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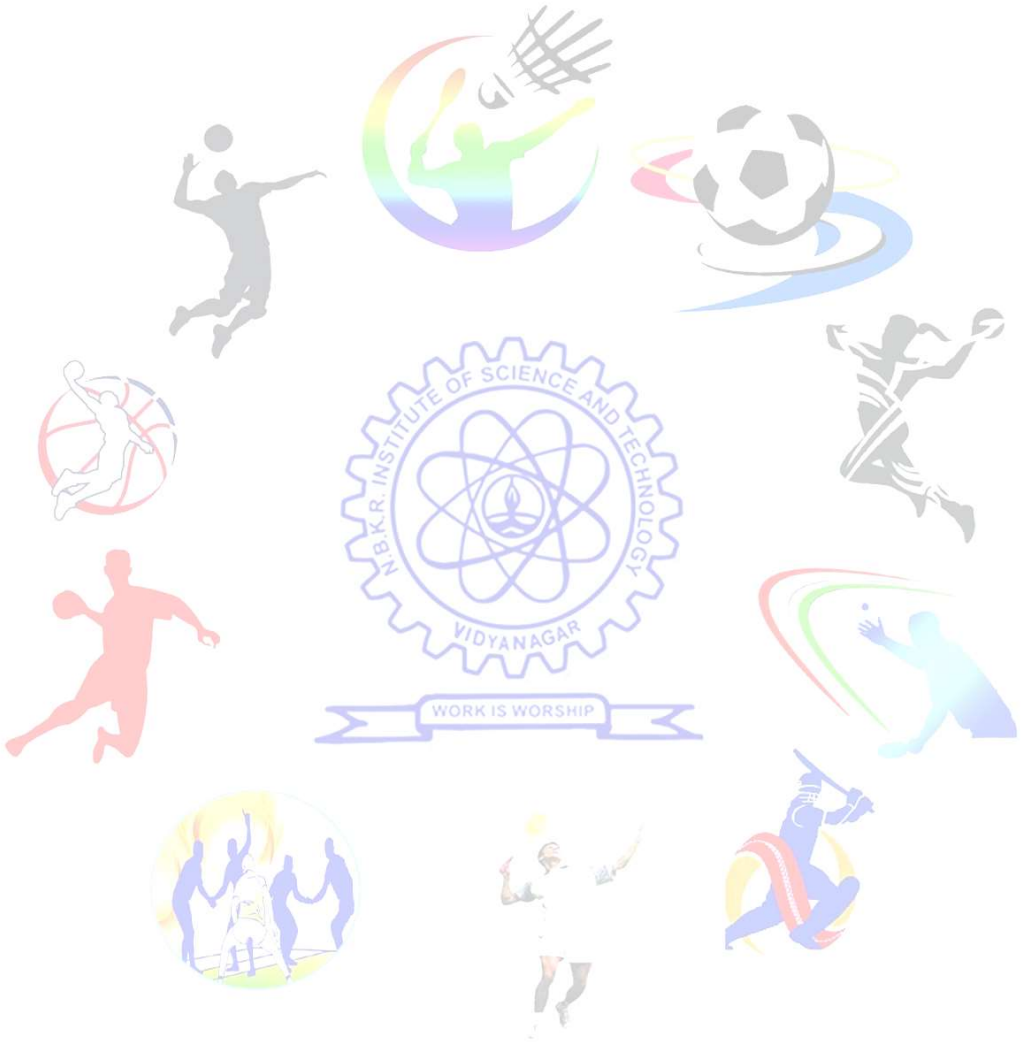
DEPARTMENT OF PHYSICAL EDUCATION

HEALTH AND WELLNESS, YOGA AND SPORTS

(Common to All branches of Engineering)

Dr. V. Mallikarjuna Reddy, M.P.Ed.,Ph.D
Physical Director
Department of Physical Education
N.B.K.R. Institute of Science and Technology, Vidyanagar
Phone: +91 9441844120
Email: pd@nbkrist.org



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UNIT – 01

1.1 Health

Health is a state of complete physical, mental, and social well-being, not merely the absence of disease or infirmity. It encompasses a holistic balance of various factors that contribute to an individual's overall vitality and quality of life. This multidimensional concept extends beyond just the absence of illness to encompass elements such as emotional resilience, social connections, environmental factors, and access to healthcare services.

1.2 Dimensions of Health

Let us come to considering the physical, mental and social dimensions of health in greater detail. These are the components of health cited in the WHO definition. In addition, we shall take a look at some of the newer dimensions of health like spiritual and vocational. As we shall see, all these dimensions are closely related to, and interact with, each other.

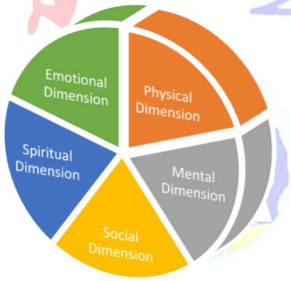

Fig. Dimensions of Health

1.2.1 Physical Dimension

Physical well-being implies a state in which every cell and organ is functioning at optimum capacity and in harmony with the rest of the body. It is a very important component of health. And in fact, in practical terms, generally when we say that a person is healthy, we are referring to this dimension. Physical health is comparatively easy to identify and describe.

Some of the signs of physical well-being of a person are:

- Lustrous hair
- Healthy scalp
- Good complexion
- Clean skin
- Firm flesh
- Bright, clear eyes
- No malformations of skeleton
- Weight normal for height and age
- Well developed and firm muscles
- Smooth, easy, coordinated body movements
- Regular activities of bowels and bladder
- Good appetite
- Sound sleep

In such a state, the organs of the body are of normal size and function normally, and all the senses (such as sight and hearing) are intact. Physical health can be assessed by measures such as clinical examination, dietary and nutritional assessment and laboratory investigations.

You must be aware that it is this dimension of health that has been receiving the most attention.

1.2.2 Mental Dimension

Mental health is a vital component of total health. It is basic for dealing effectively with reality, with oneself and with others. Only a mentally healthy person is able to meet her life problems in such a way as to provide her with a feeling of personal satisfaction and to contribute satisfactorily to the welfare of the society. A person who is mentally healthy is one who is

- free from unsolvable internal conflicts and is able to arrive at decisions
- is confident about her own abilities but recognises her faults
- has high self-esteem
- assumes responsibilities according to her capacity and finds satisfaction in their accomplishment
- is not in the habit of condemning or pitying herself all the time
- is able to handle any situation without getting too upset or tense
- has good control over her emotions and does not give in frequently to strong feelings of fear, jealousy, anger or guilt
- adapts to situations and people
- is sensitive to the emotional needs of others
- deals with others with consideration
- is well adjusted and gets along well with others

It is difficult to determine just when a person is no longer mentally healthy, as also when the boundaries are not that clear. What would you say about somebody who lacks self-esteem or is indecisive? The extent is obviously an important criterion. And as is true of health in general, mental health is not simply the absence of mental illness. So what is important is not just the absence of negative attributes, but the presence of positive ones. As things stand, our knowledge of mental health is still incomplete and we do not have precise tools for measuring mental health.

The fact that mental well-being and physical well-being are interrelated is a common observation. It is also suggested by the ancient concept of sound mind in a sound body. Poor mental health affects physical health and vice-versa. Psychological factors play a major role in physical disorders like stomach ulcer, bronchial asthma and high blood pressure.

1.2.3 Social Dimension

A person's health is not just her physical and mental well-being. A healthy person should be well adjusted in the community of which she is a part and should be able to function for the betterment of her community.

The social dimension of health includes the person's ability to see herself as a member of a larger community, the quantity and quality of her interpersonal relationships with others and the extent of her involvement with the community. She should fulfil her social obligations. These include obligations to the family as well as the community. In addition, she should be able to relate to others, that is, help others and get along well with them.

As in the case of mental health, while extreme forms of social ill-health are easy to identify, the same is not true of minor deviations. All of us would recognise criminals as socially ill individuals, and acts like theft and murder as manifestations of social ill-health, but when it comes to areas like fulfilling one's responsibility and ability to get along well with others, the line between normal and abnormal gets nebulous.

Like mental well-being, our knowledge of social well-being is imprecise and we need better yardsticks to measure this dimension of health.

The three aspects of health, that is, physical, mental and social well-being, mentioned in the WHO definition, are closely interrelated. Change in any one of them is normally accompanied by changes in the other aspects too. For example, recall how your mental and social well-being had been affected when you had been ill! Similarly, if you are very tense about something, you may lose your appetite and gradually your physical well-being may get influenced. The way you interact with others may also get affected.

Let us now take a look at two more dimensions of health, which are not

mentioned in the WHO definition. These are the spiritual dimension and the vocational dimension. Though still not precisely defined, these dimensions are fast gaining recognition. A few other dimensions have also been suggested such as philosophical, cultural, environmental and educational, but we shall not go into these.

1.2.4. Spiritual Dimension

With the increasing acceptance of the concept of holistic health, it is being widely believed that time has come to give serious consideration to the spiritual dimension and to the role it plays in health and disease. Spiritual health, in this context, refers to the striving to understand the meaning and purpose of life. It is that "something" which goes beyond physiology and psychology. As you can observe, spiritual health does not really lend itself to a concrete definition. But it does include integrity, principles and ethics, belief in concepts that may not have a scientific explanation, commitment to some higher being and a feeling of being linked to the whole universe to comprise, as mentioned earlier, a perception of the meaning and purpose of life.

You would have noticed that the spiritual dimension of health, because of being relatively new concept and because of its very nature, has yet to acquire a precise, universally accepted definition. A person has to be at peace with herself before she can be at peace with the world!

1.2.5 Emotional Dimension

Emotional health is one aspect of mental health. It is your ability to cope with both positive and negative emotions, which includes your awareness of them. Emotionally healthy people have good coping mechanisms for negative emotions, and they also know when to reach out to a professional for help.

Emotional wellness is tied to physical health. People who experience great amounts of stress and negative emotions will sometimes develop other health problems. These problems are not caused directly by the negative feelings, but by behaviours that negative emotions can influence due to a lack of emotional regulation. For example, some people enjoy smoking cigarettes or drinking alcohol as a way to relieve stress. However, those habits put you at a greater risk for cancer, heart disease, and other illnesses.

Keep in mind that a person can experience mental illness or bad days, and still have good emotional wellness. Mental illness often have deeper causes like a chemical imbalance or trauma.

1.3 Factors Affecting Overall Health

The overall health of an individual is affected by many factors. The basic factors that affects the health of an individual in a positive manner are described below.

1.3.1 Physical Activity

Regular physical activity, such as walking, cycling, wheeling, doing sports or active recreation, provides significant benefits for health. Some physical activity is better than doing none. By becoming more active throughout the day in relatively simple ways, people can easily achieve the recommended activity levels.

Physical inactivity is one of the leading risk factors for non-communicable diseases mortality. People who are insufficiently active have a 20% to 30% increased risk of death compared to people who are sufficiently active.

Regular physical activity can:

1. Muscular and cardiorespiratory fitness.

2. Improve bone and functional health.

3. Reduce the risk of hypertension, coronary heart disease, stroke, diabetes, various types of cancer (including breast cancer and colon cancer), and depression.

4. Reduce the risk of falls as well as hip or vertebral fractures.

5. Help maintain a healthy body weight.

1.3.2 Nutrition

Good nutrition equates to receiving enough (but not too much) of the macronutrients (proteins, carbohydrates, fats, and water) and micronutrients (vitamins and minerals) so that the body can stay healthy, grow properly, and work effectively. The phrase "you are what you eat" refers to the fact that your body will respond to the food it receives, either good or bad. Processed, sugary, high-fat, and excessively salted foods leave the body tired and unable to perform effectively. By contrast, eating fresh, natural whole foods fuels the body by providing what it needs to produce energy, promote metabolic activity, prevent micronutrient deficiencies, ward off chronic disease, and promote a sense of overall health and well-being.

1.3.3 Mental Well-being

Mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act as we cope with life. It also helps determine how we handle stress, relate to others, and make choices. Mental health is important at every stage of life, from childhood and adolescence through adulthood and aging.

Mental disorders are serious conditions which can affect your thinking, mood, and behaviour. They may be occasional or long-lasting. They can affect your ability to relate to others and function each day.

Mental health is important because it can help you to:

1. Cope with the stresses of life.

2. To be physically healthy.

3. Work productively.

4. Realize your full potential.

1.3.4 Proper Sleeping Pattern

Sometimes, the pace of modern life barely gives you time to stop and rest. It can make getting a good night's sleep on a regular basis seem like a dream. But sleep is as important for good health as diet and exercise. Good sleep improves your brain performance, mood, and health. Not getting enough quality sleep regularly raises the risk of many diseases and disorders. These range from heart disease and stroke to obesity and dementia.

Healthy sleep encompasses three major things. One is how much sleep you get. Another is sleep quality that you get uninterrupted and refreshing sleep. The last is a consistent sleep schedule. People who work the night shift or irregular schedules may find getting quality sleep extra challenging.

1.4 Physical Fitness

The physical fitness definition is the ability to perform daily tasks with ease, without becoming tired, and with extra energy to enjoy leisure-time activities such as hobbies and extra daily tasks. Physical fitness is when a person can execute daily activities with maximum performance, endurance, and strength. A person that is physically fit can also manage some health-related diseases, exhaustion, and undue stress.

1.5 Components of Physical Fitness

There are two basic components of physical fitness. They are Health related fitness components and Skill related fitness components.

1.5.1 Health Related Fitness Components

The following are lifelong fitness components necessary to ensure the body can perform normal daily tasks.

1. Cardiovascular Endurance: The ability of the heart, blood vessels, and lungs to supply oxygen to the working muscles. Cardiovascular endurance can be tested by completing the mile run, 1.5 mile run, step test, PACER, 12 minute cycle, or the 12 minute swim.

2. Muscular Strength: The ability of the muscles to exert a force. The maximum amount of force that a muscle can generate in a single effort. Muscular strength in the upper body is tested by the maximum bench press and the lower body by the maximum leg press.

3. Muscular Endurance: The ability to efficiently use muscles over a longer period of time. The ability of a muscle to repeatedly contract or sustain continuous contraction involving less than maximum force. Muscular endurance can be tested by performing the one minute sit-up test or push-up test.

4. Flexibility: The ability to move at the joints through a full range of motion. The range of motion through which the body's joints are able to move. Flexibility is evaluated with a sit and reach test, arm and shoulder flexibility test, and prone trunk test.

5. Body Composition: The amount of body weight that is fat compared to muscle, bones, and other body tissues. Body fat percentage can be estimated by four different testing protocols: skinfolds, hydrostatic weighing, bio-impedance analysis, and BMI (Body Mass Index).

