



**MINISTRY OF AYUSH**

# **Yoga Therapist Level - 6**

## **Therapeutic Yoga Consultant Level - 7**



**YCB TEXT BOOK (LEVEL 6 & 7)**

**Complete Compiled Book**





**Ministry of Ayush**

**Yoga Therapist Level-6**

**Therapeutic Yoga Consultant**

**Level-7**

**YCB TEXT BOOK**  
**(LEVEL – 6 & 7)**

**Complete Compiled Book**







# Thane School of Yoga

“Yoga Education is the most potent tool for the complete development of individual and the society. It is well known that quality of a nation depends upon the quality of its citizens. The quality of the citizens depends upon the yoga education system. As yoga education is imparted by teachers and if the teacher is capable, energetic and mentally healthy, it is good for the school and a matter of joy for the society as well.”



**Shri Narendra Modiji**  
Hon'ble Prime Minister





## Acknowledgement

Swami Vivekanand: The greatest quest of the youth is for a meaningful life that inspires the heart, liberates the mind, and ignites the soul.

Brave, bold people, these are what we want. What we want is vigour in the blood, strength in the nerves, iron muscles, and nerves of steel, not softening namby-pamby ideas.

A brave, frank, clean- hearted, courageous and aspiring youth is the only foundation on which the future nation can be built.

**Thane School of Yoga** impart and nurture Swami Vivekananda's idea in practical life.

The mission of **Thane school of Yoga** is to bring out the potential and Empower Yoga The initiative of publishing this book is aligned completely with this mission. This movement shall be carried forward to release more meaningful books in the field of classical, authentic traditional Yoga which will not only be useful for teaching, but shall also add value to the lives of people.

Yoga is a view of life as well as a way of life. Its philosophy and its practices aim at a harmonious integration of the different dimensions of human personality, i.e., the mind, body and spirit, so as to achieve the highest goal of human life, a state of Self-realization. Hatha Yoga being more physical is more popular. But it is only one school of Yoga.

This book is an outcome of the vision of Shri. Dr. Madhusudan Penna (Vice Chancellor of KKSU Nagpur), Shri. Dr. Shriram Agashe who prompted, supported and encouraged us to create this it.

I would like to thank my students and colleagues in the yoga field. We could not have reached this high level of quality namely (Yogmaurya) Sushama Maurya, (Yogveena) Beena Ahuja, (Yogarajni) Dhanashree varma, Sandhya Patki, Jaya Bagchi, S.Ezhilarasi, Shri Balkrishna Chitnis, Shri Raj Kamal, Shri Menon sir.

I thank the publisher of Yoga Therapy book 'M/s. Kothavale Prakashan, at Panchpakadi Thane, who supported us through various design changes and editorial changes throughout the creation of this book.

Yoga Therapy book is a creation of collaboration, produced for preserving the ancient knowledge of one of the most acclaimed as well as widely practiced traditions, which is known to improve the quality of human life. This knowledge needs to be spread widely and so this book on YOGA. Thank you all who have been a part of this journey.

Yoga as our main motto is that Yoga students should enjoy this grand science by reading and transform the universe as "**Vasudeva Kutumba**". TSY is fostering, implementing and spreading the awareness of live in moderate as per Bhagwat Geeta says: -

युक्ताहारविहारस्य युक्तचेष्टस्य कर्मसु ।

युक्तस्वप्नावबोधस्य योगो भवति ॥

Stress at work or in personal life can bog you down and debilitate you from doing any good to yourself or others. In fact, the Bhagavad Gita talks about ways to handle stress.

This epic scripture has the answers to all our problems.



*Vijay Madhekar*

**Vijay Madhekar**





## Preface

According to the International Association of Yoga Therapists:

“Yoga therapy is the process of empowering individuals to progress toward improved health and well-being through the application of the teachings and practices of Yoga.”

These days, yoga therapy has become so popular, that it has got support even from the medical fraternity. Various medical journals are publishing research outcome about the various benefits of Yoga. Similarly, the psychiatrist and health counselors are also often recommending yoga to clients or even integrating some aspects of Yoga into their health advice. At The Mindful Institute, the Yoga experts train many health professionals in mental health to bring yoga therapy into clinical practice.

At physical level, the methods comprise of various Yoga postures or Asana that aim to keep the body healthy. The mental techniques include breathing exercises or Pranayama, followed by Mudras and Bandha, meditation to Dhyana to discipline the mind. Since human life is characterized at physical, mental and spiritual levels, Yoga helps in achieving Self-healing, freeing mind from negative blocks and removing toxins from the body. The following are some of the benefits:

- Increased personal power and self-awareness
- Increased attention, focus and concentration
- Reduced Stress and Tension in the physical body by activating the para sympathetic nervous system.

There is a very alarming increase in physical ailments in the country. The recent COVID-19 took away many lives and had changed our life perspective in a very drastic manner. In this back ground, the Ministry of Ayush, Govt. of India, thought it proper to introduce ‘YOGA as a THERAPY.’ The Govt. has added in the year 2021, the Level 5- Asst. Yoga Therapist; Level 6- Yoga Therapist and Level 7-Yoga Therapeutic Consultants.

Mr. Vijay Madhekar, Founder Member of the Thane School of Yoga, thought of contributing to the Therapeutic knowledge of Yoga Teachers through a new Text book that has been meticulously prepared as per the syllabus of the Ministry of Ayush. The book has covered the details of all the Human Anatomical systems.

Some of the salient features of this book are:

- Therapeutic Adaptations of the Normal Diet for Hospitalized patients;
- Restricted foods, Importance of SOFT Diet and Fluid diet tolerance of foods on patients;
- DASH Diet for High BP persons;
- Renal Diet for Chronic Kidney Disease (CKD);
- Low Glycemic Index Diet;
- Psycho Therapy; Cognitive Behavioral Therapy;
- Application of the concepts of the Bhagavad-Gita in various mental disorders;



**Prof. Dr. Madhusudan Penna**



- ## Therapeutic Skills of Yoga Therapy:

The new concept of Yama and Niyama (Karma Suddhi) (Ghat Suddhi) Shat Kriyas, Asanas (Snayu-Suddhi), with benefits and contraindications etc., will be learnt through this course. Further, the benefits are well elaborated through the Biomechanics study of each asana, facilitating an easy understanding of the joints and muscles of each ailing individual. The prospective Yoga Therapist can analyze and suggest the relevant asanas depending upon the state of health of the individual.

This book thus presents an elaborate explanation of each disorder through anatomical perspective discussing the causes, symptoms, types, management, prevention and suggestive Yogic Therapy including ideal diet and diet restrictions in each disease.

I am very much delighted to see that Shri. Vijay Madhekar has prepared this text with utmost care. I Congratulate Shri. Vijay Madhekar Ji and his team for their tireless efforts in popularizing Yoga therapy across the globe through authentic text books like this.

**- Prof. Dr. Madhusudan Penna**

Dean,

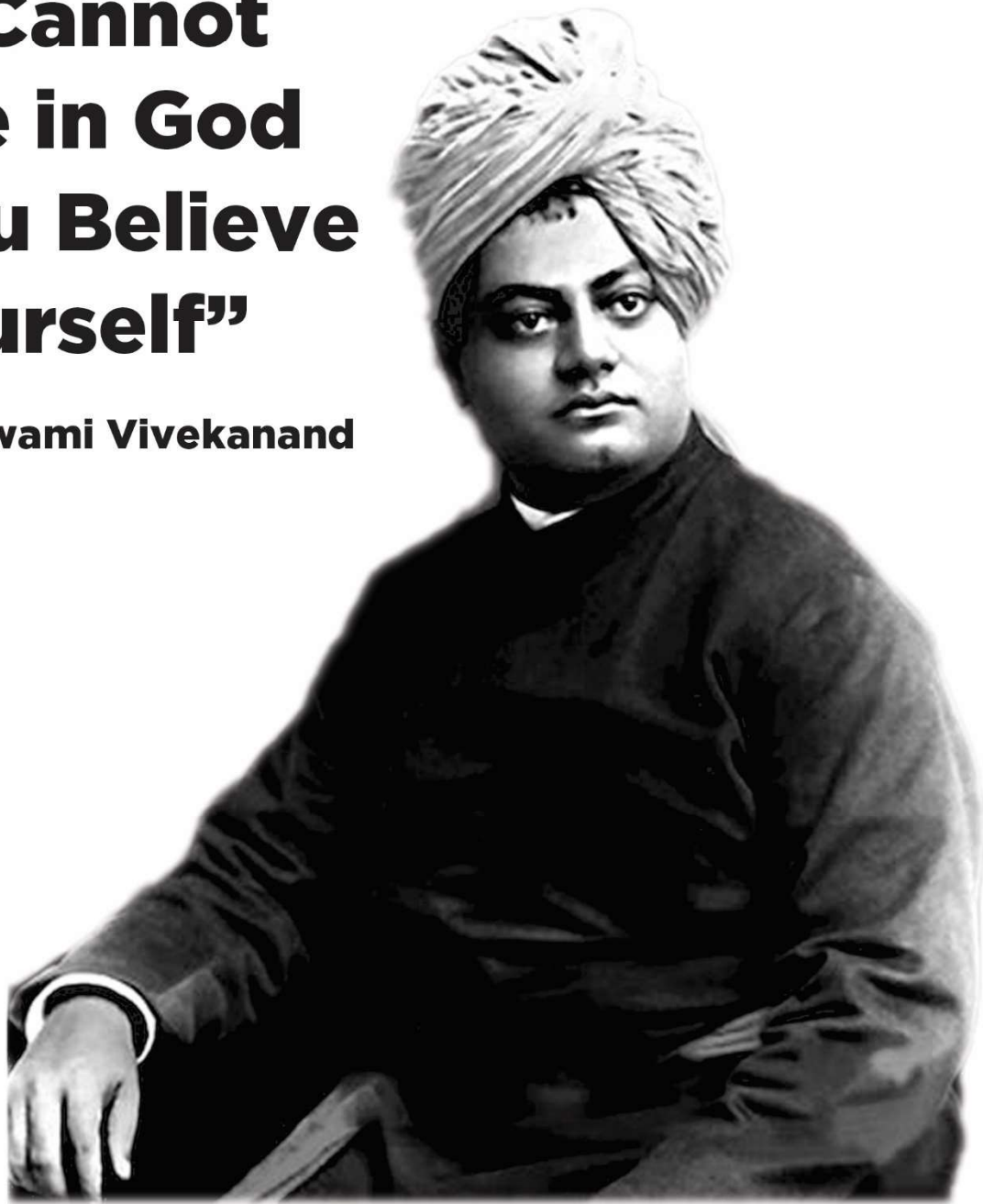
Bharatiya Dharma, Tattvajnan tathaa Sanskruti Sankaya  
Kavikulaguru Kalidas Sanskrit University, Nagpur



**THEORY**  
**UNIT-1**  
**Yoga and Human Body**

**“You Cannot  
Believe in God  
Until You Believe  
in Yourself”**

**-Swami Vivekanand**







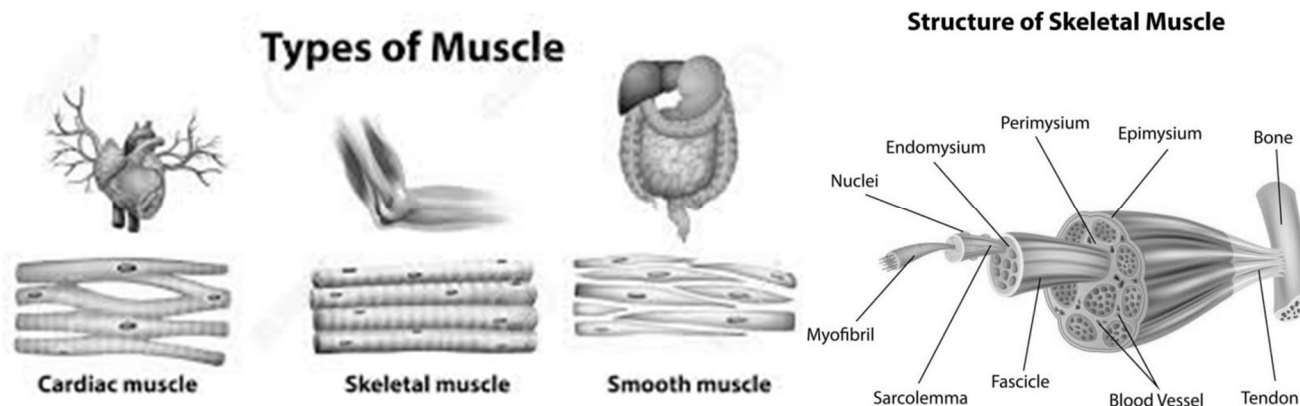
## UNIT 1 YOGA AND HUMAN BODY

### A. Anatomy & Physiology:

**1.1 Musculo-Skeletal System:** The **human musculoskeletal system** (also known as the **human locomotor system**, and previously the **activity system**) is an organ system that gives humans the ability to move using their muscular and skeletal systems. The musculoskeletal system provides form, support, stability, and movement to the body.

It is made up of the bones of the skeleton, muscles, cartilage, tendons, ligaments, joints, and other connective tissue that supports and binds tissues and organs together. The musculoskeletal system's primary functions include supporting the body, allowing motion, and protecting vital organs

**Muscle classification:** There are 3 types of muscles namely: Skeletal, Smooth and Cardiac



### Histology (under microscope) of muscles: Skeletal Muscles-

- Skeletal muscles consist of muscle cells which are elongated and are often tapering to the ends. These cells show several nuclei situated under the covering of the cell called sarcolemma. Such muscle cells are described as muscle fibers. The length of the fibers varies from 10 to 40 mm. The muscle fibers lie parallel to one another and when viewed under microscope they show Wellmark transverse dark and light bands, hence the name striated or stripped muscles.
- Each muscle fiber is covered by a fibrous tissue called endomysium. small bundles of fibers are enclosed in Perimysium and the whole muscle in epimysium. The fibrous tissue enclosing the fibers, the bundles and the whole muscle extends beyond the muscle to become tendon, which attaches the muscle to bone. The contraction of this muscle is under the will power of the person that is the conscious control of the person. Hence the muscle is called voluntary muscle. The skeletal muscle enables body movements.

### Properties of skeletal muscle

1. Contractibility- It is the ability of muscle cells to forcefully shorten. It allows muscles tissue to pull on its attachment points and shorten with force.
2. Excitability- It is the ability to respond to a stimulus. Stimulus can be anything that stimulates to produce a response.





3. Extensibility- It is the ability of a muscle to be stretched or extended. This helps in preventing injuries to the muscles.
4. Elasticity – Elasticity is the ability of the muscle to return to its original length and getting relaxed.

#### **Properties of cardiac muscles**

1. Rhythmicity and Contractility- Cardiac muscle contains many mitochondria and the intercalated discs create interconnections that allow cardiomyocytes to contract together in a synchronized manner to enable heart work as a pump involuntarily without stimulation from Central Nervous System.
2. Excitability- It has action potential that gives mechanical response to the stimulus. Sympathetic nervous system increases excitability and Parasympathetic Nervous system decreases excitability.
3. Conductivity- The ability of cardiac muscle fibers to conduct cardiac impulses that are initiated through nodes. Insufficient blood flow to cardiac muscle decreases conductivity and myocardial metabolism.

#### **Properties of smooth muscles**

1. Expansion and contraction- a particular stimulus (electrical or mechanical) may cause either contraction or relaxation. If the muscle is relaxed, the stimulus will cause contraction; but if it is already contracted, the stimulus will relax the muscle.
2. Rhythmicity- This alternate contraction and expansion is necessary for the peristalsis. This action can continue for a longer stretch. This helps in movement of bolus or bowel.
3. Conductivity- The stimulus travels from one muscle fiber to another fiber.
4. Tonicity- Smooth muscle remains in a state of light tension.

#### **Distribution of muscles**

1. Skeletal muscles – This type of muscle is distributing all over the body along with the skeletal system. These muscles are attached to bones making the movement possible.
2. Cardiac muscles – This muscle is found in heart. It is distributed largely along the ventricular area of the heart for effective pumping of the blood throughout the body.
3. Smooth muscles – Digestive organs are made up of smooth muscles. The peristalsis movement of these muscles is significant for the process of digestion. For e.g., Intestines, Oesophagus, etc.

#### **Neuromuscular Transmission**

Neuromuscular Transmission is possible via neuromuscular junction.

