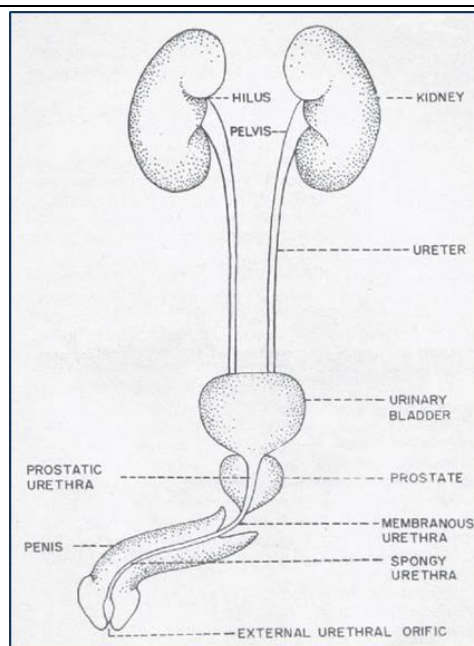
**Fig. 1.14: Diagram of respiratory system**

Right lung is broader and shorter where as left lung is longer and narrower. Inside the lungs consist of subdivisions of the bronchial tree, blood vessels, nerves and lymph vessels. Exchange of gases takes place between the air in the alveoli and blood in the capillary network. Pulmonary vessels supply the lungs for oxygenation. Nutrition to the lungs is provided by bronchial vessels.

### Kidney and Associated Organs

Kidneys are bean shaped organs situated in the lumbar region of abdomen on each side of the vertebral column. They are concerned with the production of urine. On the medial border of the kidney there is a depression called hilus where blood vessels enter or leave the kidney and the ureter emerges. Arterial supply is derived from renal artery. Renal vein draining the kidney empties into the inferior vena cava. Near the upper pole of each kidney adrenal gland is closely related.

Interior of the kidney consists of two main parts-an outer cortex and an inner medulla. Functional unit of the kidney is called a nephron. Each nephron consists of a renal corpuscle and renal tubules. In the renal corpuscle there is a capillary bed called glomerulus within a double layered cup called Bowman's Capsule.



**Fig. 1.15: Urinary system in male**

Most of the fluid component of the blood of the glomerulus is filtered into the cavity of the Bowman's Capsule which in turn is continuous with the renal tubule. As the fluid passes through the tubules reabsorption of water and certain salts takes place. Remaining small portion of the fluid component enters into the larger ducts called collecting ducts as the urine. From the collecting ducts urine passes to the ureter. Renal corpuscles and tubules are present in the cortex but a small segment of renal tubules is present in the medulla. Ureters are cylindrical thick walled tubes which carry the urine from the kidneys to the bladder. Ureters pass down in the abdomen and enter the urinary bladder. Urinary bladder is the reservoir for urine. In the empty condition it is tetrahedral in shape. Its average capacity is about 220 C.c. but it can be distended upto 500 c.c. under will shown in Fig. 1.15.

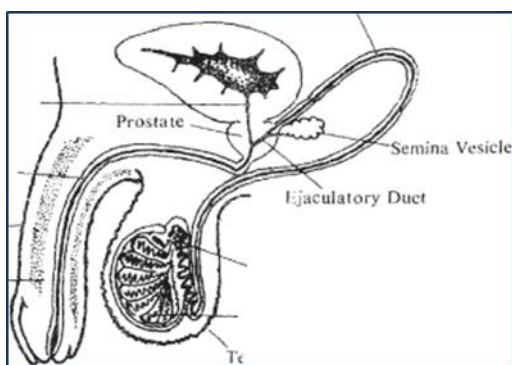
### *Reproductive Organs*

The reproductive organs include the gonads which are concerned with the production of germ cells or gametes and associated organs concerned with passage and maintenance of these gametes. In females the organ which shelters the prenatal development of its offspring and the copulatory organs in both sexes are also included in this system.

### **Male reproductive organs**

**Testes:** These are the male gonads concerned with the production of gametes called sperms. They are situated one in each half of the scrotum which is a pouch of skin between the two thighs. Tail of the epididymis continues as the vas deferens which is a thick walled muscular tube. On the posterior surface of the urinary bladder there is a conical body called seminal vesicle. Beginning of urethra is surrounded by a gland called prostate. Secretions of prostate and seminal vesicle form the bulk of the semen. Penis acts as the male copulatory organ.



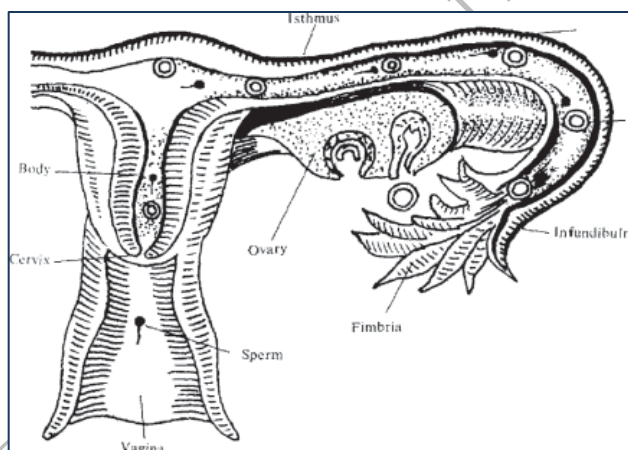


**Fig. 1.16: Diagram of reproductive system in male**

### **Female Reproductive Organs**

Female reproductive system consists of ovaries, uterine tubes, uterus and vagina.

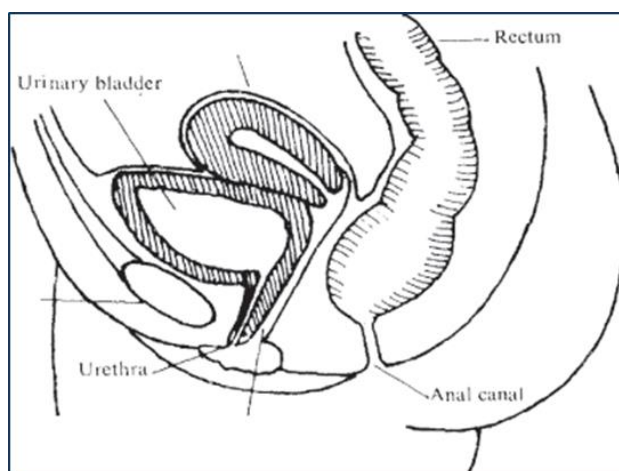
**Ovaries:** Ovaries are two in number situated one on each side wall of the pelvis. They are the female gonads producing the gametes called ova. In each menstrual cycle only one ovum matures from any one of the ovaries. Within the ovary the ova are situated in structures called ovarian follicles. When an ovum matures within the ovarian follicle the follicle enlarges to form Graafian follicle and ruptures. The ovum thus liberated from ovary comes into the peritoneal cavity. After the discharge of ovum the empty Graafian follicle develops into an endocrine organ called corpus luteum. Life span of corpus luteum depends only on fertilization of ovum.



**Fig. 1.17: Diagram of reproductive system in female**

Uterine tubes are cylindrical muscular tubes one on each side of uterus. Each tube is 4 inches in length. Its medial end opens into uterus and lateral end opens into the peritoneal cavity.

**Uterus:** It is a thick walled muscular organ situated in the pelvis in front of the rectum and behind the urinary bladder. It is about 3 inches in length, 2 inches in breadth and 1 inch in thickness. Its weight is about 1-1/2 oz. It has an upper portion called fundus, middle portion called body and a lower portion called cervix. Mucous membrane of the uterus is called endometrium, superficial portions of the endometrium are shed off in each menstrual flow and repaired subsequently under the influence of female sex hormones (Fig.1.18). Vagina is the female copulatory organ. It is a muscular organ lined by stratified squamous epithelium. There are 2 main layers for the skin. The outer layer is called Epidermis, the inner layer is called Dermis.



**Fig. 1.18: Diagram of Uterus**

The epidermis is divided into several layers:

Stratum corneum - horny layer,  
 Stratum Lucidum - transparent layer,  
 Stratum granulosum - granular layer,  
 Stratum Malpighian - prickly celled layer.

Dark pigment melanin is present in the deep layers of epidermis which gives the colour to the skin. The epidermis contains no blood vessels, but lymph circulates. The dermis consists of the following:

#### **Connective tissue**

- Sweat glands - produce sweat & regulate body temperature.
- Sebaceous glands - secrete Sebum which helps to keep skin supple and the hair from becoming dry and brittle.
- Nerve ending and receptors - are mainly sensory and responsible for general sensation.
- Hair follicles are present. The hair arises from these follicles. A tiny muscle Arrector pili is attached to the hair follicle. Contraction of this muscle causes the hair to become straight.
- Adipose tissue acts as an insulator.
- Blood vessels.

#### **Functions of the Skin**

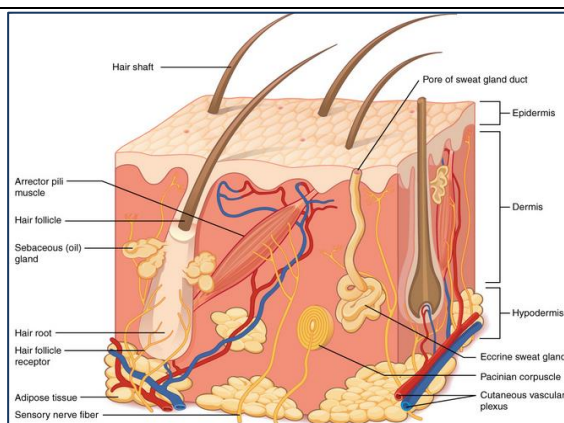
**Protection:** Skin protects the body from external injuries.

**General sensation:** It keeps us in contact with the external environment by informing us of touch, temperature, pain, pressure, vibration, sensation etc.

**Temperature regulation:** Normal body temperature is 37°C or 98.6°F. Temperature is regulated by increasing or decreasing the blood flow and sweat formation by the skin.

**Absorption:** It is capable of absorbing small amounts of oily substances.

**Vitamin D production:** The skin contains dehydrocholesterol. This substance is converted into Vitamin D by the action of sunlight.



**Fig.1.19: Structure of the Skin**

## Activities

- Visit a Anatomy Lab and identify the following:  
Gross and microscopic slides of various body parts.  
Identify the types of synovial joint and give their examples.  
Identify the anterior, posterior, superior and inferior parts of liver.
- Visit a Anatomy and Physiology science Lab and identify the following:
  - Gross and microscopic slides of various body parts.
  - Study the gross and microscopic slides of various body parts
  - Identify the human body organs and their function.
  - Identify the anterior, posterior, superior and inferior parts of kidney and liver.
- Visit a nearby anatomy and physiology lab and observe various body tissues.  
Fill the table given below:

Types	Tissue obtained from which body parts
Epithelial	
Connective	
Muscular	
Nervous	

## Check Your Progress

### A. Fill in the Blanks

- The functional relation of different parts to each other is known as.....
- Secretion of HCL in the.....
- The small intestine starts from .....of the stomach.
- Peritoneum is the largest of the .....in human body.
- The liver is situated below the.....
- Pancreatic juice and exocrine secretion secreted by the .....



7. The pulmonary vein is carry ..... from lungs.
8. .... is prevent the foods from entering in to the lungs.
9. Kidney is bean shaped organs situated .....of abdomen.

### B. Multiple Choice Questions

1. The following term are used to study the eye.
  - a. Neurology
  - b. Gynecology
  - c. Ophthalmology
  - d. Endocrinology
2. Choose the human teeth correct sequence
  - a. Incisors- canine- premolars- molars
  - b. Canine- incisors - premolars- molars
  - c. Incisors- canine- molars- premolar
  - d. Molars- Incisors- canine- premolars
3. Choose the correct meaning of the superior
  - a. Nearer to the skin and surface
  - b. Nearer to the head, also called skull
  - c. Nearer to the foot
  - d. Nearby to the median line.
4. The length of the small intestine is
  - a. 16 feet
  - b. 20 feet
  - c. 18 feet
  - d. 24 feet
5. The largest gland in human body
  - a. spleen
  - b. Liver
  - c. Gall bladder
  - d. Salivary gland
6. Pancreas is secreted
  - a. Pancreatic juice
  - b. pepsin
  - c. HCL
  - d. bile
7. The heart is a hollow muscular organ that is the weight of the heart in an adult
  - a. 360 grams
  - b. 250 grams
  - c. 280 grams
  - d. None of the above
8. The lungs are situated in human body
  - a. Thoracic cavity
  - b. Pelvic cavity
  - c. Peritoneal cavity
  - d. Nasal cavity
9. The functional unit of kidney is called
  - a. Capillary
  - b. Nephron
  - c. Bowman's capsule
  - d. Glomerulus
10. The dark pigment melanin is present in the deep layers of skin
  - a. Hypodermis

- b. Dermis
- c. Epidermis
- d. All of the above

**C. Match the following**

**Column A**

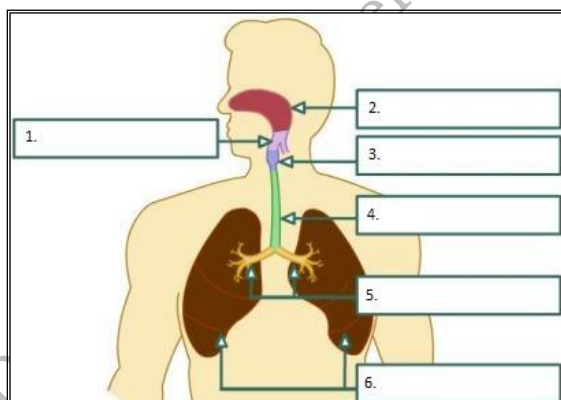
1. Oral cavity organs
2. Larynx
3. Trachea
4. Large intestine supply
5. Pancreas
6. Spleen
7. Cardiovascular
8. Urinary
9. Integumetary
10. Reproductive system blood corpuscles

**Column B**

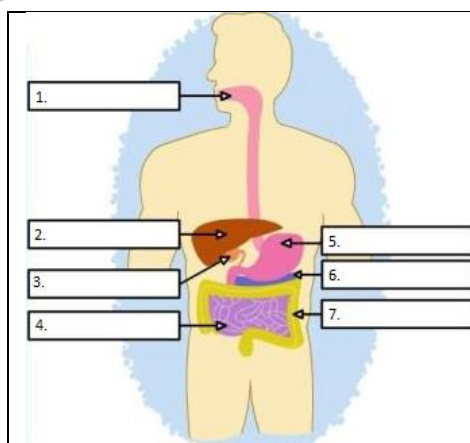
- a. Male and female genital
- b. Sebaceous gland
- c. kidney, urinary bladder
- d. Heart, vessels, blood
- e. Salivary glands
- f. Vocal cord
- g. Wind pipe
- h. Water absorption
- i. Grayish pink gland
- j. Lymphocytes and red

**D. Fill in the Box following appropriate Words.**

(Pharynx, Larynx, Bronchus, Trachea, Nasal cavity, Lungs)



**E. Write the Name of Human body Organs**



- a. Mouth
- b. Stomach
- c. Gall Bladder
- d. Pancreas
- e. Liver
- f. Large Intestine

		g. Small Intestine	
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**F. Shorts Answer Questions**

1. Define digestive system.
2. Write the anatomy of liver.
3. Write the functions of heart.
4. Write the exchange of gases in lungs.
5. Explain the filtration of urine.
6. Write short note on male and female reproductive system.

**g. Draw the well Diagrams of the following Organs and Label them**

- a. Heart
- b. Kidney
- c. Liver
- d. Skin
- e. Digestive system
- f. Urinary system

**Module 3****Health and safety at workplace****Introduction****Learning Outcomes**

After completing this module, you will be able to:

- 

**Module Structure**

Session 1: Preparation of suitable yoga therapy ambiance

Session 2: Safety Measures and Healthy Environment

Session 3: Infection Control Methods

Session 4: Waste Management

Session 5: Qualities of a Yoga Therapy Assistant

**Session 1: Preparation of suitable yoga therapy ambiance****Ideal Place for Yoga**

It is advisable to practice Yoga in a quiet and properly ventilated room. You can also practice Yoga at outdoors, amidst trees and flowers.

Avoid practicing Yoga during colds, strong winds, smoky or dirty atmosphere. Make sure your Yoga mat is surrounded by much space to avoid any sort of accidents while practicing Yoga poses like Sirshasana. Refrain from practicing under an electric fan, if it is not too hot.

**Ideal Clothes for Yoga**

Wear loose, light and comfortable clothes during yoga practice. It should be ensured that clothes are covering body appropriately as per your cultural beliefs. Remove your spectacles, watches or any jewellery before starting the Asanas. It can harm you while doing yoga.

**Clothing to Wear During Yoga**

One should wear comfortable clothes (preferably cotton clothes), during Yoga Exercises. The clothes should be loose enough which allow you to do all the stretching exercises and Yoga poses. Since one does Yoga exercises in the group in Yoga Center, so the Yoga clothing should be such that it should not show off private body parts during practicing different Yoga poses, specially shirshasana or similar upside down poses.

**Yoga Mat for Exercise**

Yoga mats made of natural materials as well as folded blankets can be used for doing Yoga. Blankets work as good insulators between your body and earth. We

should avoid spongy or air-filled mattresses as they do not provide the required support to the spine.

### **Ideal Diet for Yoga**

There is no specification or dietary rule for Yoga. Eat natural food filled with nutrients. It does not require one to be vegetarian to practice Yoga.

However, in the advanced level of yoga, it is recommended to lead a vegetarian life. It is advised to fill half of the stomach with food, one-quarter with water and to keep the remaining quarter empty. This practice keeps the body fit and active. Details on diet are given in Yogic Diet.

### **Responsibilities of the Yoga Therapy Assistant Assesses Clients and Participants during yoga session**

#### **Condition of Stomach**

It is highly recommended that your stomach is empty while doing yoga. That is why Yoga is normally practiced during morning hours after emptying the stomach. If that is not possible, then at least give 3- 4 hour gap after your last meal for doing yoga. In the morning create a schedule of waking up at fixed time and empty your bowl before doing yoga. After some time it would become natural, and you would need not to force your body for that.

#### **Way of breathing**

During Yoga, you should breathe through your nose, not from the mouth. It is very important in order to get full benefits of Yoga.

#### **Human Condition While During Yoga**

While doing Yoga, one's body should be free from fever or any other disease. If he / she is suffering from any disease, he / she should consult his / her doctor before practicing Yoga. While doing Yoga one's body should be relaxed and calm.

#### **Asans in Inverted Position**

Female practitioner should be avoid doing any kind of inverted position yoga, such as *Shirshasana* or *Sarvangasana*, during menses. This can harm their body.

#### **Pain in Body while Doing Yoga**

Initially, the body tends to pain since it would be in stiff condition. But if pain is unbearable then you should immediately stop yoga and inform your instructor about that.

#### **Benefits of Yoga**

**Following are some of the benefits of doing Yoga. We will discuss effects of Yoga on different parts of the body in detail in subsequent chapters -**

- 1- Improvement in immunity - Protection from diseases
- 2- Healthy Heart - Protection from Heart Problems
- 3- Improved body flexibility - Protection from Injury
- 4- Improved Body posture - Better personal image
- 5- Improved Muscle Strength
- 6- Improved Vitality
- 7- Positivity in mind - Protection from Hypertension, depression, etc.
- 8- Weight reduction / Weight increase - Body attain ideal Body weight

### **Do's and Dont's:**

#### **Do's of Yoga**

- "Early to bed and early to rise makes a man healthy, wealthy and wise" is a universal adage. Yoga practitioners should go to bed early, have a sound sleep and get up early in the morning, attend to nature's call, wash the mouth and teeth thoroughly, take a bath and start yoga in fasting mode. It is advisable that one should wake up and practice Yoga in '*Brahm Muhrat*' which is from 4:30 am to 5:30 am.

- Yoga can also be practiced 1 hour after a liquid diet, 3 hours after refreshments or 5 hours after full meals.
- One could practice, yoga even before bath but, after practice one should wait for some time and then take a bath.
- Yoga should be practiced on a levelled floor in a room where doors and windows are kept open for air and light.

#### Don'ts of Yoga

- Women should refrain from regular yoga practice during their menses or pregnancy. However, for them there are a specific set of asanas to be done.
- Don't have a full tummy while doing yoga, wait until 2 to 3 hours after large meals.
- Don't take a shower or drink water for 30 minutes after doing yoga.
- During illness, after operations, when there is a bandage either for sprains or fractures, one should refrain from Yoga Practice. They can resume yoga after consulting experts.
- Don't do strenuous exercises after yoga.
- One should not practice yoga in unclean/smoky place and areas with a foul smell.
- Yoga should not be practiced in storm winds either.

### Activities

### Check Your Progress

## Session 2: Safety Measures and Healthy Environment

### Health and safety risks at workplace

The probability of a person to experience an adverse health effect if exposed to a hazard is considered as a risk factor at work. Let us now learn about the various types of hazards and their causes. This will help us to identify the various hazards that one may encounter at a workplace.



**Fig. 3.1: Hazards**

### Workplace Safety

'Hazard' is a set of conditions, which can be a risk to health or life. It can be an atmosphere of work place or construction of a machine or working procedure. Anything out of these can be a Hazard.

For understanding it better, we can see Examples of various hazards and threat possessed by them. Oil on the floor creates a Slip hazard. Use of Asbestos causes

Cancer and other breathing problem hazards. Use of broken electric wires creates electro cut on hazard and fire hazard by potential sparking out of it.



**Fig. 3.2: Diagram of Safety at the workplace**

### **Hazards at a Yoga Center**

Apart from some common hazards of working areas, Yoga industry has some exclusive hazard, which is associated with making postures during Yoga. First, we will learn common hazards of workplace in detail –

#### **Manual Handling**

Around 40% of the total accident at workplaces is reported due to this cause.

#### **Accident by Moving or Falling Objects**

This is one of the other big hazards at the workplace. There are many big and heavy things at workplaces which are difficult to manage manually. During transportation also, if they are not secured properly then there is a chance that they may fall from moving the vehicle or can fall on the person who opens the door of the closed transportation vehicle. Special safety arrangement should be made to load heavy objects.



**Fig.3.3 : Diagram of Falling objects**

#### **Slips and Falls**

This is also one of the biggest reasons for workplace accidents. The floor of the workplace should be free from any oil or slippery material. Also, aisles should be clutter free so that movement of persons and trolleys remains smooth.





**Fig. 3.4: Diagram of Slips and Falls**

### Other Hazards

Apart from above hazards, there are some other hazards which are very dangerous. These are following -

- 1- Physical Hazard
- 2- Biological Hazards
- 2- Chemical Hazard
- 3- Ergonomic Hazard

#### 1. Physical Hazard

These hazards are caused due to slippery surfaces, falling objects, manual handling (lifting, pushing, carrying), sharp tools and equipment, radiation, magnetic fields, extreme pressure (high pressure or vacuum), excessive loud and prolonged noise, and bullying (abnormal, repeated behaviour directed against a worker or group of workers, causing health and safety risk). These may cause stress, depression, loss of self-esteem, feeling of guilt, phobias, sleeping and eating disorders, etc.

#### 2. Biological

Biological hazards are caused by living organisms, like bacteria, viruses, insects, plants, birds, animals, humans, etc.



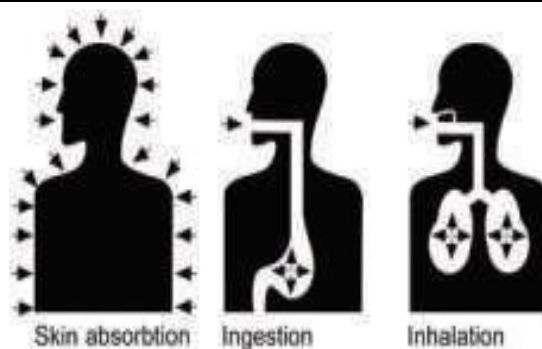
**Fig. 3.5 Diagram of Biological Hazards**

#### 3. Chemical Hazard

There are many chemicals that are used in workplaces. Prolonged exposure to these chemicals without using effective PPEs can affect human body adversely.

There are 3 ways of getting affected by chemicals.

- 1- Inhalation
- 2- Ingestion
- 3- Absorption



**Fig. 3.6: Diagram of Chemical Hazards**

#### 4. Psychosocial

Psychosocial hazards are caused due to violence, excessive pressure or stress at workplace for meeting deadlines, conflicts at workplace, etc. It also includes hazards due to discrimination on the grounds of caste, race, skin colour, ethnic origin, sex, religion, etc.

#### 5. Ergonomic Hazards

Ergonomic hazards are caused due to same posture and movements for a long time, improper layout of workstation (e.g., computer workstation, workstation for repair of electrical gadgets, etc.), faulty chairs, tools and equipment, etc. Wrong postures also cause fatigue, back pain, and discomfort in shoulders and lower limbs.

Ergonomic hazards can cause painful and disabling injuries to joints and muscles. These can occur from:

- Heavy, frequent, or awkward lifting
- Repetitive tasks
- Awkward grips, postures
- Using excessive force
- Over exertion
- Using wrong tools for the job or using tools improperly
- Using improperly maintained tools
- Hand-intensive work

##### **Correct Lifting position**

- Chin tucked in
- Comfortably straight back
- Leaning slightly forward
- Arms close to body
- Secure grip
- Bent knees & Proper foot position



**Fig. 3.7: Diagram of correct lifting position****Safety**

Safety hazards at a workplace include slipping or tripping, inappropriate machine guarding, collision, bumps, road and fire accidents, equipment malfunctions or breakdown, and electrical accidents (it can cause burns, affecting areas in contact with the current).

**Identify the Special Hazards in Yoga Center**

Following are some special Hazards associated with Yoga Center -

- Falling hazard while doing upside down Yoga poses, like Shirshasana or Sarvangasana.
- Ergonomic hazard of Muscle pulling while doing difficult poses with a stiff body, like Paschimottanasana.
- Neck pain hazards while doing difficult poses like- Sarvanangasana.
- Severe Back pain or Slip disc hazard while doing difficult poses like- Halasana.
- Tearing ligament while doing some special asanas. Sprained ankle hazard while doing some asanas, like - Vajrasana.

**Safety Precautions during Yoga**

Following are the precautions to be taken while doing yoga -

- First and foremost precaution is to do Yoga in the supervision of some trained Yoga Instructor only.
- Get doctor's advice before starting Yoga, especially after the age of 30 years.
- Do not push yourself beyond your body's flexibility limit.
- Never compete with anybody while doing difficult poses or holding
- a yoga pose for longer durations. Every person has different ability to do yoga, and everyone should respect its own body's endurance limit.
- Do not attempt Yoga immediately after eating or drinking something, there should be a gap of minimum 3 to 5 hours after your last meal.

**Fig. 3.8. Assistance from Yoga Instructor for avoiding injury****Safety Hazard During Practicing Yoga**

Although Yoga is for improving one's health, but if not done correctly it may cause harm to the body also. During Shirshasana, one may fall and get injured. Similarly, Sarvangasana has the same hazard. In some asanas, like Halasana – one may over stretch one's back and may get injured. The threat of Back injury is also present in forward and backward bend and during Paschimottasana. New practitioner may pull their muscles if warm up is not done properly or difficult posture asana is done without precautions.

One may get dehydrated if one is sweating too much during Yoga. There is a chance of vomiting if yoga is practiced immediately after having a meal.

There is also a risk of Heart attack if a person is suffering from Heart disease and he / she does very exhaustive Yoga, which increases their heart rate very high.

### **Role and Responsibilities of YGTA during Yoga Session**

There are many threats present while practicing Yoga, but these all can be avoided if it is done under supervision and with some precautions. Following are the precaution one must take during Yoga exercises.

#### **1. Medical Condition of Yoga Practitioner**

New Practitioner must get him / herself medically checked completely. One must take one's doctor's advice before taking up Yoga exercises. There are certain Yoga exercises, which should not be done by Heart patients or person suffering from other diseases. On review of medical reports, Yoga Instructor can advise properly which exercises needs to be avoided.