1.5.2 Skill Related Fitness Components

The following components are related to sport/athletic performance and they can be argued to be improved by one's training (inherent to or improved by training).

1. Speed: Also referred to as movement time, the ability to move the body or parts of it very quickly. (40 yard Dash/20 yard Dash)

2. Power: The ability to exert muscular strength quickly, strength and speed combined (standing long jump, vertical jump).

3. Agility: The ability to start, stop and change direction quickly and with precision (shuttle run, jingle jangle, 3 cone drill).

4. Balance: The ability to maintain a certain posture or to move without falling (balance beam activities).

a. Static Balance: Maintain equilibrium in a stationary position.

b. Dynamic Balance: Maintain equilibrium when moving the body.

5. Reaction Time: Also referred to as quickness, the period from when a stimulus is perceived to when movement begins (starting a race, tennis ball drop).

6. Coordination: The ability to use your senses together with your body parts; ability to use two or more body parts at the same time (hitting a tennis ball, hand-eye coordination/timing).

1.6 Interconnection between Health and Fitness

Health and fitness are interrelated concepts that are crucial for leading a healthy and fulfilling life. Health refers to the overall physical and mental well-being of an individual. Fitness refers to the ability to perform physical activities with ease, endurance, and strength.

Maintaining good health and fitness requires a holistic approach that encompasses a balanced diet, regular

physical activity, adequate sleep, stress management, and preventative healthcare practices. By prioritizing these factors, individuals can improve their quality of life and reduce the risk of developing chronic health conditions.

Leading a healthy lifestyle not only benefits an individual's physical health but also has a positive impact on mental health, relationships, and overall happiness. Whether it is through engaging in physical activity, practicing mindfulness, or seeking support from loved ones, there are many ways to prioritize health, fitness, and well-being.

Regular exercise is essential for overall health and fitness as it has numerous physical and mental health benefits. Exercise helps to improve cardiovascular health, increase muscle strength and flexibility, maintain a healthy weight, and reduce the risk of various chronic diseases such as heart disease, type 2 diabetes, and certain types of cancer.

Physical activity also has a positive impact on mental health. Exercise releases endorphins, which are natural chemicals that can boost mood and reduce stress and anxiety. Additionally, exercise can improve sleep quality and promote better cognitive function.

It is also important to listen to the body and gradually increase the intensity and duration of exercise to avoid injury and maintain adherence. Additionally, it is important to stay hydrated and fuel the body with healthy food and adequate rest to support recovery and performance.

In conclusion, regular exercise is essential for overall health and fitness. Engaging in moderate to intense physical activity for at least 30 minutes most days of the week can provide numerous physical and mental health benefits, improve cardiovascular health, and reduce the risk of various chronic diseases.

1.7 Nutrition

Nutrition is the biochemical and physiological process by which an organism uses food to support its life. It provides organisms with nutrients, which can be metabolized to create energy and chemical structures. Failure to obtain sufficient nutrients causes malnutrition. Nutritional science is the study of nutrition, though it typically emphasizes human nutrition.

1.7.1 Nutrients

Nutrients are substances that provide energy and physical components to the organism, allowing it to survive, grow, and reproduce. Nutrients can be basic elements or complex macromolecules. Approximately 30 elements are found in organic matter, with nitrogen, carbon, and phosphorus being the most important. Macronutrients are the primary substances required by an organism, and micronutrients are substances required by an organism in trace amounts. Organic micronutrients are classified as vitamins, and inorganic micronutrients are classified as minerals.

1.7.2 Types of Nutrients

There are six major nutrients we get from food. They are given below with detailed explanation.

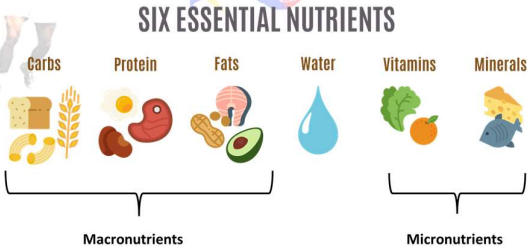

Fig. Six essential nutrients

1. Carbohydrates: Provide energy for the muscles from starches and sugars in the form of glycogen. The best source of

carbohydrates that are digested quickly come from fruits, milk and milk products, and vegetables. Stay away from candy, soda beverages, syrups, and table sugar which provide calories but no vitamins, minerals, and fibre. There are 4 calories per gram of carbohydrates. Complex Carbohydrates contain three or more sugars. Good sources of complex carbohydrates include legumes, starchy vegetables, and whole grain breads and cereals.

2. Fat: Primary source of stored energy that is used in long-term aerobic activity. It also helps the body to absorb vitamins. There are 9 calories per gram of fat.

Saturated: A fat, most often of animal origin, that is solid at room temperature. An excess of these fats in the diet is thought to raise the cholesterol level in the bloodstream.

Unsaturated: A fat derived from plant and some animal sources, especially fish that is liquid at room temperature. Plant sources include avocados, olives, walnuts, and some vegetable oils. Intake of foods containing more unsaturated fats than saturated fats may contribute to reduced blood cholesterol levels.

Trans Fats: These are formed during a process called hydrogenation. Trans fats raise blood cholesterol and can raise the risk of heart disease. May trans fats are found in processed foods such as margarine and donuts, crackers and fast foods.

3. Proteins: Essential for developing new muscle tissue and maintaining existing muscle tissue, helps control the water level inside and outside the cells. These break down into amino acids. There are 4 calories per gram of protein. Sources of protein include meat, dairy products, nuts, certain grains, and beans.

Complete Proteins: Proteins that supply the body with all the amino acids it cannot make on its own. Animal products are complete proteins.

Incomplete Proteins: Proteins that do not supply the body with all the amino acids it cannot make on its own. Plant proteins are incomplete and must be combined to make complete proteins.

4. Vitamins: Help to regulate metabolic reactions in the body. The body needs 13 vitamins. These are: A, D, E, K, C, thiamine, riboflavin, niacin, pantothenic acid, B-6, B-12, and folate.

5. Minerals: Help form structures in the body and regulate body processes. Some examples of minerals are calcium, sodium, potassium, and iron.

6. Water: Essential for temperature control, carries nutrients to cells and removes waste from cells, water makes up 60-70% of the body's weight. All cells need water to function. Water is lost through perspiration, urine, breath, and digestion. It is important to replace lost fluids to avoid dehydration.

1.8 Balanced Diet

A balanced diet refers to the intake of edibles which can provide all the essential constituents necessary for growth and maintenance of the body in definite amount in which they are required by the body. A balanced diet means eating the right amount of foods from all food groups. "A diet which consists of all the essential food nutrients viz. proteins, carbohydrates, fats, vitamins, minerals and water in correct proportion is called balanced diet."

In other words, "Balanced diet is that diet which is consisted of various constituents of food in accurate and appropriate quantity and quality according to the requirement of an individual."

In fact, every individual does not require same type of diet. It differs from individual to individual. The following points are essential to note for balanced diet:

1. It must contain all the essential constituents in adequate amount.

2. There must be definite proportion between the different constituents of food. The proper ratio between proteins, fats and carbohydrates should be 1:1:4.

3. The food should be easily digestible.

4. Heating of food is necessary because it sterilizes foodstuffs and makes it palatable and easily digestible.

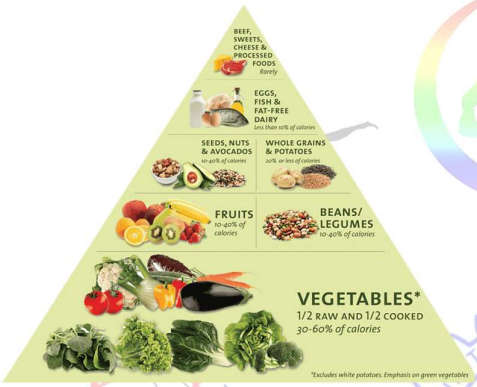

Fig. Pyramid of Balanced Diet

1.8.1 Factors Affecting Balanced Diet

All the persons do not need same type of diet. The amount and quality of balanced diet depends upon certain factors such as age, sex, avocation or occupation and climate etc. These factors, which affect the balanced diet are described below:

1. Age: The amount of food depends upon the age of an individual. It means that balanced diet is different for different persons. In young age much amount of diet is required for proper growth and development. Children require much amount of proteins and fats in comparison to old ones. The old people do not need much amount of food because their digestive systems so not function efficiently. The quality of food is also different for these people. In fact, they should be given less fatty diet.

2. Sex: Balanced diet also depends upon sex of the individual. Males need more amount of food in comparison to females. This has been proved by dieticians. The main reason behind this fact is that males have more height and weight in comparison to females. The other reason is that males perform strenuous work, which require more energy.

3. Body built or Constitution: It is a fact that a tall and fatty individuals need more amount of food in comparison to lean and short statured individuals. Its main reason is that tall and fatty individual spends much amount of energy.

4. Occupation: Occupation also affects the amount of balanced diet. The persons, who are employed in such avocations, where strenuous work is more, need more amount of balanced diet, whereas the persons, who perform less physical work, needs less quantity of balanced diet. The persons who are engaged in mental work, they need more carbohydrates that proteins. Such persons require multi-vitamins diet.

5. Climate: The quality and quantity of balanced diet also depends upon the climate in which we live. If we live in cold climate, we need more quantity of balanced diet. In such climate, we need more quantity of protein and fats. It is also a universal truth that we take more diet in winter. As a matter of fact, owing to greater loss of heat in winter, we require more food. In winter the heat supplying food should be taken in more quantity. In other words, we should take rich fat diet in cold climates. In hot climate, we should take such a balanced diet, which has less fats.

The following can be enough useful to take balanced diet:

Calories in Constituents of Food

1 gram (protein) = 4.1 calories

1 gram (carbohydrates) = 4.1 calories

1 gram (fats) = 9.3 calories

1.9 Immunity

Immunity is the ability of the body to defend itself against disease-causing organisms. Everyday our body comes in contact with several pathogens, but only a few results into diseases. The reason is, our body has the ability to release antibodies against these pathogens and protects the body against diseases. This defence mechanism is called immunity.

1.10 Types of Immunity

There are two major types of immunity:

1. Innate Immunity or Natural or Non-specific Immunity.

2. Acquired Immunity or Adaptive Immunity

1.10.1 Innate Immunity

This type of immunity is present in an organism by birth. This is activated immediately when the pathogen attacks. Innate immunity includes certain barriers and defence mechanisms that keep foreign particles out of the body.

Innate immunity refers to the body's defence system. This immunity helps us by providing the natural resistance components including salivary enzymes, natural killer cells, intact skin and neutrophils, etc. which produce an initial response against the infections at birth prior to exposure to a pathogen or antigens.

It is a long-term immunity in which our body produces the antibodies on its own. Our body has few natural barriers to prevent the entry of pathogens.

1.10.2 Types of Barriers

The four types of barriers are:

1. Physical barrier

These include the skin, body hair, cilia, eyelashes, the respiratory tract, and the gastrointestinal tract. These form the first line of defence.

The skin does more than providing us with fair or dark complexions. Our skin acts as a physical barrier to the entry of pathogens. The mucus coating in our nose and ear is a protective barrier which traps the pathogen before it gets inside.

2. Physiological barriers

We know that our stomach uses hydrochloric acid to break down the food molecules. Due to such a strongly acidic environment, most of the germs that enter our body along with the food are killed before the further process is carried on.

Saliva in our mouth and tears in our eyes also have the antibiotic property that does not allow the growth of pathogens even though they are exposed all day.

3. Cellular barriers

In spite of the physical and physiological barriers, certain pathogens manage to enter our body. The cells involved in this barrier are leukocytes (WBC), neutrophils, lymphocytes, basophil, eosinophil, and monocytes. All these cells are all present in the blood and tissues.

4. Cytokine barriers

The cells in our body are smarter than we give them credit for. For instance, in case a cell in our body experiences a virus invasion, it automatically secretes proteins called interferons which forms a coating around the infected cell and prevents the cells around it from further infections.

1.10.3 Cells involved in Innate Immunity

1. Phagocytes: These circulate through the body and look for any foreign substance. They engulf and destroy it defending the body against that pathogen.

2. Macrophages: These have the ability to move across the walls of the circulatory system. They release certain signals as cytokines to recruit other cells at the site of infections.

3. Mast Cells: These are important for healing wounds and defence against infections.

4. Neutrophils: These contain granules that are toxic in nature and kill any pathogen that comes in contact.

5. Eosinophils: These contain highly toxic proteins that kill any bacteria or parasite in contact.

6. Basophils: These attack multicellular parasites. Like the mast cells, these release histamine.

7. Natural Killer Cells: These stop the spread of infections by destroying the infected host cells.

8. Dendritic Cells: These are located in the tissues that are the points for initial infections. These cells sense the infection and send the message to the rest of the immune system by antigen presentation.

1.10.4 Acquired Immunity

Acquired immunity or adaptive immunity is the immunity that our body acquires or gains over time. Unlike the innate immunity, this is not present by birth. The ability of the immune system to adapt itself to disease and to generate pathogen-specific immunity is termed as acquired immunity. It is also known as adaptive immunity.

An individual acquires the immunity after the birth, hence is called as the acquired immunity. It is specific and mediated by antibodies or lymphocytes which make the antigen harmless. The main function of acquired immunity is to relieve the victim of the infectious disease and also prevent its attack in future. It mainly consists of an advanced lymphatic defence system which functions by recognizing the own body cells and not reacting to them.

The immune system of our body identifies the pathogens which have encountered in the past. It is mainly caused when a person comes in contact with the pathogen or its antigen.

Fig. Flowchart of Immunity

Our body starts producing antibodies to engulf the pathogen and destroy its antigen. When it encounters for the first time, it is called a primary response. Once a body gets used to these pathogens, antibodies are ready to attack them for the second time and are known as naturally acquired immunity. The acquired immunity in our body has certain special features.

1.10.5 Features of Acquired Immunity

1. Specificity: Our body has the ability to differentiate between different types of pathogens, whether it is harmful or not, and devise ways to destroy them.

2 Diversity: Our body can detect vast varieties of pathogens, ranging from protozoa to viruses.

3. Differentiate between self and non-self: Our body has the unique ability to differentiate between its own cells and foreign cells. It immediately starts rejecting any foreign cell in the body.

4. Memory: Once our body encounters a pathogen, it activates the immune system to destroy it. It also remembers what antibodies were released in response to that

pathogen, so that, the next time it enters, a similar procedure is followed by the body to eliminate it.

1.10.6 Types of Acquired Immunity

1. Active Immunity

Active immunity involves the direct response to a foreign antigen within the body. In the case of the acquired or adaptive immune system, the body remembers the pathogens it has encountered in the past. This is a direct result of the active immune system.