The Neuromuscular Junction is the connection between the end of a large myelinated (spinal) nerve fiber and the skeletal muscle fiber. Each skeletal muscle in general is supplied with 1 Neuromuscular Junction. The muscle membrane through which the nerve fiber passes is called sarcolemma. The nerve fiber then spreads to form many branches called Hypolemmal axons these axons in turn end in club like feet called sole feet. The entire nerve ending including axon and the sole feet is called end plate. Beneath the sole

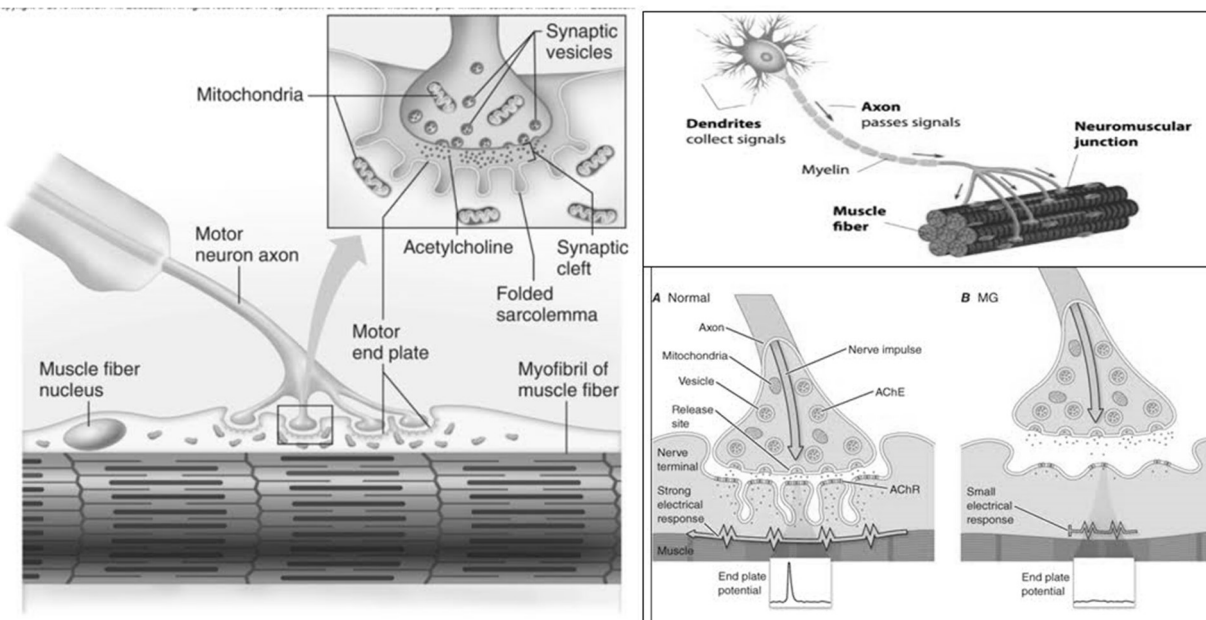




## Yoga Therapist Level – 6

### Therapeutic Yoga Consultant Level - 7

feet is a small space called synaptic cleft below which there are many large folds of muscle fiber membrane. The sole feet contain many large vesicles containing acetylcholine which is responsible for stimulating the muscle fiber.



When a nerve impulse reaches Neuromuscular Junction passage of the action potential over the sole feet causes many of small vesicles to acetylcholine to rupture into synaptic cleft. The acetylcholine acts on the plasma membrane to increase its permeability. This in turn allows spontaneous leakage of sodium causing end plate potential. When the end plate potential becomes great enough, it stimulates the entire muscle fiber causing an action potential to travel in both directions along the fiber. When the action potential spreads to the inside of muscle fiber then calcium ions are released into the fluid surrounding the fibers. It is presence of calcium ions that elicits contractile process in the fiber immediately after the action potential is over, previously released calcium ions recombine with the reticulum and the muscle contraction ceases. There is an enzyme called acetylcholinesterase which is responsible for splitting of acetylcholine, the membrane is repolarized again to receive successive stimuli. Acetylcholine provides an amplifying system that allows a very weak nerve impulse to stimulate a very large muscle fiber.

### Mechanism of muscle contraction

Nerve stimulus is the origin of muscle contraction. It sets in chemical changes in the muscle which includes breaking down of glucose, glycogen and fats. As a result of their oxidation the chemical changes liberate energy required for contraction. Only about one-fifth of the food is completely oxidized and the remainder is built up again in the form of glycogen. Only about 30% of the energy produced results in work, the remainder being released in the form of heat. Glucose is a better fuel because it is more easily burnt and burnt completely. If there is lack of glucose, fat is incompletely burnt and acid bodies are formed. Excess of acid bodies produce fatigue in muscles. They neutralize natural alkalis in the blood and can cause acidosis. During muscle contraction, organic phosphates are broken down to inorganic phosphate





and the other substances. Organic phosphates are regenerated from inorganic phosphates with the help of energy produced from oxidation of food.

\*\*\*Muscle contraction occurs when the thin actin and thick myosin filaments slide past each other. It is generally assumed that this process is driven by cross-bridges which extend from the myosin filaments and cyclically interact with the actin filaments as ATP is hydrolysed.

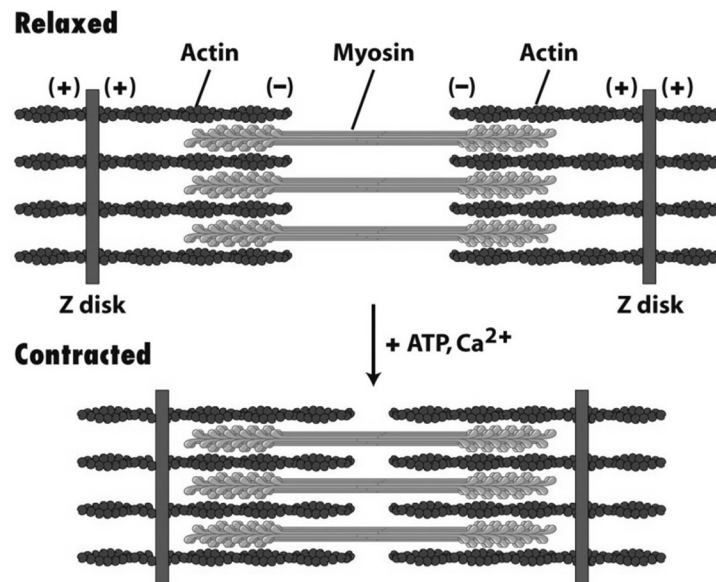
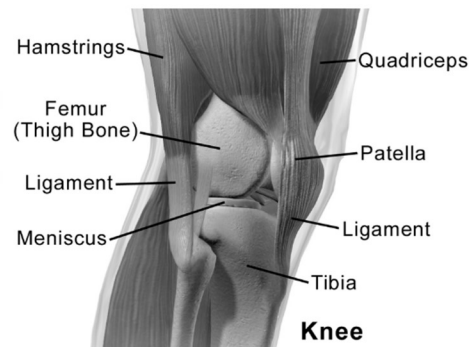
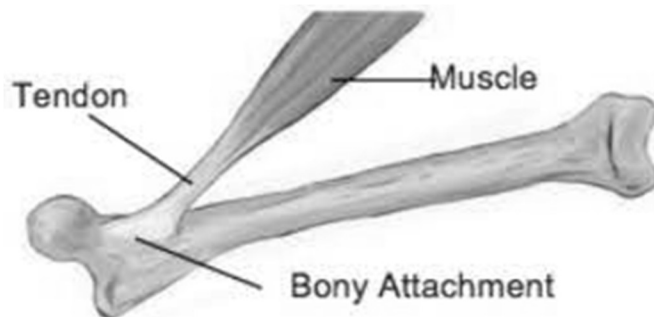


Figure 17-30  
Molecular Cell Biology, Sixth Edition  
© 2008 W.H. Freeman and Company

## Tendons and Ligaments

1. Tendons: - Tendons are fibrous connective tissues that attaches muscle to bone.
2. Ligament: - Thread like tissue structures that hold the bones together are called ligaments. (Bone to Bone)

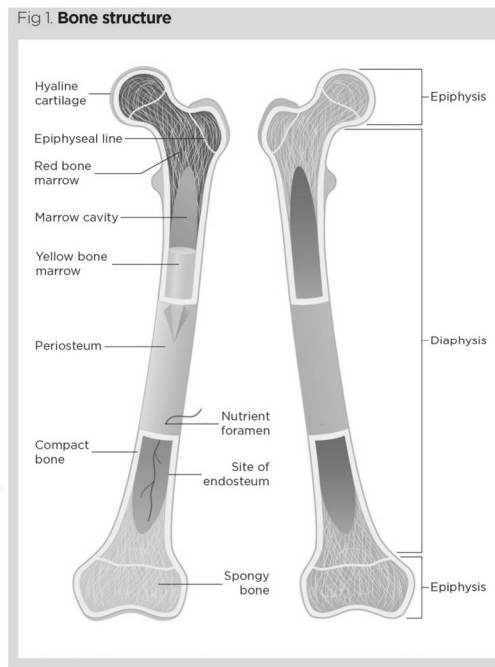
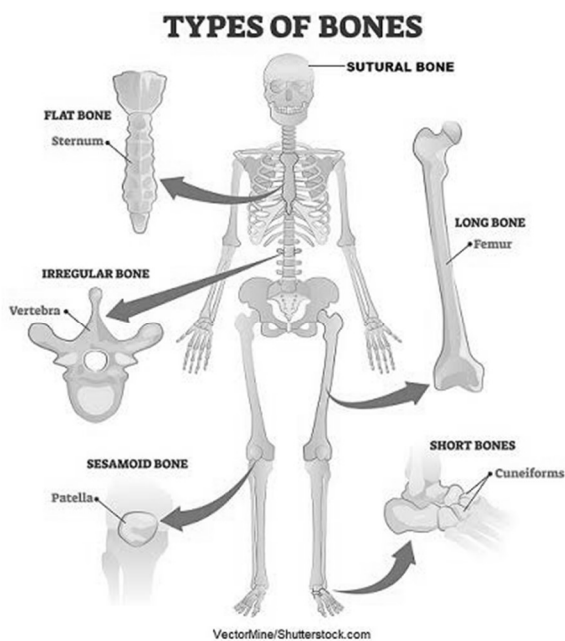






## Skeletal bones- Types

- **Meaning-** Bone is the hardest connective tissue in the body. The solid portion is made up of complex mineral matter, mainly calcium and other cellular substances including proteins.
- **Types Of Bones:** -
  1. Long bones- These are present mainly in the limbs (hands, legs etc.) They act as levers and make body movements possible. Ex. Femur, Tibia, Fibula.
  2. Short Bones- They are light but strong as in hand (carpus) and in feet (tarsus).
  3. Flat Bones- They protect vital organs such as brain. They also give wide surfaces for attachment of muscles.
  4. Sesamoid Bones- They develop in the tendons of muscles. Ex. patella
  5. Irregular Bones- Bones that cannot be put under any of these categories are included in this group. Ex. Vertebral column.



## Functions of Skeletal System

The bones perform the following important functions:

1. They form the supporting framework of the body.
2. They form boundaries for the cranial, thoracic and pelvic cavities.
3. They give protection to delicate organs.
4. They form joints which are essential for the movement of the body.
5. They provide attachment for the voluntary muscles this helps in movement of joints.
6. They form blood cells in the red bone marrow in cancellous bones.
7. They act as a store house of calcium salts.





## Yoga Therapist Level – 6

### Therapeutic Yoga Consultant Level - 7

#### Low Glycemic Index Diet

The glycemic index is designed to be a food-choice guide for people living with diabetes. A low-glycemic index (low-GI) diet is an eating plan based on how foods affect blood sugar level, also called blood glucose level. The glycemic index ranks food on a scale from 0 to 100. The low end of the scale has foods that have little effect on blood sugar levels. The high end of the scale has foods with a big effect on blood sugar levels. Only foods that contain carbohydrates have a GI. Foods such as oils, fats, and meats do not have a GI, though in people with diabetes, they can affect the blood sugar. In general, low GI foods increase glucose slowly in your body. Foods with a high GI increase blood glucose quickly.

A low-GI diet uses the glycemic index as the main guide for meal planning. People also may use the glycemic index as one of many tools for making choices about foods and meals. The purpose of a low-GI diet is to choose foods less likely to raise blood sugar levels.

#### **Low GI foods (0 to 55) - Moderate GI foods (56 to 69) - High GI foods (70 and higher)**

CEREALS	PULSES	FRUITS	VEGETABLES	HIGH GI FOOD
Barley - 28	Green mung dal - 38	Mango – 51	Ladyfinger -20	Glucose -100
Oatmeal -55	Yellow mung dal - 29	Apple – 36	Green beans -32	Milk - 31
Quinoa - 53	Masoor - 25	Papaya - 60	Onion -10	Curd-45
Whole wheat - 54	Rajma - 29	Guava - 12	Cabbage -10	Yoghourt - 35
Corn - 52	Tur dal - 22	Oranges – 43	Green peas -22	Paneer - 30
Poha – 38 to 64	Chana dal - 8	Banana - 51	Radish – 8	Buttermilk-35
Daliya - 41	Moong beans - 25	Strawberry -49	Brinjal – 15	Cheese-less thn 50
Jowari - 62	Black chana - 28	Grapefruit -25	Cauliflower -10	Soft drinks - 65
Maida - 70	Kabuli chana - 33	Peaches – 42	Cucumber – 15	Dates - 42
White Rice - 72	Peas -22	Kiwi – 39	Carrot -16	Raisins -64
Brown Rice - 50	Peanuts - 13	Grapes – 53	Broccoli -10	Jaggery - 84
Bajri - 54	Soybean - 15	Chickoo - 57	Peppers – 15	Honey - 61
Ragi - 54		Pears	Tomato -	Sugar -68
Muesli - 57		Berries	Beetroot - 61	
Popcorn - 72		Pomegranate	Sweet potato - 70	
		Water melon – 72	Yam -54	
		Musk melon - 65	Potato - 80	
		Pineapple - 59		
		Jamun - 25		



## **UNIT-2**

### **Fundamental Principles of Yoga Therapy**

**Yoga is a wholistic multi-dimensional system of health and well-being that focuses on the mind and its functions**







## **2.1 Concept of Yoga and Health in Indian Traditional Systems of Medicine**

### **Ayurveda:**

Ayurveda is a science of life- Ayur = life, Veda = science or knowledge. It offers a body of wisdom designed to help people stay active and healthy while realizing their full human potential. Ayurveda also emphasizes the adage, 'prevention is better than cure'.

The two main guiding principles of Ayurveda 1. The mind and the body are inextricably connected 2. Nothing has more power to heal and transform the body than the mind Health care is a highly individualized practice under Ayurvedic principles, which state that everyone has a specific constitution, or prakruti, that determines his or her physical, physiologic and mental character and disease vulnerability. Prakruti is determined by three "bodily energies" called doshas.

" Samadosha Samagnishcha Sama Dhata Mala Kriya.  
prassanna atma indriya manah swastha iti abhideyate."

समदोषः समग्निश्च समधातु मलक्रियाः।  
प्रसन्नात्मेन्द्रियमनाः स्वस्थः इत्यभिधीयते ॥

### **Sushruta Samhita**

In Ayurveda one is in good health when our inner and internal environment is in balance:

1. The Vata, Pitta and Kapha dosha (vital humours) are in balance.
2. Agni (the digestive fire) is balanced.
3. Dhatus (the 7 body tissues) are functioning normally.
4. Mala (the waste products) are produced and eliminated normally.
5. The Mana, Indriya and Atma (mind, senses and consciousness) are working in blissful harmony.

### **Basic Principles of Ayurveda**

There are three basic doshas, and though everyone has some features of each, most people have one or two that predominate.

Pitta energy is linked to fire, and is thought to control the digestive and endocrine systems. People with pitta energy are considered fiery in temperament, intelligent and fast-paced. When pitta energy is out of balance, ulcers, inflammation, digestive problems, anger, heartburn and arthritis can result.

Vata energy is associated with air and space, and is linked to bodily movement, including breathing and blood circulation. Vata energy is said to predominate in people who are lively, creative, original thinkers. When out-of-balance, Vata types can endure joint pain, constipation, dry skin, anxiety and other ailments.

Kapha energy, linked to earth and water, is believed to control growth and strength, and is associated with the chest, torso and back. Kapha types are considered strong and solid in constitution, and generally calm in nature. But obesity, diabetes, sinus problems, insecurity and gallbladder issues can result when kapha energy is out of balance.



## Healing Properties of Herbs, Spices & Kitchen Ingredients

- 82





## Yoga Therapist Level – 6 Therapeutic Yoga Consultant Level - 7

powder of the seeds, everything is beneficial for your health. Coriander keeps you healthy as it is rich in antioxidants, cures urine retention, improves digestion, regulates y menstrual cycles and treats acne.

**18. Ginger:** - Its benefits overall health as it helps to treats indigestion, eases headaches, controls blood pressure, treats cold, cough, flu and asthma.

**19. Ajwain:** - It is used for treating piles, painful menses, Urticaria (Skin allergy), abdominal pain and flatulence (gas)

**20. Amla:** - Common name: Amalaki. Regular use of Amla provides nutrition and boosts good health. It is used to cure hyper acidity, peptic ulcer, constipation. stress and diabetes.

**21. Dalchini:** - This commonly used spice is a good digestive and its pleasant flavor has soothing effect on mind. It is used to cure indigestion, loss of appetite and vomiting

**22. Elaichi:** - It is used in Hiccup, vomiting, bad breath and diarrhea

**23. Hing:** - Use of hing in daily diet is good for digestion and disorders related to it. It helps relieve abdominal pain and loss of appetite.