#### **2. Yoga under Supervision**

New Practitioner must start yoga under good supervision only. Yoga Instructor is required to give continuous advice for improvement. Yoga Instructor is also helpful in giving initial support while taking up difficult yoga postures. It is ok to practice some easy Yoga Postures after reading the book or by seeing the video. But difficult postures, such as Shrisasan or Halasan must be done under Yoga Instructor supervision only.

#### **3. Don't Push Body Too Much**

Initially, the body of Yoga Practitioner would be stiff, and he / she might be over enthusiastic for doing difficult yoga postures by seeing videos or fellow yoga practitioner. In that scenario, he / she might want to push his / her body to its limits of bending or straining. But you should not let him/her cross the limit and should allow his / her body to adjust. You should increase the intensity of Yoga Posture, gradually. You should continuously counsel them to have patience in doing difficult yoga postures.

#### **4. Practicing Yoga with Empty Stomach**

You should ensure that yoga should be practiced with an empty stomach. There are many yoga postures in which you pose upside down or put pressure on your stomach. If you are not empty stomach, you could vomit, or there could be a pain in stomach. Ideally, you should keep a gap of 3 to 5 hours after your last meal.

#### **5. Do not Drink Too Much Water during Yoga Practice**

You should avoid drinking too much water during Yoga practice. The temperature of the room plays a great role in this. If there is too much heat in the Yoga room, then you tend to sweat more and feel more thirstier. Hence you should do yoga at a comfortable temperature. If you really have to drink water then take only a few sips of water.

#### **6. Take Precautions in Practicing Yoga during Pregnancy**

You can practice Yoga during pregnancy, but you need to take expert Yoga Instructors advice on the type of Yoga to be done and for other precautions. If precautions are not taken, there could be a complication in pregnancy and person may face abortion also.

#### **7. Precautions in Practicing Yoga During Menstruation**

You should avoid asanas in which you have to elevate your pelvis higher than your heart. You should also avoid the postures which put pressure on your lower abdomen.

#### **8. Precautions During Back Bending Yoga**

Never bend your back too much in initial attempts. Gradually increase the intensity. Bending your back too much or bending it with a jerk may cause harm to your back.

### 9. Precautions During Upside Down Yoga Poses

Initially, always take support doing upside down yoga. There is a big risk of falling till the time you master these poses. Also always do these asanas under supervision.

### 10. Precautions For Heart Patients

There are some yoga poses which are prohibited for Heart patients. Persons undergone Bypass Surgery or Angioplasty must avoid all upside down poses and yoga postures which put Heart under strain.

### 11. Duration of Yoga Poses

You should immediately leave a Yoga pose if you are feeling uncomfortable or feeling unbearable pain in any of your body part. Putting your body under undue stress may cause more harm than benefit.

### 12. Avoid Competition

When doing Yoga in a group, it is natural to have a feeling of competition in doing difficult pose or doing it for a longer period. You need to understand one thing that everybody has the different ability for bending or enduring the pain. Everyone gets the benefit of yoga (some less and some more), even if it is done for a shorter period. You should give your body sometime to adapt to Yoga. In competition, you may harm your body.

## 2. Role of yoga therapy assistant

### Triage System

Moving an injured patient to and within the hospital must be performed with care. The hospital transportation system for patients is internal, external and various methods of triage. Internal transportation includes the use of trolleys, stretchers, lifts, escalators, etc., for transporting patients, equipment and other supplies, whereas, external transportation includes ambulances, relief vans, trains, or manual labourers, etc. Transportation is done to ensure that a victim reaches the hospital without deterioration in her/his condition. A severely injured or ill person must be immobilised unless there is a threat to his life. A critically ill patient must never be left with untrained personnel. A female patient must never be left alone with a male attendant.



**Fig. 3.9: Triage with a red tag**

Triage in treatment (first aid and transportation)

- **Red tag (highest priority)**



Severe breathing difficulty, cardiac arrest, burns involving respiratory tract, heart attack, poisoning, etc.

- **Green tag (second priority)**

Severe burns, spinal injury, moderate haemorrhage, multiple fracture, head injuries

- **White tag (least priority)**

Minor fracture, minor bleeding, moderate or minor burns

## Activities

## Check Your Progress

## Session 3: Infection Control Methods

In this session, you will learn about the various methods of disinfecting equipment's.

### Learning Outcome(s)

On completion of this session the student will be able to:

- ☐ Demonstrate the methods of disinfection.

Microorganisms are present everywhere. Since they cause contamination, infection and decay, it becomes necessary to remove or destroy them from materials or from areas in the hospital. There are various measures adopted in order to prevent the spread of microorganisms in the hospital. Good housekeeping is therefore, of paramount importance in a hospital. Providing safe, clean and orderly environment is the responsibility of all the personnel in a hospital. Every patient has the right to be protected from the Hospital Acquired Infections. In order to ensure that the patients are protected from HAIs, various procedures and practices are adopted which include cleaning, sterilization and disinfection using physical, chemical and other methods.

In this session, you will learn about the various agents, machines, equipment and methods adopted by the medical staff in disinfecting ward and equipment.

Let us first try to understand the meaning of some of the common terms, such as cleaning, sterilization and disinfection used in prevention and control of microorganisms.

### Cleaning

Cleaning plays an important preparatory role before sterilization or disinfection. Cleaning helps in removing soil and other dirt and reducing the microbial burden,

making sterilization more effective. The various equipments that are used for cleaning include, but not limited to the following:

- Floor cleaning machines
- Swiping machines
- Floor scrubbing machines
- Floor polishing machines
- High pressure machines to clean bathrooms

**Daily cleaning:** This includes sweeping and mopping floors, dusting furniture, cleaning fixtures, walls, ceilings, windows and bathrooms, emptying trash cans, etc.

**Periodic Cleaning:** It includes washing windows, waxing floors, cleaning carpets, dusting high ceilings and changing drapers.

**Discharge cleaning:** This includes cleaning patient room after discharge or transfer of a patient and readying it for another patient.

**Exterminating bugs and pests:** Hospital's Integrated Pest Management (IPM) plans help direct a hospital in carrying out its pest control practices regularly. An IPM programme is a pest management approach to preventing and managing pest problems in the least hazardous manner possible. It emphasizes on pest prevention through good sanitation practices and maintaining structures in optimum repair. Pesticides are used only when needed, primarily in baits. Records are kept of all pesticide applications. The hospital should utilize the services of a licensed pest control agency. All hospital staff should be educated about the hazards of pesticides and the advantages and principles of IPM. Prior notification of pesticide use in the hospital should be done well in advance and all precautions should be taken.

**Trash and garbage removal:** Waste generated from the hospital has to be carefully disposed of as per the guidelines issued by the government. The various types of waste generated in the hospital include, but not limited to the following:

- a) **Solid waste** – This waste is also called municipal waste or non-regulated medical waste. This is general trash, similar to what you would find in a hotel but with more plastics and packaging.
- b) **Regulated Medical Waste (RMW)** – This waste stream is also called potentially infectious material, red bag waste or bio hazardous waste.
- c) **Pharmaceutical Waste** – Some pharmaceutical waste is considered hazardous while a large majority may not require handling as hazardous waste, but should receive special disposal considerations, including controlled substances.
- d) **Universal Waste** – Universal waste include batteries, pesticides, mercury-containing equipment, bulbs (lamps), etc.
- e) **Recyclables** – Recyclables are items and materials bound for the waste stream that can be converted into a reusable material. Recyclables in healthcare include the usual suspects found in commercial buildings such as paper, cardboard, beverage and food containers, metal and glass.

**Sterilization :** Sterilization is defined as the process by which an article, surface or medium is freed of all living microorganisms either in the vegetative or spore state.

**Disinfection :** Disinfection means the destruction or removal of all pathogenic organisms, or organisms capable of giving rise to infection. This is the freeing of an article from some living organisms and is used in conditions where sterilization is not needed, e.g., disinfection of bed-pans, wash basins, furniture, eating utensils



and clothes. A perfect disinfectant would also offer complete and full sterilization, without harming other forms of life, be inexpensive, and non-corrosive.

**Antisepsis** : Antisepsis is used to indicate the prevention of infection, usually by inhibiting the growth of bacteria in wounds or tissue. Chemical disinfectants which can be safely applied on the skin or mucous membrane and are used to prevent infections by inhibiting the growth of bacteria are called antiseptics.

**Decontamination** : Decontamination refers to the process of rendering an article or area free of danger from contaminants, including microbial, chemical, radioactive and other hazards.

**Table No. 1**

**Difference between Antiseptics and Disinfectants**

Antiseptics	Disinfectants
<ul style="list-style-type: none"> <li>• Use on skin and mucous membrane to kill microorganisms</li> <li>• Not for use of inanimate objects</li> </ul>	<ul style="list-style-type: none"> <li>• Use to kill microorganisms on inanimate objects</li> <li>• Not for the use on skin and mucous membrane</li> </ul>

**Properties of an Ideal Disinfectant**

The properties of an ideal disinfectant include the following:

- Resistant to inactivation
- Broadly active in killing pathogen
- Non-poisonous
- Penetrating to pathogens
- Not damaging to non-living materials
- Stable
- Easy to work with and not unpleasant

The various agents used in sterilization can be classified as follows:

A. Physical agents

- Sunlight
- Drying
- Dry heat : flaming, incineration, hot air
- Moist heat: pasteurization, boiling, steam under normal pressure, steam under pressure
- Filtration : candles, asbestos pads, membranes
- Radiation
- Ultrasonic and sonic vibrations

B. Chemical

- Alcohols: ethyl, isopropyl, trichlorobutanol
- Aldehydes: formaldehyde, glutaraldehyde
- Dyes
- Halogens
- Phenols
- Surface – active agents
- Metallic salts: e.g. salts of Ag, Cu, Hg
- Gases : ethylene oxide, formaldehyde, beta propiolactone



**Fig. 3.10: Diagram of various agents used in sterilization**

### **Effectiveness of Antimicrobial Agent Activity**

Destruction of microorganism and inhibition of microbial growth are not simple matters because the efficiency of an antimicrobial agent (an agent that kills microorganisms or inhibits their growth) is affected by at least six factors.

1. **Population Size:** Because an equal fraction of a microbial population is killed during each interval, a larger population requires a longer time to die than a smaller one. The same principle is applicable to chemical antimicrobial agents.
2. **Population Composition:** The effectiveness of an agent varies greatly with the nature of the organisms being treated because microorganisms differ markedly in susceptibility. Bacterial endospores are much more resistant to most antimicrobial agents than are vegetative forms, and younger cells are usually more readily destroyed than mature organisms. Some species are able to withstand adverse conditions better than others. *Mycobacterium tuberculosis*, which causes tuberculosis, is much more resistant to antimicrobial agents than most other bacteria.
3. **Concentration / Intensity of an Antimicrobial Agent:** Often, but not always, the more concentrated a chemical agent or intense a physical agent, the more rapidly microorganisms are destroyed. Sometimes an agent is more effective at lower concentrations. For example, 70% ethanol is more effective than 95% ethanol.
4. **Exposure Time:** The longer a population is exposed to a microbiocidal agent, the more organisms are killed.
5. **Temperature:** An increase in the temperature at which a chemical acts often enhances its activity. Frequently a lower concentration of disinfectant or sterilizing agent can be used at a higher temperature.
6. **Local environment:** The population to be controlled is not isolated but surrounded by environmental factors that may either offer protection or aid in its destruction. A second environmental factor is organic matter that can protect microorganisms against heating and chemical disinfectants. It may be necessary to clean an object before it is disinfected or sterilized. Surgical and medical or dental equipment should be cleaned before sterilization because the presence of too much organic matter could protect pathogens and increase the risk of infection. The same care must be taken when pathogens are destroyed during the preparation of drinking water. When a city's water supply has a high content of organic material, more chlorine must be added to disinfect it.



**Fig. 3.11: Diagram of Antimicrobial Agent**

### **Antimicrobial Mode of Action of Disinfectants and Antiseptics**

The disinfectants and antiseptics acts in the following ways:

1. Denaturation of bacterial proteins by disrupting hydrogen and disulfide bond (for example phenol in high concentration, alcohol, heavy metal in high concentration, acids, alkalis, aldehydes).
2. Damages to bacterial membrane (lipids and/or proteins), causing leakage of intracellular molecules. (for example phenol in low concentration, surfactants, dyes).
3. Interference of bacterial enzyme and metabolism (for example oxidants, heavy metals in low conc., alkylating agents).

### **Uses**

- To sterilise culture media, rubber material gowns, dressing, gloves, etc.
- It is particularly useful for materials which can withstand the higher temperature of hot air oven.

## **Activities**

## **Check Your Progress**

## **Session 4: Waste Management**

Municipal solid waste (MSW), commonly known as refuse, is non-hazardous garbage that must be collected and transferred to a processing or disposal facility. Garbage and waste are examples of refuse. Garbage consists primarily of compostable food waste and dry materials such as glass, paper, cloth, or wood. Garbage, on the other hand, is extremely putrescible and decomposable, but trash is not. Bulky goods like old refrigerators, couches, and massive tree stumps, as well as building and demolition waste (e.g., wood, drywall, bricks, concrete, and rebar a steel rod with ridges for use in reinforced concrete), all of which require special collection and processing, are considered trash. Sanitary landfills—pits or other places covered with impermeable synthetic bottom liners where garbage is segregated from the rest of the environment—are frequently used to dispose of refuse.

Municipal liquid waste is channeled through sewage systems in developed countries, where it is treated as wastewater or sewage. Before wastewater, or sewage, may enter groundwater aquifers or surface waters like rivers, lakes, estuaries, and seas, this procedure eliminates most or all of the contaminants. (See wastewater treatment for further information on sewage systems and treatment.)

In this session, you will learn about the Domestic waste management.

### Learning Objective

On completion of this session the student will be able to:

- ☐ Demonstrate the knowledge of domestic waste management.

In this session, you will learn about the concept of Domestic waste management. You will study about the risks involved with poor waste management, classification of waste and disposal of domestic waste.

Wastes can be of numerous types and much of the waste generated today is non-biodegradable waste. Globalization and industrialization have contributed to this hugely. The dumps with harmful substances in the waste can release toxic fumes and smoke. Therefore, the correct disposal for the particular kind of waste is necessary, for example burning all kinds of wastes may lead to the above problem and cause harm to bodies. Also, dumping into rivers and filling land depressions without proper administration is not encouraged. Wastes including plastics, batteries, sanitary and oil products should be properly disposed of. Doing so may result in a hazardous environment and a polluted atmosphere.

Waste management is an important term associated with waste disposal and both go hand in hand for maintaining a clean environment. Thus, the waste disposal definition should also include a waste management system. The 7 R's associated with waste management are Refuse, Repurpose, Reduce, Reuse, Rot, Recycle and Rethink. Following each of these steps in the process of waste disposal will help enormously to live hygienically and healthily. It is necessary not only for us but also for the next generations to come. It also prevents waste disposal workers, employees in landfill facilities, and other related workmen to reduce risks associated with improper handling of wastes. It may cause blood infections, respiratory and growth problems, skin irritations, etc. Therefore, waste disposal should not be dependent upon the workers, rather the concern should start from every home. Waste segregation should be followed everywhere including homes and commercial. Segregating biodegradable waste, non-biodegradable and toxic products should be followed.

Let's learn about the various methods of waste disposal which are carried out for the cleaning up process.

### Definitions

Domestic waste is garbage and waste materials discarded from households. It can include food materials, plastics, cardboard, rubber, metal, paper, wood, fabric, chemicals, etc. (a) Wet waste, (b) dry waste, (c) hazardous waste

### Classification of Waste

The World Health Organization (WHO) has classified the hospital waste in to the following categories:

1. General Waste: The waste generated from office, administrative offices, kitchen, laundry and stores. It includes general domestic type waste from offices, public areas, stores, catering areas, comprising of newspapers, letters, documents, cardboard containers, metal cans, floor sweepings and also includes kitchen waste.

2. Sharps: Hypodermic needles, needles attached to tubing, scalpel blades, razor, nails, broken glass pieces, etc.
3. Infected waste: Equipment and instruments used for diagnostic and therapeutic procedures, waste from surgery like tissues and organs removed and autopsy.
4. Chemical waste: Formaldehyde used for preserving tissues and organs, fixer and developers used in radiology department. Solvents like xylene, acetone, ethanol and methanol used in laboratories.
5. Radioactive waste: Various radioactive wastes generated through the activities of the department like research activity, clinical laboratory and nuclear medicine department
6. Cytotoxic drugs: Various anti-cancer drugs.
7. Recyclable Waste: It includes glass after cleaning and disinfection, paper, corrugated cardboard, aluminium, X-ray film, reclaimed silver from X-ray developing solution, Plastics after disinfection and shredding.



**Fig. 3.12: Diagram of Various Waste**

### **Methods of Waste Disposal**

**The various methods of waste disposal known are as follows:**

1. Incineration
2. Biogas Generation
3. Composting
4. Waste compaction
5. Vermicomposting
6. Landfill

#### **Landfill**

In this process, the waste type involves non-reusable and non-recyclable substances which are spread in a thin layer in specific low-lying lands or areas. These areas are dug deep where waste is disposed inside then a layer of soil will be used to cover it back. These areas are declared unfit for activities like construction of buildings for the next 20 years. That site can be made use for building parks or playgrounds in the near future. It is one of the hugely adopted methods of waste disposal in a bulk manner.

#### **Incineration**

Incineration is the treatment of waste or waste disposal by the means of burning where the garbage turns into the incombustible matter like gases and ashes. Incinerators are believed to be environmentally very dangerous as the resultants are heavy metals, which are placed in landfills ultimately making air, water, and soil polluted. However, there are numerous benefits associated with this process including decreased waste quantity, production of power and heat, pollution



reduction, no transportation of waste required, control over noise and odor, and elimination of chemical and harmful germs.

### **Generation of Biogas**

Food items, animal waste, municipal waste, vegetable/fruit peels and organic industrial wastes are biodegradable waste which means these can be decomposed by bacteria or other organisms. Using these wastes, biogas is produced at small as well as a large scale where bacteria, fungi, and other microbes easily degrade the substances. The organic biodegradable matter that is broken down or has to be decomposed serves as food for microorganisms. The biogas production process can happen anaerobically i.e. without oxygen as well as aerobically i.e. with oxygen. The outcome is biogas which is used as a fuel and the remains are used as manure in fields or plantations. Biogas is a mixture of gases, primarily methane and carbon dioxide. This kind of waste disposal method is beneficial as the wastes are utilized in production of something useful.

### **Waste Compaction**

Waste compaction involves a proper technique that includes shredding the waste into smaller pieces, pushing to mix properly and placing it in such a way to fill voids. Waste compaction results in reducing the amount and size of waste that ultimately results in less pollution of the environment. Recycling is also one of the best methods to reduce waste and it can be performed for cans, plastic bottles, cardboards, paper, metal, textiles, electronics, batteries, tires, etc. Reusing these kinds of wastes is possible through recycling.

### **Composting**

Composting is one of the waste disposal methods that begin from our kitchen. It deals with all organic materials including food scraps, garden waste, fruits and vegetable peels. When these substances are buried and left under the soil for some days, those decay under the action of bacteria, fungi and other microorganisms. As a result, decomposition takes place and a humus-like substance called compost is formed. It is highly beneficial to be used as manure or fertilizer as it is nutrient-rich that can replenish the soil to grow crops or plants. It's also known to enhance the water retention capacity of the soil and is the best alternative to harmful chemical fertilizers.

### **Vermicomposting**

Also known as vermiculture, vermicomposting is one of the waste disposal methods and it is performed by the decomposition process using white worms, red wigglers, earthworms and other worms to break the organic matter like vegetable or food waste. Vermicast is the end product generated as a result of breakdown of organic waste by earthworms. Vermicompost or vermicast is highly water-soluble that acts as an excellent source of nutrients and thus used as fertilizer. It is often mixed with soil in a standard ratio or added as a liquid fertilizer.

**Nosocomial infections:** Nosocomial infections are infections that have been caught in a hospital and are potentially caused by organisms that are resistant to antibiotics. It is the infection that was not present or incubating prior to the patient's being admitted to the hospital, but occurs within 72 hours after admittance to the hospital. The sources of hospital acquired infection are as follows:

- a) Patients own flora
- b) Flora of another patients
- c) Fomites-any object or substance capable of carrying infectious organisms.
- d) Environmental sources

- e) Contamination by patients, attendants, visitors and hospital staff.

The routes of transmission of infection can be:

- Aerial route for example, through inhalation of hospital dust.
- Direct contact for example, through abrasions on skin, or through mucous membrane.
- Faecal – oral route for example, through ingestion of food, water with contaminated hands
- Parenteral route during the process of injections and infusions.
- Through equipment and materials.

## Activities

## Check Your Progress

## Session 5: Qualities of a Yoga Therapy Assistant

This session throws an insight into the role and responsibilities of a Yoga therapy Assistant in yoga practices. A Yoga therapy Assistant provides services to clients under the supervision of Yoga therapist in a yoga session. YGTA as must be empathetic, and have good communication and yoga therapy skills.

### Essential duties and responsibilities

The essential duties of a YGTA include the following:

1. Assist professional yoga staff in performing physical examinations and related procedures, which include measuring and recording vital signs, temperature, blood pressure.

- Client data, such as personal details, phone numbers, any disease, are taken and recorded according to the policies and procedures of yoga center.
- Team members are informed timely if there is a change in the yoga timings of the client.
- The client is assisted with personal hygiene.
- S/he is given assistance with ADLs (Activities of Daily Living), exercise and ambulation as directed by therapists and health care staff.
- Personal care and yoga related services are provided to the client at home or in the hospital as needed.

### 2. Help in maintaining the safety of clients :-

- The environment of the yoga room, which includes the yoga area, is kept neat and clean.
  - Creating a yoga room in a home setting to maintain a safe environment when the client is unable to visit the yoga center.
- Equipment maintenance and safety checks are completed in accordance with the policies and procedures followed by the Yoga Center.
- Events and incidents are promptly reported to the relevant people using the Yoga Centre's reporting process, which involves computers and various software.

### 3. Perform administrative support functions:-



- Clients record duties, including file maintenance and record-keeping, are completed when necessary.
- Orders related to purchases and supply of inventory are completed according to the yoga center guidelines.

#### **4. Master necessary skills and competencies: -**

- Competency in the use of new equipment is achieved and maintained.
- Opportunities for professional development are identified and goals for self-improvement are set.
- The education and development of others is fostered by sharing information learned through individual professional development.
- A positive environment for the professional development of co-workers is encouraged.
- Annual mandatory training activities and regulatory in-service hour requirements are completed within set timeframes

#### **Organisational duties :-**

The organisational duties of a YGTA include the following:

##### **1. Communicate to maintain good interpersonal relationships:**

- Positive professional qualities of an employee are reflected in her/his verbal and non-verbal communication.
- Information about clients and staff is provided in a supportive and timely manner.
- Interpersonal conflicts are resolved as per organisational policies.
- Diverse perspectives in personal and social arenas are accommodated to nurture inclusive work environment.
- Clear communication pattern is followed.

##### **2. Service extended to internal and external customers :**

- Confidentiality for client and employee information must be maintained.
- Appropriate resources are used consistently to meet customer needs.
- Relationships with staff are fostered to meet internal and external customer needs.
- Positive work relationships with peers, management and customers are maintained at all times.
- Organisational values must be followed with respect, integrity, excellence and must be evident in the yoga therapy assistant's behaviour.

##### **3. Participate in performance improvement activities :**

- An initiative taken by an employee is demonstrated by trying to resolve problems of the people around.
- Change is faced with positive and supportive behaviour.

#### **Qualities of a Yoga Therapy Assistant**

##### **Empathy**

- Ability to identify with and understand the other person's feelings, situation and motives
- Interest in working with people
- Care about others and ability to communicate and work with them
- Understand the needs of people and learn effective communication skills to develop empathy

##### **Honesty**

- Truthfulness and integrity
- Admit to committing mistakes and correct them

##### **Dependability**

- Accept the responsibility as required
- Maintain punctuality
- Perform the assigned tasks efficiently and on time

#### **Willingness to learn**

- Ability to learn and adapt to changes that results from inventions and other factors
- Willingness to study further if required

#### **Patience**

- Must be tolerant
- Learn to deal with workload, frustration and overcome work-related obstacles

#### **Acceptance of criticism**

- Take the criticism of patients, employers and co-workers in a constructive manner so as to improve her/his efficiency.

#### **Enthusiasm**

- Must enjoy work
- Enthusiasm benefits oneself and others in improving the team spirit

#### **Self-motivation**

- Initiate and acclimatise with a task
- Individually determine work on priority basis and follow them

#### **Tact**

- Ability to tackle difficult situations with ease
- Avoid being judgemental about other's feelings and show consideration towards them

#### **Competence**

- Capability to perform tasks efficiently
- Follow instructions
- Use approved procedures and try to maintain accuracy
- Get guidance whenever necessary

#### **Discretion**

- Information must not be passed on to anyone without authorisation
- A client is entitled to confidential care
- Be discreet and ensure that the client's rights are not violated

#### **Team player**

- Learn to work with others
- Each member of a yoga therapy team will contribute to provide the client with quality care
- A team of workers can accomplish the goals faster

#### **Personal appearance**

- Keep yourself well-groomed
- Wear the uniform as per the place of employment
- Wear a photo identity card as issued by the place of employment

#### **Practices to be avoided by YGTA**

- Advising clients and other health professionals without the preceptor's authority
- Accepting payment, either directly or indirectly, from client(s)
- Requesting to be placed with someone you are related to
- Requesting for changes and withdrawal after rotation assignments are made.

## **Activities**

## Check Your Progress

### Module 4

### Personal Hygiene And First Aid

#### Introduction

Human body provides the base for disease causing microorganisms to grow into it. Personal hygiene habits prevent these germs from entering the body. To preserve hygiene, care should be taken to maintain domestic and personal hygiene. Personal hygiene activities are the activities we perform to keep our body clean and include taking bath, hand washing, cleaning hair, dental hygiene etc. Indian cultural traditions focus on the value of maintaining personal hygiene. We follow a set sequential of oral care, bathing, and dressing. This inculcates the daily habit of keeping clean our body.

This unit describes the methods of washing hand, personal grooming practices and its role in maintenance of health. It also explain tool for home health aide. After completion of this unit, you will be able to comprehend personal hygiene methods and first aid practices which are very essential tools for a Home Health Aide.

#### Learning Outcomes

#### Module Structure

Session 1: Good Hygiene Practice

Session 2: Hand Washing

Session 3: Demonstrate Personal Grooming

Session 4: First Aid and Health Emergency at Workplace

Session 5: Identify Facilities, Equipment and Materials for First Aid

Session 6: Role and Functions of Yoga Therapy Assistant as First Aider

#### Session 1: Good Hygiene Practice

On completion of this Session, student will be able to explain good hygiene practices including hand washing, personal grooming practices and its role in maintaining sound health.

**Hygiene** is a set of practices performed for the preservation of health. While in modern medical sciences, standard of hygiene varies in different situation. What is considered hygienic or not may vary between different cultures and gender groups. Some regular hygienic habits can be considered as good habits by a community, when they ignore of hygiene may be disrespectful, impolite or even denunciative. Sanitation involves the systemic dispose of waste and treatment through the civic authority of potentially unhealthy human waste, such as sewage and drainage.

## Personal Hygiene

Good grooming and Good health is the first step of personal hygiene. Primary hygiene is common knowledge of individual. Negligence of hygiene causes problems that you may not even know about. Many persons unaware of bad breath irritate the people around them and so damage their image. Some hygiene problems can't be your mistake, but we can improve quality of hygiene standards that will control this condition such as dandruff and lice infection that cause hair fall and itching condition. The more you care about your hygiene level, the more you develop a habit of healthy living.

