2 Physical Education

Physical education : Physical Education is defined as a process of learning through physical activities designed to improve physical fitness, develop motor skills, knowledge and behaviors of healthy and active living.

Physical education is the sum of man's physical activities selected as to kind and conducted as to their outcome.

Aim of Physical Education : Physical education is a vital component of the education system that aims to promote physical fitness, health, and overall well-being of students. The aim of physical education is the wholesome development of personality of an individual which means making an individual physically fit, mentally alert, emotionally balanced, socially well adjusted, morally true and spiritually uplifted. Physical education spreads awareness about the physical body. It enhances the knowledge of a student regarding physical safety.

Objectives of physical education : The objectives of physical education are: Physical development, psychological development, social development and emotional development.

1. **Physical Development :** Physical development is defined as the growth of the body and its parts, including muscle and motor development. It refers to the physical and biological changes that occur in humans between birth and adolescence.

Physical development objectives of physical education :

1. To develop the body in proper posture.
2. To develop organ systems such as nervous system, digestive system properly.
3. To develop muscle strength, power.
4. To develop muscular endurance, flexibility and agility.
5. To develop the concept of correct postural habits in walking, running, sitting.
6. To avoid accidents and injuries.
7. To provide knowledge about first-aid.
8. To develop neuromuscular coordination through participation in physical activities.
9. To develop proper growth and development in the individual.
10. To guide a person to make his body strong, and well-shaped.

11. To provide education about prevention of communicable diseases.
12. To provide the knowledge about fundamental movement skills in children.
13. To provide opportunities to enjoy different physical activities.
14. To set a goal for future development.

2. **Psychological development :** It is the development of human beings cognitive, emotional, and social capabilities and functioning over the course of the life span, from infancy through old age.

Psychological development objectives of physical education :

1. To develop positive thoughts, ideas, behavior, attitude, conduct and responses.
2. To develop a psychological balance in an individual.
3. To develop alertness of mind, deep concentration through various physical activities.
4. To develop social qualities such as courtesy, sportsmanship, co-operation, teamwork, managing one's emotion and expressing it in socially acceptable ways.
5. To develop thinking skills such as organizing and evaluating; focusing and remembering; decision-making and creative problem solving.
6. To inculcate values and skills in order to promote self-control, peace and relaxation to avoid the ill effects of stress, strain and fatigue.
7. To develop the ability to plan, implement and evaluate decisions.
8. To develop self-confidence and self-esteem in a player.
9. To overcome various challenges of life in a good manner.
10. To develop body awareness through different activities.

3. **Social Development :** Social development is about the overall improvement in the well-being of every individual in society so they can reach their full potential. For example, social development refers to change in the thought process of people regarding different genders in a positive sense.

Social development objectives of physical education :

1. To develop the awareness to follow rules, regulations, traditions and laws of society.
2. To develop awareness of motivation, enthusiasm in maintenance of healthy society.
3. To develop awareness of self-discipline and responsibility.
4. To enable students to play safely and acquire an awareness of safety measures.
5. To develop the ability to respect the attitudes and values of others.
6. To develop effective interpersonal skills such as cooperation and leadership.
7. To provide skills for dealing with psycho-social issues in the school, and community.

8. To develop understanding and appreciation of the culture which is world-wide.
9. To develop self-control, honesty, sincerity among the children.
10. To develop sensitivity and understanding of whole world's culture.

4. **Emotional development :** It is the ability to recognize, express, and manage feelings at different stages of life and to have empathy for the feelings of others. This development influences a child's self-confidence, empathy, the ability to develop meaningful and lasting friendships.

Emotional development objectives of physical education :

1. To develop the ability to control various emotions like fear, pleasure.
2. To develop the ability to control various emotions like hope, anger.
3. To develop the ability to control various emotions like love, hate, anxiety.
4. To develop the ability to deal with success and failure with equanimity.
5. To develop the ability to use one's body to express one's ideas, attitudes and emotions.
6. To develop the ability to motivate oneself.
7. To develop the ability of not brooding over a disappointing or painful incident.
8. To develop respect for others in the game.
9. To develop emotional maturity, social competence by interacting with other children.

