Health and Physical Education

A Teachers' Guide for Class VI

विद्यया ऽ मृतमश्नुते

एन सी ई आर टी
NCERT

राष्ट्रीय शैक्षिक अनुसंधान और प्रशिक्षण परिषद्
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Foreword

Health is a critical input for the overall development of the child. It is a multi-dimensional concept and includes physical, mental, social and emotional aspects. Integrated cohesive development of the related concepts lead to the achievement of health, fitness and wellness of the children. Physical Education and Yoga contribute towards holistic development of the child by making him/her physically fit, mentally sound, socially well adjusted and emotionally stable. Considering the importance of this area, various *National Curriculum Frameworks* (NCFs) made it a compulsory subject up to the secondary school stage.

As in the other subject areas, in Health and Physical Education, teacher plays a vital role in effective transaction of this area. Over the years, the orientation of this subject has undergone a change making it an integrated discipline comprising Health, Physical Education and Yoga. Considering the fresh orientation and importance, teachers need resource material and skills to meet the needs of this area for proper transaction. In view of this, the National Council of Educational Research and Training (NCERT) has developed Teachers' Guides on Health and Physical Education for Classes VI to VIII.

This Teachers' Guide for Class VI is first in the series focuses on a holistic understanding of health and covers how exercises, games and sports, nutrition and the environment influence health. The psycho-social and mental health related issues of children— sensitivity, safety and security and their collective responsibilities for healthy community living—have also been discussed in this book. Given the interdisciplinary nature of this subject, cross references have also been mentioned. Experiential learning activities, for acquiring skills for healthy living form an integral part to make the material child constructive, has been included.

I appreciate the hard work done by Professor Saroj Yadav, *Dean (Academic),* NCERT and the team for bringing out this material. Several experts and teachers contributed towards the review and finalisation of this material. We are grateful to them and their institutions. The material was tried out with teachers in actual schools. Based on the feedback of experts and teachers, the material has been revised. We are also grateful to them for their suggestions.

As an organisation committed to systemic reform and continuous improvement in the quality of its products, NCERT welcomes comments and suggestions which will enable us to undertake further revision and refinement of this material.

HRUSHIKESH SENAPATY
Director
National Council of Educational
Research and Training

New Delhi
April 2016

Preface

The National Council of Educational Research and Training (NCERT) has developed the syllabi and a number of instructional materials for different classes as a follow up of NCF–2005 to facilitate and promote effective transaction of Health and Physical Education in school. The present publication, *Health and Physical Education: A Teachers Guide* for Class VI is addressed to the needs of teachers. The material makes an effort not only to explain various concepts related to different content areas but also indicates activities in which every learner may be actively involved. Besides, some critical facts that are related to the content are also provided in the boxes. Each module ends with a set of items for assessment. As is evident, it contains details about the topics included in the syllabus for this class, such as human body, physical fitness, leadership abilities, selected games, relationship between environment and health and nutrition and healthy living, safety measures and gender concerns. The Unit 6 on Yoga for Health has been adopted from the texbook titled *Yoga : A Healthy Way of Living.*

As is reflected in the entire material, the pedagogical approach to be adopted for the transaction of this curricular area has necessarily to be interactive and truly participatory that promotes experiential learning. It is also addressed to the conditions that must be made available for ensuring that all students of the class get equal opportunities to participate in all games and sports included in the syllabus. For this, teachers are expected to be responsive to the needs of all the students. All the activities that are to be organised have to be focused on skill development and not simply on providing knowledge about games and sports. It is appreciated by letting students free to play games and sports themselves on their own.

In view of the above, the role of the teacher in effective transaction of this subject is very critical. The teacher, therefore, has to pay special attention to the following points:

- The Health and Physical Education is a core subject like all other subjects, and hence, it has to be ensured that it receives its due recognition and equal status with other subjects, a status which is not being given at present.
- It is essential to ensure that even the minimum essential physical space and equipment are available in the school.
- This subject does not need to be focused on casually organised certain physical activities and games and sports activities for selected students. It consists of health education, physical education and yoga. All these components must be suitably integrated during the transaction process and in an inclusive way.
- A basic understanding of all concerns, activities, games and sports is necessary, but more important is to focus the transaction process on skill development and utilisation of the experiences of learners as a resource.
- In order to develop specific skills of a particular sports, sequential actions are required to improve performance. Some of the actions are general whereas some are specific to a particular game/sports.
- A questionnaire has also been given for feedback.

Saroj Yadav
Dean (Academic)

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We acknowledge the contributions of Pardeep Nayak and Fajruddin for making illustrations for this Guide material, V.K. Baweja, *Sr. Consultant*, Ms. Sana Rehman as a *Junior Project Fellow*, Ms. Pooja for creating a CRC and Nitin Kumar Gupta (DTP) for Designing.

The Council gratefully acknowledges the valuable suggestions and feedback received during try-out by school teachers.

Feedback Questionnaire

(Teacher's Guide on Health and Physical Education for Class VI)

Please give your comments on the material by filling this feedback questionnaire. You may please send the questionnaire by post, or through email, to Saroj Yadav, *Dean Academic* and *Project Coordinator* of NPEP, AEP, NCERT, Sri Aurobindo Marg, New Delhi-110016. E-mail: deanacademicncert@gmail.com

We welcome feedback from teachers, students, parents and any other user of the material. You may attach a separate sheet as per your requirement.

Teacher/Student/Parent

Name _____

School Address _____

_____

1. Do you find the Teacher Guide easy to understand? Yes/No
2. Point out chapters/pages where the language is difficult to understand.

Chapter No.	Page No.	Lines
_____	_____	_____
_____	_____	_____
_____	_____	_____

3. Do you think the content of the guide is adequate to meet the requirements of the syllabus? Yes/No
4. (i) Point out chapters which are lengthy

   _____

   _____

   (ii) Point out chapters which are too sketchy

   _____

   _____
5. Point out illustrations which are not helpful in understanding the content.

Page No.	Illustration	Caption
_____	_____	_____
_____	_____	_____
_____	_____	_____

6. (i) Certain practical activities and games have been suggested. How many activities and games have you undertaken in your class? Mention them.

_____

_____

_____

(ii) What difficulties did you face in organising these activities and games?

_____

_____

_____

(iii) Would you like to suggest any activity(ies). Mention them.

_____

_____

_____

7. Certain questions have been given in boxes in the text of chapters.
   (i) Do you try to find out their answers? Yes/No
   (ii) Are these helpful in understanding the text of the chapter? Yes/No
   (iii) Do you find these questions interesting? Yes/No
8. (i) Do you find the exercises given at the end of each chapter In the textbook interesting? Yes/No
   (ii) Point out the exercises which according to you should be modified

Page No.	Exercise No.
_____	_____
_____	_____
_____	_____

9. Point out the printing errors, if any.

Page No.	Error
_____	_____
_____	_____
_____	_____

10. Any specific comment/suggestions for overall improvement of the textbook.

_____

_____

_____

Contents

Do You Know ?

According to the 86th Constitutional Amendment Act, 2002, free and compulsory education for all children in 6-14 year age group is now a Fundamental Right under Article 21-A of the Constitution.

EDUCATION IS NEITHER A PRIVILEGE NOR FAVOUR BUT A BASIC HUMAN RIGHT TO WHICH ALL GIRLS AND WOMEN ARE ENTITLED

Give Girls Their Chance !

Unit
1

Knowing Your Body

Introduction

Growth and development are important processes of life. Since birth, all living beings on earth grow and develop. It is, therefore, important to understand growth and development, particularly in human beings. These vary in boys and girls. It is also significant to know how do various organs and organ systems contribute towards optimal and healthy development of the body? These issues are addressed in this unit.

Objectives

The module will help the teachers to enable the students to:

- understand the concept of growth and development;
- identify differences in physical growth and changes that take palce in boys and girls;
- develop awareness of the functioning of various organ systems and their relationship with fitness and body image.

Materials Required

Charts, models, posters, blackboard, scale, height measuring instrument, weighing machine, two sets of chits, and wherever available, the computer internet access.

1.1 Understand the Concept of Growth and Development

Growth and development are normal happenings of life. Growth is an overall increase in size as a result

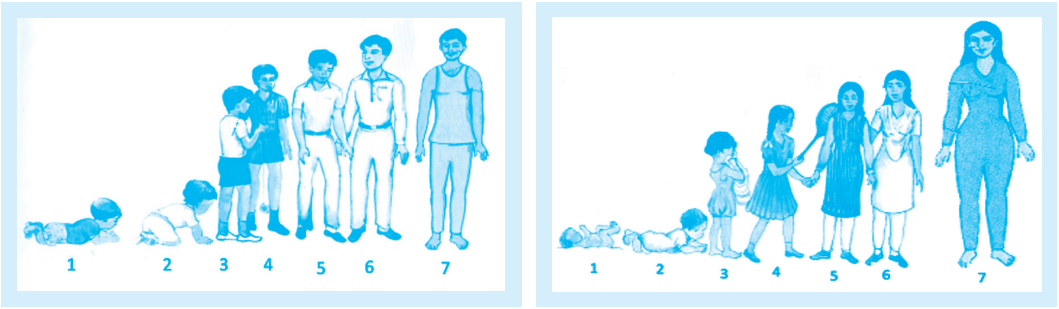
of increase in height and weight, including increase in the size of certain organs. Development involves maturation of organs for proper functioning and it occurs along with growth.

Guidelines for the Teacher

Activity 1.1

The teacher asks questions such as the ones given below and records answers given by students based on their experiences, on the blackboard:

1. Do you think your height was the same last year? How do you know?
2. Which part of your body has grown to make you taller?
3. Which other parts of your body have also grown?



A B

Fig. 1.1 : Stages of growth and development

The teacher can summarise that growth is part of our life. As we grow, our body goes through certain changes. For example, hands and legs become longer, weight increases and other body parts also increase in size. As a result, clothes become shorter and have to be passed on to younger brothers/sisters.

The teacher explains the difference between growth and development. Growth may be defined as an increase in size or mass. It is quantitative.

Development is the progression of changes in the body which may be both quantitative and qualitative. The teacher gives examples of development of enlargement of breasts in girls and change of voice in boys during adolescence.

Guidelines for the Teacher

Activity 1.2

- The teacher may carry a scale and a measuring tape to record the height of those who volunteer.
- The teacher arranges a weighing machine and asks children to weigh themselves.
- The teacher asks students to enter the relevant information in Table 1.1 on the blackboard or in a chart.
- The teacher asks students to compare heights of different children in Table 1.1.

Table 1.1 : My height and weight

Sl.No.	*Name*	*Age*	*Height (cm.)*	*Weight (kg.)*
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
Average				

- The teacher may ask students to bring a diary. If diary is not available, a notebook

may be used. All students would then be asked to record their height, weight and length of their limbs as is now and on first day of every month for next three months.

- The teacher asks students to compare and record changes in their height and weight after six months.
- Let them then complete Table 1.2.

Table 1.2 : Am I growing?

Sl. No.	*Name*	*Age*	*Height (cm.)*	*Weight (kg.)*
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
Average				

- The teacher may ask the students to compare their growth from the two tables and help them try to find reasons for variation. The teacher emphasises that such variation is normal.
- Teacher may also prepare a graph with the help of students and encourage them to interpret data from the graph.

As an alternative, the above observations can also be recorded before and after summer vacation.

- The teacher can summarise the discussions and experiences highlighting the following points:

- ❖ Growth takes place in all living beings including humans.
- ❖ After age of ten, growth rate suddenly increases.
- ❖ Not all children grow at the same rate. Some begin late and suddenly shoot up.
- ❖ Both boys and girls of the age group in Class VI, generally do not differ too much in terms of height, weight and length of limbs till the age of 9 years. These differences become more marked in next 2-3 years.
- ❖ Growth depends on what we eat and how active we are.

Guidelines for the Teacher

Activity 1.3

- The teacher asks students to make an album entitled "My Family and I" in which the student pastes photographs of a baby, an infant, an elder sibling, parents and grandparents to show various stages of life. The photographs can be of extended family, relatives or even neighbour. The students can also be asked to draw if photographs are not available. The students have to get an idea that every one grows and develops from the time when he/she is newborn to an aged person and passes through phases of infancy, childhood, adolescence, youth, adulthood, middle age and ultimately becomes senior citizen and remains so till death.
- Teacher asks students to explain growth and development of humans with the help

of photographs/drawings collected by the students.

The teacher can highlight the fact that growth is a normal happening process. There is a time in every one's life when one suddenly realises that the body is growing and many changes are taking place in the body, though rate of growth of these changes vary from person to person.

1.2 Differences between Growth and Development among Boys and Girls

There occur a number of changes in boys and girls as they grow. These changes are external as well as internal. Some of these changes are common in both boys and girls while others are specific to boys and girls. In order to enable students understand these, the following activities may be organised.

Guidelines for the Teacher

Activity 1.4

The teacher can provide sheets with columns as drawn below to the students or ask them to draw the columns as shown below in their notebook or a sheet of paper.

Table 1.3 : Changes during adolescence

Change	*Boy*	*Girl*	*Boys and Girls*
• Enjoying friends' company more • Can cross the road independently			

• Becoming taller • Becoming heavier • Broadening of shoulders • Can run faster • Sweat more • Oily skin • Can solve more difficult sums • Can concentrate for a longer period • More conscious about appearance • Facial hair begins to appear • Breasts beginning to develop			

- The teacher asks students to tickmark (✓) the correct option in appropriate column for the changes mentioned in the above table as per their own age and observations.
- The teacher collects students' responses in the table drawn on the blackboard.
- The teacher may encourage students to identify changes specific to boys and girls and common changes by asking relevant questions.

The teacher then summarises by explaining that certain changes are common while certain changes are specific to boys or girls. Variations are seen even within same age groups of girls or boys. Such variations may be due to heredity, differences in diet and physical exercises.The teacher emphasises that such variation is normal and should not be allowed to have impact on self-image.

1.3 Organ Systems and Fitness

In our body, many organs related together with a particular function form an organ system. Proper functioning of all organ systems is essential for physical health and fitness. Some selected organ systems such as digestive system, respiratory system, excretory system, skeleton system, may be introduced to students.

Guidelines for the Teacher

Activity 1.5

- The teacher prepares two similar sets of chits with names of organ systems written on them. Name of only one system is to be written on each set of two chits.
- The teacher divides students into two groups naming them as 'A' and 'B'. Group A gets one set of chits, group B gets the other set.
- If students want to work on more than one organ systems, the teacher forms two such groups 'A' and 'B' for each organ system. The teacher may ensure that students select only a few organ systems, so that there are adequate number or students in each group.
- The teacher asks Group 'A' to discuss and note down functions of the system written on the chits and asks group 'B' to discuss and note down how to keep the organ systems fit and healthy.
- Ten minutes are given to each group for discussion. Teacher encourages each student to participate in the discussion.

Digestive System

Functions

- .....
- .....
- .....
- .....

Group A

Digestive System

How to keep the system fit and healthy?

- .....
- .....
- .....
- .....

Group B

- Each group identifies number of students equal the number of chits of body systems to present the group report.
- After ten minutes, teacher invites students for presentation. One student already identified from Group 'A' presents the function of one organ system. Correspondingly, the student identified from Group 'B' for that system is asked to present the ways to keep that system fit and healthy. Similar process is continued for other systems as well.
- The teacher asks such questions as:
  - ❖ How do you feel when you are ill?
  - ❖ How does illness affect your appearance, mental condition and attitude?
  - ❖ Are you able to perform to your maximum capacity or feel tired soon?
- The teacher highlights how malfunctioning of body systems affects the efficiency and self image of a person.

- The teacher then discusses the relevance and importance of proper functioning of organ systems and ways to keep them healthy as follows:

  Teacher may consult the given fact sheet.

  - ❖ The body keeps fit only when various organ systems function properly.
  - ❖ The organ systems remain fit and healthy when nutritious diet is taken regularly and regular physical exercises undertaken and healthy life style is observed. This prevents the problems of acidity, stomach upset and improves the health and efficiency of the person. Similarly, the teacher draws the conclusion for other organ systems.
  - ❖ A healthy and fit body helps in developing a positive attitude towards oneself, others and various issues.

Guidelines for the Teacher

This activity may be conduced in school where the needed facilities are available.

Activity 1.6

If the facility of internet is available. You can get information from the internet. Also involve your students to procure information on various physical activities. Here are a few ideas. You may add many more.

1. Powerpoint presentation with five slides showing downloaded images of any five organ systems.
2. Make a table with headings : Nervous System—function of nervous system and import of physical activities in nervous system.

3. Find out from the internet single line definitions of terms like growth, development, puberty, adolescence.

Fact Sheet

Growth and Development

Growth is limited to increase in size while development consists of overall changes in functions that may occur with growth. Growth is quantitative whereas development is both quantitative and qualitative. Growth stops at a certain stage in humans while development continues till death.

There is a time in life when one suddenly finds oneself growing. Many changes take place in the body when a child is between 10 and 19 years. This phase of life is called 'adolescence'. These changes are more obvious due to a 'spurt' in growth in the parts of the body. These are accompanied by various changes in body functions.

Variation in Growth among Boys and Girls

There is variation in the rate of growth. Changes do not occur at exactly the same month and year in all children of the same age. Some changes are common to all, while some changes are specific to boys or girls. Increase in height, weight and length of body limbs, development of sex organs, greasy skin, increased sweating, improvement in speed of walking and running, crossing the road independently, solving more complex mathematical problems, enjoying friends' company, concentrating for longer periods are signs of growth and development which occur in both boys and girls. However, deep voice and appearance of facial hair occur in boys only, while increase in breast is specific to girls alone.

Body image is the perception of one's own body in terms of how it looks, and moves and how the boy or girl feels about his/her own body. This perception is influenced by others and also by the environment. This is also influenced by rapid changes taking place in the body. The positive perception towards oneself helps to develop high self-esteem which positively impacts the overall behaviour of the student. Correct, proper and relevant information will inculcate a positive body image in the student about the self.

The Organ Systems

In our body the organs related to a particular function together form an organ system. There are several organ systems in the human body which carry out different functions. We will study a few of them here.

Digestive System

Digestive system comprises stomach, intestine, pancreas and many others, which work together to digest and absorb food. All these contribute in the digestion of the food and in its absorvation in the body. And hence, all of these need to be healthy so that these may contribute to the well being of the body.

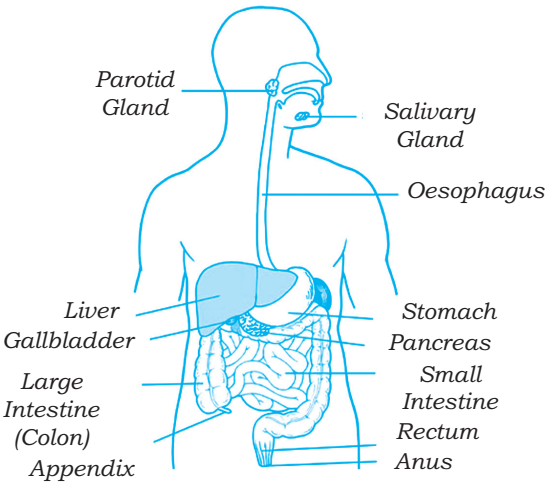


Fig 1.2 : Human Digestive System

Respiratory System

The respiratory system is made up of the organs like wind pipe, lungs, etc. The function of this system is to help supply oxygen (O_2) to all parts of body and remove carbon dioxide (CO_2) which is a waste.

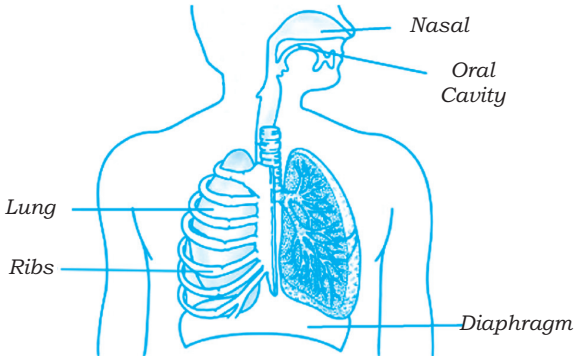


Fig 1.3 : Respiratory System

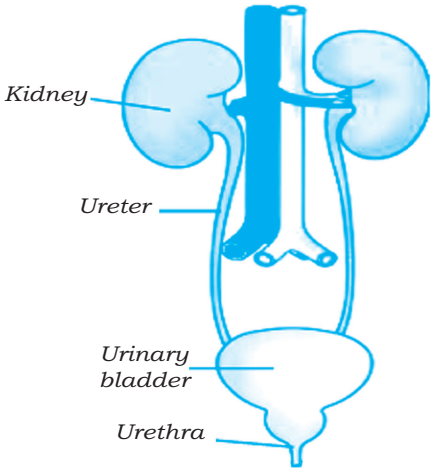


Fig 1.4 : Excretory System

Excretory System

The kidneys, urinary bladder, etc. form the excretory system which removes waste from the body. Eating seasonal vegetables, fruits and cereals help system to work efficiently. It is essential to take special care of all these so that the functioning of the system is healthy.

Skeletal System

The skeletal system is made of bones and cartilages. The muscular system is formed of muscles. These two systems together are responsible for movements of body parts as well as body as a whole. Regular exercises help in growth of muscles and flexibility of joints.

Nervous System

The nervous system which includes the brain, spinal cord, nerves, etc. is responsible for overall control and coordination of the body functions.

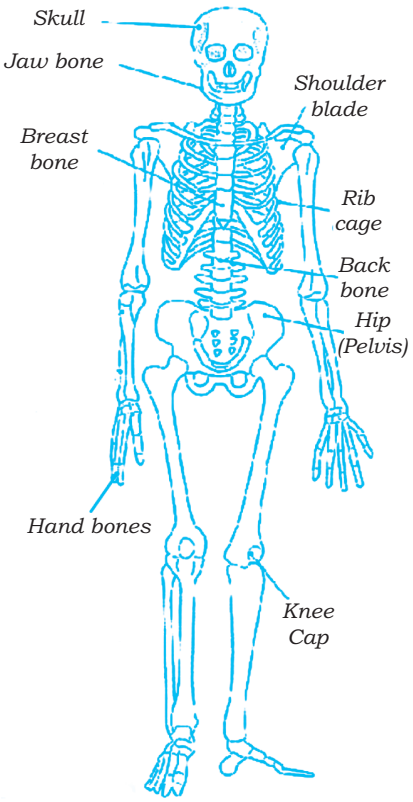


Fig 1.5 : Skeletal system

Teacher at the end highlights the important points such as the following:

- The adolescents should not feel conscious about becoming different from others nor should anyone feel left out if the changes have not begun in him/her as these changes very from individual to individual.
- Children of the same age not necessarily grow to the same extent. Some grow fast initially and then slow down while others grow slowly and steadily.
- Proper functioning of all organ systems is essential for physical health and fitness.
- Nutritious diet, regular exercises and healthy life style are necessary to keep the body fit and healthy.

ASSESSMENT

Answer the following questions:

1. What changes in your body and mind are you experiencing now? Write down two changes each.

   Body _____ Mind _____

   _____ _____

   _____ _____

2. Identify two physical changes, two changes in thinking patterns and two behavioral changes that you find in your friends who are (a) girls and (b) boys.

   (a) girls _____

   _____

   _____

   (b) boys _____

   _____

   _____

3. Champa is 11 years old now. Two of her milk teeth had fallen off but permanent teeth have not grown in their place. What do you think is the reason?

   _____

   _____

   _____

4. Why is physical exercise necessary? How does it affect muscles and bones?

   _____

   _____

   _____

5. The sign for male is ♂ and ♀ for female. Listed below are five changes that take place in growing children. Put the correct male or female sign in front of the change that occurs only in boys or only in girls or in both.

   List of Changes

   - Hair on upper lip
   - Breast development
   - Increase in height
   - Hair growing under arms
   - Change in voice.

6. In many areas of the country, we find that the 10-year olds look like 5 or 6-year olds. Write reasons for this.

   _____

   _____

   _____

7. Mother says you must drink milk and have a balanced diet so that you can grow? Do you think her saying is correct. Why?

   _____

   _____

   _____

Unit 2

Bones are Important

Introduction

Bones form the skeletal system. This organ system supports the body and protects internal vital organs. The muscles responsible for movement are attached to bones. Also, blood cells are formed in the bone marrow. It is, therefore, important to take care of bones along with the care of other parts of the body.

2.1 Bones are of Different Shapes and Sizes

Our body is made of different types of bones. They range from long bones in our limbs, to flat bones

Objectives

The unit will help the teachers to enable students to:

- learn that there are different kinds of bones;
- understand the functions of bones and joints;
- realise the importance of keeping bones healthy;
- become aware of common bone injuries and learn how to deal with them;
- develop a positive attitude towards the differently abled children;
- emphasise the importance of maintaining a good posture to be free from postural defects.

Materials Required

Chart of skeletal system, a large bead and small beads, nylon thread, bamboo or cardboard pipes, cheap toys whose parts move over each other, a sling made of old cloth, a cardboard piece cut into rectangular shape to support the sling, clay/plasticine/thermocole, and computer wherever available.

making the rib cage, and tiny bones in our fingers and toes. The tiniest of all bones is inside the ear (see the Fact Sheet on page 27).

Guidelines for the Teacher

Teacher asks students to press own limbs, chest and midback to feel bones and asks them to name the bones felt by them. The vertebrae, the ribs, bones in fingers and toes are easily felt but not long bones of the limbs. Teacher notes down the responses on the blackboard.

The teacher tells them that in the body there are bones of different shapes and sizes. The teacher also tells them that long bones are not easily felt as they are covered by muscles attached to them. Teacher asks students to recall lesson on body movement in NCERT *Science Textbook* for Class VI. The teacher may collect X-ray images or ask students to bring them and show bones next time.

Activity 2.1

The teacher brings a big bead and 33 small beads and asks two students to string them with the big bead first and then the smaller 33 beads. The teacher hangs the string on a nail in the wall with the large bead up. Teacher then tells the students that our skull and the vertebrae are joined end to end and form a line like the string of beads.

Activity 2.2

For revision, teacher divides class into two groups and gets them to build with clay or thermocole or plasticine, the skull and the vertebrae or the limb bones. To facilitate, the teacher hangs a chart showing skeletal system.

2.2 How Bones are Joined Together

The teacher asks students to feel the elbow joint and feel the ends of upper arm and lower arm that form the elbow joint. The teacher asks students to mention other joints such as knee, finger bones, wrist, ankle, etc.

Guidelines for the Teacher

Activity 2.3

Teacher asks students to (i) rotate head; (ii) flex elbows; and (iii) bend knees.

A discussion can be initiated by the following questions:

- How is it that you can flex your elbow or the wrist but not any other part of the arms?
- How is it that you can flex your arm at elbows or bend knees inwards but not in all directions?
- How is it that head cannot rotate a full circle?
- An infant needs support for his/her head, why?

Use Table 2.1 in the Fact Sheet to answer the questions.