**24. Jayphal:** - It is helpful in diarrhea, irritability, black pigmentation and abdominal pain.

**25. Jeera:** - It is beneficial in indigestion, diarrhea, dysentery, hyper-acidity and skin disease.

### Principles and Terminology associated with Ayurvedic System of Medicine

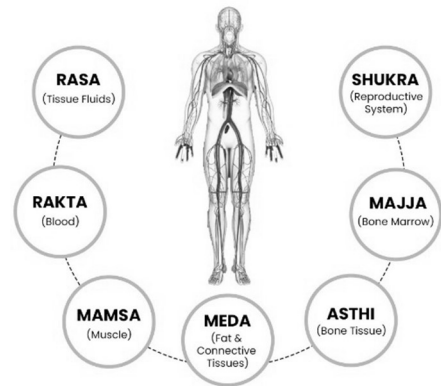
Medicine is divided into eight components in the earliest classical Sanskrit works on Ayurveda. This summary of the physician's art, medicine with eight components, first appears in the Sanskrit epic Mahabharata, written around the fourth century BCE.

1. **Kayachikitsa** is used as general medicine, body medicine
2. **Kaumara-bhtya**, Prenatal and postnatal treatment of the baby and mother, methods of childbirth, choosing the child's gender, intelligence, and constitution, childhood diseases, and midwifery are all discussed in Kaumara-bhtya (Pediatrics).
3. **Salyatantra**, Surgical procedures and the removal of foreign objects are taught in Salyatantra.
4. **Shalakyatantra** is used to treat illnesses of the ears, eyes, nose, and mouth, among other items (ENT)
5. **Bhutavidya** is used to pacify possessed spirits as well as people whose minds have been influenced by such possession.
6. **The Agadatantra/Vishagara-vairodh Tantra** (Toxicology) covers epidemics, animal poisons, vegetables, and minerals. It also includes keys for identifying anomalies and their antidotes.





The human body is made up of tissues (dhatus), waste (malas), and biomaterials (doshas), according to Ayurveda.







5. The second form of assessment is to determine the individual's strength and physical condition so that the appropriate management can be prepared. Prakriti (Body constitution), Saar (Tissue quality), Samhnan (Physique), Satva (Mental strength), Satamya (specific adaptability), Aaharshakti (diet intake capacity), Vyayaam shakti (exercise capacity), and Vaya (age) are all examined during this process. Based on the results of this test, the person is graded as having Pravar bal (excellent strength), Madhyam bal (moderate strength), or Heen bal (moderate strength) (low strength).
6. Two of classical Ayurveda's eight branches, Salya-cikitsa and Salakya-tantra, deal with surgery, but contemporary Ayurveda emphasises achieving vitality through a stable metabolic system and good digestion and excretion.
7. Ayurveda also emphasises physical activity, yoga, and meditation. A Sattvic diet is one form of prescription.

**Ritucharya** in Ayurveda is a practice of right living, in harmony with nature. ‘Ritu’ means season and ‘Charya’ means routine. Ritucharya consists of Ayurvedic lifestyle changes according to the six seasons of the year. Particularly talking about the seasons in India, they are diverse. It leads to a lot of changes in the body. The digestive system is most affected by the change in weather.

Ritucharya in Ayurveda divides a year into two time periods (Kaal) – Adaan Kaal and Visarga Kaal. Each time period consists of three seasons. So, there are six seasons in a year. In Adaan Kaal/ Uttaryana or Northern Solstice, the sun and wind are powerful. The energy and strength of people drop. However, in Visarga Kaal/ Dakshinayana or Southern Solstice, people gain their energy with the cool elements increasing in the environment. Six Seasons of The Year

### **1. Shishir Ritu**

It is the winter season beginning from mid-January and ending around mid-March. Shishir Ritu among the six seasons in India is cold as well as windy. According to the Ayurvedic lifestyle, Kapha Dosha increases in Shishir Ritu.

### **2. Vasant Ritu**

One of the most pleasant seasons in India, Vasant Ritu (Spring season) spans from mid-March to mid-May. It is a season of flowering and greenery. Ritucharya in Ayurveda believes that a person's agni (digestion) becomes weak. Therefore, certain Ayurvedic lifestyle changes are a must. One should have light as well as easily digestible meals during this season.

### **3. Grishma Ritu**

The summer season is known as Grishma Ritu as described by Ritucharya in Ayurveda. It starts from mid-May and lasts till mid-July. Grishma Ritu is the warmest season among the 6 seasons of the year. During this season, Vata Dosha deposits in the body and agni turns mild. Therefore, adopt a healthy Ayurvedic lifestyle by reducing Vata inducing activities.

### **4. Varsha Ritu**

Among the six seasons of the year, Varsha Ritu is significant for farmers. It is the season of monsoon bringing rain and relief from extreme summers. Ritucharya in Ayurveda informs that monsoons



**UNIT-3**  
**Application of Yoga Therapy in**  
**Traditional Yoga Texts**

**स्वदेहे यो न जानाति तस्य सिद्धिः कथं भवेत्।**

How can one who does not know in his own body attain Siddhi?

-योग चूडामण्युपनिषद्







### 3.1 Bhagavad-Gita: Definitions of Yoga in Bhagavad-Gita and their relevance in Yoga therapy.

योगस्थः कुरु कर्माणि सङ्गं त्यक्त्वा धनञ्जय | सिद्ध्यसिद्ध्योः समो भूत्वा समत्वं योग उच्यते || 2.48||

Be steadfast in the performance of your duty, O Arjun, abandoning attachment to success and failure.  
Such equanimity is called Yog.

To have equanimity for success and failure, it becomes imperative to have peaceful mind

बुद्धियुक्तो जहातीह उभे सुकृतदुष्कृते | तस्माद्योगाय युज्यस्व योगः कर्मसु कौशलम् ||2.50||

When mind is at peace actions are performed on intellectual level and thus excellence is achieved in the performance of actions.

This science of working without desire for rewards is called the *yog* of the intellect or *buddhi-yog*. He further advises that the intellect should be used to control the desire for rewards from work. By working with such intent, the bondage-creating karmas get transformed into bondage-breaking karmas and a state beyond sorrows can be attained.

युक्ताहारविहारस्य युक्तचेष्टस्य कर्मसु | युक्तस्वप्नावबोधस्य योगो भवति दुःखहा ||6.17||

For a person who is moderate in eating and recreation, balanced in work and regulated in sleeping and wakefulness, his practice of YOG destroys all material miseries.

Yog is the union of the soul with God. The opposite of Yog is bhog, which means engagement in sensual pleasures. Indulgence in bhog violates the natural laws of the body, and results in rog (disease).

As stated in the previous verse, if the body becomes diseased, it impedes the practice of Yog.

Thus, in this verse, Shree Krishna states that by being temperate in bodily activities and practicing Yog, we can become free from the sorrows of the body and mind.

तं विद्याद् दुःखसंयोगवियोगं योगसंज्ञितम् | स निश्चयेन योक्तव्यो योगोऽनिर्विण्णचेतसा || 6.23||

tam: that which, vidyaat: you should knowduhkha: sorrow,

saiyoga: connection, viyogam: sever, yoga: yoga

sanngitam: definition, saha: that nischayena: firm conviction, yuktavyaha: should engage in, yogaha:

yogaanirvinna:not despondent, chetasaa: mind

You should know the definition of yoga as that which severs connection with sorrow. You should engage in yoga with firm conviction and a non-despondent mind.

**The Shrimad Bhagavad Gita** enlightens everyone on how to cope up with various situations in life. It uses the conversation between Lord Krishna and Arjuna to highlight initial negative coping mechanisms exhibited by the latter.

1. Identify problems more clearly
2. Develop an awareness of automatic thoughts
3. Challenge underlying assumptions that may be Wrong
4. Distinguish between facts and irrational thoughts





5. Understand how past experience can affect present feelings and beliefs
6. Stop fearing the worst
7. See a situation from a different perspective
8. Better understand other people's actions and motivations
9. Develop a more positive way of thinking and seeing situations
10. Become more aware of their own mood
11. Establish attainable goals
12. Avoid generalizations and all-or-nothing thinking
13. Stop taking the blame for everything
14. Focus on how things are rather than how they think they should be
15. Face their fears rather than avoid them
16. Describe, accept, and understand rather than judge themselves or others

### **Cognitive behavioural therapy:**

Lord Krishna encourages maintaining self-consciousness at every flash of life even during death. Subjects suffering from Guilt, Fear, Anxiety of work and depression can be imparted the knowledge of Self-awareness and the divine role in everything we do. This will relieve the subject from all his distortions and further practice of meditation during the session will calm down his mind. Work detachment theory explained to the patient in CBT session will barr his negative thinking and all kind of distortions in mind making him rest his mind in eternal peace. This seems to be philosophical rather than peace.

The logical and thought-oriented component of mental life is overemphasized in CBT. The individual's capacity to change themselves (their thoughts, feelings and behaviour) is focused during CBT session and does not address wider problems in the system and families. This makes clients sometimes think cognitive approach as judgmental and as a moral model in turn which make them think that their distorted thinking is the basic flaw. These limitations of CBT can be overcome by the introduction of renunciation (Karma Yoga), Non-detachment to the work & its results, meditation and non-dual theory of The Bhagwat Gita and Faith on the therapist.

### **Concept of Samkhya Yoga in Bhagavadgita:**

The chapter begins with Arjuna expressing his confusion and reluctance to engage in the battle, which is a metaphor for life's challenges. Krishna responds by highlighting the impermanence of the physical body and the eternal nature of the soul. He explains that the soul (Atman) is beyond birth and death, and thus, Arjuna should not grieve for the physical bodies that will perish.

Krishna introduces the concept of Samkhya, which means knowledge or wisdom, and encourages Arjuna to cultivate a detached and balanced mindset. He emphasizes that true wisdom involves seeing beyond the dualities of pleasure and pain, success and failure, and remaining unaffected by external circumstances.

Krishna discusses the different paths to spiritual realization, including Karma Yoga (the yoga of selfless action) and Jnana Yoga (the yoga of knowledge). He emphasizes that performing one's duties without attachment to the results is the key to attaining inner peace and spiritual growth.





Krishna addresses Arjuna's doubts about renunciation, explaining that true renunciation is not about abandoning actions but renouncing attachment and desire for the fruits of those actions. He teaches those actions performed as an offering to the divine, without selfish motives, lead to liberation.

Krishna emphasizes the importance of self-control and discipline. He likens the turbulent mind to a wild wind that can be tamed through practice and detachment. By mastering the mind, individuals can maintain equilibrium in the face of challenges.

The chapter concludes with Krishna underscoring the significance of faith and surrender. He encourages Arjuna to surrender his will to the divine and trust in the greater cosmic order. True knowledge, Krishna explains, leads to self-realisation and liberation from the cycle of birth and death.

In summary, the second chapter of the Bhagavad Gita, Samkhya Yoga, is a profound discourse on the nature of the self, the importance of selfless action, and the path to spiritual enlightenment. Krishna teaches Arjuna to transcend the dualities of life, cultivate detachment, and embrace a disciplined and balanced approach to challenges. The chapter lays the foundation for understanding the essence of yoga, which is the union of the individual soul with the cosmic consciousness.

### **Significance of Bhagavadgita as a synthesis of Yoga:**

1. **Visada Yoga** – the Path of Dejection. Here, Arjuna is under severe depression and is confused about his duties as he stands in the battlefield. He then approaches Krishna to seek advice from Him. Actually, each one of us is Arjuna struggling in the battle of life. Many times, we also seek guidance from a spiritual person, when we are utterly frustrated with the sufferings of this material world. That is why this is called the Yoga of Dejection.
2. **Sankhya Yoga** – the Path of Analysis. It describes how to understand the Absolute by means of logical analysis and reasoning. Philosophers and intellectuals may prefer this Yoga.
3. **Karma Yoga** – the Path of Action. It talks about actions and reactions. Activity for one's personal sense gratification can cause bondage. Activity performed as a sacrifice, as a service, and as a duty without attachment or aversion can set one free and link one with the Absolute.
4. **Jnana Yoga** – the Path of Knowledge. This chapter discusses the transcendental knowledge about the form, birth and activities of the Supreme Being. It also stresses that the knowledge about the Supreme has to be obtained in disciplic succession, originating from the Supreme Being Himself. Just like an athlete needs to take appropriate training from a bona fide coach in order to achieve perfection, similarly, a practitioner of Yoga needs to take shelter of a bona fide spiritual master. Only then one can connect oneself properly to the chain of self-realized Yogis leading all the way up to the Supreme.
5. **Karma-Vairagya Yoga** – the Path of Renunciation of Action. Another name of this chapter is Karma-Sanyasa Yoga. It explains what is action, what is inaction, who is the doer of action, and what is actual renunciation. True renunciation is not just mechanical detachment from work. True renunciation means working not for oneself, but for the Supreme.
6. **Abhyasa Yoga** – the Path of Practice (of Self-Control). Other names of this chapter are Dhyana Yoga – the Path of Meditation, or Astanga Yoga – the Path of the Eightfold Mystic Processes. When we refer to Yoga as a system of physical exercises, we actually mean this particular Yoga. The purpose





of this Yoga is to connect one's consciousness to the Supreme Consciousness by controlling one's body, mind and senses. There are 8 progressive stages of self-control: namely, yama (don'ts), niyamas (do's), asana (postures), pranayama (breath control), pratyahara (withdrawal of senses), dharana (concentration), dhyana (meditation) and samadhi (trance).

7. **Paramahansa Vijnana Yoga** – the Path of Realization of the Ultimate Truth. Another name of this chapter is Vijnana Yoga – the Path of Wisdom. It describes how to achieve the Supreme by realizing His material and spiritual energies and their relationships.
8. **Aksara-Parabrahman Yoga** – the Path of Imperishable Brahman. Here, the nature of the living entities, the nature of material activities, and the ever-changing material manifestation have been discussed. This chapter also teaches us how to remain connected to the Supreme by remembering Him at the time of death.
9. **Raja-Vidya-Guhya Yoga** – the Path of the Most Secret of Royal Knowledge. Here, devotion has been stated to be the topmost important means to connect to the Supreme. Because the Supreme is a person, He is especially pleased when one performs personal devotional service unto Him. He reciprocates with His devotees by bestowing blessings upon them and providing them with His protection.
10. **Vibhuti-Vistara-Yoga** – the Path of Manifestation of Opulence (of the Absolute). This chapter discusses the opulence's of the Supreme throughout this universe, and also how to know God as the origin of all.
11. **Visvarupa-Darsana Yoga** – the Path of Vision of the Universal Form. It explains how the Supreme Being is pervading the entire cosmic creation and how can we connect to Him by seeing Him in everything.
12. **Bhakti Yoga** – the Path of Devotion or the Path of Love. It discusses how to link with the Supreme through loving relationship and devotional service. According to Bhagavad Gita, this is the highest form of Yoga and we will come back to this again at the end of our discussion.
13. **Ksetra-Ksetrajna Vibhaga Yoga** – the Path of Fields and the Knower of the Fields. Another name of this chapter is Prakriti-Purusha Viveka Yoga – the Path of Nature, the Enjoyer and Consciousness. This chapter discusses how to relate to the Supreme through these three aspects of His energies.
14. **Gunatraya-Vibhaga Yoga** – the Path of the Three Divisions of Modes. There are three modes of material nature: Sattva or the mode of goodness, Rajas or the mode of passion and Tamas or the mode of ignorance. The qualities in the mode of goodness are peacefulness, contentment, compassion, patience, discipline etc. The mode of passion includes attachment and aversion, anxiety, desire to control etc. Anger, fear, intoxication, laziness etc. are the symptoms of the mode of ignorance. This chapter describes how every moment of our lives we are subject to one or more of these modes and how can we transcend these modes in order to connect to the Supreme.
15. **Purusottama Yoga** – the Path of the Supreme Enjoyer. This chapter explains how the Supreme Being is also the Supreme Enjoyer. All other living beings can derive enjoyment not by trying to enjoy themselves, but by working for the enjoyment of the Supreme.





16. **Daivasura-Sampad-Vibhaga Yoga** – the Path of Divine and Demoniatic Qualities. It enlists the qualities of a Yogi. It also describes the qualities that are obstacles in the path of Yoga such as lust, envy, illusion etc.
17. **Sraddhatraya-Vibhaga Yoga** – the Path of the Three Divisions of Faith. It discusses foods, sacrifices, austerity and charity in the three modes (goodness, passion and ignorance) and how do they relate to connecting to the Supreme.
18. **Moksa-Opadesa Yoga** – the Path of Advice for Liberation. Renunciation is a qualification for the perfection of Yoga. This chapter stresses that a true renunciate is not just a monk who does not do any work, but who works simply according to one's duty, without being attached to the results. Working in this consciousness, one can get liberation from the bondage of action and reaction, and finally, one can achieve devotion, which is the highest means to reach the Supreme.

### **Concept of Sthita Prajna, stages and characteristic of it.**

Sri Krishna explaining to Arjuna the qualities of Stithaprajna – (Desire-less) "When one completely cast away, O partha, all the desires of the mind, satisfied in the self alone by the self, then he or she is said to be one of steady wisdom." -2.55

Here Krishna clearly gives the hint - absence of desire alone is not enough. It can be a pathological state. There may not be anything spiritual about it. There are cases in mental hospital, they live in a corner, don't want anything, immersed in themselves all the time.

