

Health and Physical Education

For Class 10th



ਇਹ ਪੁਸਤਕ ਪੰਜਾਬ ਸਰਕਾਰ ਦੁਆਰਾ ਮੁਫਤ
ਦਿੱਤੀ ਜਾਣੀ ਹੈ ਅਤੇ ਵਿਕਾਊ ਨਹੀਂ ਹੈ।



PUNJAB SCHOOL EDUCATION BOARD

Sahibjada Ajit Singh Nagar

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Subject Co-ordinator : S Harjinder pal Singh, Retd. Subject Expert
Chief Vetter : Ms Jasvir Kaur, Retd Dy. Director
Subject Vetter : S Harpal Singh, Lecturer in Physical Education
Translator : Ms Anu Batta, English Teacher
Vetter : Ms Neha Arora, English Teacher
Artist : S Manjit Singh Dhillon, Artist PSEB

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ਇਹ ਪੁਸਤਕ ਵਿਕਰੀ ਲਈ ਨਹੀਂ ਹੈ।

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Foreword

The Punjab School Education Board, since its inception in 1969 has been striving to revise the curricula of various subjects on modern lines and to prepare books in a scientific manner according to the revised syllabus.

Recognizing the importance of National and International sports, Punjab is the first state to make Health and Physical Education a compulsory subject from class 6th to 8th grade and an optional subject from class 9th to 12th.

Before preparing the book in hand, the recommendations of PCF-2013 were probed and the curriculum was revamped. Under these recommendations the curriculum of Science subject was combined with the present book so that the information on Physical Education can be obtained. This book has been prepared by qualified and experienced experts related to this subject. The language of the book is written in a simple, vivid and relevant way according to the mental level of the students. Appropriate diagrams are given to explain the difficult concept and subtopics in a clear manner.

An effort has been made to make the content of the book useful for teachers as well. It is hoped that this book will be useful for both students and teachers. However the board will welcome the suggestions from the teachers and scholars of the field to improve this book further.

Chairman

Punjab School Education Board

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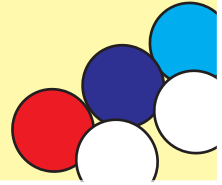
Content

For Class X
(Chapter 1 - 6)

Sr. No.	Tital		Page No.
1.	Effects of Exercise on Body Systems	S Harpal Singh	1
2.	Physiotherapy	Mrs Mandip Kaur	8
3.	Growth and Development	Dr Kuldip Singh Banur	16
4.	Test, Measurement and Evaluation	Mrs Mandip Kaur	23
5.	Olympian Gurbachan Singh Randhawa	S Navdeep Singh Gill	29
6.	Recruitment and Future in Indian Forces	Dr Kuldip Singh Banur	33

1 Chapter

Effects of Exercise on Body Systems



Human body is a complex machine. It is a combination of various bodily systems and vital organs. Every physical activity depends on the coordination of the body systems. The functioning of the body systems depends on one another. No physical system is can to work independently. For example, oxygen is very important for survival. Our brain and muscles need oxygen in the form of energy to function continuously. Our digestive system has a digestive process (metabolism) to break down food which is impossible without oxygen. Oxygen is obtained from the environment through inhaling, then the oxygen reached in the lungs is circulated to the various systems of the body such as the muscular system, digestive system and the nervous system through the blood circulatory system. From this we can infer that all the systems of the body work together.

It is very important to have a strong body to perform well in sports. Players need constant practice to enhance their physical fitness and improve their performance. Through practice, additional appropriate stress is placed on the physical functioning systems of the athlete to increase the athlete's performance. As we have discussed earlier, all functional systems have an important role in the body, but in sports performance the muscular system, respiratory system and blood circulatory system are considered to play an important role in sports performance. Although exercise has an effect on all the functional systems, more emphasis is given on exercises that improve these three main systems. In this lesson we will study about the effects of exercise on these three systems.

- 1. Muscular System** – The muscular system is one of the most important systems in the human body that helps a person perform all kinds of activities. From light work like lifting a pencil to heavy work depends on the muscles. Our muscles make up 40 percent of

the total weight of the human body. There are more than 650 muscles in our body that are connected to different bones. Each muscle has two ends that are very tightly attached to the ends of the bones. When these muscles contract and expand, the bones attached to the respective muscle move. It is because of this movement in the bones that we can walk and work. Any movement in the body is not possible due to any single muscle

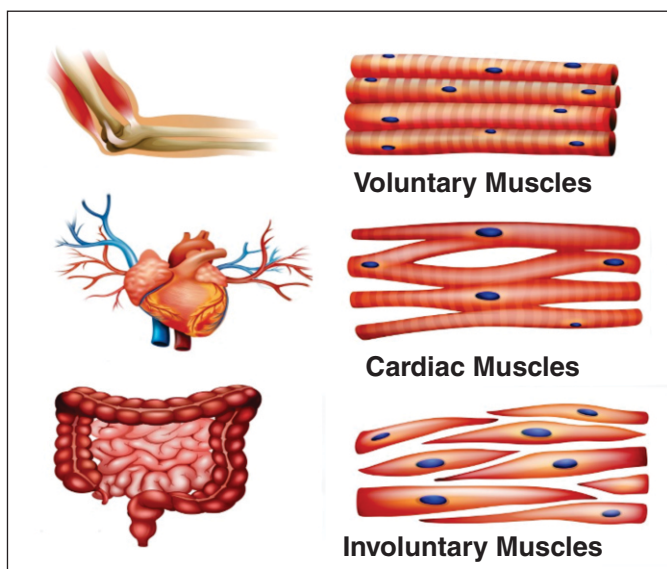


Fig.1

rather many of muscles work together in coordination to perform action. They are divided into three categories according to the function of the muscles - voluntary muscles, involuntary muscles and cardiac muscles.

- (i) **Voluntary Muscles** – These muscles are attached to our bones which help to move our body. These muscles are completely under our control and we can use them as per our wish, such as the leg and the arm muscles.
- (ii) **Involuntary Muscles** – These types of muscles are not under human control and do not work as per our wish. These types of muscles are found in the oesophagus, lungs, blood vessels, etc. in our body.
- (iii) **Cardiac Muscles** - These muscles are present in our body only in the heart. The structure of these muscles is somewhat similar to voluntary muscles but the functions are involuntary. These muscles are not under our control and they constantly keep working from birth till death.

Effects of Exercise on Muscular System

- (i) **Change in Structure** – Exercise changes the shape of muscles. There is an increase in muscle length and thickness. It is important to note that exercise increases the size of muscle fibers but does not change the number of fibers.
- (ii) **Increase in Muscle Strength** – When we exercise daily, there is change in muscle size and its strength also gets increased. With exercise, the muscle fibers become

stronger and the grip of the muscles with the bones becomes stronger. With the increase in muscle strength we are able to do heavier tasks.

- (iii) **Prevention from Injuries** – It is common for players to get injured on the playground. Exercise strengthens the muscles and makes them flexible, due to this the risk of injuries such as sprains, strains, etc. on the playground decreases.
- (iv) **Improvement in Body Physique** – Exercise enhances physical shape and beauty. It cures muscle weakness and a variety of physical deformities. Strength in muscles keeps a person fit even in old age.
- (v) **Reduction in Fatigue** – Exercising daily increases the ability of muscles to work. A person who exercises regularly can work longer than a normal person and has less fatigue. Exercise also improves reaction time.