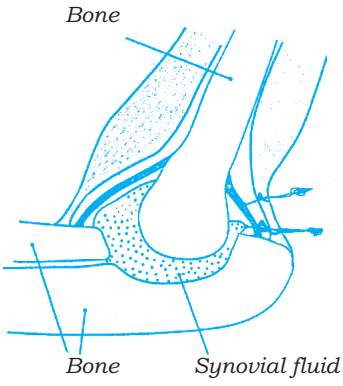


Fig. 2.1 : A Joint showing bone and muscles

Activity 2.4

Teacher tells students to try and make joints by tying one end of a pencil with that of another. For this, sticks or any other material such as pieces of bamboo or pipes tied or joined to form a joint may be used. Toys having movements of parts can be brought by students. Teacher may even use parts of meccano. Screw the pieces together to show joints.

2.3 How Bones are Formed and can be Kept Healthy

The teacher discusses with students how bones can be kept healthy and tells them that food items rich in calcium are essential for bone building and are for keeping bones healthy as bones are made of calcium salts. The teacher also emphasises that eating these during growing years is very necessary as the increase in height that occurs during 'growth-spurt', during the period of adolescence is due to growth of bones.

Teacher explains that spending some time in the sun and physical activities help in keeping the bones strong and healthy. Sun helps build Vitamin D, which is necessary for healthy bones. The teacher can find out from students how much they know about sources containing calcium. The teacher also names some sources of calcium like milk.

For this, the following is to be written on blackboard or on the chart:

1. Milk bottle or pouch or cow/buffalo being milked.
2. Any milk product : Yoghurt (curd), cheese (paneer)
3. Fish
4. Custard apple (*shareefa*)
5. Beans
6. *Rajma*
7. Almonds (*badam*)
8. Okra/Ladies finger or *bhindi*

After the charts have been made the teacher asks students to write on a paper which item out of those listed is consumed by each one of the students (i) regularly; (ii) at times; and (iii) hates to consume. Teacher also asks students to name

other food items that are not included in the list but they are important for bones. Can you think about the item not included to strengthen bones? What about Vitamin D? From which sources is it available?

2.4 Injuries to Bones

Teacher procures picture like the one given here (Fig. 2.2) and asks the students what the picture shows by posing the following questions:

1. What does this picture show?
2. Why is the person's hand kept horizontal and hanging in a sling?

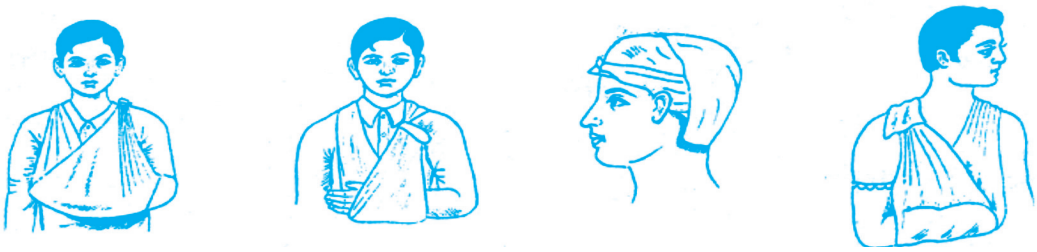


Fig . 2.2 : Bone injuries and their management

Guidelines for the Teacher

Activity 2.5

Teacher tells the students to collect pictures from newspapers or old magazines or draw them to make a chart.

Students are also asked to narrate the experience of someone who has had such an injury and they have heard about it. Teacher then explains:

1. What a fracture is?
2. How to identify from symptoms that a bone is broken?

3. What kind of first-aid may be given?
4. How bone injuries can be prevented?
5. How regular physical activities help in making bones strong?

Activity 2.6

Students are divided into groups of three. Each group brings an old cloth and cardboard and shows how a sling may be made and worn. Teacher ensures that every student learns to make a proper sling.

2.5 Posture

Posture means placing the body in correct position while sitting, standing, sleeping and also during activities like playing.

Lack of proper posture leads to deformities in our bony (rib) cage and the vertebral column (back bone) supporting the body at mid back. These are called postural defects. It is very important to maintain correct posture during growing years. Adolescent girls sometimes become too conscious of developing breasts and walk bending forwards. Similarly, adolescent boys may walk with chest stretching forward. These can lead to postural defects like stooping of back in girls and bending of lower part of spine in boys.

Postural defects not only lead to deformities of bones but also pain and ache in the neck or back.

These can be prevented by maintaining correct posture while sitting, standing, or walking. It is also important to sleep on an even and hard surface and not using a very thick pillow which can cause pain in the neck. Postural defects may be avoided by learning correct posture and undertaking special exercises with the help of experts called physiotherapists.

The teacher may procure some pictures of correct standing, sitting and sleeping postures. Also, one or two postural defects seen in humans can be shown to students so that they recognise incorrect posture, correct their own and help others correct theirs. Students may be asked to be vigilant about posture both inside and outside class.

2.5.1 What is a Good Posture?

Our posture changes when we are walking, standing, sitting, running, etc. Let us look at what is good posture in a few of these positions.

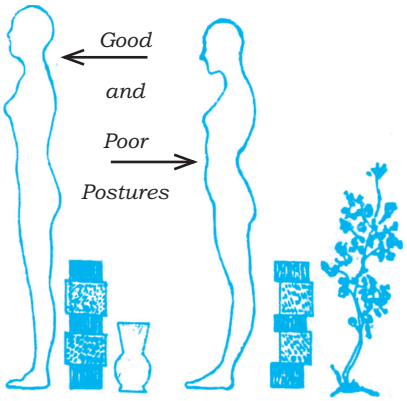


Fig. 2.3 : Good and poor postures

Source : Figs. 2.3, 2.4, 2.5, 2.6, 2.8, 2.9, 2.10 Health Education and Secondary School, *A Handook for Teachers,* Department of Education by the Queensland Health Council Queensland, Australia

2.5.2 Sitting Position

1. The feet should be flat on the floor with a comfortable distance apart.
2. Sit with your back well into the chair.

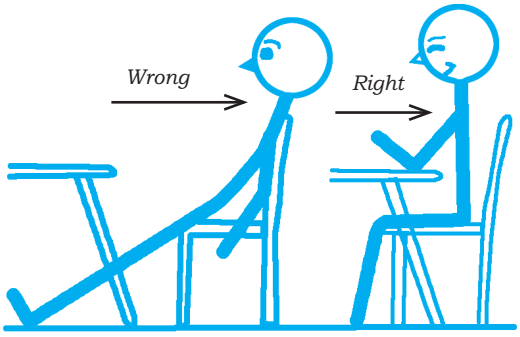


Fig .2.4 : Sitting Posture

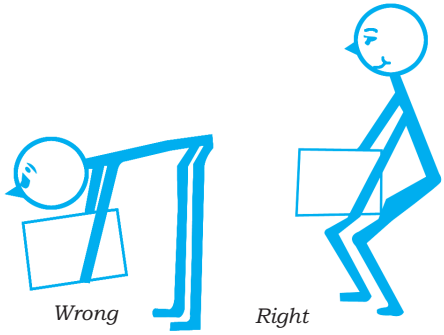


Fig .2.5 : Lifting Posture

2.5.3 Lifting Posture

1. When lifting heavy object, make sure that the back is straight.
2. Bend at the hips and knees; don't lift with leg strength.
3. Hold the object close to the body and have a firm and comfortable grip.
4. The back should be reasonably straight, the spine should not be changed and you would not be slumped.

2.5.4 Standing Posture

1. The chest should be parallel and the weight be evenly balanced over both legs.
2. The knees should be straight.
3. The buttock should be tucked in.
4. The shoulder should be back and relaxed.
5. You should stand tall with chin in and look straight ahead.
6. The stomach should be flat.

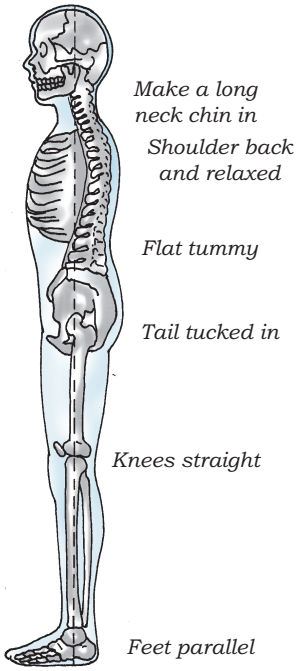


Fig .2.6 : Standing Posture

2.5.5 Walking Posture

1. Carry the head tall and look straight ahead.
2. The toes should point straight ahead.
3. The feet should be reasonably parallel.
4. Do not drake your feet.
5. Keep the stomach flat and swing the arm easily and naturally.

2.5.6 Poor Posture

The vertical column is an important factor in maintaining good posture although many muscles of the body help in the task. The three most common forms of incorrect posture while walking viewed in the spine: kyphosis, lordosis, and scoliosis are given here:

(i) Kyphosis (Round Shoulder)

In this deformity, the shoulder becomes round and head is held in a forward position (Fig.2.7).

If we do not sit, stand or sleep properly, we may develop longstanding aches and pains in our neck and back. This may need help from medical experts.

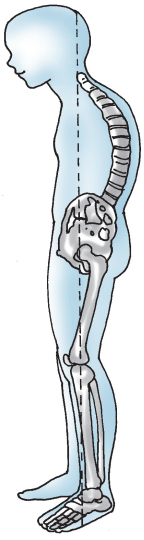


Fig. 2.7 Kyphosis

Remedies

The following exercises are recommended for correcting above posture:

1. Hyper extension (*Bhujang Assan*) from prolying position (lying on abdomen).
2. While walking keep head in such a position that eyes are looking forward.
3. Walk balancing a book on the head.

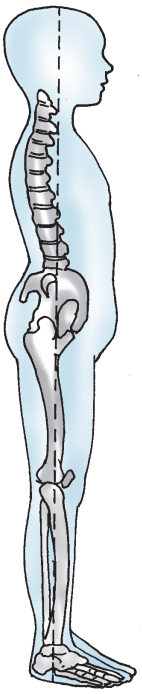


Fig. 2.8 Lumbar Lordosis

(ii) Lordosis (Hallow Back)

Due to weakness in the abdominal (as shown in Fig. 2.8) muscles, the lumbar region of the spine pulled forward, causing hallow back, also known as bodies.

Remedies

1. Pressing the hallow back against the flat surface.
2. Sit-up to strengthen the abdominal muscles.

(iii) Scoliosis

In this deformity the body is laterally bent either to right side or to the left side (Fig.2.9)

Remedies

1. Hanging on the horizontal bar.
2. Bending to opposite side – can help in correcting this defect.

In other words, many deviations from the normal posture may develop if a person does not take care to sit, stand or lie down in an appropriate position.

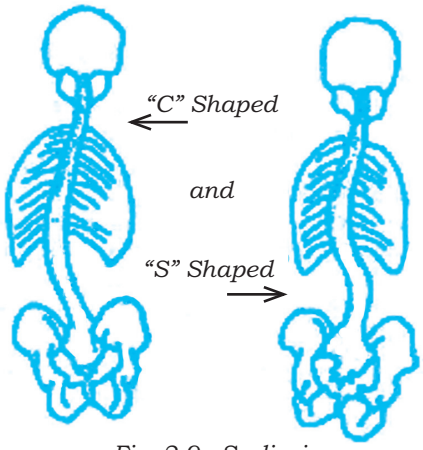


Fig. 2.9 : Scoliosis

Guidelines for the Teacher

Activity 2.7

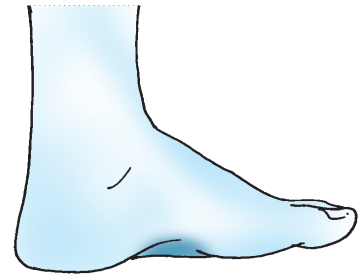
Teacher asks the students to demonstrate how to stand, jump, run, sit on a chair, sit on the floor, lie down, etc. The demonstration may be followed by these questions for students to reflect.

(i) Why is it important to maintain correct posture?
(ii) What are the postural defects caused by lack of awareness of proper posture?
(iii) Why is maintenance of proper posture very important during growing years?

Flat foot: If one can slide his fingers under the arch of his foot while in standing position, or the arch is resting on the supporting surface, this foot is classified as 'flat foot'. The defect can be corrected through exercises.

Remedies

(i) Rising on the toes.
(ii) Climbing stairs on the toes.
(iii) Rope skipping.
(iv) Cycling.
(v) Other exercises could be sitting on the chair and spread wet hand towel in front of you.Try to get the towel with flexing your toes towards heel.


Normal foot


Flat foot

Fig. 2.10 : Normal and flat foot

(vi) Yet another exercise could help in flat foot. Place marbles *(kancha)* before your toe. Pick the marble with right toe and place it on the left knee, similarly, with left toe on the right knee.

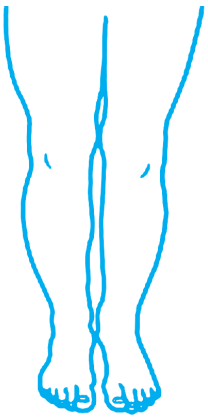


Fig. 2.11 : Knock knee

Knock knee: It is a deformity in which the foot is bent inward, i.e. knee bent inward. Mostly it develops when a child starts walking. It may be due to injury.

Rickets, malnutrition, excessive load, weakness of muscles and ligaments are the main causes for this deformity.

Remedies

Not walking till rickets is fully cured. Massage, active and passive movements to be carried out for strengthening the muscles. Doctor should be consulted.

Bow legs: This deformity is generally seen among children suffering from rickets. It is reverse of knock knees. In addition, crossed leg sitting and child's too early walking are main reasons for this deformity.

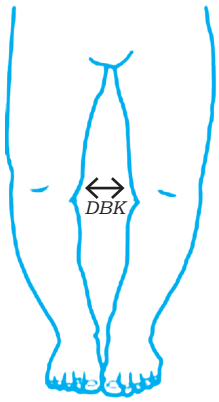


Fig. 2.12 : Bow legs

Remedies

Use of lateral heel wedge in shoes, passive pressure on outer curve of leg, use of calipers as an external support, regular strengthening and stretching exercises will prove helpful in this.

Activity 2.8

Teacher asks children to check their own foot or each other's in pairs, by placing fingers under the arch of the foot for 'flat foot', knees for 'knock knees' and legs for 'bow legs'. The teacher then explains these and mentions that they can easily be corrected through exercises.

Fact Sheet

Bones form the Skeletal System

The human body has 206 bones. You can make out that shapes of bones vary in the skull, vertebrae, limbs and girdles. Teacher may photocopy the unlabelled skeleton and get students to label the major bones.

Bones are hard structures made of certain calcium salts. The skeleton performs four main functions:

1. *Support:* The skeleton holds body upright and forms the framework for attachment of tissues and organs.
2. *Protection:* Ribcage protects the heart and lungs– very important organs of the body. Vertebral column protects the spinal cord.
3. *Movement:* It occurs when muscles attached to bones move them at joints.
4. *Making blood cells:* Red and white blood cells are made inside the bone marrow of long bones.

When a model or picture of the entire human skeleton in a chart is shown to the students, they can easily make out that bones are of various sizes and shapes and also the manner in which skull, backbone, ribs and long bones are attached to each other.

While showing the limb bones, teacher may ask the students to carefully observe and identify common pattern in bones of arms and leg.

Muscles

The human body has over 600 muscles. These muscles help in performing different body movements mainly walking, running, lifting,

pulling, pushing, etc. In our body, muscles are attached to the bones of a tendon. Each muscle consists of thousands of muscle fibers. On contraction muscle ends are pulled together which results in different movements of the body. Regular physical exercise helps in strengthing the muscles of the body.

Joints

A joint is formed where two bones meet. Joints allow movements. Different types of joints allow different range and direction for movement. Some joints allow more movement than others. Some do not allow any movement at all.

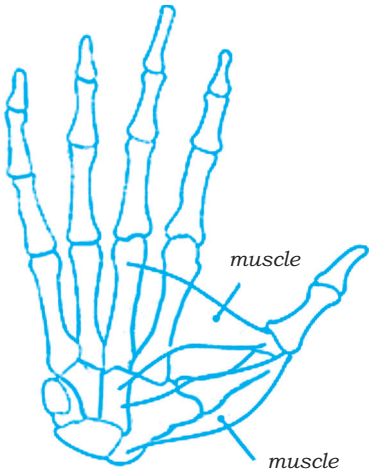


Fig. 2.13 : Bones of the hand

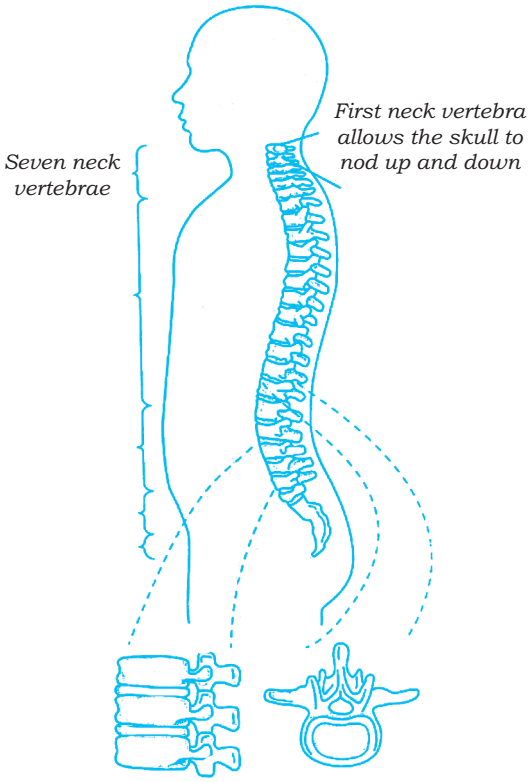


Fig. 2.14 : Bones of the back

Table 2.1: Joints and types of movement

Kind of joint	*Where found in body*	*Type of movement*
Hinge	Elbow, knee, finger	In only one plane like the angle on a door
Ball and socket	Hip and shoulder	In all directions
Pivot	Neck	Nodding and turning
Fixed Gliding	Skull and pelvis back bone	No movement/slight movement

Common Problems Related to Bones

As we get older our joints do not work as smoothly as before. This is because the tissue called cartilage and ends of bones wear away and the lubricant fluid present around the joints dries up. The bones rub against each other; friction causes pain and makes movement difficult. One such problem is due to osteoarthritis. Other similar problems are rickets, osteomalacia.

Now-a-days artificial parts or **prostheses** can be used to help this condition. An artificial joint can be used to replace the ball and socket joint at the hip. Stainless steel ball is used to make head of the thigh bone and this moves in a plastic cup in the hip girdle. Such a joint is like a real one and allows movement in all directions. It cuts down friction and can absorb shock whenever there is a knock at the joint. Bone injuries can also be rectified with the help of artificial parts made of steel and constructed in the shape of the bone.

Certain bone injuries are common, like while playing or in case of an accident bone injuries happen. Bones may develop a crack or may even break depending on extent of injury. When the

bones break, it is termed as a **fracture**. If there is a fracture, the adjoining parts are swollen and any movement is very painful. In such a case, immediate medical advice should be sought.The broken bones should not be moved and need to be held in place on the way to the doctor. This can be done by:

1. Keeping a flat wooden article like a scale under the broken bones and tying with a cloth. It is required in case of fractures of long bones of limbs.
2. Making a sling using a bandage or a long cloth like *dupatta*. You can tie the bandage or *dupatta* in the shape as shown in Fig. 2.2 around the neck and the arm with the injured bone. It can be used to prevent movement of broken collar bone or long bones in the hand.

Broken parts of the bone are set by the doctor and covered with white cement like substance called plaster cast so that the broken parts are unable to move and held in the proper place. With time, the broken parts get joined. The plaster cast is then removed. The time taken for keeping the plaster cast is usually 4-6 weeks but depends on the extent of breakage. It is important to follow medical advice properly, failing which, bones may not join or join improperly causing pain and deformity.

Injuries may be caused while playing or during an accident. Everyone should be careful and prevent bone injury as it is not only painful but also makes the person immobile which causes wastage of precious time. A regular physical exercise and nutritious food rich in calcium (like milk and milk products) and fresh vegetables help to strengthen bones preventing injury to them. Sunlight helps

to make the bones strong by providing Vitamin D. It is recommended that at least 15 per cent of the body should be exposed to the sun at least for half an hour per week. Regular physical exercise strengthen muscles and bones.

Disability

Disability is the consequences of impairment, may be physical, mental or combination of these.

Teachers must be experiencing that there are children with learning problems due to physical and intellectual disabilities. Let us discuss various kinds of disabilities.

Visual Disability: There are children who are blind. They have no vision or some have very low-vision. Those who have no vision need braille as they can't read normal text. Children with low-vision problems rub eyes and blink frequently. Due to some injuries also children lose vision.

Hearing Impairment: A child who cannot hear properly suffers from hearing impairment. It is difficult to identify children with mild hearing impairment as it is not visible. A child who cannot hear properly may also develop speech problems. If a child has some deformity in the ear, or has frequent discharge from ear(s), frequently request to repeat, scratches ear(s) frequently, then he/she may be suffering from hearing impairment.

Orthopaedic Disability

Children with any extra growth (long or short) in arms, hand finger, back, legs, feet or any part of the body are orthopedically disabled. Physical exercise depending on the type of orthopedic disability can be organised for such children. For example, if legs are all right, then the child can be asked to stand on one foot and swing the other leg forward

and backward. Similarly, children can be involved in movements like jumping, skipping, etc.

There are children who do not have visible physical problem, but have short span of attention and poor muscular coordination, display poor academic achievements or are slow in learning.

Learning Disability

There are children who have limited learning abilities in reading, writing and mathematics. For example, they may not be able to distinguish between 89 and 98 or may often be confused in mathematics signs like '+' or '×'.

Active participation in various activities including physical activities helps them encourage to learn.

As a teacher always try to help the child to overcome the psychological aspect of disability, discuss with parents. If need be refer the child to doctor and tell the parents about the action to be taken.

ASSESSMENT

Answer the following questions:

1. What are bones made up of ?
2. Define a joint.
3. A lady was complaining of pain in joints and wondering what could have happened to her joints. What will you tell her?
4. How do people begin to walk again even after one of their bones may have become deformed due to a crushing injury?
5. Why is it important to maintain correct posture?

6. Your grandmother was recently complaining of pain in the knees and having difficulty in walking after sitting for some time. The doctor asked her to get her blood tested for the level of Vitamin D which was found to be below the normal range. Read the Chapter 2 of your Science Textbook on 'Components of Foods' and explain to her the importance of Vitamin D and Calcium and their sources.
7. Suggest remedies for conditions like flat foot, knock knee and bow legs.

Tick (✓) mark either Yes or No:

(i) Knee joint is called a ball and socket joint. (Yes/No)
(ii) Breaking of a bone is known as fracture. (Yes/No)
(iii) Elbow joint is an example of hinge joint. (Yes/No)
(iv) Humerus or upper arm bone is connected with elbow joint. (Yes/No)
(v) Skull bone is located in the head. (Yes/No)

Fill in the blanks:

(i) A joint forms where ..... meet.
(ii) Movements are due to ..... attached to bones.
(iii) One of the functions of the skeleton is .....
(iv) Elbow joint is an example of ..... joint.
(v) Radius and ..... bones are part of forearm.

Unit
3

How to Remain Physically Fit?

Introduction

Proper growth and development in children lead to good health. The best way to achieve good health is to remain physically fit. Physical fitness activities improved the shape and size of the body and efficiency of the heart, blood circulation and all internal organs and systems. It helps in improving learning skills, promotes general well being and also improves performance in games and sports. The major components of physical fitness are strength, speed, endurance, flexibility and agility.

A person who is physically 'fit' also enjoys good health. In a physically fit person, all the organ systems, mainly skeleton system, muscular system, respiratory system, circulatory system, nervous system, and digestive system become efficient. The overall improved condition of the body protect individual from different health hazard and in turn delays ageing. Development of physical fintness improves the body immunity, reduces the risk of getting illness, diseases and

Objectives

The unit will equip the teachers to enable students to:

- understand the concept of physical fitness;
- rocognise the relationship between health and physical fitness;
- develop a positive attitude towards need for physical fitness;
- be able to work towards attaining physical fitness; and
- develop appreciation for developing different components of physical fitness.

makes the heart and lungs more efficient. All these contribute to maintenance of good health.

3.1 Concept of Physical Fitness

Meaning of Physical Fitness

Physical fitness is defined as the general capacity to adapt and respond favourably to physical efforts. It also means the capacity to carry out daily work with vigour and alertness without undue fatigue and also leaving ample energy to enjoy leisure time and to meet unforeseen emergencies.

In modern era physical fitness is defined as "the body's ability to function efficiently and effectively in work and other activities". In short, physical fitness is a measure of body's strength, speed, agility, endurance and flexibility.

Importance of Physical Fitness

Physical fitness is always closely related to good health and physical development. The purpose of any fitness programme is to increase individual's health, physical abilities and skills according to age, sex, body build and physiology.

Obtaining and maintaining physical fitness is a result of regular physical activities, proper diet and nutrition and also adequate rest for recovery.

Benefit of Physical Fitness

Every individual is benefited by physical fitness in the following ways.

1. It helps to enjoy life in fullest with freshness and energetic feelings.
2. It enables the individual to gain energy, strength and stamina.
3. It sharpens the mind and keeps him/her alert and increases the intellectual ability.

4. It helps to keep weight under control and thus prevents obesity.
5. The individual gets better sleep.
6. It increases the immunity power of the body.
7. It also increases appetite and helps in the better digestion of food.
8. It helps in proper growth and development and promotion of strong muscles, ligament, bones, etc. and hence prevents injuries.
9. It helps to develop good physique, good appearance and smart look and improves self confidence.

3.2 Components of Physical Fitness

Strength, speed, endurance, flexibility and agility are components of physical fitness. The following activities are needed to develop these components of physical fitness.

3.2.1 Activities Needed to Develop Strength

The development of strength may be understood by engaging students in an activity for performing push ups, standing broad jump, etc.

Activity 3.1

Push-ups: Push-ups help in improving strength and power of arms, chest and shoulder muscles.
Time Required: As per the time available.
Materials Required: Plane surface, stop watch, writing board, recording material.

Guidelines for the Teacher

- Proper warming up is to be done first by students.
- The teacher introduces the techniques of push-ups to students.
- Participants are asked to do push-ups.

- Students practise the correct technique of push-ups as demonstrated to them.
- Teacher makes corrections in the technique when needed.
- Good performers are identified and they should lead other peers to improve push-ups performance. Others must observe and then perform again.
- For detailed information regarding the components of strength, teacher may use *Fact Sheet* given at the end.

Assessment

The teacher can evaluate the children on how best they have learnt to perform the push-ups and

- record how many push-ups are done by each student in a minute;
- record how many maximum push-ups are done by the students in one attempt without considering the time;
- use the record of individual students as a benchmark.