Active immunity occurs when we are in contact with the pathogen or its antigen. Antigens stand for antibody generator. It is with the help of antigens released by the pathogen that our body tackles the pathogen. So what our body does is, it starts producing antibodies to attack the pathogen based on its antigen. When this happens for the first time, it is called a primary response. Once a body experiences a pathogen for the first time, it keeps a few of the antibodies that attacked the pathogen just in case it attacks for the second time. This is known as natural active immunity.

2. Passive Immunity

Passive immunity involves the immune response by the antibodies attained from outside the body. The primary response by the body to a pathogen it encounters for the first time is rather feeble, so the first encounter is always a little harsh on the body.

Biotechnology has grown tremendously in the last decade or two and now we are capable of manufacturing antibodies for diseases. These ready-made antibodies protect the body even if the body hasn't yet experienced a primary response. While active immunity may protect us from a disease for a lifetime, passive immunity is the more short term. Passive immunity develops immediately and our body could begin its attack on the pathogen right away.

1.10.7 Immune System

The immune system is our body's best defensive system. It functions against infringing microorganisms and keeps us healthy.

Immunology is a branch of biology which deals with complex body functions of the immune system. The ability to tackle antigens or pathogens and being healthy is referred to as immunity. The immune system is composed of cells, tissues, and organs that work unitedly in protecting our body. This system defends the human body from the trespassing pathogens in a variety of ways. They work based on memory, some are innate, and some are acquired. Hence, they function in allergies, autoimmunity and organ transplantation.

The most important cells involved in the immune system are white blood cells (or) leukocytes, which are involved in destroying disease-causing organisms or substances. Apart from the leukocytes, lymphoid organs, tissues, and proteinaceous molecules antibodies are also involved in the defensive system.

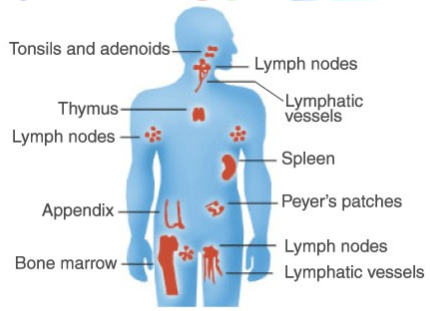

Fig. Immune System – Lymphoid Organs

Lymphoid Organs

The organs of the immune system which are involved in defending the body against invading pathogens causing infections or spread of tumours is termed as Lymphoid organs. It includes bone marrow, blood vessels, lymph nodes, lymphatic vessels, thymus, spleen, and various other clusters of lymphoid tissue. Lymphoid organs are

the site of origin, maturation, and proliferation of lymphocytes. They exist as primary, secondary or tertiary and these are based on their stage of development and maturation.

These organs consist of fluid connective tissues with different types of leukocytes or white blood cells. The highest percentage of Lymphocytes are present in the white blood cells or leukocytes.

1. Primary lymphoid organs

The primary lymphoid organs produce and allow the maturation of lymphocytes. It also serves by generating lymphocytes from immature progenitor cells. Therefore it is referred to as the central lymphoid organs. Examples of primary lymphoid organs include thymus and the bone marrow.

2. Secondary lymphoid organs

The secondary lymphoid organs are referred as the peripheral lymphoid organs as they are involved in promoting the sites for the interaction of lymphocytes with the antigen to become effector cells. They initiate an adaptive immune response. The secondary lymphoid organs Examples of secondary lymphoid organs spleen, tonsils, lymph nodes, appendix, etc. are secondary lymphoid organs.

3. Tertiary lymphoid organs

The tertiary lymphoid organs usually contain very less number of lymphocytes. It plays an important role during the inflammation process.

1.11 Relation between Diet and Fitness

The relationship between diet and fitness is intricate and profound, with dietary choices exerting a significant impact on physical performance, recovery, and overall fitness levels. Each macronutrient and micronutrient plays a distinct role in supporting exercise and muscle growth, contributing to the optimization of athletic performance and the attainment of fitness goals.

Carbohydrates serve as the primary fuel source for high-intensity exercise, supplying readily available energy to fuel muscle contractions. Adequate carbohydrate intake before and during exercise helps sustain performance by replenishing glycogen stores and preventing fatigue. Additionally, carbohydrates facilitate recovery by promoting glycogen re-synthesis post-exercise, aiding in muscle repair and restoration of energy levels.

Proteins are essential for muscle repair, maintenance, and growth, making them crucial for athletes and fitness enthusiasts. Consuming an adequate amount of protein supports muscle protein synthesis, helping to rebuild and repair muscle tissue damaged during exercise. Furthermore, protein intake post-exercise stimulates muscle recovery and adaptation, optimizing gains in strength and muscle mass.

Fats play a vital role in providing sustained energy during low to moderate-intensity exercise and are essential for overall health. While carbohydrates are the primary fuel source for high-intensity activities, fats become increasingly important for longer-duration endurance events. Additionally, dietary fats are involved in the absorption of fat-soluble vitamins and contribute to hormone regulation, which influences metabolism and energy production.

Micronutrients such as vitamins and minerals are essential for numerous physiological processes that impact exercise performance and recovery. For instance, vitamin D plays a role in muscle function and immune health, while minerals like iron and magnesium are critical for oxygen transport, energy metabolism, and muscle contraction.

In conclusion, dietary choices profoundly influence physical performance, recovery, and overall fitness levels. By prioritizing

macronutrient balance and adequate intake of essential micronutrients, individuals can optimize their nutritional status to support exercise performance, enhance muscle growth, and achieve their fitness goals effectively.

1.12 Globalisation and its Impact on Health

Globalization has brought about significant changes in various aspects of health, with both positive and negative effects on individuals and populations worldwide. Understanding these impacts across different dimensions of health is essential for developing strategies to mitigate potential negative consequences while maximizing the benefits.

1.12.1 Positive Effects:

1. Improved Access to Healthcare: Globalization has facilitated the transfer of medical knowledge, technology, and expertise across borders, leading to improved access to healthcare services and advancements in medical treatment worldwide.

2. Increased Awareness and Education: Globalization has expanded access to health information and education through digital media and international collaborations, empowering individuals to make informed decisions about their health and well-being.

3. Enhanced Disease Control and Prevention: Global efforts to combat infectious diseases, such as HIV/AIDS, malaria, and tuberculosis, have benefited from international partnerships and coordinated responses, leading to improved disease surveillance, prevention, and control strategies.

1.12.2 Negative Effects:

1. Altered Dietary Patterns: Globalization has led to the widespread availability and consumption of processed foods high in sugar, salt, and unhealthy fats, contributing to the global rise in obesity, diabetes, and other diet-related diseases.

2. Health Inequalities: While globalization has improved access to healthcare in many regions, it has also widened health disparities between high-income and low-income countries, exacerbating existing inequalities in healthcare access, quality, and outcomes.

3. Increased Disease Transmission: Globalization has facilitated the rapid spread of infectious diseases through increased travel, trade, and urbanization, making populations more vulnerable to pandemics and emerging infectious threats.

4. Cultural Perceptions of Health and Wellness: Globalization has influenced cultural norms and perceptions of health and wellness, leading to the adoption of Westernized lifestyles and ideals of beauty, which may conflict with traditional cultural practices and values related to health.

1.12.3 Strategies for Mitigating Negative Health Impacts:

1. Strengthening Healthcare Systems: Investing in healthcare infrastructure, workforce training, and access to essential medicines and technologies can improve healthcare delivery and reduce disparities in healthcare access and outcomes.

2. Promoting Healthy Dietary Patterns: Implementing policies to regulate food marketing, promote nutrition education, and encourage the consumption of fresh, whole foods can help combat the rise of diet-related diseases associated with globalization.

3. Enhancing Disease Surveillance and Response: Strengthening global health security through improved disease surveillance, early detection, and rapid response capabilities can mitigate the risks of infectious disease outbreaks and pandemics.

4. Embracing Cultural Diversity: Promoting cultural competence and respecting diverse cultural practices and beliefs can help address cultural barriers to healthcare access and improve health outcomes among diverse populations.

1.13 Body Mass Index (BMI)

Body mass index (BMI) is a value derived from the mass (weight) and height of a person. The BMI is defined as the body mass divided by the square of the body height, and is expressed in units of kg/m2, resulting from mass in kilograms (kg) and height in metres (m). If pounds and inches are used, a conversion factor of 703 (kg/m2)/(lb/in2) is applied.

$$BMI = \frac{Weight_{(kg)}}{Height^2_{(m)}} = \frac{Weight_{(lb)}}{Height^2_{(in)}} \times 703$$

The BMI may be determined first by measuring its components by means of a weighing scale and a stadiometer. The multiplication and division may be carried out directly, by hand or using a calculator, or indirectly using a lookup table (or chart). The table displays BMI as a function of mass and height and may show other units of measurement (converted to metric units for the calculation). The table may also show contour lines or colours for different BMI categories.

WEIGHT STATUS	BODY MASS INDEX (BMI), kg/m^2
Underweight	<18.5
Normal range	18.5 – 24.9
Overweight	25.0 – 29.9
Obese	≥ 30
Obese class I	30.0 – 34.9
Obese class II	35.0 – 39.9
Obese class III	≥ 40

Fig. Chart showing detailed information

The BMI is a convenient rule of thumb used to broadly categorize a person as based on tissue mass (muscle, fat, and bone) and height. Major adult BMI classifications are underweight (under 18.5 kg/m2), normal weight (18.5 to 24.9), overweight (25 to 29.9), and obese (30 or more).When used to predict an individual's health, rather than as a statistical measurement for groups, the BMI has limitations that can make it less useful than some of the alternatives, especially when applied to individuals with abdominal obesity, short stature, or high muscle mass.

UNIT – 02

2.1 Yoga

Yoga is a healthy way of life, originated in India. Now, it is believed to be a form of science accepted all over the world. The western culture is also accepting it as a healthy form of scientific exercise. Although the origin of yoga is obscure, it has a long tradition. Yoga for a common person contains the practices of yama, niyama, asana, pranayama, pratyahara, kriya and meditation, which are helpful to keep oneself physically fit, mentally alert and emotionally balanced. This ultimately prepares ground for the spiritual development of an individual. The main emphasis of the present yoga curriculum for school-going children is to develop their physical fitness, mental development and emotional stability. Posture or asana form an important basis of this curriculum. These have, therefore, been given more weightage. Though other yogic activities have also been included in the curriculum.

The word 'Yoga' is derived from Sanskrit root yuj which means 'join' or 'unite'. This may be taken as the union of body, mind and soul, and is used in the literature both as an end as well as means. As an end, yoga signifies 'integration of personality' at the highest level. As means, yoga includes various practices and techniques which are employed to achieve the development of such integration. These practices and techniques are means in the yogic literature and are also referred collectively as 'Yoga'.

2.2 Importance of Yoga

Good health is the right of every human being. But this right depends on individual, social and environmental factors. Along with environmental or social factors to a large extent, we can develop a better immune system and a better perception of oneself so that other conditions do not affect us adversely and we can achieve good health.

Health is a positive concept. Positive health does not mean merely freedom from disease, but it also include a jubilant and energetic feeling of well-being with an amount of general resistance and capacity to easily cultivate immunity against specific offending agents.

Yoga is one of the most powerful drugless system of treatment. It is having its own concept of wellness which has been scientifically understood and presented by many. Yoga can be adopted as lifestyle for promoting our physical and mental health. Yoga, if introduced at the school level, would help to inculcate healthy habits and lifestyle to achieve good health.

The aim of yoga thus, at the school level, is to encourage a positive and healthy lifestyle for physical, mental and emotional health of children. Yoga helps in the development of strength, stamina, endurance and high energy at physical level. It also empowers oneself with increased concentration, calm, peace and contentment at mental level leading to inner and outer harmony.

2.3 Yoga Origin and Originator of Yoga

2.3.1 Yoga and its Origins

At present Yoga is very much discussed line of learning. It is necessary for its future growth to know what is its origin?, who was its original author? What is its present position? There are two sources ancient archaeological ruins and literature. The archaeological ruins of Indus valley civilization are the proof of Yoga being practiced at that time in India. Its form, its expansion and its depth can be observed there. Similarly in ancient sutra and also

from popular instructive Pauranik literature - both types of literatures, it can be noticed.

In the beginning of twentieth century very few ruins of prehistorical time were found. But with the discovery of Mohan-ja Dero and Harappa ruins, a 5000 years old very highly developed, prosperous and thriving civilization came to be known. Because this had developed and grown in the valley of river Indus it is called Indus valley civilization. Certain things discovered from the ruins reveal many important information about use of yoga by the people at that time. These things are coins, and idols made of metal, stone and earth. One of the most important stone idol broken from waist down is of a man wearing a cloak. The eyes are closed and seem to be engrossed in meditation. Many information about yoga are available from the coins obtained from the ruins. According to John Marshall the images on the coins are those of yogis. There are many different opinions about these images on the coins. According to some scholars they are images if Pashupati Shiva. According to others they are of the first Tirthankara Aadinath Rishabha of Jaina tradition

These ancient archaeological ruins take yoga back by 5000 tears. According to different scholars the connection of yoga prevailing at that time with present is in mainly two yoga traditions - Jaina yoga and Tantra yoga.

2.3.2 The originator of Yoga - Hiranyagarbha

The information about the originator of Yoga is found in the ancient literature. There are two kinds of ancient literature. Sutra literature is that literature wherein extensive thoughts are written in very brief, systematic, logical and in Sutra style. This is mostly used by scholars. The other kind is in which the thoughts are written in extensive description, interesting but simple and in story telling or instructive style. In fact the information about the originator of yoga is obtained from the second kind of literature. Yogasutra by Maharshi Patanjali is the only authoritative literary work where the description of Yoga-learning is found in its pure thinking. Almost all commentators and critiques of Yogashastra believe that Patanjali Yogasutra is created on the basis of Hiranyagarbha Shastra. In Mahabharat (0/2/349-65) it is said - Hiranyagarbha is the (real) creator of Yoga. There cannot be anyone ancient to him.

In Mahabharat (12/342/96) it is said - This is the same majestic Hiranyagarbha whose praise is given in Veda. All yogi worship him and he is called Vibhu (the supreme being). Descriptions of ancient happenings, personalities and historical facts are available in Puran literature. Therein the ancient traditions are found in writing.(documented). In Shree Devibhagvat Puran (uttarardha, skandha ekadasha adhyaya) Lord Rishabhadeo only is praised and worshipped in the name of Hiranyagarbha, Yogeshvar, Yoganipun, etc. In Shrimad Bhagavat (5/4/9) it is said "Bhagvan Rishabho Yogeshvar".And in thesame (5/5/25) it is said that Lord Rishbha is expert in different Yoga learning. Faith in lord Rishabha is continuously there from ancient times till today. He is also known as visionary of Hattha yoga.