2. Respiratory System – All living creatures on earth, including humans, need oxygen to survive. A human being can live for a few days without food but without oxygen it becomes difficult to breathe which can lead to his death within a few minutes. We inhale oxygen from the atmosphere. This oxygen reaches the lungs through nose or mouth. Every part of the body from head to toe needs oxygen to function. During oxygen consumption and physical activities, the body produces carbon dioxide, which must be expelled from the body. The blood collects carbon dioxide from different parts of the body and carries it to the lungs. The lungs expel it out of the body through nose and mouth. This process of obtaining oxygen and emitting carbon dioxide is continuous and this process is called respiration. The respiratory system consists of the following organs :

- Nose
- Pharynx
- Larynx
- Trachea
- Bronchial Tubes
- Lungs
- Diaphragm

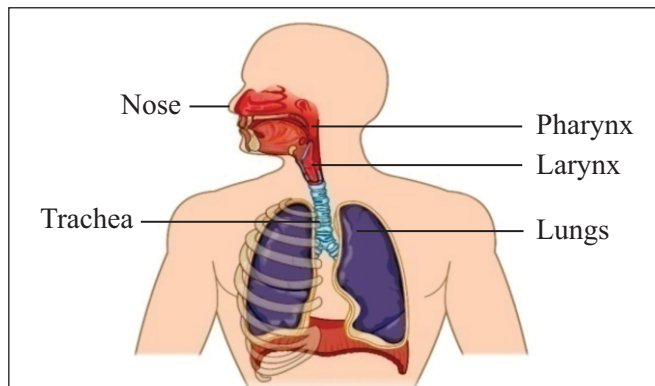


Fig.2

Effects of Exercise on the Respiratory System :

- (i) **Increase in Vital Capacity** – The process of forcing air out of the lungs after a deep breath is called vital capacity. Vital capacity is measured with a device called Spirometer. Exercise increases a person's vital capacity. The capacity of a normal person is 3-4 liters while the capacity of an exerciser can be 4-5 liters. An increase in vital capacity helps in releasing large amount of carbon dioxide and unwanted gases from the body.
- (ii) **Increase in Lung Capacity** – Exercising daily increases the size of our lungs, allowing us to carry more oxygen to the lungs in one breath. A person who exercises has a higher oxygen level in his body so he is active and more agile than a normal person.
- (iii) **Change in Respiratory Rate** – At rest a person breathes at a rate of 16-18 per minute while during exercise the breathing rate reaches 50-60 per minute so that the body can get more oxygen and rapidly forming carbon dioxide can be expelled from the body. The lung capacity of a person increases by doing exercise. Normally an athlete or a person who exercises has a lower respiratory rate than a normal person but inspite of low breath count, he is able to carry more oxygen to the body.
- (iv) **Strengthening Respiratory Muscles** – Exercising daily strengthens the respiratory muscles such as the intercostals muscles and the diaphragm. While breathing, the diaphragm helps the lungs to expand, allowing more oxygen to enter the lungs. The increased level of oxygen in the lungs increases the rate of blood oxidation. The speed of blood purification increases due to which the level of haemoglobin in the blood also increases.
- (v) **Avoids Second Wind** – When a new player starts the game, after some time he starts feeling tired and short of breath, he wishes to stop the game. This state of the body is called the second wind. By continuing the game the situation gradually goes away and the player starts playing normally. With daily practice the second wind phase of the player gets decreased. This increases the endurance of the player and he can continue playing without getting tired for a long time.

3. Circulatory System – Humans are in constant need of oxygen and food to survive. At the same time, it is very important to get rid of carbon dioxide and other unwanted substances produced in the body for good health. The work of delivering oxygen from the lungs and the digested food from the digestive system to the whole body is done through the blood circulatory system. In other words the circulatory system does the work of supplying essential elements to the body and removing extra substances. The blood circulatory system is a very important system of the body in which the heart, arteries, veins, capillaries and blood are its main organs.

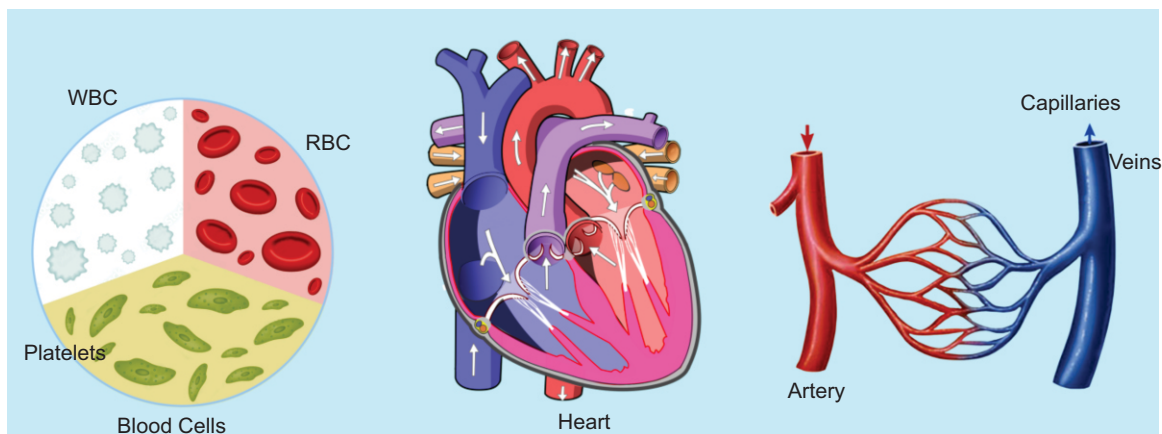


Fig. 3 Circulatory System

Heart – The heart is the most important part of the circulatory system and is located slightly tilted to the left between the two lungs. The heart beats continuously in a rhythmic way and pumps blood throughout the body. The main function of the heart is to carry pure blood i.e. oxygenated blood from the lungs to different parts of the body and bring the de-oxygenated blood back to the lungs for cleansing.

The heart is divided into four chambers in which the upper two are called the auricles and the lower two are called the ventricles. When the two auricles contract together during a heartbeat, both ventricles expand, and when both ventricles contract, both auricles expand. This process of heartbeat goes on continuously. First of all, impure blood from different parts of the body reaches the right auricle of the heart through the veins. When the right auricle contracts, the impure blood in it travels to the right ventricle through the tricuspid valves situated between right auricle and right ventricle. When the ventricles contract, the tricuspid valve closes so that the blood cannot return to the right auricle. Now there is only one way for the blood to flow out and the blood flows out of the heart through the pulmonary artery. This pulmonary artery is further divided into two sections

which carries the impure blood from the heart to the right and left lungs for purification. From lungs, carbon dioxide is expelled from the impure blood and oxygen is added to purify the blood. Purified blood enters the left auricle of the heart through the pulmonary veins. When the left auricle contracts, pure blood reaches the left ventricle through the bicuspid valve. The left ventricle is the fourth and the last compartment of the heart, at the contraction of which blood flows out of the heart through the Aorta Artery into various parts of the body. Thus this process of heartbeat works continuously and the heart keeps delivering the pure blood to the whole body.

- Arteries** – Arteries carry blood from the heart to the body and contain pure blood. Only the pulmonary artery contains impure blood.
- Veins** – Veins carry blood from the body to the heart. All veins except the pulmonary veins contain impure blood.
- Capillaries** – There is a network of very minute capillaries in our body. These capillaries carry clean blood from the arteries to every part of the body.
- Blood** – The components include red blood cells, white blood cells, platelets and plasma. Blood is the red fluid found in our body which is about 1/12 of the total weight of our body. The blood constantly circulates in the blood vessels and supplies the essential nutrients to the whole body and helps in expelling the non-essential elements present there. There are Red blood cells and White blood cells in the blood. They play an important role in the body. The function of Red blood cells is to deliver oxygen to the cells of the body and the function of White blood cells is to protect the body from diseases by fighting against foreign bacteria. Platelets helps to prevent excessive bleeding from the body plasma is liquid form of blood.

Effects of Exercise on Circulatory System

- (i) Strengthening Cardiac Muscles** - Exercise makes the heart muscles work harder. This strengthens the muscles and increases the heart's ability to work. A person with a strong heart is able to do any task for a long time without getting tired.
- (ii) Increase in Exchange of Blood** - The body needs more oxygen during exercise and the carbon dioxide produced in the body is needed to be expelled faster. The heart of a person who exercises daily inhales more oxygen through normal inhaling and expels more carbon-dioxide gas from the body through exhaling which keeps the person active and healthy.

- (iii) **Increase in Stroke Volume** - The amount of blood the heart pumps out after one stroke is called a stroke volume. The heart of a normal person draws out 70-75 ml of blood in one stroke while the heart of a trained athlete normally supplies 100-115 ml of blood per stroke to the body.
- (iv) **Change in Heart Rate** - Exercise on a daily basis changes the heart rate. The heart rate of a normal person is about 72 beats per minute while the heart rate of a hard working athlete is 40-45 beats per minute. As we have read earlier, the stroke volume of an athlete increases, thus the athlete's heart supplies more blood to the body even after a few beats per minute.
- (v) **Prevention from Diseases** - Exercise has a very significant effect on the circulatory system. There is an increase in the amount of oxygen in the body, expulsion of carbon dioxide, strengthening of the heart muscles and increase in the number of blood cells. Due to these changes brought about by exercise, a person is prevented from a variety of severe diseases such as heart attack, high blood pressure, high cholesterol, etc.