## Grooming Routines

Our body's every external parts need basic care and cleanliness. Here are some daily grooming routines to avoid complaints.

- Hair
- Skin
- Teeth
- Hands
- Nails
- Feet
- Menstrual Hygiene
- Dressing and Undressing
- Bathing
- Shaving

## Hair

Hair is humans head crowning glory. So hair needs regular care. Wash your hair in a week at least two times using soap and shampoos and rinse well. Avoid hair washing with chemicals borax or alkalis. Dry your hair after a wash. Brush your hair three to four times a day with a soft bristled brush or a wide toothed comb. Wash your brush and comb every time you wash your hair. Oil the scalp, once a week, preferably an hour before hair wash. There are no completely safe or permanent hair dyes yet. In addition to causing scalp allergies, dyes can also cause allergic colds and throat infection. Every time you use a hair color, do a sensitivity test before use hair dyes or color.

## Skin

In many culture, bathing is a part of daily activity. Bathing with soap and water keep our skin healthy and clean. In daily lives, bathing may be done for two times in, in tropical regions like India. Peoples who are involved actively in sports or heavy work like to be sweat a lot thus; they need to take bath after the activity. We may use Bathing brushes/sponges or scrubbers to exfoliate dirt. But don't use abrasive material ob body. Washing of every part is essential after using soap. Drying the body should be done by using clean towel. Always, avoid soaps and towels sharing with another person. After bath change your underwear and using clean washed underwear. Use moisturizing cream for hydrating the skin. Before going to bed, cream or oil can be applied to skin.

## Teeth

Teeth are very important part of our life. White and clean teeth make our smile attractive and also help in eating food. Teeth require cleanliness and oral care twice daily.

*Have you heard about battery operated wonder brush that operates for sixty second?*

You have to hold the brush in your teeth and say cheese (and then perhaps S-A-U-C-E for the brush to get a good scrub inside!). So, you can use neem twig or tooth brush but you should never miss brushing. Brush and clean the teeth in two times a day and rinse them well after every meal. Brushing is important before sleeping (especially needed for people with a sweet tooth). While brushing, clean the teeth all around places because during eating, some food particles stuck in-between the teeth in the gap of flatter teeth at the back of molar and premolar teeth and serve as growing media for the micro-organisms. Brushing should be done on both upper and lower teeth. Use a vertical zigzag motion with normal speed. Pay attention to the inner surface of teeth and tongue. The brush should be flexible. It should be well clean and left to dry after use. Always prefer good quality toothpastes and powder available in the market. Daily brushing prevents from getting oral disease such as mouth smell, gingivitis, yellowish teeth and layer of cavity.



**Fig. 4.1: Oral care**

#### **Hands**

Micro-organisms are present all around the world in crowd and some invisible bacteria are found in human bodies. A layer of dust or grime reduces the sensibility of the hands. Washing your hands clean with soap and water before and after every meal and after visiting the toilet is a must. Soap should cover the area between fingers, nails and back of the palm. After thorough washing, hands should be wiped and dry with a clean towel. The towel has to daily washed and changed at the wash stands.

While preparing food, especially during packing of lunches, we can also prevent food from spoilage or waste and reduce contamination by keep your hands clean. While handling the food avoid rubbing, or touching the nose, ears, mouth or other body parts. If you need to use a tissue paper or handkerchief, after that wash and clean your hands. Keep your nails short because big nails carried germs and causes disease. Avoid Nail Polish because it may enter in our digestive system with meal and affect our health. Always keep your hands neat and clean.



**Fig.4.2: Hand hygiene**

#### **Nails**

Nails are dead cells of our body, made up of keratin. For a health professional, nails should be regularly trimmed and clean. Also home health aide need to maintain the cleanliness of patient's nail. To maintain healthy nails, always cut the nails short along their shape, don't cut them so deep because it may damage the skin. A healthy body ensures healthy nails. Fragile or discolored nail shows the

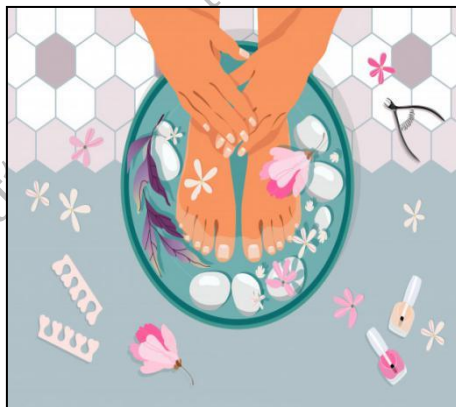
deficiencies or disease such as anemia – lack of “Hemoglobin” in blood. Do not use nail polish or nail painted constantly. It causes the keratin, to split the nails. Take care of hands and nail once in a weeks with manicure. For this you may soak your hands in luke warm water for minimum ten minutes, massaging of hands and shaping and cleaning of nails. You can also purchase your manicure kit of your choice.



**Fig.4.3: Nail care of patient (step 5 )**

### Feet

Care of feet should be done on routine basic like other body parts. You can opt for pedicure once in a three week by using good scrub with sponge and pumice stone or foot scrubber during bath time, but this it should not be made of harmful material. Clean and dry the space between the fingers of toes after bathing. Those who use shoes constantly need to slip them off now and then. Always wear cotton socks in which easily pass air and makes them less smelly. Wear cotton socks. Wear a clean pair socks every day and use talcum powder on feet before wearing socks. This will help in reducing sweat and fungal infection. Many people sweat excessively on feet so their socks and shoes get quite smelly. Do not repeat the same pair of shoes.



**Fig.4.4: Care of feet**

Keep one pair extra shoes in bag and use them alternatively. Select the foot wear, which is comfortable to wear. If some people enters barefoot indoors, have door mats to clean the dirt of the feet. Special kind of foot care is needed to diabetic patient.

### Menstrual Hygiene

The woman feels completely uncomfortable when menstruation begins. There may be sign of tension, abdominal pain, cramps, anxiety or stomach cramps during menstruation. Comfortable sanitary pads of different sizes and absorbing capacity are available in the market. Menstrual cups or caps and tampons may also be used



during menses. Absorbent pads may be considered as best option. Pants or inner garments should be loose enough for air passage as tight fitting cloths may cause some soreness and itching on the inner thighs areas.

Some women's prefer tampon over external pads which is a plug of absorbent cotton or gauze to be inserted into the vagina. Tampon absorbs all menstrual blood. But these should not be left unchanged beyond six hours. Approximately 1% women's carry the bacteria (*Staphylococcus aureus*) in their vagina during menstruation. The menstrual cup or cap is a reusable device inserted in to the vagina and to collects the all blood flow and can be emptied, cleaned and to use it again. During these times the preference maintains personal hygiene is important. Bathing and cleaning of private parts during menses is a must. Some woman may have complaint of odor during menstruation this could be reduced by changing pad/tampon frequently and should visit to the doctor. Don't give the advice to use perfume pads/tampons in reality, using of powder in the genital area is not recommended. Women need to clean or hygienic during menses to prevent genital disease.

### **Health and Hygiene Education**

Health education plays an important role in the community hygiene. To prevent illness and have positive health attitude, correct and complete knowledge of health is necessary. Health is cleanliness; cleanliness is one of the main defenses against diseases, whether infectious or self-generated.

In this session, we will learn the concept of health and hygiene in our daily life as good hygienic habits and healthy living are the way to achieve good health.

Hygiene is same as the health promotion, it's concerned not only upto the transmission of information, but to understand and promote the capacities of people and to improve their own health chiefly through:

- Improving environmental health condition and changing behavior to reduce certain hazards at the household level.
- Best uses of available health services and facilities.

Health or hygiene education is promotion of hygiene practices and concerned to achieve and improvements in health through the efforts of persons, families or society and community and external agencies, health authorities etc. Mostly in every culture, hygiene practices are inculcated in children's behavior from the early life itself by the family. On the other, through health education, health and hygiene related situation, services, knowledge and behavior of individual or community may be improved. Key aspect of hygiene promotion is that it depends on the careful analysis of people's problems, opportunities and power in any situation, it seek to solve the hygiene problems, that are realistic and applicable to people's desires and ways of living. Recent work on hygiene awareness in development and emergency condition has emphasized the benefits of hygiene promotion over the more traditional and limited aspects of hygiene education and health education. Hygiene promotion and hygiene education are needs to be employed on large scale so as to involve in various aspects of health, such as avoiding all type of exposure hazards contact, protection from communicable disease during pandemic.

### **Importance of Personal Hygiene**

Maintaining personal hygiene is important in many aspects; such as personal, social, health reasons as this is a kind of psychological or simple way of living life. Need of maintaining a good standard of hygiene helps to prevent from germs growth



and spread of infections, disease and bad smell. Personal hygiene has various important aspects ranging from personal, social, health and psychological ways.

### *Personal Aspect*

Importance of personal hygiene practices had been taught at early age, and in school also we learn about oral cavity, head lice infection and gastro intestinal infection. Personal hygiene practices mostly reflected on our ability to care for ourselves and maintain good health such clean and healthy teeth with bright white smile can make positive image, while yellowish and cavity in can cause shame or unhealthy reflection. Healthy skin, hair and nails are indicators of good nutritional status and a good healthy body that gives good confidence in daily life.

### **Social Aspect**

Mostly people hate to talk with unhygienic person or person who does not maintain cleanliness. So always ensure that our body is clean and well presented. We are more likely to project a positive image that reflects our personality. Children and student should be taught the necessity of hygiene in daily life, and how to achieve good hygiene in early age and keep themselves and others keep good healthy, and reduce the risk of begin bullied.

### **Health Reasons**

Whenever a person goes into hospital, he or she becomes very aware about his or her personal hygiene. The thought of being insecure and exposed to ignorance can make the person very strict maintain to their hygiene needs. If you are injured, the wound should be cleaned and use antiseptic lotion and dressing the wound. Suitably; this can help to control blood flow and will reduce risk of infection and pain. Some situation such as lice infection on head, sport injury etc. some communicable disease should be treated early to prevent it from infecting others. Hand washing should be a priority because this simple procedure can prevent plurality of disease and developing disorders. Many people forget washing their hands after using toilet or before taking foods; this mistake can cause a big deal of illness and may be fatal sometimes.

### **Psychological Issues**

By maintaining personal hygiene and being well presented, looking neat and clean, person can feel more confident and energetic especially in social situation. When we meet any person for the first time or during job interviews people closely observe the candidate's personal hygiene and many decisions are made by first impression. This kind of decision is made in the sub conscious. The chances of succeeding either in work and social situation, or even for making an impression on other person or society, we should maintain hygiene habits. Maintaining our hygiene practices is important to reduce the risk of illness, and at the same time it equally affects how we and others people observe ourselves and impact our level of confidence and self-esteem.

## **Activities**

1. Students prepare a chart on health and hygiene and will go to rural areas and provide health education about personal hygiene and disease awareness.

## Check Your Progress

### A. Fill in the Blanks

- Hygiene is a set of practices performed for the .....
- Good grooming and good health is the first step of .....
- Hair is humans head .....

### B. Match the following Columns

#### Column A

- Skin
- Nails
- Health education
- Menstrual hygiene

#### Column B

- Made up of keratin
- To prevent genital disease
- Clean and healthy
- Community hygiene

### C. Multiple Choice Questions

- Daily brushing is protect from getting oral disease
  - Gingivitis
  - Yellowish teeth and cavity
  - Mouth smell
  - all the above
- Health and hygiene education play an important role in the community hygiene.
  - To prevent illness
  - Health promotion
  - Both a and b
  - To promote causing disease
- Healthy skin, hair and nails are indicators of...
  - Good nutritional status and personal hygiene
  - Poor nutritional status
  - Malnutrition
  - Poor personal hygiene

### D. Short Answer Questions

- What is personal hygiene?
- What are the daily grooming routines to be followed to make sure good health?
- Write short notes on menstrual hygiene.
- Write the relation between health and hygiene.
- Write the various important aspects of personal hygiene.

## Session 2: Hand Washing

**Hand washing for hand hygiene** is the act of cleaning one's hands with the use of water or another liquid, using soap to remove soil, dirt, and/or microorganisms.

Medical hand hygiene concerned to the self care hygiene practices related to administration of medicine and immediate medical care, that prevents or reduce disease and decrease spreading of infection. Hand washing with the use of soap or liquid, is the single most effective and inexpensive way to prevent diarrhea and acute respiratory infections (ARI). The main objective of washing hand is to clean the hands and to make them free from the germs and pathogens (bacteria and viruses) or chemical; they can cause personal harm and disease. This is mainly for people who are handling food and work in Healthcare sector, but it is also essential for the general public. People may be infected with respiratory disease such as

influenza or common cold (sneezing), if they are not wash hands before touching their eyes, nose, or mouth. The Center for Disease Control and Prevention (CDC) has stated: "It is well established that effective hand washing is one of the most essential measures for preventing the spread of pathogens."

As common rule, hand washing is protect us from many communicable disease which spread through fecal- oral routes (such as many forms of stomach flu) and via direct physical contact (such as impetigo). Hand washing with soap and water can be replaced only during unavailability of water or soap with alcohol based gels sanitizer that is killed some types of pathogen, micro organism, but alcohol based sanitizer effectiveness is disputed and may lead to antibiotic-resistant bacterial strains.

Washing hands is important after using toilet, changing nappies, handling animals and before and after meal, this helps to prevent from spread of various disease form of gastroenteritis, and some may causes serious health problems. Liquid soap is best for the washing hands as it kill germs.

### **Why is hand hygiene important?**

The hands normally have a "resident" population of micro-organisms apart from those accumulated during everyday activities termed "transient" organisms. Most of the germs on our hands are harmless, but some causes cold, flu, skin infections or diarrhea. Forgetting to wash our hands causes spreading of these germs to other people; also infect ourselves when we touch our eyes, mouths or open cuts. Hand washing prevents the microorganisms getting displaced to other surfaces, patient or vulnerable areas on the patient.

### **Why is hand hygiene important in Healthcare?**

Patients are more vulnerable to infection from germs carried on their hands or other hospital people when brought into a healthcare environment. Patients, visitors, Healthcare workers, nursing staff and doctors can cut the risk of spreading infections by regularly cleaning their hands.

### **Advice to healthcare staff and patients**

All Healthcare staff should wash hands with soap or use alcohol gel:

- Before and after direct patient contact;
- Attending to the toilet needs of the patient.
- After Medical procedures;
- Wearing and removing gloves.

The temperature of hot water used for hand wash is not sufficient to kill bacteria. Bacteria grow much faster at body temperature (37°C). Warm water with soap is more effective than cold water for removal of micro-organisms as flowing water helps to dissolve the soil and dirt from hands easily. A hand sanitizer or hand antiseptic is a non-water-based hand hygiene agent.

Hand sanitizers are effective against bacteria but not for some viruses which commonly cause contagious gastroenteritis. Reduce touching wound dressings, stitches, catheters or an intravenous line, unless it is unavoidable as it may lead to spreading of germs to other parts of the body. Medical hand-washing is ideally done for a minimum of 15 seconds, using soap and water or gel to lather and rub each part of the hands.

The main function of soap and detergents is to decrease barriers and increase solubility in solution. Water alone is not effective for skin cleanser because fats and

proteins, which are components of organic soil, do not get easily dissolved in water. Therefore, for cleaning, use proper flow of water. A hand sanitizer or hand antiseptic is a non-water-based hand hygiene agent. Hand sanitizers are most effective against bacteria and less effective against some viruses. Alcohol-based hand sanitizers are not entirely effective against all type viruses, such as in gastroenteritis infection which is common cause of many disease. Regular use of alcohol-based hand sanitizers can cause dry skin unless added the amount of skin moisturizers in the formula.

Wound, stitches, catheters or an intravenous insertion sites should never be touched with bare hands unless it is absolutely necessary as it could spread germs to other parts of the body. Medical hand-washing procedure should be done for a minimum of 15 seconds, using proper amounts of soap and water or gel and rub each part of the hands wash and clean. Let us now practice the steps used for hand washing.

### **Steps for Hand Washing**



**Fig.4.5: Steps of hand washing**

## Activities

1. Students perform hand washing demonstrate in the classroom and explain the importance of hand washing to people in the community.

## Check Your Progress

**A. Multiple Choice Questions**

1. The most essential measures for preventing the spread of pathogen.
  - a. Contaminated hands
  - b. Rubbing hands
  - c. Washing hands
  - d. Clean hands
2. All Healthcare staff should be hand washing
  - a. Before and after direct patient contact
  - b. After any medical procedure
  - c. Wearing and removing gloves
  - d. All the above

**B. Short Answer Questions**

1. What is hand hygiene?
2. Write the all steps of hand hygiene.
3. Write the importance of hand hygiene.
4. Make a beautiful picture of the steps of hand washing.

### Session 3: Demonstrate Personal Grooming

**Personal grooming** (also called **titivating** and **preening**) involves cleaning of body parts, trimming of nails and hair to improve the personal hygiene.

#### Importance of Personal Grooming

Personal grooming encourages the resident to maintain a pleasing and attractive appearance and develop a positive self-image.

- It makes a person neat and personally appealing.
- Grooming indicates the readiness of a person for work.

#### Basic Grooming

Basic grooming involves practices that are followed daily to keep healthy and to make effective presentation. Practices that can be followed regularly are :

- Groom your facial hair. Facial hair should be groomed by avoiding patchy beard, long black mustache, or chin pube goatee.
- Brush your teeth twice daily and wash your hair regularly.
- Wash your hair.
- Take care of your skin.
- Keep your finger nails and toe nails trimmed and clean.
- Wear deodorant.
- Pay attention to keep your ears and nose clean.
- Use clear communication skills while speaking to the patient and their relatives.
- Wear identity card and clean uniform

#### Basic Dressing

Common mistakes while dressing for work:

- White socks with dark shoes and vice versa can be better avoided.
- Wear T-shirts that are properly fitting.
- Same outfit should not be repeated for two days or more in a row.
- Avoid wearing faded clothes.
- Do not wear clothes that are overly wrinkled, dirtied or stained.

#### Basic Appearance

- Get your hairs looking good.
- Trim it in fashionable style.



- Ensure you wear glass frames appropriate to the situation.
- Maintain your physique by involving in enjoyable activities like rock climbing, or kick boxing, or dancing.
- Pick something you enjoy doing.

### Activities

1. Students Demonstrate personal grooming activity in class room.

### Check Your Progress

#### A. Fill in the Blanks

1. Personal grooming is also called .....
2. Use effective..... while speaking to the patient relatives.

#### B. Short Answer Questions

1. What is personal grooming?
2. Write the importance of personal grooming.

## Session 4: First Aid And Health Emergency At Work Place

First Aid is the first assistance or aid or treatment given to a patient in emergency situation before the formal and appropriate medical help is available. Any trained person, paramedical staff at any point of time can give their services. An ambulance should also be made available at the workplace to meet any emergency. The very purpose of giving first aid is to prevent further deterioration of the patient. The responsibilities of the first aid giver is to help the patient by winning the confidence of the patient. At the same time first aider must not endanger his own life while giving appropriate and adequate treatment bearing in the mind that casualty may have more than one injury.

When a person suffers any kind of injury or sudden illness, any immediate medical attention or treatment may be provided to reduce the discomfort, pain and deterioration of the condition. During these situations trained doctors are not available on the spot. Hence the first care provided before seeking professional medical help is called "First Aid". As a trained FHW it is necessary to understand the principles and procedures for providing first aid while awaiting the arrival of "Medical Aid".

First Aid means initiating treatment for life support of people suffering with an injury or sudden illness. We have to understand that First Aid has its limitations and cannot be substituted for professional medical treatment. Proper assistance given by First Aider helps in saving the life of a patient. The ISO specified symbol for the First Aid is symmetrical white cross on a green background.

### Purpose of First Aid

The primary intention for giving first aid is to sustain the life of the victim before the arrival of a qualified medical expert, reduce discomfort due to pain, help in early recovery and prevent condition from worsening.





**Fig.4.6: First aid symbol**

### Principles of First Aid

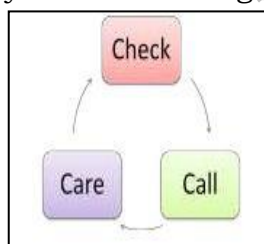
The basic principles of first aid are to:

1. **Preserve life:** This includes preserving the life of the casualty and rescuer.
2. **Ensure protection of the casualty from further harm:** The place should be safe and not affected by the presence of excess people.
3. **Provide pain relief:** This includes the use of ice packs or applying a sling.
4. **Prevent the condition from becoming worse:** Ensure the First Aid procedures does worsen the condition.

### Rules of First Aid

Important rules for First Aid are as follows:

- **Check:** Find out what has happened, and then what is wrong with the person. Comfort the victim and arrange shelter.
- **Call:** Arrange for professional medical aid.
- **Care:** Help the victim, preferably without moving him or her.



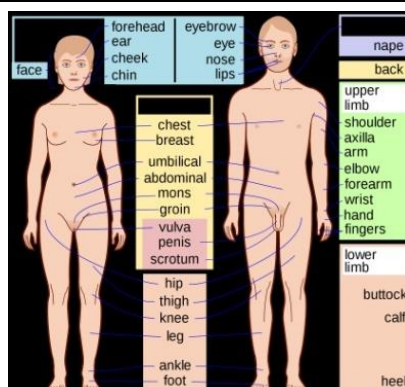
**Fig.4.7: Rules of first aid**

### Health Emergency

A situation in which the health of a person is in danger because of sudden illness or accident, and immediate help is required to “save a life” is health emergency. The ill or injured person should be given immediate attention and first aid in case of emergency before the medical help arrives. The various situations which requires immediate medical care are: (i) electric shock, (ii) breathing difficulty (iii) burns, (iv) bleeding, (iv) injury, (v) fracture, (vi) heart attack, etc.

### The Human Body

The human body works together continuously to perform countless tasks. The body by adulthood consists of close to 100 trillion cells, the basic unit of life. These cells are organized in systematic manner to form the whole body with various body systems. A newborn baby has over 300 bones at birth, whereas an adult human has 206 bones. The body includes the musculoskeletal system, cardiovascular system, digestive system, endocrine system, integumentary system, urinary system, lymphatic system, immune system, respiratory system, and reproductive system. We will now understand two vital aspects of life from the point of First Aid.



**Fig.4.8: Human body**

### Breathing

Breathing is vital to life and a person breathes about 20,000 times a day. Breathing process is assisted with the help of the respiratory system, which includes the nose, throat, voice box, windpipe, and lungs. We inhale air through the nose or mouth that meets together at the pharynx or throat, located at the back of the nose and mouth. The diaphragm that separates the chest from the abdomen moves up and down when we inhale and exhale. When we breathe in, the diaphragm moves down to enlarge the chest cavity to fill in maximum air. When we breathe out or exhale, the diaphragm moves up, forcing the chest cavity to push the gases in the lungs out through the nose and mouth.



**Fig.4.9: First aid for Breathing problem**

*In case of tongue fallen backwards, blocking the airway, it is necessary to hyperextend the head and pull up the chin, so that the tongue lifts and clears the airway.*

**Table 4.1: Respiratory Rate**

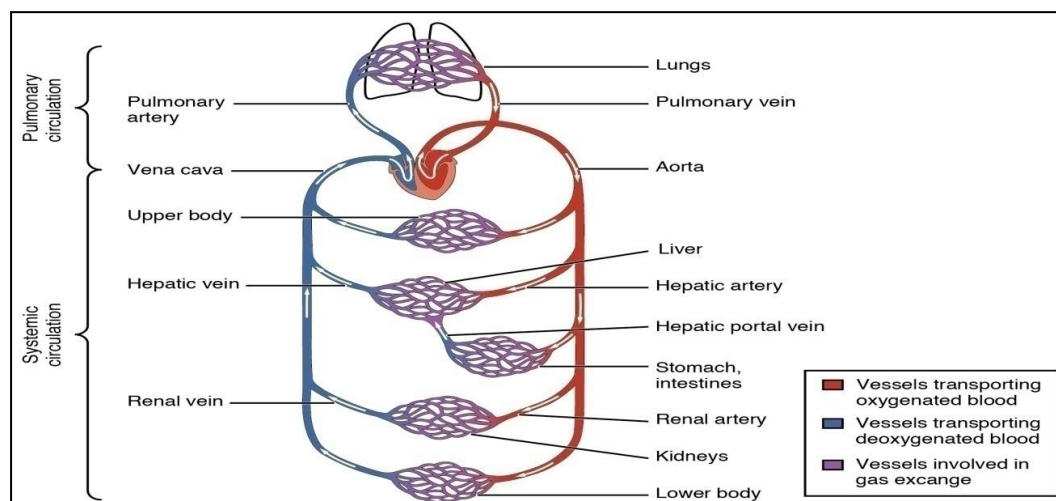
Respiratory rate/minute	
Infant	30 to 60
child	24 to 40
Adult	16 to 18
Old age	10 to 14

### Blood circulation

Blood is composed of plasma and cells suspended in viscous medium. The blood consists of plasma, red blood cells, white blood cells and platelets. The heart, the main pumping organ of the circulatory system is made of muscles. It is located between the two lungs slightly inclined towards the left side. The pointed tip at the bottom of the heart touches the front wall of the chest each time the heart beats producing a sound . You can also listen to them with your ear. While the heart

contracts, it pushes the blood out into two major loops or cycles, the systemic loop or the pulmonary loop.

The blood reaches the body's systems by circulating oxygen to all its organs, structures and tissues and collecting carbon dioxide waste through the systemic cycle. The pulmonary loop helps in oxygenation of blood. It circulates blood to and from the lungs, to release the carbon dioxide and pick up oxygen. The systemic cycle controls the left side of the heart and the pulmonary cycle the right side of the heart.



**Fig.4.10: Systemic blood circulations in human body**

### **Common Injuries at work and How to deal with them**

As per nature of workplace, it is very difficult to eliminate the threat of accidents at workplaces. However, by using safety precautions, we can minimize the occurrence of accidents. Following are common injuries and their First Aid instructions -

#### **Abrasions and Small Cuts**

Clean wound with soap and water. Apply antibiotic cream or Providone-iodine solution. Bandage and check dressing daily. See your doctor if there are signs of infection: increased redness, pus or red lines running from the wound.



**Fig.4.11: Diagram of Small cuts**

#### **Splinters**

Remove with sharp, pointed tweezers. (They should be sharp enough to pick up a single hair.) If the splinter is completely under the skin, expose splinter end with sewing needle doused in alcohol, and then remove with tweezers.



**Fig.4.12: Diagram of Splinters**

**Lacerations**

Clean wound with soap and water. Assess damage: If The laceration is gaping or more than 1/4 inches deep, seek emergency help. Otherwise, apply pressure to stop bleeding. Close wound with butterfly closures or adhesive strips. Check dressing daily.



**Fig.4.13: Diagram of Lacerations**

**Fractures**

Signs include extreme pain, swelling, bruising and an inability to move an adjacent joint. If you have any of these signs, you should be seen by a doctor to see whether you need an X-ray to evaluate for a fracture.



**Fig.4.14: Diagram of Fractures**

**Amputations**

Apply pressure to wounded area with a clean bandage. Don't panic. Call for help. Raise wounded area above the heart. Wrap amputated appendage in a plastic bag. Keep appendage cool, not directly on ice. Sit in a chair near the door, and await help.



**Fig.4.15: Diagram of Amputations**

**Eye Injuries**

Look in the mirror to assess eye. If foreign matter is embedded in the eye, go to the emergency room. If foreign matter is on the surface, flush it out with water, or use eye wash and cup. For chemical splashes, flush with running water for five to 10 minutes. If it hurts too much to open your eye, go to the emergency room.



**Fig.4.16: Diagram of Eye Injuries**

**Fumes and Dust**

If you feel dizzy or are having trouble breathing, leave the area, and go to fresh air. If normal breathing doesn't return in 15 minutes, go to the emergency room.