So, Sri Krishna adds the second line - he or she is fully delighted in the self by the self. Because of that, I don't want anything. I have got something infinite with me. What can these petty things do for me. This is the actual idea. -2.56

In the material world, one who is unaffected by whatever good or evil he may obtain, neither praising it nor despising it is firmly fixed in perfect knowledge. He who is everywhere without attachment, on meeting with anything Good or bad, who neither rejoices nor hates, his wisdom is fixed. -2.57

यदा संहरते चायं कूर्मोऽङ्गानीव सर्वशः | इन्द्रियाणीन्द्रियार्थेभ्यस्तस्य प्रज्ञा प्रतिष्ठिता || 58||

“When also, like the tortoise drawing its limbs, one can completely withdraw the senses from their sense objects, his or her wisdom becomes steady.” -2.58

“In tranquility, all sorrows are destroyed. For the intellect of one who is tranquil-minded is soon established in firmness” -2.65

आपूर्यमाणमचलप्रतिष्ठं, समुद्रमापः प्रविशन्ति यद्वत् | तद्वत्कामा यं प्रविशन्ति सर्वे, स शान्तिमाप्नोति न कामकामी ||2.70||

Just as the ocean remains undisturbed by the incessant flow of waters from rivers merging into it, likewise the sage who is unmoved despite the flow of desirable objects all around him attains peace, and not the person who strives to satisfy desires.





**Concept of Atman (Purusha) and Jivatman in Bhagavadgita, Concept of Paramatman (Parmeshwar or Purushottam) as described in Bhagavadgita:**

पुरुषः प्रकृतिस्थो हि भुङ्क्ते प्रकृतिजान्गुणान् | कारणं गुणसङ्गोऽस्य सदसद्योनिजन्मसु ||13.22||

puruṣah—the individual soul; prakṛti-sthah—seated in the material energy; hi—indeed; bhūṅkte—desires to enjoy; prakṛti-jān—produced by the material energy; gunān—the three modes of nature; kāraṇam—the cause; guṇa-saṅgaḥ—the attachment (to three guṇas); asya—of its; sat-asat-yoni—in superior and inferior wombs; janmasu—of birth

Shree Krishna explained that the *puruṣh* (soul) is responsible for the experience of pleasure and pain. Now, he explains how this is so. Considering the body to be the self, the soul energizes it into activity that is directed at enjoying bodily pleasures. Since the body is made of Maya, it seeks to enjoy the material energy that is made of the three modes (*guṇas*)—mode of goodness, mode of passion, and mode of ignorance.

Due to the ego, the soul identifies itself as the doer and the enjoyer of the body. The body, mind, and intellect perform all the activities, but the soul is held responsible for them. Just as when a bus has an accident, the wheels and the steering are not blamed for it; the driver is answerable for any mishap to the bus. Similarly, the senses, mind, and intellect are energized by the soul and they work under its dominion. Hence, the soul accumulates the karmas for all activities performed by the body.

This stockpile of karmas, accumulated from innumerable past lives, causes its repeated birth in superior and inferior wombs.



**Do Your Duty Without Thinking About Results**



**UNIT-4**  
**Physiological And Psychological Effects**  
**Of Hatha Yoga Practices**

अधयो व्याध्याश्चैव द्वयं दुःखस्य कारणम् ।  
तन्निवृत्तिः सुखं विद्यात्तत्क्षयो मोक्ष उच्यते ॥  
-श्रीवसिष्ठ उवाच







#### **4.1 SHATKRIYAS AND STHULA AND SUKHSAM VYAYAM KRIYA**

##### **Knowledge of Sthula and Sukshma Vyayam for different parts of the body.**

##### **Sthula Vyayam**

These are also called as Macro Circulation Practices. Sthula Vyayam effects the body on Gross level, focuses on more than one joint. Sthula Vyayam focuses on building physical strength, flexibility, and cardiovascular health, Sthula Vyayam is a form of Physical exercise which requires more strength and require more physical effort, Warm up exercises, mobilises joints, Builds Muscles

##### **Sukshma Vyayam**

Also called Micro Circulation Practices. Sukshma Vyayam is the system of the physical and breathing exercises which helps to sequentially work out all joints of a body, to warm it up. This system has a strong purifying effect on the energy of the body. Sukshma Vyayam was propagated, designed, and developed initially by Maharshi Karthikeya Maharaj of the Himalaya. He had great compassion and empathy for humanity and taught Swami Dharendra Brahmachari (1924-1994), who in turn propagated it across the modern world. In Sukshma Vyayam, every little activity or movement releases stress. A person can start understanding and experiencing the prana (energy) movement mechanism within himself/herself. Sukshma Vyayam emphasizes joint mobility, mental focus, and energy balance.

The most important and beautiful facet of Yogic Sukshma Vyayam is that it is the only system of exercises in which every body part, every muscle, joint and organ is taken into consideration. Here a specific exercise or even a set of exercises which is linked with a particular kind of breathing in a particular kind of position having particular point of mental concentration is recommended.

Therefore, firstly we cover the head, which is at the top, then:

1. The neck
2. The shoulders, elbows, wrists, arms, fingers, and toes
3. The trunk
4. The hip joints
5. The knees, ankles, foot, and toes

Hence, the sequence mentioned above which actually covers from top to toe is something which is very exceptional in the whole world (past, present and perhaps the future too)

Thus, by its name Yogic Sukshma Vyayam is only applied to the subtle body (Sukshma Sharir) which is prescribed to the gross body (Sthula Sharir). One of the separate exercises which is successful in gross body is Sthula Vyayam. Sukshma Vyayam is same as other gross exercises, like running and swimming, several cultural and physical exercises. However, Yogic Sukshma Vyayam is at a different footing. According to Indian traditional philosophy, it is only meant for those human beings who have a subtle body.

##### **Following are the important components or features of Sukshma Vyayam –**

- Breathing
- Concentration point





- Actual exercise including motion (many times, yet not always).

**The benefits of sukshma yoga are immense, direct, and immediate:**

- Removes blocks and tightness of the muscles and strengthens them.
- Increases flexibility of ligaments
- Increases body mobility and makes it flexible.
- Develops coordination and equilibrium.
- Improves blood circulation and metabolism.
- Strengthens immunity.
- Increases vital lung capacity.
- Increases endurance.
- Facilitates cleaning of nadis
- Activates energy centres (chakras)
- Prepares for the practice of more complex asanas and pranayama.

Different kinds of breathing include - very deep, very light or even very fast, mostly through the nose or at times through the mouth. Thus, it is just a brief of Sukshma Vyayam.

**The following are some noteworthy points about sukshma yoga:**

- Preferably it must be carried out twice a day, which is both morning and evening, or can be done once a day in the morning.
- Can be done after bath if one takes a cold-water bath, or before bath if one would take a warm water bath.
- Can be done before the intake of any type of food.
- Can be done on a comfortable surface.
- Can be done either indoors or in the open air.
- Can develop extraordinary levels of faculties and capabilities both at the physical and mental levels for different traits of personalities.

For those who have maladies and problems of different kinds, Sukshma Vyayam alone is capable of curing and preventing maladies without taking the help of kriyas, asanas or pranayama. It enhances and improves the energy (vigor) level and different systems and organs in the human body strong.

Therefore, Sukshma Vyayam is nonetheless a minor exercise, which is done from toes to head. Therefore, Sukshma Vyayam is nonetheless a minor exercise, which is done from toes to head.

Together, Sukshma & Sthula Vyayam practices create a foundation for a holistic and well-rounded yogic experience.

**Whole series of Sukshma Vyayam - joint movements is mentioned below:**

**Upper Body:**

**Head and Throat:**

**Practice Begins with Prarthana (1)**

1. Uccarana-Sthala-Tatha-Visuddha-Cakra-Shuddhi - Clearing the Pharynx/Throat and Voice



2. Buddhi Tatha Dhrti-Shakti-Vikasaka - Developing the Mind and Willpower
3. Smarana-Shakti-Vikasaka - Developing Memory
4. Medha-Shakti-Vikasaka - Developing Intellect
5. Netra-Shakti-Vikasaka - Improving Eyesight
6. Kapola-Shakti-Vardhaka - Rejuvenating the Cheeks
7. Karna-Shakti Vardhaka - Improving Hearing

### Neck and Shoulders:

- 8-10. Griva-Shakti-Vikasaka- Strengthening the Neck – 1-3
11. Skandha-Tatha-Bahu-Mula-Shakti-Vikasaka - Developing the Strength of Shoulder Blades and Joints

### Arms and Hands:

12. Bhuja-Bandha-Shakti-Vikasaka - Strengthening the Upper Arms
13. Kaphoni Shakti-Vikasaka - Strengthening the Elbows
14. Bhuja-Balli-Shakti-Vikasaka - Strengthening the Forearms
15. Purna-Bhuja-Shakti-Vikasaka - Developing the Arms
16. Mani-Bandha-Shakti-Vikasaka - Developing the Wrists
17. Kara-Prstha-Shakti-Vikasaka - Developing the Back of the Hand
18. Kara-Tala-Shakti-Vikasaka - Developing the Palms
19. Angula-Mula-Shakti-Vikasaka - Developing the Finger Joints
20. Anguli-Shakti-Vikasaka - Strengthening the Fingers

### Middle Body:

### Chest and Abdomen:

- 21-22. Vaksha-Sthala-Shakti-Vikasaka-1 - Developing the Chest – 1-2  
23. Udara-Shakti-Vikasaka-1 - Developing the Abdominal Muscles - 1 (Ajagari - the Panther Exercise)  
24-33. Udara-Shakti-Vikasaka-2 - Developing the Abdominal Muscles - 10

### Lower Back and Pelvis:

- ### 34 - 38. Kati-Shakti-Vikasaka-1- Strengthening the Back – 1-5

### Lower Body:

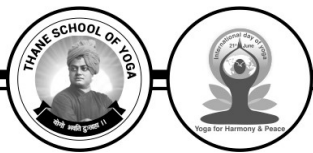
### Legs and Thighs:

- 39 - Muladhara- Cakra-Suddhi  
40 - Upastha Tatha Svadhisthana-Cakra-Suddhi  
41 - Kundalini-Sakti-Vikasaka  
42 - 43. Jangha-Shakti-Vikasaka-1- Developing the Thighs – 1-2  
44. Janu-Shakti-Vikasaka- Strengthening the Knees  
45. Pindali-Shakti-Vikasaka- Developing the Calves  
46. Pada-Mula-Shakti-Vikasaka- Developing the Strength of the Soles  
47. Gulpha-Pada-Prshtha-Pada-Tala-Shakti-Vikasaka

### Developing the Strength of the Ankles and the Feet:

- #### 48. Padanguli-Shakti-Vikasaka -Developing the Toes





These exercises target specific areas of the body and contribute to overall physical and mental well-being. Practice should be done mindfully, with attention to breath and proper form. It is advisable to learn and practice these under the guidance of a qualified yoga instructor.

### **Physiological Benefits of Sthula & Sukshma Vyayam on The Human Body in Preparation of Yogic Practice.**

#### **Sthula Vyayam:**

1. **Muscular Strength and Endurance:** Sthula Vyayam involves physical exercises that target major muscle groups. This helps in building muscular strength and endurance, which is essential for holding yoga postures (asanas) for extended periods.
2. **Cardiovascular Health:** Dynamic movements in Sthula Vyayam increase heart rate and enhance blood circulation. This promotes cardiovascular health, improving the efficiency of the heart and lungs.
3. **Joint Flexibility:** The varied movements in Sthula Vyayam work on different joints, promoting flexibility and mobility. This is crucial for performing various yoga poses with ease and reducing the risk of injuries.
4. **Improved Digestion:** The abdominal exercises in Sthula Vyayam can stimulate and massage the digestive organs, promoting better digestion and elimination. This is particularly beneficial before engaging in yogic practices that involve twists and forward bends.
5. **Enhanced Lung Capacity:** Certain breathing exercises included in Sthula Vyayam can improve lung capacity. This prepares the respiratory system for the controlled and conscious breathwork (pranayama) practiced in yoga.

#### **Sukshma Vyayam:**

1. **Joint Lubrication:** Sukshma Vyayam consists of subtle and gentle movements that focus on joint articulation. This helps in lubricating the joints, improving synovial fluid production, and maintaining joint health.
2. **Increased Blood Circulation:** Gentle movements in Sukshma Vyayam increase blood flow to various parts of the body. This can help in warming up the muscles and joints, preparing them for more intense yogic postures.
3. **Improved Concentration and Mind-Body Connection:** The mindful and slow nature of Sukshma Vyayam encourages concentration and a deeper connection between the mind and body. This mental focus is beneficial for transitioning into the meditative aspects of yoga.
4. **Balancing Energy Flow:** Sukshma Vyayam incorporates subtle energy movements, helping to balance the flow of prana (life force energy) in the body. This prepares the practitioner for the energy-based practices in yoga.
5. **Stress Reduction:** The calming and soothing nature of Sukshma Vyayam can contribute to stress reduction. This is important for creating a conducive mental state for more advanced yogic practices.





## **An Overview of Diffusion, Osmosis, Active Transport Across Cell Membrane:**

### **1. Diffusion:**

**Definition:** “Diffusion is the passive movement of molecules from a region of higher concentration to a region of lower concentration down the concentration gradient.”

It is an important process occurring in all living beings. Diffusion helps in the movement of substances in and out of the cells. The molecules move from a region of higher concentration to a region of lower concentration until the concentration becomes equal throughout.

Liquid and gases undergo diffusion as the molecules are able to move randomly, hence It occurs due to the random motion of particles.

It is a passive process which takes place without any expenditure of energy.

### **Examples:**

- Oxygen and carbon dioxide molecules can diffuse across the cell membrane.
- A tea bag immersed in a cup of hot water will diffuse into the water and change its colour.
- A spray of perfume or room freshener will get diffused into the air by which we can sense the odour.
- Sugar gets dissolved evenly and sweetens the water without having to stir it.
- As we light the incense stick, its smoke gets diffused into the air and spreads throughout the room.
- By adding boiling water to the dried noodles, the water diffuses causing rehydration and making dried noodles plumper and saturated.

### **Potential Relevance to Yogic Kriyas:**

Yogic practices, such as pranayama (breath control), may influence the concentration of gases, such as oxygen and carbon dioxide, in the body. Proper breathing techniques can enhance the exchange of gases at the cellular level, promoting overall well-being.

### **2. Osmosis:**

**Definition:** The process by which solvent molecules pass from a solution of lower concentration to a solution of higher concentration through a semipermeable membrane.

It is a passive process which takes place without any expenditure of energy. The transport of solvent molecules continues from low to high concentration regions till the concentration on either side of the membrane is equal. A semipermeable membrane is a thin barrier between two solutions that permits certain components of the solutions, generally the solvent, to pass through. Since water is solvent in every living being, biologists define osmosis as the diffusion of water across a selectively permeable membrane.

Osmosis has a significant role to play in plants, animals and also in humans. In an **animal cell**, osmosis helps in absorbing water from the intestines to the blood.

### **Example:**

- Water Moving through a cell membrane to equalize solute concentrations on both sides.
- Plants take water and minerals from roots with the help of osmosis.





- The absorption of water from the soil is due to osmosis. The plant roots have a higher concentration than the soil. Therefore, the water flows into the roots.
- The guard cells of the plants are also affected by osmosis. When the plant cells are filled with water, the guard cells swell up, and the stomata open.
- If a freshwater or saltwater fish is placed in the water with different salt concentrations, the fish dies due to the entry or exit of water in the cells of the fish.
- Humans suffering from cholera are also affected by osmosis. The bacteria that overpopulate the intestines reverse the flow of absorption and do not allow water to be absorbed by the intestines, which results in dehydration.
- When the fingers are placed in water for a longer period of time, they become pruned due to the flow of water inside the cells.

### Potential Relevance to Yogic Kriyas:

While osmosis is not directly targeted in yogic kriyas, practices that involve fluid intake and hydration may indirectly influence the osmotic balance within cells. Adequate hydration is essential for cellular function and overall health.

### 3. Active Transport:

**Definition:** “Active Transport is defined as a process that involves the movement of molecules from a region of lower concentration to a region of higher concentration against a gradient or an obstacle with the use of external energy.” This process requires energy in the form of ATP.

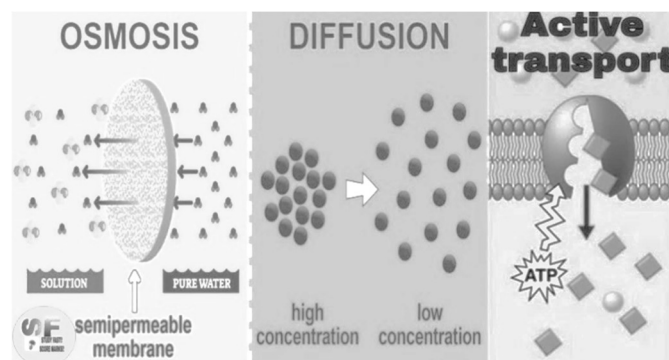
During the process of active transport, a protein pump makes use of stored energy in the form of ATP, to move molecules. Active transport is an energy-consuming process.