In earlier Jain Puran (sarga 24) Lord Aadinatha is described by the emperor Bharat Chakravarti in the following words - Oh Lord! You are Hiranyagarbha, you are god, you are the greatest, you have the name of Rishabha, you are decorated with sign of vrishbha, you are the divine one and you are the one to create the original form of soul by yourself.

According to tantra literature Shiva is the first propounder of Tantra Shastra. In Shivapuran (4/ 47-48), Rishbhdeo is accepted as incarnation of Shiva and the original Shiva. Today it is accepted that Aadinath, Rishabha and Shiva are the same

person. Aadinath Rishabha is the originator of Yoga. He is Hiranyagarbha.

2.4 Classification of Yoga According to Bhagvad Gita

Many tools/means can be used for yoga. These tools /means are also called yoga. There is no agreed upon classification of these tools. Most of these are connected with each other. In all traditional yoga systems many yoga procedures are used. Depending upon an individual, time and place emphasis is given on one of the procedures. But when it becomes an orthodox tradition or institute, many problems are created. Quarrels and intolerance are the results. Then some great men initiate a new age. In the present era Swami Vivekanand, Mahrshi Aravind and Acharya Mahaprajna have emphasised on synthesis of all yoga traditions.

2.4.1. Jnana Yoga

This is a path of knowledge and wisdom. A wise man /knowledgeable man removing ignorance, wrong perceptions and illusions identifies self (sva), pure consciousness and the divine element. Accomplishment of Jnana Yoga is done by study and meditation. salvation is not possible without the knowledge of ultimate truth. The knowledge of ultimate truth can be obtained by mental and emotional growth and its purity. Listening and contemplation are its chief means. Mostly very intelligent persons take this path. Only people with inquisitive mind intent / tread on this path. In Jnana Yoga illusion and ignorance are considered as cause of all miseries and unhappiness. And to contemplate on these causes and to attain the ultimate truth is the right knowledge (jnana). Jnana Yoga is self realisation.

Jnana Yoga has also its own limitations.The person engrossed in Jnana Yoga is always lost in the knowledge and gets cutoff from the society. A common man cannot have that high level of intelligence to go for Jnana Yoga. Only intellectual study without emotional purity creates discussions, arguments and counter-arguments and insistence and quarrels. Too much of intellectual activity can effect the digestion and the body becomes weak. To keep away these limitations it is necessary to cultivate non-absolutism. Karmayoga or Hathayoga is necessary for healthy body.

2.4.2 Bhakti yoga

This yoga is based upon bhakti (worship), shraddha (faith) and samarpan (devotion). A devotee devoting himself to a god or a guru (teacher) worships him totally surrendering to him. He experiences oneness with him. Many Indian common people are found following this path It is based upon emotions. The devotee believes that whatever he is doing is done by his god and not by him (the devotee).

Limitation of bhakti yoga is that many times without understanding the real purpose and the meaning the devotee neglecting his own efforts depends only upon or beg for the help of his god. The faith going beyond logic becomes or results into blind faith. The importance of labour, simplicity and restraint become subsidiary resulting into idleness, unemployment and effortlessness. This is not good for any society. Bhakti yoga can be balanced by joining it with Jan yoga and karasa yoga.

2.4.3 Karma yoga

Today karma yoga means path of doing duty and giving service without expecting reward. In this era Mahatma Gandhi, Acharya Tulsi, Vinoba Bhave are unique examples. This is a path of endeavor, independence and self-dependence. According to Gita One should not claim right on the reward. It is opposite of bhakti yoga.

It has also its own limitations. There is a possibility of creation of emotion of arrogance in the person doing his duty. Here the endeavor is very strong but it is

connected with the problem of arrogance. One has to adopt path of non-attachment to solve this problem. Everybody cannot follow this path of karma yoga because not getting reward may make him frustrated. One more limitation is that an immature follower may expect rewards in the form of position, name, honor, fame, accomplishment etc. This tendency can became cause of mutual conflicts which are fatal for healthy running of society and institutes. But the boundaries of karma yoga grow if the noble emotions of duty without reward, fulfilling responsibility, doing service only etc. get connected with it.

2.5 Yoga Sutras of Patanjali

The most popular book of Bharatiya spiritualism and yoga is Yoga-sutra of Patanjali (200 B.C.). In his Yoga-sutra he has done a beautiful collection and co-ordination of sadhana systems and concise, well-organised, logical and philosophical deliberation of intellectual techniques of past. Patanjali by means of only a few words reveals the growth/development of complete yoga path.

Yogasutra of Maharshi Patanjali presents practical a and experimental side of Sankhya darshan. How to attain reasoning intelligence? This is learnt from Yoga-sutra. This Yoga-sutra is divided into four parts. These are Samadhi, sadhan, Vibhooti and Kaivalya. There are total 185 sutra (verses). Characteristics and form are described in the first part-Samadhi. In the second part - Sadhan, causes and solutions of unhappiness are described. In the third part- Vibhooti, dharana, dhyana and samadhi, samyam and the accomplishments resulting from them are described. In the last part -Kaivalya the form of chitta is propounded.

2.6 Ashtang Yoga

There are eight parts of yoga; Yama, Niyama, Aasan, Pranayam, Pratyahar, Dharana, Dhyana, and samadhi. The primary moral study is integral part of yama and niyama. They control the agitation / restlessness generated because of raga-dvesh.

2.6.1 Yama: They are five.

1. Ahinsha
2. Satya
3. Asteya
4. Brahmcharya
5. Aparigraha

2.6.2 Niyama: The meaning of the word niyama is regular practice and maintaining vrata. They are also five.

1. Shauch
2. Samtosh
3. Tapa
4. Swadhyaya
5. Ishvarpranidhan

2.6.3 Aasan: It is that position in which the body stays comfortable. The body becomes very strong. Affection towards body reduces gradually. Capacity to bear happiness and unhappiness increases. The purpose of aasan is to prepare the body suitable for spiritual development.

2.6.4 Pranayam: In pranayam one separates inhaling and exhaling, sitting very steady.

2.6.5 Pratyahar: In pratyahar the sense-organs are removed from their respective subjects and concentrated internally. Practitioner of these two can control his mind.

2.6.6 Dharana: Steadying of chitta in one place is dharana. This dharana, dhyan and samadhi can take practitioner up to the depths of the soul.

2.6.7 Dhyan: In dhyan chitta remains only on one subject. In the condition of dhyan there are distinct separate concepts of dhyan (the action), dhyata (the doer) and

dhyeya (the goal i condition where there is cognition of one object only is that

2.6.8 Samadhi: This-samadhi-is the aim and the highest step of Yoga. Patanjali has defined it: When doing meditation only the support remains, only the goal remains. Here the seer, the scene and seeing, the doer, the goal and the action become one. The difference between them vanishes

There are two kinds of samadhi Samprajnat and Asamprajnat.

2.6.8.1 Samprajnata Samadhi: Patanjali has described this kind of samadhi as the state in which there is total wane of fickleness of mind (mind stops wandering over different subjects), and there is full concentration on one only. This is called chitta samadhi parinam (result). Consistent long period study and practice are necessary for this result. This cannot be done without full faith Faith produces motive and enthusiasm. This makes memory purer. Pure memory increases concentration and steadiness. When chitta reaches this stage, prajna-wisdom is born. This state of samadhi is called Samprajnat samadhi The one who knows, the knowable and the knowledge appear one. In this state chitta is very near to total nirodh, but total nirodh is not there. This sariadhi is also called sabija-samadhi, salamban-samadhi and prajna-samadhi Very detailed description of the subtle states which exist during samadhi is found in Bauddha-Yoga. On similar basis the following four levels are prescribed with some difference in Yoga- Sutra.

1. Savitark Samadhi - As a first step the meditator concentrates his chiita on a vitark- gross support eg. elephant. Gradually this results into dhyan and samadhi. This is Savitark samadhi.

2. Savichar samadhi - When the concentration of chitta is instead of gross is on the subtle side of the support, such as one of the senses (touch, taste, smell, sound etc) then the state of samadhi at that level is called Savichar samadhi.

3. Sananda samadhi - With increase in concentration only satva quality remains balance. The other two qualities are ended. The experience of happiness is very intense. So this is called Sananda Samadhi.

4. Sasmita samadhi - Then a stage is reached when together with happiness there is cognition of self that is soul.

2.6.8.2 Asamprajnata Samadhi: Patanjali has defined this as follows Only earlier memories remain behind, all other chitta-vriti disappear. Here the division of the one who knows, the knowable and the knowledge disappear. There is no ego. Also there is no support (beej)left. So this Asamprajnata samadhi is also called nirbeej samadhi.

2.7 Physiological Effects of Yoga

Yoga practices, including asanas (physical postures), pranayama (breathing exercises), and meditation, have profound physiological effects on the human body. Here's an analysis of how each contributes to physical health and vitality:

2.7.1 Asanas (Physical Postures):

1. Muscle Strength and Flexibility: Asanas involve stretching, bending, and holding various postures, which helps in increasing muscle strength and flexibility. Regular practice can improve joint health and range of motion.

2. Improved Circulation: Certain asanas promote blood circulation throughout the body, which can enhance oxygenation of tissues and removal of metabolic waste products.

3. Posture Correction: Asanas encourage proper alignment and posture, which can alleviate musculoskeletal issues and prevent injuries.

4. Balance and Coordination: Many yoga poses require balance and coordination, leading to improved stability and motor skills.

5. Stress Reduction: Engaging in asanas can trigger the relaxation response, reducing levels of stress hormones like cortisol and promoting a sense of calmness.

2.7.2 Pranayama (Breathing Exercises):

1. Enhanced Respiratory Function: Pranayama techniques focus on conscious control of breath, which can strengthen respiratory muscles, increase lung capacity, and improve overall breathing efficiency.

2. Stress Reduction: Deep breathing techniques activate the parasympathetic nervous system, inducing relaxation and reducing stress levels.

3. Improved Oxygenation: Pranayama practices optimize oxygen intake and carbon dioxide elimination, promoting better oxygenation of tissues and organs.

4. Energy Regulation: Certain pranayama techniques are believed to balance the flow of prana (life force energy) in the body, leading to increased vitality and energy levels.

2.7.3 Meditation:

1. Stress Reduction: Meditation induces a state of deep relaxation, reducing physiological markers of stress such as heart rate, blood pressure, and cortisol levels.

2. Enhanced Brain Function: Regular meditation is associated with structural and functional changes in the brain, including increased gray matter density in regions related to attention, memory, and emotional regulation.

3. Improved Immune Function: Meditation has been linked to enhanced immune function, possibly through its stress-reducing effects and modulation of inflammatory responses.

4. Pain Management: Meditation techniques can help alleviate chronic pain by modulating pain perception and promoting a more positive emotional state.

Overall, these yoga practices work synergistically to promote physical health and vitality by improving muscular strength and flexibility, enhancing respiratory function, reducing stress, and fostering overall well-being. Regular practice is key to experiencing the full range of benefits.

2.8 Stress Management through Yoga

A comprehensive blueprint for navigating stress and nurturing mental well-being emerges is embedded within the PYS 1:32-39. Patanjali illuminates eight principles, guiding individuals toward a state of profound inner equilibrium.

1. The practice of a single principle: Addressing obstacles and their accompanying symptoms, Patanjali advocates the practice of concentrated attention on a single principle. This focused endeavor serves as a potent antidote to barriers obstructing mental well-being.

2. Cultivating Positive Attitudes: In connection with emotions of happiness, distress, virtue, and vice, Patanjali introduces the transformative qualities of friendliness, compassion, gladness, and indifference. By nurturing these attitudes, the mind undergoes purification, paving the path to serenity.

3. Breath Regulation: Mastery over the mind is attainable through the regulation of breath, involving controlled inhalation and exhalation. This practice resonates as a powerful method to govern the mind's fluctuation.

4. Engagement with Senses: Directing the mind's activity through sensory experiences stabilizes its fluctuations. By thoughtfully

engaging with the senses, the mind achieves a newfound steadiness.

5. Transcending Sorrow: Accessing the luminous realm beyond sorrow, the mind gains mastery over its own turbulence. This transcendence serves as a beacon guiding the mind toward serenity.

6. Concentration on Dispassionate Persons: Imposing focus on individuals devoid of passion facilitates the mind's subjugation. Through this method, the mind aligns with steadiness.

7. Dream and Sleep Awareness: Providing the mind with insights into dreams and deep sleep fosters steadiness. Knowledge derived from these states nurtures the mind's equilibrium.

8. Tailored Meditation: Through the vehicle of personalized meditation, the mind can be ushered into a state of unwavering focus. Customized meditation practices bolster the mind's tranquility. Ultimately, the pinnacle of Yoga's aspiration rests in achieving complete mental well-being, a state rooted in the mastery of mental fluctuations. This mastery emerges from the twin pillars of persistent practice (Abhyasa, PYS 1:13) and non-attachment (Vairagya, PYS 1:15), fostering resilience in the face of life's challenges. The repetition of the sacred syllable (Pranava Japa, PYS 1:28) and contemplation of its profound essence (Arthabhavanam, PYS 1:28) lead the way to the realization of ultimate mental wellbeing. In the tapestry of Patanjali's teachings, the art of stress management converges with the journey toward holistic mental equilibrium, revealing a profound path to inner harmony and tranquility.

2.9 Effects of Yoga on Mental Health

Mental health is an essential component of overall health and well-being. Mental health disorders such as depression, anxiety, and stress affect millions of people worldwide, leading to a significant burden on individuals and society as a whole. The conventional treatment for mental health disorders usually involves medications and psychotherapy. Therefore, alternative therapies such as yoga have gained popularity as a complementary treatment for mental health conditions. Yoga is an ancient practice that has been used for centuries to promote physical and mental well-being.

Yoga is a combination of physical postures (asanas), breathing exercises (pranayama), and meditation techniques (dhyana) that promote physical and mental well-being. The practice of yoga is believed to balance the body and mind and create a sense of harmony and tranquility. The physical postures and breathing exercises are designed to promote physical strength, flexibility, and relaxation, while meditation techniques are used to improve focus, concentration, and reduce stress.

Several mechanisms have been proposed to explain the effects of yoga on mental health. One of the primary mechanisms is through the regulation of the autonomic nervous system (ANS). Yoga practice has been shown to modulate the ANS by increasing parasympathetic activity and decreasing sympathetic activity. This shift in the ANS balance leads to a reduction in the physiological symptoms of stress, such as increased heart rate and blood pressure. Additionally, yoga practice has been shown to improve emotion regulation and cognitive processes, such as attention and memory, which may contribute to the improvements in mental health (Gard et al., 2014).