**Fig.4.17: Diagram of Fumes and Dust**

### Handling Fire Emergencies

Fires and explosions can severely damage or destroy premises or plant. There have been cases numerous fires started due to either badly maintained cables at the workplace, electric sparks, or due to open wood burning stoves and cigarettes. Make sure that all electric equipment are cleaned, and that dust is not allowed to accumulate. Report any defects you see in equipment.

Although workplaces, especially office area or Yoga Center, have a low risk of fire because the workplace has very few inflammable substances like wood, petrol, and chemicals, etc. Still, it is necessary to have fire-extinguishing equipment inside the workplace, and all employees should be trained properly to use these equipment.





### Type of Fire Extinguishers

**Water Extinguishers:** It is used to extinguish the fire on wood, paper, cloth, etc. It

should not be used to extinguish the fire over electrical equipment. **Foam Extinguishers (Foam Extinguishers):** It is used to extinguish the fire caused by

kerosene, spirit, thinner, etc. It also should not be used to extinguish the fire caused by electrical equipment. **Dry Powder Extinguishers (Dry Powder Extinguishers):** This is used to extinguish – the fire evolving due to flammable

liquids such as petrol, diesel, etc. **Carbon di oxide Fire Extinguisher:** Carbon Dioxide evolves from this fire extinguisher, and it can be used to extinguish fire over electric equipment, liquid gases, or fluids. These fire-extinguishing equipment should be installed at the proper place, and it should be inspected, repaired and refilled regularly.

Extinguisher		Type of Fire				
Colour	Type	Solids (wood, paper, cloth, etc)	Flammable Liquids	Flammable Gasses	Electrical Equipment	Cooking Oils & Fats
	Water	✓ Yes	✗ No	✗ No	✗ No	✗ No
	Foam	✓ Yes	✓ Yes	✗ No	✗ No	✓ Yes
	Dry Powder	✓ Yes	✓ Yes	✓ Yes	✓ Yes	✗ No
	Carbon Dioxide (CO <sub>2</sub> )	✗ No	✓ Yes	✗ No	✓ Yes	✓ Yes

**Fig.4.18: Diagram of Type of Fire Extinguishers  
Fire Extinguishers Chart**



### Role of YGTA How to Operate Fire Extinguisher

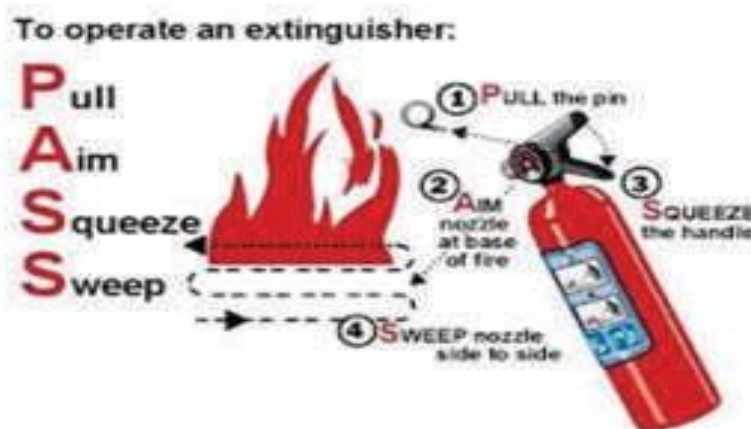
Remember PASS

P- Pull the pin In some models, you may have to remove a locking pin.

A- Aim Aim low. Direct the hose or cone to the base of the fire.

S-Squeeze Squeeze the handle. This will release the contents of the extinguisher.

S-Sweep Sweep from side to side. Don't lessen the pressure on the handle. Try to keep it constant.



**Fig.4.19: Diagram of operate an Extinguisher**

### Do's and Don'ts for post yoga session

- cleanliness - an important prerequisite for Yoga practice. It includes cleanliness of surroundings, body and mind.
- Bladder and bowels should be empty before starting Yogic practices.
- Asanas should be practiced on an empty stomach. Consume small amount of honey in lukewarm water if you feel weak.
- Practice sessions should start with a prayer or an invocation as it creates a conducive environment to relax the mind.
- Yogic practices shall be performed slowly, in a relaxed manner, with awareness of the body and breath.
- A Warm up or loosening exercise and stretches before asanas is mandatory to avoid injuries.
- Asanas should be done slowly and one should move to advanced postures with practice.
- Try to eat Satvik food (Avoid meat, eggs, onion, garlic and mushrooms from diet).
- Stay hydrated before going into yoga practice
- Use a mat with a good grip to do Yogasanas
- Be aware of breathing while doing Yogasanas.
- Wear supportive and comfortable clothing. Light and comfortable cotton clothes are preferred to facilitate easy movement of the body.
- Yoga should be practiced in a well ventilated room with a pleasant draft of air.
- Complete the yoga session with relaxation techniques to cool down
- Do not hold the breath unless it is specially mentioned to do so during the practice.
- Breathing should be always through the nostrils unless instructed otherwise.
- Do not hold the body tight or give undue jerks to the body.
- Perform the practices according to one's capacity. It takes some time to get good results, so persistent and regular practice is very essential.



- There are contra-indications/ limitations for each Yoga practice and such contra-indications should always be kept in mind.
- Yoga session should end with meditation/ deep silence / Sankalpa / Śānti pāṭha etc.

### Don'ts

- Yoga should not be performed in a state of exhaustion, illness, in a hurry or in an acute stress conditions.
- Women should refrain from regular yoga practice especially asanas during their menses. Relaxation techniques and pranayama can be done instead.
- Don't perform yoga immediately after meals. Wait until 2 to 3 hours after a large meal.
- Don't shower or drink water or eat food for 30 minutes after doing yoga.
- During illness, surgeries, or any sprains or fractures, one should refrain from Yoga Practice. They can resume yoga after consulting experts.
- Don't do strenuous exercises after yoga.
- Don't practice yoga in adverse and extreme weather conditions (too hot, too cold or humid)

### Role of yoga therapy Assistant

- Undertake regular home visits to the clients and provide psychosocial support to the clients and family members.
- YGTA will assist the family members in routine home care, simple yoga skills and accessing various service as needed including mobilization of local resources.
- Create awareness about palliative care.
- YGTA should be able to communicate compassionately with the patient and family, answering all their queries with knowledge, patience and understanding. She should also be able to communicate effectively with team members.
- Equip the care givers in performing simple nursing task and should help them take suitable decisions and help them carry these out.
- Interventions provide physical and psychological support, appropriate use of resource, adequate knowledge and skill, providing individualized care.

## Activities

1. Visit a hospital and find out first aid measures adopted. In your school find out the steps taken by the administration to provide first aid during health/medical emergency.
2. Visit a nearby hospital and observed various hazards. Fill the common hazards in the table given below:

Type of Hazards	Place prone to get the Hazard in the Hospital
Biological	
Chemical	
Radiation	
Ergonomic	
Physical	

Psycho social	
---------------	--

## Check Your Progress

### A. Fill in the blanks

1. The medical attention that is given before professional medical help is called \_\_\_\_\_.
2. The ISO specified symbol for the first aid is \_\_\_\_\_ on a green background.
3. A health emergency is a situation in which immediate help is required to \_\_\_\_\_.
4. The composition of the blood includes plasma, \_\_\_\_\_ and platelets.
5. Biological hazards are \_\_\_\_\_ and that are present in the environment.

### B. Short Answers the following Questions

1. What is the purpose and principles of First Aid?
2. Write the rules of First Aid.
3. What is a Health Emergency? Write the various emergency situations?
4. Draw the diagram of systemic blood circulation in human body.
5. Explain various types of hazards that are affect our health and causes disease

## Session 5: Identify Facilities, Equipment And Materials For First Aid

This session explains the various facilities, equipment, and materials used for First Aid. First Aid facilities should be easily available and located at points convenient to workers. An ambulance should also be made available at the workplace to meet any emergency.

Ambulance is a transport vehicle to shift critically sick or injured people to a medical facility. Ambulances are motor vehicles, that may be a helicopter, airplane, or even a boat. The interior of an ambulance can accommodate one or more patients and several emergency medical personnel's. It consists of supplies and equipment's to stabilize the patient's condition en-route. The head of the organization or the employer provides first aid facilities, such as a First Aid room, a First Aid kit, a health centre and First Aid equipment in the premises to meet any emergency.



**Fig.4.20: Facilities of transportation**

Once the employer has set up First Aid facilities, one or two persons should be nominated as First Aider. They should be trained for First Aid facilities and services

at the workplace. Now let us understand the facilities and the important aspects that we need to keep in mind when arranging these facilities.

### First Aid Room

It is the place where equipment and materials are made available and systematically arranged for providing first aid services. It should have the following:

- A name plate with the symbol of FIRST AID.
- Proper lighting and ventilation.
- Toilets, which should be friendly for differently abled persons (Persons with disability). Facilities for easy movement of a person on a stretcher or a wheelchair.

The facilities at the First Aid Room should include:

- Table and chairs
- Telephone
- Directory of emergency telephone numbers. (For example, in India telephone number for fire service station is 101, for police it is 100 and for emergency services/Ambulance it is 108)
- First Aid kit
- Examination lamp
- Medical examinations couch with blankets and pillows
- A portable screen
- Container for sharp equipment like surgical knives, etc.
- Sink and wash basin with hot and cold running water
- Sterilizer
- Stretcher
- Workbench or dressing trolley
- Oxygen cylinder
- Sphygmomanometer – blood pressure measuring instrument
- Resuscitation equipment
- Cupboards for storing medicines, dressings and linen
- Electric power points
- Suitable seating
- Container for soiled dressings
- Medical waste containers.

### First Aid Kit

The First Aid Kit consists of mainly contents for providing first aid in case of bleeding, bone fractures and burns. The first aid kit could also be made industry/organisation specific (nature of the job being undertaken at the industry/organisation). For example, in casting and forging industries, medicine used in burns and scalds should be kept in the First Aid kit. A basic First Aid kit should include the following:

- Band-aids of all sizes.
- 4" by 4" gauze pads - for cleaning wounds.
- 4" by 4" dressing bandages - for wounds, cuts, and abrasions.
- 2" dressing rolls or crepe bandage - for covering and bandaging injuries.
- Medical tape.
- Cotton balls.
- Safety pins.
- Alcohol pads or isopropyl alcohol for cleaning wounds.
- Antimicrobial hand wipes - placed in a sealed plastic bag to keep them moist.
- Hydrogen Peroxide for cleaning skin wounds.

- Sterile water bottle.
- Eye flushing solution bottle with an eye cup.
- Ace bandage for casing sprains and contused soft tissue.
- Arm sling.
- Chemical ice pack.
- Chemical hot pack.
- Thermometer - oral and rectal (for kids).
- Tweezers.
- Scissors.
- Torch.
- Nail clippers.
- Jack knife.
- Clean string for various purposes.
- Sterile gloves.



**Fig.4.21: First aid kit**

Important medications and other relief materials to be contained in a First Aid kit and updated (check for expiry of the medicine and replace immediately with fresh batch) include the following:

- Antibiotic ointment - for cuts and scrapes of the skin.
- Medicated sunburn spray or cream.
- Calamine lotion. Insect sting relief pads.
- Tablet Tylenol (Acetaminophen) – It is used as pain and fever reducer.
- Tablet Advil (Ibuprophen) – It is anti-inflammatory, used for pain, swelling, and fever.
- Syrup Benadryl (Diphenhydramine) – It is antihistamine for allergic reactions, itching, and runny nose.
- Cough suppressant.
- Oral Rehydration Salts (ORS).
- Defibrillators: An electronic device that controls an electric shock of preset voltage to the heart through the chest wall. It is used to reinstate the normal heart rate during ventricular fibrillation.
- Tourniquet bandage (compression bandage): If bleeding persists even with pressure for more than 15 to 20 minutes, tourniquet bandage is applied.
- Slings: Sling is a bandage used rest an injured forearm. It is a wide triangular piece of cloth which is used to support the hand from around the neck.
- Splints: Splints are orthopedic mechanical devices used to restrain and protect a part of the body in the case of a fracture (such as a broken leg or hand).

**Drugs for Common Ailments:** There are a variety of common ailments from which people suffer. These ailments are not very serious and can be cured by referring to some home remedies or over the counter medicines. Many common illnesses are treated at home using non-prescription medicines. Some ailments are serious enough to require professional medical attention; even the common cold can become very serious if not treated correctly, as it can advance to other infectious diseases such as influenza and pneumonia. If ailments persist, then the patient

should immediately consult a doctor.

Some of the common ailments and the drugs generally prescribed are given in the table below:

**Table 4.2: Drugs for Ailments**



Ailments	Drugs
Allergies	Tablet Cetrizine
Headache	Tablet Saridon, Aspirin (Aspirin is also used in case of chest pain)
Heartburn/ Acidity	Tablet/Syrup Digene
Nasal Congestion	Vaporub for rubbing on nose and chest
Cough and Cold	Tablet for cough and cold or syrup
Fever/Flu	Paracetamol (also used as a General Pain Killer)
Constipation	Isabgol Husk (with hot milk/water)
Sprains and Strains	Tablet Flexon/Combiflam (used as a anti-inflammatory painkillers)
Dehydration	Oral Rehydration Salt (ORS)

## Activities

1. Prepare a First Aid box with all equipment and materials.
2. Prepare list of all essential medical equipment and medicines.
3. Visited nearby hospital and medical training centre and collect the information about First Aid.

## Check Your Progress

### A. Fill in the Blanks

1. \_\_\_\_\_ is a vehicle specifically designed to transport critically sick or injured people to a medical facility.
2. \_\_\_\_\_ is the place where equipmental and materials are made available and systematically arranged for first aid services.
3. The contents of the \_\_\_\_\_ kit are mainly meant for providing first aid.

### B. Match the following Column

#### Column A

1. First Aid
2. Ibuprophen
3. Defibrillators
4. Splints
5. Tourniquet bandage

#### Column B

- a) Electronic equipment
- b) Orthopedic mechanical device
- c) Compression bandage
- d) anti inflammatory
- e) for emergency

### C. Answer the following Questions

1. What is the first aid room and write the facilities of First aid room.
2. Explain the First aid kit and enlist the contents of first aid kit.
3. What are the drugs for minor ailments? Prepare a list of the medicines.
4. Write the names of medicines given in case of minor illnesses.

S.No	Minor illness	Drugs
1	Allergies	
2	Fever (flu)	
3	Constipation	
4	Sprains and strains	
5	Acidity	

## Session 6: Role And Functions Of Yoga Therapy Assistant As First Aider

A First Aider is a person who undertakes an emergency situation and gives first aid. Often the first aider at an emergency scene is passerby who is willing to help. A parent who help his/her child, a firefighter attending to an injured pedestrian, or an employee who provides care are all providing first aid. A First Aider do not



diagnose or treat injuries and illnesses but offers help to the person in need. This session describes how to give first aid to a casualty with fever, heat stroke, back pain, asthma and food borne illness. As a First Aider, the first thing is to manage the situation and stay in charge until the arrival of the medical help or ambulance. While in charge, many other people may offer to help and crowd the place. In an emergency, where there is a confusion and fear, a well-trained and effective First Aider reassure everyone, and can make the whole experience less traumatic. Besides giving First Aid, one should ensure the following:

- Manage unnecessary crowd.
- Protect the casualty's belongings

### General Considerations and Rules

The elementary lifesaving procedures are head tilt, First Aid at choking and recovery position. Now let us imagine that a person has met with an accident. The services of priority that should be followed by the first aider in an emergency are as follows:

- Step 1:** Check for bleeding: Stop bleeding by applying direct pressure on the wound site.
- Step 2:** Check for head, neck and spinal injury: If any of these are suspected, immobilize the victim to prevent further injury. Moving a victim will often increase the impact of spinal injuries.
- Step 3:** Determine responsiveness: If a person is unconscious, try to arouse by gently shaking and speaking.

Do not give fluid, the victim cannot swallow and could suffocate. Look for the victim's chest movements and listen for sounds of breathing (place your ear near the nose and mouth and feel for breath on your cheek). If the victim is not breathing then mouth to mouth resuscitation is to be given. If you are not trained to do that, then call for medical help at the earliest.

If the victim is breathing, but unconscious, roll the casualty on one side, keeping the head and neck aligned with the body. This will help drain the mouth and prevent the tongue or vomit from blocking the airway if the person remains unresponsive, carefully roll the casualty on back and open the airway.

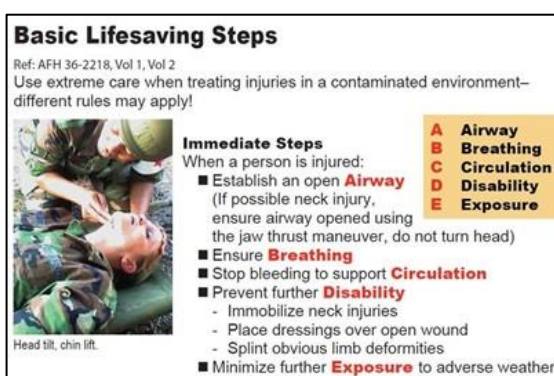
- Keep head and neck aligned.
- Cautiously roll onto the back while holding the head.
- Open the airway by lifting the chin.

### Observe ABC as follows:

A – Airway

B – Breathing

C – Circulation



**Fig.4.22: Basic lifesaving steps**

**Airway:** Ensure that the tongue or any foreign body does not obstruct the airway.

**Breathing:** Make sure the victim is breathing. If you are trained to give mouth to mouth respiration, then facilitate breathing.

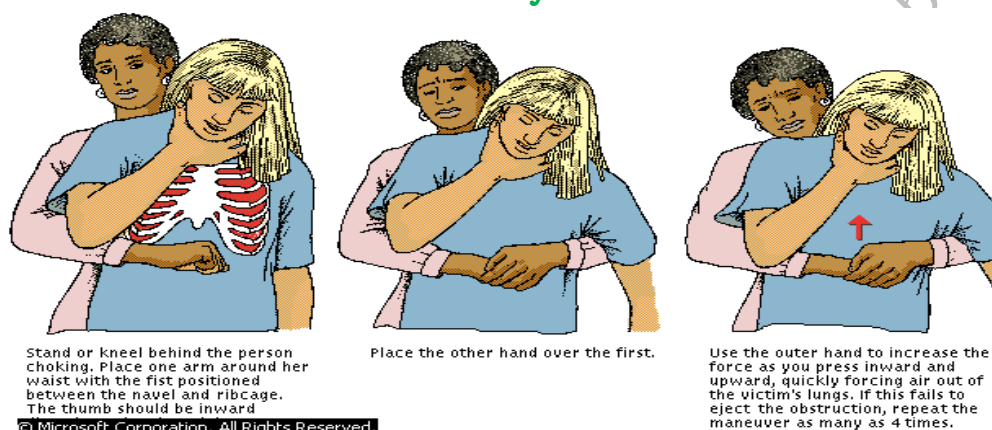
**Circulation:** Check for the pulse to ensure that the heart is beating properly. Check heart beat/pulse of the victim. If there is no pulse and if you are trained to do Cardio Pulmonary Resuscitation (CPR), then begin CPR immediately.

(**Note:** CPR is administered when both heart and lungs have ceased to function)

**Step 4:** Call Emergency Services: Call for help or tell someone else to call for help as soon as possible. If you are alone, try to establish breathing before calling for help, and do not leave the victim unattended for an extensive amount of time. Stay calm and don't give up. Continue to aid the victim until medical help arrives.

Let us now learn about the basic first aid practices that may be utilized by the first aider to provide first aid to people working in various occupations, with special reference to the health sector. Considering your age and body strength, we will take up only those first aid practices that you can easily perform.

### Heimlich Maneuver for Conscious Airway Obstruction



**Fig.4.22: Diagram of Heimlich Maneuver**

### Fever

Fever is higher-than-normal human body temperature (normal body temperature is 37° Celsius or 98.6° Fahrenheit). Body temperature is a good indicator of your health. Fever is a symptom and not disease. Fever can be categorized as given below:

- Low fever: 98.8° F to 100.8° F
- Mild to moderate: 101° F to 103° F
- High fever: 104° F and above. If the temperature is high, then it is a sign that body is fighting illness.

**Causes:** Fever may be caused due to hot weather, bacterial or viral infection, spending too much time under the sun or allergy to medication or food/water.

**Symptom:** Symptoms may include hot flushed face, nausea, vomiting, head and body ache, constipation, diarrhea.

**First Aid:** Monitor temperature using a digital thermometer. Remove the excess clothing. Keep the person in a cool place and if required give a sponge bath in tap water. Give plenty of fluids and prescribed dose of tablet paracetamol.

### Taking body temperature

In case of fever, the body temperature is measured using a thermometer. Let us now learn how to take body temperature.

**Step 1– Prepare:** Wash the tip of the digital thermometer with clean water and wipe it with a clean cloth. Wipe it with a paper tissue after cleaning the surface. This will remove certain germs on the surface.

**Step 2– Switch On:** Check the power button by switching the button on the digital thermometer to ensure it is working properly. The LCD screen should read "0". If the screen remains blank, replace the battery. Read the instructions given in the manual to replace the battery. Use the thermometer when the initial reading is correct.

**Step 3– Position:** Place the thermometer in the mouth of the person by laying the tip on a middle point at the back of the tongue before asking the patient to close the lips around it to hold the length of it.

**Step 4– Take Temperature:** Press the button to make the appliance read the temperature. This can take few seconds to a few minutes. Remove the thermometer from the mouth and read the temperature.

**Step 5– Store:** After you have finished using the thermometer, switch off the thermometer and clean the tip with water and wipe with tissue paper or dry cloth. Keep the thermometer in its protective case and store it at safe place, away from the reach of children.

### Heat Stroke

Heat stroke is a severe heat-related condition. It could be life threatening. It is caused when the body's cooling mechanism fails due to excessive heat and humidity. Impairment in sweat gland function may be another cause of heat stroke.

**Symptoms:** Body temperature greater than 104°F. Fever may cause headache, dizziness, fatigue, fluctuating blood pressure and irritability.

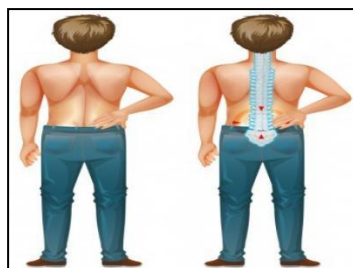


**Fig.4.23: Head stroke dehydration**

**First Aid:** Shift the person to a shady place. Cool the person by sponging with wet towel. Apply ice packs in armpits and groin. Give luke warm water with electrolyte.

### Back Pain

Back pain is a short-term acute pain in the back of the body. It indicates that the body is under stress. It is caused due to problems in bones, ligaments and muscles of spine and nerves.



**Fig.4.24: Back pain**

**Triggering Factors:** Back pain may be aggravated due to poor posture, inappropriate footwear, incorrect walking habits, prolonged sitting, sleeping on soft mattresses, kidney, bladder prostate disorders, constipation, stress, etc.

**First Aid:** Massage with hot/cold packs and use painkillers or relaxants for pain relief.

## Asthma

Asthma is a chronic inflammatory lung disease that causes airways to tighten and narrow. It creates narrowing of air passages of the lung and therefore produces difficulty in breathing.

**Symptoms:** Symptoms may include wheezing, cough and cold, tightness in the chest, sticky mucus, disturbed sleep, and breathlessness.

**Causes:** It is believed that heredity factors are the main cause of asthma. Environmental factors like dust, mite, pollen and occupational exposure to irritants aggravate asthma. Cold, viruses, cigarette smoking, scent, pollution, change in weather, etc. are the triggering factors.

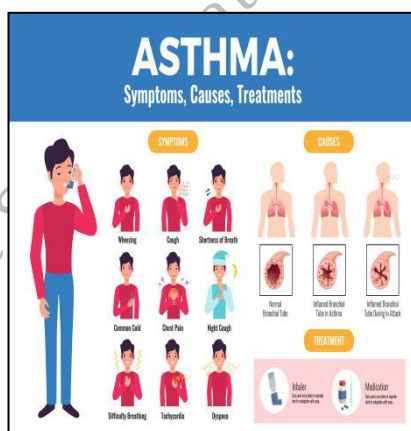


**Fig.4.25: Sign causes symptoms of Asthma**

**First Aid:** In case of asthmatic attack, use asthma inhalers. Asthma inhalers are hand-held portable devices that deliver medication to the lungs. Asthma inhalers are available to help control asthma symptoms in adults and children.

**Types of asthma inhalers include:**

**(i) Metered dose inhalers:** These inhalers are equipped with a medicine canister that fits into a boot-shaped plastic mouthpiece. This gives quick relief and opening breathing way and is the best method of treating the asthma. This type of inhaler is mostly preferred by 40 years age peoples.



**Fig. 4.26: Asthma Inhaler**

**(ii) Metered dose inhaler with a spacer:** a spacer holder is there for the release of medication, making to easily inhale of full amount. A spacer is collect the medicine, after that is released by spray, and it is easy to inhale thus works fast. Through open breathing airway and asthma patient feels comfort.

**(iii) Dry powder inhaler:** These inhalers does not use any type of chemical because Medication is released through deep breathing, fast breath. There are various types of inhaler, which are used in asthma treatment and patient select the inhaler according to their severity of asthma. Choose the accurate asthma inhaler because they can help you take the right amount of medication to prevent asthma attack.

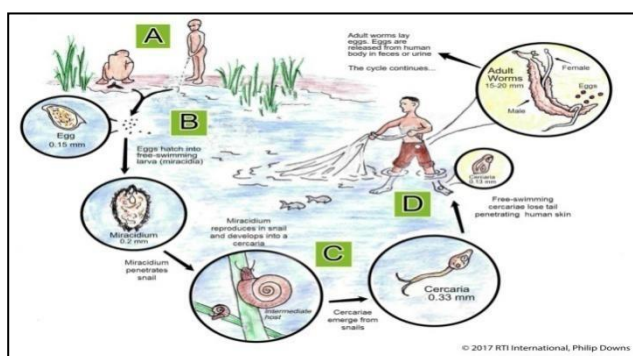
### Food Borne Illness

Food borne illnesses occur by eating unhygienic food and water. Bacteria are the common cause of food contamination.

**Symptoms:** Common symptoms include diarrhoea, which may be bloody, nausea, abdominal cramps, vomiting, fever, dehydration, shallow breath, rapid pulse, pale skin, and chest pain.

**First Aid:** Oral Rehydration Salt (ORS) should be given with luke warm water. In severe cases, the patient needs hospitalization immediately. Recipe for making a 1 litre ORS solution using Sugar, Salt and Water.

- Clean Water - 1 litre - 5 cupfuls (each cup about 200 ml.)
- Sugar - Six level teaspoons
- Salt - Half level teaspoon
- Stir the mixture till the sugar dissolves.

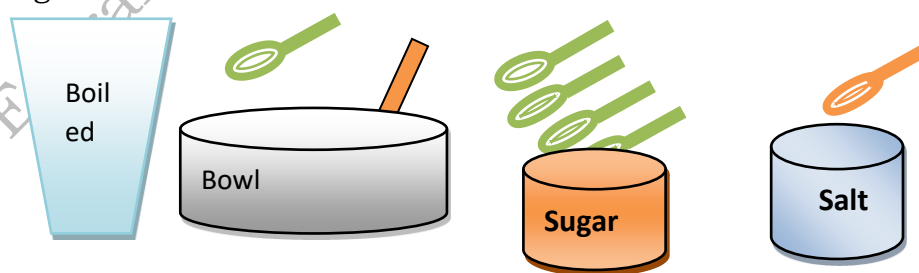


**Fig.4.27: cycle of contaminated water food born disease**

**Preparation of ORS recipe at home:** Oral Rehydration Solution necessary in maintaining the electrolyte balance of the human body. ORS can be collected in primary health centers or any medical shop. It can be prepared in home also.

### Materials Required:

- Clean bowl/container, Pot
- Glass
- Spoon/stir
- Boiled drinking water
- Sugar and Salt.