EXERCISE

Objective Type Questions

1. Human body is a complex _____.
2. Which is the best food for human beings?
3. 50% of the total weight of the human body is muscles. True/False
4. How many muscles are there in our body?
 - (a) more than 650
 - (b) 660
 - (c) 550
 - (d) 60

Short Answer Type Questions

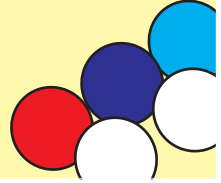
5. Write the names of the organs of the circulatory system?
6. How many types of muscles are there?
7. Explain Vital Capacity.

Long Answer Type Questions

8. What is the respiratory system? Give information about the effects of exercise on respiratory system.
9. Describe 'Heart' briefly and also write about arteries, veins and capillaries.

2 Chapter

Physiotherapy



Physiotherapy is a combination of two terms, word ‘physio’ means body and ‘therapy’ means healing. It is a process of treatment through natural methods. In place of medicines, the patient is treated with natural methods such as massage and exercise.

Physiotherapy is an ancient form of treatment. The name may seem new, but it is usually used in every home, such as massaging, rubbing with ice, heat fomenation with a warm cloth, etc. Such treatments are part of physiotherapy. In modern life, these techniques are used for treatment and to enhance the performance of athletes. This technique of treatment is also known as physical therapy. It treats an injured person or a patient and enables him to work again. This is the branch of rehabilitation. In this method of treatment, magnetic equipments are also used along with natural resources. This treatment is very affordable and effective for long time. In this type of treatment, the medicine is used only if it is extremely necessary.

Definition of Physiotherapy

“Physiotherapy is the science in which a patient is treated with water, heat, radiation, light, ice, electricity and magnetic energy.”

“Physiotherapy is a method of treatment which enables a person to function by treating a person’s disorders, disabilities and invalidness.”

Contribution of Physiotherapy in Sports

Physiotherapy is a major contributor in the field of sports. This is an important part of sports medicine. Athletes continue to suffer injuries during sports, such as fracture, dislocation, sprains and muscle strains etc. For example, if sprains occur while playing in the playground, the sprained area is massaged with ice. If the sprain is normal then the player

recovers quickly. If the sprain is severe, it is treated using various methods of physiotherapy so that the player gets recovered and is able to play again. In simple terms, physiotherapy is a form of treatment that involves physical exercise, massage, cold and hot water, heat, radiation using electrical appliances and magnetic energy. This technique strengthens the muscles, tissues and ligaments and is very helpful in the quick treatment of the joint injuries. It is forbidden to use any kind of painkillers, physical ability enhancing medicines during sports competitions. Sometimes the player gets injured during the match and his immediate treatment is very important to keep him in the match. Despite an injury sports physiotherapist plays a vital role in keeping an athlete active in the game. He treats the player immediately with natural remedies to relieve the pain or discomfort and helps the player to stay competitive.

Role of Physiotherapist in Sports

A specialist in physiotherapy is called a physiotherapist. While playing, players get many types of injuries. For the treatment of such injuries, a physiotherapist must have the knowledge of sports medicine. Specialists in Sports Physiotherapy are sent with the teams during international sports competitions and practice. These physiotherapists treat injuries sustained during sports. These experts also keep on researching for better treatment of sports injuries. The main work of these experts is to relieve the fatigue of the players during the sports competition and provide them physical and mental rest. Physiotherapy helps the athletes maximise joint mobility and relieve muscle strain, so that the players can easily complete the activities and movements during the game. It is natural for the player to get injured during sports practice or competition. Injuries to athletes are usually mild, but these may be serious some times. If the physiotherapist does not diagnose and treat a player properly then the injury may prove detrimental to the future of the player.

Techniques of Physiotherapy

1. Therapeutic Exercises
2. Massage
3. Cryotherapy
4. Hydrotherapy
5. Infrared Rays Therapy (Radio Therapy)
6. Heat Therapy

7. Electrotherapy

8. Magnetic Therapy

1. **Therapeutic Exercises** - Exercise therapy is a method of physiotherapy that allows the injured limb of the athlete to be rehabilitated by performing special exercises. Physical disorders and disabilities are eliminated through these exercises. These exercises are done according to the medical advice, the type of exercise, time, number, repetition and rest time are also determined as per the instructions. The main function of these exercises is to heal as well as regain the strength of the injured limb.



Fig. 4

2. **Massage** - The method of massage therapy is very old. This method of physiotherapy is a technique that involves movements of the of hands and fingers movements with the help of which the ligaments and muscles can be restored to their functioned capacity. This technique is used to relax the athlete and relieve fatigue. For example, after the game is over, we usually notice that the athlete feels stiffness in the muscles. So the players pat each other on the back of calves and thighs with their hands. This is a massage technique that relaxes the muscles. For different types of Massages and Movements of fingers and palms, the following techniques are used accordingly.

(a) Effleurage (Stroking) : The athlete's limbs are gently pushed up with light hands using the effleurage method. This massage is done by rotating the palms in a circular motion in each stroke, keeping the palms in contact with the body.



Fig. 5

(b) Petrissage (Kneading) : The meaning of petrissage is to knead, meaning the position of the hands, fingers and thumb while massaging is like kneading dough. Just as the dough is kneaded with the palms so the massaged limbs are continuously kneaded, squeezed, rolled and sometimes picked up with the help of one hand. Muscle pain is felt while using this method but gradually this method helps to relax and speed up the blood circulation in the body.



Fig. 6

(c) Tapotement (Percussion) : Tapotement means tapping. In this technique, the fingers and thumbs are joined to form different shapes with the hands which are then used to apply pressure to the body such as cupping, hacking, tapping and pinching.



Fig. 7

- (d) **Friction** : Friction means massaging by creating friction with the tips of fingers and thumb. This method is used to massage the muscles by creating friction on the strained and swollen area. This technique increases the working ability of the joints, muscles, ligaments and the nerves.



Fig. 8

- (e) **Vibration** : This is a technique for massaging the muscles to create vibrations on the limbs with light hands and fingers. There are many vibrating electric machines available these days. This method is used to stimulate the soft tissues, relieve muscle pain, reduce stress, relax and relieve fatigue.



Fig. 9

3. **Cryotherapy** : The method of treating with ice is very popular. Injuries are treated using ice packs, ice-cooled towels, ice massages and ice gel packets. Many athletes bathe in ice to improve their performance. This treatment is usually used immediately after an internal injury such as a sprain, strain,



Fig. 10

etc. This is a very effective treatment. This treatment helps to prevent internal bleeding. This reduces the swelling on the affected area. Using it takes less time for the injury to heal. This technique is used to reduce pain, reduce muscle swelling and increase the ability of the body to function.

4. **Hydrotherapy :** Hydrotherapy is a method of treatment using different pressures of hot or cold water and exercising in water. Consumption of more energy during practice and competition in sports makes the athlete physically and mentally exhausted. This causes pain in the joints and strain in the muscles. This technique enhances the working ability of joints and muscles of athletes. Sometimes too much work or exercise builds



Fig.11

up lactic acid in the muscles, which makes the muscles feel stiff. Lactic acid does not accumulate in a place by using hot water which makes the player feel relaxed. Repeated tapping of hot and cold water alternately changes the temperature of the injured area and activates the affected nerves.

5. **Infrared Rays Therapy :** This treatment involves the use of Infrared Lamp that releases infrared rays. These rays are used to treat the muscles and ligaments attached to the bones.



Fig. 12

6. **Heat Therapy :** Heat treatment means that the injured part of the body is treated according to the heat prescribed by the physiotherapist. This heat can be obtained by hot water bottle, electric bag, hot gel packet, hot belt, hot water bath, Sona bath and steam bath. Athletes usually use this treatment to warm up the body, relieve fatigue and pain.



Fig.13

7. **Electrotherapy :** Electrotherapy is done by using electric current with the help of some special equipment for treatment through electrical energy. It is used to generate heat in the athlete's body, repair nerves and reduce pain. This technique should only be used by an expert physiotherapist.



Fig. 14

8. **Magnetic Therapy :** This method is also called magnetic field therapy. In this method, treatment is done by activating the magnetic field of our body. With the help of artificial magnets injuries of joints, muscles and ligaments are treated by activating the magnetic field of the body. Different types of magnetic devices like rings, bracelets, chains, etc. are used.