QUESTIONS :

1. What do you mean by Physical Education?
2. What is the aim of Physical Education?
3. State any four physical development objectives of physical education.
4. State any four psychological development objectives of physical education.
5. State any three social development objectives of physical education.
6. State any three emotional development objectives of physical education.

4 Physical Fitness

Physical Fitness : Physical fitness is the ability of a person to do daily work without fatigue; moreover, to participate in playful activities and still reserve enough capacity to meet any emergency.

It is generally achieved through proper nutrition, physical exercise, and sufficient rest.

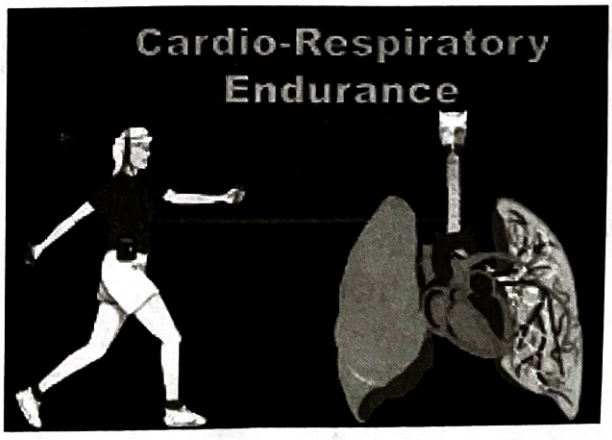
Physical fitness is the capacity to meet the present and potential physical challenges of life with success. It is successful adaptation to the stresses of one's life-style.

Importance of Physical fitness :

1. Physical fitness helps to increase total efficiency of an individual.
2. It helps us to grow faster physically and mentally.
3. We learn to keep our environment clean and safe for healthy living.
4. It improves the functioning of body systems leading to a good health.
5. With physical fitness we gain good shape, size and structure of the body.
6. We learn more about balanced diet, and develop self-esteem.
7. It develops the ability to take fast and correct decision.
8. It improves immune system and prevents us from various diseases.
9. It helps you live longer and prevent many chronic diseases, such as heart disease, high blood pressure.

Components of physical fitness : Physical fitness components can be categorized as: Health related components and Motor skill related components.

I. **Health related fitness components of physical fitness :** There are five components of physical fitness: Cardiorespiratory endurance, muscular endurance, muscular strength, flexibility and body composition.



1. **Cardio-respiratory endurance (Cardiovascular endurance) :** Cardiorespiratory endurance refers to the ability of the heart and lungs to deliver oxygen to working muscles during continuous physical activity. Cardiorespiratory endurance indicates a person's level of aerobic health and physical fitness. Having a high cardiorespiratory endurance generally means that a person can perform high-

intensity exercise for longer time. Cardiovascular exercise can be classified into three categories: high-impact cardio, low-impact cardio and no-impact cardio.

Exercise examples include walking, jogging, swimming, cycling, dancing, running and bike riding. The cardiovascular exercises improve cardiovascular health, lowers blood pressure, helps regulate blood sugar and regulates weight. The Cooper run test (2.4 km run), Harvard step up test (Brouha Test), are used to assess cardiovascular endurance.

2. **Muscular endurance (Stamina) :** Muscular endurance refers to the ability of a given muscle to exert force, consistently and repetitively, over a period of time. Long-distance running is a sport that requires muscular endurance. During a race, a marathon runner's body performs the same movement and stride, over and over again.

The exercises to improve muscular endurance are running, swimming, pushups, pull ups, sit ups, planks, body weight squats, and walking lunges. The muscular endurance increases your ability to do activities like lifting boxes or chopping wood without getting tired and reduces the risk of injury. It helps to decrease anxiety, depression. The muscular endurance tests include push-ups and pull-ups for upper extremities, repeated squats for lower extremities, and sit-ups and static back extension for trunk muscles.