**Fig.4.28: Preparation of ORS**

### These are following steps to prepare ORS:

- We should clean our hands thoroughly before making ORS recipe.
- All the material should be collected in one place so that we can save time and energy.
- All material should be of good quantity and quality.
- Boiled 1 liter clean drinking water and cool it at room temperature.
- Take a minimum of six teaspoon of sugar in a bowl.
- Add salt in half level tea spoon in bowl.
- Stir the mixture until the salt and sugar is dissolves.



- Oral Rehydration Solution is ready to feed patient.
- Ready ORS may be kept only upto 24 hrs.
- ORS should be given to a child of 24 months age 500 ml./day
- 2 to 10 years age of child should be given 1000 ml. /day
- Above 10 years to adult requirement are 2000 ml. /day

**Precaution:**

- All articles must be clean.
- Wash your hands well before making ORS solution.
- Water must boil at a certain temperature range.
- Should be adding a certain amount of sugar and salt in Luke warm water.
- The prepared ORS solution should always be covered.
- ORS solution should be given to the patient for a period of time.

### Activities

1. Practice the lifesaving procedure Cardio Pulmonary Resuscitation (CPR) procedure on simulation.
2. Demonstrate the recipe of prepare Oral Rehydration Solution at home.
3. Visit a nearby hospital and taking medical training how to provide good Healthcare services.

### Check Your Progress

**A. Fill in the Blanks**

1. \_\_\_\_\_ is a person who takes charge of an emergency scene and gives first aid.
2. A healthy person body temperature is \_\_\_\_\_.
3. \_\_\_\_\_ is a long term inflammatory respiratory disease.
4. Back pain is caused due to problems in bones, \_\_\_\_\_ of spine and nerves.
5. \_\_\_\_\_ illnesses occur by eating unhygienic food and water.
6. \_\_\_\_\_ is provided to a patient when the heart and breathing of the patient has stopped due to a cardiac arrest.

**B. Multiple Choice Questions**

1. A 25-year-old woman suffering from chronic inflammatory lung disease asthma. What will we do first aid when he has a sudden asthmatic attack?
  - a. Cardio pulmonary resuscitation
  - b. Hospital in admitted
  - c. Provide asthma inhalers
  - d. Administerd drugs

**C. Write the following immediate basic life steps words in the given box below**

S.N	Words	Immediate Basic Life Saving Steps
1	A	



2	B	
3	C	
4	D	
5	E	

**D. Answer the following Questions**

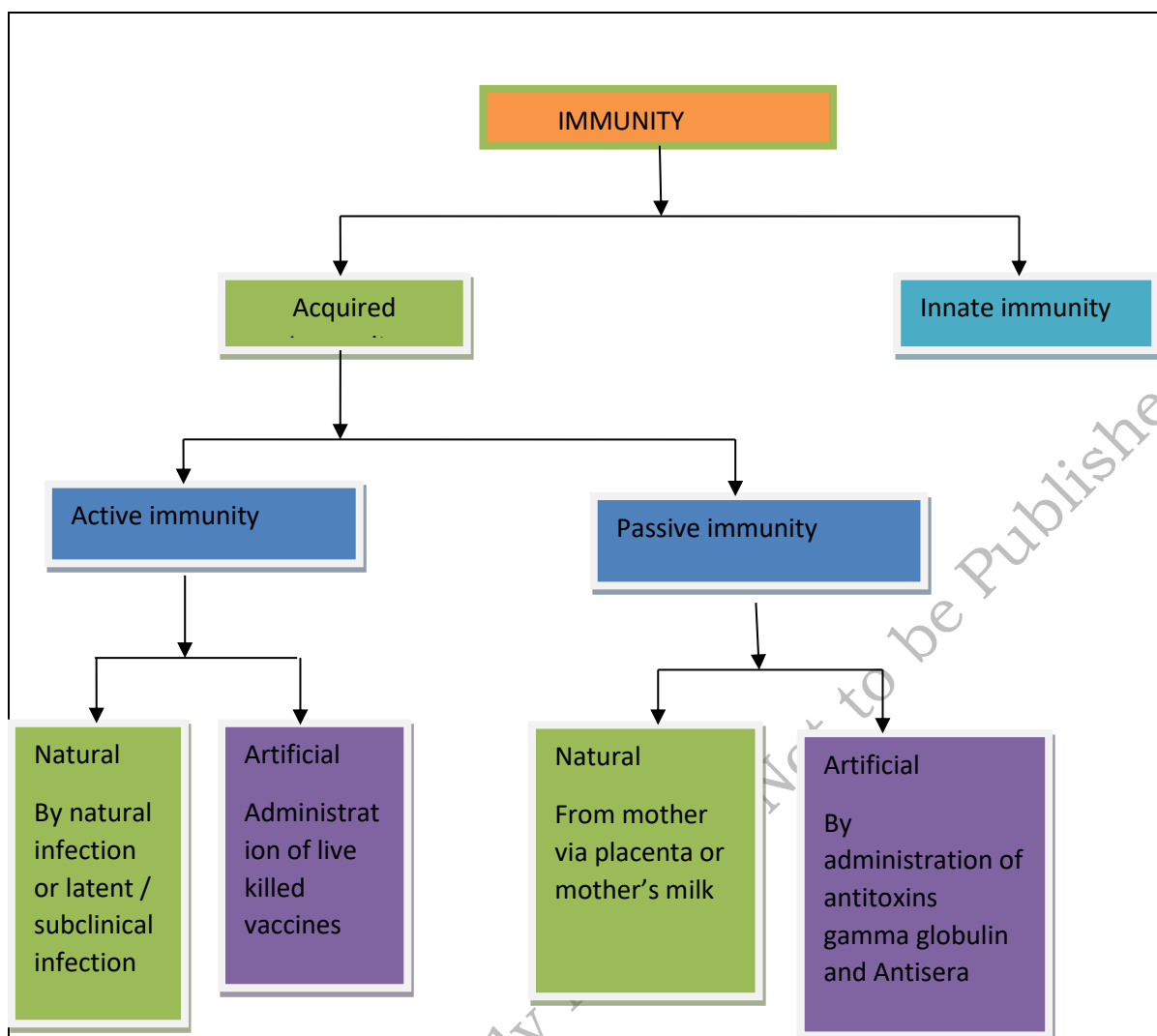
1. Write the role and functions of first aider?
2. Write the steps of taking human body temperature.
3. Write a short note on asthma and food borne illness.

**Module 5****Immunization****Introduction**

Immunization is the process through which a person is made immune or resistant to an infectious disease by vaccination. India has largest number of births in the world. An effective immunization programme reduces the burden of vaccine-preventable diseases to a great extent. Universal Immunization Program supports National and State governments to boost routine immunization. It is one of the most successful and cost effective public health investment the countries vaccine protects children against many diseases.

Immunization has reduced child mortality rate to a significant extent. Basic knowledge of the process of immunization benefit the future generations and improve the health and life expectancy of our country.

This unit details on the process of immunization and the key components of universal immunization programs.



### Learning Outcomes

After completing this module, you will be able to:

- 

### Module Structure

Session 1: Differentiate between Various types of Immunity

Session 2: Immunization

### Session 1: Differentiate between Various types of Immunity

In this session, you will learn about the immune system is your body's way of helping to protect you from infection. When your body is infected by viruses,

bacteria or other infectious organisms (e.g. a fungus or parasite), it undergoes a process of fighting the infection and then healing itself.

### Learning Objective(s)

On completion of this session the student will be able to:

- Explain the difference between types of immunity.

As a result of this, the next time your body encounters the same organism, you will be 'immune' to this infection. This means that you are less likely to get the same disease again, or if you do, the infection will be less severe. This is the principle behind vaccination.

### How does immunity work?

Whenever your body encounters a foreign organism, like bacteria or a virus, a complicated set of responses are set in motion. Your body has two sets of defensive mechanisms, one called 'innate immunity' and another called 'adaptive immunity'.

### Innate (Natural) Immunity

**Innate** immunity describes your body's barriers to infection that are in-built (or innate). This includes:

- skin
- the acid in your stomach
- saliva
- tears
- mucus in your mouth and nose
- Cells in your blood stream that can destroy bacteria.

All of these systems are extremely important as a first line of defense to prevent you from becoming infected, and for getting rid of the infections that you do get. These innate systems do not change with multiple exposures to the same infection; there is no 'learned' response no matter how many times your body is exposed to the same organism.

### Adaptive (acquired) Immunity

Your body's more complicated second line of defense is called adaptive immunity. By adapting to fight infections from particular bacteria or viruses, your body can become immune to infections caused by the same organism in the future. This adaptation by your body to prevent infection is the basis of immunization. Certain types of blood cells can learn from exposure to an infection. This means that the next time they encounter that infection they can remember it and mount a faster and stronger response.

For example:

- **Antibodies** are made by the body in response to an infecting organism. They can recognize specific types of viruses or bacteria. They work by attaching themselves to the organism, and preventing them from infecting your body.
- **Macrophages** are specialized blood cells that can directly attack and destroy an infecting organism, digesting them so they cannot produce disease.

Vaccines trigger the adaptive immune system by stimulating the body to make antibodies, so that it can prepare for a potential infection in the future. Passive immunity is acquired through transfer of antibodies or activated T-cells from an immune host, and is short lived, usually lasting only a few months, whereas active immunity is induced in the host itself by antigen and lasts much longer, sometimes lifelong.

### Differentiate between passive and active immunity

This topic you will learn about the passive immunity and active immunity is that which the individual possesses by virtue of his constitutional and genetic make-up.

### Learning objective (S)

On completion of this session the student will be able to:

- ☐ Differentiate between passive and active immunity.
- ☐ Identify prophylaxis prevent from disease.

### What is passive

The anti-bodies produced in one body (human or animal) are transferred to another, to provide protection against disease, e.g. anti-tetanus serum (ATS) anti-diphtheria serum (ADS). It differs from active immunity in that immunity is rapidly established; the immunity produced is of short duration and when the immediate protection is over, the individual is again fully susceptible to infection.

### Active immunity

Active immunity is the immunity which the individual develops as a result of contact with pathogenic organisms or their products. In this, the body is stimulated to produce its own anti-bodies. This immunity is specific for a particular disease. Active immunity can be acquired:

- (a) Naturally, as by infection with the particular organism e.g., measles, polio, diphtheria,
- (b) Artificial is administration by the vaccine

**Chemoprophylaxis:** Chemoprophylaxis is the administration of a specific drug before the disease has occurred e.g. use of anti-malaria ls in the prevention of malaria, 'penicillin in rheumatic fever, DDS in leprosy and INH in tuberculosis.

**Health Education:** Some diseases can be prevented if simple rules of personal hygiene are observed. The knowledge of causation, spread and control of diseases and enlisting the cooperation of people towards this end will be helpful in controlling many diseases. The multi-purpose health workers have a special role to play in this and awareness of prevention infectious disease. During their visits to families, they should educate the family members by providing knowledge about communicable diseases.

### Differentiate between Passive and Active Immunity

S.N O.	Passive Immunity	Active immunity
❖	Passive natural immunity it is not produced by immune response naturally but directly transferred.	Active natural immunity is naturally active by human body immune system.
❖	Passive immunity response is very fast against foreign pathogen.	Active immunity response is very slow process against foreign pathogen.

❖ Natural passive immunity is not self generated it is directly transferred mother to fetus via placenta , mother milk (colostrum)	Natural active immunity is self generated antibodies lymphocytes against pathogens, nosocomial infection, micro -organism.
❖ Artificial passive immunity is administered in human body by injection. Gama globulin, anti tetanus	Artificial active immunity is administered use vaccines in human body . Live & killed vaccines.
❖ Artificial passive immunity is prevent from disease short time duration. (Tetanus inj.)	Artificial active immunity is effective from long time duration. BCG, polio vaccine)
❖ Artificial passive immunity is manmade it is costly.	Artificial active immunity is man made it is costly.
❖ Passive immunity natural and artificial are temporary.	Active immunity is natural & artificial it is long life.
❖ Fig. ex - passive immunity	Fig. ex- active immunity

### Activities

1. Prepare a presentation on “How does the immune system works?”

### Check Your Progress

#### A. Fill in the Blanks

1. The body adaptation to prevent infection for the second exposure is \_\_\_\_\_ immunity.
2. The immune system is the body's way of protecting from \_\_\_\_\_.
3. The in-built systems that act are barriers to infection like skin, saliva, tears are the \_\_\_\_\_ immunity.
4. By \_\_\_\_\_ to fight infections from particular bacteria or virus, body become immune to infections caused by the same organism in future.
- 5.

#### B. Fill in the Blanks with appropriate words

1. \_\_\_\_\_ are made by the body in response to an infecting organism. (Antigen, anti - immunity, antibodies, all of these)
2. \_\_\_\_\_ are specialized blood cells that ingest and destroy an infecting organism. (antigen, antibody, macrophages, immunity)
3. \_\_\_\_\_ immunity is short lived and acquired through transfer of antibodies. (passive, active, immunity, antigen)

**C. Short Answer Questions.**

1. What is immunity?

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2. State the difference between innate immunity and adaptive immunity?

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## Session 2: Immunization

In this session, you will learn about the immunization schedule.

**Learning objectives**

On completion of this session the student will be able to:

- ☐ Importance of Immunization.
- ☐ Prepare Immunization schedule chart.

**Immunization: -**

Immunization protects children (and adults) against harmful infections disease, before they come into contact with them in the community. Immunization uses the body's natural defence mechanism, the immune response, to build resistance to specific infections. Nine diseases can be prevented by routine childhood immunization - diphtheria, tetanus, whooping cough, poliomyelitis (polio), measles, mumps, rubella, haemophilus influenza type b (Hib) and hepatitis B. All of these diseases can cause serious complications and sometimes death. Immunization is given as an injection or in the case of polio vaccine, taken as drops by mouth. Immunization helps children stay healthy by preventing serious infections.

**Vaccination**

Vaccinations function by stimulating the immune system which is the human body's natural disease-fighting mechanism. Immunizations equip the immune system to fight off a disease. To immunize the body against viral diseases, the strength of the virus utilized in the vaccine has been decreased or the virus has been killed. It has been noticed that there can be improvement in the effectiveness of immunizations by periodic repeat injections or "boosters".

**What is vaccine?**

A **vaccine** is a biological preparation that improves immunity to a particular disease. A vaccine typically contains an agent that resembles a disease-causing microorganism, and is often made from weakened or killed forms of the microbe, its toxins or one of its surface proteins. The agent stimulates the body's immune system to recognize the agent as foreign, destroy it, and "remember" it, so that the immune system can more easily recognize and destroy any of these microorganisms that it later encounters. Vaccines may be prophylactic (example: to prevent or ameliorate the effects of a future infection by any natural or "wild" pathogen), or therapeutic (e.g. vaccines against cancer are also being investigated). The term *vaccine* derives from Edward Jenner's 1796 use of cowpox (the word *variola vaccinae*, adapted from the Latin word *vaccinus*, and *vacca* - cow) to inoculate humans, providing them protection against small (cow)pox.



**Types of vaccines:-**

- (i) **Live vaccines:** These are preparations from live attenuated organisms. They are potent immunizing agents, e.g. BCG, oral polio, rabies, yellow fever and measles vaccines.
- (ii) **Killed Vaccines :** organism killed by heat or chemical injected in to the body and stimulate active immunity e.g. vaccines against cholera, typhoid, whooping cough. They are not as efficient as live vaccines; there for two or three doses are administered to increase antigenic efficiency.
- (iii) **Toxoid preparations:** Certain organisms produce exotoxins, e.g., diphtheria and tetanus bacilli. The toxins produced' by these organisms are detoxified (rendered harmless) to prepare vaccines. Such products are called toxoids.
- (iv) **Polyvalent vaccines:** Vaccines prepared from the culture of two or more strains of the same species, e.g., polio and influenza vaccines.
- (v) **Combined or mixed vaccines:** When more than one kind of immunizing agent is included in the vaccine, e.g. DPT, TABC, MMR.



**Fig.5.1: Immunization kit**

**Vaccines commonly used in India: -**

DPT vaccine provides protection against diphtheria, whooping cough and tetanus. It is a mixture of purified diphtheria and tetanus toxoids And killed Bordetella pertussis organisms absorbed on aluminium hydroxide. three doses of 0.5 ml. each are given and it is administered by intramuscular injection with a booster dose.

DT vaccine is a protection against diphtheria and tetanus. It contains purified diphtheria and tetanus toxoid absorbed on aluminium hydroxide. The dose is 0.5 ml given intramuscularly.

TT vaccine is for protection against tetanus. It contains purified tetanus toxoid absorbed on aluminium phosphate. the dose is 0.5 ml. administered intramuscularly.

**Polio vaccine(OPV)** is a live, attenuated trivalent vaccine containing three strains of polio virus. 2 drops of vaccine is given orally. Warm milk should not be given for at least half an hour after the vaccination.

**BCG vaccine contains** live attenuated tubercle bacilli and is freeze dried It has to be reconstituted before use with a diluent(normal saline). The diluent used for reconstituting BCG should be cooled

before use. The dose is 0.1 ml given by the intradermal route, using a tuberculin syringe. The reconstituted vaccine should be used within 3 hours.

**Typhoid Vaccine** is a phenol killed vaccine containing the organisms *Salmonella typhi* and *Salmonella paratyphi*A. The dose is 0.5 ml. given subcutaneously.

**Measles vaccine** is live vaccine containing attenuated measles virus. It is freeze dried and has to be reconstituted before use. The dose is 0.5 ml which is given subcutaneously. Once reconstituted, the vaccine must be used within 4 hours.

**COVID - 19 Vaccine:** Corona virus disease (COVID-19) is an highly infectious disease caused by the severe acute respiratory disease SARS-CoV-2 virus. The dose is 0.5 ml which is given upper arm deltoid muscles.



**Fig. 5.2: Diagram of Vaccine**

### Cold Chain

Vaccines are highly perishable and have to be stored at specific temperatures in order to maintain their efficiency. Vaccines are easily destroyed or lose their potency if exposed to heat and light. Therefore, they have to be stored and transported at specific temperatures. The system of storing and transporting vaccines at low temperature is called the Cold Chain. Even under these conditions the life of vaccines is limited. Storing and transporting of vaccines correct temperature so long time duration keep safe vaccines. So need cold freezers room, refrigerator, cold boxes, ice box, freezers.

### Importance of Immunization:

Each year, vaccines prevent more than 2.5 million child deaths globally. An additional 2 million child deaths could be prevented each year through immunization with currently available vaccines.

- **Immunization saves a child's life:** Immunization helps to protect your child against various diseases.
- **Immunization is safe and effective:** All vaccines that are given to children are completely safe and effective, as various medical professionals have tested them. The only discomfort can be pain, redness or tender feeling among few.
- **Immunization prevents spread of diseases:** If a person is immunized, there is little to risk of an epidemic. Thus, it also prevents spreading of the disease.
- **Immunization saves time and money:** A prolonged illness can take a toll on your finance as well as your precious time. Immunization is a good investment, as it saves time, money and promotes good health.
- **Immunization protects future:** Immunization has helped to eradicate polio to some extent. If we keep on practicing immunization, in near future we will be able to eradicate all these diseases completely.

- **Immunization has reduced mortality rate**
- **Immunization has made children healthier and fit.**
- **Immunization promotes long life span.**
- **Immunization is protected from disease.**
- **It is very important must educate and awareness in community about the immunization programme.**

**Side effects of immunization: -**

- Common side effects of immunization are redness and soreness at the site of injections and mild fever, pain.
- Paracetamol may be required to help ease the fever and soreness.
- While these symptoms may concern you and upset your child at the time, the benefit of immunization is protection from the disease.
- Other side effects are very rare but if they do occur, a doctor should be consulted immediately.

**National Immunization Schedule Chart**

The national immunization programmed is specialized program by the Govt. of India is started in 1985.

Let us now read through the National Immunization schedule for Infants, Children and Pregnant Women to understand the importance of immunization against various diseases.

National Immunization Schedule for Infants, Children and Pregnant Women				
Vaccine	When to give	Dose	Route	Site
<b>For Pregnant Women</b>				
TT-1	Early in pregnancy	0.5 ml	Intra-muscular	Upper Arm
TT-2	4 weeks after TT-1*	0.5 ml	Intra-muscular	Upper Arm
TT- Booster	If received 2 TT doses in a pregnancy within last 3 yrs*	0.5 ml	Intra-muscular	Upper Arm
<b>For Infants</b>				
BCG	At birth or as early as possible till one year of age	0.1ml (0.05ml till 1mth age)	Intra-dermal	Left Upper Arm
Hepatitis B	At birth or as early as possible within 24 hours	0.5 ml	Intra-muscular	Antero-lateral side of mid-thigh
OPV-0	At birth or as early as possible within the first 15 days	2 drops	Oral	Oral
OPV 1,2 & 3	At 6 weeks, 10 weeks & 14 weeks	2 drops	Oral	Oral
DPT 1,2 & 3	At 6 weeks 10 weeks & 14 weeks	0.5 ml	Intra-muscular	Antero-lateral side of mid-thigh
Hep B 1, 2 & 3	At 6 weeks 10 weeks & 14 weeks	0.5 ml	Intra-muscular	Antero-lateral side of mid-thigh
Measles	9 completed months-12 months.	0.5 ml	Sub-cutaneous	Right upper Arm
Vitamin-A (1stdose)	At 9 months with measles	1 ml (1 lakh IU)	Oral	Oral
<b>For Children</b>				
DPT booster	16-24 months	0.5 ml	Intra-muscular	Antero-lateral side of mid-thigh
Measles 2nd dose	16-24 months	0.5 ml	Sub-cutaneous	Right upper Arm
OPV Booster	16-24 months	2 drops	Oral	Oral
Japanese Encephalitis**	16-24 months	0.5 ml	Sub-cutaneous	Left Upper Arm
Vitamin-A***				
(2nd to 9th dose)	16 months. Then, one dose every 6 months up to the age of 5 years.	2ml (2 lakh IU)	Oral	Oral
DPT Booster	5-6 years	0.5 ml.	Intra-muscular	Upper Arm
TT	10 years & 16 years	0.5 ml	Intra-muscular	Upper Arm

\*Give TT-2 or Booster doses before 36 weeks of pregnancy. However, give these even if more than 36 weeks have passed. Give TT to a woman in labour, if she has not previously received TT.

\*\* JE Vaccine, in select endemic districts after the campaign.

\*\*\* The 2nd to 9th doses of Vitamin A can be administered to children 1-5 years old during biannual rounds, in collaboration with ICDS.

## Activities

1. Prepare a sample immunization schedule chart for a child.

## Check Your Progress

### A. Fill in the Blanks

1. \_\_\_\_\_ is the term used for giving vaccine, where as \_\_\_\_\_ is the process of getting the vaccine.
2. \_\_\_\_\_ is a biological preparation that improves a person's immunity to a particular disease.
3. \_\_\_\_\_ protects children against harmful infections, before they come into contact with them in the community.

#### A. Short Answer Questions

1. What is immunization?

## Module 6

## Basic Yoga Practices

### Introduction

### Learning Outcomes

After completing this module, you will be able to:

- 

### Module Structure

Session 1: Yoga for Physical Fitness

## Session 1: Yoga for Physical Fitness

### INTRODUCTION Yogic Sukshma Vyayama

There are various yogic practices which have an impact on different parts of body. Sukshma Vyayama is one of it. Sukshma Vyayama is the system of yogic practices which loosens your joints and removes the energy blockages. This system has a strong purifying effect thus, boosting the body energy.

Yogic Sukshma Vyayamas (Loosening and strengthening practices) are safe, rhythmic, repetitive stretching movements synchronized with breathing. These practices mobilize the joints and strengthen the joints and muscles. In this lesson you will study about various Sukshma Vyayama practice.

#### I. Yogic Sukshma Vyayama

- SMARANA SAKTI VIKASAKA
- Griva Shakti Vikasaka I & II
- Bhuja Valli Shakti Vikasaka
- Purna Bhuja Shakti Vikasaka
- Vaksha Sthala Shakti Vikasaka I & II
- KatiShaktiVikasaka I, II, IV & V
- Jangha Shakti Vikasaka I & II
- Pindali Shakti Vikasaka



### Prayer During Yoga

There are some prayers which one can offer during practicing Yoga.

1. OM saha navavatu saha nau bhunaktu saha viryam karavavahai tejasvi navadhitam astu ma vidvishavahai OM shani, shani, shani

May we be protected together. May we be nourished together. May we create strength among one another. May our study be filled with brilliance and light. May there be no hostility between us.

### I. Yogic Sukshma Vyayama

sukshma Vyayama is meant for the Subtle Body (Suksma Sarira) , it is not meant for the Sthula Sarira (Gross Physical Body) . Suksma Sarira is one of the 5 Koshas (sheaths / enveloppes) that make up the human being.

#### 1. PRARTHANA

**POSTURE:** With eyes closed, feet together, the body erect, fold your hands with the thumbs on the throat-cavity (sternal notch) and the forearms pressed against the chest.

**EXERCISE:** Concentrate your mind on the Supreme Being. As soon as you have attained this mental state, relax the pressure of your forearms and palms. As long as you are unsuccessful in achieving this state of mental concentration, keep the forearms pressed against the chest. According to Yogi tradition, this exercise, by its effect on the Manovaha nerve, helps to sublimate the sexual instinct and to increase the powers of concentration.

#### 2. SMARANA SAKTI VIKASAKA

**POSTURE:** With your feet together, the body erect and the mouth in the normal position and the eyes must focus on a spot of 5 ft. in front of the toes.

**EXERCISE:** Concentrate on the Brahmarandra, which is the Yogic name for the area just under the anterior fontanel and through the nose inhale and exhale vigorously (Bellows effect). 25 times to begin with. This is of special benefit to cases of mental fatigue. There is a marked improvement in memory. This exercise is useful for all those whose work causes mental strain and nervous exhaustion.

#### 3 Griva Shakti Vikasaka I & II

##### GRIVA-SAKTHI-VIKASAKA-1

**POSTURE:** Keeping your feet together, stand erect.

**EXERCISE 'A':** Relaxing your neck, turn your head with a jerk first towards your right shoulders, then towards your left shoulders. In the beginning 10 times.

**EXERCISE 'B':** Standing erect, jerk your head first forward, then backward. When it goes back it should touch the nape of your neck. When it is forward your chin should touch the sternum notch. Keep breathing normally. 10 times to begin with.

##### GRIVA-SAKTHI-VIKASAKA-II

**POSTURE:** Keep your feet close together, your back straight, your mouth closed and your eyes wide open.

**EXERCISE:** Keep your chin in and rotate the head from left to right and then right to left alternately. Breathe normally. Try to make your ear touch your shoulder, taking particular care to avoid raising the shoulder. Five times to begin with.



**BHUJA-VALLI-SAKTHI-VIKASAKA**

**POSTURE:** Feet together, the body straight, the arms by the sides.

**EXERCISE `A`:** Begin with your right arms. Let it hang relaxed; then raise it sideways above your head with the palm outward. Bring it down in the same manner. The arm must not touch the head when going up, or the thigh when coming down. Palms must be open, with the fingers together.

**EXERCISE `B`:** Repeat the exercise with your left arm.

**EXERCISE `C`:** Now bring both arms into action. Both should go up and come down together but the arms should not touch the head nor the hands touch each other.

**PURNA-BHUJA-SAKTHI-VIKASAKA**

**EXERCISE `A` :** Inhaling through the nose and holding your breath, swing your right arm forward and backward in a circle as many times as you can. When you cannot hold your breath any longer stop with your arm bent at the elbow and breathe out forcefully while thrusting your arm forward at shoulder level.

**EXERCISE `B`:** Repeat the exercise `A` in reverse, swinging the arm backward and then forward.

**EXERCISE `C` :** Now repeat the exercise `A` with the left arm.

**EXERCISE `D` :** Repeat the exercise `B`, with the left arm.

**EXERCISE `E` :** With both hands clenched into fists, let both your arms describe a full upward circle, and exhale with a hissing sound.