Another potential mechanism is through the release of endogenous opioids and other neurochemicals, such as serotonin and gamma-aminobutyric acid (GABA), which are involved in the regulation of mood and anxiety. The physical postures and breathing exercises in yoga have been shown to stimulate the release of these

neurochemicals, leading to improvements in mood and reduced anxiety. The positive effects of yoga on mental health have been demonstrated in various populations, including healthy individuals and those with mental health conditions.

2.10 Asanas

There are innumerable asanas. Some of the asanas useful for curing ailments and maintain good health are as follows:-

Padmasana

Sit on the asan. Spread the legs forward, place your left foot on the join of your right thigh, and right foot on the joint of left thigh in such a way that both heels tough each other below your navel in the middle of abdomen. Place your hands on your knees. Keep the head and spinal column erect. Keep your eyes close or open. Stay in the final position for 1-2 minutes in the initial stage. Later increase the time gradually. This asan is useful for Jaap, Dhyana and Samadhi. This asan also helps in curing diseases like asthama, hysteria and insomnia.

Fig. Padmasana

Baddha Padmasana

Sit in Padmasana. Try to project the feet as far as possible. Take the hand behind your back. Catch the right toes with your right hand and left toe with your left hand. Keep the back bone straight and fix your eyes on the tip of the nose. This asana improves nervous system and the abdomen. It also cures drowsiness, sleepiness, laziness and night discharge.

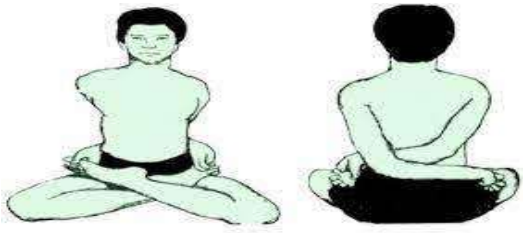

Fig. Baddha Padmasana

Siddhasana

The main function of this asana is to awaken the power of Kundalini. Sit on the carpet. Place the heel of left foot under the testis on the prostrate gland in such a way, that the sole of your foot should be placed at root of genitals. Place the hand on the knees so that palm face upward. This asana helps the mind to be firm, attentive and alert.

Fig. Siddhasana

Gyan Mudra

Sit in Padmasana or siddhasana. Put your Hands on your knees with palm facing upwards. Bend your index finger and place them at the root of your thumbs. Spread the remaining three fingers forward, all joined together. This asana is most suitable for pranayam and dhyana.

Fig. Gyan Mudra

Trikonasana

Stand erect keeping the distance between the feet 60 – 75 cm. Raise your right hand towards the sky and look towards its palm. Then bend the truck to the left side and try to touch left toe with the left hand without bending your legs. Repeat this process with your left hand up and right hand down. This asana is useful to the eyes, spinal cord, neek and mental power. Timings 3 – 6 sec. 4 – 6 times.

Fig. Trikonasana

Ardha Chandrasana

Stand erect. Raise your both hands and join them above your head. Bend towards left from the waist. After some time bring they body back in straight position. Repeat this by bending the body towards right. This asana improves the functioning of heart, liver, intestine, stomach, lungs and make the body flexible. Timing 4 - 6 sec, 4 - 5 times.

Fig. Arda Chandrasana

Surya Namaskara

Surya means Sun and Namaskara means salutation. It is basically salutating the Sun through postures. Surya Namaskara is a series of 12 physical postures. These postures stretch various muscles and spinal column and give flexibility to the whole body.

Let us perform Surya Namaskara by following the steps given below:

1. Stand erect with feet together. Join the palms together in front of the chest in a namaskara mudra. Remain in this posture for a few seconds.

2. Inhaling, raise both arms above the head and slightly bend trunk backward. Remain in this posture for a few seconds.

3. Exhaling, bend forward from the waist keeping the arms by the side of the ears until palms touches the floor on both sides of the feet and the forehead touches the knees. Remain in this posture for a few seconds.

4. Extend the right leg behind as far as possible. Bend the left knee and keep the left foot on ground between the palms. Remain in this posture for a few seconds.

5. Exhaling, bring the left leg back to join with the right leg. Simultaneously, raise the buttocks and lower the head between the arms so that the body forms a triangle with the floor. Try to place the heels flat on the ground. Remain in this posture for a few seconds.

6. Gently lower knees, chest and chin to the ground with normal breathing. Toes, knees, chest, hands and chin should touch the floor. The buttocks are kept up. Remain in this posture for a few seconds.

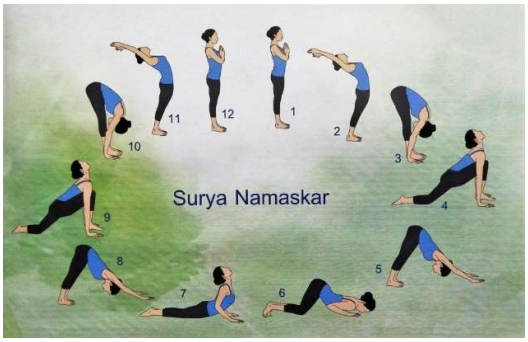

Fig. step-wise poses for Surya Namaskara

7. Lower the hips while pushing the chest forward, and raise the trunk upward until the spine is fully arched and the head is facing up. The legs and lower abdomen remain on the floor. Inhale while raising torso. Remain in this posture for a few seconds.

8. Exhaling, lower the trunk keeping the palms flat on the floor. Place both feet flat on the ground. Raise the buttocks and lower the head between the arms. Remain in this posture for a few seconds.

9. Inhaling, extend the left leg behind as far as possible. Bend the right knee and keep the right foot on the ground between the palms. Remain in this posture for a few seconds.

10. Exhaling, bring the stretched left foot forward. Join both legs, straighten the knees and bend forward. Bring the head near the knees. Palms should be placed on floor beside the feet. Remain in this posture for a few seconds.

11. Inhaling raise both arms and the trunk slowly. Bend backwards with arms stretched up. Stay in the posture for a few seconds.

12. Breathing out, come to an erect and straight position. Bring the hands in front of the chest and join the palms together in namaskara posture. Breathe normally in this position. Remain in this posture for a few seconds.

Shavasana

The main aim of this asana is releasing the mind from the body. By this asana we can achieve relaxation in the shortest possible time. This asana provides relief in disease like blood pressure, weakness of nerves and other ailments. Lie on your back and let your body be relaxed completely. Your feet should be 30-45 cm apart, arms in sides with palm upwards, eyes gently closed with attention on breathing. Keep body in a straight position. For proper blood circulation in the body, the legs, hand and neck should have no curves or bend. Take a long and deep breath then concentrate on each and every part of your body, putting it in a relaxed state Timing 5-10 minutes.

Fig. Shavasana

Gomukhasana

Sit on the seat comfortably. Place your left foot heel under your left hip. Now take the right leg over the left buttock in such a manner that the heel of your right foot is placed near your left hip. Take right arm behind back from above and left arm from below, so that fingers of the both hands are interlocked behind the back. Stay in this position for some time. Then repeat this with opposite side. Timings 20-30 seconds, 4-6 times.

Fig. Gomukhasana

Vajrasana

Bend the legs and sit on knees. Place the heels at the sides of the anus in such a way that thighs rest on the legs and the buttock rest on the heels. Stretch the arms and place the hands on the knees. Keep the knees close by. Sit erect. This asana can be done immediately after eating food. This helps digestion and eliminates gas troubles. Timing 1-3 minutes.

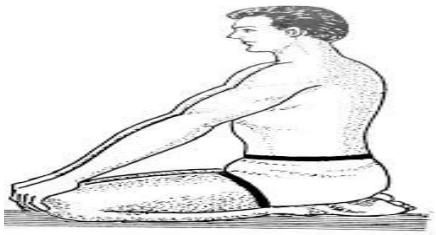

Fig. Vijrasana

Dhanurasana

Lie down on the chest, legs should be folded at the knees and the feet should be grasped with both the hands near the ankles. The thighs and the chest should be raised, making the body appear like a bow. This asana provides good exercise to the abdominal muscles, lower back and thighs, Timing 10-30 seconds, 4- 5 times.

Fig. Dhanurasana

Bhujangasana

Lie down on the chest. The hands should be below the shoulders with the fingers pointing forward. The legs are kept straight with the feet touching each other and the soles facing up. Raise the head, giving a backward bend to the spine. Try to keep the spine bent backward as much as possible without raising the navel. This asana is good for the spine, the chest, the neck and the head. Timing 20-30 sec. 4-6 times.

Fig. Bhujangasana

Chakrasana

Lie down on the back. Bend the legs at the knees. Heels are close to the hips and sole touching the ground. Bend the arms at the elbows and place them on the ground on either side of the head. Place them in such a way that palms should rest on the ground and the direction of the fingers should be towards your feet. First raise your hips and waist, keeping the legs straight. Raise the back as far as possible. This asana helps in making the spine supple. Timing ½ -1 min, 1-2 times.

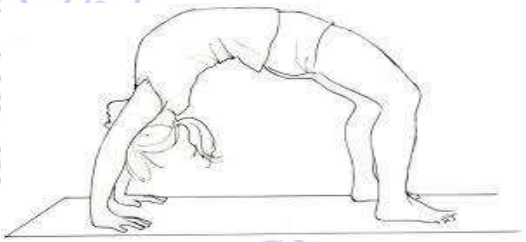

Fig. Chakrasana

Sarvangasana

Lie down flat on the back. Raise legs from the hips, push the trunk up until legs are in vertical position. The chin should press against the chest. The hands are giving support to lower ribs. Hold this position upto 2-10 minutes. Do not give any jerks to the body. This asana improves circulatory, respiratory and alimentary systems of the body. Timings: ½ -1 minute.

Fig. Sarvangasana

Halasana

Lie down flat on the back. Place the arms by sides along the hips, palm facing the ground. The legs are raised up in a single motion and put down behind the head keeping knees unbent. The chin should touch the chest. In this exercise, the legs will remain straight and breathing should be normal. Hold this position for 30-50 seconds. This asana stimulates blood circulation and makes the spine flexible and elastic.

Fig. Halasana

2.11 Pranayama

"Pranayama is control of Breath". "Prana" is Breath or vital energy in the body.On subtle levels prana represents the pranic energy responsible for life or life force, and "ayama" means control. So Pranayama is "Control of Breath". Pranayama is the forth Limb of Ashtanga Yoga, following after the Yamas, Niyamas and Asanas. Pranayama is the regulation of the breath through certain techniques and exercises.

The basic pranayamas are described below.

2.11.1 Nadi Shodhana Pranayama

Nadi Shodhana Pranayama is a type of breathing exercise that is also known as "alternate nostril breathing." This technique involves alternating the flow of breath between the left and right nostrils, using your fingers to block one nostril while inhaling and exhaling through the other. It is a popular pranayama practice that helps to balance the flow of energy in the body and calm the mind.

Fig. Nadi Shodhana Pranayama

2.11.2 Kapalabhati Pranayama

Kapalabhati Pranayama is a breathing technique in the yoga that helps to energize the body, improve concentration, and purify the mind. It involves forceful exhalation through the nose, followed by passive inhalation. Kapalabhati means "skull shining" in Sanskrit, and it is believed to help purify the mind and body by removing toxins.

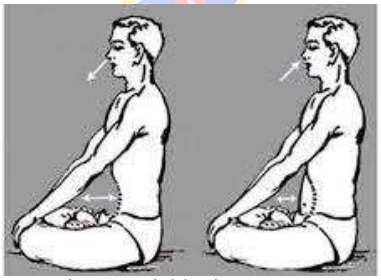

Fig. Kapalabhati Pranayama

2.11.3 Bhramari Pranayama

Bhramari Pranayama, also known as the humming bee breath, is a calming and

soothing pranayama practice. In this technique, you create a humming sound that resembles the buzzing of a bee. It involves inhaling deeply through the nose and exhaling while making a humming sound, which creates a vibration in the body that helps to calm the mind and reduce stress.

Fig. Bhramari Pranayama

2.11.4 Ujjayi Pranayama

Ujjayi Pranayama, also known as the "victorious breath," is a breathing technique commonly used in yoga. It involves constricting the back of the throat while inhaling and exhaling, creating a hissing or oceanic sound. This technique helps to regulate and deepen the breath, calming the mind and enhancing concentration.

Fig. Ujjayi Pranayama

2.11.5 Bhastrika Pranayama

Bhastrika Pranayama, also known as Bellows Breath, is a powerful breathing technique in the yoga that involves forceful inhalations and exhalations through the nose. It is an energizing and cleansing practice that is believed to purify the body and mind by removing toxins and negative emotions. The practice involves rapid breathing with an equal emphasis on inhalation and exhalation, creating a bellows-like effect. It is said to enhance the flow of prana or life force energy in the body, providing numerous physical and mental benefits.

Fig. Bhastrika Pranayama

UNIT – 03

3.1 Sports

Sport is usually defined as an organized, a competitive and a skillful physical activity which asks for devotion and fair play. All of this is regulated by rules or customs. The physical activity includes movement of people and/or different objects – sport's equipment. At the same time, sport includes noncompetitive activities, like: jogging, running, exercising, swimming, which are usually classified as recreation. It means using of time designed as a physical, health and mental refreshment of the human body.

Sport is a vigorous physical activity which involves physical exertion and skill, generally played by two teams against each other by following the set number of rules in order to win or defeat other team. Sport not only has physical benefits but it also improves your concentration and makes you more alert and attentive. It helps to enhance the overall personality of an individual and makes him more productive and alert. It also increases your social interaction and develops sportsman spirit in an individual.

The difference between sports and games sports are individually practiced. Games are those sports in which at least two players are involved. Usually all sports and games are further differentiated into:

1. Indoor sports:

Include for example gymnastics, table tennis, boxing, wrestling, weight-lifting, aerobics or gymnastics. They are practiced in gymnasiums or in sport centers.

Kabaddi

Kabaddi is a popular sport in South-East Asia. However, it has nowadays gained widespread popularity and has been included in the international games like Olympic, Asian Game and Commonwealth Game.