#### Examples:

- Sodium-potassium pump actively transports sodium out of the cell and potassium into the cell against their respective concentration gradients.
- Phagocytosis of bacteria by Macrophages.
- Movement of  $\text{Ca}^{2+}$  ions out of cardiac muscle cells.
- Transportation of amino acids across the intestinal lining in the human gut.
- Secretion of proteins like enzymes, peptide hormones, and antibodies from different cells.
- Functioning of the White Blood Cells by protecting our body by attacking diseases causing microbes and other foreign invaders.

### Potential Relevance to Yogic Kriyas:

Active transport processes are not typically a focus of yogic kriyas. However, the overall improvement in energy levels and vitality that may result from regular yoga and meditation practices could indirectly support cellular activities that involve active transport.





Summary - Differences between Diffusion, Osmosis, and Active Transport			
Process	Diffusion	Osmosis	Active Transport
<b>Example of Substance</b>	Water Molecules, Glucose, Urea (Occurs through the lipid bilayer or protein channels.)	Water Molecules (Specifically involves water molecules moving through a selectively permeable membrane.)	Mineral Ions, Glucose, Amino acids. (Often involves protein pumps or carriers.)
<b>Movement of Substance</b>	Movement from higher to lower concentration.	Movement of water molecules across a membrane from an area of lower solute concentration to an area of higher solute concentration.	Movement against the concentration gradient, from lower to higher concentration.
<b>Occurs Across Cell Plasma Membrane</b>	Not Necessarily	Yes	Yes
<b>Energy Requirement</b>	NO energy input required. Passive processes	NO energy input required. Passive processes	Requires energy input (usually ATP).
<b>Example</b>	Movement of oxygen and carbon dioxide across cell membranes	Movement of water in and out of cells.	Sodium-potassium pump, which maintains ion gradients in animal cells.
	Diffusion of oxygen from the alveolus into blood capillaries	Uptake of water by the root hair from the soil	Reabsorption of glucose in the kidney
	Diffusion of carbon dioxide from the blood capillaries into alveolus	Movement of water molecules between neighbouring cells in the leaf	Uptake of mineral ions by the root from the soil

### Significance of Using Salt During the Practice of Shatkriya:

Using salt reduces discomfort. it has a higher osmotic pressure than pure water and will not be as easily absorbed into the membranes, the salt kills any bacteria present and flushes out viruses.

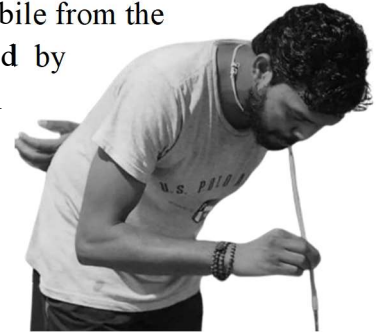




### **Dandadhauti**

*Danda dhauti* is a yogic purification technique designed to remove excess bile from the stomach and excess mucus. Traditionally, danda dhauti was performed by threading a lotus or banana stem down the throat. While that method is still used, the modern way of practicing danda dhauti is to use a catheter.

After the yogi drinks warm saltwater, the catheter is guided through the esophagus into the stomach and then removed. Danda dhauti should only be practiced with the help of an expert.



### **Neti (Sutra and Jal)**

Hatha Yoga Pradipika: "Take soft cotton threads about one foot long and insert them through the nostril and out the mouth. The siddhas (accomplished yogis) call this neti. Now, mostly yoga practitioner uses rubber catheter. Rubber catheter properly sterilize it

#### **Technique**

1. Carefully insert the sutra (Nasal thread) into one of the nostrils and gently push it through the nasal passage until it reaches the back of the throat.
2. Reach far back into the throat with the first two fingers, using the fingers as a pincer to take hold of the sutra.
3. The sutra is grasped between the first two fingers and drawn out of the mouth, but still leaving some of the sutra outside the nose.
4. Hold each end of the sutra and then gently floss back and forth a few times.
5. The ends of the sutra can be attached together and the circle thus formed is drawn through the nostrils several times.
6. Separate the attached ends of the sutra and remove it completely.
7. Rinse off the sutra and perform the same on the opposite nostril

### **Benefits**

Swami Swatramana described the practice of sutra Neti Kriya for nasal polyps in the second chapter of the Hatha Yoga Pradipika as follows:

The Neti is the cleaner of the brain and giver of divine sight. It soon destroys all the diseases of the cervical and scapular regions.

Sutra neti stimulates many of the large number of nerve endings in the nasal passages. This improves the innervation of the various functions of the nose and their connections with the brain.

Sutra neti gives a frictional massage to the internal mucus membranes of the nose, strengthening the membranes





**Jala neti** is a process of cleaning the nasal passage with salt water, and is essential in allowing free breathing as required in many of the practices we will teach you, as well as in helping to ensure your good health.

**Equipment-** A pot or lota (pitcher) should be used to introduce salt water into the nostrils. This pot is known as a neti lota. It can be made of brass or any other suitable material which does not contaminate water, but the important thing to remember is that the nozzle on the end of the spout should be suitably sized so that the end fits comfortably into your nostril.



**Salt water-** The water used in the practice should be pure and lukewarm; body temperature is the ideal temperature for pouring the water into your nose. The water should then be mixed with clean salt in the proportion of one teaspoonful per half litre of water. Make sure the salt is fully dissolved in the water. People often wonder why salt water is introduced into the nostrils instead of ordinary water. The reason is very simple and very practical. Saltwater has a much higher osmotic pressure than ordinary water, which means that salt water is not easily absorbed into the delicate blood vessels and membranes in the nose, whereas ordinary water is.

**Technique-** Fill the neti pot with the prepared salt water. Hold the bottom of the pot with one hand, as shown in the accompanying picture. Gently insert the end of the nozzle into the end of the left nostril (or, if this is blocked into the right nostril). There should be no force involved, but the nozzle should press firmly against the side of the one nostril so that no water leakage occurs. Progressively tilt your head to the right side while simultaneously raising the neti pot in such a way that water runs into the left nostril. Make sure that you keep your mouth wide open so that you can breathe.

#### **Benefits of Jala Neti:**

1. Jala neti clear all the impurities and bacteria that obstruct your nasal passage. Hence, it eliminates any nose related allergies.
2. Through the simple draining procedure, you also enhance your sense of smell and restore the mucous membrane to its pure state.
3. The chances of the multiplicity of Common cold virus (also called Rhinovirus) are reduced since the lukewarm water is used to treat the nasal passage.
4. All the excessive mucus gets drained out of the nostrils, and sinuses hence, creating a smooth route for air to flow through the breathing route.
5. The Nasal Irrigation directly relieves from Cough, cold, influenza, Asthma, and bronchitis.
6. This one of the six Shatkriyas also helps clear the tear duct to enhance a fairly sharp vision.
7. This procedure keeps your ears away from infections (tinnitus) and related irregularities caused by external agents.
8. If your decision to give up smoking has become an everyday habit, try Jala Neti this time. It's an effective way to get rid of smoking dependency.
9. By reducing your tendency to breathe through the mouth, you rejuvenate the nose's senses against the inhaled smoke, thereby resetting the encouraging your brain against physical and psychological addiction.
10. Since your mind and senses become balanced through Jala neti, you can achieve an enhanced state of meditation after practicing jala neti.





### **Kapalbhati:**

Kapalbhati literally translates as “skull shining”. In the Sanskrit word Kapalbhati, kapal means ‘skull or frontal head’ and bhati means ‘shinning’.

### **Technique:**

1. Sit comfortably with your spine erect. Place your palms on the knees.
2. Take a deep breath in.
3. The exhalation in Kapal Bhati is active and forceful. So, just throw out your breath.
4. Don't worry about the inhalation. The moment you relax your abdominal muscles, inhalation will happen naturally.
5. Keep your awareness on breathing out.
6. Give a stroke to abdomen 30 to 40 as per your capacity
7. After completing the round, relax with your eyes closed and observe the sensations in your body.

### **Benefits:**

1. Practicing kapalbhati strengthens respiratory muscles and increase lung capacity.
2. Kapalbhati clears the nadis. It encourages detoxification which paves way for a healthy and glowing skin.
3. It cures common digestive problem such as stomach pain, gas, ulcers, constipation or diarrhoea.
4. Kapalbhati boosts your immune system which will inherently help you fight diseases.
5. It promotes the production of endorphins, which will keep you happy and positive.
6. Women can greatly benefit from practicing kapalbhati as it helps in regulating menstruation and prevent menstrual cramps.
7. The kapalbhati can energize your brain which will improve your concentration and memory.

### **Agnisara:**

Agni means “fire” and Sara means “wash” so literally it means to purify the fire energy located at the navel center.

Agnisara is a type of dhauti kriya (abdominal wash), in which abdominal wall is rapidly expanded & contracted in a very short interval of time. The exercise stimulates the immune system, increases the power of digestion and heat in the body.

Before starting the intense practice of Nauli kriya, it is suggested to master the Agnisara Kriya. It helps to wash the fire inside the body. It uses the internal energy of the body to provide vitality.

### **To perform it,**

- Stand with the legs slightly apart, inhale deeply through the nose and exhale fully through the mouth while slightly bending forward and bending the knees.
- Rest on your both hands while placing it over thighs. The back should be straight, the head upright, allow the abdominal muscles to relax.
- Now draw the navel inwards and upwards back to the spine.







- Hold navel for a moment & then begin abdomen contraction and expansion rapidly 10-15 times while retaining the breath.

Breathe out before it becomes too uncomfortable. This is one round, complete 3 rounds. It's very common at first for the abdominal muscles to tire quickly, this is a sure sign you have the weak fire energy.

### Benefits:

Agnisar kriya improves the physiology of the practitioner by improving digestion, metabolism, eliminating toxins, and energizing the body. Its anatomy can be understood under the following sub-heads:

1. In the Agnisar Kriya, the focus is kept on holding the breath out and snapping the abdominal muscles and organs. The vigorous contraction and expansion of the stomach stimulates the bowel movement and removes the stagnant food and stool from the gastrointestinal tract.
2. The removal of stool (toxins) from the body initiates the process of assimilation. It causes better digestion of food material in the intestine and the nutrients get absorbed by the body. It nourishes every cell of the body and promotes the formation of new cells.
3. The contraction and relaxation of the abdomen during Agnisar Kriya puts pressure on internal organs. It strengthens the abdominal muscles and organs thereby facilitating their proper functioning.
4. Most of the catabolic and anabolic process within the body occurs and gets affected during the process of digestion. Since the digestion is improving as described above the metabolism rate is also improved by practicing the Agnisar Kriya.

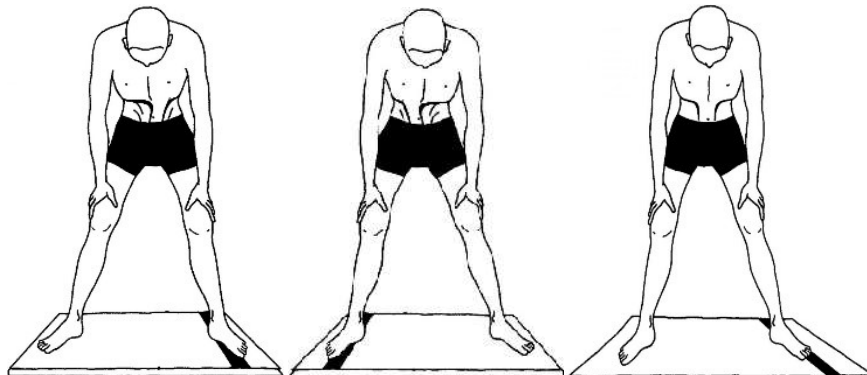
### Nauli.

Nauli is also referred to as “*lauliki karma*” in Sanskrit scriptures. The word *lauliki* means “to move clockwise and anti-clockwise” or “rolling and agitation” which is exactly what this technique does. It rolls, rotates and agitates the entire abdomen and the associated muscles and nerves.

### Types of Nauli Kriya

Nauli is basically categorised into 3 types based on the position of abdominal muscle contraction.

1. Vama Nauli: the contraction of the left side of the abdominal muscles.
2. Dakshina Nauli: the contraction of the right side of the abdominal muscles.
3. Madhya Nauli: the contraction of both sides of the abdominal muscles.







### **How to Do Nauli Kriya**

Nauli is the practice of contracting & isolating the rectus abdominis muscles.

Rectus abdominis muscles (abs) are two long vertical muscles situated at both sides of the middle abdomen line. It ranges from the diaphragm to the pubic bone. In nauli kriya, basically these muscles are manipulated.

To Perform it, follow the following steps.

1. Stand with the feet about 1-1.5 meter apart.
2. Take a deep breath in through the nose and then exhale through the mouth, emptying the lungs as much as possible.
3. Bend the knees slightly and lean forward, placing the palms of the hands on the thighs just above the knees. Thumb pointing inside & rest fingers point outside of the thighs to make a firm grip.
4. The arms should remain straight while the weight of the upper body rests comfortably on hands above the knees.
5. Perform jalandhara bandha while maintaining external breath retention or Bahir kumbhaka.
6. Then perform Uddiyana bandha by sucking the lower abdomen in & above.
7. Keep the eyes open and watch the abdomen.
8. Now lift the right & left hand slightly off the knee one by one.

### **Benefits of Nauli**

1. Nauli kriya massages and tones the entire abdominal area, including the muscles, nerves, intestines, reproductive, urinary and excretory organs.
2. It is an exercise of the internal organs such as the stomach, liver, spleen, urinary bladder, pancreas, gall bladder, and large and small intestine.
3. It helps the body to increase gastric fire and eliminate toxic materials from the digestive tract.
4. This kriya generates heat in the body and stimulates appetite, digestion, assimilation, absorption, and excretion. Nauli also considered panacea practice to lose the belly fat or weight loss as it directly works on the extra fat present in abdominal muscles.
5. Nauli builds the core strength as it focuses on the “rectus abdominis” muscle which is responsible for the **six-packs**.
6. It activates the Manipura chakra, “the storehouse of prana” and improves mental efficiency.
7. Nauli kriya is also helpful in strengthening the immune system.
8. Nauli Kriya gives you power and vigour by harmonizing the flow of energy in the body.

### **Laghoo and Poorna sankhaprakshalana:**

Shankha Prakshalana is a process or procedure to cleanse the intestinal tract so as to remove its impurities by oral administration of salt water. Shankha Prakshalana is a term made up of two words. = Conch  
Shankha Prakshalana = Wash or cleanse -

In this context, the term Shankha is a word used to represent the entire digestive tract starting from the mouth and ending at anus.

Shankha Prakshalana means cleansing the stomach thoroughly.





Laghu Shankha Prakshalana is identical to Shankha Prakshalana, but the cleansing is done in a minimum proportion

(laghu=less, light, the quantity of saline water given is less than that given in Shankha Prakshalana).

Shankha Prakshalana is a variant of Dhauti Karma, one among the Shat Karmas explained as a part of Hatha Yoga. It is synonymous with Varisara Dhauti, a subtype of Antar Dhauti or internal body cleansing procedure. Since both the procedures are not exactly similar, Shankha Prakshalana can be considered as a variant of Varisara Dhauti.

Shankha Prakshalanam is also a part of Kaya Kalpa, an Ayurvedic technique for purification and transformation of the body. (Kaya = Body, Kalpa = Transformation). Laghu Shankha Prakshalana is a subtype or variant of Shankha Prakshalana.

Shankh Prakshalan

(Poorva Karma) Pre-Procedure (Preparation) Salt water preparation –

The salt water should be kept ready before conducting the procedure. 2 teaspoons of salt should be added to 1 liter of water and mixed thoroughly. This is the ratio. More salt water should be kept ready because Shankha Prakshalana needs one to drink adequate and saturating quantity of saline water. Juice of 1 lemon can be added to the water (optional). Sugar should not be added to the solution.

- Choice of Place - Shankhaprakshalana shall be done in a garden or in open area with fresh air. The place should be equipped with adequate toilet facilities in the vicinity. Time of start - Shank prakshalan shall be started in the early morning, between 6-7 am and not later.

### Pradhana Karma:

Shankh Prakshalan, the main procedure

One should drink about 16 glasses of warm saline water and should evacuate it through the bowels.

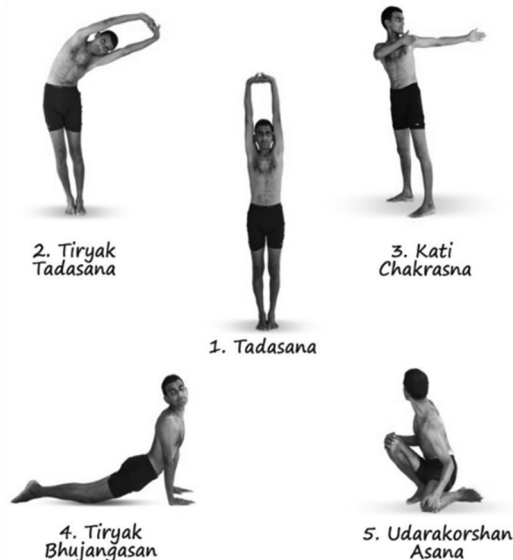
Initially drink 2 glasses of salt water quickly, in sitting position. After having consumed two glasses of salt water one should perform a series of 5 asanas (in that order) which include:

• Tadasana • Tiryak Tadasana • Kati Chakrasana • Tiryak Bhujangasana • Udarakarshana Asana

Each asana should be performed 6 times. These asanas will enable easy movement of the water towards the anus.