**EXERCISE `F` :**

The same as exercise `E` in reverse. This set of exercises tones up the nerves. The arms and hands become more shapely. The entire length of the arm becomes stronger.

**VAKSHA-STHALA-SAKTI-VIKASAKA-1**

**POSTURE:** Stand with the feet together, body erect. Arms by your side, palms turned backwards with the fingers together.

**EXERCISE:** Swing back your arms, describing a semi-circle. While doing this, inhale through the nose and lean back as far as possible and remain in that position as long as you can. Exhale slowly while reverting to the original position. Five times to begin with. This exercise is helpful in many chest diseases. The chest expands and becomes strong. Tuberculosis, asthma and chronic bronchitis can be effectively tackled with the help of this exercise. Persons suffering from weakness of the heart will benefit by its tonic effect if they do this exercise for five minutes every morning.

**VAKSA-STHALA-SAKTI-VIKASAKA-2**

**POSTURE:** Stand with the feet together, body erect, arms by your side with palms of the hands turned inwards.

**EXERCISE:** While inhaling through the nose, bend backward from the waist as far as you can go. At the same time raise your arms behind you as high as you can. Maintaining this posture as long as you can, exhale slowly while resuming your

original position. Five times to begin with. The advantages derived from this exercise are the same as from vakshasthala- sakti vikasaka asana with the addition that this one gives vitality and strength to the chest and back. The arms are also strengthened. Thin persons will find their protruding bones covered with healthy flesh. Regular practice of this exercise will keep the back straight throughout a man's life.

### **BHUJA BANDHA SAKTHI VIKASAKA**

**POSTURE:** Keep the feet together, body erect, the hands clenched into fists with the thumbs tucked in.

**POSTURE:** Stand with the feet together, body erect, arms by your side with palms of the hands turned inwards.

**EXERCISE :** While inhaling through the nose, bend backward from the waist as far as you can go. At the same time raise your arms behind you as high as you can. Maintaining this posture as long as you can, exhale slowly while resuming your original position. Five times to begin with. The advantages derived from this exercise are the same as from vakshasthala- sakti vikasaka asana with the addition that this one gives vitality and strength to the chest and back. The arms are also strengthened. Thin persons will find their protruding bones covered with healthy flesh. Regular practice of this exercise will keep the back straight throughout a man's life.

### **KATI-SAKTI-VIKASAKA-1**

**POSTURE A:** With your feet together, back straight, clench your right hand to form a fist with the thumb tucked in. Holding it behind your back place your left hand on the right wrist, both in contact with the back.

**EXERCISE A':** Breathe deeply through the nose while bending backward as far as you can. Maintain this posture for a few moments. Then, while exhaling, bend forward and try to touch your knees with your head. Repeat this operation several times. Five times to begin with.

**POSTURE B:** As above except that the left hand should be formed into a fist with the right hand on the left wrist.

**EXERCISE 'B' :** As in Exercise 'A'.

### **KATI-SAKTI-VIKASAKA-2**

**POSTURE:** With your legs stretched apart as far as possible. Arms on hips, keeping the fingers to the rear, and the thumbs in front.

**EXERCISE:** Inhaling, bend back from the waist as far as you can go. Maintain this posture for some time. Then, while bending forward to touch the ground with your head, exhale gradually. Five times to begin with.

### **KATI-SAKTI-VIKASAKA-3**

**POSTURE:** With your feet together, stand erect.

**EXERCISE:** Inhaling, bend back with a jerk as far as you can. Exhaling, bend forward with a jerk trying to touch your knees with your head. Take care that during this exercise your hand do not touch your thighs or your knees.

### **KATI-SAKTI-VIKASAKA-4**

**POSTURE:** With your feet together, stand erect with your arms stretched out sideways.

**EXERCISE:** With your arms spread out, bend the trunk to your left, as far as you can and return slowly to the normal position. Then bend towards your right. Five times to begin with. While doing this exercise, particular care should be taken to see that your arms do not move up or down and that the trunk does not bend forward or backward. At the same time while bending to right or left you must stretch so that the hand touches the calf. Repeat the exercise with your feet two feet apart. Five times to begin with.

### **KATI-SAKTI-VIKASAKA-5**

**POSTURE:** Stand with your feet two feet apart.

**EXERCISE:** While inhaling quickly, swing the trunk and the outstretched arms to describe a semi-circle to the right and exhale. Repeat the process, this time exhaling with the trunk turned to the left. Repeat this operation ten times to begin with. The five exercises for the back make it supple and symmetrical. Regular practice removes all minor deformities of the back. Men and women under twenty-five can add to their height, while those between twenty-five and thirty will also find themselves taller than when they started. It is a boon for short persons. These exercises are specially good for strengthening the back. Artists, actors and actresses will find them of great help. A short course of these exercise will add several inches to the chest and take away many more from a flabby, back, while regular practice will make the body symmetrical and strong.

### **JANGHA-SAKTI-VIKASAKA-2 thigh**

**POSTURE 'A'** With the feet together, stand erect.

**EXERCISE 'A' :** Inhaling through the nose bend your knees gradually, with your arms held out before you parallel to the ground. Stop when your thighs are parallel to the ground and try to maintain this position as long as you can. Take care to prevent the heels or the toes from rising from the ground. The knees must be together. Then begin to rise gradually, while exhaling. If in the beginning you find it difficult to hold your breath while doing this exercise, you can breathe normally, until, with sufficient practice, you can hold your breath.

**POSTURE 'B':** With your feet together, heels raised, body erect, spread your arms sideways, throwing your entire weight on the toes.

**EXERCISE 'B' :** Breathing in and spreading you knees apart bend your knees but without sitting on your heels. While in this position, hold your breath as long as you can. While rising exhale slowly, Breathe normally to begin with, if it is difficult to hold your breath. five times to begin with. These exercise develop the thighs and make them shapely. You can cover long distances without tiring. Thin limbs acquire healthy flesh, while flabby ones get rid of the superfluous flesh. Within a very short time benefits of a lasting nature are noticed.

### **PINDALI-SAKTI-VIKASAKA**

**POSTURE:** With your feet together, stand erect, your hands clenched into fists, your neck relaxed.

**EXERCISE:** While inhaling through the nose, squat with your arms held out in front of you, keeping them parallel to the ground. Your feet should remain on the ground, with your knees closed. Go down as far as you can Holding your breath, stand up while your arms describe one full circle as in udara sakti vikasaka and, on completing the circle, they should be held before your chest, arms bent at

elbows, fists touching each other. Then exhale sharply while expanding the chest and pulling the arms slightly backward.

## II. Yogic Sthula Vyayama

- Hrid Gati (Engine Daud)
- Sarvanga Pushti

### 1. Hrid Gati (Engine Daud) yogic jogging

Particularly recommended to those in the army or in the police force this exercise has been named the Locomotive Exercise because the movement resembles that of a locomotive.

**POSTURE:** With the feet together and the body, rect, bend arms at the elbows as in Bhujja-Bandha Sakti Vikasakasana.

### EXERCISE

Running fifty small steps ahead of you on your toes, push your arms, forward and backward alternately in a piston movement. The feet, while running, must be thrown back from the knee so as to hit the buttocks. When the right leg is moving forward, the right arm must be thrust out and vice versa. Breathing in and out sharply and deeply through the nose will produce the hissing sound of an engine. Having gone forward 50 steps, move backward the same distance with the same movement. Care must be taken to see that the elbows in the rear action of the arms, do not go further back than the body. This is one of the most wonderful physical exercises, which re-vitalizes the entire body. The chest expands, the muscles of thighs and the calves are developed. A miraculous cure for the obese who will find themselves of normal size in a very short time. On the other hand thin persons will find their limbs acquire flesh. One has to do this exercise for five minutes to obtain the energy needed to cover 25 mls. It is, or those interested in athletics, particularly running.

## Session Yogasana for physical health

### III) Yogasana

- Tadasana, Vrikshasana, Ardha Chakrasana, Padahasthasana, Kati
- Chakrasana
- Dandasana, Bhadrasana, Padmasana, Vajrasana,
- Mandukasana, Ushtrasana, Shashankasana, Uttana Mandukasana,
- Kagasana
- Paschimottanasana, Purvottanasana
- Vakrasana, Gomukhasana
- Bhujangasana, Shalabhasana, Makarasana
- Pawanmuktasana, Uttanapadasana, Ardha Halasana, Setubandhasana
- Vipareetkaraniyasana, Saralmatsyasana, Shavasana,

### Tadasana (Palm tree posture)

Tada in Sanskrit means 'palm tree'. This is called Tadasana because in this asana the student stands straight like a palm tree. Hence, it has been named Tadasana.

### Let us perform Tadasana by following the steps given below:

1. Stand erect, feet together, hands by the side of the thighs. Keep the back straight and gaze in front.
2. Stretch the arms upward, keep them straight and parallel with each other in vertical position, with the palms facing inward.

3. Slowly raise the heels as much as you can and stand on toes. Stretch body up as much as possible. Maintain the position for 5-10 seconds.
4. To come back, bring the heels on the floor first. Slowly bring down the hands by the side of the thighs and relax.

### Benefits

- It gives vertical stretch to whole body muscles.
- It strengthens thighs, knees and ankles.
- It helps improve height of the children.
- This posture plays an important role in increasing one's self-awareness.
- It helps to remove laziness and lethargy.

### Limitation

- Those having complaints of vertigo should not practise this asana

### Katichakrasana (Lumber Twist Posture)

Kati in Sanskrit means 'waist' and chakra means 'wheel'. In this asana, the waist is moved towards right side and left side. The movements of the waist along with arms look like a wheel. Hence, it is called Katichakrasana.

#### Let us perform Katichakrasana by following the steps given below:

1. Stand erect on the ground with feet 12 inches apart.
2. Now, keep the arms out-stretched in front of the body with palms facing each other at the shoulder level.
3. While inhaling, swing the arms slowly towards right side of your body.
4. Twist your body from the waist to the right and take your arms back as far as possible.
5. While swinging towards right side, keep the right arm straight and left arm bent.
6. Repeat the practice twisting toward left side as well.

### Benefits

- It helps in making slim.
- It relieves constipation and makes the lumber region strong.
- It is good for respiratory ailments. Tuberculosis of lungs can be prevented.
- It strengthens shoulders, neck, arms, abdomen, back and thighs.

### Limitation

- Do not practise it if suffering from chronic spinal pain or injury

### Simhasana (Lion Posture)

In Sanskrit Simha means 'lion'. In this asana, the face with open mouth and tongue stretched out towards the chin resembles the fierce look of a lion, hence, it is called Simhasana.

#### Let us perform Simhasana by following the steps given below:

1. Sit in Vajrasana with palms on the respective knees.
2. Keep the knees apart.
3. Place both the heels upwards under perineum.
4. Place both the palms on the respective knees widely spreading out the fingers.
5. Lean forward and place the palms on the floor between the knees.
6. Open the mouth and stretch out the tongue as much as possible and gaze at bhrumadhya (centre of eyebrows).

7. Release the bhrumadhya dristi and relax your eyes.
8. Come to Vajrasana by placing the palms on the respective knees and relax.

### Benefits

- It is beneficial for the muscles of the face and neck.
- The tongue becomes more elastic and healthier.
- Salivary glands become strong.
- It regulates functioning of thyroid.
- It helps in reducing dullness and depression and improves slurring of speech.

### Limitation

- Do not practise if suffering from backache, arthritis of hip and knee, throat problems and pain in jaws.

### Mandukasana (Frog Posture)

Manduka, a Sanskrit word means 'frog'. In this asana, the final posture resembles the shape of a frog. Hence, it is named Mandukasana.

Let us perform Mandukasana by following the steps given below:

1. Sit in Vajrasana.
2. Make the fists with thumbs inside and put them near navel and press the navel area.
3. Exhale slowly, lean forward from the waist, lower the chest, so that it rests on the thighs.
4. Keep the head and neck raised and gaze in front.
5. Maintain the position comfortably for 5-10 seconds.
6. To release the posture, come back to the sitting position by raising the trunk; remove your fists from the navel area and sit in Vajrasana.

### Benefits

- This asana is beneficial for the people having heavy bellies, thighs or hips.
- It eliminates gases from the abdomen.
- It benefits people suffering from constipation, diabetes and digestive disorders.

### Limitation

- Person with slipped disc, lumber spondylitis or any other major disease of the spine should not practise this asana.

### Uttana-mandukasana (Stretched up Frog Posture)

Uttana means 'upright' or 'stretched up' and manduka means 'frog'. In final position of this asana, the body looks like a stretched up or upright frog, hence, it is called Uttana-mandukasana.

**Let us perform Uttana-mandukasana by following the steps given below:**

1. Sit in Vajrasana.
2. Keep both the knees wide apart to such an extent that toes of both the feet touch each other. The head, neck and trunk are kept erect. The eyes are either closed or kept open.
3. Raise the arms above the head, fold them and take them behind.
4. Place the right palm below left shoulder and left palm below right shoulder.
5. Maintain this position comfortably for 5-10 seconds.
6. To come back, remove the arms one by one, bring the knees together and come to Vajrasana.

### Benefits



- It helps in reducing backache.
- It improves the blood circulation in the chest and abdomen.
- It tones the abdominal and shoulder muscles.
- It improves the functioning of lungs by improving the movements of diaphragm.

#### **Limitation**

- Those suffering from chronic knee pain and piles should avoid this asana.

#### **Kukkutasana (Cockerel Posture)**

This is called Kukkutasana because this asana imitates the posture of a cock. This is a balancing posture, therefore, it should be practised with caution. Before taking up this practice, one must have sufficient practice of Padmasana.

#### **Let us perform Kukkutasana by following the steps given below:**

1. Sit in Padmasana. Keep your hand on side.
2. Now insert the arms between calves and thighs until the palms reach the floor.
3. Inhaling, lift the body up as high as possible in the air. Support and balance the body on the hands. Keep the neck and head straight.
4. Maintain the position with normal breath comfortably for 5-10 seconds.
5. To release the posture, exhaling lower the body and bring it to the floor. Take the inserted arms out and sit in Padmasana.

#### **Benefits**

- This posture helps to strengthen the shoulder, arms and elbows.
- This posture also helps to develop a sense of balance and stability.
- This makes the body strong.

#### **Limitation**

- People suffering from heart disease or high blood pressure should not practise this asana.

#### **Akarna Dhanurasana (Bow and Arrow Posture)**

Akarna means 'ear' and Dhanur means 'bow'. In this asana, the posture resembles like a 'bow'. In this posture, hand is pulled up to ear like pulling a bow and arrow. Hence, this is called Akarna Dhanurasana.

#### **Let us perform Akarna Dhanurasana by following the steps given below:**

1. Sit and stretch out both the legs in front. Keep both the arms by the side of the body. Palms should be resting on the ground, fingers together pointing forward.
2. Catch hold of the right big toe by the hook of the index finger and thumb of the left hand.
3. Make the hook with the help of index finger and thumb of right hand. Clasp the big toe of the left leg.
4. Bend the right leg at knee. Pull the feet by the toe, so as it reaches up to the left ear.
5. Maintain the position for 5 to 10 seconds.
6. To come back, lower the right foot, release the hand and keep it by the side. Now bring the left leg on the floor. Release the right hand and keep it by the side of the body.

#### **Benefits**

- This asana is beneficial in constipation and indigestion.

- It strengthens the abdominal muscles, muscles of arms and legs.
- It makes the legs supple.

### **Limitation**

- Do not practise, if suffering from spinal complaints, dislocation of hip joints and sciatica.

### **Matsyasana (Fish Posture)**

In Sanskrit, Matsya means 'fish'. In final posture of this asana, the body takes shape of a floating fish. The folded legs resemble the tail of a fish, hence, it is called Matsyasana. This asana should be performed under the supervision of an expert.

**Let us perform Matsyasana by following the steps given below:**

#### **1. Sit in Padmasana.**

2. Lie on the back with support of the elbows.
3. Lift the neck and chest slightly up; the back should be arched and raised from the ground.
4. Bend the head backward and place the crown of the head on floor.
5. Make hooks with the index fingers of both hands; and clasp the big toes with hooks of opposite hands.
6. Maintain the position for 10-15 seconds or as long as comfortable.
7. To come back, release the toes; place hands on the ground; raise head up with the support of hands. Sit with the help of the elbows.

### **Benefits**

- It improves blood supply to the brain.
- It regulates the functioning of thyroid gland and improves immune system.
- It alleviates backache and cervical spondylitis.
- It divert the blood from the legs to the pelvic region and helps to increase the tone of the abdominal muscles.
- It is beneficial in lungs and respiratory disorders.

### **Limitation**

- Avoid practising this asana in case of vertigo, cardiovascular diseases, hernia, arthritis, knee and ankle and spinal problems.

### **Bhujangasana (Cobra Posture)**

Bhujangasana comprises two words bhujanga and asana. In Sanskrit, bhujanga means cobra (snake) and asana means posture. In the final position of this asana, the body resembles the shape of a hooded snake, hence the posture is called Bhujangasana.

**Let us perform Bhujangasana by following the steps given below:**

1. Lie prone on the ground with forehead touching the floor; legs together, hands by the side of thighs.
2. Fold the hands at elbows and place the palms by the side of the shoulders, thumbs under armpits, with tip of the fingers not crossing the shoulder line.
3. Inhaling, slowly raise the head, neck and shoulders. Shoulders should be shrugged backwards.
4. Raise the trunk up to the navel region. Raise the chin as high as possible.
5. Eyes should be kept gazing upward.
6. Maintain the position for 5 -10 seconds or as long as comfortable.
7. To come back, bring down the upper part of navel region, chest, shoulders, chin and head.

8. Place the forehead on the ground and arms along the body, hands by sides of the thighs. Relax.

### **Benefits**

- It affects the spinal column and makes it flexible.
- It solves digestive complaints.
- It increases intra-abdominal pressure benefiting the internal organs especially the liver and kidneys.
- It relaxes both body and mind.

### **Limitation**

Those suffering from hernia, peptic ulcer, intestinal tuberculosis and acute abdominal pain should avoid this practice.

### **Makarasana (Crocodile Posture)**

The posture is called Makarasana as the body resembles the shape of makara, which in Sanskrit means 'crocodile'. Makarasana is a relaxing asana to body and mind and is very beneficial for reducing stress.

### **Let us perform Makarasana by following the steps given below:**

1. Lie down on your stomach.
2. Keep the legs at a comfortable distance with heels inside and toes pointing outward.
3. Fold arms at elbows, and keep them under the head.
4. Place the head on the cushion of the arms, close the eyes and relax.
5. To come back bring the arms along the body and legs together.

### **Benefits**

- Traditionally it is a relaxing posture.
- It is beneficial in almost all psychosomatic disorders.
- It is beneficial for respiratory organs, as well as digestive organs.

### **Limitations**

- Those having complaint of obesity and cardiac problems should avoid this practice.

### **Shalabhasana (Locust Posture)**

This asana is named after the locust. In Sanskrit Shalabha refers to 'locust' and asana means 'posture'. In the final posture of this asana, body resembles a locust.

### **Let us perform Shalabhasana by following the steps given below:**

1. Lie flat on the stomach, legs together, hands by the side of the thighs, palms facing downward and heels together. Chest and forehead should be placed on the ground.
2. Place both palms under the thighs.
3. Stretch the chin slightly forward and keep it on the floor.
4. Inhaling and pressing the palms on the ground, raise both the legs upward as high as possible.
5. Maintain the position with normal breathing for few seconds.
6. To come back, slowly bring down the legs to the floor. Take out the hands from the thighs. Lie flat on the stomach, legs together, hands by the side of the thighs and palms facing downward.

### **Benefits**

- Shalabhasana stimulates the autonomic nervous system especially the parasympathetic system.
- It strengthens the lower back and pelvic organs.
- It gives relief in the conditions of mild sciatica, backache and non-serious slip disk.
- It is a good exercise for the legs, thighs, hips, buttocks, the lower abdomen, diaphragm and wrists.
- It improves blood circulation in the pelvic region.
- It helps to reduce excessive fat formed around the knees, the thighs, the waist and the abdomen and thereby improves physical appearance and positive body image.
- It helps to regulate the functioning of liver.
- It is beneficial to increase elasticity and flexibility of spine.

#### Limitation

- People suffering from high blood pressure, asthma and cardiac diseases, weak lungs, hernia, peptic ulcers and intestinal tuberculosis should avoid practising this asana.

### **Dhanurasana (Bow Posture)**

In Sanskrit Dhanur means 'bow'. This is called the bow posture because in this posture the body resembles a bow with its string attached to it. The trunk and the thighs represent the bow, whereas the hands and legs take the place of the string.

**Let us perform Dhanurasana by following the steps given below:**

1. Lie down in prone position.
2. Exhaling, slowly bend the legs backwards at the knees.
3. Hold the toes or ankles firmly with hands as per your capacity.
4. Inhaling, raise thighs, head and chest as high as possible. Stretch and bring the toes or ankles towards head. Look upward. Maintain the position comfortably for 5-10 seconds.
5. To come back, release the arms and keep them beside the body. Straighten the legs. Bring the legs, head, shoulders and chest slowly on the floor and relax in starting position.

#### Benefits

- Dhanurasana is a good exercise for joint of the shoulders, knees, ankles and entire backbone.
- It is beneficial for management of diabetes mellitus as it massages the liver and pancreas.
- It helps to reduce excess fat around the belly, waist and hips.
- It strengthens the ligaments, muscles and nerves in the back, arms, legs, shoulders, neck and abdomen.
- It stimulates and regulates thyroid and adrenal glands.
- It helps in reducing backache pain.
- It is good for the conditions of hunched back and drooping shoulders.

#### Limitation

- Person with high blood pressure, hernia, peptic ulcer, appendicitis, colitis slipped disc, lumbar spondylitis should not practise this asana

### **Sarvangasana (Shoulder Stand Posture)**

Sarvangasana comprises three words: sarva, anga and asana. In Sanskrit, sarva means 'whole' and anga means 'parts of the body' and asana means 'posture'. The posture is called Sarvangasana, because it influences the whole body.

**Let us perform Sarvang-asana by following the steps given below:**

1. Lie on the back with the hands along the thighs, palms resting on the ground.
2. Pushing down on hands slowly raise both the legs up to 300. Hold the position for few seconds.
3. Slowly, raise the legs further up to 600 and maintain the position for few seconds.
4. Raise the legs further up to 900 and maintain the position for few seconds.
5. Bend the arms at the elbow and place the hands at the hips. Now, cupping the buttocks with hands raise the buttocks. Raise legs, abdomen and chest up vertically in a straight line with the trunk. Place the palms on your back to support the back.
6. Push the chest forward so that it presses firmly against the chin. Keep the elbows close to each other.
7. Maintain the position comfortably for 5-10 seconds.
8. To come back, lower the spine very slowly along the floor. Lower the buttocks with hands supporting the back and bring the buttocks on the ground. Bring the legs up to 900 and stop there. Place the hands firmly on the ground close to the body. Lower the legs still up to 600 and 300 and then slowly on the ground and relax.

### **Benefits**

- It regulates the thyroid function.
- It helps in increasing the circulation of blood to the brain.
- It strengthens the neck region.
- It helps in managing problems related to endocrine glands.

### **Limitation**

- Those suffering from high blood pressure, epilepsy, pain in neck and lumber region, excessive obesity and cardiovascular complaint should not practise it.

### **Halasana**

Hala in Sanskrit and Hindi means 'plough'. In the final position of this asana, the body resembles the shape of a plough. As plough makes the hard ground soft, in this asana the veins are stretched which reduces the stiffness of the body.

### **Let us perform Halasana by following the steps given below:**

1. Lie in supine position, legs together and arms beside the body.
2. Keeping the knees straight, raise the legs up to 30°.
3. Raise the legs further up to 60°.
4. Raise the legs still further up to 90°, keeping them vertical and straight.
5. Pressing the arms raise the trunk by lowering the legs over the head, the toes touching the ground. Push the legs a little beyond the head.
6. Keep the arm straight on floor. Maintain the position for 5-10 seconds.
7. To come back, remove the arms, slowly lower the back and buttocks to the ground, bring the legs to 900 position. Lower the legs to starting position.

### **Benefits**

- It gives good exercise to the thyroid gland/parathyroid gland.
- It gives a good stretch to the spinal column and back deep muscles, making the spine strong and healthy.
- It helps in increasing the height of children.
- It alleviates problem of dyspepsia and constipation is removed.

### **Limitation**

- Practice of this asana should be avoided in case of stiffness in spine, cervical spondylitis, hernia, high blood pressure and slipped disc.

**Shavasana (Corpse Posture)**

In Sanskrit, Shava means a 'dead body'. In this posture the body resembles like a dead body, hence, this asana is called Shavasana.

As the name suggests, this asana takes the person away from tension; reduces stress and is relaxing to the body and the mind.

**Let us perform Shavasana by following the steps given below:**

1. Lie flat in supine position.
2. Keep the legs straight with feet at 8-12 inches apart. Keep heels inside and toes outside.
3. Keep the palms facing upward slightly away from the body with fingers in a semi-flexed position.
4. Take deep breath and simultaneously close the eyes. Feel complete relaxation in your body. Try to relax all parts of your body.
5. Breathe normally and concentrate on the flow of breath.
6. To come back, open your eyes and come to the starting position.

**Benefits**

- It removes stress and tension.
- It is useful to reduce high blood pressure.
- It relaxes the body and mind.
- It removes fatigue from the body.
- It is beneficial in the cases of insomnia as it helps to induce sleep.

**Limitation**

- Do not practise if suffering from low blood pressure.

**IV) Kriya****Kapalabhati (Frontal Brain Cleansing)**

Kapalabhati is considered a Kriya (cleansing practice) which cleanses the frontal brain. In Sanskrit, Kapala means 'skull' and bhati means 'shine'. Kapalabhati helps to improve the functions of the organs located in the skull.

Let us perform Kapalabhati by following the steps given below:

1. Sit straight in any meditative pose like Padmasana or Vajrasana.
2. Take deep breath through the nostrils.
3. Exhale forcefully in such a way that the lower abdomen is contracted to expel out the air. Inhale spontaneously and passively without making any efforts. Do not make effort to inhale. Air will enter the body through the passive inhalation. This is one stroke of Kapalabhati. Begin with 20 strokes at a time. This is one round. One can practise one to three rounds in a practical session. Gradually increase the strokes in one round.

**Benefits**

- It stimulates the nerves in the abdominal region, tones up the abdominal muscles and improves digestion.
- Kapalabhati expels more carbon-dioxide and other waste gases from the lungs than the normal breathing.
- It improves heart and lungs capacity and therefore good for bronchial/asthma.
- It improves blood circulation throughout the body.
- It energises the body and removes lethargy.

**Limitation**



• Those suffering from cardio-vascular problems, high blood pressure, hernia, vertigo and gastric ulcer complaints, should avoid practising kapalabhati.

### **Agnisara**

It is considered as a Kriya in yogic practices. The meaning of Agnisara is to increase the gastric fire. In Sanskrit agni means 'fire' and sara means 'essence'. This kriya regulates the essence of fire which is supposed to be located in the navel region. This practice regulates the functioning of abdominal organs.

#### **Let us perform Agnisara by following the steps given below:**

1. Stand erect with the feet apart from each other.
2. Keep the hands on thighs above the knee. Exhale completely.
3. Bend the knees and the upper part forward.
4. Contract and expand the abdominal muscles rapidly for as long as comfortable while retaining the breath outside.
5. Then slowly breathe in. Repeat the practice 2-3 times.

#### **Benefits**

- It strengthens the abdominal muscles and nerves.
- It improves the gastric fire and stimulates appetite.
- It alleviates constipation and sluggishness of liver.
- It alleviates dullness and depression.