Types of muscular endurance :

i. *Speed-endurance :* Speed endurance is the quality of being able to maintain sprinting velocities at or near your maximal velocity. *For example,* an 800m runner would do intervals at a distance less than 800 m at a speed of race pace or faster.

ii. *Short term endurance :* The short term endurance is the ability to resist fatigue in activities that starts from 45 seconds and lasts up to 2 minutes. It is associated with fast twitch muscle fibres. *e.g.* 800 m run.

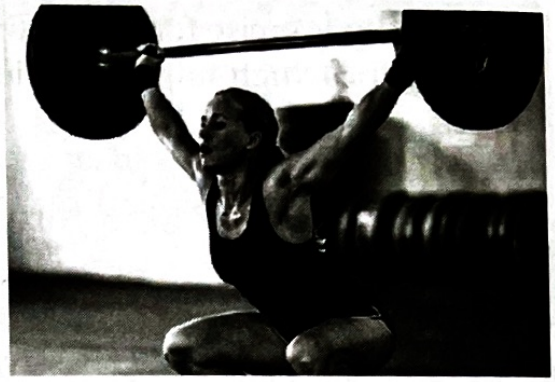
iii. *Medium term endurance :* The medium term endurance is the ability to sustain a strenuous activity which has a duration of 2 to 10 min. It associated with a high level of activity of the brain and slow twitch muscle fibres. *e.g.* 1500 m run, 5000 m cycling.

iv. *Long term endurance :* The long term endurance is the ability to resist fatigue in activities that lasts more than 11 minutes. This endurance is helpful when the activity is done for longer duration and the intensity or speed is slower. *e.g.* 5000 m cross country, 10,000 m race, and marathon requires such type of endurance.

3. **Muscular strength (Strength) :** Muscular strength is defined as the maximum amount of force that a muscle can exert against some form of resistance in a single effort. It is the ability of muscles to overcome resistance and produce force. A strength exercise is any activity that makes your muscles work harder than usual. Examples of exercises that develop muscular strength include resistance training, such as weightlifting,

bodyweight exercises, and resistance band exercises, push-ups, and pull-ups, cycling, climbing stairs, heavy gardening, such as digging. The muscular strength reduce the risk of injury, help you keep a healthy body weight.

The push up test, handgrip dynamometer test are used to test muscular strength.



Types of muscular strength :

i. *Static Strength (Isometric strength) :* Static strength is the ability to apply a force where the length of the muscle does not change and there is no visible movement at a joint. Static exercises are performed by increasing tension in a muscle while keeping its length constant. This can be achieved by pushing against an immovable object such as a wall

ii. *Dynamic Strength (Isotonic strength) :* Dynamic strength is the ability to apply a force repeatedly over a period of time. It is essential for highly explosive activities such as sprinting. Some examples of common dynamic strength movements are the push ups, bench press and deadlift. e. g. wrestling and throwing events etc.

Types of dynamic strength :

a. *Maximal strength :* Maximal strength is the ability to exert force upon an external object. It is required in weight lifting, wrestling and throwing events like shot put.

b. *Strength endurance :* It is the ability to overcome resistance under fatigue condition. An example of strength endurance for the chest would be performing the bench press followed immediately by a stability ball push-up. It is required for long distance races, swimming and road cycling.

c. *Explosive strength :* Explosive strength is the ability to exert maximal force in minimal time or the neuromuscular system's ability to generate high action velocities. It is generally used in sprint starts, weightlifting, shot put, jumping, wrestling, gymnastics, etc.

Types of explosive strength :

a. *Start strength :* It is the ability to develop maximal muscle force during the starting phase of the movement. *e.g.* sprints start, weight lifting.

b. *Strength power :* It is the ability to overcome the heavy resistance with high speed. *e.g.* shot put throw, discuss throw, long jump.

c. *Speed strength :* It is the ability to overcome lower resistance with high speed. *e.g.* team games like Football, Hockey require speed strength.