Fig. Kabaddi

Some of the important points relating to kabaddi are as follows:

i. Kabaddi is played by two teams. Each team consists of twelve players. However, only seven players per team are allowed on the field of play at any one time.

ii. The surface of the Kabaddi ground measures 13m x 10m and it is separated into two halves by a white line, one team occupying each half.

iii. The duration of the match is 40 minutes, and each half is 20 minutes with a five minute interval.

iv. The team being raided is defending and the players must prevent the raiders from tagging them and returning over the halfway line. The defending team scores a point by successfully preventing the raider returning to their own half after tagging them. Raiders may only be grabbed by their limbs or torso, not by their hair, clothes or anywhere else, and defenders are not permitted to cross the center line.

v. Six officials look after each Kabaddi match. The officials comprise of a referee, a scorer, two assistant scorers and two umpires.

Badminton

Badminton is one of the popular indoor games played both nationally and internationally.

Fig. Badminton

Some of the important points relating to badminton are as follows:

i. The badminton is played with two rackets and a shuttlecock.

ii. Two opposite sides play badminton: It may be single player or double player. If there is one male and a female on one side, then it is called mixed double.

iii. The badminton court is 13.4 m long and 6.1 m wide.

iv. The point limit is usually 20-21 points. Moreover, if the game gets tied at 20 then the point limit gets extended. The player who scores the next point will win the game.

v. If a player touches the net with any part of his or her body or racket, then it is deemed a fault and their opponent receives the point.

vi. The shuttlecock which is either served or hit should land inside the service court. If the shuttlecock flew away from the white boundaries it will not be counted and the opponent will get the point.

Table Tennis

The game was invented in England in the early days of the 20th century and was originally called Ping-Pong, a trade name.

Fig. Table Tennis

Some of the features of table tennis are:

i. The table is rectangular consisting of 9 feet by 5 feet.

ii. Its upper surface is a level plane 30 inches above the floor.

iii. The net is 6 feet long.

iv. The game can be single, double and mixed double. In single two opponents' players play; it may be men or women. In the double two players from each team play, it can be men or women. In case of mixed doubles one male and one female player from each team play the game.

v. Each game is being owned by the team or player who first reaches 11 points.

vi. Officials in table tennis are divided into two types such as umpires and referees. Umpires control the match, while referees control a tournament.

Boxing

Boxing is a popular game and is a part of the Olympic, Asian and Commonwealth games. It is a combat sport in which the players fight by wearing protective gloves.

Fig. Boxing

They throw punches at each other for a predetermined amount of time in a boxing ring. The boxing contest takes place in a four-rope ring no less than 16 foot and no more than 20-foot square. Boxing contest is played of a total 12 rounds. The game should be less than 8 minutes of actual boxing. Each round is of three-minute duration with a one-minute interval between each round.

Chess

Chess game is a well-known indoor game all over the world. It is a game of mind. It is played on a board called chess board.

Fig. Chess

Some of the features of chess are narrated below.

i. Chess is a game, played by two players. One player plays with the white pieces, and the other player plays with the black pieces. Each player has sixteen pieces in the beginning of the game: one king, one queen, two rooks, two bishops, two nights, and eight pawns.

ii. The game is played on a chessboard. The chess board consists of 64 squares: eight rows and eight columns. The squares are alternately light (white) and dark colored.

iii. To facilitate movement all squares are given a name. From the view of the white player, the rows are numbered 1, 2, 3, 4, 5, 6, 7, 8; the lowest row has number 1, and the upper row has number 8. The columns are named, from left to right, a, b, c, d, e, f, g, h.

iv. The game begins with white players. Both players have to play with their mind to win. Protecting the king is the prime to each of the players. In this game if the king of the players dies the game is over. Players have to save their king from the opposite player to win the game.

2. Outdoor sports:

Include for example skiing (down-hill, cross-country, slalom, ski jump), sledging, hiking rock climbing, horse riding, golf, some aquatic sports such as rowing or windsurfing. Athletics: high jump, pole-jump, long jump, triple jump, track and field events, long- distance runs, marathon, hurdle- race, cross- country run, walking race, relay race, pentathlon, decathlon, javelin/ discus/ hammer throw. The games are usually all- season activities practiced both indoors and outdoors.

e. g. athletic meetings in all the track and field events (sprints, middle and long distance runs, hurdling, high and long jump, pole vault, shot put, javelin and discus throw) take place in summer stadiums as well as in athletic halls.

Football (Soccer)

Football (Soccer) is one of the oldest, popular, and most recognized sports in the world. It is played at the country, state, and local level and also in the schools, colleges and universities. It is played between two teams and each team consists of Il players including a goalkeeper. The aim of each football team is to score more goals than the opponents within a 90-minute playing time frame. The game is played in the artificial or natural grass field. The match is divided into two halves of 45 minutes each and a 15-minute rest period called half time is given after the completion of the first half.

Fig. Football

Some of the rules are:

i. The size of the field be 100-130 yards long and 50-100 yards wide.

ii. The football must have a circumference of 58-61 cm and a round or circular shape.

iii. Each team name seven substitute player and three substitution is made at a time during the play.

iv. The game is conducted by one referee and two assistant referees and linesmen.

v. If the game draws in 90 minutes, then 30 minutes extra time with two 15 minutes keeping a gap is given.

vi. If a player commits fouls then either a yellow or red card is shown depending on the severity of the foul. The yellow is a warning, and a red card is a dismissal of the player.

vii. The corner is given if the ball crosses the boundary line of the defending side players.

viii. Penalty kick is awarded if a player commits a direct free kick offence inside their penalty area.

ix. The goal post is 8 yard wide and 8 feet high.

Hockey

Hockey is an old game being played by many countries of the world. Some of the top hockey playing nations include Australia, Spain, Argentina, India, Pakistan, New Zealand, Netherlands and Great Britain. Hockey is the national game of India.

Fig. Hockey

Some of the important features of field hockey are as follows:

i. It is played by two teams. Each team consists of 11 players. The composition of the team in the field is I goalkeeper and 10 outfield players. The outfield players usually consist of defenders, midfielders, and attackers.

ii. The game is played for 60 minutes with four quarters with 15 quarters Building of Physical each. After each quarter there is a break of five minute and after the and Mental Skills first two quarters there is half time with a break of 10 minute.

iii. Goal cages are 7 feet (2.14m) high, 12 feet (3.66m) wide and 4 feet (1.22m) deep.

iv. The Hockey field is 100 yards long and 60 yards wide. It has three lines running across the width of the pitch which are two 25-yard lines and a halfway line.

v. The goal is awarded within the 16-yard line of the goal post. Any foul within the 16yard line led to the penalty corner. However, if the ball goes outside touching the stick of the defending player it leads to a long corner.

vi. There are two referees in the hockey field who control the game and also a third referee sits outside the field with audio-video and gives judgment with regard to penalty corner complaints.

Cricket

Cricket is a popular game in a few countries of the world such as India, Pakistan, Australia, New Zealand, England, Sri Lanka and Bangladesh. Each team consists of Il players and there is a twelfth man and in case a player got injured the 12th man does the job. The test series is played for five days. Besides one day series is played for a day with 50 over given to each side. Now a day's 20 over matches are very popular. Here each side is given 20 over. A few important players in the world are Sachin Tendulkar, Sunil Gavaskar, Kapil Dev, Brain Lara, Allan Border, Richard Hardly, etc.

Fig. Cricket

Some of the features are:

i. Bat and ball used in the cricket.

ii. The cricket pitch is 22 yards.

iii. The players consist of batsman, bowlers, wicket keeper. If a player does both bowling and batting, then he is being called as all-rounder.

iv. Toss is used by the humpier for choosing which team will bat and bowling first.

v. The diameter of the cricket field varies between 130m to 150m.

vi. Cricket matches are played in big stadiums. The popular stadiums in India are Wankhede stadium, Mumbai and Eden Garden Kolkata.

Volleyball

Volleyball is one of the most popular sports in every national and internal outdoor game.

Fig. Volleyball

Some of the key features of volleyball are as follows:

i. Played between two teams. Each team has 6 players on a court at any one time. Substitute players are used throughout the game.

ii. Each player takes a position in either the attacking zone or the defensive zone. The attacking zone is next to the net, while defensive zone in at the back of the court. Three players are positioned in each zone and rotate in a clockwise position after every point.

iii. The court is of a rectangular shape measuring 18m x 9m.

iv. The court is a 2.43m high net with the ball measuring 8 inches in diameter and weighing between 9 and 10 ounces.

v. Each game is played for 25 points. The game must be owned by two clear points. If the scores reach 24-24 then the game is played until one team leads by two.

vi. Volleyball is generally officiated by two referees and two-line judges.

Basketball

Basketball is played between two teams. Each team consists of five players. The purpose of each team is to throw the ball into its own basket and to prevent the other team from scoring. Basketball can be played both indoor and outdoor.

Fig. Basketball

Some of the key points relating to basketball are:

i. The basketball hoop comprises a rim or basket attached to a backboard (Wassel 20). The rim is 18 inches in diameter and 10 feet above the ground.

ii. Field Goal counts as two points when it scored in the basket before the 3 -point line.

iii. Foul is a violation when a player pushes, holds, or charges into each other.

iv. Free Throw is a shot toward a fouled player.

v. There are four quarters in a regular basketball game, and each takes 10 or 12 minutes.

vi. A basketball game usually takes approximately 2 hours.

3.2 Physical Fitness

Physical fitness implies abilities such as that of resisting fatigue, performing with an acceptable degree of motor ability and being able to adapt to muscular stress. Physical fitness can also be functional specific and emergency requirements.

Physical fitness refers to the organic capacity of the individual to perform normal task of daily living without undue tiredness or fatigue having reserves of strength and energy available to meet satisfactory and emergency demands suddenly placed upon him".- Nixon

Physically fitness is the quality of the whole body in terms of its state of adaptation of physical activity.

3.2.1 Components of Physical Fitness

Physical fitness on be the most easily understood by examining these components, or elements or parts. There is widespread agreement that following four elements are basic.

1. Endurance: The ability to deliver oxygen and to tissues arid to remove wastes over sustained periods time. Long runs and swims are the methods employed in measuring this component.

2. Strength: The ability of a muscle to exert force for brief period of time. For example upper body strength can be measured by various weight lifting exercises.

3. Speed: The quickness of movement of limb whether this is the leg of a runner or the arm of the shot putter

4. Flexibility: The ability to move joints ad use muscle through their full range of motion. The sit and reach test is good measure of flexibility of the lower back and backs of this upper leg.

Body composition is also considered a component of fitness. It refers to the makeup of the body in terms of lean mass (Muscle, bone, vital tissue and organs) and fat mass. An optimization of fat to lean mass is an indication of fitness and the right of exercise will help one to decrease body fat and increase maintains muscle mass.

3.2.2 Benefits of Physical Fitness

Exercise or fitness is not just for Olympic hopefuls or supermodels. In fact no one never too unfit too young or too old get started. Regardless of age, gender or role in life, one can benefit from regular physical activity. If there is a commitment exercise in combination with a sensible diet can help to provide in overall sense of well-being and can even help to prevent chronic

illness, disability and premature death. Some of the benefits of increased physical activity or physical fitness are:

Improved health

- Increased efficiency of heart and lungs
- Reduced cholesterol levels
- Increased muscle strength
- Reduced blood pressure
- Reduced risk of major illness such as diabetes and heart disease
- Weight loss

Improved Sense of well being

- More energy
- Less energy
- Improved quality of sleep
- Improved ability to cope with stress
- Increased mental sharpness

3.3 History of Sports

History of Indian Sports

India, a land rich in history, tradition, and culture, has always been a hub for activity in many aspects. The sports history of India dates back to the 4th Century BCE when traditional sports such as Kho-Kho and Kabaddi originated. Dholavira, the world's oldest terraced arena, was built in Kutch, Gujarat, around 3000 BC, evidencing the existence of sports in India. Ancient texts like the Mahabharata, written around the 3rd century BCE, mention martial arts and archery as activities that were carried out during that era. Even indoor games like Chess and Snakes & Ladders have origins in ancient India, in the form of games of Chaturanga and Gyan Chauper, respectively.

Colonial Influence

The arrival of colonists on Indian shores brought a significant shift in the sporting culture. The British, with their love for organized sporting events, established the first cricket club in India in 1792 and greatly propagated the sport in the country.

While the gentleman's game took centre stage, other sports like football, tennis, and golf began to find their footing. The establishment of the Calcutta Football Club in 1872 marked the beginning of organized football in India. The British influence was evident in the rules and structure of these sports, and Indian athletes were gradually drawn into these global competitions. The British also took many indigenous games and made adaptations of their own to form brand-new sports, with badminton being a prime example.

Emergence of Indigenous Sports

As Indians adopted British sports, they also preserved their own rich sporting heritage. Kusthi, or traditional Indian wrestling, continued to thrive and found its place in the Olympics. Kabaddi, a contact sport that requires agility and strength, became popular in villages across the country. These indigenous sports, with deep-rooted traditions, represented the true spirit of India's sporting identity.

Cricket Takes Center Stage

While other sports continued to prosper, cricket remained the heartbeat of India's sporting landscape. The 1983 Cricket World Cup win under Kapil Dev was a historic moment. This victory not only solidified cricket's position but also ignited a cricketing revolution across the nation. The Indian Premier League, launched in the late 2000s, further redefined cricket and made it a global phenomenon. India became a cricketing powerhouse, and that remains true to this date.

India at the Olympics

While India hasn't been a powerhouse at the Olympics, there have been some truly remarkable moments on the grandest sporting stage that has started a revolution in the country. Our nation has had a total of

35 medals at the Olympics, divided among various disciplines including badminton, boxing, wrestling, and shooting. India had a glorious run in the initial Olympic Games in the sport of field hockey. Athletes like Dhyan Chand and his legendary prowess in field hockey inspired the nation as in 1936, India clinched its first Olympic gold medal, marking the beginning of an era of dominance in the sport. This was followed by a golden hat-trick at the next three Olympics in 1948, 1952, and 1956.

Except for hockey, India struggled to find any medals for the rest of the century, only managing to obtain one individual medal (KD Jadav's bronze in wrestling) until the end of the 20th century. Things started changing as we entered the 21st century. The 2008 Beijing Olympics was a historic event, as India clinched its first individual gold medal when Abhinav Bindra engraved his name in history in shooting. It was also the first time in over half a century that we managed to clinch multiple medals in the same Olympics.

His triumph marked a new era for Indian sports and provided a ray of hope for aspiring athletes. The stage was set for now as the upcoming Olympics would see India win multiple medals, and the athletes who brought us glory would become household names. Today, India's newfound love for the Javelin throw is facilitated by Neeraj Chopra, who won gold in the 2020 Tokyo Olympics, writing another remarkable chapter in our sporting history.

Rise of Badminton

In the 1970s, a young shuttler started making waves in the badminton world. Winning medals and challenging world-beaters was India's father of badminton, Prakash Padukone. He brought badminton to the forefront in India, winning coveted medals like the All England Championships and Commonwealth Games. This led to the sport being picked up by youngsters, giving rise to several other badminton stars like Syed Modi, Pullela Gopichand, and U Vimal Kumar.