#### **Limitation**

- Person suffering from high blood pressure, heart disease, peptic ulcers or chronic diarrhoea should not perform this kriya.

### **V) Pranayama**

Prana refers to the 'universal life force' and ayama means to 'regulate'. Prana is the vital energy without which the body would not survive. Pranayama relates to breathing techniques which help to increase breathing capacity. Some common pranayamas include anuloma-viloma, bhasrika, ujjayi, sheetali, etc.

#### **Anuloma-viloma Pranayama (Alternate Nostril Breathing)**

The Anuloma means 'towards' and Viloma means 'reverse'. It is called Anuloma-viloma because alternate nostrils are used for each inhalation and exhalation. One inhales through the left nostril and then exhales through the right nostril, then the order is reversed by inhaling through the right nostril, and exhaling through the left nostril. This pranayama is called Nadi-shodhana pranayama also, if it is performed with kumbhaka (holding the breath).

#### **Let us perform Anuloma-viloma by following the steps given below:**

1. Sit in the position of Padmasana or in any other comfortable meditative posture.
2. Keep the body erect and place the hands on the respective knees.
3. Raise the right hand and place the right thumb on the right nostril and close it.
4. Inhale slowly through the left nostril.
5. Close the left nostril by the ring finger and the little finger and exhale slowly through the right nostril.
6. Again inhale through the right nostril.
7. Close the right nostril with thumb and exhale through the left nostril. This is one round of Anuloma-viloma.
8. Repeat it 10 times.

#### **Benefits**

- It calms down the mind and improves concentration.

- It improves functioning of all cells of the body by providing them sufficient oxygenated blood.
- It purifies the blood.
- It improves blood supply to brain.
- It helps to regulate blood pressure.
- It helps in managing stress by reducing anxiety.
- It is beneficial in many diseases such as asthma, high or low blood pressure, insomnia, chronic pain, endocrine imbalances, heart-problems, hyperactivity, etc.

#### **Limitation**

- In the beginning, retention of breath should be avoided.

### **VI) Bandha**

#### **Uddiyana Bandha**

In Sanskrit, uddiyana means 'raising up' and bandha means 'contraction' of any part of the body. This may be called uddiyana because it raises the diaphragm up. In this bandha, the diaphragm is made to fly up from its original position and held very high in the thoracic cavity. This bandha exercises the diaphragm and the ribs. It can be practised either in sitting or in standing position.

#### **Let us perform Uddiyana Bandha by following the steps given below:**

1. Sit in Padmasana, Vajrasana or Sukhasana. Keep the hands on knees.
2. Exhale through the mouth emptying the lungs as much as possible. Hold the breath outside and press down the knees with palms.
3. Form a pit in the abdomen. For making the pit, contract the abdominal muscles inward towards the spine and upwards (abdominal lock). Hold the breath outside with abdominal lock for as long as comfortable.
4. To come back, gradually release the abdominal lock, come slowly to the starting position and start inhaling slowly. (Repeat it 3-4 times.)

#### **Benefits**

- It increases the respiratory efficiency.
- It Improves blood circulation in the thoracic and abdominal region.
- It tones up the abdominal muscles.
- It is beneficial in the conditions of constipation, indigestion and diabetes mellitus.

#### **Limitation**

- Person suffering from hernia, high blood pressure, heart disease, intestinal ulcers should not practise this.

### **VII) Yoga for Concentration**

#### **Dhyana (Meditation)**

Meditation is a yogic practice by which mind becomes still and relaxed. We all know that our mind always remains active and never takes rest. All kinds of thoughts and emotions negatively affect it and as a result minds becomes disturbed. In order to pacify and relax the mind, it is to be stilled. This can be done by taking the mind away from the external things.

For pacifying and relaxing the mind, meditation is a very effective practice. It relaxes body and mind both and refuels them with energy. Several researches indicate that meditation improves the functioning of brain. There are several techniques of meditation. They vary in the methodology but the goal of all techniques is same, i.e., reaching an inner calm and a higher level of awareness. All techniques of meditation involve focussing on a single point which could be breath, a mantra, a word or an object. In the beginning, focussing of the mind is

difficult; therefore a beginner can start meditating for a few minutes only and later on can increase its duration.

**Let us practice meditation by following the steps given below:**

1. Sit in Padmasana, Sukhasana or in any meditative comfortable posture. Place your hands in Jnana mudra on your respective knees. Keep your spine erect. Close your eyes gently.
2. Breathe normally.
3. Focus your attention on the breath. Go inside yourself and observe your breathing. Concentrate on inhalation and exhalation. During the practice, your mind may wander here and there. Try to concentrate on your breath only. Breathe normally.
4. Now you can focus on the space between the eyebrows with closed eyes. Remain in this position for five minutes.
5. To come back, bring your consciousness very slowly back to the external surroundings.
6. Cup the eyes with the hands and blink the eyes for a few seconds so that sudden exposure to light does not irritate them. Slowly open your eyes and remove the hands. Slowly externalise yourself.

Meditation can be performed in different forms. For example, instead of breath, one may focus on sound also. For this, slowly produce the sound, keep on reducing its volume till it comes to a barely audible note. Then stay calm and concentrate on the tip of the nose or the space between the eyebrows with closed eyes.

**Benefits**

- It gives deeper relaxation.
- It lowers heart rate and blood pressure.
- It slows respiratory rate.
- It helps to reduce stress.
- It helps in managing emotions.

**Benefits of Yoga on Human Body**

Unlike other physical exercises, which give benefits to the body only, Yoga benefits Body, mind, and soul. Also, no other exercise give benefits to internal organs and glands, while for good health it is very essential that they all should work properly. Below are some of the benefits of yoga –

**Improves flexibility**

Improved flexibility is one of the first and most obvious benefits of yoga. During your first class, you probably won't be able to touch your toes, never mind do a backbend. But if you stick with it, you'll notice a gradual loosening, and eventually, seemingly impossible poses will become possible. You'll also probably notice that aches and pains start to disappear. That's no coincidence. Tight hips can strain the knee joint due to improper alignment of the thigh and shinbones. Tight hamstrings can lead to a flattening of the lumbar spine, which can cause back pain. And inflexibility in muscles and connective tissues, such as fascia and ligaments, can cause poor posture.

**Builds Muscle Strength**

Strong muscles do more than looking good. They also protect us from conditions like arthritis and back pain and help prevent falls in elderly people. And when you build strength through yoga, you balance it with flexibility. If you just went to the gym and lifted weights, you might build strength at the expense of flexibility.

**Improves Body Posture**

Your head is like a bowling ball—big, round, and heavy. When it's balanced directly over an erect spine, it takes much less work for your neck and back muscles to support it. Move it several inches forward, however, and you start to strain those muscles. Hold up that forward-leaning bowling ball for eight or 12 hours a day, and it's no wonder you're retired. And fatigue might not be your only problem. Poor posture can cause back, neck, and other muscle and joint problems. As you slump, your body may compensate by flattening the normal inward curves in your neck and lower back. This can cause pain and degenerative arthritis of the spine.

### **Prevents cartilage and joint breakdown**

Each time you practice yoga, you take your joints through their full range of motion. This can help prevent degenerative arthritis or mitigate disability by “squeezing and soaking” areas of cartilage that normally aren't used. Joint cartilage is like a sponge; it receives fresh nutrients only when its fluid is squeezed out, and a new supply can be soaked up. Without proper sustenance, neglected areas of cartilage can eventually wear out, exposing the underlying bone like worn-out brake pads.

### **Protects Spine**

Spinal disks—the shock absorbers between the vertebrae that can hernia and compress nerves—crave movement. That's the only way they get their nutrients. If you've got a well-balanced asana practice with plenty of backbends, forward bends, and twist, you'll help keep your disks supple.

### **Better your bone health**

It's well documented that weight-bearing exercise strengthens bones and helps ward off osteoporosis. Many postures in yoga require that you lift your own weight. And some, like Downward and Upward facing dog, help strengthen the arm bones, which are particularly vulnerable to osteoporosis fractures.

### **Increases your blood flow**

Yoga gets your blood flowing. More specifically, the relaxation exercises you learn in yoga can help your circulation, especially in your hands and feet. Yoga also gets more oxygen to your cells, which function better as a result. Twisting poses are thought to wring out venous blood from internal organs and allow oxygenated blood to flow in once the twist is released. Inverted poses, such as Handstand and Shoulders and, encourage venous blood from the legs and pelvis to flow back to the heart, where it can be pumped to the lungs to be freshly oxygenated. This can help if you have swelling in your legs due to heart or kidney problems. Yoga also boosts levels of haemoglobin and red blood cells, which carry oxygen to the tissues. And it thins the blood by making platelets less sticky and by cutting the level of clot-promoting proteins in the blood. This can lead to a decrease in heart attacks and strokes since blood clots are often the main cause behind them.

### **Drains your lymphs and boosts immunity**

When you contract and stretch muscles, move organs around, and come in and out of yoga postures, you increase the drainage of lymph (a viscous fluid rich in immune cells). This helps the lymphatic system fight infection, destroy cancerous cells, and dispose of the toxic waste products of cellular functioning.

### **Ups your heart rate**

When you regularly get your heart rate into the aerobic range, you lower your risk of heart attack and can relieve depression. While not all yoga is aerobic, if you do it vigorously or Ashtanga classes, it can boost your heart rate into the aerobic

range. But even yoga practices that don't get your heart rate up that high can improve cardiovascular conditioning. Studies have found that yoga practice lowers the resting heart rate, increases endurance, and can improve your maximum uptake of oxygen during exercise—all reflections of improved aerobic conditioning. One study found that subjects who were taught only pranayama could do more exercise with less oxygen.

### **Drops your blood pressure**

If you've got high blood pressure, you will get benefited from yoga. When compared the effects of Shavasana (Corpse Pose) with simply lying on a couch, after three months, Savasana was associated with a 26-point drop in systolic blood pressure (the top number) and a 15-point drop in diastolic blood pressure (the bottom number)—and the higher the initial blood pressure, the bigger the drop.

### **Regulates your adrenal glands**

Yoga lowers cortisol levels. If that doesn't sound like much, consider this. Normally, the adrenal glands secrete cortisol in response to an acute crisis, which temporarily boosts immune function. If your cortisol levels stay high even after the crisis, they can compromise the immune system. Temporary boosts of cortisol help with long-term memory, but chronically high levels undermine memory and may lead to permanent changes in the brain. Additionally, excessive cortisol has been linked with major depression, osteoporosis (it extracts calcium and other minerals from bones and interferes with the laying down of new bone), high blood pressure, and insulin resistance. In rats, high cortisol levels lead to what researchers call “food-seeking behavior” (the kind that drives you to eat when you're upset, angry, or stressed). The body takes those extra calories and distributes them as fat in the abdomen, contributing to weight gain and the risk of diabetes and heart attack.

### **Makes you happier**

Feeling sad? Sit in Lotus. Better yet, rise up into a backbend or soar royally into King Dancer Pose. While it's not as simple as that, one study found that a consistent yoga practice improved depression and led to a significant increase in serotonin levels and a decrease in the levels of monoamine oxidase.

### **Creates a healthy lifestyle**

Move more, eat less—that's the adage of many a dieter. Yoga can help on both fronts. A regular practice gets you moving, and burns calories and the spiritual and emotional dimensions of your practice may encourage you to address any eating and weight related disorders on a deeper level. Yoga may also inspire you to become a more conscious eater.

### **Lowers blood sugar**

Yoga lowers blood sugar and LDL (“bad”) cholesterol and boosts HDL (“good”) cholesterol. In people with diabetes, yoga has been found to lower blood sugar in several ways: by lowering cortisol and adrenaline levels, encouraging weight loss, and improving sensitivity to the effects of insulin. Get your blood sugar levels down, and you decrease your risk of diabetic complications such as heart attack, kidney failure, and blindness.

### **Helps you focus**

An important component of yoga is focusing on the present. Studies have found that regular yoga practice improves coordination, reaction time, memory, and even IQ scores. People who practice Transcendental Meditation demonstrate the ability to solve problems and acquire and recall information better—probably because



they're less distracted by their thoughts, which can play over and over like an endless tape loop.

### **Relaxes your system**

Yoga encourages you to relax, slow your breath, and focus on the present, shifting the balance from the sympathetic nervous system (or the fight-or-flight response) to the parasympathetic nervous system. The latter is calming and restorative; it lowers breathing and heart rates, decreases blood pressure, and increases blood flow to the intestines and reproductive organs.

### **Regulates your nervous system**

Some advanced yogis can control their bodies in extraordinary ways, many of which are mediated by the nervous system. Scientists have monitored yogis who could induce unusual heart rhythms, generate specific brain-wave patterns, and, using a meditation technique, raise the temperature of their hands by 15 degrees Fahrenheit. If they can use yoga to do that, perhaps you could learn to improve blood flow to your pelvis if you're trying to get pregnant or induce relaxation when you're having trouble falling asleep.

### **Releases Tension From Your Limbs**

Do you ever notice your self holding the telephone or a steering wheel with a death grip or scrunching your face when staring at a computer screen? These unconscious habits can lead to chronic tension, muscle fatigue, and soreness in the wrists, arms, neck, shoulders, neck, and face, which can increase stress and worsen your mood. As you practice yoga, you begin to notice where you hold tension: It might be in your tongue, your eyes, or the muscles of your face and neck. If you simply tune in, you may be able to release some tension in the tongue and eyes. With bigger muscles like the quadriceps, trapezius, and buttocks, it may take years of practice to learn how to relax them.

### **Helps you sleep deeper**

Simulation is good, but too much of it taxes the nervous system. Yoga can provide relief from the hustle and bustle of modern life. Restorative asana, yoga nidra (a form of guided relaxation), Savasana, pranayama, and meditation encourage pratyahara, a turning inward of the senses, which provides downtime for the nervous system. Another by-product of a regular yoga practice, studies suggest, is better sleep—which means you'll be less tired and stressed and less likely to have accidents.

### **Boosts your immune system functionality**

Asana and pranayama probably improve immune function, but, so far, meditation has the strongest scientific support in this area. It appears to have a beneficial effect on the functioning of the immune system, boosting it when needed (for example, raising antibody levels in response to a vaccine) and lowering it when needed (for instance, mitigating an inappropriately aggressive immune function in an autoimmune disease like psoriasis).

### **Gives your lungs room to breathe**

Yogis tend to take fewer breaths of greater volume, which is both calming and more efficient. A 1998 study published in *The Lancet* taught a yogic technique known as “complete breathing” to people with lung problems due to congestive heart failure. After one month, their average respiratory rate decreased from 13.4 breaths per minute to 7.6. Meanwhile, their exercise capacity increased significantly, as did the oxygen saturation of their blood. In addition, yoga has been shown to improve



various measures of lung function, including the maximum volume of the breath and the efficiency of the exhalation. Yoga also promotes breathing through the nose, which filters the air, warms it (cold, dry air is more likely to trigger an asthma attack in people who are sensitive), and humidifies it, removing pollen and dirt and other things you'd rather not take into your lungs.

### **Prevents IBS and other digestive problems**

Ulcers, irritable bowel syndrome, constipation—all of these can be exacerbated by stress. So if you stress less, you'll suffer less. Yoga, like any physical exercise, can ease constipation—and theoretically, lower the risk of colon cancer—because moving the body facilitates more rapid transport of food and waste products through the bowels. And, although it has not been studied scientifically, yogis suspect that twisting poses may be beneficial in getting waste to move through the system.

### **Gives you peace of mind**

Yoga quells the fluctuations of the mind, according to 'Patanjali's Yoga Sutra. In other words, it slows down the mental loops of frustration, regret, anger, fear, and desire that can cause stress. And since stress is implicated in so many health problems—from migraines and insomnia to lupus, MS, eczema, high blood pressure, and heart attacks—if you learn to quiet your mind, you'll be likely to live longer and healthier.

### **Increases your self-esteem**

Many of us suffer from chronic low self-esteem. If you handle this negatively by take drugs, overeating, working too hard, sleeping around—you may pay the price in poorer health physically, mentally, and spiritually. If you take a positive approach and practice yoga, you'll sense, initially in brief glimpses and later in more sustained views, that you're worthwhile or, as yogic philosophy teaches, that you are a manifestation of the Divine. If you practice regularly with the intention of self-examination and betterment—not just as a substitute for an aerobics class—you can access a different side of yourself. You'll experience feelings of gratitude, empathy, and forgiveness, as well as a sense that you're part of something bigger. While better health is not the goal of spirituality, it's often a by-product, as documented by repeated scientific studies.

### **Eases your pain**

Yoga can ease your pain. According to several studies, asana, meditation, or a combination of the two, reduced pain in people with arthritis, back pain, fibromyalgia, carpal tunnel syndrome, and other chronic conditions. When you relieve your pain, your mood improves, you're more inclined to be active, and you don't need as much medication.

### **Gives you inner strength**

Yoga can help you make changes in your life. In fact, that might be its greatest strength. Tapas, the Sanskrit word for “heat,” is the fire, the discipline that fuels yoga practice and that regular practice builds. The tapas you develop can be extended to the rest of your life to overcome inertia and change dysfunctional habits. You may find that without making a particular effort to change things, you start to eat better, exercise more, or finally quit smoking after years of failed attempts.

### **Connects you with guidance**

Good yoga teachers can do wonders for your health. Exceptional ones do more than just guiding you through the postures. They can adjust your posture, gauge

when you should go deeper in poses or back off, deliver hard truths with compassion, help you relax, and enhance and personalize your practice. A respectful relationship with a teacher goes a long way towards promoting your health.

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### **Helps keeping you drug free**

If your medicine cabinet looks like a pharmacy, maybe it's time to try yoga. Studies of people with asthma, high blood pressure, Type II diabetes (formerly called adult-onset diabetes), and obsessive-compulsive disorder have shown that yoga helped them lower their dosage of medications and sometimes get off them entirely. The benefits of taking fewer drugs? You'll spend less money, and you're less likely to suffer side effects and risk dangerous drug interactions.

### **Builds awareness for transformation**

Yoga and meditation build awareness. And the more aware you are, the easier it is to break free of destructive emotions like anger. Studies suggest that chronic anger and hostility are as strongly linked to heart attacks as are smoking, diabetes, and elevated cholesterol. Yoga appears to reduce anger by increasing the feelings of compassion and interconnection and by calming the nervous system and mind. It also increases your ability to step back from the drama of your own life, to remain steady in the face of bad news or unsettling events. You can still react quickly when you need to—and there's evidence that yoga speeds reaction time—but you can take that split second to choose a more thoughtful approach, reducing suffering for yourself and others.

### **Benefits your relationships**

Love may not conquer all, but it certainly can aid in healing. Cultivating the emotional support of friends, family, and community has been demonstrated repeatedly to improve health and healing. A regular yoga practice helps develop friendliness, compassion, and greater equanimity. Along with yogic philosophy's emphasis on avoiding harm to others, telling the truth, and taking only what you need, this may improve many of your relationships.

### **Uses sounds to soothe your sinuses**

The basics of yoga—asana, pranayama, and meditation—all work to improve your health, but there's more in the yoga toolbox. Consider chanting. It tends to prolong exhalation, which shifts the balance toward the parasympathetic nervous system. When done in a group, chanting can be a particularly powerful physical and emotional experience.

### **Guides your body's healing in your mind's eye**

If you contemplate an image in your mind's eye, as you do in yoga nidra and other practices, you can effect change in your body. Several studies have found that guided imagery reduced postoperative pain, decreased the frequency of headaches, and improved the quality of life for people with cancer and HIV.

### **Keeps allergies and viruses at bay**

Kriyas, or cleansing practices, are another element of yoga. They include everything from rapid breathing exercises to elaborate internal cleansings of the intestines. Jalneti, which entails a gentle lavage of the nasal passages with salt water, removes pollen and viruses from the nose, keeps mucus from building up, and helps drain the sinuses.

### **Helps you serve others**

Karma Yoga (service to others) is integral to yogic philosophy. And while you may not be inclined to serve others, your health might improve if you do. A study at the University of Michigan found that older people who volunteered a little less than an hour per week were three times as likely to be alive seven years later. Serving others can give meaning to your life, and your problems may not seem so daunting when you see what other people are dealing with.

### **Encourages self-care**

In much of conventional medicine, most patients are passive recipients of care. In yoga, it's what you do for yourself that matters. Yoga gives you the tools to help you change, and you might start to feel better the first time you try practicing. You may also notice that the more you commit to practice, the more you benefit. This results in three things: You get involved in your own care, you discover that your involvement gives you the power to effect change, and seeing that you can effect change gives you hope. And hope itself can be healing.

### **Supports your connective issue**

As you read all the ways yoga improves your health, you probably noticed a lot of overlap. That's because they're intensely interwoven. Change your posture, and change the way you breathe. Change your breathing, and you change your nervous system. This is one of the great lessons of yoga: Everything is connected—your hipbone to your anklebone, you to your community, your community to the world. This interconnection is vital for understanding yoga. This holistic system simultaneously taps into many mechanisms that have additive and even multiplicative effects. This synergy may be the most important way of all that yoga heals.

### **Uses the Placebo Effect, To Affect Change**

Just believing that you will get better can make you better. Unfortunately, many conventional scientists believe that if something works by eliciting the placebo effect, it doesn't count. But most of the patients who just chanted a mantra, like you might do at the beginning or end of a yoga class or throughout a meditation, they felt better.

### **Clothing to Wear During Yoga**

One should wear comfortable clothes (preferably cotton clothes), during Yoga Exercises. The clothes should be loose enough which allow you to do all the stretching exercises and Yoga poses. Since one does Yoga exercises in the group in Yoga Center, so the Yoga clothing should be such that it should not show off private body parts during practicing different Yoga poses, specially shirshasana or similar upside down poses.

## **Activities**

## **Check Your Progress**

Module 7	Yoga and Diet Therapy for Diabetics
<b>Introduction</b>	
<b>Learning Outcomes</b>	
<b>Module Structure</b>	
Session 1: Nutrition and Health Promotion Yogic Diet (Ahana)	
Session 2: Yoga and Diabetes Mellitus (DM)	
Session 3: Diet for Diabetics	
Session 4: Yoga Therapy for Diabetics	
<b>Session 1: Nutrition and Health Promotion Yogic Diet (Ahana)</b>	
<p>Individual can't live without air, water and food. Food is fundamental need for every human to live. Nutrition is an essential for sound life. A balanced and nutritious diet routine is important from the onset of life for development and advancement. With regards younger, it expects more prominent significance as earliest stages, youth and puberty are the times of development and improvement; the requirement of nutrition during these phases of advancement, in this way, is definitely more. Balanced and nutritious eating regimen is a fundamental contribution for keeping one healthy.</p> <p><b>Balanced Diet:</b> - A balanced diet is the one which contains all the elements of food that are needed to keep one healthy. The balanced diet can be divided into two parts: the macronutrients and micronutrients.</p> <p><b>Macronutrients:</b> Macronutrients cover principally three components namely carbohydrates, fats and proteins. Carbohydrates and fat provides energy and heat. Proteins are critical for building of tissues, maintenance of the cellular integrity and functioning of the cells.</p> <p><b>Micronutrients:</b> The micronutrients comprise of vitamins and minerals. They maintain tissues and regulate functions of the body. They also enhance the utilization of carbohydrates, proteins and fats by the body.</p>	



**Fig. 7.1 Diagram of Yogic Diet**

### **Concept of Aahara**

Shrimadbhagavadgita classifies three types of Yogic Diet. The ancient yogis have characterized Aahara into three qualities namely, Sattvic, Rajasic and Tamasic. In like manner, each individual has three distinct qualities which are transcendent and decide the nature and likings of an individual.

Yogic system categorizes Aahara (diet) into three groups:

#### **Sattvic diet:**

Those that expand lifespan, mental essence, quality, wellbeing and charm, that are tasty, Unctuous, stable, and fulfilling to the heart are the nourishments that are favored by sattvic."

Sattvic diet is also mentioned to as Yogic diet. It is considered as normal condition of natural food that which is new and liberated from any added substances or preservatives. Sattvic diet ought to be expended in its normal structure as could be expected under the circumstances, for example raw, steamed or lightly cooked. Sattvic diet contains Whole grains (carbohydrates), Pulses, nuts and seeds (proteins), Fresh leafy foods (nutrients and minerals), Herbs, Natural sweeteners, for example, honey (in small quantities) etc.

#### **Rajasic diet:**

"Bitter, sour, salty, excessively hot, pungent, dry, and burning are the foods favored by rajasic, causing discomfort, depression and illness."

Rajasic things of food ought to be abstained in a yogic eating diet; they include: Caffeinated beverages, for example, tea and coffee, Overly processed food, Artificial added substances in food. Hot chilli or anything that can aggravate the mucous membranes. Garlic, onion, mushrooms etc.

#### **Tamasic diet:**

Not completely cooked, flavorless, smelly, extra food by others, not fit as a contribution is the food known as tamasic."

Tamasic diet contains food things which are substantial and cause exhaustion or laziness in a person. Such nourishments are best avoided by individuals experiencing chronic depression. Tamasic diet includes food things like: Red meat, Alcohol, spoiled food, Overripe or unripe organic products, Burnt food, overly processed food sources, Fermented food.

### **Basis of yogic Diet**

Various yogic scriptures identify food items to be as Pathya (wholesome) and Apathya (unwholesome) food and forms basis of Yogic diet. They are discussed as follows:



**Pathya/Wholesome food:**

The most helpful food for the yogi are: acceptable grains, wheat, rice, grain, milk, ghee, sugar sweets (solidified sugar), dry ginger, natural product (types of cucumber), five vegetables and such pulses, and pure water. The yogi should take nourishing and sweet food mixed with, milk and ghee; it ought to sustain the dhatus (basic body constituents) and be satisfying and suitable.

**Apathya/ Un-Wholesome food:**

The foods which are restricted (for the yogi) are: those which are, sour, bitter, salty, heating, green vegetables (other than those ordained), oil, sesame and mustard, alcohol, fish, flesh foods, curds, buttermilk, oil cakes and garlic. Undesirable eating routine ought not be taken, what is warmed subsequent to getting cold, which is dry (without common oil), which is too much salty or acidic, has too much (blended) vegetables.

**Yogic scriptures firmly discourage habit of Over-eating and inspiring moderation of diet .**

Yogic literature on the Indian philosophy which says that additional (surplus) of anything is worthless; it strongly suggests diet must be taken with some limitation and overeating should be kept away at all cost. Likewise, Higher Yogic practices, for example, meditation and pranayama are done while sitting for extended periods for which light and adequately food is progressively relevant.

There is no yoga for an individual who eats plenty or who eats nothing at all for one who is always ready to excessive sleep or one who rises throughout. Yoga gets useless by overeating, over-effort, public contact, and irregular status of mind. One should fill half the stomach with food, one quarter with Water and the forth quarter should be saved for the expansion of the air.

**Importance of Good Eating Habits in Yoga****Plan of Yogic diet**

- It is said that the Yoga (pranayama) must not be performed soon after the dinners, nor when one is tremendously eager; before starting the training, some amount of milk and butter must to be taken.

**Effect of Mitahara (Yogic diet)**

- In the yogic eating schedule, it is a standard to start the day with a glass of warm water mixed with lemon . This cleanses the body and helps it to get rid of harmful toxins. By the method of standard detoxification, organs in the body can work well, because of which the body is without ailments and diseases.
- The satvik diet keeps one genuinely fit, yet in addition intellectually graceful. It is an eating habit which adjusts the body, mind and soul, subsequently bringing energy in life of a person.
- The yoga diet believes in eating in tandem, therefore the yoga diet for weight reduction is perhaps the most ideal way to lose fat, and it helps to strengthen your body's immunity power altogether. Hence, the eating plan alongside a couple of moments of yoga, pranayama or some physical action will get you far from a wide range of way of life ailments like circulatory strain, diabetes, and so on.
- Sattvic diet includes green leafy vegetables, fruits and sprouts etc. Accordingly, it doesn't take a lot of hard work for the stomach related system to process the food; the final result of which is proper bowel movement, clean skin, etc.
- Sattvic nourishments include ghee, coconut oil, sprouted seeds etc. These make the food tasty. In addition, the good fats in the diet help in keeping your mind ,memory, healthy and sharp respectively.