4. **Flexibility :** Flexibility is the ability of each joint to move through the available range of motion for a specific joint. Examples would be stretching individual muscles or the ability to perform certain functional movements such as the lunges. Flexibility activities that lengthen and stretch muscles can help you to prevent injuries, back

pain and balance problems. A well-stretched muscle more easily achieves its full range of motion. Without flexibility, the muscles and joints would grow stiff and movement would be limited. The sit and reach test is used to test flexibility.

Types of flexibility :

i. *Passive flexibility :* Passive flexibility is the range of motion a joint can move into when there's an external force helping it go there. A passive stretch is one where you assume a position and hold it with some other part of your body, or with the assistance of a partner or apparatus. *e.g.* bringing your leg up high and then holding it there with your hand.

ii. *Active flexibility :* The active flexibility refers to the ability of an individual to do the joint motion for a longer range without any external help. For example, doing any stretching exercise without external help.

Types of active flexibility :

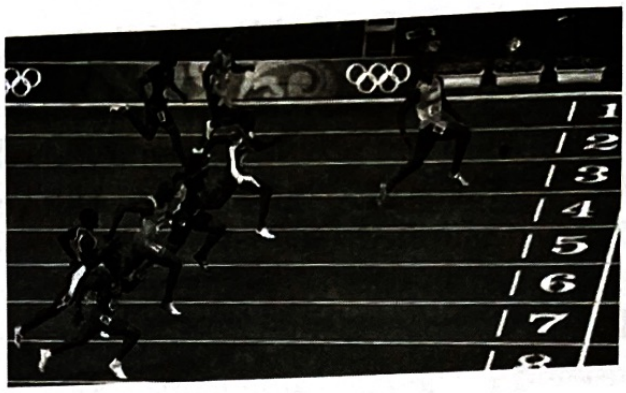
a. *Static flexibility :* It is the ability to move a joint to its maximum range of motion with static posture (stationary position). Static stretching involves holding a position for 30 seconds or longer. *e.g.* Toe-touching by bending forward and sideward.

b. *Dynamic flexibility :* It is the flexibility performed while in motion or movement. Dynamic stretches are controlled movements that prepare your muscles, ligaments and other soft tissues for performance and safety. *e.g.* the arm action in back stroke or the follow-through when kicking a ball.

II. **Motor-skill-related physical fitness components :** The six components of motor skills related to fitness are agility, balance, co-ordination, power, accuracy and speed.

1. **Power (Muscular Power) :** Muscular power refers to a great force production over a short period of time. In other words, it is the ability of muscles to exert maximum force in the shortest amount of time, like when you run or swim. Muscular power increases your ability to do activities like opening doors, lifting boxes or chopping wood without getting tired, reduce the risk of injury and help you keep a healthy body weight.

Examples of exercises that develop muscular power include resistance training, such as weightlifting, bodyweight exercises, and resistance band exercises. Running, cycling, and climbing hills are also options. Jumping with weights or throwing weights are used for power training exercises. Examples include football players, sprinters, and throwers. A standing broad jump, vertical jump and drop jump are used to test legs power.



2. **Speed :** The speed is the ability to move all or part of the body as quickly as possible. Speed is important in sprinting, speed skating, sprint cycling and sports such as tennis when a player has to move forward quickly from the baseline to reach a drop shot close to the net. The speed requires good strength and power, but also too much body weight and air resistance can act to slow the person down. It is basically dependent on heredity but can be improved through proper training. The test to measure speed is 40 yards sprint and AAHPER (The American Alliance for Health, Physical Education, and Recreation) test.

Types of speed :

i. *Reaction speed :* It is the ability to react efficiently and quickly after a stimulus. Reaction time is important when driving, when playing sports. *e.g.* The sound of the gun is the stimulus, and starting the race is the response.

ii. *Speed of movement :* It is the ability to do a single movement in minimum time. Movement speed is important in sports like jumping, throwing, kicking, boxing etc.

iii. *Acceleration speed :* It is the ability to achieve high speed of locomotion from a stationary position or from a slow moving position. It is important in swimming, football.