After taking every 2 glasses of salt water, one should perform the above-mentioned asanas until the water starts flowing easily towards the anus to get excreted.

If there is an urge to go to the toilet, you need to go to the toilet and evacuate your bowel. If you get a feel of incomplete evacuation, do not strain. After coming back from the toilet, drink 2 more glasses of salt water and complete the set of asanas. Continue this cycle i.e., drinking salt water, doing asanas and going to the toilet. After successive evacuations, less stools and more water will be evacuated. Eventually cloudy yellow water and later almost clear water will be evacuated. The form and consistency of bowel and elimination of water





**UNIT-2**  
**Therapeutic Skills-Yogic Therapeutic**  
**management for various disorders**

**Yoga Is When Every Cell In The Body Sings  
The Song Of The Soul.**

**-Swami Vivekanand**











**Most common disorders are Spinal Disorders & Lumbar area most commonly affected.**

### **Causes of Pain**

- Major cause of pain is Improper Lifestyle - Poor posture, wrong ways of standing and sitting, bad habits, lack of awareness.
- Misuse, Overuse, No Use of Muscles – e.g. Forward & Backward Bending – neck, back
- Accidents, Injury, and trauma.
- Degeneration of the spine – Arthritis, Trauma, Osteoporosis.
- Poor core strength and stability.
- Pregnancy.
- More than 80% of back pain does not relate to any specific problem. No particular reason of back pain is found.

### **Sources of Pain - There are 4 sources of pain in our back.**

- **Bone** – Bone itself can create pain on the primary level sometimes.
- **Vertebrae** – If the vertebrae are locked or it is moved out of position, or if there is an erosion of the vertebrae or bone, which may cause misalignment creating a pressure on the spinal cord and nerves. Ligaments and Muscles are the supportive tissues which make the back flexible and stable. If ligaments and muscles are overstretched, or weakened or there is wear and tear in them they can create Back Pain.
- **Intervertebral Disc** – these work as shock absorbers, like a cushion in between the bones in between the vertebrae, since they absorb shocks, there can be wear and tear of the intervertebral disc causing rupture, tear of the disc due to excessive pressure, shock, jerk, misalignment creating compression, pressure to the nerve which can create Back Pain.
- All these factors, affecting the conditions of the bones, ligaments, muscles, intervertebral disc, can create a stretch on the nerves which comes out from in between the 2 vertebrae, so when the nerves are stretched, irritation is created causing pinching of the nerve which can lead to Back Pain. These nerves are messengers carrying sensations in our body and when the nerves are irritated, pinched, pulled, or stretched, it will give a Painful sensation.

### **Back Pain**

- 80 % of adults are affected by back pain at some point in their lives.
- Lumbago is defined as mild to severe pain or discomfort in the area of lower back.
- Weak muscles in the back and stomach increase the risk of backaches.
- A variety of problems in the muscles, tendons, bones, ligaments, or an underlying organ, such as kidney, may also cause back ache.
- The pain can be acute or chronic if it has lasted for more than three months.
- Lumbago often occurs in younger people whose work involves physical effort though is not uncommon in elder people of retirement also.
- Lumbago is a term for muscle pain in the lower back, near the pelvis and affected region with pain is the Lumbar Sacral Region of the spine.





## Symptoms

High blood pressure (Hypertension) usually has no obvious symptoms, and many people have it without knowing. HPB can lead to serious diseases, including stroke causing paralysis and heart diseases, heart attack, cardiac failure.

- Persistent headache (can be mild to pounding)
- Blurred/Hazy or double vision.
- Giddiness and extreme tiredness
- Ringing in the ears and nausea
- Disturbed Kidney Functioning
- Nose bleeds
- Shortness of breath



Genes



Smoking



Obesity



High salt  
intake



High alcohol  
consumption



Stress



Lack of exercise



Aging

## Causes

- Mental Tension
- Obesity
- Lack of Exercise
- Aging
- Hereditary, Lifestyle
- Alcohol & Smoking
- Birth control Pills, Medication
- Chronic Kidney Disease & Adrenal & Thyroid Disorders

**No Hypertension**  
Heart Pumping Normally



Blood flows easily  
through vessels

**Hypertension**  
Heart Pumping Harder



Blood may not flow  
easily through vessels

## Classification of Hypertension

Hypertension may be classified as **Essential or Secondary**.

### Essential Hypertension:

- **Essential hypertension** is the term for high blood pressure with unknown cause or absence of any disease. It accounts for about 95% of cases. Defined as high BP due to nonspecific lifestyle and genetic factors.
- Lifestyle factors that increase the risk include excess salt in the diet, excess body weight, smoking, and alcohol use.

### Secondary Hypertension

- **Secondary Hypertension** is the term for high blood pressure with a known direct cause or disease such as Kidney disease, Tumours, Birth control pills, narrowing of the kidney arteries, an endocrine disorder.





## Yoga Therapist Level – 6

### Therapeutic Yoga Consultant Level - 7

- Malignant hypertension - it is a result of particular diseases. For e.g., Tumour, Kidney disorder, Diabetes, Cardiac Emergency.
- It accounts for the remaining 5–10% of cases categorized as secondary high blood pressure.

#### Measuring high BP:

- Blood pressure is classified by two measurements, systolic and diastolic, these are maximum and minimum pressures respectively.
- **Blood Pressure** is the pressure exerted by the blood upon the walls of the blood vessels, especially arteries.
- **Systolic BP** - Maximum Pressure in an artery at the moment when the heart is beating and pumping blood.
- **Diastolic BP** - Lowest pressure in an artery in the moment between the heart beats when the heart is resting. When the heart relaxes, the pressure on the walls of the blood vessels falls and reaches the lowest level.
- In other words, Systolic represents working of heart and Diastolic is rest provided to heart.
- Systolic is the function of heart and diastolic is function of arteries.
- **The normal average range of BP for a normal person is 120/80mm/hg.**
  - Prehypertension – 120-139 systolic / 80-89 diastolic
  - Stage 1 hypertension – 140-159/90-99
  - Stage 2 hypertension – more than 160 / more than 100

#### Diagnosis / Procedure to measure BP:

- Equipment's – Sphygmo-manometer, stethoscope, appropriately sized BP cuff
- BP Measured using a device called Sphygmo-mano-meter. Measured in mm of hg.
- The most accurate way to measure the BP is to use the artery closer to the heart i.e., the **Brachial Artery**
- The **Radial Artery** is far weaker and less audible, making it a less popular area for the body to access BP.

#### Lifestyle Management to prevent heart disease:

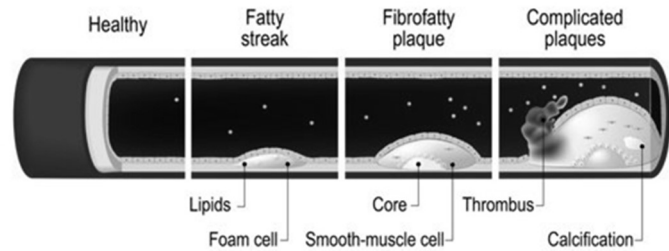
- **Make Yoga a Lifestyle**
- Exercise regularly, a healthy diet and medication can all help maintain a healthy blood pressure and therefore a healthy heart.
- Quit smoking, drinking alcohol or any other bad habits.
- Keep Cholesterol in Control
- Keep a healthy weight.
- Reduce Stress
- Decrease Salt Intake
- Do not ignore the symptoms.





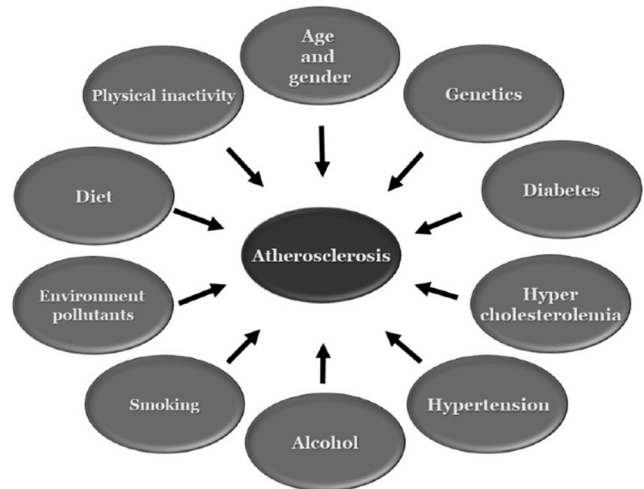
### Atherosclerosis:

- Atherosclerosis is thickening or hardening of the arteries caused by a buildup of plaque in the inner lining of an artery.
- Wall of the artery develops abnormalities, called lesions.
- The build-up of fats, cholesterol and other substances in and on the artery walls, causing obstruction of blood flow.
- Atherosclerosis often has no symptoms until a plaque ruptures or the build-up is severe enough to block blood flow.
- A healthy diet and exercise can help. Treatments include medication, procedures to open blocked arteries and surgery.



### Causes:

- The exact cause is not known.
- High blood pressure.
- High cholesterol & High triglycerides, a type of fat (lipid) in the blood.
- Smoking or chewing tobacco.
- Diabetes, Insulin resistance.
- Obesity.
- Narrowing of arteries limits flow of O<sub>2</sub>-rich blood to parts of the body



### Symptoms:

- Symptoms depend on which arteries are affected and how much blood flow is blocked.
- Chest pain (angina), cold sweats, dizziness, extreme tiredness, heart palpitations (feeling that your heart is racing), shortness of breath, nausea and weakness are all symptoms of coronary heart disease.

### Coronary Artery Disease (CAD):

Coronary arteries involve the reduction of blood flow to the heart muscle due to build-up of plaque (atherosclerosis) in the arteries of the heart hence fails to supply blood to heart due to blockage or narrowing of coronaries, which causes pain for more time, due to blocks in the arteries, the path narrows and hence that part gets less blood supply resulting in permanent damage to the organ.

Coronary heart disease (CHD) is also called **ischemic heart disease** (IHD) or simply heart disease.





- Improve neurotransmission, and
- Slow neurodegeneration.

Therefore, consuming more omega-3 rich food sources or taking an omega-3 supplement may benefit people with Parkinson's. In addition to possibly offering direct benefits to those with Parkinson's, omega-3 fatty acids may also help reduce the risk of dementia and confusion more generally. These are also secondary symptoms of Parkinson's disease.

**Common deficiencies:** people with Parkinson's often have certain nutrient deficiencies, including deficiencies in

- Iron
- Vitamin B1
- Vitamin C
- Zinc
- Vitamin D

Therefore, people with Parkinson's are recommended to consume more of the food items rich in the above nutrients.

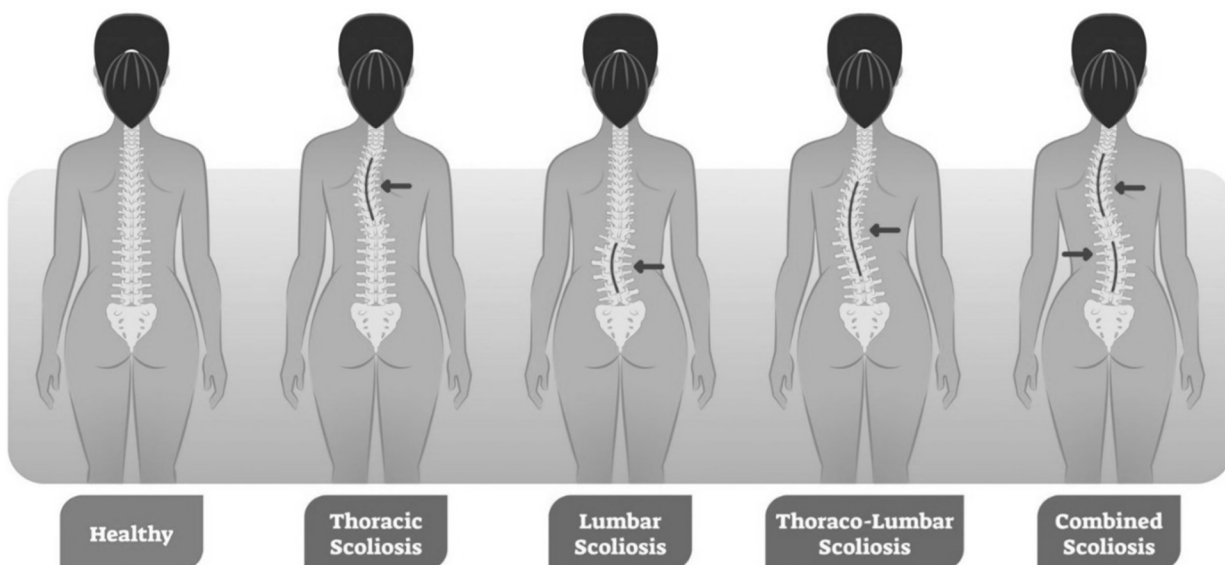






anomaly in spinal cord, brain and other organs including heart, kidney, gastro intestinal tract and other bones.

- **Neuromuscular scoliosis** - Scoliosis secondary to the abnormality in muscles and nerves like cerebral palsy, muscular dystrophy and spinal muscular atrophy. The weak nerves and muscles are not capable of supporting the spine leading to its curvature. X-ray of the spine shows a typical long 'c' shaped curve.
- **Thoracogenic** – it is seen in patients whose spinal development has been asymmetric due to radiation treatment of childhood tumours or surgery to address a congenital heart defect.
- **Syndromic scoliosis** - Associated with syndromes like connective tissue disorders and neurofibromatosis. The progression or worsening of scoliosis is rapid in this group of patient and so close monitoring and early intervention is necessary.



#### Symptoms:

- Tilted or uneven shoulders (one above the other)
- Asymmetry of the rib cage
- Uneven waist line and hip level
- Hunched back and unequal limb size in severe cases
- Pain is rare in scoliosis

#### Management of spinal deformity:

- Nonoperative treatments: Pain medications, physical therapy and certain braces
- Surgery considered if: Patient has severe pain not relieved by physical therapy, bracing, and/or pain medications
- The ailment is progressing









### **Management of Loss of coordination (Ataxia):**

- Treat the Cause
- Physical Therapy
- Occupational Therapy
- Speech Therapy

### **Stress:**

- A normal physical, mental and emotional reaction or response to the ever-increasing demands of life, including change. It is a biological response to demanding situations.
- Stress can come from any event or thought that makes you feel intense emotion. Additionally, stress can also be perceived as positive (Eustress) or negative (Distress).
- Positive stress could include situations like a new job, retirement, wedding or birth. Eustress energizes us and motivates us to make a change, gives us a positive outlook and makes us capable of overcoming obstacles and sickness. It has a positive effect on us
- Negative stress could consist of a life-threatening situation, death of a loved one, hospitalization, etc.
- Overall, our perception determines how we view an event and the way in which we choose to respond to it.
- On occasion, stress can actually be beneficial. It can challenge and motivate us, increasing our ability to be more resilient.
- Physiological Systems Involved in Stress Response are Nervous system, Endocrine system & Immune system



### **Causes:**

There are challenges older adults face that the rest of us may not have to deal with, including:

- Isolation
- Living on a fixed income
- Inability to afford daily medications
- Experiencing cognitive, functional and sensory impairments
- Dealing with one or more chronic health conditions, pain and complicated diagnoses
- Coping with a loss like a retirement, financial independence, loved ones, purpose in life and ability to carry out everyday tasks

### **Effects of stress on the body in old age:**

- During Old Age, stress often manifested in more physical ways, including health problems.
- Warning signs of stress could include frequent headaches, sleep problems, insomnia, fatigue (physical and mental), difficulty concentrating, change in appetite, muscle tension, pain, chest pain, stomach upset and more.





### 3.3 Knowledge of effect of Surya Namaskar:



- Individual with low physical energy must practice of Surya Namaskar. This is because these conditions require a boost of prana shakti in order to develop the necessary physical stamina to overcome disease, and also activate the catabolic processes of our metabolism in order to eliminate the build-up of excess waste products and hormones such as adrenaline. It stimulates the inter and intracellular energizing processes making it a powerful therapeutic practice.
- This dynamic series of asanas tires the body. The effect of tiring the body is twofold. The first is that we have less energy to overthink on useless thoughts, daydream of disasters, and to ruin our lives with unnecessary decisions. The second is that sleep comes more easily. It reduces mental overactivity and physical underactivity inducing deep restful sleep. This kind of sleep is required for the regeneration of diseased tissues. Deep sleep is necessary for rejuvenation.
- The channelling of blocked energies which has led to pingala predominance gets regulated and the mental energies are brought more into line balancing the nadis. It rebalances the energies of mind and body.

#### Effect on Respiratory System:

Breathing process when synchronized with each movement completely empties the lungs of all traces of stale gas and refills them with fresh, clean, oxygenated air. The oxygen content of the blood is increased, which improves the overall vitality and oxygenation of the cells and tissues of the body and brain. Sluggishness and lethargy are rapidly overcome. Respiratory diseases and excess mucus in the air passages can be eliminated.