Activity 3.2

Standing Broad Jump of Legs: Standing broad jump is important for developing strength and becoming familiar with the test of strength and resistance exercise.
Time Required: As per the time available.
Materials Required: Jumping pit, measuring tape, writing board and chart, recording material.

Guidelines for the Teacher

- First, students perform proper warming up.
- The teacher introduces the technique of standing broad jump to the students.
- After demonstrating standing broad jump using proper technique, students are made to perform.

- Participants are then divided into small groups of 6-8.
- Students are made to practise the correct technique.
- Corrections in the technique, if necessary, are made by the teacher.
- Good performers (students) are identified and asked to perform the standing broad jump. The rest observe carefully and then all do the standing broad jump.
- Teacher may use Fact Sheet for detailed information regarding the development of strength among children.

3.3 Speed

Another component of physical fitness is speed. Acquiring speed helps move fast and do things quickly and thus saves time. A 20-50 metres sprint is mostly used to develop the component of speed and also as the test of speed.

3.3.1 Activities Needed to Develop Speed

20-50 Metres Sprints:

Time Required: As per the time available.

Materials Required: Marked play ground, clapper, stop watch, recording material.

Guidelines for the Teacher

- Proper warming up exercises should be undertaken by the students.
- The teacher introduces the student to the techniques of 20-50 metres sprint.
- Participants are then divided into small groups of 6-8 students.
- Students are made to practise the correct technique.

- Teacher makes corrections in the technique, whenever needed.
- Students are made to run 20-50 metres employing proper technique.
- Good performers (students) will perform and other students of class will observe carefully.
- Other students then take part in the sprint activity.
- Teacher may use Fact Sheet for detailed information regarding the components of speed.

3.4 Endurance

In order to assess the endurance of the students of Classes VI and VII, a longer run like 800-1500 approx metres is used.

3.4.1 Activities Needed to Develop Endurance

800-1500 Metres Run:

Time Required: As per the time available.
Materials Required: Marked play ground, clapper, stop watch, writing board and chart.

Guidelines for the Teachers

- The teacher introduces the method of 800-1500 metres run to the students.
- Proper warming up exercises are undertaken prior to the run.
- Participants are divided into small groups of 6-8.
- Students are made to practise the correct method.
- First they are made to run 800-1500 metres at the medium pace.
- Good performers run 800-1500 metres first and the rest will observe carefully. and then take part in the run. Teacher may use Fact Sheet for

detailed information regarding the components of endurance.

- Teacher may use Fact Sheet for detailed information regarding the components of endurance.

3.5 Flexibility

Flexibility improves range of motion or movement of a specific limb joint, or even the body as a whole. For flexibility the following activity can be organised :

3.5.1 Activities Needed to Develop Flexibility

Sit and Reach Test:

Time Required: As per the time available.

Materials Required: Smooth surface, yard stick, writing board and chart.

Guidelines for the Teacher

- Proper warming-up exercises are undertaken by students.
- The teacher introduces the techniques of sit and reach test to the students.
- Students are divided into small groups of 6-8.
- Students are made to practise the movements slowly and gradually and asked to avoid jerky movements.
- Students then perform sit and reach test with proper technique.
- Good performers showcase the sit and reach test while the rest observe carefully and then all perform individually the scores are recorded.
- Teacher may use Fact Sheet for detailed information regarding the components of flexibility.

3.5.2 Bridge up Test

To develop and measure felxibility of back and shoulders.

Time Required: As per the time available.

Materials Required: Smooth surface, yard stick, writing board and chart.

Guidelines for the Teacher

- Proper warming up exercises are undertaken by students.
- The teacher introduces the techniques of bridge up test to the students.
- Students are divided into small groups of 6-8.
- Students are made to practise the movements slowly and gradually and asked to avoid jerky movements.
- Students then perform bridge-up test with proper technique.
- Good performers showcase the bridge-up test while the rest observe carefully and then all will perform individually. The scores are recorded.
- Teacher may use Fact Sheet for detailed information regarding the components of flexibility.

3.6 Agility

Agility pertains to ability for making quick movements (ability to change). A 4×10 metres shuttle-run test may be organised to check the agility of students. In order to improve the agility of students, 4×10 metres shuttle run can also be used.

3.6.1 Activities Needed to Develop Agility

4 × 10 metres Shuttle Run:

Time Required: As per the time available.

Materials Required: Marked play ground, clapper, stop watch, four wooden blocks.

Guidelines for the Teacher

- Proper warming up is undertaken by students.
- The teacher demonstrates the technique of shuttle run to the students.
- Participants are divided into small groups of 6-8.
- Students are made to practise the correct technique, while teacher makes corrections, if necessary.
- Students are made to run 4×10 metres shuttle run using the proper technique.
- Good performers are asked to perform the 4×10 metres shuttle run and the rest of the class observes carefully.
- Other students then participate in the 4×10 metres shuttle run.
- Teacher may use the Fact Sheet for detailed information regarding the components of agility.

3.7 Fact Sheet

Physical fitness may be defined as the ability of an individual to carry out the physical task for longer duration without undue fatigue or stress and have ample energy to meet the emergency demands.

Summing up
The teacher will sum up the session by clarifying doubts of learners and the learning of skills is checked.

3.7.1 Components of Physical Fitness

Strength: It may be defined as the ability of the muscle to overcome resistance or act against resistance.

Speed: It is measured by rate of movements. For example, a student's ability to cover a certain distance in minimum possible time.

Endurance: It is defined as the ability to perform movements for longer duration under the condition of fatigue (tiredness).

Flexibility: It is defined as the ability to perform movement with greater amplitude (wide range) or in other words it may be defined as the range of movement possible around a specific joint.
Agility: It is defined as the ability of an individual to change direction as quickly as possible.

- **Developing Strength** through push-ups and standing broad jump.
  (a) *Push-ups:* It is a common callisthenic exercise performed in lying prone position by lowering the body by bending followed by stretching the arms. Push-up is an exercise for the muscles of arms, shoulder and chest.
  (b) *Standing Broad Jump:* While performing the standing broad jump, the jumper stands at a line marked on the ground with feet slightly apart. The student takes off swinging their arms and bending their knees to provide forward drive and lands using both feet. The measurement used is the longest distance. The jump must be repeated if the athlete falls back or takes a step at take-off.
- **Developing Speed**
  (a) *A 20-50 metres sprint:* This activity is organised on plane surface. A 20-50 metre course is marked with starting and finish line. After a warm up, ask the students to stand behind the starting line and one timekeeper (student) to be assigned for each student running on the track. All the time keepers should stand at the finishing line. For obtaining the best result two students are made to run at a time. The command on the mark "set" and "go" is to be given. The students sprint across the finish line and

the score is the time taken to complete the course and recorded to the nearest 1/10th of a second. Two trials may be given to each student and the best of two trials is recorded as a final score.

- **Endurance**

  (a) *800-1500 metres run:* To measure endurance (cardio-respiratory), the 800-1500 metres run is used. The activity is conducted on a 200 or 400 metres track or in a football/ hockey ground. The time is recorded in minutes and seconds. Students are given a start signal while standing from a common curved line.

- **Flexibility**

  This component of physical fitness helps a person to have free body and better coordinated movements. This helps the person to perform movements with greater range and reduces chance of injury.

- **Sit and Reach Test**

  This activity is organised anywhere on the plane surface. One yardstick is fixed by the tape on the surface in such a way that 15 inches mark of the yardstick coincides with a line drawn on the floor. The students are asked to sit on the floor and line up their heels with the near edge of the 15 inches mark and to slide the seat back beyond the zero end of the yardstick. One assistant is asked to stand to brace toes against the heels of the participating student and another assistant to hold knees of the student in a locked position while stretching forward with the heels not more than 5 inches apart. The student is asked to stretch forward slowly by sliding finger tips of both hands with

the yardstick. Reading is taken at the near edge of the finger up to 15 inches mark of the yardstick.

- **Bridge up Test**
  This activity is organised anywhere on the plain surface. A student is asked to lie his/her back (supine lying position). He/she tries to bend his/her knees and places hands on ground near the head. From this position he/she raises his/her body to make a bridge. The distance between hands and feet is measured to find out the scores of an individual.
- **Agility**
  (a) *4×10 Metres Shuttle Run:* To measure agility, two horizontal lines, ten metres apart are marked parallel to each other. The students will stand behind one of the lines and two wooden blocks are kept on the line opposite the starting line. On the signal 'go' the student will run to the blocks, collect one block and return to the starting line and place the block behind the line. He/she will again run to the second block which is carried across the starting line on way back. Two students shall be made to run together. The score for each performer will be the length of time taken to complete the course which shall be recorded in seconds.

ASSESSMENT

Answer the following questions:

1. Define physical fitness?
2. How can we develop our physical fitness?
3. Which test will be used to assess strength?
4. Explain any one activity which is used to improve (i) endurance, and (ii) agility.
5. Explain the test for assessing speed.
6. Which activity is used to improve the shoulder muscles?

Tick (✓) mark either Yes or No:

(i) Standing broad jump helps to assess strength. (Yes/No)

(ii) 50 metre sprint is the test of endurance. (Yes/No)

(iii) Endurance of the students is assessed through 800- 1500 metre run test. (Yes/ No)

(iv) Sit and reach test is the test of agility. (Yes/ No)

(v) Flexibility is assessed by using 4×10 metre shuttle run test. (Yes/ No)

Fill in the blanks:

(i) 50 metre sprint test is related to which component of physical fitness?

(ii) Endurance can be measured by which test?

(iii) Sit and reach test is used to assess which component of physical fitness?

(iv) How a physically fit person looks like?

(v) Push-ups are used to improve which component of physical fitness?

Unit
4

Leaders and Followers

Introduction

Many situations occur in our daily life which require application of leadership qualities. Physical education, specially games and sports, provide ample opportunities to develop leadership qualities among students. The quality of winning or losing with grace and ease are very important for a sportsperson, what is commonly termed as 'sportsmanship'. When team games are played, mutual respect for teammates and fellow competitors help in becoming both good leaders and good followers. All these are discussed in this unit. Mass drills and modified relays have been used here as tools which help in developing leadership qualities as well as provide a platform for training and following instructions of the teacher or leader attentively and correctly pursuing team spirit.

Objectives

The unit will help the teachers in enabling students to develop:

- leadership qualities;
- quality of good followership;
- quality of sincerity and, a sense of discipline;
- the trait of honesty; and
- the sense of cooperation.

Method/Procedure

Let us discuss the following methods/procedures that contribute to the qualities of leadership as well as follwership among the participants.

Mass Drills: These are perfomed collectively by using different formations and equipments such as dumb bells, lezim, wands, ribbons, umbrellas, etc. These drills help in developing not only the quality of sportsmanship and leadership, but also an attitude of cooperation and discipline, and the habit of following instructions attentively.

Calisthenics is a Greek word and it is used for freehand exercises collectively performed to the beat of a drum, music or a count. Given below are three examples of calisthenic formations:

(i) Four count (File formation)
(ii) Eight count (Star formation)
(iii) Sixteen count (Star formation and Swastik formation)

Materials Required: Marked area, writing board and chart, drum, hand microphone and music system.

Guidelines for the Teacher

- The teacher introduces the students to calisthenics.
- Proper warming up is to be given to the students.
- Depending on the space available, teacher asks students to stand in file in any other formation and explains that movements of students are to accompany drum beats or/ and counts on the microphone/music.

Precautions

The teacher should make sure that:

- Proper distance is maintained between students while filing in.
- Exercises should be practised in a graded fashion, i.e. simple to difficult.
- Exercises should first be performed with slow counts.

Assessment

The teacher will conduct the test for exercises of four/eight/ sixteen counts and ask related theoretical questions.

- Students should not face the sun while doing mass drills or calisthenics.
- Mass drill and calisthenics should not be done continuously for a long time.
- The teacher makes necessary corrections in the exercises, performed by each student.
- Students are made to practise correct exercises of four/eight/sixteen counts.
- Teacher should stand in such a way so as she/he is able to see all the students.

Modified Relays

The student participation in relays of different types improves the quality of cooperation in addition to the qualities developed by mass drills.
Modified Relays: They are as follows:

1. 10×20 metres Shuttle Relay running, hopping and frog jumping.
2. 10×10 metres Shuttle Relay (hopping).
3. 10×20 metres Shuttle Relay (frog jumps).

Time Required: As per the time available.
Materials Required: Marked play ground, writing board and chart, batons, hand kerchiefs, etc.

Guidelines for the Teachers

- The teacher introduces the rules and steps of modified relays to students.
- Proper warming up is first given to the students.
- Participants will be divided into small groups of 10-12 students (2- 4 teams).
- Teacher makes corrections in the skills.
- Students are made to practise the correct skills of running shuttle relay.
- Good performer (student) will perform the skill and the class will observe carefully.
- Student leaders will help the teacher during skill practice.

- Teachers may use fact sheet for detailed information regarding the skill of running different shuttle relays— running, hopping, and frog jumping.

Summing up

The teacher will sum up the session:

- Doubts, if any, will be clarified.
- Learning of exercises will be checked by the teacher for each student during its performance.
- Turn by turn students be made responsible to observe the performance of other students and help in necessary correction in exercise.

Assessment

The teacher will conduct the test comprising the performance of running shuttle relays and related theoretical questions.

Fact Sheet

Calisthenics: The teacher draws a star on the ground with a chalk and make the group of students stand on the lines of the star, taking care to keep adequate distance between two students. Teacher stands at a distance from where each and every child can be seen.

1. Four Count

Start Position : Basic stands, arms downward.
Count One: On hearing the drum beat on the first count bring the arm forward parallel to the ground at shoulder height with palms facing each other.
Count Two: Bring the arms upwards (touching the ears) and look front, palms facing each other.
Count Three: Bring the arms forward, same as on count one.
Count Four: Back to attention position.

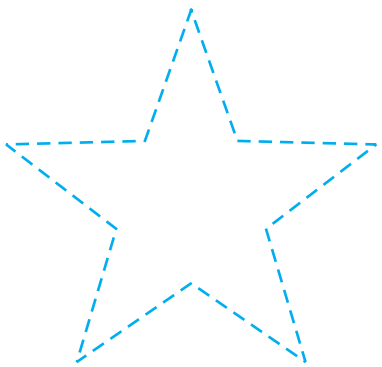
2. Eight Count (Star formation)

Start Position : Basic stands, arms downward.
Count 1: On the first count drum beat, students

bring the arm forward parallel to the ground at shoulder height with palms facing each other.
Count 2: Bring the arms upward and look front.
Count 3: Bring the arms sideward.
Count 4: Back to starting position.
Count 5: Same as count one.
Count 6: Same as count two.
Count 7: Same as count three.
Count 8: Back to starting position.

3. Sixteen Counts (Star formation)

Start Position: Basic stands, arms downward.
Count 1: On first count bring the arm forward parallel to the ground, shoulder width apart, palms facing each other.
Count 2: On count two, bend forward and try to touch the ground with the tips of the fingers.
Count 3: Same as count one.
Count 4: Back to starting position.
Count 5: Same as count one.
Count 6: Same as count two.
Count 7: Same as count three.
Count 8: Back to starting position.
Count 9: Same as count one.
Count 10: Same as count two.
Count 11: Same as count three.
Count 12: Back to starting position.
Count 13: Same as count one.
Count 14: Same as count two.
Count 15: Same as count three.
Count 16: Back to starting position.

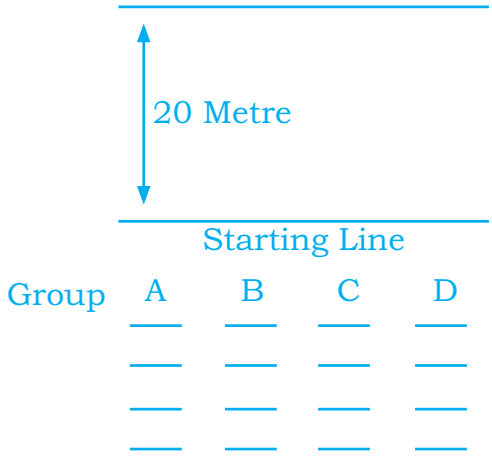


After enough practice of calisthenics, it is necessary to assess the students regarding, both proper performance of the exercises and also showing leadership qualities. Teacher has to ensure that every child in turn, gives instruction or acts as the leader.

Modified Relays: These are discribed below:

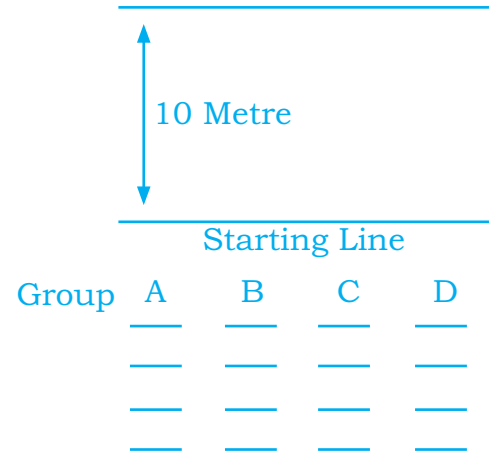
1. 10×20 metre shuttle run

Two lines are marked at a distance of twenty metres. One line is labelled as starting line. The participants/groups shall stand behind the starting line in a vertical file. The first member of a group shall hold the baton. On the command "go", each participant runs and shall touch the line at 20 metre distance and comes back to the starting line and passes on the baton to the next member of the group. This process continues until the last participant in the group has completed the task.



2. 10×10 metre shuttle relay (hopping)

Two lines are marked at a distance of ten metres. One of line is labelled as starting line. The participants/groups shall stand behind the starting line in a vertical file. The first member of a group shall hold the baton. On the command "go" each participant shall run and touch the line at 10 metre distance hopping and come back to the starting line and pass on the baton to the next member of the group. This process continues until the last participant in the group has completed the task.

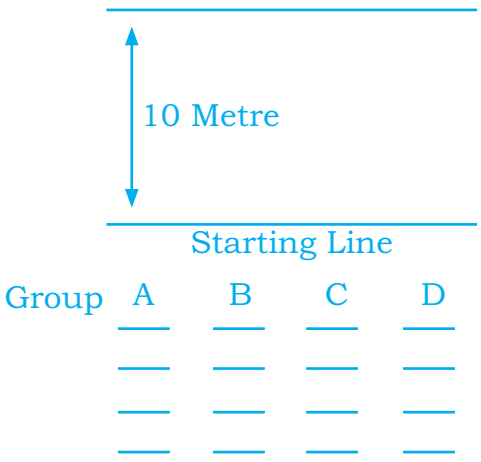


3. 10×20 metre shuttle relay (frog jumps)

Two lines are marked at a distance of ten metres. One of line is labelled as starting line. The

participants/groups shall stand behind the starting line in a vertical file. The first member of a group shall hold the baton. On the command "go" each participant shall run and touch the line at 10 metre distance jumping like frog and come back to the starting line and pass on the baton to the next member of the group. This process continues until the last participant in the group has completed the task.

Relay races help to develop team spirit and cooperation.



ASSESSMENT

1. List any three formations which can be used in mass drills.
2. List different equipments which can be used in mass drills.
3. Suggest one mass drill each of four and eight counts.
4. Conduct any two activities that help in developing values like leadership, followership, cooperation, honesty and self discipline.

Unit
5

Games and Sports are Important

Introduction

Children play at home and in school. Think for a moment, what you really do for making children to play games? Are these children really different from what senior and well known players do while playing? Do they also aspire to play like them? Have they ever witnessed a match? These are some of the questions for which you would like to search answer. In this module, we will talk and learn how to become a sportsperson. What makes a sportsperson? An individual becomes a sportsperson only when he/she acquires fundamental skills of the sport. Different motor skills help the players to acquire expertise in fundamental skills of various games. Participation in these games will also help a student in learning ethical values and team sprit.

Objectives

The module will help the teachers to enable the students to:

- understand and acquire various motor skills.
- apply these skills and improve performance while participating in different games and sports.
- enable students to understand and acquire various aspects of fundamental skills related to individual and team sports.
- acquire competency in these skills.
- develop team spirit, cooperation and leadership.

The duration of each class is 45 minutes and for teaching different skills of individual and team games, the teacher should ensure that all the materials required for each class are available in sufficient quantity.

Guidelines for the Teacher

The teacher introduces the technique of the concerned skill of different games and sports to students and organises this activity as follows:
The teacher:

- Engages students in warming up activities.
- Demonstrates the technique and helps them to form a mental image of the technique.
- Asks students to practise the correct technique(s) of the skill and makes corrections wherever required.
- Identifies some good performers (students) in each group, who perform the skill and asks rest of the students to observe carefully.
- Asks students to practise the skill again in their respective groups.
- Ensures that each student of the group performs the skills correctly. This may take more than a day/period to complete the process.
- Engages students in cooling down activities.
- Checks the level of competency in each student at the end of the activity and gives feedback for improvement.

5.1 Individual Sports

The individual sports discussed here are track and field events, gymnastics and swimming.

Track and field events comprise running, jumping and throwing. Running events include sprints, middle and long distance runs, while field

events consist of jumps and throws. Every event requires certain fundamental skills for efficient performance. These have been discussed below.

5.1.1 Sprinting

- Sprints have events like 50, 100, 200 and 400 metres run. The technique of sprint consists of start, running, and finish.
- Crouch start is used in sprinting events. Students may be instructed to listen to the starting command with utmost care, i.e on your marks – set – go.
- Skills related to only 50-100 meters are specified under sprinting.

Activity 5.1

50-100 metres run
Time Required: 45 minutes
Materials Required: Marked play ground, clapper, stop watch, writing board, chart and pen.

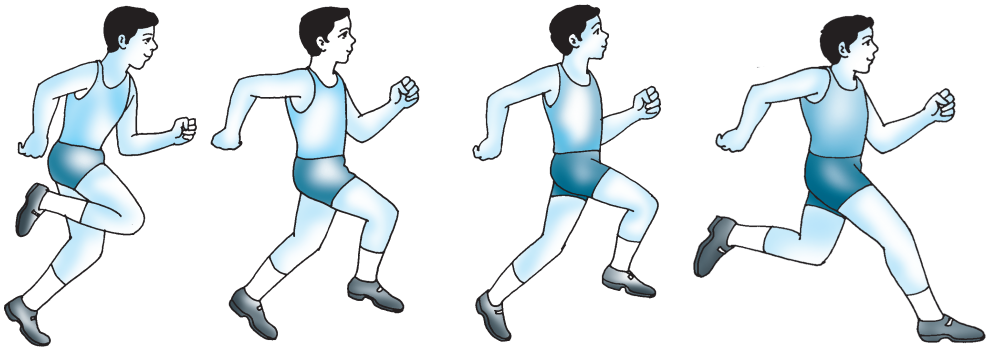


Fig. 5.1 Sprint in Action

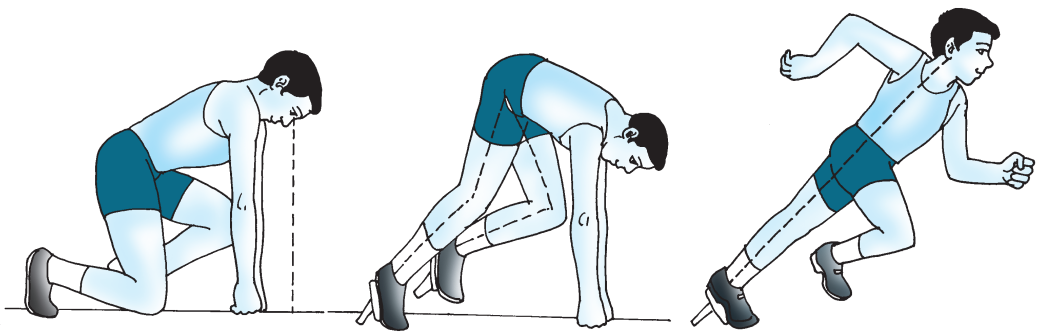
Notes for the Teacher:

- The teacher familiarises students with the movements related to the basic technique of 50-100 metres run.

(i) Crouch Start

The teacher gives the command. Which is as follows:

- *On your marks:* The students attain a crouch position in which arms are straightened and hands with shoulder width are kept apart in high bridge position, back is kept flat, eyes are focused a few feet ahead of the starting line. (Fig. 5.2a)
- *Set:* On this command, hips are raised higher than the shoulders. The angle of front knee is approximately 90 degrees and the rear knee is about 120 degrees while the weight is distributed on both hands and feet. (Fig.5.2b)
- Go: On this command, legs are extended forcefully, hands are lifted from the ground and students start running. (Fig.5.2c)



(a) On your mark *(b) Set* *(c) Go*

Fig. 5.2 Crouch Start

(ii) Running

It is important to ensure that sprinters maintain forward inclination in the first phase and move the legs as fast as possible. Gradually they should increase stride length and their arms move in counter balancing manner.

Fig. 5.3 (a) : Run through

(iii) Finish

For an efficient finishing of the race, three methods are commonly used, i.e.

- *Run through:* In this method, speed is maintained through the finish line.
- *Shoulder shrug:* The shoulders are kept nearer to the finish line, moving these downward towards finish line.
- *Dip:* In this method, arms move backward together and the torso is dipped towards the finish line.

Fig. 5.3 (b) : Shoulder shrug

Fig. 5.3 (c) : Dip finish

5.1.2 Jumping

Jumping events consist of Long Jump, High Jump, Triple Jump and Pole Vault. Here only skills related to long jump are specified.

Activity 5.2

Long Jump: Long jump is conducted by adopting several techniques. One of these is known as Hang technique.

Time Required: 45 minutes

Materials Required: Long jump pit, measuring tape, lime powder, writing board, chart and pen.

Notes for the teachers

The teacher:

- helps to familiarise students with the movements related to the basic technique of Long Jump.
- improves the movements related to the technique of Long Jump.

Technique of Long Jump

This has four phases: an approach run, take off, flight and landing.

a) Approach run: The teacher explains that approach run is 30-45 metre long, and is performed in an accelerated manner. In last 3-4 strides, the jumper settles for the jump. The last stride is shortened by 0-15 cm.

Fig. 5.4 (a) : Take Off

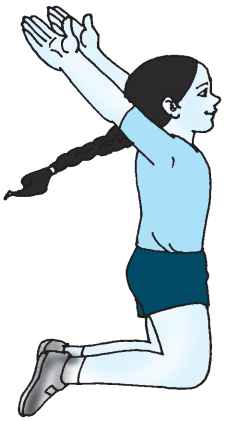


Fig. 5.4 (b) : Hang Style

b) Take off: During take off, the leg extends vigorously accompanied by the swing of non take off leg and the opposite side arm. The trunk is kept upright and eyes are focused on the distal end of the pit.

c) Flight and Landing: During the flight the jumper may use the hang technique. After the take off, the body of the jumper makes an arc in which the hips are ahead of the arms and legs. The legs move in the forward and upward direction in landing. The moment the feet touch the sand in the pit, the legs are flexed, and the arms move in forward direction. As a result the body moves in the forward direction.