Fig.15

In this way we can say that physiotherapy has a great contribution in the field of physical education and sports. Through its various methods, while re-enabling injured players, the performance of the players can also be improved. Sports physiotherapists play an important role in enhancing the performance of athletes during training camps by using a variety of therapies.

EXERCISE

Objective Type Questions

1. Physiotherapy is a process of treatment in a _____ way.
2. What is the meaning of word 'Physio' in Physiotherapy ?
3. Massage is a new method of treatment. True/False
4. Hydrotherapy is treatment through
 - (a) water
 - (b) magnet
 - (c) ice
 - (d) electricity

Short Answer Type Questions

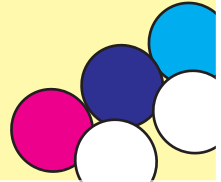
5. Write the definition of Physiotherapy.
6. What is massage?
7. Write a note on friction.

Long Answer Type Questions

8. How is the treatment done with ice?
9. Write in detail about any five techniques of Physiotherapy.

3 Chapter

Growth and Development



The words ‘growth and development’ are related to the changes that take place in a child’s body as he gets older. Although the words growth and development seem to be synonyms but there is a lot of difference between the two terms.

Growth in the Human Body

The word ‘growth’ refers to the physical changes taking place in a child’s body. As a child gets older, his height, body weight and physique change, which can be measured, weighed and observed. Growth is a natural process that begins from the birth of a child. This process continues till a certain age.

Development of the Human Body

The field of physical development is very wide. The term development is associated with a child’s physical changes as well as other aspects of life. Apart from physical development, it is related to the development of mental development and complete personality of the child. Development depends on the experiences gained during one’s life which cannot be weighed or measured but can only be felt. The process of development continues throughout the life of a child from birth till death.

Difference between Growth and Development

We have already read that there is a big difference between the words growth and development. The following are some of the key differences between the terms growth and development-

Sr.No.	Growth in the human body	Development of the human body
1.	Growth is a process that continues from the birth of a child to a certain age and stops when the body reaches maturity.	1. This process continues throughout life. It continues even after the body has reached maturity.
2.	Growth can be measured in body size, weight and height.	2. Physical development cannot be measured, it can only be felt.
3.	The changes that take place during the growth process can be clearly seen.	3. Due to the qualitative aspect of development, it cannot be seen. But feel its effects.
4.	Growth refers to changes in any part of the body.	4. Development jointly affects the complete transformation of an individual.
5.	Growth is more affected by lineage.	5. Development depends on a person's ancestry as well as the environment in which he lives.
6.	Growth is related to a person's internal factors.	6. Development is related to the external factors of the individual.

Factors Effecting Growth and Development

Growth and development both are important aspects of human life which fluctuate over time. Growth and development largely depend on a child's lineage and environment but there are some other factors also that affect a child's growth and development: -

- 1. Heredity :** Heredity is the quality that a child inherits from his parents or grandparents from birth. It is commonly seen that the offspring of tall parents are also tall. In addition, other aspects of a child's life, such as intelligence, temperament, behaviour, etc. also match the qualities of the parents.
- 2. Balanced Diet :** Balanced diet is also considered to be a very important element for the growth and development of a child. A balanced diet is extremely essential for a child's early development. If the child's diet is unbalanced then the child can suffer from many diseases such as: skin diseases, bone diseases, dental diseases etc. A balanced diet should have adequate amount of nutrients to enable the baby to grow and develop properly.
- 3. Effect of Secretion Glands :** The thyroid gland in the body plays an important role in the growth and development of a child. Sometimes physical growth and development is accelerated or delayed due to abnormal secretion from this gland.
- 4. Physical Exercises :** Physical exercise is very important for the physical and

intellectual development of a child. Exercise strengthens the body muscles. Exercise increases physical efficiency. The bodily systems begin to perform their functions in an orderly manner. Thus, exercise plays an important role in the overall development of the body.

- 5. Gender Gap :** There is a difference in the speed of growth and development in the body of boys and girls. From infancy to adulthood, girls grow faster than boys, so they get young early. By the age of 16-18, the growth process is complete in most of the girls. In contrast, boys continue to grow until they are 20-22 years old. After the age of 18, boys outnumber girls in growth.
- 6. Effect of Environment :** The environment has a great influence on the process of growth and development. If a child is provided a good environment at school and at home then the child's physical and mental development takes place properly.

Principle of Growth and Development

The principle of growth and development cannot be overlooked for the creation of a healthy society. If teachers and parents are not aware of these principles then the process of development of the child will be affected. The study of some of its important principles is as the following.

- 1. Principle of Hereditary Traits :** The birth traits inherited from the parents have a great influence on the growth and development of the child. It is commonly seen that the children of doctors also become doctors, the children of lawyers become lawyers and the children of sportsmen progress more in sports than the other children. This is all due to the influence of hereditary traits.
- 2. Principle of Continuity :** The process of development in a human being is continuous from birth till death. According to this theory, the process of evolution never stops that is why human beings undergo gradual changes. The pace of development can be seen through the changes in human behaviour.
- 3. Unequal pace of Growth and Development :** The pace of growth and development in life is not uniform. The rate of growth and development is functions between slow and fast during different stages of life. During infancy the growth and development of a child is very fast while in childhood this speed is a bit slow. As soon as a child enters adolescence this speed increases again. This rate of growth and development varies from child to child.

- 4. Principle of Individual Difference :** The speed of growth and development of each child is different as the growth and development of child is influenced by different aspects such as heredity, environment, intelligence and gender. Even if twins are placed in the same geographical conditions, is a differences in their physical, mental and social development arise due to individual differences.
- 5. Principle of Inter-relation :** There are many aspects of a person's life such as physical, mental, emotional and social etc. Every aspect of life is interconnected and these aspects affect growth and development. If a child's height remains small, it also affects the child's mental and emotional development. Short stature makes a child feel inferior to the other children which has an effect on his overall development.
- 6. Principle of Simple to Complex :** The first step of growth and development is simple then the development gradually progresses towards complexity. After birth when a child starts moving his or her limbs, this is a process of development. After this when the child is little mature then he tries to pick the things up with his fingers, this is called special development. Similarly, a toddler initially starts speaking with a lisp or unclear speech but over time he begins to speak clearly. This is also part of development.

After studying the above principles, we come to know that in addition to these principles, there are many other principles that play an important role in improving the growth and development of the child.

Types of Body : Every person's physical constitution is different from another person. A person's physical, mental, intellectual, emotional and social characteristics do not match with any other person. Twins despite being born into the same family and nurtured in the same environment, have differences in their bodies. These physical variations have a very important place in the field of sports. Not every child can succeed in every sport. Children who are interested in sports are given a choice of sports based on their physical constitution (height, weight, strength, etc). If the child gets the right game according to his physical qualities then after practice he can get good results in that game. So we can say that it is very important to identify the different types of body physique for sports. Due to these physical differences, some psychologists have categorized the study on the basis of physical and

mental characteristics and temperament. This classification is not complete in itself but the famous scientist William Herbert Sheldon has categorized the human species on the basis of body size, i.e. Somatotype, in the following three categories-

1. Endomorph

2. Mesomorph

3. Ectomorph

1. Endomorph : These types of people have a chubby body. The body parts of such people are soft and the size of the abdomen is large. Their neck is short and thick. Their palms are wide and fingers are small. They are calm in nature and do not get angry over small things. Such individuals can participate in weightlifting, powerlifting, heavyweight wrestling and throwing events.

2. Mesomorph : The body of these types of people is strong, shapely and has attractive muscles. They have wide chest and shoulders. These people are agile. They are adventurous, enthusiastic and courageous. These people are more active while facing any obstacle. Their neck is strong and long. They have strong bones. The bones of these types of people are strong. The body of a person with this type of physique is also known as the athletic body. Such people fit into any sport with a little effort. Such people are also called all-rounder.

3. Ectomorph : This type of person has a long, lean, thin and weak body. Such people like solitude. They keep their emotions suppressed. Their muscles are thin and their limbs are long. They always stay within their limits. By nature these people are irritable, more stressed and more agitated in difficult times. These types of people like to participate in endurance activities such as long distance running.

Although the above classification is not scientific but still on the basis of this information we can form groups of students in the class to reveal their behaviour, discipline and the uniqueness hidden in them.