### Steps for Putting Spiritual Nutrition In to Practice

So those are the basics of Yogic diet and fasting. As you can see, the fundamentals are actually quite

simple: the Yogis realized that by focusing on natural foods in their natural state, we could foster greater health and peace of mind, and by eating mindfully and in moderation we can further support that process. Ultimately, eating this way not only can give us the best health possible but also the best mental focus and outlook for living our spiritual values.

To offer a closing reinforcement, below are five simple steps we can use each time we eat to take even greater advantage of the powerful link between food and our ideals:

1. Consider your greater goals – Of course, every meal is a wonderful and important chance to experience pleasure – something the Yogis felt shouldn't be denied or missed out on in any way – but it's also a chance to foster health and build our capacity to serve others. Before each meal, take a moment to look at how you'd like this meal to support your long-term goals while still provide pleasure and joy.
2. Think of connection – As you prepare your food or wait to receive it, use the time to think of the connection between you and the world that meal represents. Think of the people who grew or prepared it, the plants or animals nourishing you, the people with whom you are sharing, and of course all those who support your work, making the meal possible.
3. Express gratitude– Before eating, take a moment to express, silently or out-loud, your appreciation of the nourishment and pleasure you are about to receive. Even a moment of silent thanks can greatly enhance our mindfulness and enjoyment, in turn dramatically enhancing the physical and psychological nourishment we receive from each meal.
4. Actively enjoy – We all know what it's like to finish a meal with little recollection of how it actually tasted. As you eat, take as much time as you can to truly savour it. Ideally, consider eating in silence, or at least try to allow at least a few moments of calm within the meal, really observing and appreciating the smells, tastes, textures, and social connections of your meal.
5. Observe & reflect– At the end, take at least a moment simply to reflect: how does the meal feel for you? In retrospect, how were the choices you made? Are there things you'd like to be more aware of or do differently next time? This process of observing and reflecting will help reinforce good choices and allow us to be even more mindful and aware of our next meal.

### Activities

### Check Your Progress

## Session 2: Yoga and Diabetes Mellitus (DM)

### Introduction

Yoga is commonly practiced as a routine which helps in improving physical fitness and sometimes as a means to stress management. There is growing awareness that yoga can be effectively used as therapy in treating a variety of ailments, including hypertension, diabetes, heart conditions, etc. Those who have been practicing yoga for a while can attest to the physical and physiological benefits that the practice brings.

Diabetes mellitus (DM) is a metabolic disease, involving inappropriately elevated blood glucose levels. DM has several categories, including type 1, type 2, maturity-onset diabetes of the young (MODY), gestational diabetes, neonatal diabetes, and secondary causes due to endocrinopathies, steroid use, etc.

### Diabetes

**Diabetes mellitus** is a metabolic disorder characterized by varying or persistent hyperglycemia (high blood sugar levels) resulting from the defective secretion or action of the hormone insulin.

When we eat, the pancreas automatically produces the right amount of insulin to move glucose from blood into our cells. In diabetes, however, the cells do not respond appropriately to the insulin that is produced or the pancreas produces little or no insulin. As a result, glucose builds up in the blood, overflows into the urine which is detected as sugar in the urine. Persistently high glucose levels in the blood results in many metabolic changes that damage the tissues. Thus, the body loses its main source of fuel, even though the blood contains large amounts of glucose.

**Table no. 1 of Blood Glucose Level**

**The values for blood glucose levels are:**

S.No	Classification	Fasting blood Glucose(mg/dl)	Post meal Blood Glucose (mg/dl)
1	Normal	80-100 mg/dl	140 mg/dl
2.	Pre- Diabetes	100-124 mg/dl	140-199 mg/dl
3.	Diabetes	125 mg/dl	200 mg/dl

### The main subtypes of Diabetes

T1DM is characterized by the destruction of beta cells in the pancreas, typically secondary to an autoimmune process. The result is the absolute destruction of beta cells, and consequentially, insulin is absent or extremely low.

T2DM is also called Non-insulin-dependent diabetes mellitus (NIDDM) involves a more insidious onset where an imbalance between insulin levels and insulin sensitivity causes a functional deficit of insulin. Insulin resistance is multi factorial but commonly develops from obesity and aging.

Gestational diabetes (GDM) is a form of diabetes consisting of high blood glucose levels during pregnancy.

### Risk Factor

Family history of diabetes  
Overweight  
Unhealthy diet  
Physical inactivity  
Increasing age

High blood pressure  
 Ethnicity  
 Impaired Glucose Tolerance (IGT)\*  
 History of gestational diabetes  
 Poor nutrition during pregnancy

### Sign and Symptoms

- Weight loss
- Tiredness Fatigue
- Excessive thirst (Polydypsia)
- Frequent urination (Polyuria)
- Increased hunger (Polyphagia)
- Blurred vision
- Frequent infections
- Slow-healing wounds
- Lack of interest and concentration
- A tingling sensation or numbness in the hands or feet
- Vomiting and stomach pain (often mistaken as the fever related)

### Hyperglycemia and Hypoglycemia

**Hyperglycemia** occurs when blood sugar levels are too high. People develop hyperglycemia if their diabetes is not treated properly.

**Hypoglycemia** sets in when blood sugar levels are too low. This is usually a side effect of treatment with blood-sugar-lowering medication.

Diabetes is a metabolic disease with far-reaching health effects. In type 1 diabetes, the body only produces very little insulin, or none at all. In type 2 diabetes, not enough insulin is released into the bloodstream, or the insulin cannot be used properly.

We need insulin to live. Without it, sugar (glucose) builds up in the blood because it cannot be taken out and used by the body. Very high blood sugar, known as hyperglycemia, leads to a number of symptoms. If blood sugar levels are too low, it is called hypoglycemia.

**Complications:** Complications may be caused by or unrelated to the disease, procedure, or treatment.

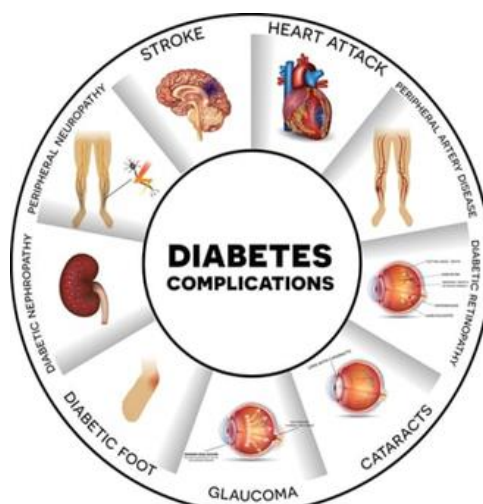
Among the major risk of the disorder are chronic problems affecting multiple organ systems which will eventually arise in patients with poor glycaemia control. Many of these arise from damage to the blood vessels. These illnesses can be divided into those arising from large blood vessel disease (macro-angiopathy), and those arising from small blood vessel disease (micro-angiopathy).

Small vessel disease complications (Micro-angiopathy):

- Proliferative retinopathy and macular edema, which can lead to severe vision loss or blindness.
- Peripheral neuropathy, which, particularly when combined with damaged blood vessels, can lead to foot ulcers and possibly progressing to necrosis, infection and gangrene, sometimes requiring limb amputation.
- Diabetic nephropathy (due to micro-angiopathy) which can lead to renal failure.

Large vessel disease complications (Macro-angiopathy):

- ischemic heart disease caused by both large and small vessel disease.
- Stroke.
- Peripheral vascular disease, which contributes to foot ulcers and the risk of amputation.



**Fig. 7.2: Diagram of Diabetes Complications**

Diabetes mellitus is the most common cause of adult kidney failure and worldwide. It also is the most common cause of amputations, usually toes and feet, often as a result of gangrene, and almost always as a result of peripheral vascular disease. Retinal damage (from micro angiopathy) makes it the most common cause of blindness among non-elderly adults. A number of studies have found that those with Diabetes are more at risk for dry eye syndrome. Advanced glycosylation end products (AGEs) are believed to play a role in the pathogenesis of angiopathy resulting from Diabetes mellitus.

### Health Care Management

People with diabetes must take responsibility for their day-to-day care. This includes monitoring blood glucose levels, dietary management, maintaining physical activity, keeping weight and stress under control, monitoring oral medications and, if required, insulin use via injections or pump. Modifying eating habits and increasing physical activity are typically the first steps toward reducing blood sugar levels.

### Do's

- Regular walking
- Active lifestyle
- Exercise within one's capacity
- Learn how to reduce and manage stress as much as possible
- Compliance with medication as prescribed by your doctor
- Eat a balanced and healthy diet that is rich in fibre, but low in salt, sugar and carbohydrates
- Reduce or try to completely stop smoking and/or consumption of alcohol
- Maintain a healthy weight and BMI

### Don'ts

- Never stop/reduce medicine dosage unless instructed to by your doctor
- Avoid fried/high fat foods

- Don't lead a sedentary lifestyle
- Avoid foods that have a high glycemic index (a measure of how fast a certain food can raise the blood sugar)

## Activities

## Check Your Progress

## Session 3: Diet for Diabetics

There are three basic components in the lifestyle change for diabetes: diet, exercise and stress management. Diet is altered in such a way as to reduce post-prandial glycaemia and to improve carbohydrate tolerance.

This is achieved by emphasizing consumption of complex carbohydrates (such as starch) and more of dietary fibre.

Foods rich in fibre take more time and effort to chew and slow down gastric emptying, which promotes satiety, and limit energy intake and also makes the fecal matter soft and bulky that prevents constipation and promotes easy bowel evacuation.

Fibre adds to the weight and volume of food but makes only a negligible contribution to energy intake, helps in reducing the obesity, which is one of the risk factors for Diabetes. Also, the fibre content is rich in Yogic Satvik Diet.

Eating is totally a psychological phenomenon in man due to the development of the higher faculties of awareness and mastery.

Sage Bhartruhari says:

āhara midrā bhaya maithunam cha  
sāmanyam etat paśubhih narānām  
buddhirhi (dharmohi) te shām adhiko viśeshah  
buddhiviheenah (dharmeinheenah) paśubhih samānah

Srimat Bhagavadgita describes the Yogic Diet as follows:

Yuktāhāra Vihārasya Yuktacheshtasya Karmasu  
Yuktasvapnavabodhasya Yogo Bhavati Duhkhaha.

### (Gita verse 6:17)

He who is proper at food selection, conduct, sincere in effort, and who is moderate in sleep and wakefulness, attains the state of Yoga, which destroys all the sorrows and miseries (dukhah).

**The Bhagavad gita also classifies food into three categories:**

**Satvik:** Those foods which increase the life, purity, strength, health, happiness and cheerfulness and good appetite are considered Sātuik food. Sātuik foods are mild — neither over cooked nor undercooked and they lead to state of calm and alertness. Satvik foods not only provide nourishment for the body but also add

utility to the total system by bringing a perfect, harmonious balance of energy states in the food.

**Rajasik :** Food that is bitter, sour, saline, streaming hot, pungent, dry, burning is the Rajasik food. Definitely, these diets create brilliant energy and keep all vigorous men restlessly striving to fulfil their uncontrolled passions and desires.

**Tamasik:** The foods which are partially spoiled, which have lost its essence, have been processed for too long, preserved in a way having no spark of life, or which lack the vitality of food are generally considered as Tamasik foods. Energy and vitality are almost absent in such foods.

Yoga talks about the effect of food on the mind and vice versa. Those foods that improve vitality health and maintain good blood glucose levels are the Satvik foods. Thus, yogic diet is a satvik diet which is in tune with what the modern nutritionists are recommending for diabetics. Sātvik diet is a diet based on foods mentioned in Yoga literature that contains sattva quality (guna). In this system of dietary classification, foods that harm the mind or body are considered Tamasik, while those that are stimulating and negative are considered Rajasik. Satvik diet is meant to include food and eating habit that is "pure, healthy, essential, natural, vital, containing energy that enhances longevity, clean and consciously managed". Satvik diet is a regimen that places emphasis on seasonal foods, fruits, nuts, seeds, oils, ripe vegetables, legumes, whole grains, and low calorie diets. Satvik diet is sometimes referred to as yogic diet in modern literature. In ancient and medieval era Yoga literature, the concept discussed is Mitahara, which literally means "moderation in eating".

The Yogic concept of food takes into consideration, the total dimension of human existence. Apart from the atoms and molecules, from which our gross physical body is made of, we all possess Prana, Mind, Intellect, Emotions and Spiritual Dimensions. 'Yoga' is that process by which we can bring in an integration of the entire personality at all these levels. The stamina of the body is to be developed, the Prana should be flown freely, the mind should calm down, the emotions should be stabilized & cultured. In totality the bliss should arise to keep oneself happy and healthy.

- Fenugreek (Methi): both powder and green leaves 2-3 times a day along with regular meals
- Bitter Gourd (Karella)
- Turmeric (Haldi)
- Bitter and Sweet Neem (Mitha aur Kadu Neem)
- Indian Gooseberry (āmla)
- Ginger (Adrak)
- Aloe vera (gwar paatha)

It is a healthy eating plan which is naturally rich in nutrients and low in fat and calories. It insists on moderate eating of healthiest food at regular intervals. The following diet plan can help prepare an individual made diet program:

**Table no. 2 of Food Item**

Meal Time	Food item
On empty stomach	Eating one spoon of overnight soaked methi seeds and drinking glass of Methi water/ Barley water/lemon water
Breakfast	Millet Kichidi/ Pongal/ Vegetable salad/ Brown rice dahlia/ 1 Vegetables/soups/ sprout salads/sprouts etc
Lunch	50% should be salads and the rest of the lunch can be Multigrain or chappati made of whole wheat/ Brown rice + Boiled Veg Curry/ Leafy Vegetables + dhal or pulses/ Gourds +butter milk



Snacks in the evening	Lemon/ Herbal tea/ hot soups/ Fruit Salads/Panca (Channa/wheat etc)
Dinner	An early light dinner is advised. Veg Soups/ Fresh salads along v Brown rice gruel/ Fenugreek/ Brown Rice/ Multi grain Pulka+ Bo veg Curry
General Advice Avoid:	:Drink at least 3 liters of water/ day 30% of the total diet should in the form of uncooked/ raw salads/ sprouts/ seasonal fruits 8 nuts processed /chemical/ packed/salted foods and pure sugars.

**Do's:**

- High fiber diet: Vegetables, fruits, grains (barley, oat, millet, whole-wheat).
- Grains: Yava (barley), Godhuma (wheat), Shali (saathi rice), Kodrava (grain variety), Bajara.
- Pulses: Chanaka (bengal gram), Adhaki (toor dal), Mudga (green gram), Kulattha (horse gram).
- Vegetables (bitter and astringent): Methika (fenugreek), Patola (pointed gourd), Karvellaka (bitter gourd), Tanduleyaka (choulayee), Vastukam (bathuva), Shobhanjana (drum stick), Rasona (garlic), Kadali (unripe banana).
- Fruits: Jambu (jamun), Amla (goose berry), Kapittha (monkey fruit), Dadima (pomegranate).
- Seeds: Methi (fenugreek), Kamala (Nelumbo nicifera), Utpala (Nymphaea alba).
- Others natural products and spices: Madhu (pure natural honey), Madhudaka (honey + water), Atasi (flax seed) oil, Sarshapa (mustard) oil, Dhani (pop corn of jawar), Laja/Murmura (puffed rice), Maricha (black pepper), Saindhava (rock salt), Hingu (asafoetida), Haridra (turmeric), Ardraka (ginger).
- Do regular physical activities, brisk walk and maintain ideal body weight.
- Yoga Asana- Vakrasana, Suryanamaskar, Agnisar prayanama, Kapalbhathi kriya, Bhramari pranayama, etc.

**Don'ts:**

- Avoid dairy products, Payas (rice cooked with milk), meat of aquatic animals, sugarcane products, fresh grains, fresh wine, products of jaggery, red meat, fatty oil, white salt, simple or refined sugars (white sugar, sweets, candy, cakes and pastries).
- Avoid sedentary life, prolonged sleep, day sleep.
- Avoid Alcohol, smoking, anxiety, anger

**Activities****Check Your Progress**

## Session 4: Yoga Therapy for Diabetics

Yoga is the spiritual science of self-realisation. It is an art of healthy living, which focuses on bringing perfect harmony between body and mind. Yoga is popular world-wide because of its spiritual Value, therapeutic credentials, its role in the prevention of disease, promotion of health and management of lifestyle related disorders.

According to Maharshi Patanjali, Yoga is the process of sublimation of all mental modifications in the mind through a systematic process of yamas (moral doctrines), niyamas (disciplines), āsanas (postures), Prāṇāgāma (regulated breathing/breath control), pratyahara (introspection/drawing the mind away from perceptible external sensory stimuli), dhāraṇa (concentration), dhyana (meditation) and finally to attain a state of Samadhi (absorption).

Attainment of such a contemplative absorptive state has been elucidated to confer a blissful state of mind and body.

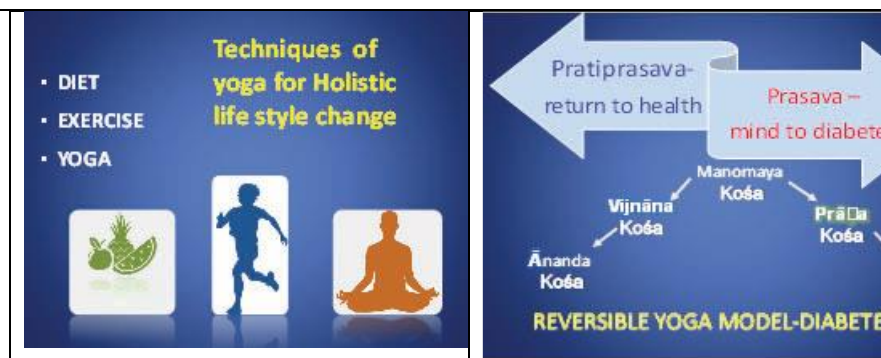
Apart from this ashtanga Yoga, there are many more Yogic methods, which prescribes different practices such as

- **Satkriyas (Six Cleansing Techniques), śīthilikarana Vyāyāma (Looseming Exercises),**
- **Bandhas and Mudras,**
- **Suryanamaskara (Salutations to Sun),**
- **Yogic Diet,**
- **Karma Yoga (Path of Action),**
- **Bhakti Yoga (Path of Devotion),**
- **Jnana Yoga (Path of Knowledge) and**
- **Raja Yoga (Path of Psychic Control).**

Each step of Yoga not only enlightens the soul but also increases physical strength, endurance, power of mind, establishes emotional stability and social security.

The practices of Yoga leads to promotion of health, prevention of disease, effective management of all mental disturbances and better understanding of higher level of Consciousness.





**Fig. 7.3: Diagram of Yogic methods**

Each step of Yoga not only enlightens the soul but also increases physical strength, endurance, power of mind, establishes emotional stability and social security. The practices of Yoga leads to promotion of health, prevention of disease, effective management of all mental disturbances and better understanding of higher level of consciousness.

### **Sithilikarana Vyayama (Tanavmukt Kriya/Sukshma Vyayama) and Suryanamaskara**

In this text book of Yoga, we have included Sithilikarana Vyayama in the beginning of the one-hour program, which has this exercise effect. Though, they resemble to that of exercise, but they are not exercise. They are performed with awareness and breathing. These Sithilikarana Vyayama or loosening exercise includes simple trunk movements, which prepares the body with better flexibility to move on to Suryanamaskara. Sithilikarana Vyayama followed by Suryanamaskara offers the workout effect, which is necessary to burn the calories and transport more glucose from blood to the cells, so that the muscles can utilise this glucose in a healthy way.

Three important points to remember while doing Sithilikarana Vyāyāma:

- Rhythmic movement which starts slowly and becomes faster to prepare the body for risk free practice of further Yogic program.
- Movements combined with breathing and
- Deep internal awareness of the parts that are stretched or Contracted during practice of a particular vyayama or asana.

Suryanamaskara is a very interesting program which is a bridge between loosening exercise and the yogasana. Suryanamaskara is a combination of 12 postures, but done like an exercise. During Suryanamaskara three important points to be remembered and they are:

- a) Suryanamaskara is done initially with fast movements. Then do it slowly. The idea is when we do fast, it will burn out calories involving all the muscles all over the body and then when we move on to the slower pace, we start developing deeper awareness.
- b) Combination of breathing with body movements is the most important component, as it promotes concentration and complete body awareness.
- c) Suryanamaskāra involves mind and emotion through devotion to Sun. In the mind, you have a continuous divine mood that "am offering salutation to the divine source, the Surya, the Sun'. Therefore, in the

mood of offering the 'self, our mind gives up stiffness & rigidity and becomes soft and gentle.

### **Satkriyas-Six Cleansing Techniques**

These are cleansing techniques using "external objects. These are 6 types and therefore termed as 'shat'kriyas. Shatkriyas bring control on different reflexes and establish psycho-physiological balance. The main effects of kriyas are:

- Cleansing, activating and revitalizing the organs.
- Tones up the functions of the organs.
- Desensitization.
- Development of deep internal awareness.

### **Asanas for Diabetics**

Now coming to yogasanas, in this first module, the very simple but effective asanas have been included.

Asanas are not really exercises although they look like exercises.

They use the body but the principle of using the body movements in yogasana is totally different. What is the definition of yogasana?- It is defined as sthira sukham asanam. Maintained in the final posture for a long time, it should become easy, effortless and enjoyable. They do not burn out calories, but help to conserve calories, conserve energy. Therefore, it works in harmony with nature and offers rest to the local stretched part of the body. So there are three outcomes, which one would like to remember when practising asanas.

### **There are 3 steps while you do the asanas.**

**a. Step 1-Prayatna:** it means to try to come to the final position; here you have pain, you feel like giving up; with your will power, you are fighting to continue to stretch; you are feeling tired in the process. You are putting lot of effort. So, with full effort, with full prayatna you are trying to reach the final posture ignoring the pain.

**b.** Now the real effect of yoga starts. So you have made an effort. You have tried your best. You have come to a position which may not be the final position as per the final position in the model. The stretch will go on improving and you will be able to reach the position as recommended by sages. But today when you have reached Your maximum possible range of movement without severe pain, you start doing the next step that Patanjali describes by two words prayatna Saitilya and ananta samapatti. Now effort (prayatna) should go away. While you are maintaining the final position, scan the whole body once from top to bottom. Recognize the parts of the body you are keeping tight or stiff with unnecessary extra effort. Now release the unnecessary extra effort and let go; relax those parts of the body which are held tight. Thus, you relax all other parts of the body, except the part which is stretched to maintain the final position. This makes you feel a lot better;

**c. Expansion (ananta samāpatti) :** Now focus your mind on the point that is being stretched. Take the example of vakrasana or ardhmatsyendrasana, the spinal twist in sitting position. Here you have twisted the spine; there is one spot in the upper part of the lumbar region where you can really feel the strong stretch. Bring your mind completely focused to this point; no other thoughts in the mind; when you focus intensely on that area (pradesa) of your back where there is enormous

amount of strain your mind enters into the state of dhāraṇa. Now, go on releasing the effort involved in that stretched part. This 'let go' is called prayatna Saitilya in the spot where you are focusing your mind.

Now defocus your mind focus-defocus; Constrict and expand; start experiencing ananta samapatti, a limitless expanded feeling from that point of stretch. Feel the release of the energy blockage in the body structures around. Moving further, observe the whole body and be in this posture with one point being stretched and all other parts completely relaxed. Now allow your mind diffuse into the vast space all around the body; start seeing your body from that vast space all around; this is called ananta samāpatti - i.e. to merge in the unlimited expanse. This results in the experience of sukha, the joy of maintaining in the final posture; thus enjoying the final posture with ease and effortlessness is called sthira sukham āsanam.

When you maintain deeply relaxed in this position for a long time it is neither isometric not even isotonic contraction; it offers deeper and deeper rest to each and every part of body including the part that is being stretched. In vakrasana the part that is being stretched is the upper part of lumbar region; your pancreas is seated just under this spot; so your mind is completely focused on the pancreatic area where the insulin producing cells are sitting. Over a period of time, when your concentration and internal awareness improves, you will actually feel the deep rest in the internal organs including the pancreatic cells. We have seen earlier that deep rest to the sick organ is the healer. So consciously bringing the mind to that particular point in the final position of vakrasana and just concentrating on the zone just underneath offers deep rest to your pancreas and fat cells around.

**d. Absorption:** Now, once you stay in that state, the mind has become so soft, so gentle, so much expanded that you may start losing your body awareness; you become one with the vast space around where your awareness has merged in the non-dual state and that is called 'tato dvandva anabhighātaḥ; At that stage, mind becomes so much in tune with that one single universal consciousness that you cannot be affected by the dualities of the life. This is the final experience of an asana. This results in conscious, wakeful relaxation to the nervous system, musculoskeletal system and the endocrine system. Sages say "do not use brutal force to handle your mind and body - na hatat na balaḥ. It is the stretch with awareness followed by slowing down that really works. This is the yogic way for self-mastery through asana that helps your cells do their job better.

### Pranayama for Diabetics

Maharshi Patanjali defines Pranayama as slowing down of breathing  
***'Tasmin satitvasa praśvasayoḥ gatirvicchedah Pranayāmah'.***

- Pranayama means mastery over Prana. Prāṇa is that bio-energy, which carries out all functions of the body. A quantum of Prana is drawn from the bottom of the spine to be supplied to all parts of the body through the system of nadis and chakras. All cells need their Prana to carry out their functions at a basal level. When we need to do more work we need more Prāṇa. When we think of doing any work the extra Prana flows to that part which makes the structures in that part work more vigorously for e.g. if we want to run - you decide to run, Prana rushes to limbs - this energy makes the nervous system send down information to muscles - muscles contract using this extra Prana. After the running is over, the Prana flow reduces



and the muscles get rest. So increase or decrease of Prana flow is responsible for all actions.

- Mind controls its flow. If mind is slow, breathing is slow; if breathing is slow mind becomes slow and rested.
- Mastery over all mental (manah/chitta) and physical activities (Prāna) is health.
- Sickness is uncontrolled excessive Prana during stress, due to increased speed of mind, the habituated drawing of excess Prana results in imbalance and blockages in the nadis disturbing healthy functioning of the chemical processes in the tissues; thus the tissue damage (in annamaya kosa) is due to this excess persistent excessive flow of Prana. So the aim should be to reduce the flow to the sick organ where the Prana is locked up.
- This is achieved by doing cleansing type of breathing practice as in kapalabhati and then go on to Pranayama (slow breathing) - so slow that you are breathing almost at the rate of 1-2 breaths/min.
- Pranayama that refers to slowing down the rate of breathing is a very important tool to develop mastery over the excessive speed of Prāna.
- Several types of Pranayama techniques that may involve fast breathing, sectional breathing, uni-nostril breathing, alternate nostril breathing, with or without breath holding are all meant to achieve mastery over the Prāna and correct the imbalances.

### **Meditation for Diabetics**

Yoga is an ancient Indian Science and way of life, which includes the practice of specific postures, regulated breathing, and meditation.

"Meditation is uninterrupted, spontaneous flow of the mind towards the chosen object'. Meditation has been described as training in awareness, which produces definite changes in perception, attention and cognition.

The characteristic features of meditation are

- Single Thought,
- Effortlessness
- Awareness
- Slowness and Expansiveness.

Scientific studies on Meditation have shown significant decrease in the amount of oxygen consumed and in breath rate and an increase in breath volume, enhanced cardiac activity, decreased sympathetic nervous activity, reduced anxiety, improved attention, concentration and produces a hypo-metabolic physiological state indicating a greater control over the mind, which helps in the management of Diabetes mellitus.

## **Activities**



**Check Your Progress****Answers****Glossary**