Fig. 5.4 (c) : Landing

5.1.3 Throwing

Throwing events include shot put, discus throw, javelin throw and Hammer Throw. We will discuss the fundamental skills related to only shot put through the following activity.

Activity 5.3

Shot Put: Shot put is conducted by adopting several techniques. One of those is known as the Perry O'Brien technique.
Time Required: 45 minutes.
Material Required: Throwing circle, measuring tape, lime powder, writing board and chart.

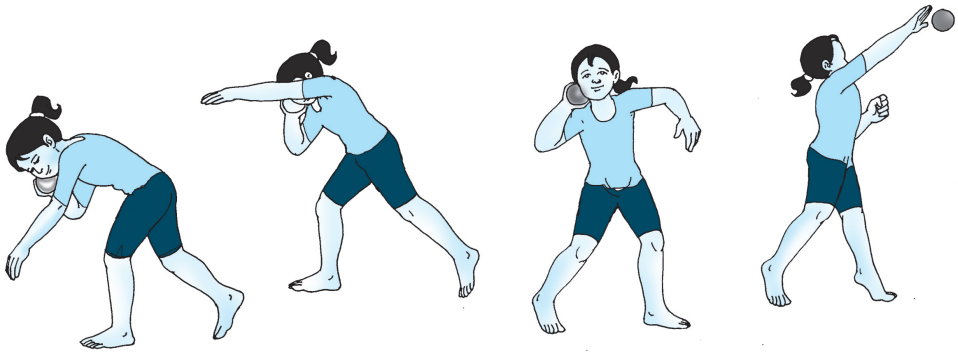


Fig. 5.5 : Grip, Stance, Glide, Release

Notes for the Teachers

The teacher:

- familiarises students with the movements related to the technique of shot put using Perry 'O' Brien Technique.

Perry O'Brien Technique consists of Grip and Stance, Glide, Release or Put and Reverse.
Grip and Stance: The teacher explains with demonstration how the shot is placed on the base of the fingers, which remain spread, the thumb and the little finger provide lateral support. The putter attains a stance in the rear half of the circle,

the right toe touching the inner edge of the rim. The left foot is approximately one foot away from the right heel and touches the ground by its toe. Shot is placed near the collar bone in the hollow of the neck. The right arm is kept straight and by the side of the head of the putter.

Glide: The teacher explains with demonstration how a right handed putter performs the glide with right leg. Right foot glides and lands approximately in the centre of the circle, while the left foot moves little towards left side. The right leg remains flexed while the left leg is kept straight after the completion of the glide.

Release: The teacher explains with demonstration how the final thrust is initiated by extension of right leg, and when the shoulders are square to the landing sector, the right arm extends and the shot is released from the hand of the putter.

Reverse: The teacher explains with demonstrations how after the release, the right leg is brought forward and flexed in order to avoid fouling.

5.1.4 Relays

There are two types of relays: 4×100 metres and 4×400 metres. Here only 4×100 metres relay, is covered keeping in view the age of students.

Activity 5.4

4×100 metres Relay

Time Required: 45 minutes

M*aterials Required:* Marked play ground, clapper, batons, stop watch, writing board, chart and pen.

Guidelines for the Teacher

The teacher:

Familiarises students with the movements related to the technique of 4×100 metres Relay.

- Explains with demonstration the technique of baton exchange using visual method. In this event of 4x100 meter Relay, there are four runners and each runner has to run 100 metres distance to cover a 400 metres distance. The first runner begins the race in his own lane using sprint start with a baton which must be passed to the second runner using visual exchange method within 20 metres change over zone extended by 10 metres on either side of the 100 metres mark.

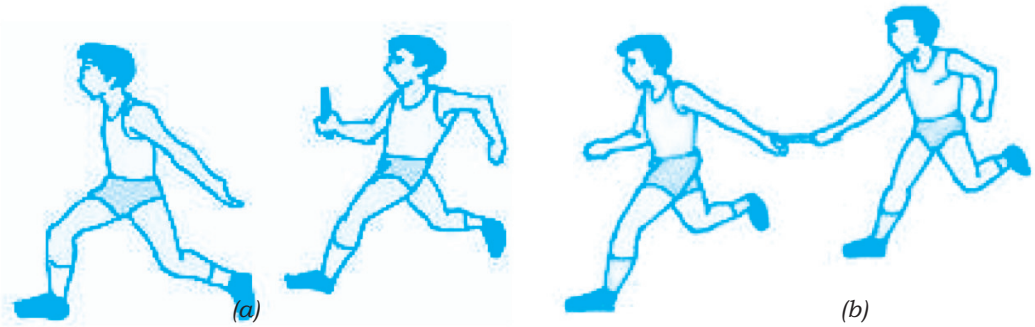


Fig. 5.6 : Showing relay technique of baton exchange

- Explains that change of baton takes place with the right hand of the incomming runner and left hand of the outgoing runner.
- Explains that similarly batons are exchanged between second and third and third and fourth runner. Fourth runner finishes the race by crossing the finishing line.

5.1.5 Gymnastics

Gymnastics is a sport which comprises exercises on floor and on different types of apparatus. The floor exercises include skills like Forward roll, Backward roll and Balances. Only balancing, forward and backward rolls are covered here.

Fig. 5.7 : Balancing (One leg)

Balancing (One Leg)

The student will be made to practise balancing on one leg till waist level first. He/she is then made to hold the stretch as in Fig. 5.7 for greater accuracy and poise. This posture is very graceful when performed effortlessly and accurately.

Turn 360^0

The students are demonstrated about the starting position with single leg and both legs. Initially they hump and turn 360 degrees to get an idea of the level of difficulty in this skill. One leg 360 degree rotation is then performed with proper balance and accuracy. Care should be taken not to injure oneself while rotating.

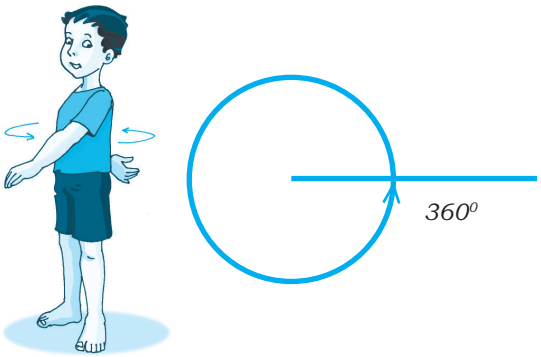


Fig. 5.8 : Turn 360^0

Activity 5.5

Forward roll

Time Required: 45 minutes

Materials Required: Mattress writing board and chart.

Guidelines for the Teachers

The teacher:

- Familiarises students with the movements related to the technique of forward roll.

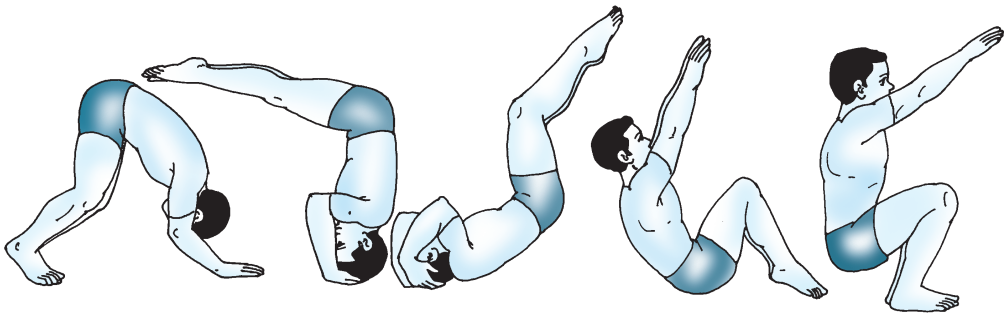


Fig. 5.9 : Forward roll

- Explains with demonstration forward roll that is performed from standing position. The hands are placed by the side of the feet keeping them shoulder width apart. The chin is brought closer to the chest and body is pushed in the forward and downward direction by the hands and legs. The legs are kept as close as possible to the chest. Body moves quickly in the forward and upward direction.

Activity 5.6

Backward roll

Time Required: 45 minutes

Material Required: Mattress, writing board and charts.

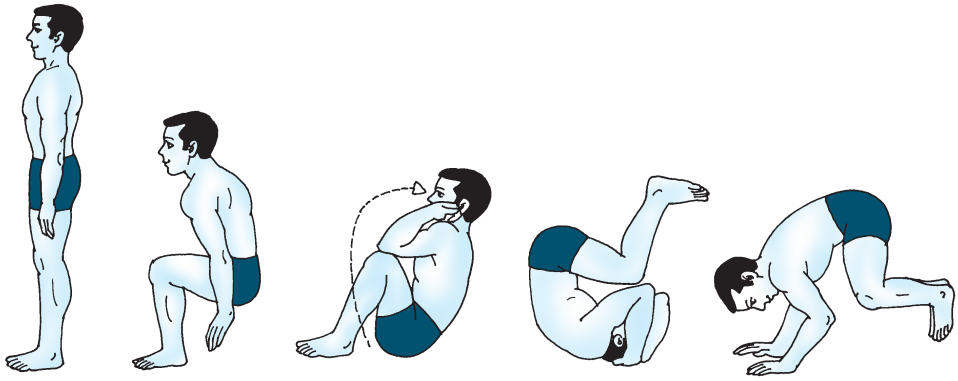


Fig. 5.10 : Backward roll

Guidelines for the Teachers

The teacher:

- Familiarises students with the movements related to the technique of Backward roll.
- Explains with demonstration that the backward roll starts from standing position. Arms are behind the body. Body leans backward and pushes up from the floor. The hands are kept shoulders width apart and the body is kept as close as possible. The body rolls backward over the shoulders and head. The feet are placed on the floor and the gymnast stands up.

Safety Measure

- Avoid doing this kind of roll on hard surfaces. The act of rolling along your spine can damage it. Always use a mat or grassy surfaces.
- Try to land on the uppermost part of your shoulders, not on your neck or head. It might cause injury on your joint between your head and neck.

5.1.6 Swimming

Swimming consists of different strokes, i.e. Front crawl, Breast stroke, Back stroke and Butterfly. We will discuss here only Front crawl (Free style) through activities as follows:

Activity 5.7

Front crawl (Free style)

Time Required: 45 minutes

Materials Required: Swimming pool, costume, towel, bathing cap, swimming goggles, clapper, writing board and chart.

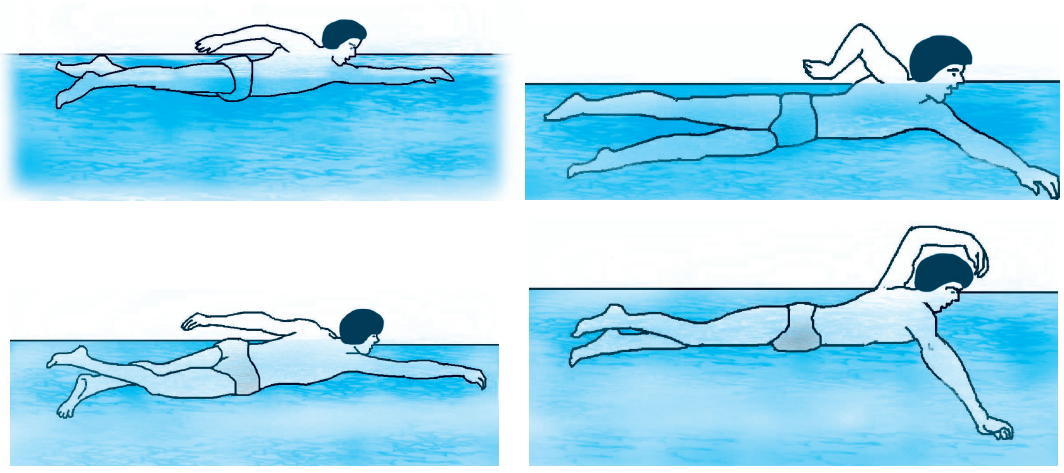


Fig. 5.11 : Free Style Swimming

Guidelines for the Teachers

The teacher:

- Familiarises students with the movements related to the technique of front crawl (free style).
- Explains with demonstration that in freestyle event, a swimmer can swim in any manner. The front crawl swimmer uses alternate stroking of the arms over the water surface with up and down kick action of legs. Breathing is performed on the side, whichever side is convenient to the swimmer.

Try to assess the attitude and interest of the students towards particular game or sport and the level of performance through observation. The observation will focus on the process and the level of achievement.

5.2 Team Games

Team games require a number of players to play in specific positions. They develop sportsmanship, cooperation and attitude for serving the same goal. In this section, team games like Football, Kabaddi, Kho-Kho, Volleyball, Basketball and Cricket have been included.

5.2.1 Football

It is a popular game and is played in all parts of the world. The game requires a variety of skills like passing, dribbling, kicking, throwing, dodging, etc. We shall learn the skills of passing, kicking and throwing through the activities given below:

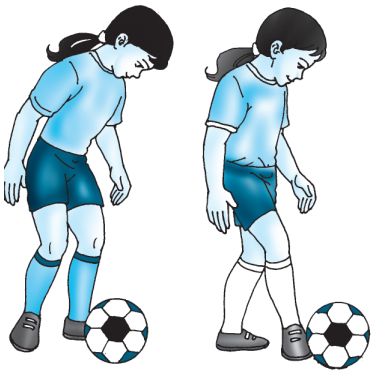


Fig 5.12 : Passing

Activity 5.8

Passing (Short pass)

Time Required: 45 minutes

Materials Required: Marked playground, Ball, writing board and chart, football.

Guidelines for the Teachers

The teacher:

- Familiarises students with the movements related to the basic technique of passing.
- *Passing (Short Pass):* The ball is kept on the ground and the player takes stationary position or takes few steps. The left foot is kept by the side of the ball and right foot pushes the ball with medial part of the foot. The ball moves 10-20 metres.

Activity 5.9

Kicking

Time Required: 45 minutes

Materials Required: Marked playground, ball, writing board and chart, football.

Guidelines for the Teachers

The teacher:

- Familiarises students with the movements related to the basic technique of kicking.
- *Kicking:* The player may kick the ball from stationary position or by taking few steps in approach. The left foot is placed by the side of the ball while the right leg moves forcefully and kick the ball with the right toe. The right leg continues to move in the same direction after kicking as follow through.

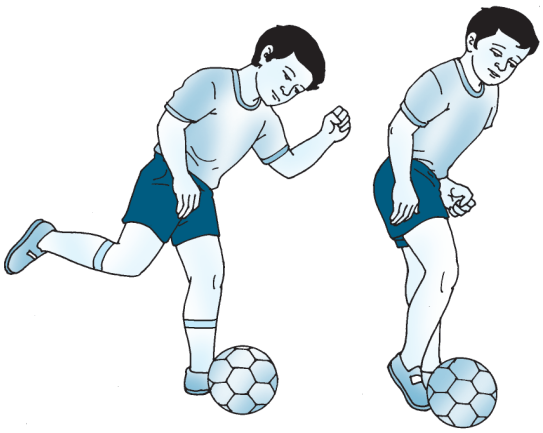


Fig. 5.13 : Kicking

Activity 5.10

Instep Kick

A player positions left foot close to the ball and strikes the ball with his/her inside of the right toe. This kick is more accurate than other kicks.

Activity 5.11

Throw-in

When a player kicks the ball over the sideline the throw-in is awarded to the opponent team.

Time Required: 45 minutes

Materials Required: Marked playground, ball, writing board and chart, football.

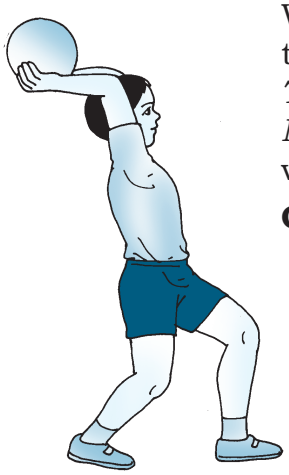


Fig. 5.14 : Throwing

Guidelines for the Teachers

- The teacher familiarises students with the movements related to the basic technique of throw-in.
- *Throw-in:* The throw-in is executed from behind the side line. Ball is held in both hands over head position. The player takes few steps followed by release of the ball by

extension of arms in forward direction. The eyes are kept towards the field. The rear leg moves in the forward direction and comes in line with the front leg for retention of balance. Jumping while throw-in is a foul.

5.2.2 Basketball

Holding the ball, stance:
The ball is held with both hands on the ball, one on either side with the throwing hand usually a little higher on the ball. The ball is cocked up near the ear to aid in a quick release. The passer's hand must be behind the ball so the pass doesn´t have too much side spin, making it hard to catch. The pass is made over the defense, leading to the receiver.

5.2.3 Cricket

The game of cricket originated from England in 16th century and now played professionally in most of the Commonwealth nations. The test playing nations are India, England, Australia, South Africa, New Zealand, West Indies, Pakistan, Sri Lanka, Zimbabwe and Bangladesh. The game of cricket is now played in different formats, i.e. Test Cricket, One Day Cricket, T-20. The World Cup is organized for ODI and T-20 formats.

Equipment

Stumps, bails, pads, batting gloves, wicket keeping gloves, inner gloves, wicket keeping pads, leg guard, thigh guard, elbow guard, abdominal guard, chest guard, bat, ball and helmet.

Battings Skills

A proper grip is important as it helps in hitting the ball to both the sides, i.e. onside and offside by the batsman. The simplest way to hold the bat is to lay

the bat on the ground and the handle of the bat pointing the feet and then pick the bat with both hands.

The 'V' formed by the thumb and fore finger of each hand should be lined towards the outside edge of the bat. Both the hands should be closed to get better control of the bat.

Fig. 5.15 : Batting Skills

Stance

Batsman should stand side on, with both the feet parallel, back leg inside the popping crease not touching the crease and front leg out-side the crease making a proper balance. The knees should be slightly bent. The shoulder and head should be together and still, eyes focusing the bowler.

The top hand of the player should rest comfortably against the inside of front thigh and bat close to the toe of back leg cricket is a side on game and batsman should make slight adjustment if bowler changes his bowling side.

Front Foot Defence

At the beginning children should be told the importance of side on batting. They should be told how to transfer body weight from back leg to front leg and back leg should be lifted a bit on toe and front leg rotates on heel, front knee bent slightly, the head should be still and eyes on the ball, batman's bat lifted from second slip and making contact with the ball close to front pad in front of pad.

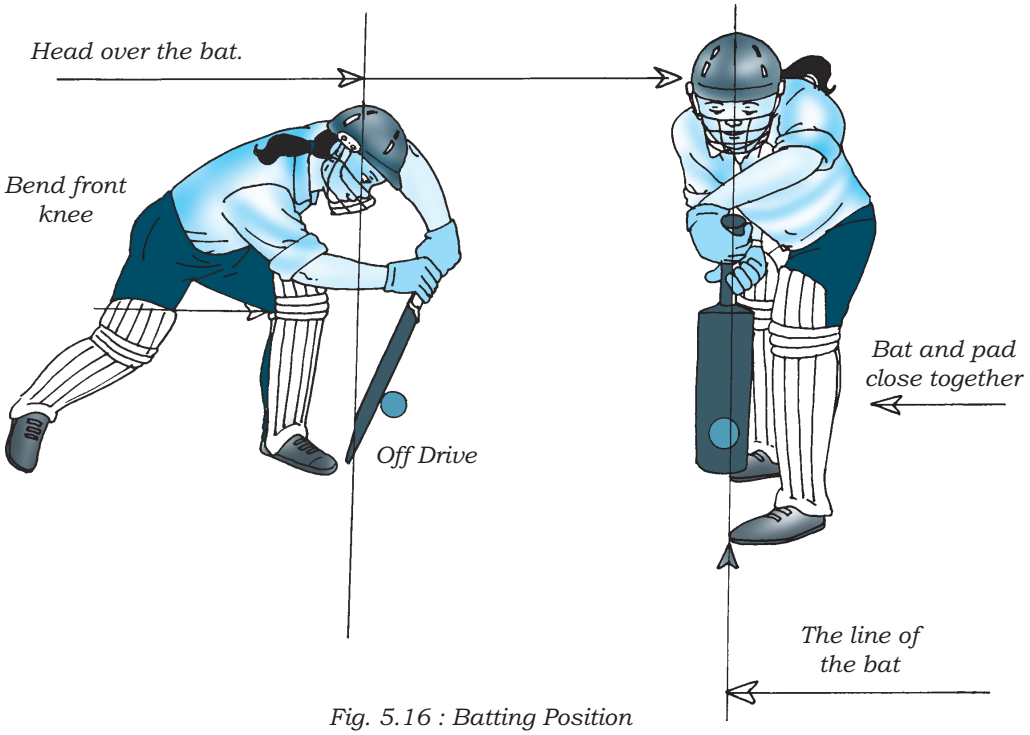


Fig. 5.16 : Batting Position

Off Drive

To improve the ball sense and smoothness in bat swings physical education teacher/coach should personally throw 20 balls to each batsman. He should emphasise on swinging the bat in the direction of the ball by pointing the front leg, shoulder, neck and top hand in the direction of the ball by feeding low full tosses in the direction of stumps on onside to improve the foot work and developing ball sense. Occasionally they should be given balls to defend also.

Running between the Wickets

To create interest once a week they should be taught how to take run and they should play match. The physical education teacher/coach

should stand inside the ground and arrange the field telling the players to go to mid-on, mid-off and keep on changing the field.

Fig. 5.17 (a) : Bowling Action

Bowling

At a very young age a bowler should know how to hold the ball, how to run, reach and deliver the ball. Coach should teach them to bowl straight. Students should run in short strides and when they reach the non striker bowling crease, back leg should go parallel to the back popping crease and rocking back they should lift the front hand up and swing in front towards the batsman, while running with the ball they should keep the ball close to the waist and while loading the ball to bowl they should load from close to chest and bowl high arm/stretching the non bowling arm straight pulling down and pulling the body in the direction of batsman, all these action are side ways.

Fig. 5.17 (b) : Bowling Action

Fig. 5.17 (c) : Bowling Action

Fielding

Fielding is the most important skill in cricket. A fielder's objective is to prevent the batsman from taking run. A fielder should always remain alert as if each and every ball is hit towards him/her. When fielding at some

Fig. 5.18 : Fielding

distance from the batsman, he/she should focus his eyes on batsman's bat, head still and with short steps move towards the batsman as bowler moves from his start. When batsman is about to play the

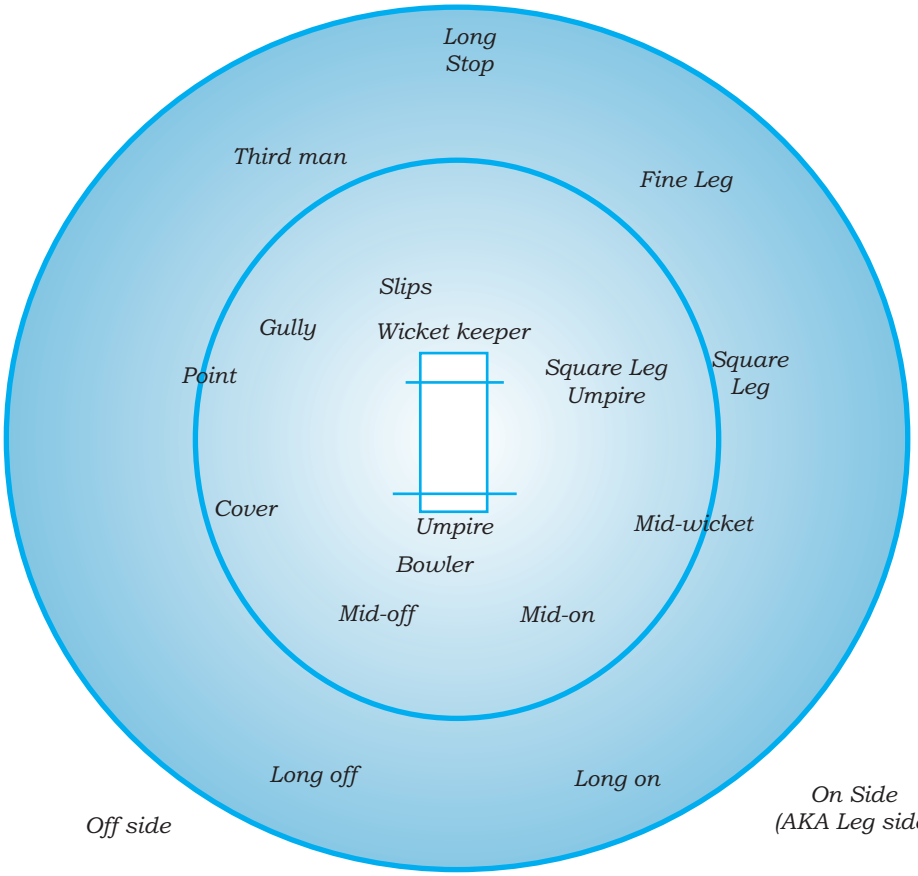


Fig. 5.19 : Cricket Fielding Position

ball he/she should stop and watch the direction in which the ball is hit. If it is towards him/her and strike is not very hard he/she should move (or attack) the ball, with body low and eyes watching the ball with back foot at right angle towards the direction of the ball, opening the body slightly and hold the ball with soft hands. If hit is hard, the player should keep the body at right angle in the direction of the ball and knees and back leg act as second line of defence. This is used in rare cases especially where surface is rough or strike is very hard.

5.2.4 Kabaddi

Kabaddi is one of the indigenous games played in different parts of the country by men and women throughout the year. The game can be played on a mat, and/or plain and soft surface (sand or ploughed field). It develops the skills focused on team spirit, competitiveness, observance of ethical values, regard for rules and regulations and judgement. Kabaddi is played between two teams of 12 members each for 15- 20 minutes in two halves with an interval of 5 minutes. However, seven players are in the court at the start from each side and the remaining players are the substitutes. One player who enters the court of the opposite team is known as "raider" and utters the word "kabaddi" continuously in one breath is called "cant". There are basically two types of skills used in this game that is raiding skills and defensive skills. Among the raiding skills, running hand and toe touch are the basic skills used by the raider. The defenders use the catching skills like ankle and wrist holds. We shall focus on both kinds of skills through the following activities:

Raiding Skills

Activity 5.12
Running Hand Touch
Time Required: 45 minutes
Materials Required: Marked playground, writing board and chart.