Stages of Growth - The whole life of a person can be called the stage of development. There are many phases in this stage. Scientists have divided this stage in their own way but generally for the medium of education these can be divided into the following stages -

- 1. Infancy (1-6 Year)**
- 2. Childhood (6-12 Year)**
- 3. Adolescence (12-18 Year)**
- 4. Adulthood (above 18 Years)**

- 1. Infancy :** The period from the birth of a child to the age of 6 years is considered to be the period of infancy. During this period the child is completely dependent on his parents. He spends most of his time with his family and his family is his first society. This stage is very important from the point of view of the child's development. As the pace of development accelerates, a child learns a lot from his surroundings. By the end of infancy the child starts going to school. It is a new experience for him as he sets foot in the society outside his home for the first time.
- 2. Childhood :** After infancy the child enters childhood. The period of this stage is considered to be from the age of 6 years to the age of 12 years. At this stage the child develops artistic interests and tries to learn new things. The child's interest in sports grows and most of his time is spent in learning and playing new games. At this stage of life, the growth and development of boys and girls is almost uniform and sometimes it is difficult to recognise the difference between boys and girls. At this stage boys and girls are seen playing together.
- 3. Adolescence :** Adolescence is considered to be the most crucial phase of a child's life. This period is from 12 to 18 years of age. Adolescence is a time when many physical changes begin to occur in children who remain carefree until childhood. The children who are unaware of these physical changes, begin to feel sick and stressed. Physical changes cause sudden transformation in boys and girls at this age. Adolescent girls grow faster than boys. Girls outperform boys in growth and development. Boys start getting facial hair and girls also start moving towards maturity. Boys and girls who play together until childhood are divided into different groups during adolescence. At this age children feel stressed about their future. The child considers himself mature enough and insists on making his own decisions. But due to the opposition and interference of the parents, he becomes irritable by nature and he gets frustrated. At this age the child needs to be treated empathetically by his parents and teachers.

- 4. Adulthood :** Adulthood begins after adolescence. After 18 years, this state lasts till the end of human life. Adulthood is the stage when a person becomes mature and is able to make his own decisions. That is the reason the right to vote and driving license is issued by the government only after the age of 18 years.

EXERCISE

Objective Type Questions

1. Growth is a _____ process.
2. What kind of food should be taken for growth and development?
3. Environment has no effect on the process of growth and development.

True/False

4. What kind of a body does an ENDOMORPH type person have?
(a) strong (b) chubby
(c) shapely (d) tall

Short Answer Type Questions

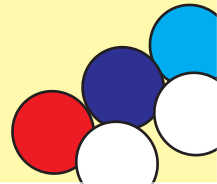
5. Write the names of stages of development.
6. What is adolescence?
7. What is the difference between growth and development?

Long Answer Type Questions

8. Describe the factors affecting growth and development.
9. Describe briefly the principles of growth and development.

4 Chapter

Test, Measurement and Evaluation



In order to progress in any sphere of life, especially in the field of education, there is a great need for test, measurement and evaluation. For example, assuming there are 50 students in a class, the teacher has to take a test of the lesson he / she has taught to find the brightest student. All the students in the class take the exam, the teacher examines all the students' papers and gives them marks. The student who gets the highest marks in the examination gets the first place. In this way the students at second, third and fourth place are also identified. The test taken by the students is a test and determining the students at first, second and third place based on the marks obtained by the students is measurement. Determining the difference between the marks obtained by the student in the previous and current examination to see if the student has progressed or not is called assessment.

Testing, measurement and evaluation have a very important role to play in Physical Education and Sports. With the help of these tools, data of the players is collected from the playgrounds, with which a decision is taken about the progress of the players and the training they need. Athletes are monitored and evaluated from time to time and information on the effects of training on the player is obtained. These methods are very important to measure the physical fitness, performance and progress of the player. The players are selected for different sports according to the test, measurement and evaluation and training programs are prepared accordingly. It is on the basis of various tests performed on the players that the progress of the players, the selection of training methods, the identification of the weaknesses of the players and the scales of the ability of the coaches are examined.

Test - Test is a very important tool to know the progress of the player and training level of the coaches. Test is a tool that helps us find out the improvement in the physical abilities, mental level and sports skills of the player. Different types of tests have been developed to examine these abilities of the players some of which are as the following:

- 1. Speed Test :** This test is used to monitor a player's speed. In this test the athlete is asked to run a distance of 50 yards at full speed. The time from the start to the finish is recorded in seconds to determine the exact speed of the player.

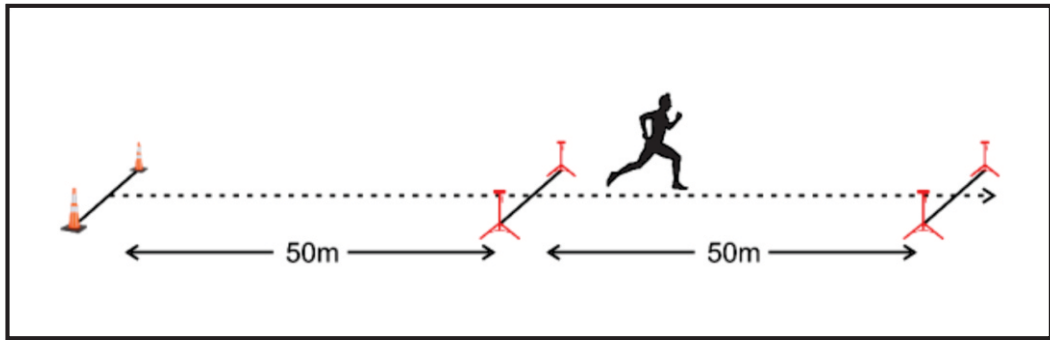


Fig.16

- 2. Chin-Up Test :** The strength of a player's arms and shoulders is measured through this test. The player hangs with an iron rod and pulls the whole body up with his arms. While pulling up, the player's feet should be in the air and the chin should be above the iron rod. The test is based on the number of chin-ups struck by the player.

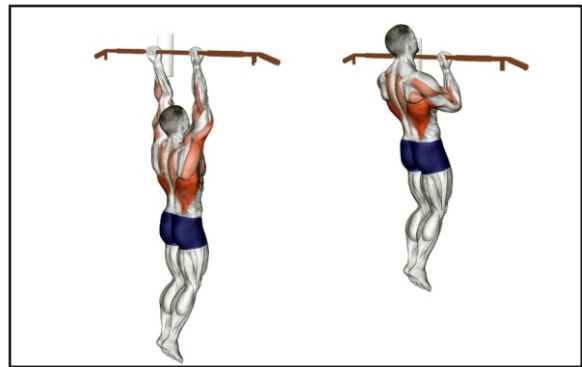


Fig.17

- 3. Broad Jump :** To perform a broad jump, the athlete stands with his legs open according to the width of his shoulders. With equal force on both legs, he jumps forward with both feet together. The distance covered by the player after jumping is measured in metres. The distance covered by the player shows the strength of the player's legs.

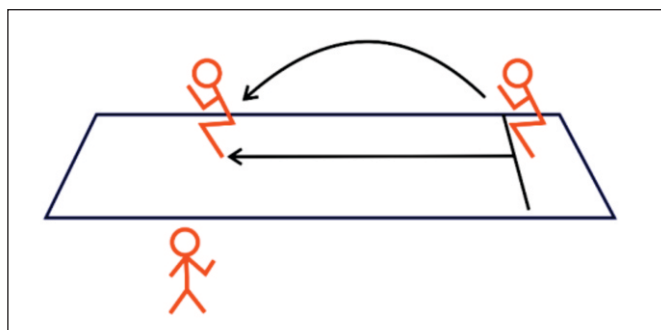


Fig.18

- 4. Flexibility Test :** The athlete will stand upright on a flat platform with legs straight and feet together. He will try to touch his hands below his feet, keeping his legs straight and leaning his upper body forward. The player tries to touch the platform with his hands bending his body as much as possible and stays in that position for at least 2 seconds that will be the flexibility of his body. As far as the player's hands go below his feet is measured. The player's legs should be perfectly straight during this test.



Fig.19

- 5. Skin Fold Test :** A special type of tool called Skin Fold Calliper is used to measure thickness of skin. With the help of this tool, the thickness of the skin of the arms, abdomen and chest of the athlete is measured. This measurement helps to determine the body fat of the athlete as excessive body fat affects sports performance in different sports.