As years passed, badminton strengthened even more, and finally, in 2012, we got our first Olympic medal as Saina Nehwal won the Bronze. The medal streak continued in the next two Olympics, with PV Sindhu clinching Silver and Bronze respectively on both occasions.

India recently celebrated another massive breakthrough as the Indian pair Satwik Rankireddy and Chirag Shetty achieved the World No. 1 ranking, becoming the first Indian pair to do so in badminton history. Satwik and Chirag have been a force to be reckoned with in the past couple of years, winning title after title. Not just in doubles, even the singles badminton shuttlers have also been on the rise. H S Pronnoy and Lakshya Sen are currently in the top 15 rankings in the world and have been title contenders in all the major tournaments in the past couple of years. This era is what many have been calling the golden age of Indian badminton, but our shuttlers are not done yet, and the world has yet to see the heights Indian badminton has to reach.

Athletics on Blistering Speed

One of the great catalysts for India's record-breaking Asian Games stint was its performance in Athletics. India garnered a total of 29 medals in the sport, out of the total of 107, making up almost 27% of the medals. Athletics has been one of the fastest-growing sports in the country, and a majority of the credit goes to the athletes who have been performing exceptionally well on the world stage in events like the Commonwealth Games and the Diamond League.

Para Athletes Shining

In recent years, India has also seen a surge in the achievements of para-athletes. These remarkable athletes have not only overcome physical challenges but have also made the country proud on the global stage.

Para shuttlers Pramod Bhagat, Sukant Kadam, and Krishna Nagar have been smashing it in the badminton world. Devendra Jhajharia, the para javelin throw athlete, has a remarkable two golds and a silver Paralympic medal in his collection. These are only a few examples, likewise, there are many more who with their dedication and excellence serve as an inspiration to all. The success of para-athletes further enriches India's sporting legacy.

The history of sports in India is a remarkable journey, from rich traditions to colonial influences, and post-independence glories. It's a story of resilience, passion, and an unyielding spirit of competition. From ancient times to the modern era, Indian athletes have always managed to rise above challenges and make their nation proud on a global stage.

As we look ahead, there is no doubt that India's sporting landscape will continue to evolve. With more players investing in sports, volunteering to put up infrastructure projects and donating to support athletes, the nation is poised to make its mark in even more diverse disciplines. As a land of over a billion dreams, India's sporting history is far from being written in full, the future promises new stories, new champions, and new heights for sports in India, we just have to wait and watch.

3.4 Olympic Movements

3.4.1 Olympic Games

Olympic Games is an international sports event in which intercontinental and international competitors participate in the sports competitions. Participation in sports help the peoples to know one another and also it provides opportunities to the participant to see each other.

It unites countries and continents. The Olympic movement like sport in general by its very nature brings in international understanding and opposes the division of the world, rapprochement and friendship among people of all continents.

Objectives of Olympic Games

1. To develop interest and competence of life time participation in games and sports and for that purpose.

- To develop physical and motor fitness i.e strength, endurance speed agility, flexibility balance, accuracy etc.
- To develop good body mechanics and skills in a variety of dynamic forms of movements applied in games and sports.
- To develop a fir level of skills to specific major games and track and field events gymnastics and yoga exercises.

2. To develop interest for games and sports as a cultural heritage.

3. To develop social aim.

4. To develop social qualities such as cooperation sympathy team spirit, helpfulness, tolerance, patience and sportsmanship.

5. To develop emotional maturity mental alertness and moral goodness.

6. To develop Psycho somatic unity i.e. unity of the mind and body.

7. To develop motor skills i.e Neuro muscular coordination.

3.4.2 Ancient Olympic Games

The Olympic Games were held once in four years on the full moon day in the month of August or September at Olympia in Greece in honor of their God Zeus. We cannot definitely state the origin of these games, but these are a few legends which show that these games were in existence from very remote times.

Origin

1. It was believed by the Greeks that there was a wresting contest between God Zeus and God Kronos for the Possession of Earth. In the contest God Zeus won and in remembrance of the victory of Zeus, the Olympic Games were started.

2. Hercules it is said defeated King Augeas and in honor of his victory he instituted the Olympic Games (Circa 1253 B.C)

3. Peoples won over king Aenomanus in a chariot race and married the latters daughter Hippodemia. As king Aenomaus died in the race itself. Peoples took his kingdom. Peoples was worshipped as a hero and behalf of his death the Olympic games instituted (884B.C)

4. Another version states that Lycurqus, the Great Sparta law giver joined hands with lphitus of Elis to Urestoreu the Olympic festival in 820 B.C. The version indicates that the games had been run before.

Thus these legends clearly show that the Olympic Games had a long past.

Although the origin of the Olympic games is lost if legend and obscurity the year 776 B.C. was reckoned and recorded as the date of the first ancient Olympics thanks to the efforts taken by Cleosthenes (King Pisa) and Iphitus (Kin of Ellis) who become weary of the war over the control of Olympia made a sacred truce and revived the ancient Olympic festival.

The winner of the first Ancient Olympics in 776 B.C. was Coroebus From this date onwards the games were held regularly once in four years until 394 A.D with the games were abolished by the Roman emperor Theodosius I.

Rules/Eligibility for Competition

i. The participants should be free born Greeks.

ii. The amateurs were allowed to participate.

iii. The competition must have had at least 10 months of training prior to their participation in the Olympics the final month being spend at Olympia under the control of the Hellanodikai the official judges of the games.

iv. They should have no criminal record.

Conduct of the Games

Assembly: Before the start of the games the competitors their trainers their trainers their fathers their brothers and the judges assembled in the council house in front of the state of Zeus (God of oaths).

Sacrifice: Sacrificed a pig to Zeus

Oath: All took an oath that they would not resort to any unfair means to secure victory further the competitions took the oath that they had 10 months of training as per Olympic regulations.

Thereafter the Olympic judges swore that they would be honest and faith in their decisions

March Past: The march past took place in which the Trumpeter Officials and the competitors participated. In the courts of the March past as the competitors passed by the Herald announced to the spectators the name of each competitor his father's name and his city and asked whether anyone had any charge to make against him. Silence on the part of the specifications was considered as No Objection for the competitor concerned.

Opening Ceremony: Then the herald proclaimed the opening of the games. The chief judge or some distinguished person addressed the participants. Afterwards the events were conducted the sacred fire was kept burning perpetually at the altar of Zeus.

Events

Originally foot race was the only item it Ancient Olympics and it was conducted in

single day. Later on other events were added and they were foot race, chariot race, horse race, pentathlon (Running, long jump, discuss throw, javelin throw and wresting) Boxing Wresting, pancratium etc. Because of the addition of more events from time to time, the duration of the games was extended to 5 days.

The first day was devoted to religious sacrifice and oath taking and no Competitions were held.

On the second day there was a march past, the introduction of the competitions to the public and the opening of the games. This was followed by chariot race horse race andpentathlon.

The third day was the day of official sacrifice of a 100 oxen in the morning at the Altar of Zeus in The afternoon footrace; wresting and boxing were conducted for the boys.

The fourth day was reserved mainly for the chief athletic events for men via three foot race and the dual combats (Wresting, boxing and pancratium). The day's programs would come to an end with the race in armour.

The fifth day was the last day which intended only for feasting and rejoicing

Originally women were not allowed to complete in the Olympics and the married women were not even allowed to witness the competitions. It is understood that women had their own festival called the heraca in honour of hera, wife of God Zeus In this festival women had athletic competitions. Later on women were allowed to Complete in the Olympics in the Chariot race.

Awards

- The Olympic victor was highly honoured. It seems that tripods and other valuable objects were given as prizes to the Olympic victor till the 7th Olympiad.
- Later on the only reward from the judges at the Olympic stadium was a wreath made out of Olive leaves plucked from the sacred Olive tree in the temple of Zeus.
- Poets immortalized his name in poems and sculptors carved his figure in stones. The concerned Olympiad was named after the name of the victor of the state race i.e. 200 yards race.
- The winners were escorted home in triumph by their fellowmen and loaded with honour, gifts and privileges. We even come to know that they were received in their cities not through the ordinary gates but through a breach made in the walls of the city. They were even considered as demo gods. To be crowned a victory in the Olympics was the highest honor to every Greek.

3.4.3 Modern Olympic Games

(From 1896 AD onwards)

For nearly 1500 years since 394 A.D. there were no Olympics. The first efforts towards renaissance of the Olympics in modern times were made by the Greek in 1859 and 1870. The Greeks and Evangelos Zappas a Greek living in Rumania, began working towards the revival of the Olympics long before Coubertin the Frenchman succeeded. Two Olympic games organized by the Greeks in 1859 and 1870 were unsuccessful In 1894 A.D.

Baron Pierre De Coubertin a Frechman revived the Olympic games. He felt that international unity and brotherhood can be achieved through competitions in sport and games among the youth of the various countries at one place similar to the ancient Olympic Games. He visited various countries and put forth his ideas. His ideas were welcomed and it was decided to hold the first Olympics in Greece. As the ancient

site at Olympia was not suitable to conduct the games. Athens in Greece was selected.

The sponsors of the Modern Olympics were hard pressed for money. The Greek Government gave about 2 ½ lakhs of drachmae in addition to the money bequeathed by Zappas. Even this amount was not enough. Fortunately one George Averoff a merchant of Alexandria gave a princely gift of million drachmae for restoring the Pan Athenian stadium and conducting the games.

Modern Olympics is held once in four years But during the times of world wars, the Olympic games (i.e VI, XII and XIII Olympiads respectively in the years 1916, 1940 and 1944) were and held in the days of Ancient Olympics such sanctity was attached to the games that wars were stopped for the conduct of the Olympics whereas in the days of Modern Olympics. We have witnessed that Olympic Games had to be stopped for the conduct of the wars.

Governing Body

1. The international Olympic Committee is the controlling body for the Modern Olympic Games. The I.O.C. is a permanent and self-elected body which has at least one member from a country where there is a National Olympic committee.

2. The members shall elect a president for eight years and he is eligible for reelection.

3. Two Vice presidents shall also be elected for a period of four years who are also eligible for reelection.

4. A small Executive board shall be formed which shall include the president the two Vice presidents and four other members elected for a period of 4 years who shall retire by rotation.

5. The I.O.C fixes the venue for competition draws the rules for competition draws the rules for competition and the general programme for Olympics.

Rules of Eligibility of Competition

1. One who is a native or naturalized subject of a member country can alone participate

2. One who has competed already in the Olympic Games for a nation cannot compete in future Olympic Games for another nation even if he has become a naturalized subject of that nation except in the case of conquest or the creation of a new state ratified by a treaty.

3. Every competitor must be an amateur. This must be certified by the national body controlled that activity and countersigned by the National Olympic committee. In addition each competitor must give a personal declaration that he is an amateur.

4. There is no age limit for a competitor.

Organization and conduct of the Games

The Olympic Games should be held in the first years of the Olympiad. The games under no pretext can be adjourned to another year. The period of the games shall not exceed 16 days.

Venue

The venue for the Olympic competitions will be fixed by a majority of votes among the members of the international Olympic committee, taking into consideration the claims made by the cities opting to stage the games. Committee from the I.O.C and the respective NOC's (National Olympic Committees) along with the respective international sports federation visits the cities aspiring to hold the games to determine its suitability.

After various committees submit their respective reports to the IOC it takes the final decision through a ballot at a session held in a country, no city of which was a candidate. The selection unless in exceptional circumstances, is made at least six years in advances.

When the venue is fixed the mayor of that city will be informed about the decision of IOC. The Mayor in turn will inform the National Olympic Committee and this committee will take up the responsibility of Organizing and conducting the games.

Events

The events are fixed by the organizing committee in consultation with international Olympic Committee. The usual events are track and field sports, Gymnastics, Boxing, Fencing, Wresting Shooting, Rowing Swimming and Diving Equestrian Sports (Horse riding) Football, Water polo, Hockey, Cycling, Weightlifting yachting (Sailing, Ship racing), Basketball, Volleyball etc.

3.4.4 Olympic -Opening Ceremony

1. For opening of the games, usually the President, King or any other head of the State will be asked to preside and declare the games open. The president will then mount up the Tribune of Honor and the National Anthem of the host country will be played.

2. The march past of the athletes and the officials will take place according to the alphabetical order of the countries. In the march past the Greek contingent will always take the lead while the host country will be at the end.

3. The president of the games will declare open the Olympiad of the modern era.

4. Hoisting of the Olympic flag with fanfare of trumpets followed by a salute of gun fire and pigeons release.

5. The Olympic torch will be brought into the stadium and the Olympic flames will be lit in the bowl constructed for this purpose. The flames will be burning throughout the period of the Olympic Games.

6. All the bearers will move forward to the Rostrum and stand in a semi-circular fashion facing the Tribune of Honor.

7. The Olympic oath will be taken by a representative of the athletes usually an athlete of the host country who will take the following oath.

The Olympic oath will be taken by a representative of the athletes usually an athlete of the host country who will take the following oath.

We swear that we will take part in the Olympic games in loyal competition respecting the regulations which govern them and desirous of participating in them in the true spirit of sportsmanship for the honor of our country and for the glory of sports.

Presently this oath has been revised a sunder and given effect from Sydney Olympics 2002.

In the name of all competitors I promise that we shall take part in this Olympic game respecting and abiding by the rules which govern them without the use of doping and drugs in the true spirit of sportsmanship for the glory of sports and the honor of our teams.

After the Oath the National Anthem of the host country will be played. The athletes and the Officials shall march out of the stadium. The games shall then begin.

Awards

Those who get the first three places will mount the Victory stand. The first place winner will be at the center at a higher level.

The second place winners will be on his right and the third place winners on his left. As soon as they have mounted the victory stand the national flags of the winners will go up the masts. The National Anthem of the winner will be briefly played.

The victors will be crowned with Olive Wreaths. The President of the International Olympic committee or his representatives will give away medals and diplomas (Gold Medal for I place, Silver Medal for II place and Bronze medal for III place).

The banes of the victors will be inscribed on the walls of the stadium where the Olympics games are conducted. In addition a Roll of honor is keep with the international Olympic Committee in which the names of the first six competitions are entered. Competitors who have secured IV, V and VI places in each event are awarded only Diplomas. Souvenir medals are given to all participants.

Closing of the Games

The closing of the games will take place in a solemn manner. The president of the International Olympic Committee will express his gratitude to the organizers. He will then declare the games closed and will call upon the youth of the various countries to assemble again after four years at the next venue of the games.