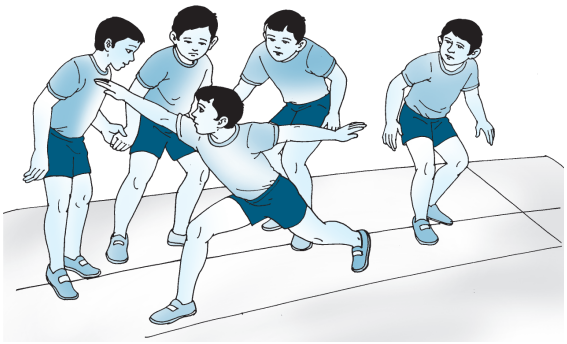


Fig. 5.20 : Hand touch

Guidelines for the Teachers

The teacher:

- Familiarises students with the movements related to the basic technique of Running Hand Touch.
- Running Hand Touch is applied in a natural running movement.
- Care must be taken that the raider does not enter the lobby without struggle. A raider may be trapped if she/he runs blindly.
- In the execution of this skill, the raider should attack the shoulders of the anti/ opponent. Once the attack is over, the raider has to check her/his speed on leading leg and change direction towards the midline.
- Players at the corners are the best targets. This attack is advisable for raiders who play from side to side.

Activity 5.13
Toe Touch
Time Required: 45 minutes
Materials Required: Marked playground, writing board and chart.

Guidelines for the Teachers

The teacher:

- Familiarises students with the movements related to the technique of Toe Touch.

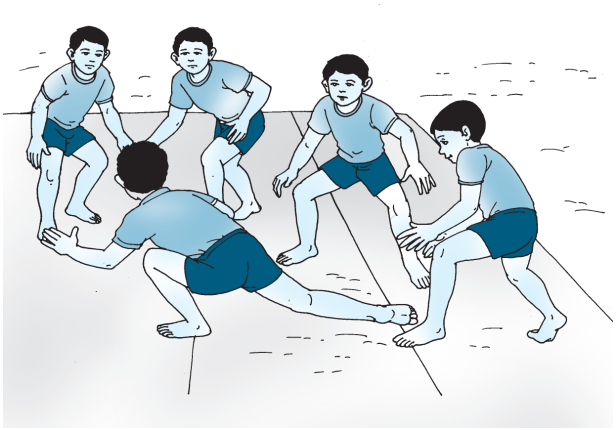


Fig. 5.21 : Toe touch

• *Toe Touch:* This is an offensive skill used by almost every raider. A raider can execute this skill even when she/he is at a considerable distance from the anties.

• During the course of a raid, the raider moves in different angles, according to the positions and moves of the anties.

• At the same time, the raider requires to extend his/her leg suddenly towards the anti.

- Body weight of the raider should be on the rear leg for easy extension. The raider should not face the anties and ensure that the shoulder line is towards the side-lines or mid-line. To maintain balance the raider should keep the body in a crouch position and lean towards the mid-line.
- She/he extend all the joints (knee and ankle) in order to cover more distance and touch with the inner portion of the toe. Keep hands free with flexed elbows aside the chest to maintain balance and to defend self from the covers.
- After executing this skill, the raider should immediately withdraw his/her leg as there are chances for an ankle hold by the anties. While withdrawing his/her leg, he/she should not take a wide step.

Catching Skills

Activity 5.14

Ankle Hold

Time Required: 45 minutes

Materials Required: Marked play ground, writing board and chart.

Guidelines for the Teachers

The teacher:

- Familiarises students with the movements related to the technique of Ankle Hold.
- *Ankle Hold* is an individual defensive skill. This is a counter skill used by defensive players against leg thrusts and foot touches by raiders during an attack or raid. Now-a-days even the second position player uses this skill for initiating a catch. Every team uses ankle hold as a supporting skill. When a raider is caught by the chain holds, the other anties are advised to use ankle hold as support. A team which has mastery over ankle hold can plan different strategies and tactics in various situations.

Activity 5.15

Wrist Hold

Time Required: 45 minutes

Materials Required: Marked play ground, writing board and chart.

Guidelines for the Teacher

The teacher:

- Familiarises students with the movements related to the technique of Wrist Hold.

Fig. 5.22 : Wrist hold

- *Wrist Hold:* Teacher explains with demonstration that the defender should keep his body position free and relaxed without holding the chain.
- Keep the palms in a cup shape with the thumb and fingers apart and the rest of the fingers close together for having a firm grip. The players should lean forward and take a firm grip of the raiders' wrist, upon reaching the raider.
- The grip should not be loosened and the raider is pulled for better follow- through.
- The defender should not go forward with the raider's movement and should make use of the body weight and cling to the raider's wrist so that the raider's movement gets checked.

5.2.5 Kho-Kho

Kho-Kho is another indigenous game. It is played by boys and girls all over India. The game can be played on plain surface and small area. The game is played between two teams of 12 players in each. The game consists of two innings of nine minutes for boys and seven minutes for girls, each of chasing and running. The chasing team players take the sitting position in squares marked on the ground. Three players of the running team initiate the run. When all the three are chased out by the chasing team, the next three players enter into the court to run. In this way all the players participate in running turn by turn. The game of kho-kho requires two types of skills: Running and Chasing.

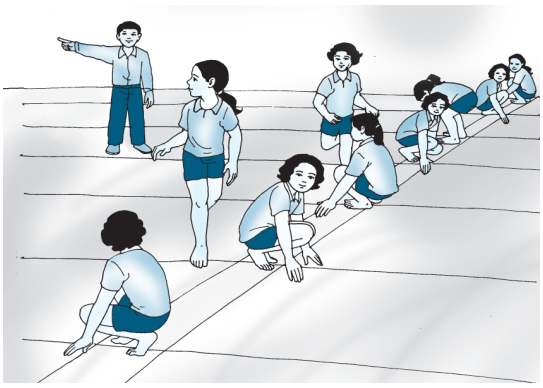


Fig. 5.23 : Children playing kho-kho

Running Skills

The running skills in the game of kho-kho are most important. Running in this game is different. It requires some specific skills and is to be performed in the way, so that the runner can defend herself/himself from the chaser. We shall discuss these skills through the following activity:

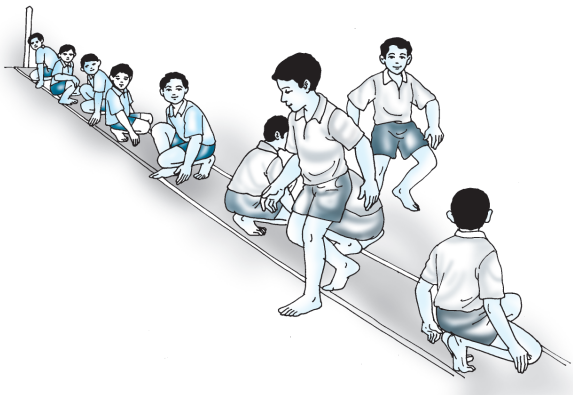


Fig. 5.24 : Runner running in the kho-kho court

Activity 5.16

Running

Time Required: 45 minutes

Materials Required: Marked play ground, writing board and chart.

Guidelines for the Teachers

The teacher:

- Familiarises students with the movements related to the basic technique of running.
- *Running:* Teacher explains that the players other than the chaser are known as runners. The runners should run within the court without getting touched by the chaser. The runner may change the direction, however, the chaser will run in the direction in which he/she starts running.

Chasing Skills

Teacher explains that the chasing skills in the game of kho-kho are not like those in any other chasing activity. Certain specific skills are to be acquired by the performer to chase the runner in an effective manner. There are several chasing skills, but only skills related to giving kho is explained.

Fig. 5.25 : Chaser chasing in the kho-kho court

Activity 5.17

Giving Kho

Time required: 45 minutes

Materials required: Marked play ground, writing board and chart.

Guidelines for the Teachers

The teacher:

- Familiarises students with the movements related to the basic technique of giving kho.
- Teacher explains with demonstration how 'Kho' is spoken, when an attacker says loudly and distinctly-the word 'kho' (which means 'go', chase'), touching by hand a chaser from behind him. In other words it is a relay covering a certain minimum distance by an attacker.
- Attacker needs to touch gently, just a touch by hand. Chaser must not be pushed. Brake is applied to chasing. The direction of running determins the leg on which the braking pressure is applied.
- Importance is attached to the method of sitting on the square in modern kho-kho. Most advantageous is to sit on toes with thighs parallel to the ground and heels completely lifted up. Palms, with cup shape position placed just outside the central and cross lane. This gives the needed position placed just outside the central and cross lane and gives the needed support. This is known as parallel toe method. Another is bullet toe method, i.e one toe nearer to the front line of square and another is a little behind the other one.

Students are required to select any two games listed above. Ask the students to perform any two skills from the selected game in terms of technique of these selected skills and also their behaviour regarding cooperation, team spirit leadership qualities and evaluate their performance by observation.

ASSESSMENT

Answer the following questions:

1. Describe the technique of 'Sprint'.

   _____
   _____
   _____

2. Explain the 'Hang' technique of long jump.

   _____
   _____
   _____

3. Explain the method of baton exchange.

   _____
   _____
   _____

4. Write the technique of forward roll.

   _____
   _____
   _____

5. Explain the technique of backward roll.

   _____
   _____
   _____

6. Rearrange the phases of Perry O' Brien technique in the correct order: Release, Grip and Stance, Reverse and Glide.

   _____
   _____
   _____

7. Write a short note on swimming.
8. Perform any one technique of selected game of your choice.
9. Write any five rules of the game of your choice.
10. How the game of your choice helps to improve the fitness.
11. Write in detail about skill of the game of your choice.

Tick (✓) mark either Yes or No:

(i) Long jumper runs 30-45 metre in approach run. (Yes/No)

(ii) In 4×100 metre relay baton are exchanged by using visual method. (Yes/No)

(iii) 100 metre sprint is started using crouch start. (Yes/No)

(iv) Term 'hang' is related to long jump technique. (Yes/No)

(v) Perry O' Brien is the technique of discuss throw. (Yes/No)

(vi) Running toe touch is a skill of kabaddi game. (Yes/No)

(vii) Running and chasing are kho-kho skills. (Yes /No)

(viii) Wrist hold is a part of kho-kho skills. (Yes/No)

(ix) Ankle hold is a part of chasing skill in kabaddi. (Yes/No)

(x) Giving kho is a chasing skill. (Yes/No)

Fill in the blanks:

(i) Ankle hold is related to ..... game.

(ii) The term wrist hold is used in ..... game.

(iii) Canting is related to ..... game.

(iv) The term chasing is related to ..... game.

(v) The term running hand touch is related to ..... game.

Unit 6

Yoga for Health

Overview

Yoga has become very popular not only in our country but also in many other parts of the world. Yogic practices lead to the development of holistic health. As said in the introduction, Yoga specifically means a connection of body and mind. It contributes to the promotion and maintenance of healthy body and sound mind. We can develop abilities like agility, balance, coordination, strength and flexibility by performing yogic practices. These also improve physical, mental and emotional health. It also helps in better functioning of all the systems of the body. Yoga thus helps in overall well-being of a person.

You have seen people of different age groups, performing various yogic practices such as *asanas* and *pranayamas*. Yogic practices are beneficial for the health of people of all age groups including children. In this context, you need to know the following important points as students.

Points to remember

- As informed in the introduction, regularity of practices is essential. We should follow the practices with sincerity and faith.
- Yoga is primarily used as a preventive measure. It can also be used for better management of physical and mental disorders.

- We should not expect miracles and have patience.
- Due to any reason, if practices are discontinued, we can start again with the basic practices and gradually move ahead.
- The duration and time of yogic practices depend on your availability.
- Along with yogic practices, it is important to take nutritious and healthy food. We should take atleast eight hours of sound sleep.

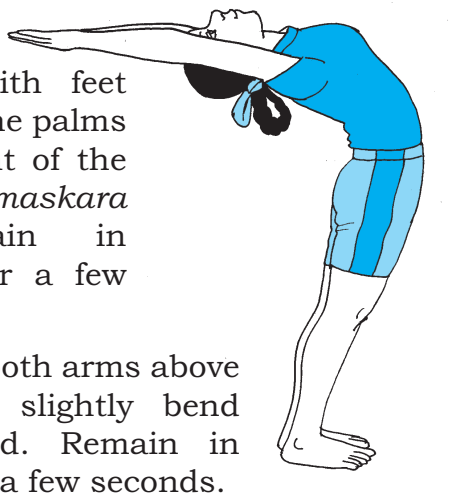
In order to bring more flexibility, *Surya Namaskara* should be practised.

Surya Namaskara

Surya means Sun and *Namaskara* means salutation. It is basically salutating the Sun through postures.

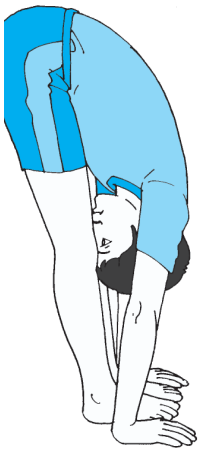
Surya Namaskara is a series of 12 physical postures. These postures stretch various muscles and spinal column and give flexibility to the whole body.

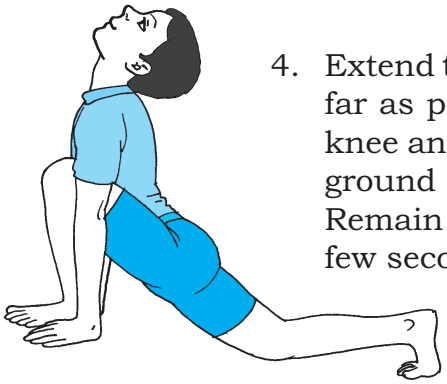
Let us perform *Surya Namaskara* by following the steps given below



1. Stand erect with feet together. Join the palms together in front of the chest in a *namaskara mudra*. Remain in this posture for a few seconds.
2. Inhaling, raise both arms above the head and slightly bend trunk backward. Remain in this posture for a few seconds.

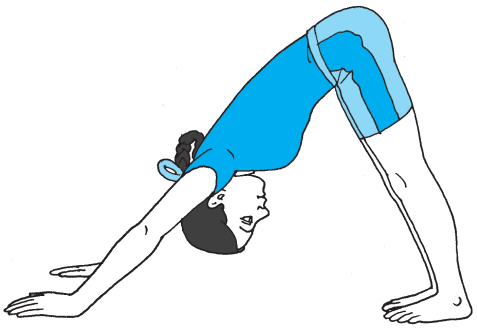
3. Exhaling, bend forward from the waist keeping the arms by the side of the ears until palms touches the floor on both sides of the feet and the forehead touches the knees. Remain in this posture for a few seconds.



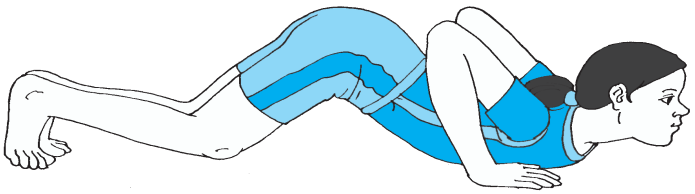


4. Extend the right leg behind as far as possible. Bend the left knee and keep the left foot on ground between the palms. Remain in this posture for a few seconds.

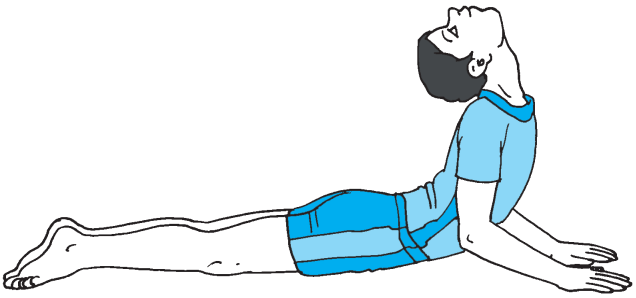
5. Exhaling, bring the left leg back to join with the right leg. Simultaneously, raise the buttocks and lower the head between the arms so that the body forms a triangle with the floor. Try to place the heels flat on the ground. Remain in this posture for a few seconds.

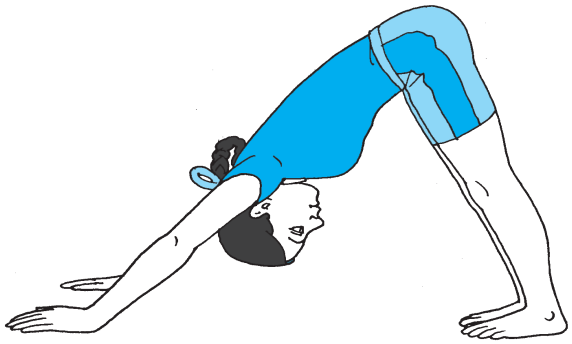


6. Gently lower knees, chest and chin to the ground with normal breathing. Toes, knees, chest, hands and chin should touch the floor. The buttocks are kept up. Remain in this posture for a few seconds.

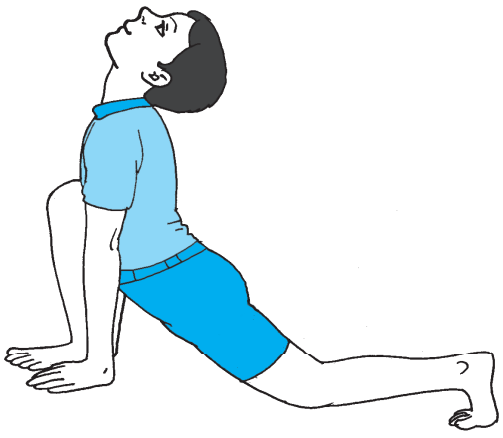


7. Lower the hips while pushing the chest forward, and raise the trunk upward until the spine is fully arched and the head is facing up. The legs and lower abdomen remain on the floor. Inhale while raising torso. Remain in this posture for a few seconds.



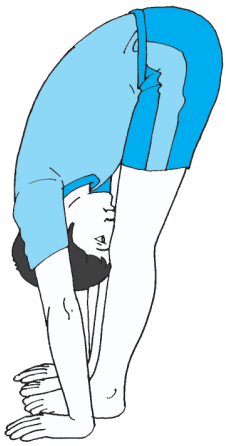


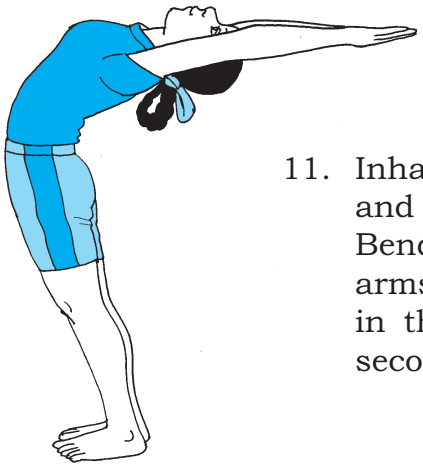
8. Exhaling, lower the trunk keeping the palms flat on the floor. Place both feet flat on the ground. Raise the buttocks and lower the head between the arms. Remain in this posture for a few seconds.



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

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





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

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

Remember the following points

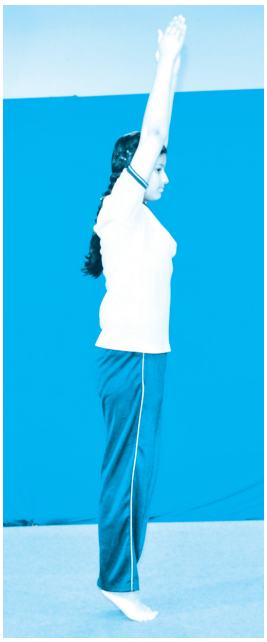
Do's	Don'ts
• Synchronise breathing with the movements of the body. • Inhale during upward bending and exhale during forward bending.	• Do not practise beyond your capacity. • The person having spinal cord injury should not practise *surya namaskara*.

Benefits

- It helps to increase strength, endurance and flexibility.
- It improves concentration.
- It removes excess fat.
- It gives energy to the body.
- It helps in increasing the height of growing children and tones up their body.
- It warms up the body.
- It improves blood circulation all over the body.
- It provides flexibility to the whole body.

Let us now perform the following *asana* for health.

Tadasana (Palm Tree Posture)



Tada in Sanskrit means 'palm tree'. This is called *Tadasana* because in it the body imitates a 'palm tree'. This tree is known for its height and also for being vertically straight. Hence, it has been named *Tadasana*.

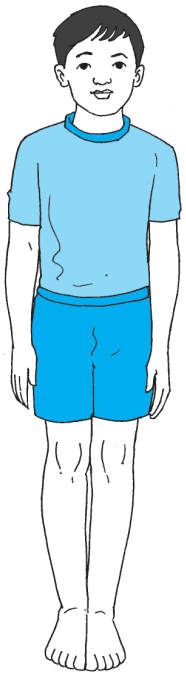
Let us perform *Tadasana* by following the steps given below

Starting position: Stand erect, legs together, hands by the side of the thighs. Keep the back straight and gaze in front.

1. Stretch the arms upward, over the head and parallel with each other, with the palms facing each other.
2. Slowly raise the heels and stand on toes. Raise heels as much as you can. Stretch body up as much as possible. Stay for a few seconds in this final position.

Releasing position:

3. While returning to the original position, bring the heels on the floor first.
4. Slowly bring down the hands by the side of the thighs and relax.



Remember the following points

Do's	Don'ts
• The inner arms should touch the respective ears and hands parallel to each other. • Stretch the arms and fingers fully. • Keep the head, neck and the body in one line.	• Do not bend forward or backward.

Benefits

- It gives vertical stretch to whole body muscles.
- It strengthens thighs, knees and ankles.
- It helps in improving height of growing children.
- It helps to remove laziness and lethargy.

Limitations

- Those having complaints of *reeling sensation* should not practise it.
- Avoid performing this *asana* if knee joints and ankle joints are having pain and stiffness.

Vrikshasana (Tree Posture)

This is a balancing *asana*. The Sanskrit word *vriksha* means 'tree', thus, this is the 'Tree Posture'. In the imagination of the tree, foot seems as a roots, leg is the trunk, arms as the branches and leaves, head as top of the tree, all make the posture in the shape of a tree.

Let us perform the *Vrikshasana* by following the steps given below

Starting position: Stand with the feet together and the arms by the sides and gaze in front.

1. Bend the right leg at the knee. Keep the sole of the right foot as high as possible in the inside of the left leg thigh (heel upwards and toes downwards).
2. Balancing on the left foot, raise both the arms over the head and joining the palms together or may bring both the arms in the front of the chest with palms joined together (*Namaskara* posture). Hold the position for 10–15 seconds.

Releasing position:

3. Take both the arms down by the side of the body.
4. Bring down the right leg on the floor and stand erect.
5. Repeat the procedure from left leg.

Remember the following points

Do's	Don'ts
• Attention should be focused on any fix point, in front. • Try maintaining the balance of the body on one leg.	• Do not bend the body in the final posture.

Benefits

- Regular practice of this posture will help in developing concentration among students.
- Regular practice of the *Vrikshasana* improves balance and coordination of body.

- It improves blood circulation.
- It tones up muscles of the legs.

Limitations

- Person having reeling sensation should not practise this *asana*.

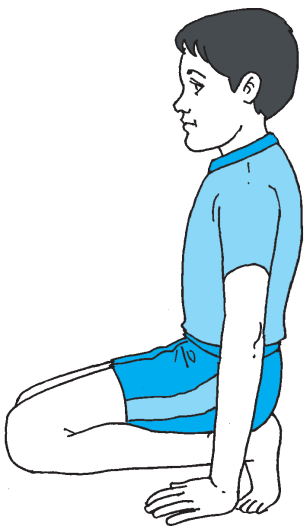
Utkatasana

In Sanskrit *ut* means 'raised' and *kata* refers to 'hips'. This *asana* is also a balancing posture. The posture is known as *utkatasana* because in this *asana*, the hips are kept raised.

Let us perform the *Utkatasana* by following the steps given below

Starting position: Stand erect placing both the feet firmly on the floor.

1. Make a comfortable distance between the feet, about 8-12 inches.
2. Raise both the arms in front, up to shoulder level and palms should be facing downward.
3. Raising the heels stand on the toes and slowly sit on the toes.
4. Hands should be placed on the respective knees. Maintain the position for 5-10 seconds.



Releasing position:

5. Balancing the body, keep the arms on the floor.
6. Maintaining the balance, slowly stand erect on the toes and raise both the arms in front, up to shoulder level.
7. Place the heels on the floor. Bring the hands by the side of the thighs and feet together.

8. Stand erect with placing both the feet firmly on the floor.

Remember the following points

Do's	Don'ts
• Maintain the balance while taking and releasing the posture. • In the final posture, upper part of the body should remain erect. • In the final posture, weight should be taken by hamstring muscles.	• Do not put the body weight on heels. • Do not bend forward.

Benefits

- It enhances the mobility of the knee joints, ankle joints and hip joints.
- It strengthens the muscles of the legs (hamstring and calf), the arms, biceps, shoulder, the pelvis and the lower back.
- It reduces the fat in the waist and hip joint and makes good figure of the body. This helps in enhancing self-esteem.
- It improves functioning of digestive system.

Limitations

- Those having complaints of reeling sensation should not practise it.
- Avoid performing the *asana* if knee joints and ankle joints are having pain and stiffness.

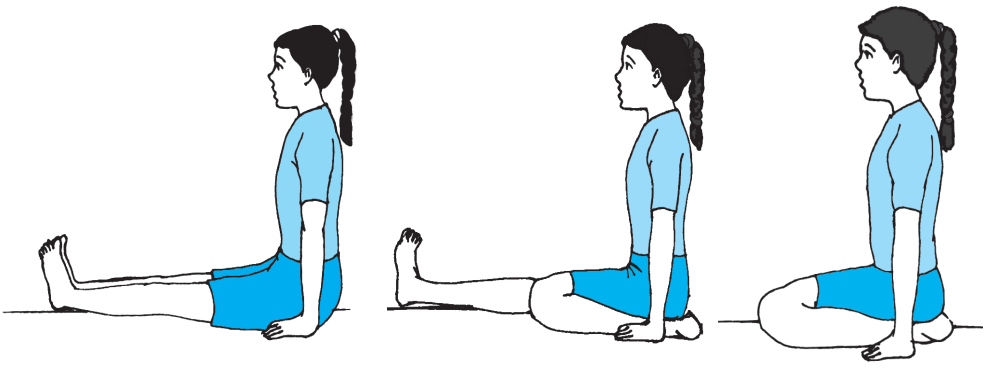
Vajrasana

This is a meditative posture. It is the only *asana* which can be practised immediately after taking meals.

Let us perform the Vajrasana by following the steps given below

Starting position: Sit with legs extended together, hands by the side of the body, resting on the ground.

1. Fold the left leg at the knee and place the foot under the left buttock.
2. Similarly, fold the right leg and place the foot under the right buttock.
3. Place both the heels so that the big toes overlap each other.



4. Position the buttocks in the space between the heels.
5. Keep the hands on respective knees.
6. Keep spine erect, gaze in front or close the eyes. Initially you can stay for 10–15 seconds.

Releasing position:

7. While returning to the original position, bend a little towards right side, take out your left leg and extend it.
8. Similarly, extend your right leg and keep arms on the sides of the body.

Return to the original position.

Remember the following points

Do's	Don'ts
• In the final posture spine must be erect. • Heels should be outside and buttocks should be resting on the heels.	• Do not bend forward or backward.

Benefits

- It is a meditative posture and helps in concentration.
- It improves our digestive system.
- This strengthens muscles of thighs and calf.