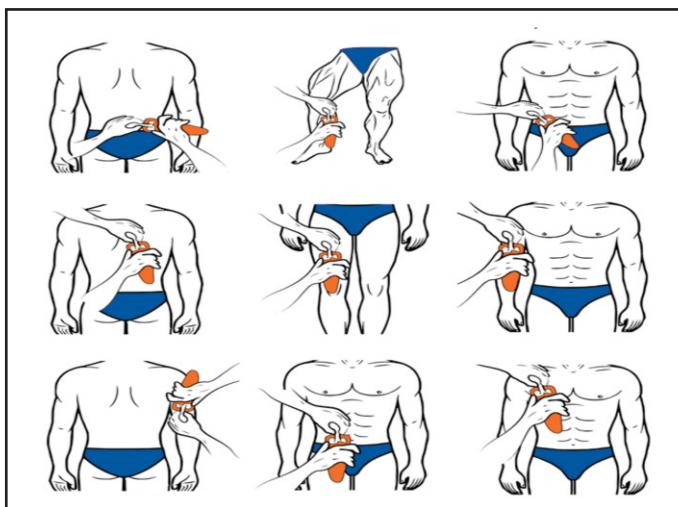


Fig. 20

6. Psychological Tests : A variety of tests are developed to determine the mental level of the players and to determine the fear of winning or losing the game in the minds of the players. These tests are in written form with multiple choice questions. The player chooses the answers according to his understanding and his intellectual ability is tested on the basis of the answers given by him.

Thus we can deduce from the various tests given above that the tests are very important in judging the abilities of the players in the game.

Measurement

Keeping a record of the data obtained from the player after the test is called measurement. It is a systematic and data based technique that is applied very carefully. Measurement is the record of qualities, characteristics and results of players. The data obtained from various tests conducted to measure the physical fitness, mental level, structure etc. of the player is very carefully collected. According to various tests, it can be measured in seconds, meters, kilograms etc. for example, in how many seconds does the athlete run the 50 meters race, how many pull-ups does the athlete hit in one go and how many feet does the athlete make a broad jump.

Evaluation

Evaluation means evaluating the record of the measurements obtained from the test being conducted on players. The evaluation compares the present data of a player with his previous record to see if the player is making progress or not. Evaluation compares one player to another so that the difference between the two players can be ascertained. Evaluation is very important for the progress of players in sports. Without evaluation, the progress of the player and the effectiveness of the coach's training program cannot be ascertained. Sometimes a player can't make the right progress despite working hard, which requires a change in his training methods. This can only be ascertained through evaluation. Evaluation helps in ranking of players and creating new training programs also.

Importance of testing, measurement and evaluation in Physical Education

1. Selection of Players : The physique and physical traits of the players vary for different sports. For example, athletes with an **ectomorph** physique can perform well in races and overweight/mesomorph athletes can perform well in sports such as shot-put and wrestling. Testing, measurement and evaluation is a technique used in sports to select the right game for a player by observing the players' height, weight and other measurements.

- 2. To identify Physical Fitness :** Athletes' speed, strength, stamina, flexibility and coordination are the components of physical fitness that help the athlete play during training and competition. Measurement and assessment test techniques can be used to determine a player's physical fitness. If there is need for improvement in any particular aspect of the athlete's physical ability, special training can be provided in that aspect. By developing the physical components with these physical abilities, the playing ability of the player is increased.
- 3. To develop new norms :** Test, measurement and evaluation is the basis of research, as a result of which new criteria is formulated. In the field of physical education and sports, a variety of new tests are being developed to measure physical fitness, mental fitness and skills in sports. Today, new records are being set by the players in sports competitions. The new records being set by the players are possible only because of the results obtained from these tests, measurements and evaluation.
- 4. Better Sports Performance :** The main goal of a player is to perform well during the competition. He works hard through out the year to achieve this goal. During the training, the coach corrects the mistakes of the player and develops the quality of sportsmanship and physical fitness in the player so that the player can perform well in the competition.
- 5. To Prepare the Training Program :** Different sports training programs are implemented to prepare players to participate in different sports. All games can not be prepared with the same training method. Sometimes two players participating in the same game are trained differently by the coach. This is done keeping in view the physical constitution of both the players, their experience or level of competition etc. Sometimes new training programs are also developed keeping in view the special needs of the players. All this is possible only through test, measurement and evaluation.
- 6. To Maintain the Record of Sports Performance :** Tests, measurement and evaluation help to keep a record of the players' physical fitness, mental fitness, health and sportsmanship. These records become a challenge for the players in the future, for example the record of the performance of the players in each competition during the games is kept as a score sheet which becomes an inspiration for the new players. Keeping records makes the player work harder and try to improve his old record.

7. Grading of Sportspersons : Athletes have a distinct identity in the society. This recognition is the result of many years of hard work by the players. Rankings are based on the performance, testing and evaluation of players, for example, during the Football World Cup; the “Golden Boot” is awarded to the player who scores the maximum goals. All the players in the world are ranked on the basis of their performance. Athletes’ past and present records are required to rank players.

In this way we can say that it is very important for the players and teachers / coaches to have knowledge about test, measurement and evaluation techniques, so that the players can develop holistically. Sports policies and sports programs have been implemented at the primary and secondary levels by various departments to promote physical education and sports that is only possible due to tests, measurements and evaluation.

EXERCISE

Objective Type Questions

1. The speed test is recorded in _____ time.
2. What is the skinfold calliper measurement tool used for ?
3. Overweight players can not perform well in sports like shot put and wrestling.
(True/ false)
4. In which sport is “Golden Boot’ awarded?
(a) Hockey (b) Cricket
(c) Football (d) Volleyball

Short Answer Type Questions

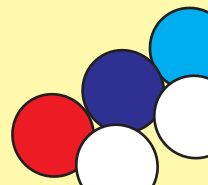
5. What is a test?
6. What is Vital Capacity?
7. What is meant by a player’s rank?
8. Explain speed test and chin-up test.

Long Answer Type Questions

9. Explain Test, Measurement and Evaluation in Physical Education in detail.
10. Explain any three types of tests to identify the abilities of players.

5 Chapter

Olympian Gurbachan Singh Randhawa



Gurbachan Singh Randhawa is a great athlete of Indian athletics who can be called a complete athlete. He was a top decathlete who won the title of Asia's best athlete while doing decathlon. He had no equal in the hurdle race. Gurbachan Singh Randhawa was an all round athlete in the true sense who was proficient in all the three events- races, jumps and throws. It seemed as though Gurbachan Singh Randhawa crossed hurdles not by running but by flying. His hawk like flight wrote a golden chapter in the history of Indian athletics.



Fig. 21 : Hurdle Race of Gurbachan Singh Randhawa

Early Life

Gurbachan Singh Randhawa was born on 6 June 1939 at village Nangli (near Mehta) in Amritsar district to father Major Tehal Singh Randhawa and mother Dhanwant Kaur. His father and elder brother Harbhajan Singh were also famous athletes of their time. Due to the sports atmosphere at home, Gurbachan Singh inherited sports.

Inclination Towards Sports

Due to the sports atmosphere at home, Gurbachan Singh started his sports career with volleyball and football at an early age. Gurbachan started his athletics career from high school in Mehta Nangal. At the school level, he became the winner of the district sports. In 1956, he took admission in Khalsa College, Amritsar. At college he was drawn to the 110m hurdles race. Gurbachan broke the college record of 110 meters hurdle race in the very first year. Then he broke the 20-year-old record set by his own father in the long jump. In 1957-58, in the inter-college athletic meet of Panjab University, Gurbachan brought laurels in whatever event he participated in. He won the title of the best athlete of the university by winning 5 gold medals.

Leaving Khalsa College in the middle of his studies, Gurbachan Singh Randhawa joined the CRPF in 1958. After joining CRPF, his sporting talent improved even more. He won many competitions in the All India Police Games and became the best athlete. The best athlete of All India Police Games was awarded the 'Home Minister's Medal' which he won for six consecutive years.