Immediately after his declaration the ceremonial Olympic flag (not the one that was hoisted on the flag mast) will be handed over to the Mayor of the city, so that he can keep the flag safety till the next Olympic Games. Then trumpets will be sounded, the Olympic flames will be extinguished and the Olympic flag will be lowered. Thus the games come to a close.

3.4.5 Olympic Flag

There are two kinds of flags used by the International Olympics Committee

1. Olympic flag for hoisting purpose during Olympic.

2. Ceremonial Olympic flag.

(i) Olympic Flag

1. This Olympic flag is based on a model design by Braon de Coubertin in 1914 It was first hoisted in 1920 at Antwerp (Belgium) Olympics.

2. The Olympic flag is made of white silk without any borders. In the center, there are five interacted rings in the colours of Blue, Yellow, Black, Green and Red representing the five continents viz. America, Asia, Africa, Europe and Australia.

3. The five rings are arranged in the shape of a W

4. The blue ring shall be high on the left nearer the flag pole.

5. Below the rings appears the Olympic Motto Citius Altius Fortius which means ever faster, higher, stronger.

6. Those rings together with the motto constitute the Olympic emblem which is the exclusive properly of the International Olympic committee.

7. Only the flag is hoisted during the Olympic Games.

Fig. Olympic Flag

(ii) Ceremonial Olympic flag

a. This flag is made of silk and this is bordered with the colours of the rings (blue, yellow, black, green and red)

b. This flag is not intended for hoisting purpose

c. The flag is handed over to the Mayor of the city conducting the concerned Olympics by the president of I.O.C at the time of the closing ceremony. This shall be under the custody of the Mayor of the city till the next Olympics.

Motto of the modern Olympic games

The Olympic Games had come to stay in 1897. The international Olympic Games committee adopted a Dominican monks

worlds. Citius Aitius, Fortius Ever (fastest, highest, strongest) as the Olympic motto to embody the spirit of the games.

The most important thing in the game is not to win but to take part just as the most important thing in life is not the triumph but the struggle. The essential thing is not to have conquered but to have fought well.

Olympic Torch

The ritual flame lighting ceremony takes place at the temples of Hera, near the stadium where the ancient Olympics were held. An actress from the Greek national theatre, portraying a priest-ess , uses a concave mirror to catch the sun's rays to ignite the torch which is then handed over to young athletes who carry it for one kilometer each (if it has to be flown, the flame is kept in specially made lanterns while it is being transported to the hot nation).

This torch shall then be relayed on foot (as for as possible) by runners until it is finally taken to the city where the games are to be conducted.

On its way as it passes through various countries the particular country through which it passes shall arrange for the relay of runners to bear the torch. The last runners shall be an athlete from the host country and his arrival with the torch will be synchronized with the opening of the games.

This was first initiated by the Germans while they organized the Berlin Olympic Games in the year 1936. From Berlin Olympic onwards this practice is continued. Now a day's torch is also carried in aero planes from one country to another where it is not possible to carry it by a relay of runners.

3.4.6 Winter Olympic Games

The Winter Olympic Games were first introduced in the year 1924 these are also held once in four years in the same year of the Olympics but not at the same time. Hence there is a district cycle winter games. This Olympics is held at the places where the geographical and climatic conditions will be conductive of the conduct of these games. The events where the geographical and climatic conditions will be conductive for the conduct of these games. The events for the competitions are Ice Hockey, Skating, and Skiing etc.

3.4.7 Special Olympics

Special Olympics in an international organization dedicated to empowering individuals with mental retardation to becomes physically fit, productive and respected members of society through sports training and competition. Special Olympics offers children and adults with mental retardation year round training and competition in 26 Olympic type summer and winter sports.

To be eligible to participate in Special Olympics they must be at least eight years old and identified by an agency or professional as having one of the following conditions.

Mental retardation cognitive delays a measured by formal assessment or significant learning or vocational problems due to cognitive delay that require or have required specially designed instruction. It does not cost anything to participate. The Special Olympics world summer games are held every four years and the Special Olympics world winter games also are held every four years.

3.4.8 Ancient And modern Olympics (Comparison)

S.no	Ancient Olympics	Modern Olympics
1.	The ancient Olympics were conducted	The modern Olympics are conducted once in four years.

	once in four years.	
2.	There was the march past of the participants.	There is the march past of the participants
3.	In ancient Olympics Oath was taken by all competitors.	In modern Olympics a leading Athlete of the Host country takes the oath on behalf of the competitors of all nations at the Olympics stadium in front of the Tribune of honour.
4.	The competitors who wished to participate in ancient Olympics must be free born Greeks. They should have neither committed any sacrilege against gods nor have any criminal record.	The competitors who wish to participate in modern Olympics shall be the natives or naturalized subjected of a member country.
5.	Only Amateurs were allowed to participate.	Only Amateurs are allowed to participate.
6.	The ancient Olympics were held only at Olympia in Greece.	The modern Olympics are not held at Olympia but at different cities of the world.
7.	In the earlier Olympics married women were not allowed even to witness the games and later on they were allowed not only to witness but also to participate in the games.	In the modern Olympics women were allowed to take part from1900 onwards.
8.	In the earlier Olympics men and boys participated in competitions in naked form.	In modern Olympics competitor have to wear a decent sports costume.
9.	The ancient Olympic games were a religious festival for the Greeks being held in honour God Zeus.	The modern Olympic games are an international sports gathering with a zeal of patriotism.
10.	Sacred fires were burning perpetually in the temple of God Zeus at Olympics.	The Olympic fire is lit and kept burring at the stadium till the close the games.
11.	In ancient times the Olympic games were held to maintain unity among Greeks.	In modern times the Olympic games are held for the international understanding and brother hood.
12.	Ancient Olympics were	Modern Olympics are

	conducted for 5 days.	conducted for 16 days.
13.	In ancient Olympics the items were individualistic.	In modern Olympics both individual and team events are conducted.
14.	Each Olympiad was named after the victor of the strade race. For example the Corbus Olympiad (from 776 BC to 772 BC) was named after corneous the winner of the strade race in 776 B.C.	Each Olympics is called in its serial order. For examples XIV Olympiad (1948 to 1952) XV Olympiad(1952-1956)etc.
15.	Wars were stopped for the conduct of ancient Olympic games.	Olympic games Games has to be stopped because of wars.

3.5 Asian Games

The Asian Games, also known as Asiad, is a continental multi-sport event held every fourth year among athletes from all over Asia. The Games were regulated by the Asian Games Federation (AGF) from the first Games in New Delhi, India in 1951, until the 1978 Games. Since the 1982 Games, they have been organized by the Olympic Council of Asia (OCA), after the breakup of the Asian Games Federation. The Games are recognized by the International Olympic Committee (IOC) and are described as the second largest multi-sport event after the Olympic Games.Nine nations have hosted the Asian Games. Forty-six nations have participated in the Games, including Israel, which was excluded from the Games after its last participation in 1974. The last edition of the games was held in Hangzhou, China from 23 September to 8 October 2023.

Fig. Symbol of Asian Games

Since 2010, it has been common for the host of the Asian Games to host the Asian Para Games held shortly after the end of the Games. This event is exclusive for athletes with disabilities as with the continental version of the Paralympic Games. But unlike what happens in the Paralympic Games where the host city's contract mentions the holding of both events, the case of Asia does not mention the mandatory holding of both. Instead, the exclusion of the Asian Para Games from the Asian Games host city's contract means that both events run independently from one other, and may lead to occasions in the future that the two events be held in different cities and countries.

3.5.1 Origin

The Far Eastern Championship Games existed previous to the Asian Games, the former mooted in 1912 for a location set between Japan, the Philippines, and China. The inaugural Far Eastern Games were held in Manila in 1913 with 6 participating nations. There were ten Far Eastern Games held by 1934. The second Sino-Japanese War in 1934, and Japan's insistence on including the Manchu Empire as a competitor nation in the Games, brought China to announce its withdrawal from participation. The Far Eastern Games

scheduled for 1938 were cancelled. The organization was discontinued.

3.5.2 Formation

In 1962, the Games were hit by several crises. The host country Indonesia, refused to permit the participation of Israel and Taiwan due to political recognition issues. The IOC terminated its sponsorship of the Games and terminated Indonesia's membership in the IOC. The Asian Football Confederation (AFC), International Amateur Athletics Federation (IAAF) and International Weightlifting Federation (IWF), also removed their recognition of the Games.

South Korea renounced its plan to host the 1970 Asian Games on the grounds of a national security crisis; the main reason was due to a financial crisis. The previous host, Thailand, would host the Games in Bangkok using funds transferred from South Korea. Japan was asked to host but declined the opportunity as they were already committed to Expo '70 in Osaka. This edition marked the Games' inaugural television broadcasting, world-wide. In Tehran, in 1974, the Games formally recognized the participation of China, North Korea, and Mongolia. Israel was allowed to participate despite the opposition from the Arab world, while Taiwan was permitted to continue taking part (as "Chinese Taipei") although its status was abolished in general meeting on 16 November 1973 by Games Federation.

Prior to the 1978 Games, Pakistan retracted its plan to host the 1975 Games due to a financial crisis and political issues. Thailand offer to host and the Games were held in Bangkok. As in 1962, Taiwan and Israel were refused the participation by Games Federation, amid political issues and security fears. Several governing bodies protested the ban. The International Olympic Committee threatened to bar the participating athletes from the 1980 Summer Olympics. Several nations withdraw prior to the Games opening.

3.5.3 Reorganization and Expansion

These events led the National Olympic Committees in Asia to revise the constitution of the Asian Games Federation. The Olympic Council of Asia was created in November 1981, excluding Israel and Taiwan. India was scheduled to host in 1982 and the OCA decided to maintain the old AGF timetable. The OCA formally started to supervise the Games starting with the 1986 Asian Games scheduled for Seoul, South Korea. In the 1990 Asian Games, held in Beijing, Taiwan (Republic of China) was re-admitted, under pressure by the People's Republic of China to compete as Chinese Taipei.

The 1994 Games held in Hiroshima included the inaugural participation of the former 5 republics of the Soviet Union who were part of Central Asia: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan. It was also the first edition of the Games held in a host country outside its capital city. However, Iraq was suspended from the Games due to the 1990 Persian Gulf War. North Korea boycotted the Games due to political issues with the host country. The Games were hampered during the opening ceremony due to a heart attack that killed Nareshkumar Adhikari, the chief of the Nepalese delegation.

The 1998 Games marked the fourth time the Games were held in Bangkok, Thailand. This time the city participated in a bidding process. The opening ceremony was on 6 December; the previous three were on 9 December. King Bhumibol Adulyadej opened the Games; the closing ceremony was on 20 December (the same date as all the previous games hosted by Thailand).

3.5.4 Symbol

The Asian Games Movement uses symbols to represent the ideals embodied in the Asian Games charter. The Asian Games

motto is "Ever Onward" which was designed and proposed by Guru Dutt Sondhi upon the creation of the Asian Games Federation in 1949. The Asian Games symbol is a bright sun in red with 16 rays and a white circle in the middle of its disc which represents the ever glimmering and warm spirit of the Asian people.

3.6 Commonwealth Games

The Commonwealth Games is an international sporting event held every four years in which different teams from Commonwealth countries can participate. Apart from 1942 and 1946, during and immediately after World War II, it has been continuously held since 1930.

From 1930 to 1950, it was known as the British Empire Games, but has since been renamed the Commonwealth Games, as athletes from all across the Commonwealth of Nations will take part.

The country to host the event the most is Australia, having welcomed athletes five times since the Games began.

Fig. Commonwealth Games

Aside from being one of the most famous multi-sporting events in the world, the Commonwealth Games is also one of the most inclusive. Athletes with a disability are considered full members of their national teams, which means the medals they earn are counted with their country's. It is also the first global sporting event to have an equal number of men's and women's events.

3.6.1 Formation

Way back in 1891, a man named John Astley Cooper wrote a letter to The Times newspaper suggesting that a sporting event should be held every four years as a means of 'increasing goodwill and understanding of the British Empire.' His campaigning is what inspired Pierre de Coubertin to reinvent what we now know as the Olympic Games.

However, there was still enthusiasm for an Empire Games. This increased after the Inter-Empire Championship was held in 1911 as part of the Festival of the Empire, to celebrate the coronation of King George V.

While the original idea for the Commonwealth Games belonged to John Astley Cooper, the man usually credited as the founder of the Commonwealth Games is Melville Marks Robinson, also known as Bobby Robinson.

Bobby Robinson was a Canadian sports journalist, who also became the manager of Canada's track and field team for the 1928 Olympic Games. Inspired by the success of the Inter-Empire Championship in 1911, he began lobbying for the creation of a British Empire Games.

Bobby Robinson was ultimately successful. The first British Empire Games was held in Hamilton, Canada, in 1930. Eleven countries took part in the Games, which included six sports:

- Athletics
- Boxing
- Bowls
- Swimming and diving
- Rowing
- Wrestling

3.6.2 Participation

Traditionally, a country would have to have some kind of history with the British Empire to become part of the Commonwealth, but that's no longer the case. Essentially, it exists so that different countries can co-operate with each other to

advance their development and pretty much any country could join.

Although there are only 54 countries within the Commonwealth, around 72 teams compete in the Commonwealth Games. This is because some dependent states prefer to compete under their own flag. For example, the United Kingdom will compete as the UK during the Olympic Games. In the Commonwealth Games, they'll compete separately as England, Wales, Scotland, and Northern Ireland.

When a team wins in a sporting event, they can come first, second, or third place. They will then win a gold, silver, or bronze medal, respectively. The all-time top gold medal winner of the Commonwealth Games is Australia, with England coming in second place.

3.6.3 Baton Relay

Similar to the Olympic Torch Relay, the Baton Relay is a relay that travels around the world in the run-up to the Commonwealth Games, finishing when the event begins.

It usually starts at Buckingham Palace. King Charles, as the current head of the Commonwealth, will insert a message into the baton. During the opening ceremony, it will be given back to him, so he can read it aloud. From there, let the games commence!

There is no set distance the baton must travel, but back in 2000, it covered around 60,000 miles and passed through 23 nations!

3.6.4 Sports in Commonwealth Games

More sports are being added to the Commonwealth Games all the time. In 2018, the Gold Coast games held 18 sports. This expanded to 19 in the Birmingham games of 2022. The decision for what games we get to see is partially determined by the host. The current Commonwealth Games sports are:

- Aquatics
- Athletics
- Badminton
- Basketball
- Cycling
- Hockey
- Rugby 7s
- Beach volleyball
- Bowls
- Boxing
- Cricket (women's)
- Gymnastics
- Netball
- Squash
- Table tennis
- Triathlon
- Weightlifting
- Wrestling