Limitations

- Those suffering from chronic knee pain should not practise *Vajrasana*.

Swastikasana (Auspicious Posture)

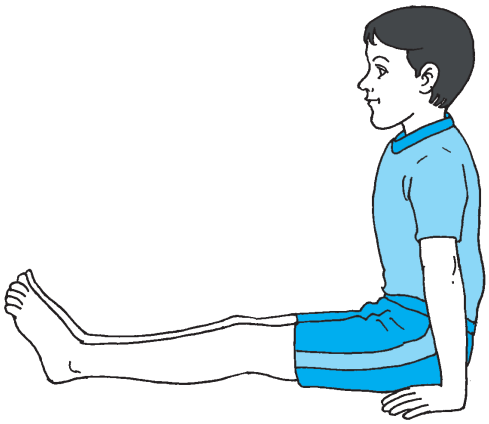
The Sanskrit word *Swastika* is normally considered to be an amalgamation of the words *su* and *asati*. *Su* means 'good' and *asti* means 'being'. Thus, *Swastika* would mean well-being. Swastika is considered an auspicious sign in Indian culture. It is a symbol of goodness.

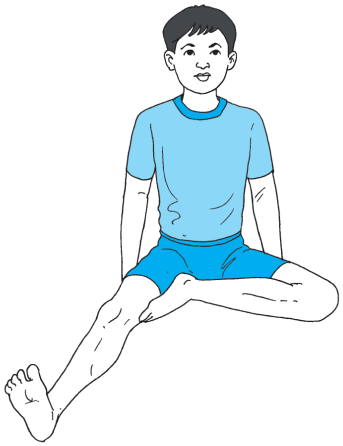
Let us perform the *Swastikasana* by following the steps given below

Starting position: Sit erect with legs extended together.

1. Set left heel against the right groin.
2. Set right heel to the left groin.
3. Insert toes in between thighs and calves. Sit erect keeping the spine straight. Keep hands

in *jnana mudra* on knees. For forming *jnana mudra*, bent the index fingers and join the tip of the index finger with tip of the thumb. This is known as *Swastikasana*. Maintain the position for 10 seconds.





Releasing position:

4. Release the hands and keep them on floor by the sides of the body.
5. Extend the right leg back to the position.
6. Extend the left leg back to the position.
7. Sit in the starting position.

Repeat the posture by changing the sequence of legs.

Remember the following points

Do's	Don'ts
• In the final posture, spine must be erect. • Adjust the feet in such a way that the knees are kept on the ground.	• Do not apply undue force to assume the posture. • Do not bend backward.

Benefits

- It helps in concentration of mind.
- It strengthens ankle joints.
- This posture helps to increase flexibility in knee joints and ankle joints.

Limitations

- Avoid this *asana* if suffering from sciatica or pain in knee joints and ankle joints.

Ardhapadmasana (Half Lotus Posture)

Ardhapadmasana also is a meditative posture. This is done by arranging one foot on the opposite thigh and the other foot under the opposite thigh. It is called *ardhapadmasana* or half-lotus posture because half the technique of *padmasana* is employed in this posture.

Let us perform the *asana* by following the steps given below

Starting position: Sit with legs extended together, i.e., long sitting posture.

1. Fold the right leg in the knee and place the sole of right foot against inside of left thigh.
2. Fold the left leg at the knee and place the left foot on the top of right thigh.
3. Place the hands on the respective knees in *jnana mudra* and maintain the pose for a comfortable time. This *asana* may be continued for any length of time.

Releasing position:

4. Release the *jnana mudra* and keep the hands by the sides of the body.
5. Extend the left leg back to the position.

6. Extend the right leg and sit in long sitting posture.

Now repeat it by changing the position of legs.

Remember the following points

Do's	Don'ts
• In the final posture spine must be erect. • Adjust the feet in such a way that the knees are kept on the ground.	• Do not apply undue force to assume the posture. • Do not bend at the back.

Benefits

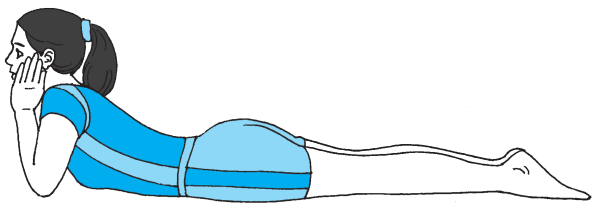
- It promotes blood supply in pelvic area, beneficially affecting the organs of that area.
- This posture helps to promote better concentration.
- It removes mental and physical fatigue. This helps in developing harmony in body and mind.

Limitations

- Avoid performing this *asana* if suffering from sciatica or pain in knee joints and ankle joints.

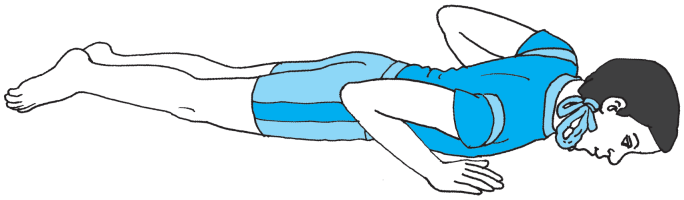
Niralamba Bhujangasana (Cobra Posture)

This is a modified simple form of *Bhujangasana*. *Bhujanga* in Sanskrit means cobra (snake). In this *asana*, the body looks like a cobra, hence it is called *Bhujangasana*.



Let us do this *asana* by following the steps given below

Starting position: Lie flat on the stomach with toes and heels kept together and forehead on the ground. Arms stretched up over the head.



1. Inhaling slowly raise head, chin, neck, shoulders and chest up to the navel with the support of the forearms.
2. Raise your head upwards, allowing it to bend backwards.
3. Now bend arms at the elbows, keep wrists together with open palms.
4. Place your chin in the palms. Just like face is resting in the cushion of palms. Maintain the position for 10 seconds.

Releasing position:

5. Unfold the arms back.
6. Exhaling lower chest, shoulders and head down to the floor. Relax in starting position.

Remember the following points

Do's	Don'ts
• Breathe comfortably. • Practise this *asana* as per the optimal capacity without any discomfort.	• Do not apply undue force to assume the posture. • When bending the body backwards, be sure not to make any violent jerks, as this may injure muscles.

Benefits

- It helps in removing pain of the neck and jaws.
- This posture give rests to the body and keeps the spine and neck healthy.
- It also maintains flexibility of backbone and gives exercise to nerves attached to the spine.
- It is very useful in asthma.
- It helps to attain relaxation of mind and body.

Limitations

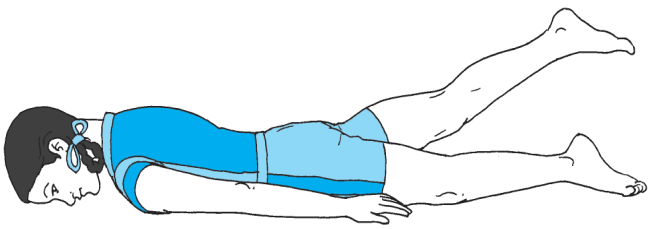
- Avoid practice in case of hernia and abdominal pain.

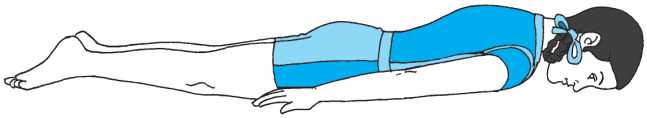
Ardhashalabhasana (Half Locust Posture)

This posture is a simple modification of the original posture named as *shalabhasana*. In Sanskrit, *shalabha* means 'locust'. In *shalabhasana*, the body resembles the shape of a locust. In *Ardhashalabhasana* half the technique of *Shalabhasana* is employed hence, it is called *Ardhashalabhasana*.

Let us perform *Ardhashalabhasana* following steps as given below

Starting position: Lie prone, i.e., on stomach with chin resting on the ground, the arms extended along the body and the legs fully stretched.





1. Keeping the knee straight, raise the right leg from the ground as high as possible and maintain the posture comfortably for 5-10 seconds.

Releasing Position:

2. Lower the raised leg to the ground slowly.
3. Similarly raise the left leg slowly to the maximum and maintain the posture for some time (5-10 seconds).While releasing the posture lower the raised leg to the ground and relax.

Remember the following points

Do's	Don'ts
• The legs should be raised only to the point where the pelvic does not tilt. • The chin should be kept on the ground throughout.	• Avoid bending the knees while raising the legs alternately. • Do not push yourself too much. • Jerk and unbearable strains should be avoided.

Benefits

- It strengthens the back muscles of the legs.
- It improves the tone of the abdominal organs.
- *Shalabhasana* is a good exercise for the legs, thighs, buttocks, the lower abdomen and wrists.

Limitations

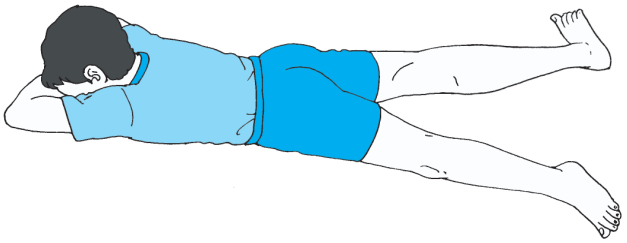
- Person suffering from ulcer in stomach, hernia, weak lungs and cardiac complaints, high blood pressure should consult yoga expert before practising this *asana*.

Makarasana (Crocodile Posture)

Makarasana is a relaxative posture. The posture is called *Makarasana* as the body in this *asana* resembles the shape of *makara*. In Sanskrit *makara* means crocodile.

Let us perform *Makarasana* following the steps as given below

Starting position: Take prone lying position.



1. Keep the legs at a comfortable distance with heels inside and toes pointing outward and the ankles resting on the ground.
2. Fold the arms at elbows. Hold the opposite shoulders with the hands. The elbows are kept one on the other.
3. Place the head on the cushion of the arms and breathe normally.

Releasing position:

4. Remove the right hand from the left shoulder and place it along the right side of the body.
5. Remove the left hand from the right shoulder and place it along the left side of the body.
6. Reduce the distance between the feet and take starting position

Remember the following points

Do's	Don'ts
• Both elbows can be kept slightly apart if found difficult to put one on the other.	• Do not press the chest on the ground so that the breathing becomes uncomfortable.

Benefits

- It relaxes body and mind both.
- It reduces anxiety and stress.
- It is beneficial for respiratory organs as well as for digestive organs.
- It improves blood circulation in whole body.

Limitations

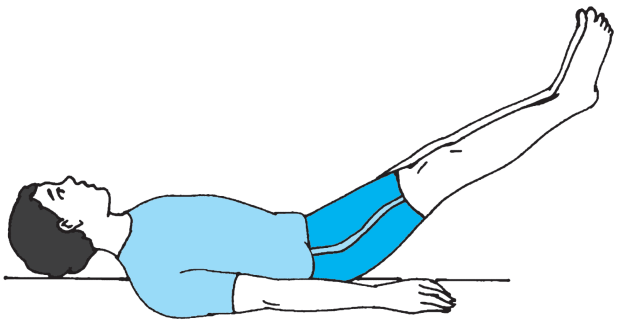
- Those having complaint of obesity and cardiac problems should avoid this practice.

Uttanapadasana

In Sanskrit *uttana* means 'raised' and *Pada* means 'leg'. In this *asana*, legs are raised hence the name of the *asana* is *uttanapadasana*. This is a traditional posture.

It can be practised by raising one leg at a time or by raising both legs simultaneously.

Let us perform *Uttanapadasana* following steps as given below



Ek-Pada Uttanasana

Starting position: Lie on back (supine) with legs together, hands by the side of the body, palms placed on floor.

1. Inhaling, slowly raise the left leg at 30°, 45° and upto 60° angle and maintain the posture for 5-10 seconds.

Releasing position:

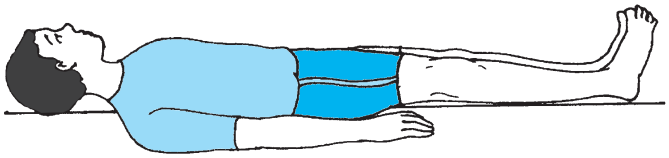
2. Lower down the leg slowly at 45° and 30° come back on the floor while exhaling.

Practise with right leg in a similar way.

Dvi-Pada Uttanasana

1. *Starting position:* Lie supine with legs together, hands by the side of the body, palms placed on floor.
2. Inhaling, raise slowly both the legs at 30°, 45° and upto 600 angle and maintain the posture for 5-10 seconds.

Releasing position:



3. While exhaling slowly lower down both the legs at 45°and 30° angle and then to the floor.

Remember the following points

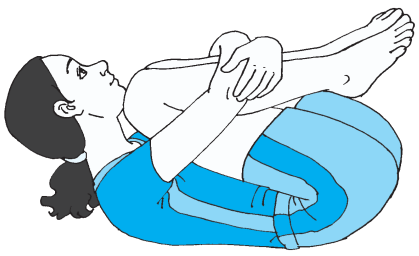
Do's	Don'ts
• It causes pressure and contraction at the lower abdomen, hence practise carefully. • Keep the trunk and head straight on the floor. • Keep the arms, legs and shoulders relaxed.	• Do not bend legs at knees while raising them upward. • Do not shake the body and avoid jerky movement.

Benefits

- It is beneficial in constipation, indigestion, nervous weakness and diabetes.
- It strengthens the abdominal muscles.
- It balances the navel centre (*nabhimandal*).

Limitations

- Do not practise with both legs if suffering from back complaints.



Pawanamuktasana

The Sanskrit word *pawana* means 'air' or 'wind' and *mukta* means 'freedom' or 'release'. This is called as the 'wind relieving posture' as it assists in releasing trapped digestive gas from the stomach and intestines.

Let us perform *Pawanamuktasana* by following steps as given below

Starting position: Lie supine with legs together and hands kept by the sides of the body, palms resting on the floor.

1. Inhaling, fold both the legs at the knee over the belly.
2. Hold the knees with the interlocked arms and press them on the belly.
3. While exhaling, raise the head and let the chin touch the knees.

Releasing position:

4. Bring the head down cautiously.
5. Release the interlocked arms and bring them on the floor.
6. Exhaling, unfold the legs back on the floor.
7. Bring legs together, hands by the side of the body, palms placed on floor and relax.

Remember the following points

Do's	Don'ts
• It causes pressure and contraction at the lower abdomen, hence practise it carefully. • Knees should be together while pressing against the chest.	• Don't shake the body and avoid jerky movement. • Do not get disheartened in initial stage. • Do not bend the head if suffering from spondylitis.

Benefits

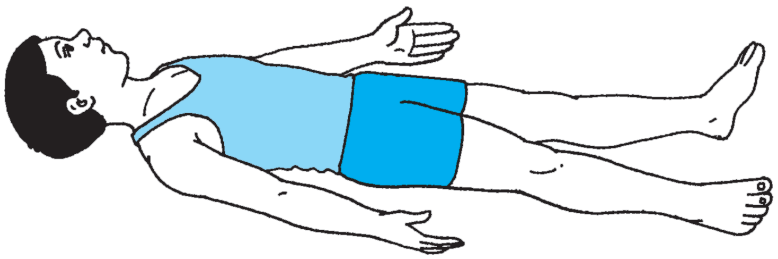
- This *asana* helps to increase digestive power.
- It helps to deal constipation by stimulating the abdominal region.
- It helps in releasing trapped gas from the stomach.
- It helps to dissolve extra fat deposited in the abdominal region.

Limitations

- Do not practise if suffering from severe back pain or abdominal injuries.

Shavasana (Corpse Posture)

It is a traditional relaxing posture. The posture is called *shavasana* as it resembles a dead body. In Sanskrit, *shava* means a 'dead body'.



Let us perform *Shavasana* by following steps as given below

Starting position: Lie supine on the floor, legs apart at a comfortable distance and hands kept at a distance of about six inches from the body.

1. Keep palms upwards, fingers naturally flexed and eyes closed.
2. Breathing should be very slow. Nobody knows that you are taking breath from a distance of 8–2 inches. Head should remain straight.

Remember the following points

Do's	Don'ts
• Take a comfortable supine position which offers least resistance to the gravity. • Continue focussing on the natural breathing. • Let the breathing be as natural as possible with attention on the abdominal movements and also on the sensations of the touch of air within the nose walls. • Keep the eyes closed throughout the practice.	• Do not tense any part of the body, hence loosen entire frame of the body. • Do not move the body parts during the practice. • Do not pay attention to the thoughts and feeling. • Do not tilt the head to the left or right. • Do not be impatient during the practice.

Benefits

- It reduces anxiety, fatigue and stress.
- It relaxes the muscles.
- It induces feeling of freshness.
- *Shavasana* relaxes rigid nerves, boosts up energy level and develops harmony, as well as calmness in the body.

Limitations

- Do not practise if someone is having low blood pressure or depression.

Breathing

Breathing with Awareness

Breathing is an important process. It is vital to our life. Breathing consists of inhalation and

exhalation. You know that through inhalation, we take the oxygen in and through exhalation we throw the carbondioxide out. This process keeps on going day and night without any break. But we are not aware of this. We also do not know whether we are breathing properly or not.

Therefore, we should try to be aware of how we are breathing. This awareness will help us in breathing properly.

Let us breathe with awareness by following the steps given below

1. Sit in a comfortable posture like *Ardha-Padmasana, Padmasana, Swastikasana.* Keep palm over your knees and close your eyes.
2. Breathe normally. Concentrate on each inhalation and exhalation. Observe your breath.
3. Now, inhale very slowly and fill the chest with air as much as you can. It will cause expansion in chest and as a result diaphragm will go down towards abdomen, resulting in the bulging of abdomen.
4. Now, exhale very slowly, emptying the lungs. During exhalation, chest will contract and diaphragm will come up towards chest cavity. Abdomen will contract. This is one round. Practise 5 rounds. This way you can be aware about your breathing and also learn to breathe properly. To come back, now breath normally, remove your hands from knees, open your eyes and relax.

Remember the following points

Do's	Don'ts
• Concentrate on your breath only. • Inhale and exhale very slowly.	• Do not make any changes when you are observing normal breathing. • Do not strain too much in the beginning.

Benefits

- This will create awareness about the breathing pattern.
- This will help in taking more oxygen in and throwing more carbondioxide.
- It will help purify the blood.
- It induces calmness and reduces anxiety.
- It helps to increase concentration.

Trataka (Concentrated Gazing)

Trataka is a *kriya* which is performed for cleansing and strengthening the eyes. In this *kriya*, eyes are focussed on a particular object which could be a flame of a lamp or a burning candle or a point.

This is done without blinking the eyes till the eyes get tired or start watering.

Let us practise *Trataka* by following the steps given below

Preparations

Place a burning candle or a lamp at the distance of 2-3 feet. Its flame should be at the eye level. Flame should be still. You can also practise on a point or a still object.

Technique

1. Sit in any meditative posture in a dark room and close the eyes.

2. Open your eyes and gaze at the flame with both eyes wide open. Continue gazing at it without blinking the eyes till the eyes become tired or start watering.
3. Now close the eyes and relax.

Remember the following points

Do's	Don'ts
• Stop gazing when eyes become tired or start watering. • Keep the body still throughout the practice. • Gaze at the flame only.	• Do not blink the eyes or do not move the eyeballs. • Flame should not be flickering.

Benefits

- It cleanses the eyes.
- It improves eye sight.
- It improves memory and concentration.
- It reduces anxiety.

Limitations

- Person having glucoma or chronic eye problems should not practise *Trataka*.
- Person suffering from epilepsy should not practise on a flame.

Meditation

Meditation is a yogic practice. This makes the body and mind relaxed. Meditation involve focussing on a single point which could be breath, a mantra, a word or an object. In the beginning, focussing of the mind is difficult, therefore a beginner can start meditating for a short duration only and later on can increase its duration.

Let us practice meditation by following the steps given below

Starting Position: Sit in *Ardhapadmasana*, *Padmasana* or in any other meditative comfortable posture. Place your hands in *jnana mudra* on your knees. Sit erect. Close your eyes gently and breathe normally.

1. Concentrate on inhalation and exhalation. During this, your mind may wander here and there. Try to concentrate on your breath only. Keep breathing normally. Try not to think about anything. Give attention to the breath only.

Releasing Position:

2. Cup the eyes with the hands and blink the eyes for few seconds so that sudden exposure to light does not irritate them. Slowly open your eyes and remove the hands and relax.

Remember the following points

Do's	Don'ts
• Meditate in a peaceful environment. • Keep the eyes closed.	• Do not use the hard floor for sitting in meditation. • Do not wear the uncomfortable clothes.

Benefits

- It gives deep relaxation.
- It lowers heart rate and blood pressure.
- It helps to reduce stress.
- It helps in managing emotions.
- It increases concentration.

ASSESSMENT

Answer the following questions.

1. What do you understand by yoga?
2. What are the benefits of yoga?
3. List two important guidelines for performing *asanas*.
4. Write two benefits each of *Swastikasana*, *Niralambha–Bhujangasana* and *Vrikshasana*.
5. How many postures are there in *Surya Namaskara*?
6. Have you experienced any change in your body after performing *Surya Namaskara*?
7. Did you experience any change in your body after performing the *asanas*?
8. How will you perform the *Ardhapadmasana*?
9. Which *asana* you like most and why?
10. Describe two *asanas* which make you relaxed.

Put a tick (✓) mark on Yes or No

(i) There are ten postures in *Surya Namaskara*. (Yes/No)
(ii) All yogic practices can be performed any time. (Yes/No)
(iii) Yoga connects body and mind. (Yes/No)
(iv) *Vajrasana* is performed in standing position. (Yes/No)
(v) *Vrikshasana* is performed on one leg. (Yes/No)

Fill in the blanks

(i) In *Makrasana*, we lie on ..... .
(ii) *Shavasana* relaxes..... and mind.
(iii) *Pawanmuktasana* improves .....
(iv) Through inhaling, we take ..... in.
(v) *Trataka* helps to improve .....

PROJECT

1. Make a chart of *Ardhapadmasana, Swastikasana* and *Vajrasana*.
2. Make a chart of any two *asanas* which are performed in standing position. Write their benefits also.

Unit 7

Our Environment and Health

Introduction

The environment in which we live is influenced by many factors. Microbes form one such factor. It is common observation that when cooked food is left uncovered for long, it smells foul. There is also a change in its appearance and it is no longer edible. Similarly, a stale bread gets dark greenish with yellow patches on it. We observe quite often that one falls ill after consuming stale food and the doctor says that it is because of some sort of infection and needs to be treated by antibiotics. Have you ever thought what causes infection? Infections are caused by microbes, also termed as micro-organisms. These are present all around us, even inside our body.

Objectives

This unit will help the teachers to enable students to:

- learn about microbes/micro-organisms;
- develop an understanding about different categories of microbes, useful and harmful microbes and modes of transmission of harmful microbes;
- know the role of the immune system and importance of immunisation to protect individuals from diseases; and
- take preventive measures against harmful microbes with special reference to water and food borne diseases.
- **Materials required:** Pictures of different microbes, microscope, specimen of bread mould, slides of micro-organisms.

Guidelines for Teachers

7.1 Microbes/Micro-organisms

Activity 7.1

The teacher:

- asks questions about the different kinds of micro-organisms and divide students in groups of 6-8 and asks them to prepare collages of different microbes that are useful to us and those harmful to us.
- with the help of students, teacher prepares a collage explaining the concept of microbes and their importance in our life.
- takes the help of biology teacher to show slides of different microbes and specimens of bread mould.
- with the help of the Fact Sheet, explains that viruses form a special category of microbes.

Teacher highlights the fact that microbes or micro-organisms are very tiny organisms which can be seen with the help of microscope only. These are present everywhere. Microbes are harmful as some of them cause diseases. Whereas there are useful microbes, there are harmful microbes as well. The useful microbes help in fermentation of food and decomposition of organic matter; and harmful microbes cause diseases.

7.2 Useful Microbes

Activity 7.2

The teacher:

- asks the students about their experiences of observing in their homes regarding setting of curd/rising of dough/preparing batter for *Idli*/making cake at home or some other examples from daily life.

- discusses the conditions required for the completion of these processes such as time, temperature, etc.
- "How does dough for *Idli* or *Bhatura* become fluffy? Is fluffy dough prepared for other food items?
- What is the microbe that helps in this preparation?

Students to become familiar with the microbe called yeast and help them to identify other useful microbes.

7.3 Harmful Microbes

Activity 7.3

The teacher:

- asks the students to recall their personal experiences with themselves and others of illnesses such as malaria, diarrhoea, common cold, etc.
- discusses how they or others had contracted the disease.
- asks "what are various ways through which disease causing microbes (pathogens) spread?"
- draws the following table on the blackboard. With the help of students fills up the columns using the details of the Fact Sheet.

Airborne diseases	*Water and food borne diseases*
1. 2.	1. 2.
Contagious (through contact) diseases	*Vector borne diseases*
1. 2.	1. 2.

Summary highlights

- Pathogens are transmitted by various modes.
- Rainy season records higher cases of food and water borne diseases.
- Provision of safe water and sanitation are essential for prevention of diseases.
- In India provision of safe water and sanitation is the responsibility of government/local civic bodies. However, certain private organisations like Sulabh International are also making notable contribution.

The teacher with the help of Fact Sheet:

- tells students about various harmful microbes and their modes of transmission.
- mentions some diseases that particularly spread through waste matter discharged from the bowel.
- explains why there is a chance of outbreak of water and food born diseases during rainy season/floods with special reference to diseases like cholera and typhoid. Why?
- Asks a group of students to make a visit to the local civic bodies responsible for safe water supply and sanitation and based on the experiences of the visit write answers to the following questions:

(i) Are the efforts of the concerned civic agencies adequate?

(ii) Is the local population satisfied? Give reasons.

(iii) Any problem which cannot be handled by the local body to improve the existing conditions.

7.4 How our Body is Protected from Diseases?

Activity 7.4

The teacher:

- asks students to narrate some common diseases they have suffered from or seen others suffering from.
- draws their attention to the fact that at a given point of time only few people fall sick and not all.
- initiates a discussion on, "How does the body protect itself from diseases?"

With the help of the Fact Sheet and sketches:

- discusses the immune system as body's defence mechanism.
- finds out from the students how many of them have been vaccinated. Gets enlisted the names of diseases against which they have been inoculated or vaccinated. (If required they can be asked to take the help of their family members.)
- introduces the concept of immunisation and explains how it protects us from diseases.

The teacher highlights the fact that our body has a unique defence mechanism against pathogens. It is called "immune system". White Blood Cells (WBCs) are the soldiers of this system. Immunisation helps to induce and boost the immune system.

Activity 7.5

Arrange a health talk by a local doctor (or by a teacher) from a health centre covering the following topics:

- Role of healthy food to enhance immunity.
- Role of physical activity and exercises to enhance immunity.

- Ways of hygienic living for prevention of diseases.
- Ways of avoiding stress.