The beginning of International Athletics

Gurbachan Singh Randhawa rose to prominence in the country's athletics at the age of 21 when he broke the national record. He won the gold medal in the decathlon at the Open National Athletics Championship held in Delhi in 1960. Gurbachan set a new record with 5973 points in Decathlon. Gurbachan Singh was the youngest athlete in the Indian athletics team selected for the 1960 Rome Olympics. After participating in the 1960 Rome Olympic Games, Gurbachan Singh's motivation increased even more. About forty days before the 1962 Jakarta Asian Games, at the Indian athletics team trials at Bangalore, Gurbachan Singh set four new national records (110 m hurdle race, long jump, javelin throw and decathlon) in two days and created a stir in sports field. These records were set in all three categories of athletics: races, throws and jumps. In the Jakarta Asian Games, he won the gold medal in the decathlon and earned the title of Asia's Best Athlete.

The year 1964 was the year of the Tokyo Olympics. The start of this year for him was very well. He set a new national record in the 110m hurdles. Gurbachan Singh went on a European tour with the Indian athletics team before the Tokyo Olympics. During the tour of Europe, he participated in 9 competitions, out of which he won 8 competitions and took his Olympics preparation to the top. During a Sports Meet in Kassel, Germany, he clocked a time of 14.1 seconds which was even better than his national record. At that time Gurbachan Singh entered in a group of first 10 best hurdlers of the world.

Gurbachan Singh was made the captain (flag bearer) of the Indian sports contingent at the Olympic Games held for the first time in the Asian Continent in the city of Tokyo. He led the Indian athletes by holding the tricolour in the opening ceremony.

Tokyo Olympic Games proved to be very crucial in the sports life of Gurbachan Singh. He was the first Asian athlete to reach the final of 110 meters hurdles in the history of Olympic Games. Although he failed to win a medal in the finals, he finished fifth with a time of 14 seconds, setting new National, Asian and Commonwealth games records. Gurbachan Singh's fifth place was also an auspicious sign for Indian sports.

Gurbachan Singh Randhawa has won 34 gold medals at national level competitions including Inter State, Open National and All India Police competitions, including 22 gold medals in Police Games alone. He has set a new national record, meet record or equalled it at national level competitions for 15 times. His national record in 110m hurdles stood for 37 years and the national record in decathlon stood for 12 years.

Even at the age of 43 years, Gurbachan was seen running on hurdles while teaching the tricks of coaching. He was the coach of the Indian athletic team during the 1982 Asian Games. Apart from being a coach, Gurbachan Singh Randhawa worked as a selector of the Indian athletics team for a long time, a member of the Sports Awards Committee and a member of the jury panels for doping cases. He has been the head of the selection committee of Indian athletes since 2005. He was also the Sports Advisor of Punjabi University, Patiala and during this period Punjabi University won the MAKAT Trophy in sports. A biography named 'Uddna Baaz' was written on his name.

Other Prominent Achievements of Gurbachan Singh Randhawa

1. In 1961, Gurbachan Singh Randhawa got the honour of being the first Arjun Awardee.
2. He received 'Police Medal for Meritorious Services' in 1978 for exemplary services in CRPF.
3. He was honoured with the highest Rashtrapati Puraskar in police services "President's Police Medal for Distinguished Services" in 1990.
4. He received the country's fourth highest civilian honour 'Padma Shri' in 2005.
5. In 2019, he was honoured with the highest sports award Maharaja Ranjit Singh Award by the Government of Punjab.

EXERCISE

Objective Type Questions

1. Gurbachan Singh Randhawa was born in _____.
2. In which year did Gurbachan Singh join CRPF?
3. After participating in the 1960 Rome Olympic Games, Gurbachan Singh's courage increased even more. (True/False)
4. Which is Gurbachan Singh's sport?
 - (a) Athletics
 - (b) Kabaddi
 - (c) Cricket
 - (d) Hockey

Short Answer Type Questions

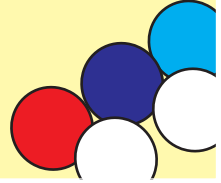
5. How did the Tokyo Olympic Games prove to be important for Gurbachan Singh?
6. Write about the early life of Gurbachan Singh.

Long Answer Type Questions

7. Elucidate Gurbachan Singh's early life and beginnings in sports.
8. Write about Gurbachan Singh's start in international athletics and the honours he received.

6 Chapter

Recruitment and Future in Indian Forces



Defence forces play an important role in the progress of any country because the country whose borders are strong has no fear of external threats. Therefore that country progresses at a fast pace. It is the responsibility of the forces to guard the country's borders and protect it from external threats. The Government of India has recently appointed a Chief of Army Staff over all the three forces chiefs, who coordinates with the three forces i.e. Army, Air Force and Indian Navy.

History

India is a vast country. The names of all its three forces are included among the world's top armies. In terms of strength, Indian army ranks second in the world after China. The Indian Army was established by the British rulers in 1895. At that time it was known as the British Indian Army. After the independence of India in 1947, it came to be known as the Indian Army. Like other countries of the world, the Indian Army is also divided into three forms: Army, Air Force and Navy. A separate chief is appointed for each of the three branches of the forces. The command of the three forces of the country is in the hands of the President.

Since the existence of the army in India till date, Punjab has made a special contribution. A large number of young people of Punjab join the army. In the various wars fought by the Indian Army, the youth of Punjab have presented innumerable examples of bravery. Punjabi youths have received the highest number of bravery awards given by the Indian Army. On the basis of their bravery and valour, the youth of Punjab have reached to the highest positions in all the three forces, i.e. the ranks of army chiefs. The names of General J.J. Singh and General Bikram Singh as the chief of the army, Air Marshal Arjan Singh and Air Marshal Barinder

Singh Dhanoa in the Air Force and Admiral Karambir Singh in the Indian Navy are prominent. In view of the enthusiasm among the youth of Punjab for joining the army, this text provides information for the students about the criteria required for the recruitment.

(A) Indian Army : Among the three Indian forces, the strength of Indian Army is the largest. The responsibility of guarding the plains of the entire country falls to the army. The Army is the first to take action to protect the country from any possible external threat.

A large number of army personnel retire every year. New recruitments are made every year to meet the shortage of retired jawans and in view of the security needs of the country. Due to the vast scope of the army, there are many departments in the army apart from general duty. Each department has its own work so that the overall organisation of the army can be run smoothly. Due to the differences in the functions of each department, different vacancies are published for recruitment in these departments. Recruitment criteria is different for different posts. Advertisements for recruitment are issued by the government through various means like internet, newspapers, television, sainik welfare offices etc. The army recruitment work is divided into several zones. Youngsters who want to be recruited apply for recruitment in their respective zone of state and district. For joining the army, applicants can apply in the following different departments according to their qualifications:-



Fig. 22

1. Soldier General Duty
2. Soldier Clerk / Store Keeping Trade
3. Soldier Technical
4. Soldier Nursing Assistant
5. Soldier Tradesman

Candidates have to go through several tests to get recruited in any of the trades mentioned above. These tests include physical measurements, physical aptitude, written and medical tests, etc. Candidates are required to pass each test. Some of the criteria for recruitment like height are given a slight relaxation to the residents of several states because the average height of the residents of these states like Sikkim, Meghalaya etc. is less than that of the residents of other states. In this lesson we will get the information about the criteria required

for the recruitment of the youth of Punjab which is as the following:–

	Soldier General Duty	Soldier Clerk/ Store Keeping trade	Soldier Technical	Soldier Nursing Assistant	Soldier Tradesmen
Age	17½ to 21 years	17½ to 23 years for all others			
Height	170cm	162cm	170cm	170cm	170cm
Chest	77 cm without inflating and 5 cm with long breath should be increased.				
Educational Qualification	Minimum 10th	10+2 in any stream	10+2 in Non-medical	10+2 in medical	10th in all subjects
Marks obtained	With 45% marks	With minimum 60% marks	With minimum 50% marks	With minimum 50% marks	With minimum 33% marks

Physical Ability Test : The physical ability of the candidate is checked in four ways through the physical ability test. It includes a 1600m race, pull-ups, a 9-feet trench and a balance test (Zig-Zag Beam).

1. 1600 Metre Race : All candidates have to complete the 1600 metre race in less than 5 minutes 30 seconds. It carries 60 marks. Candidates who complete the race in more than allocated time but less than 5 minutes 45 seconds get 40 marks. Candidates who take more than 5 minutes 45 seconds to complete the race are disqualified for recruitment.

2. Pull-Ups : In this, the candidate performs pull-ups while hanging from a bar. Points are awarded according to the number of pull-ups he performs.

Number of pull ups	10	9	8	7	6	Less than 6
Points obtained	40	33	27	21	16	Disqualified

3. 9 feet trench : In this test the candidate has to jump across a 9 feet trench. Candidates who cross the gap are considered eligible for the next test. No marks are awarded for this test. Only passing the test is mandatory.