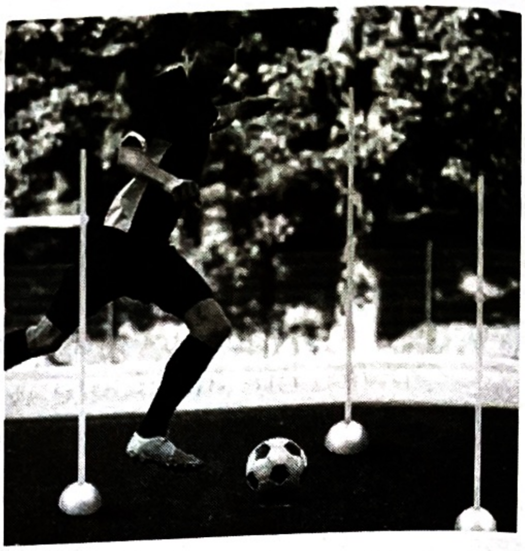
iv. *Speed Endurance :* It is the ability to do sports movements with high speed under conditions of fatigue. For example, an 800 m runner would do intervals at a distance less than 800 m (400 m repeats) at a speed of race pace or faster.

v. *Sprint speed :* It is the ability to maintain maximum speed of locomotion for maximum possible duration or distance. The key locomotor skills are walking, running, jumping, hopping, climbing, and skipping. *e.g.* 100 m and 200 m run.

3. **Co-ordination :** The co-ordination is the ability to carry out a series of movements or motor tasks smoothly and efficiently. The coordination is being able to move and use your body effectively and multiple people or things working well together. An example of coordination is when a gymnast walks on a tightrope without falling. The coordination exercises includes ball or balloon toss, jump rope, balance exercises juggling and dribbling. It involves the nervous system and the skeletal-muscular system working harmoniously in hand-eye and foot-eye coordination in activities such as the spike in volleyball. It is a learned, practiced skill that begins with active effort. The ball toss test for hand-eye coordination is used to assess coordination.

4. **Agility :** Agility is the ability to change direction rapidly without a significant loss of speed, balance, or body control. The exercises to improve agility are lateral jump

with agility ladder, single-leg forward hop, lateral lunge, side-step toe touch, plank jack. Rugby players need agility to side-step when they are running with the ball; netballers need agility to dodge into space for a pass or stick with the player they are marking. Good agility also requires good flexibility, balance, coordination and speed. It is measured by performing a timed shuttle run, zig-zag test.



5. **Balance :** Balance is the ability to maintain equilibrium when stationary or moving. Having optimal balance in equilibrium prevents fall and injuries. The exercises to improve balance are balance on one foot, single leg lift, balance on stability ball, balanced walk. It is a very complex skill that we develop using many senses such as visual, audio, touch etc. Even simple exercises such as walking, running, climbing stairs help to improve balance. Good balance will help to minimize energy waste during a performance, increasing movement efficiency and enabling the athlete to improve their performance. Balance beam test, standing stork test are used to measure balance.

Types of balance :

i. *The static balance :* Static balance is the ability to maintain postural stability and orientation with center of mass over the base of support and body at rest. This type of balance is important when doing activities such as squatting or standing on one leg.

ii. *The dynamic balance :* The dynamic balance is maintaining control of the body while moving or when switching between positions. Having good dynamic balance can help improve your coordination and ability to react to sudden changes of direction.

6. **Accuracy :** Accuracy is the body's ability to direct the body muscles and force towards a particular direction. It is the ability to control movement in a given direction or at a given intensity. There is no alternative of practice to improve your accuracy. It is very important for sports such as football, cricket. Testing accuracy can be achieved in many ways. For instance, if you're a tennis player, accuracy might mean the perfect serve. While if your sport is archery, accuracy might mean hitting the bulls eye every time.