#### Effect on Circulatory System:

The practice of Surya Namaskar improves the heart action without straining the cardiac muscles. The result is increased flow of blood that speeds up elimination of waste matter and introduces fresh oxygen and nutrients to all the cells. Deposits of stagnant blood in the spleen and all other organs are removed and

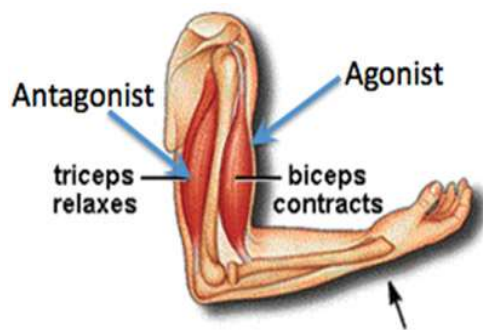
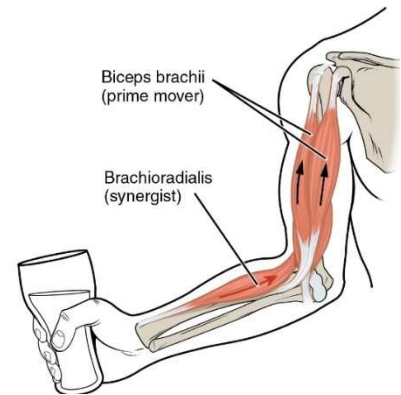




### Muscle Physiology:

**Prime mover** - The prime mover, sometimes called the agonist, is the muscle that provides the primary force driving the action. Example, when one has to pick up a glass of water the prime mover is the Bicep. The bicep contracts and strengthens to lift the weight up.

**Synergist** - A synergist muscle assists the agonist muscle or “primary mover” for a specific action at a joint. This muscle is not the main muscle involved in the action, but works in synergy with the primary muscle. These muscles help make movements more accurate and fluid. Ex. Brachioradialis is helping the Bicep to smoothly do the movement.

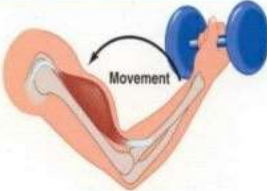
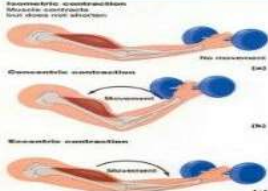



**Antagonist** - For example, when you perform a bicep curl the biceps will be the agonist as it contracts to produce the movement, while the triceps will be the antagonist as it relaxes to allow the movement to occur. The movement of agonist and antagonist is opposite. When one contracts the other relaxes.

**Physiology** – While the synergist assists the agonist, an antagonist muscle is in opposition to a prime mover in that they provide some resistance and assists a given movement. These muscles work together for a movement.

### Movement of the muscle:

While flowing through poses you work your muscles in a variety of ways. While exercising the muscles, force is exerted on the muscle fibres. This happens when the muscles become shortened, lengthened, or remain at the same length. During this process three contractions occur; concentric, isometric, and eccentric.

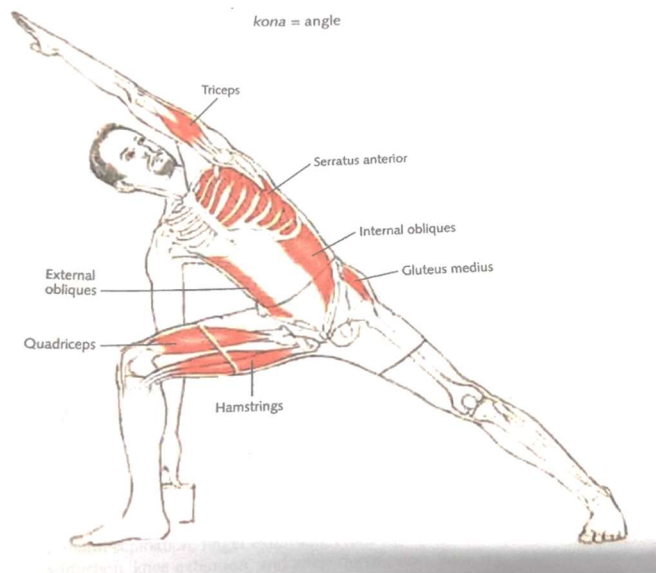
Isotonic contraction		Isometric contraction
Concentric	Eccentric	
		
<ul style="list-style-type: none"> <li>• Concentric contraction in the biceps brachii during the <b>upward phase</b> of exercise</li> <li>• Biceps brachii produces tension and <b>shortens</b></li> <li>• It pulls the <b>forearm upwards</b> to cause <b>flexion</b> of the elbow</li> </ul>	<ul style="list-style-type: none"> <li>• Eccentric contraction in the biceps brachii during the <b>downward phase</b> of exercise</li> <li>• Biceps brachii produces tension and <b>lengthens</b></li> <li>• It <b>slows the lowering</b> of the forearm and <b>controls extension</b> of the elbow</li> </ul>	<ul style="list-style-type: none"> <li>• Isometric contraction occurs in the biceps brachii when the muscle is <b>holding the weight still</b></li> <li>• Biceps brachii develops tension and <b>stays the same length</b></li> <li>• It <b>stops flexion and extension</b> of the elbow</li> </ul>





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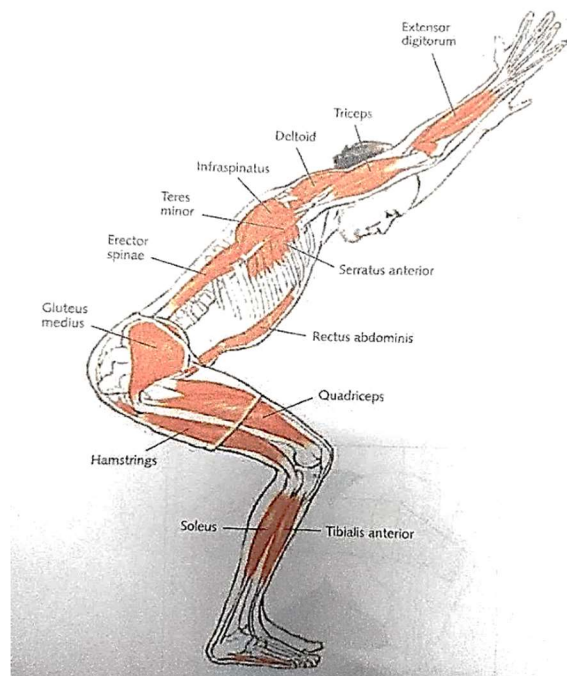
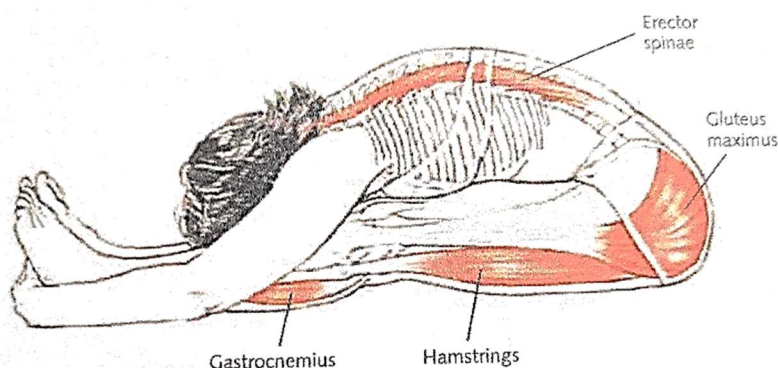


#### Lateral Bend - Utthita Parva konasan:

Agonists are gluteus medius, hamstrings that lengthens. Antagonist are Quadriceps that shortens gives support for the whole body to balance. Internal obliques are lengthened while external obliques are contracted. Synergists are Serratus anterior, Triceps.

### 3. Forward Bends - Paschimottanasana:

Agonist is quadriceps (thigh muscles), that shortens so that the person can bend forward. Antagonist is hamstrings and gastrocnemius (calf muscles), that relaxes for smooth movement of quadriceps. Synergists are glutes and Erector Spinae (spinal muscles) that lengthens to assist forward bending.



### 4. Axial Extension

Utkatasan: While Spine has axial extension, hip, knee, shoulder has flexion. Agonist are Erector Spinae, Latissimus Dorsi, Psoas major, Gluteus maximus. Antagonist are Rectus Abdominis, Gluteus minimus, gluteus medius, quadriceps, tibialis anterior. Synergists are psoas minor, deltoid, triceps, Teres minor, Serratus anterior.

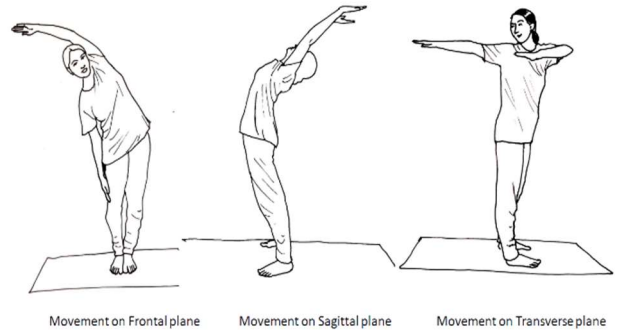




**Mechanical stretching:** Using equipment to stretch and increase joint ROM.

**Manual stretching:** External force applied by therapist to move the involved body segment slightly beyond the point of tissue resistance and available ROM.

**Neuromuscular inhibition techniques:** these procedures reflexively relax tension in shortened muscles prior to or during stretching.



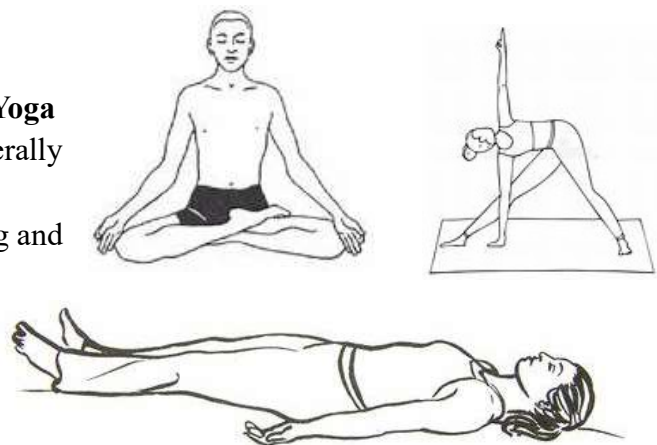
### Postures:

**Posture is the attitude assumed by the body**

**Postures may be either Active or Inactive**

**There are basically three categories of postures in Yoga**

- Meditative: for meditation (mental fitness), generally sitting and stable.
- Cultural: for physical fitness, specially by stimulating and relaxing different groups of muscle
- Relaxing: for relaxation, specially before and after cultural postures



**Biomechanics of Muscles All movements are shaped by force of gravity.**

### Padahastasana:

- Padahastasana is also known as hand to foot pose.
- Padahastasana massages and tones the digestive organs.
- Hamstrings, gluteus muscles and erector spine are extensors of hip joint not flexors.
- They act to create flexion of hip by letting go with gravity to control downward movement.
- It's lengthening contraction of hip extensors and erectors

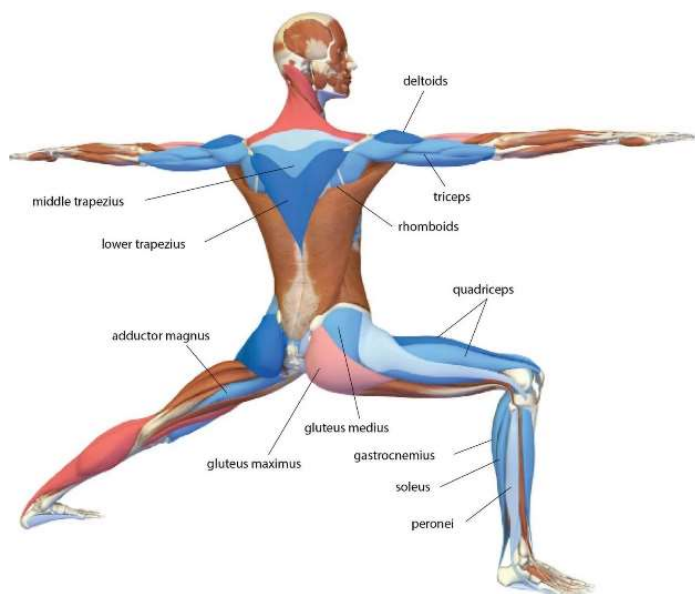
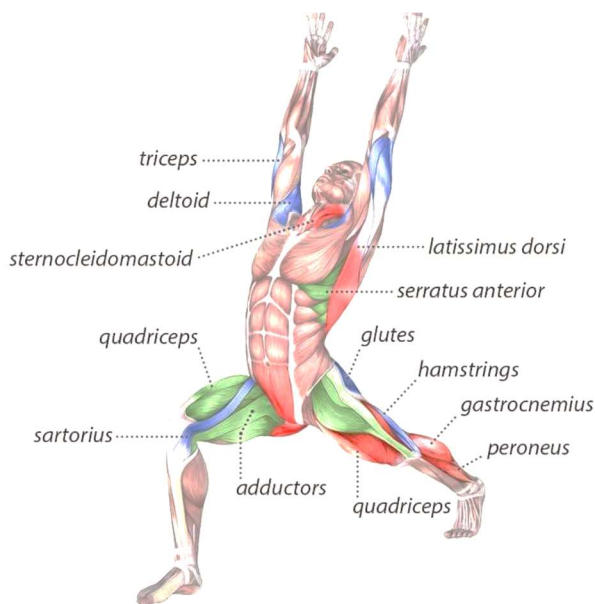






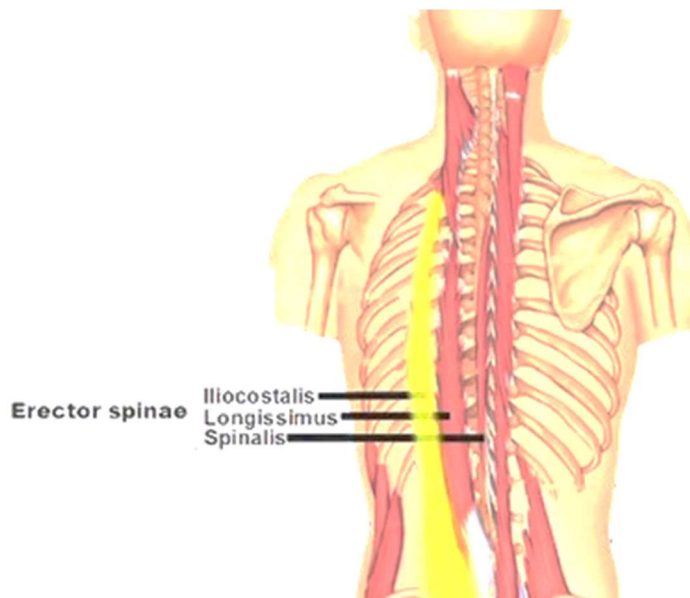
### Virabharadrasana:

- Partially bent but stabilized knee
- The antagonist must release at the same rate that the agonist contracts.



### Biomechanics of Vertebral Column

- Biomechanics call it a kinetic chain (connected chain of moving parts).
- It is designed for both movement and stability.
- Stability is created by tripod stool in each vertebra (Intervertebral disc and two facet joints).
- In vertical pose like Tadasana and sitting in Siddhasana, maintaining the natural curve will create most stability.
- Range of movement of each vertebral segment is determined by intervertebral discs.
- Direction of movement is determined by angle of facet joints.

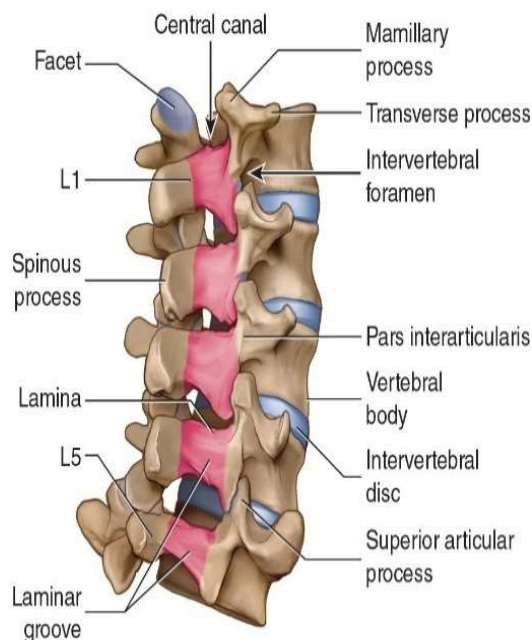






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### Therapeutic Yoga Consultant Level - 7

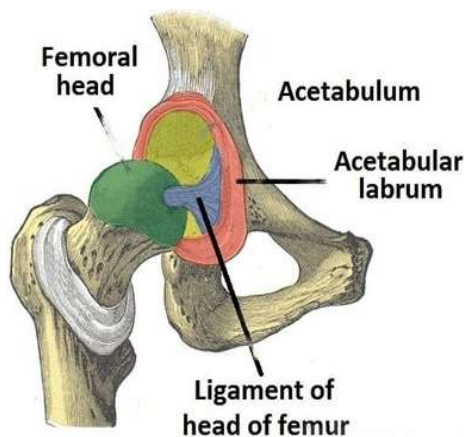
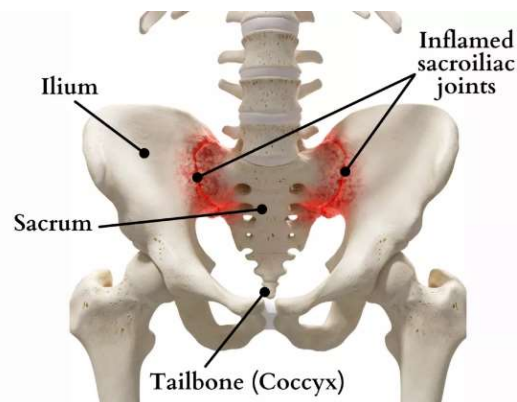


#### Biomechanics of Lumbar Spine

- Significant movements allowed in this region are flexion and extension.
- 50% of all the movements of flexion allowed in entire vertebral column is created in lumbar spine. • Out of that, 75% created in L5-S1 joint.
- Abdominal muscles and organs are highly responsible for the limitation of extension in lumbar spine.
- The facets in this region allow for almost complete free range of extension.
- Rotation of the lumbar spine is quite limited (10 degrees).
- It may seem like you are rotating from lumbar spine in Ardha Matsyendrasana, but it's not true.
- Here too, side bending and rotation occur to the opposite side (as in Trikonasana).