The teacher takes care that the doctor's talk is interactive.

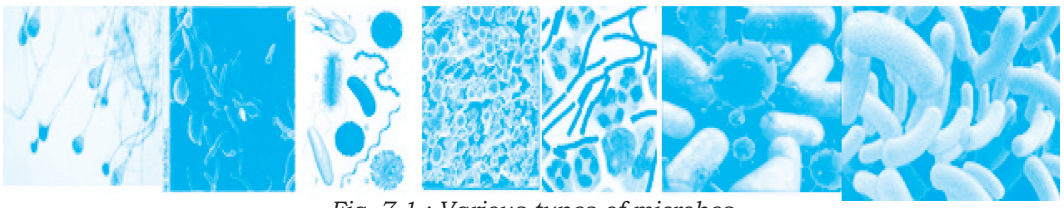


Fig. 7.1 : Various types of microbes

Fact Sheet

Microbes/Micro-organisms

There are many microbes around us. They cannot be seen with the naked eye and hence, they have to be viewed through the microscope.

Microbes can be divided into bacteria, protozoa, fungi and algae. They can survive in all types of temperature, from extreme cold to extreme heat, and in all kinds of environment. They can also be found in our body and those of animals as well. Some microbes are harmful and make us fall ill. However, there are many friendly microbes that are useful to us.

Viruses

Viruses are also microscopic. They however, reproduce only inside the cells of the host organism, which may be a bacterium, plant or animal. Common ailments like cold, influenza (flu) and most of the coughs are caused by viruses. Serious diseases like HIV, polio and chicken pox are also caused by viruses.

Benefits of microbes

Microbes help in making food products: Through the process of fermentation microbes help in preparing curd, dough for food items like *bhatura, idli* and *dhokla* and making alcohol products.

Microbes are used for making medicines called antibiotics: These medicines help to stop the growth of the disease causing microorganisms in our body.

Microbes are used for making vaccines: Vaccines are weakened microbes (bacteria or viruses) or certain components of microbes separated through special scientific process. They help to protect us against various diseases such as tetanus, diphtheria, pertussis, polio, tuberculosis, etc.

Microbes help us clean the environment: In the *Science Textbook* for Class V1 we have learnt that if we discard organic wastes (kitchen wastes such as vegetable peels, waste food, tea leaves, paper, etc.) and bury those in a pit, it turns the waste into manure within a few days. This process is known as composting. It is bacteria that helps break down the organic waste into usable substances.

Synthesis of B Complex by microbes in our digestive tract: That is why B Complex is given when antibiotic is taken to cure an illness. The antibiotics also kill the useful bacteria in our digestive tract which synthesize B Complex.

Microbes protect from diseases: We eat probiotic curd (containing useful bacteria) and other preparations containing useful lactobacilli. These collect in our digestive tract and protect us from other harmful microbes which enter our body through food and water.

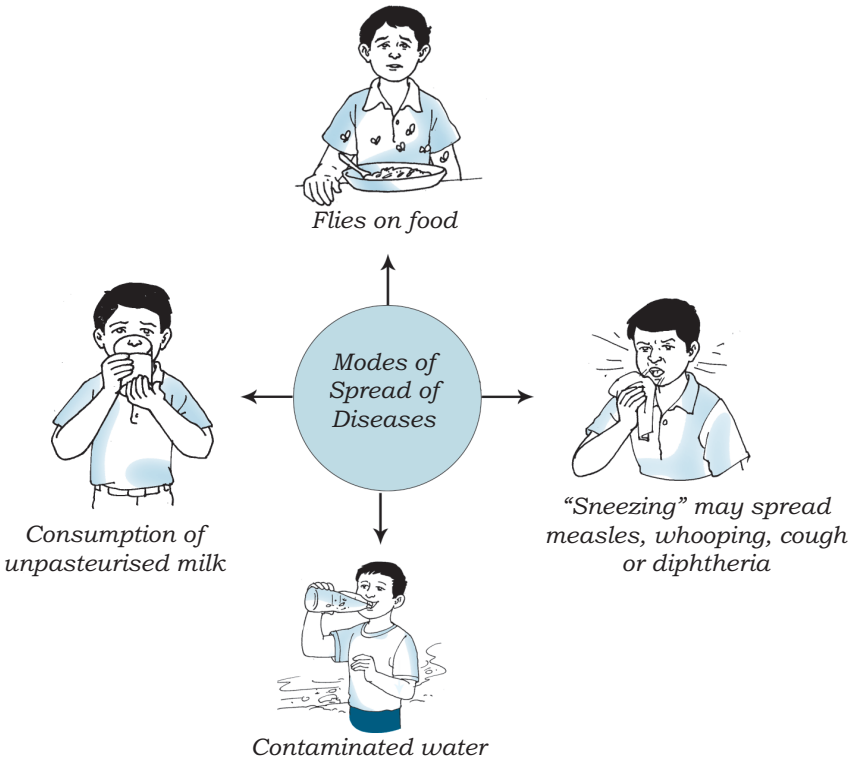


Fig. 7.2 : Modes of spread of dieseases

For increasing soil fertility: These microbes are known as biological nitrogen fixers. They help to enrich the soil with nitrogen. (For further details you may refer to the Science Textbook for Class VII Chapter 1).

Harmful Microbes and Their Modes of Transmission

The disease causing microbes are known as pathogens. Microbes grow very rapidly, especially bacteria. Under favorable conditions, a bacterium divides itself into two every half-hour. A particular microbe gives rise only to a particular disease. For instance, malaria is caused by the one-celled protozoan called malarial parasite. Entamoeba,

another protozoan, causes amoebic dysentery (loose stool with blood). The transmission of these microbes may be through air, water, food or insect bite.

Diseases such as cholera, typhoid, polio, hepatitis-B, diarrhoea and dysentery are caused by consuming contaminated food and water. Therefore, we should always keep our food covered. We should also avoid eating in places where food is not kept covered.

Bacteria causing typhoid remain present in the stool and urine of the infected person. In many places people do not have proper sewerage facilities and sewage is discharged into nearby water bodies, such as rivers, lakes and ponds. If we consume this water, we are likely to fall ill. Similarly, if we use contaminated water for washing fruits and vegetables or even washing clothes, we may fall sick. Diarrhoea, dysentery and typhoid can also spread through flies which are the carriers of microbes. The practice of open defecation and lack of proper sanitary provisions is a serious problem in our country. It leads to diseases like worm infection, cholera, diarrhoea, typhoid and polio, especially during rainy season.

Airborne diseases	*Water and food borne diseases*
1. Tuberclosis 2. Common cold (flu) 3. Pneumonia	1. Poliomyelitis 2. Cholera 3. Diarrhoea 4. Typhoid
Contagious (through contact) diseases	*Vector borne diseases*
1. Measles 2. Chicken pox 3. Fungal infections	1. Malaria 2. Dengue 3. Tapeworm

Safe Water and Sanitation

The responsibility of provision of water and sanitation lies with state government through Panchayati Raj Institutions, municipalities and other local civic bodies. To promote defecation free village with safe water *Nirmal Gram Puraskar* scheme has been launched by government. For the provision of safe water supply in villages the *Swajaldhara* scheme with community participation has also been launched. Other non-governmental agencies too are contributing towards betterment of sanitation. The work of *Sulabh International* is exemplary in this regard. It provides safe and hygienic onsite human waste disposal facility through 'pay and use public toilets.'

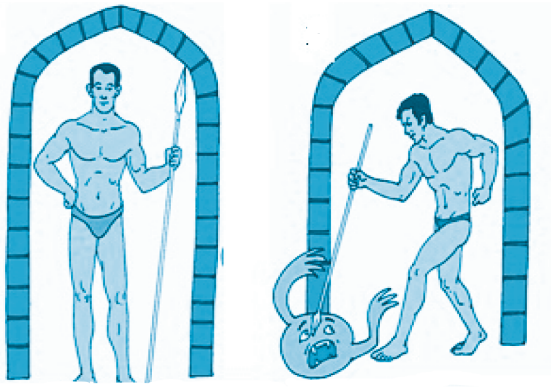
Fig. 7.3 : Lack of proper sanitation leads to diseases

Why Increased Outbreak of Water and Food Borne Diseases take place during the Rainy Season?

During rainy season there is an increased outbreak of water and food borne diseases like diarrhoea, dysentery, gastroenteritis, cholera, typhoid, hepatitis-A because of the following reasons:

- Increased vectors like mosquitoes, flies, etc. due to collection of water.
- Mixing of wastes discharged from bowels with drinking water sources.

- Suitable breeding environment of microbes due to humidity and warmth.
- More contact with human beings of certain animal vectors like rats (harboring plague microbe), cockroaches (harboring microbes for diarrhoea) which come out, as their habitat gets water-logged.



Your immune system is your Guard against disease. *White blood cells kill the germs that attack your body.*

Fig. 7.4 : WBC's - The guard of immune system

Our body has an inbuilt mechanism to fight the disease producing agents. This mechanism is called 'immunity.' Our immunity is due to special guards who protect the fort of our body. They are found in our blood as white blood cells (WBCs). When a foreign agent which is not a part of our body enters our body, it is recognised as enemy by WBCs. WBCs kill it and its identity is locked in the memory of certain WBCs. When it again enters our body, the memory comes back and the enemy is destroyed in no time. WBCs either directly attack the disease producing agent and kill it or form a specialised weapon known as 'antibodies' which specifically fight a particular disease producing agent (also known as 'antigen') and makes it weak so that it is unable to cause the disease.

One of the ways of enhancing immunity is to strengthen the memory of WBCs with the help of 'vaccination' or 'immunisation'. A vaccine provides specific protection against a given disease. It stimulates the WBCs to produce antibodies against a particular disease producing microbe

and destroy it. Vaccine contains either the live disease producing microbe from which its disease producing ability has been removed or they kill disease producing germ or a part of it. The idea of immunisation is to build memory of WBCs against that specific disease producing microbe introduced as vaccine. Vaccine may be given orally (e.g. polio vaccine) or through injections, for example, measles vaccine. Some vaccines are given only once (e.g. BCG vaccine to prevent tuberculosis) and others may have to be repeated once more or a few times e.g. diphtheria, pertussis (whooping cough) and Tetanus (DPT) vaccine, Hepatitis-B vaccine for the desirable effect.

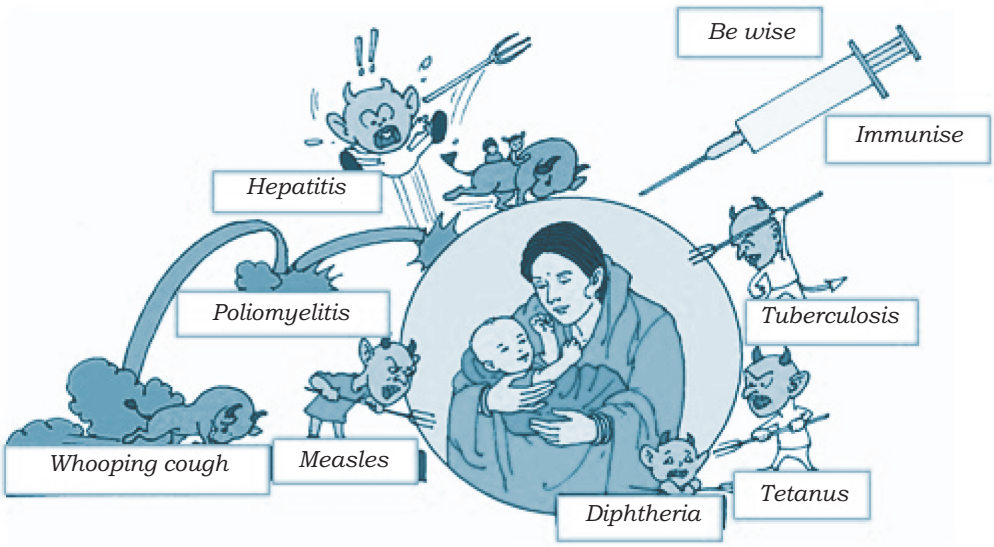


Fig. 7.5 : Immunisation against diseases

What keeps us healthy? Environment around us should be kept free of harmful microorganisms. Through immunisation, nutritive food, active life with exercise and above all physical and mental relaxation leads to healthy living.

Measures to Safeguard from Water and Food Borne Diseases

- Drink potable water. If the water is not clean, boiling or filtering is advisable. If not possible, take chlorine tablets from health centres. Crush a chlorine tablet and mix it in a bucket of water (20 litre). Keep the bucket of water covered for half an hour before drinking the water.

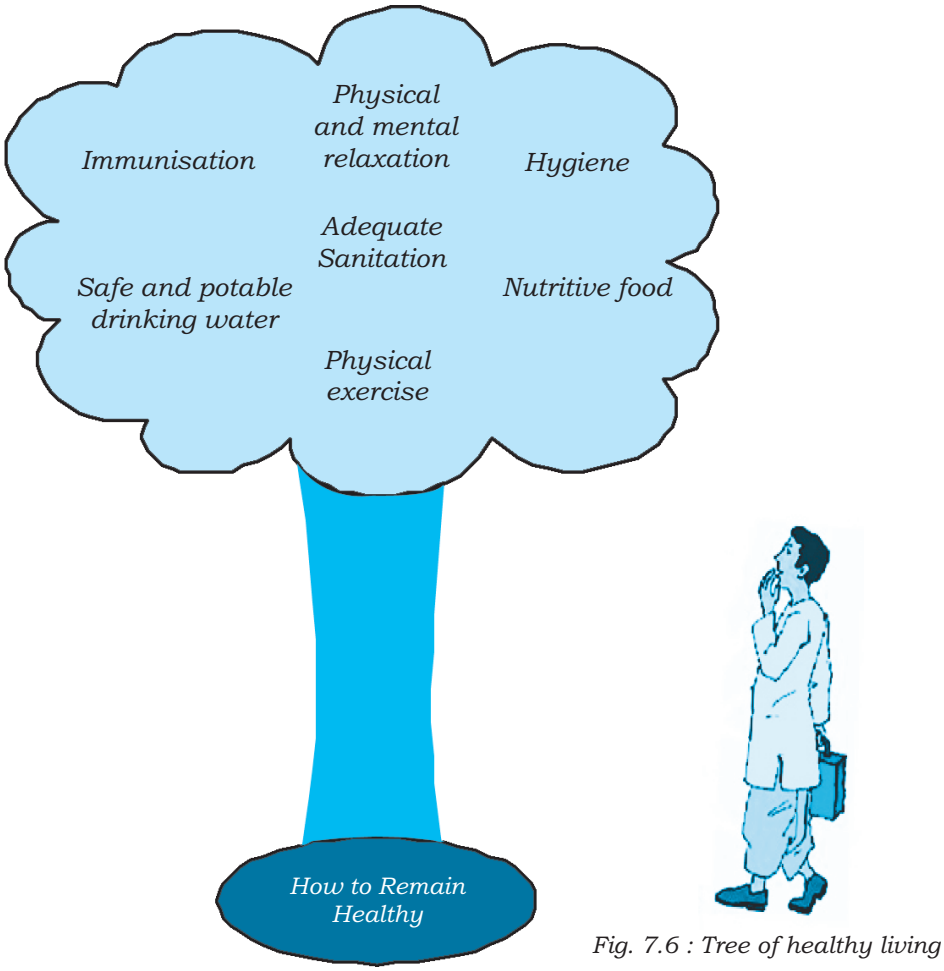


Fig. 7.6 : Tree of healthy living

- Milk should always be boiled before use except pasteurised milk.
- Wash hands thoroughly with soap before eating food and after using toilet.
- Cooked food should be consumed within five hours. It should never be left uncovered.
- Avoid eating in places where food is not covered and/or flies are sitting on the food.
- Do not accumulate garbage and avoid open air defecation as it acts as breeding ground for flies and microbes.
- Do not allow stagnation of water as stagnant water becomes breeding ground for mosquitoes and microbes.
- Our resistance to diseases can be enhanced by:
  (i) Regular physical activities
  (ii) Yogic practices
  (iii) Eating healthy diet
  (iv) Taking available vaccines as recommended.

ASSESSMENT

Tick (✓) mark either Yes or No:

(i) Microorganisms cannot be seen with naked eyes. (Yes/No)
(ii) Microorganisms are also a source for making antibiotics/vaccines. (Yes/No)
(iii) All microorganisms are harmful to us. (Yes/No)
(iv) Typhoid is an air borne disease. (Yes/No)
(v) Microbes are present only in air. (Yes/No)

Tick (✓) mark the correct answer:

Consumption of stale food should be avoided because:

(i) It contains harmful microbes.
(ii) It does not taste good anymore.
(iii) Its nutritive value gets degraded.
(iv) Its appearance is not attractive.

Fill in the blanks by choosing the suitable word from the choices given below:

(i) Typhoid .....
(ii) Common cold .....
(iii) Chicken pox .....
(iv) Fly .....

(Mosquito, Tuberculosis, Diarrhoea, Fungal infection, Polio, Tapeworm infection)

Tick (✓) mark the diseases which can be prevented by vaccines:

(i)	Diarrhoea and dysentery	(Yes/No)
(ii)	Polio	(Yes/No)
(iii)	Malaria	(Yes/No)
(iv)	Tuberculosis	(Yes/No)

Match the following:

(1) Fungus	(a) Cholera causing microbe
(2) Algae	(b) Malarial parasite
(3) Protozoa	(c) Yeast
(4) Bacteria	(d) Spirulina
(5) Virus	(e) HIV

Unit
8

Nutrition for Healthy Living

Introduction

Human beings, like all other living organisms need food to survive. Healthy food in adequate quantity is necessary to lead a healthy and productive life. There is a great variety in food items. How do we choose what to eat? There are various factors that influence our choice of food. Cost is certainly one such factor. Judicious use of money combined with wise decisions would enable us to procure food that is nutritious as well as adequate. Once procured, the food items need to be processed or preserved in such a way that most of their nutritive value is retained.

Objectives

The unit will help the teachers to enable to students to:

- become familiar with the diversity of food in India;
- correlate the cost, availability and consumption pattern of food;
- appreciate the importance of cooking and preservation of food without destroying the nutritive value.

8.1 Diversity in our Food

India is a country with diverse cultures, geographical conditions and climates. People take different kinds of food. There are wide variations in food habits of people belonging to different regions. But nutritious food intake is essential for everyone. The diversity in our food facilitates the intake of nutritious diet. The teacher should organise the following activities to provide opportunities to students to understand this.

Resources: A collage on a chart showing items like milk, egg, *chapatti, parantha,* rice, green vegetables, fish, fruits, *idly, vada,* noodles, sprouts, biscuits, juice cans/fresh juice.

Activity 8.1

Guidelines for the Teachers

The teacher forms groups of 8-10 students wherein individual students are asked to list what they have eaten in the morning during breakfast. They are also asked to list the items they took during the mid-day meal or tiffin brought from home. The teacher asks the students to prepare a common tally sheet as shown below:

Name of the Items	*Number of students who mentioned the item*
1. Milk 2. Bread 3. ..... 4. ..... 5. ..... 6. ..... 7. ..... 8.	I I I I I I

After the common tally sheet is complete, the teacher puts the following questions for reflection in the group:

1. Which is the most used item? Why is it the mostly used?
2. Which is the least used items? Why is it the least used item?
3. How many items are listed? Which ones are available all the time? Which ones are locally available?
4. Do these items cover most of the nutrients? If not, what are missing?

The teacher then asks students to make a combined table based on the tally sheets of all groups. Let the groups share various ideas on all the issues reflected upon in groups. The teacher summarises the discussion highlighting variety of food locally available, seasonal and the need to consider their nutritional value while consuming those.

As we all know, consumption of food by members of a family primarily depends on the cost and availability of food items. One may like to take certain food item which has nutritional value, while the others may not consider the nutritional value as important. In order to enable students to understand these issues, the following activities may be organised.

8.2 Cost, Availability and Consumption of Food

Activity 8.2

Guidelines for the Teachers

- Draw a big circle on the board with a title 'Choice of food' written on it.
- Initiate a discussion and ask students to reflect on the following statement:
- "Suppose you want to eat a food item of your choice (say *Bhatura*, a burger or fruit *chat*), what are the factors that will decide whether you will get the food item of your choice?"
- Form groups of having 6-8 students in each and let them discuss on the questions. Ask students to write down various factors around the circle drawn on the board.
- How are the relationship between cost, availability and consumption of food related?

Cost Factor in Purchasing Food

Activity 8.3

Guidelines for the Teachers

For brainstorming students, the teacher may think of questions beforehand and pose them to the students. For example:

1. Which are the most important activities in a family for which parents or guardians necessarily have to spend money from their earnings? Students may say education, clothes, food, etc. Teacher picks up the word 'food' to continue discussion.
2. Do you think the same amount is spent by every family on food?
3. What are the reasons for this variation in expenditure? Teacher then elaborates that 'Cost Factor' is important for purchasing food.
4. Can you think of changes that families would have made after prices of food items have gone up?
   - ❖ Teacher draws the following table on the board and fills it in after students tell the teacher what they think, families with a lot of money (family 1) eat and those who cannot afford to spend too much on food (family 2), eat.

Food consumed by family 1	*Food consumed by family 2*
1. ..... 2. ..... 3. ..... 4. ..... 5.	1. ..... 2. ..... 3. ..... 4. ..... 5. .....

The teacher summarises by saying that the cost of the food has an important bearing on what a family eats.

Activity 8.4

The teacher forms small groups having 6-8 students in each and makes available the following cases either by writing on board or providing sheets the cases written on those. He/she asks the groups to discuss the cases in the context of questions for reflection:

- *Case 1 :* For the last few days, Ravi and his sister are sad as they are being served only *chapatis* and raw onions.
- *Case 2 :* It was reported that after the wedding party of a rich man's son in the community a lot of fried rice, curry and *halwa* had to be thrown away after the party.
- *Case 3 :* Razia's parents insist that they cannot have pizza and burgers everyday but have to relish our *desi thali* with rice/ *chapati*, *dal* (pulses), salad, vegetable curry and a milk item.

Questions for Reflection

1. Which of the above three cases eat the most nutritions food? What could be their reasons to choose such a diet. (Teacher highlights awareness, affordability and discipline).
2. Which case is about eating the least nutritious food? Think of reasons for their diet? (Teacher highlights lack of awareness, affordability and possibility of nutritional deficiency disorders).
3. Which case is about being careless and insensitive regarding expenditure on food? Assign reasons.
   (Teacher highlights lack of awareness, affordability, consequences).

Activity 8.5

Field Study

Teacher divides the class into three groups. Assigns one of the following three places to each group:

Group A: Shop selling groceries, Group B: Vegetable market and Group C: Fruit market.

The students are required to go to their assigned place. They will select any 10 items of their choice and find their prices from the shop and note down the same in the table shown below:

Sl. No.	*Name of the food item*	*Price per kg.*	*Amount purchased for home consumption for one week*	
			Quantity	*Total Price (Rs.)*
1.	Atta (Wheat flour)			
2.	.....			
3.	.....			
4.	Rice *i. Parmal* *ii. Basmati* *iii. Sela*			
5.				
6.				
7.				

After the task is over, students mark the items and the quantity that they purchased regularly for consumption at home. When students come back in the class, each group presents the information they gathered. The teacher then summarises the discussion and highlighting the inter-relationship between cost of the food items and availability of nutritions food items in different families. He/she also focuses on the need to give preference to nutritional value of food items.

8.3 Processing/Cooking of Food and Preservation of Food Value

Activity 8.6

Guidelines for the Teachers

Teacher asks the students to recall the list of food items prepared in Activity 8.1.

Then makes them identify any one/two methods involved in preparation of the food item. Get them listed on the blackboard as given below:

Food item preparation	*Method involved in preparation*
1. Milk	Boiling/Pasteurisation
2. Bread	Baking
3.	.....
4.	.....
5.	.....
6.	.....

- Teacher asks 'Why is processing/cooking of food items necessary? Can some food items be eaten raw? What are the advantages?'
- Teacher explains the needs and advantages of processing/cooking of food. He/she refers to the Fact Sheet.
- The teacher initiates a discussion by asking, what effect does processing/cooking have on the nutritive value of food? Jots down the responses on the blackboard.
- Discusses the advantages and disadvantages of processing/cooking with the help of Fact Sheet.
- If the school is located in the area where families possess a refrigerator or has the facility of cold storage, the teacher makes learners name any two food items that can

be stored in (a) a refrigerator; and (b) cold storage. How long can these items be stored without affecting the nutritive value? Jots down the responses on blackboard. Teacher might receive 'myths' as students' response and needs to burst those myths.

- The teacher explains with the help of Fact Sheet the disadvantages of keeping the food for long in (a) refrigerator; and (b) cold storage.

The teacher then summarises by saying that while certain food items can be eaten raw, most of them are cooked or processed by one or more ways. The cooking/processing of food has various advantages and disadvantages and can alter its nutritive value. The nutritive value of the food can be preserved for a limited period by keeping it in a refrigerator freezing and cold storage.

Home Practices to Preserve Food Value

Activity 8.6

Guidelines to the Teachers

Draw the following table on the black board:

Processing method	*Effect on the food*	*Food items prepared by this method*
1. Cutting washing	1.	1. .....
2. Prolonged heating in an open vessel	2.	2. .....
3. Fermentation	3.	3. .....
4. Steaming	4.	4. .....
5. Pressure cooking	5.	5. .....
6. Making curd	6.	6. .....

The teacher gets the table completed with the help of the students, holds a discussion on the responses taking the help of fact sheet and local knowledge of processing methods.

Fact Sheet

Seasonal Variation of Food Items

Food items that are available all in the market throughout the year: Cereal and pulses, banana, papaya, potato, tomato, brinjal, etc.

Food items that are available only during a particular season: cauliflower, cabbage, beans, tomato, apple, orange, mango, watermelon, musk melon, etc. Mention that now-a-days with better preservation or storage techniques, most vegetables are available in the market throughout the year.

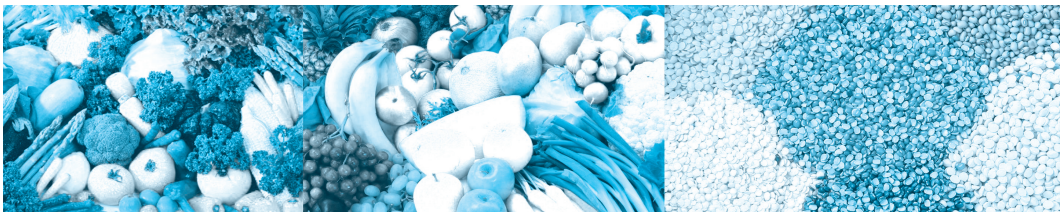


Fig. 8.1 : Nutritious food items

- There are other locally available foods which can be added to the above lists.
- In big cities due to storage/preservation, almost all the food items are available all through the year.

Factors Affecting Consumption of Food

1. Availability

- Seasonal variation;
- Raw material not easily available;
- Weather conditions (flood, drought, etc.).