4. Balance Test (Zig-Zag Beam) : In this test, there is a crooked path made of wood at a height of three feet from the ground. It is called the Zig-Zag beam. The candidate has to cross this path without losing his balance. This test is also not scored.

Written Test : Candidates who clear the Physical Aptitude Test have next aim to crack the written test. The written test carries a total of 100 marks. The exam consists of a total of 50 questions for which the examinee is given time of one hour. The candidate must score at least 32 marks in this examination.

Medical Examination : The medical test is seen as the last stage of joining the army. Candidates are thoroughly medically examined by the army's expert doctors. Apart from the examination of the physical parts, special attention is paid to the eyesight, the hearing ability, the structure of the feet, the structure of the legs, etc.

Extra Marks : Young aspirants who have obtained a certificate in NCC or sports during their school or college studies are awarded additional marks according to the level of achievement. In NCC, candidates with 'A' certificate are given 5 marks, candidates with 'B' certificate 10 marks and candidates with 'C' certificate are awarded 15 marks in the written test. Candidates having NCC 'C' certificate and interested to be recruited as Soldier General duty and tradesman are exempted from the written test. Thus, in the field of sports, an additional 20 marks are given to an international level player, 15 marks to a national level player and 10 marks to the university level player and 05 marks to the state level player.

Candidates who complete the above mentioned process and clear each test are considered eligible for army recruitment. Candidates who fulfil all the criteria are given appointment letters after conducting a police verification regarding their character.

(B) Indian Air Force : The Indian Air Force was established in 1932. Like the Army, the Indian Air Force has also earned a reputation among the best air forces in the world. The main task of the Air Force is to protect the country from any kind of air threat and to attack the enemy if necessary. The strength of air force is very less as compared to the army but the air force has an



Fig.23

important contribution in the defence of the country. Airmen are recruited in the Air Force in two categories: Technical and Non-Technical.

1. Technical Airman : To join the Air Force trade, the age limit of the candidate is 17 years to 21 years and he must have passed 10+2 category with minimum 50% marks in non-medical subjects. After passing 10th, students who have obtained a 3 year Diploma in Mechanical, Electrical, Electronics, Computer etc from a recognized institution are also eligible for recruitment in this category.

2. Non-Technical Airman : The age of the youth joining this category should also be between 17 to 21 years. Candidates must have passed 10+2 class with minimum 50% marks in any stream.

In order to join either branch of the Air Force, it is mandatory to clear the physical fitness, written test, medical tests etc. such as in the Army.

(C) Indian Navy : A naval force named “Royal Indian Navy” was established in 1934 during the British rule. After India became independent in 1947 and Pakistan became a separate country, the Navy was split into two. After this, in 1950, India built its own independent navy which was named Indian Navy. India shares sea borders with many countries. There is a fear of external attacks and many other threats to the country through sea routes. The function of the Indian Navy is to protect the country’s maritime borders and protect the country from external threats through the sea. The duty of naval recruits is very exciting and challenging. There are two ways to join the Indian Navy as a soldier.



Fig.24

1. Matric Recruitment : Applications are made under this category to join the Indian Navy as cooks, waiters and cleaners. The recruitment age for these categories is 17 to 20 years. Candidates must have passed 10th examination from any recognized Board of Education in India. Apart from the training of cooks, waiters, cleaners etc. all the selected candidates are also trained in military weapons etc.

2. Senior Secondary Recruitment : All those candidates who have passed 10 + 2

category with Non Medical (Physics, Chemistry and Maths) and are willing to join the Navy as Sailor can apply. Candidate age should be between 17 to 20 years at the time of recruitment. Candidates recruited in this category are appointed in the departments of Engineering Branch, Electrical Branch, Education Branch, Naval Architect etc . The work of the enlisted soldiers in this category of navy is very technical and important. All the operations and maintenance of radars, communication equipment, weapons etc working on naval ships are the responsibility of these soldiers.

Advertisements are given from time to time through newspapers etc for recruitment in the Indian Navy. Candidates who fulfil the recruitment requirements can apply for the recruitment. Like other forces, candidates are also required to clear physical, written and medical exams to join the Navy.

(D) Direct Recruitment/Commissioned Recruitment as Officers : In the previous part of the lesson we have learned about enlisting as a soldier, airman or sailor in the three forces. This is what we call enlisting as a soldier. Direct recruitment of officers to command the army and to replace retiring officers is also made in all the three branches of the forces. The examination is conducted by the National Defence Academy (N.D.A.) and the Union Public Service Commission (U.P.S.C) for the recruitment of officers in the army. Candidates who have passed 10+2 category with non-medical subjects and are willing to join the army as an officer apply for this exam. It is a high ranking exam. After clearing the written test, the candidates have to face an expert interview and a rigorous medical examination. It takes a lot of hard work and preparation to pass these exams. Students who clear this examination are selected as officers in Army, Air Force or Indian Navy as per their merit.

The Punjab Government has started Maharaja Ranjit Singh Armed Forces Institute, Mohali for young men and Mai Bhago Armed Forces Institute for girls aspiring to join the army as officers. Both these institutes prepare young men and women who want to join the army. Both the government run institutes provide absolutely free training to the selected candidates. Apart from government institutes, many social organisations and retired army officers have also opened training centres in which the willing youth can get trained and join the forces.

(E) Para Military Forces : Apart from the three forms of the Indian forces: the Army, the Air Force and the Navy, many other forces have been formed to meet the defence needs of

the country. These forces are called para military forces. In simple terms of appearance and operation, these forces appear to be similar to the main forces, but these forces differ significantly from one another. Among these forces Border Security Force (B.S.F), Central Reserve Police Force (C.R.P.F.), Central Industrial Security Force (C.I.S.F.) etc. are major forces. In order to join the paramilitary forces, one has to fulfill several selection criterias of the Paramilitary Forces.

Future in Army for Sportsmen

The Indian Army offers great opportunities for sportspersons. Apart from coaching, many types of special facilities are provided to the players who join the army facilities like exemption from general duty, provision of good food and promotion etc. are provided to the players. The Indian Army is divided into many regiments such as Sikh Regiment, Dogra Regiment, Gorkha Regiment, Jat Regiment, Rajput Regiment, Bihar Regiment etc. Each regiment has a sports wing, in which different sports teams are formed. Players are inducted into their teams by these regiments and trained by the best coaches of the army. Sports competitions at various levels are conducted by the army. These competitions range from inter-regiment competitions to international sports competitions. Army teams also participate in the national games held every year in which the performance of army players is commendable every year. The World Military Games are organised every four years. Army teams from all countries participate in these competitions. Indian Army players also participate in these competitions and have won many medals so far.

Apart from the military sports, Indian army sportsmen have performed well in other sports competitions like Olympic Games, Commonwealth Games, Asian Games, SAF Games etc. Neeraj Chopra, India's only gold medalist at the 2020 Tokyo Olympics, is also associated with the army. Milkha Singh is known all over the world as the 'Flying Sikh' who set many records at the international level. Milkha Singh's passion for sports started after he joined the army and after receiving training in the army, he became a successful athlete. Apart from this, Major Dhyan Chand (Hockey), Rajvardhan Rathore (Shooting), Jitu Rai (Shooting), Ram Singh Yadav (Marathon), Gurcharan Singh (Boxing) etc. many sportsmen of the army have gained fame in the field of sports internationally.

‘ਸਮਾਜਿਕ ਨਿਆਂ, ਅਧਿਕਾਰਤਾ ਅਤੇ ਘੱਟ ਗਿਣਤੀ ਵਿਭਾਗ’, ਪੰਜਾਬ।

EXERCISE

Objective Type Questions

1. The three armies of the country are commanded by _____.
2. In which year was the Indian Air Force established?
3. Among the three Indian armies, the army has the largest strength.
(True/False)
4. Apart from the physical ability test, how many methods are used to check the candidate's ability?
(a) 2 (b) 3
(c) 4 (d) 5

Short Answer Type Questions

5. What is the nine feet trench test?
6. Write a note on training institutes for recruitment in forces run by the govt. of Punjab?
7. What do you know about the Para Military Forces ?
8. Write a note on the Indian Navy.

Long Answer Type Questions

9. What is the future for sportsmen in the army? Write in detail.
10. Give complete information about the Indian Air Force.