#### Biomechanics of Sacrum:

- Primary function of sacroiliac joint is stability.
- Some passive joint movements occur here.
- When you bend your lumbar spine back (as in Ustrasana), sacrum passively moves anteriorly.
- When you bend forward (as in Padahasthasana), sacrum moves posteriorly.
- These coordinated movements are called lumbo-sacral rhythm.



#### Biomechanics of Hip Joint:

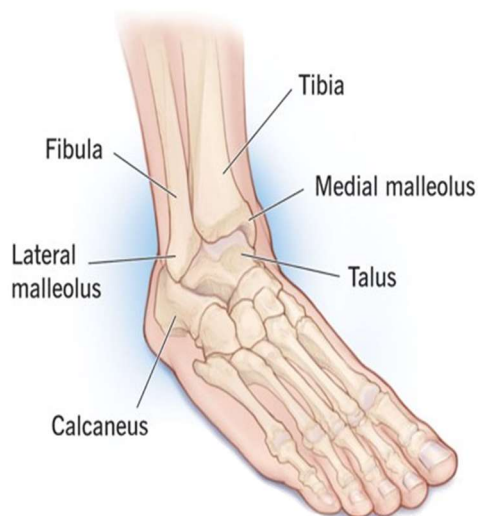
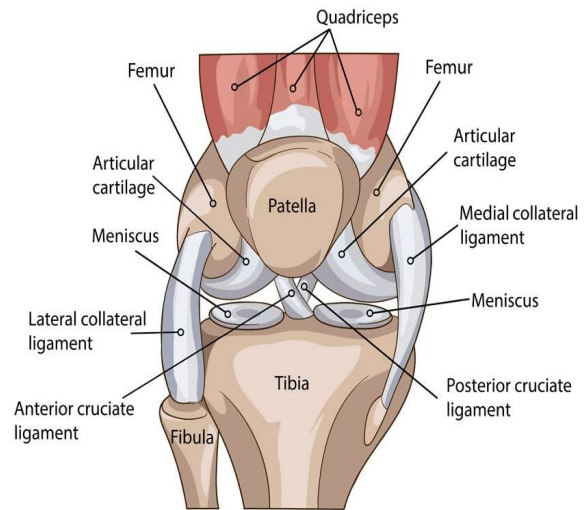
- The gluteus maximus is a hip extensor.
- The gluteus maximus has a secondary action of external rotation as well.
- It extends the hip joint and externally rotates it at the same time.
- In back bending poses like Dhanurasana & Chakrasana, feet and knees go out instead of being straight ahead.
- By pressing the knees toward each other, you can activate adductor muscles.
- This neutralizes the external rotation component of the gluteus maximus





### Biomechanics of Knee Joint and Legs:

- One of the misconceptions about the knee joint is that it acts as a hinge.
- Instead, the knee moves with a rolling and gliding action during flexion and extension.
- During extension, the femur rolls backward on, while tibia glides forward on femur.
- During flexion, the femur rolls forward, while tibia glides backward.
- During flexion, femur rotates slightly externally on the tibia (its healthy unlocking mechanism).
- The rotation happens at front knee joint in Parsvakonasana, Virabhadrasana I & Virabhadrasana II

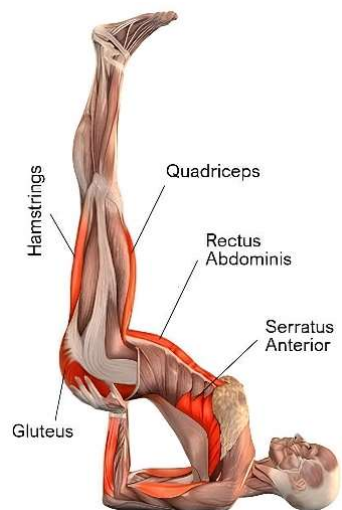


### Biomechanics of Ankle and Foot:

- In Normal ankle joint, there is approximately 45 degrees of plantar flexion.
- Dorsiflexion is limited to approximately 20 degrees.
- Dorsiflexion is also limited by tightness in Achilles tendon, gastrocnemius and soleus muscles.
- The supination movement of ankle is quite free and can be overdone in poses like Padmasana.
- Extreme supination easily can lead to sprain of lateral collateral ligaments of ankle.
- Pronation is much less free than supination in ankle joint.
- Eversion of the foot often accompanies pronation of the ankle

### Biomechanics of shoulder joint:

- Biceps muscle is elbow flexor and also a shoulder flexor.
- The strongest action performed by biceps is supination of forearm.
- Biceps action will be easier in Viparitarani as biceps will have mechanical advantage (supination of forearm).
- Most significant aspect of movement in shoulder joint is the glenohumeral rhythm.
- The gleno-humeral rhythm involves scapula, humerus & clavicle.
- The gleno-humeral rhythm accompanies shoulder flexion and abduction while performing yoga postures.







## Yoga Therapist Level – 6 Therapeutic Yoga Consultant Level - 7

a	Satkaryavaad
b	Asatkaryavaad
c	Drusti-Srushti vaad
d	Shoonyavaad
ans	c
44	योग वसिष्ठ के दर्शन का अनुसरण कौन करता है
ए	सत्कार्यवाद
बी	असत्कार्यवाद
सी	दृष्टि - सृष्टि वाद
डी	शून्यवाद
उत्तर	सी
45	Sage Vasishtha explained that the mind can be freed if _____ is destroyed
a	Vrittis
b	Klesha
c	Alasya
d	Sankalpa
ans	d
45	ऋषि वसिष्ठ ने समझाया कि मन को ----- से मुक्त किया जा सकता है
ए	वृत्ति
बी	क्लेश
सी	आलस्य
डी	संकल्प
उत्तर	डी
46	A Yogi abandons the material world and fixes the mind on one principle in the _____ stage of Saptabhoomika
a	Śubhecchā
b	Tanumānasa
c	Sattvāpatti
d	Asaṁsakti
ans	b
46	योगी भौतिक संसार को त्याग देता है और सप्त भूमिका के ----- चरण में दिए गए एक सिद्धांत पर मन को स्थिर करता है
ए	सुभेच्छा
बी	तनुमानसा
सी	सत्त्वपत्ति



**Yoga Therapist Level – 6**  
**Therapeutic Yoga Consultant Level - 7**



डी	असंसक्ती
उत्तर	बी
47	A perfectly non-attached yogi performing his necessary duties in world without any sense of involvement is ____
a	Jnani
b	Videhamukta
c	Jeevanmukta
d	Mahayogi
	Mahayogi
ANS	C
47	एक पूरी तरह से अनासक्त योगी दुनिया में बिना किसी अनुराग कि भावना से अपने आवश्यक कर्तव्यों का पालन करना ----- है
ए	ज्ञानी
बी	विदेहमुक्त
सी	जीवनमुक्त
डी	महायोगी
उत्तर	सी
48	Lord Rama blessed Kakabhushandi with ____
a	Part of his kingdom
b	Limitless riches
c	Siddhi to reach anywhere at will
d	Eternal life and limitless vision
ans	d
48	भगवान राम ने काकभुशुण्डि को ----- का आशिर्वाद दिया
ए	उसके राज्य का हिस्सा
बी	असिमित धन
सी	सिद्धि अपनी मर्जी से कही भी पाहुँचेंगी
डी	अनंत जीवन और असीम दृष्टि
उत्तर	डी
49	The disturbance of excessive appetite is called _____
a	Kujimatvam
b	Atijirnatvam
c	Ajirnatvam
d	None of these





## Yoga Therapist Level – 6 Therapeutic Yoga Consultant Level - 7

ans	b
49	अत्याधिक भूख कि बाधा को ----- कहा जाता है
ए	कुजीर्णत्वम
बी	अतिजीर्णत्वम
सी	अजीर्णत्वम
डी	इनमे से कोई नहीं
उत्तर	बी
50	The definition of Yoga as which enables one to overcome difficulties of worldly life is given by
a	Patanjali
b	Bhagwad Gita
c	Kathopanishad
d	Yoga Vasishtha
ans	d
50	योग कि परिभाषा - व्यक्ति को संसारीक जीवन कि कठिनाईयों को दूर करने में सक्षम बनती है, किसके द्वारा दी गई है
ए	पतंजलि
बी	भगवद्गीता
सी	कठोपनिषद
डी	योग वसिष्ठ
ANS	डी
51	The right order of Yoga chronology is
a	Patanjali, Buddha, Mahavir
b	Buddha, Patanjali, Mahavir
c	Mahavir, Patanjali, Buddha
d	Buddha, Patanjali, Matsyendranath
ANS	d
51	निम्नलिखित में से कौनसा योगकाल क्रम सही है
ए	पतंजलि, बुद्ध, महावीर
बी	बुद्ध, पतंजलि, महावीर
सी	महावीर, पतंजलि, बुद्ध
डी	बुद्ध, पतंजलि, मत्स्येन्द्रनाथ
ANS	डी
52	Among the Modern Yogis given here, the earliest one was
a	Swami Vivekananda



**Yoga Therapist Level – 6**  
**Therapeutic Yoga Consultant Level - 7**



b	Dayananda Sarawati
c	Raman Maharshi
d	Swami Shivananda
ANS	b
52	यहा दिए गए आधुनिक योगीयों में सबसे प्राचीन योगी __ थे
ए	स्वामी विवेकानंद
बी	दयानंद सरस्वती
सी	रमन महर्षि
डी	स्वामी शिवानंद
उत्तर	बी
53	Intestine absorbs the digested food materials. What type of epithelial cells are responsible for that?
A	Stratified squamous epithelium
B	Columnar epithelium
C	Spindle fibres
D	Cuboidal epithelium
ANS	B
53	आंत पचे हुए खाद्य पदार्थों को अवशोषित करती है। इसके लिए किस प्रकार की उपकला कोशिकाएं जिम्मेदार हैं?
ए	स्तरीकृत स्क्वैमस उपकला
बी	स्तंभकार उपकला
सी	स्पिंडल फाइबर
डी	घनाकार उपकला
उत्तर	बी
54	Which muscles act involuntarily? 1. Striated muscles, 2. Smooth muscles, 3. Cardiac muscles, 4. Skeletal muscles
A	(i) and (ii)
B	(ii) and (iii)
C	(iii) and (iv)
D	(i) and (iv)
ANS	B
54	कौन सी मांसपेशियां अनैच्छिक रूप से कार्य करती हैं? 1. धारीदार मांसपेशियां, 2. चिकनी मांसपेशियां, 3. हृदय की मांसपेशियां, 4. कंकाल की मांसपेशियां
ए	(i) and (ii)
बी	(ii) and (iii)
सी	(iii) and (iv)
डी	(i) and (iv)
उत्तर	बी





## Yoga Therapist Level – 6

### Therapeutic Yoga Consultant Level - 7

55	The muscular tissue which function throughout life continuously without fatigue is
A	Skeletal muscle
B	Cardiac muscle
C	Smooth muscle
D	Voluntary muscle
ANS	B
55	.....पेशीय ऊतक जो बिना थकान के जीवन भर निरंतर कार्य करता है
ए	कंकाल की मांसपेशी
बी	हृदय की मांसपेशी
सी	कोमल मांसपेशियाँ
डी	स्वैच्छिक पेशी
उत्तर	बी
56	How many types of tissues are found in a body?
A	1
B	2
C	3
D	4
ANS	C
56	शरीर में कितने प्रकार के ऊतक पाए जाते हैं?
ए	1
बी	2
सी	3
डी	4
उत्तर	सी
57	Which of these is not included in the vascular system?
A	Heart
B	Blood vessels
C	Blood
D	Lungs
ANS	D
57	इनमें से कौन संवहनी तंत्र में शामिल नहीं है?
ए	हृदय
बी	रक्त वाहिकाएं
सी	रक्त
डी	फेफड़े
उत्तर	डी
58	Which of these organs are situated in the thoracic cavity?
A	Stomach



**Yoga Therapist Level – 6**  
**Therapeutic Yoga Consultant Level - 7**



B	Kidney
C	Heart
D	Liver
<b>ANS</b>	<b>C</b>
58	इनमें से कौन सा अंग वक्ष गुहा में स्थित है?
ए	पेट
बी	किडनी
सी	हृदय
डी	लिवर
<b>उत्तर</b>	<b>सी</b>
59	What is the opening between the right auricle and the right ventricle called?
A	Aortic valve
B	Bicuspid valve
C	Tricuspid valve
D	Pulmonary valve
<b>ANS</b>	<b>C</b>
59	दाएँ अलिन्द और दाएँ निलय के बीच के द्वार को क्या कहते हैं?
ए	महाधमनी वाल्व
बी	द्विकपर्दी वाल्व
सी	त्रिकपर्दी वाल्व
डी	फेफड़े के वाल्व
<b>उत्तर</b>	<b>सी</b>
60	How many times does the heart beat in one minute?
A	40-60
B	100-160
C	70-80
D	80-120
<b>ANS</b>	<b>D</b>
60	दिल एक मिनट में कितनी बार धड़कता है?
ए	40-60
बी	100-160
सी	70-80
डी	80-120
<b>उत्तर</b>	<b>डी</b>
61	Lower body de-oxygenated blood goes to heart through
A	Aorta
B	Inferior vena cava





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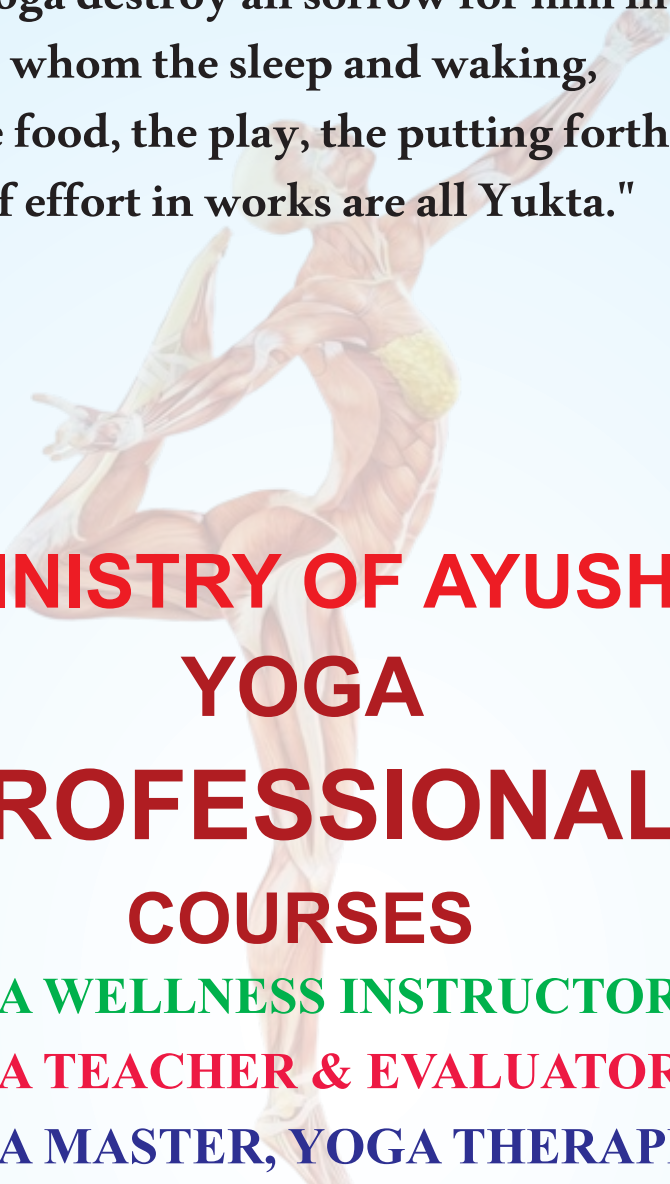
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युक्ताहारविहारस्य युक्तचेष्टस्य कर्मसु ।  
युक्तस्वप्नावबोधस्य योगो भवति दुःखहा ॥

"Yoga destroy all sorrow for him in  
whom the sleep and waking,  
the food, the play, the putting forth  
of effort in works are all Yukta."



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