2. Locally Available Foods

Consumption of locally available foods is advisable as they cost less, are available fresh with high nutritive value, cause less pollution as their transportation is not needed and promote employment for local farmers.

3. Cost

- Traditional food items may be less costly;
- Out of season food items are costly;
- Cost of food items is increased due to cost of production, transportation, processing, storage and packaging;
- Cost of the food items decides what the family gets to eat.

4. Nutritive Value

Low cost food items with high nutritive value are recommended by nutritionists as all costly food items need not be nutritious.

5. Time Taken for Processing

Traditional cooking often takes more time.

Processing/Cooking of Food

Most of the food items are processed in some way or the other before they are eaten. Simple cooking or combining a food with other foodstuff to create a recipe is also considered processing.

Various advantages of processing/cooking of food are as follows:

- It makes the food palatable and easy to digest;
- kills germs;
- inactivates enzymes in the food and prevents early spoilage;
- improves flavour and taste;
- destroys toxins;

- increases nutritive value; and
- increases the shelf life.

However, there are some undesirable effects of processing/cooking of food. It causes:

- Loss of water-soluble vitamins (Vitamins B Complex and C).
- Degradation of other nutrients (proteins are coagulated).
- Loss of minerals (all water soluble minerals).

We can also eat some food items as raw (e.g. fruits and salads). However, raw food items should be properly washed, freshly cut and eaten or refrigerated for later use.

Food Processing Methods

Food items may require one or more type of processing. Some of these methods are:

1. Washing, cutting vegetables
2. Roasting
3. Boiling
4. Steaming
5. Pressure cooking
6. Frying
7. Baking
8. Freezing
9. Fermenting
10. Pickling
11. Cold storage

8.4 Effect of Cooking/Processing Methods on Food

The following are the effects of cooking/ processing methods of food:

1. *Washing and cutting:* Washing removes dirt, micro-organisms and traces of insecticide. This is especially important in the context of frequent use of chemicals in modern agriculture. Prolonged washing leads to loss of water soluble minerals and vitamins.

   Cutting vegetables uniformly helps in reducing cooking time and also in

distribution to all members of the family. It helps in the penetration of spices which enhances the taste.

2. *Cooking:* As it involves heating, it destroys microbes and inactivates enzymes and makes food digestible. There are a number of cooking methods and those have their positive and negative effects as follows:

Boiling food	Causes degradation of water soluble nutrients
Steaming and pressure cooking	Vitamins like B complex and Vitamin C and minerals are retained. Extent of loss increases with (i) Exposure to O2 (open vessel cooking) (ii) Duration of heat. The food is subjected to steaming therefore is a good proc-essing method.

3. *Dehydration:* Surplus water from food is removed without reducing the taste and nutrient value. e.g. Sun drying vegetables, herbs, some fruits like apricots, meat.
4. *Refrigeration:* Renders bacteria and enzymes inactive at low temperatures.
5. *Freezing:* Retains taste, texture and nutritional value of food better than any other method.
6. *Cold storage:* Freezing technique for bulk storage of fruits/vegetables, etc.
7. *Fermentation:* Use of yeast and some other microbes help not only in preserving food but

also reducing its loss of nutritive value and Vitamin B, Vitamin C, etc. Food becomes soft and easy to digest.

8. *Germination:* Improves nutrient quality especially vitamins.
9. *Pasteurisation:* Kills or inactivates the microbes.
10. *Use of salt, oil, sugar:* For preserving the food items, viz. preparing pickles, jams, jelly.

Good Home Practices of Food Processing/ Cooking

Various good home practices of food processing/ cooking are:

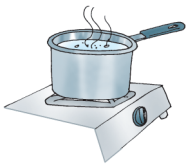
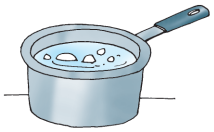
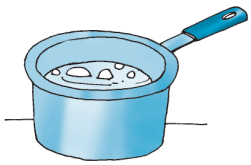
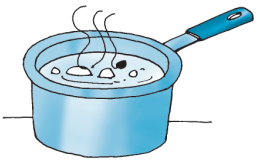
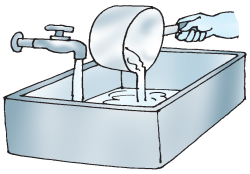
- Any cooking that minimises the time, the temperature and amount of water will help preserve the nutrients. Based on their ability to preserve nutrient values, the common cooking methods are arranged in a descending order.

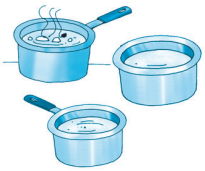
Microwave
↓
Pressure cooking
↓
Steaming within minimum water
↓
Stir frying
↓
Boiling with lid cover

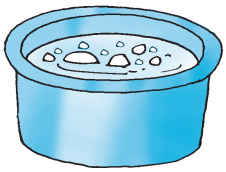
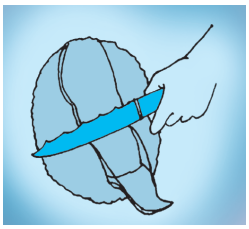
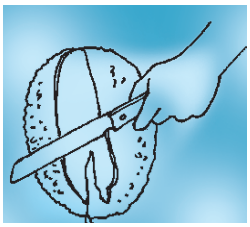
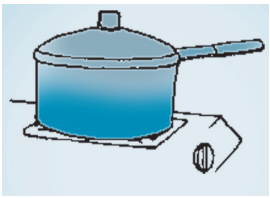
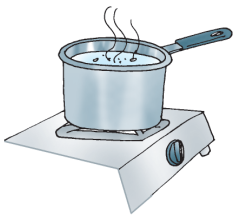
- Cut vegetable into big pieces.
- Cook until just crisp, tender, using as little water as possible.
- Eat unpreserved and fresh seasonal food items.
- Fermented food items like *idli, dhokla,* etc. are nutritious.

Do's and Don'ts of cooking

For minimising losses during preparation and cooking of the foods, the following do's and don'ts are significant;

Do's	Don'ts
Putting the foods in boiling water. 	Putting the foods in cold water. 
Use just sufficient water for cooking. 	Using too much water. 
Use excess water after cooking for some other food or cook in just sufficient quantity of water. 	Throwing excess water after cooking. 
Make use of leaves of green vegetables. 	Discarding leaves of vegetables like radish, knol-khol, onion, etc. 

Do not use baking soda for cooking. Cook without cover for a short while to retain green colour of the vegetables. 	Using baking soda which destroys vitamins of group B. 
Serve hot food immediately after cooking. 	Cooking much before serving. 
Store vegetables and fruits in a cool place. 	Keeping vegetables/fruits in a hot place. 
Wash before cutting. 	Excess loss of water soluble nutrients if washed after cutting. 

Wash rice and *dal* in less water. 	Excess water washes off B-group vitamins and minerals. 
Remove peel thin. 	Nutrients lost if peeled thick. 
Cover to avoid oxidation. 	Loss of colour and water content. 

ASSESSMENT

Answer the following questions:

1. Why is steaming a better method of cooking than boiling food in open vessel? Give one reason.
2. Mention any two food items that involve fermentaion as one of the steps in their prepartion.
3. Given below is an incomplete table showing names of some common processing methods and the methods applied. Read them carefully and fill in the corresponding details in the third column?

Name of the Processing Method	*Method Applied*	*Effect on the Nutrients*
(i) Fermentation	Use of microbes like yeast	
(ii) Freezing	Very low temperature	
(iii) Frying	High temperature addition of oil/fat	

4. Your friend loves to eat burger every evening as a snack but his/her parents do not give in to his demand. Write two reasons each (i) in support of your friend; and (ii) in support of his parents. Can you suggest an alternative to your friend? Give two reasons in support of your suggestion.
5. Ask the students to list some of the ways or practices that prevent loss of or improve the nutritive value of the food item.

Methods that improve nutrition value	*Method that destroys nutrition value.*
1. ..... 2.	1. ..... 2. .....

6. Read the following food items and categorise them in the two boxes given below:

   Green salad, Fruit *chat,* Bread *pakora,* Potato chips, *Puris, Dhokla, Dosa,* Soup

Food items prepared with good cooking/processing practices	*Food items prepared with not so good cooking/ processing practices*
1. 2. 3. 4.	1. 2. 3. 4.

7. On a Sunday or any holiday observe carefully how food is being cooked in your kitchen. Discuss with your elders how these cooking methods affect the nutritive value of food. Now answer the following questions.
   (i) List any two practices that you observed and thought were 'healthy' ways of cooking.
   (ii) List any one practice that is not so healthy as it leads to substantial loss of nutrients.
   (iii) If you were the cook, what would you cook and which process of cooking would you use in order to preserve the nutritive value of the food.

Unit 9

Safety Outside School

Introduction

Safety is a prime concern of human beings in every walk of life. It is still more significant for schools where children stay, study, play and interact with one another. While students are in the school, it is expected that their safety as well as safety of the staff of the school is adequately taken care of. It is equally important to take care of their safety outside school.

Objectives

This unit will help the teachers to enable the students to:

- become aware of the significant aspects of safety outside schools and the need for having knowledge of first-aid;
- demonstrate the methods of first-aid;
- manage minor injuries both within and outside schools; and
- transact effectively the activities delineated below.

There are occasions like the one when children are taken out to participate in certain activities organised by school or when they are commuting in the school bus or when they go for participating in competitions organised outside their own school. In such events, chances of injuries are there. An injury may cause bruises or bleeding, or even fractures. Schools are also expected to have arrangements for first-aid to meet the requirements in cases of injury.

School management is also supposed to be vigilant about safety. It is essential for students to know and appreciate the implications of safety and first-aid. As you have experienced, generally care for safety, whether within or outside schools, is not given the attention that it requires in most of the schools. This unit will focus on safety outside the school, especially during excursions, and the major aspects of first-aid.

Guidelines for the Teachers

- The teachers should go through this material thoroughly and also related available materials on safety and first-aid before organising an activity.
- Two activities given below cover all the major issues and concerns of safety outside school and first-aid. It is very important to note that organising all the activities is based on participatory approach in order to ensure that students do not behave like passive recipients of knowledge, but as active participants in the teaching-learning process. Since the topic of this unit contains contents related to first-aid also, students should be provided opportunities to visit nearby health service centre, so that they can observe demonstration of the process of use of first-aid.

9.1 Prevention and Management of Minor Injuries

Activity 9.1

Preparing a Plan for Excursion with a Focus on Safety.

Materials required: Activity Sheet, Fact Sheet, writing board, marker/chalk.

Guidelines for the Teachers

- Adopt interactive process to initiate discussion.
- Inform students that a programme for excursion to a place decided by Head of the school will be prepared in consultation with students.
- Emphasise that it should focus on the safety measures suitable for excursion.
- Ask students to think and state the following:
  - ❖ What type of transport should be used to go to the excursion?
  - ❖ When should they leave and by what time must they come back?
  - ❖ What kind of food should be packed and how?
  - ❖ What specific activities are to be conducted at the site of excursion?
  - ❖ What steps are needed to ensure safety of all those joining the excursion?
  - ❖ Who should do what to ensure safety?
  - ❖ Which items should be taken to ensure that if someone is injured during excursion first aid would be provided?
- Ensure that most of the students get opportunities to participate in the interaction.
- More than one student can express his/her opinion on one question.
- Provide hints, if they miss some important points.
- Note down on the blackboard/chart the ideas of students.
- Finalise the programme by assimilating the points made by students.
- Present the finalised programme which reflects the points of safety outside school mentioned in the Fact Sheet.

Activity 9.2

Visit to a local public health centre/dispensary/ hospital.

Materials required: Activity Sheet, Fact Sheet, writing board, marker/chalk.

How to organise the activity?

- In consultation with the In-charge of the local public health centre (PHC)/dispensary/ hospital, fix up a visit by students to that centre to observe and get experience in first-aid.
- Request the In-charge to show the first-aid kit to students and explain the use of every item contained in the kit.
- Some mock exercise of first-aid should be demonstrated by the In-charge to show what kind of first-aid is given to a person who has received a minor injury, i.e. wound dressing.
- Organise a discussion in the class on the experience of students in the primary health centre PHC/dispensary/hospital. The discussion may be focused on the following points:
  - ❖ Which major items did students observe in the PHC?
  - ❖ Name of items that were kept in the First-Aid Kit?
  - ❖ What did the In-charge of PHC do as first-aid for a particular injury? What was the sequence of first-aid activity?
  - ❖ How many students learnt to do wound dressing as was done by the In-charge of PHC?
- The teacher ensures that most of the students get opportunity to participate in the interaction.

- More than one student can express his/her opinion on one question.
- Provide hints, if they are missing out on some important points.
- Note down on the blackboard/chart the ideas expressed by students.
- Summarise the discussion with the help of Fact Sheet by elaborating the facts about first-aid.

Activity 9.3

Rules to be followed while on the road.

The teacher divides the students into five groups and gives them five topics to discuss and write do's and don'ts. The topics can be:

1. Crossing the road
2. Traffic lights – what they want you to do?
3. Using the footpath
4. Behaviour with strangers, and
5. Whose telephone numbers should you have for emergency?

The responses of the students are then used by the teacher and further enriched so that they jot down 'do's and don'ts and get fully aware of how to be safe even outside school.

Fact Sheet

Besides providing opportunities for learning, schools are expected to ensure safety of children. While safety within school campus is to be ensured, it is also equally important to take care of safety outside school. Pupils commute between their respective residences and the school. They are taken on a variety of visits by the school. They also participate in sports activities outside school. Accidents may happen anywhere and at anytime.

It is, therefore, essential that students are well equipped to face and manage such situations and use first-aid in case of at least minor injuries. Although safety has implications for a number of activities in which students are involved, in view of the needs of this class, safety during excursions and road safety will be focused in the following discussion. Moreover, the first-aid will also be discussed, as it has critical relevance to ensuring safety.

Activity

The teacher gets the children to make their own first aid kit in a small cardboard/ plastic/metal box.

Educational Visits

Learning outside the classroom is an essential component of our curriculum. Pupils are taken on a variety of visits and these form an exciting part of the learning process in schools. In order to ensure safety outside school, the excursion trip must be planned meticulously. The following considerations should be kept in mind while planning the trip:

- The time and place of visit and the route to reach there must be identified
- The means of transport must be fixed and the driver should be instructed to make a safety check of lights, tyres and emergency exit doors before departure. The member of staff sits with the children to ensure safe supervision throughout the journey.
- Itinerary of the trip must be ready and that must be strictly observed.
- If required, specific individual written consent from parents may be obtained, in case the trip will extend beyond the normal school day.
- Pupils have to be given clear instructions about the standard of behaviour expected on a trip.

- Risk assessment should be carried out for each trip. The precise needs of each trip should be considered afresh. Attention should be given to identifying potentially dangerous moments and to minimising the risk; for example, the movement of pupils through car parks, crossing roads or near water.

Road safety

- It should be reviewed beforehand whether the pupils will be crossing busy roads and mingling in a crowd or will they be taken directly to a single destination?
- If the pupils have to undertake pedestrian trip, they should be given clear instructions about the trip, the behaviour expected on the walk and when they get to the destination before setting off from school. It has been a common experience that children are vulnerable road users and are at higher risk in traffic because of their size and inability to judge speed and distance.
- It should be ensured that they should walk in pairs and wait at all road junctions before crossing. These points and instructions should be carefully explained.
- A first-aid kit must be carried along.

First Aid

First aid is the provision of initial care for an illness or injury. It is usually performed by non-expert, but trained personnel to a sick or injured person until definitive medical treatment can be accessed. Certain self-limiting illnesses or minor injuries may not require further medical care past the first aid intervention. It generally consists of

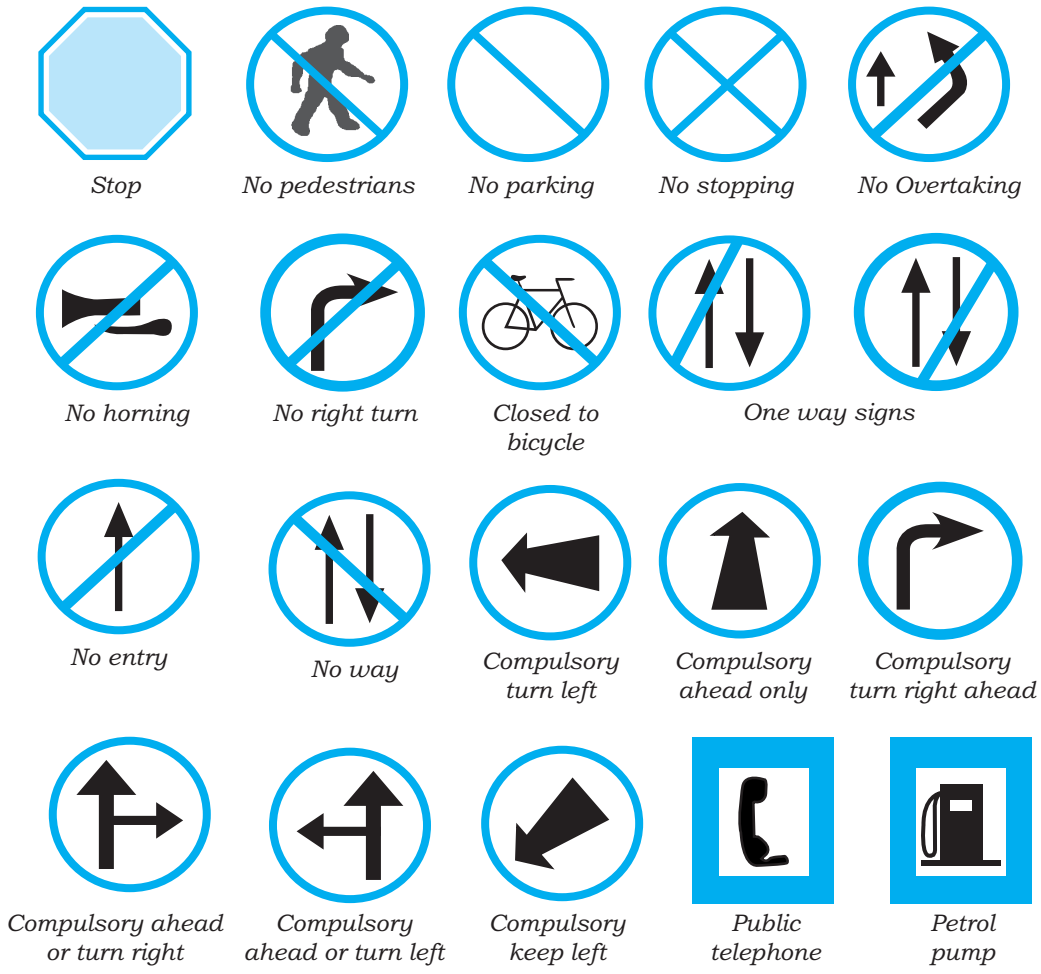


Fig. 9.1: Road Safety Signs

a series of simple and in some cases, potentially life-saving techniques that an individual can be trained to perform with minimal equipment.

Contents of a First Aid Box

There is no mandatory list of items for a first-aid box. However, where there is no special risk identified, a minimum provision of first-aid items would be:

- A leaflet giving general advice on first aid.
- 20 individually wrapped sterile adhesive dressings and bandages (assorted sizes).
- Two sterile eye pads.
- Four individually wrapped triangular bandages (preferably sterile).
- Six safety pins.
- Six medium sized (approximately 12 cm × 12 cm) individually wrapped sterile unmediated wound dressings.
- Two large (approximately 18 cm × 18 cm) sterile individually wrapped unmedicated wound dressings.
- One pair of disposable gloves.
- Disinfectant such as rectified sprit/dettol
- Packet of glucose.
- Cotton.
- Splints.
- Scissors.

Equivalent or additional items are acceptable. A school's first aid procedures should identify the person responsible for examining the contents of first-aid containers. These should be checked frequently and restocked as soon as possible after use. There should be extra stock in the school. Items should be discarded safely after the expiry date has passed.

Basic principles, such as knowing to use an adhesive bandage or applying direct pressure on a bleed, are often acquired passively through life experiences. However, to provide effective life-saving first aid interventions instruction and practical training are required. This is especially true where it relates to potentially fatal illnesses and injuries.

There are several types of first aid (and first aider) which require specific additional training. These are usually undertaken to fulfil the demands of the work or activity undertaken.

The internationally accepted symbol for first aid is the white cross on a green background shown below.

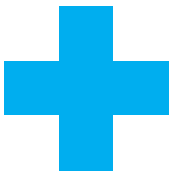


Fig. 9.2: Symbol of the Red Cross

Fig. 9.3 : ISO First Aid symbol

ASSESSMENT

Answer the following questions:

1. List down the safety measures to be followed for an excursion trip?
2. Prepare a list of do's and don'ts of road safety.
3. What is the importance of first aid? What are the contents of a First Aid Kit for a school?
4. Visit your school medical room and check the contents of the first aid box. Also make a list of the other medical facilities and related medical equipment available.

Unit
10

Gender Sensitivity

Introduction

Society comprises individuals who belong to different gender categories. Traditonally, the society has been dividing human beings into two gender categories, though it has been having a group which does not belong to either of the two. However, since the students of Class VI are very young, this unit will discuss gender activity in the context of males and females.

In a healthy society both men and women are equally respected. When the responsibilities of a family are shared by all its members, an atmosphere is created which is conducive to the growth of healthy children. However, often the roles assigned to men and women in the family are stereotyped and this reflect gender bias. Female foeticide or killing the baby girl in her mother's womb even before she is born is an extreme form of such a gender bias. Gender sensitivity and women's empowerment in the formative years of childhood can help abolish such social evils. It is, therefore, very much needed that the young children discuss some of the important aspects of gender sensitivity, sharing of work, gender stereotypes and desirable gender role in the family.

10.1 Gender and Gender Differences

Gender refers to the roles men and women play. These are based upon customs, traditions, beliefs and opinions prevailing in the society. They are

usually stereotyped but they differ from one society to another. However, our society has been considering female gender to be inferior, and hence most of the roles assigned to women are considered less important. This leads to inequality.

Objectives

This unit will help the teachers to enable the students to:

- become aware of socially constructed roles of men and women or gender stereotypes;
- appreciate advantages of sharing of work and responsibilities in the family by both male and female;
- understand various ways of gender discrimination and undermining women; and
- examine their respective beliefs related to gender stereotyped roles.

Guidelines for the Teachers

With a view to enabling students understand the above stated issues related to gender sensitivity, the following activities may be organised. The teacher has to ensure that all the students in the class activity participate in the activities.

Activity 10.1

The teacher initiates a discussion in the class with the following tasks and questions:

1. List two roles each that your mother and father play at home every day.
2. Is it possible to interchange these roles?
3. Are these roles decided at the time of the birth of the individual or by nature? If not, how have these roles been decided?
4. Why are not women equally respected and looked down upon in the society? How does this affect the society?

The teacher highlights:

- Nature has defined certain roles like giving birth to children and breastfeeding which are specific to women. Rest of the roles can be performed both by men and women.
- The division of the roles and responsibilities is based upon the social norms, customs and traditions while any of these roles can be performed by either men or women.
- The roles of men and women assigned by the society to females are considered inferior, as their work is not considered of sufficient worth.
- In the worst form of this discrimination against women social evils like dowry system and killing female children even before they are born are not very infrequent. This is distorting the sex-ratio in our country.

10.2 Stereotyped Work Roles

In the society, household jobs like cleaning, sweeping, cooking the food are usually done by women and jobs outside home and also, decision making and earning money are assigned to menfolk. However, this division cannot be justified as it not only puts women at a disadvantage but also the potential of 50 per cent of population comprising women is not utilized fully, thus hampering the progress of the nation. We need to change our mindset.

Activity 10.2

Teacher helps the students to enact the role play as per requirement and as per scenario.

The teacher highlights:

- There should be no fixed roles assigned to men and women as prevalent in the society.

- The work done by women at home is equally important and as tiring. They do not even get paid for the household work they do day in and day out.
- Most of the roles played by men and women can be interchanged as per requirement.

Role Play

Your father comes home from his work. Your mother tells him to go to market and purchase vegetables but he says, "You remain home the whole day and do nothing. I have to do a lot of work in the office and I get tired. You can't even purchase vegetables! Food should have been ready by now. You are so lazy."

After the role play, the teacher will ask the following questions:

- Do you agree with what the father says?
- Is the household work done by the mother less significant than that done by the father?
- What would your reaction be, if you were in your father's position?

Activity 10.3

The teacher discusses the following case study with the students:

The teacher highlights:

- All games and sports can be played equally by girls and boys.
- Our mindset prevents girls and women from attaining their full potential and contributing in many activities.
- Playing games and sports:
  - ❖ improves health;
  - ❖ makes available opportunities for friendship;
  - ❖ helps in better understanding of the opposite gender through open interaction, knowing about each others' qualities, capabilities and limitations;
  - ❖ teaches team work, sharing and caring; and

- ❖ promotes national integration.
- All the above stated facts are true for both girls and boys.

Case Study

The boys' hockey team in the school has to participate in the forthcoming interschool competition and is practising regularly. Bharati and her friends watched them and started practising hockey in the evening after the school got over. After few days they approached their coach and requested him to prepare a girls' hockey team and train them for the event. The coach did not agree and said, "Hockey is not for girls. It is a strenuous game and needs a lot of endurance and strength. You better play soft games like badminton or kho kho." Bharati and her friends are very disappointed.

The teacher asks the following questions related to the case study:

- Why are Bharati and her friends disappointed?
- Do you agree with the coach? Give reasons for your response.
- Are there any such games which can be played only by boys and not girls?
- How do games and sports help in:
  a. developing our personality?
  b. breaking stereotypes related to gender-based roles?

10.3 Sharing Work by Both Genders

Men and women are equal. Various roles and responsibilities need to be shared by them for healthy, harmonious and productive family life. They respect each other.

Fig. 10.1 : Education for everyone, but when will my turn come?

Guidelines for the Teacher

In order to provide opportunities to students to understand various aspects of sharing of work, the teacher should organise the following activities.

Activity 10.4

The teacher makes the following format of the chart and displays it. Reads each activity aloud and asks

students to provide the information. Records the response of the class in the appropriate column.

Who does which activity, mother or father or both?

S. No.	*List of activities*	*Performed by Mother*	*Performed by Father*	*By both*
1.	Preparing meals			
2.	Washing clothes			
3.	Knitting of sweaters			
4.	Giving birth to children			
5.	Cleaning/dusting the house			
6.	Caring of old and sick persons			
7.	Procuring vegetables, grocery, etc.			
8.	Driving bicycle/car			
9.	Helping children with their studies			
10.	Taking care of monetary requirements of the family			
11.	Paying electricity/water/ telephone bills			
12.	Household repairing			
13.	Taking children out for picnic/ village fair			

On completion of the chart, the teacher asks students to respond to the following questions:

- Which role is performed by father and which by mother? Why is it fixed? What according to you is right?
- Which roles can be performed only by men and only by women?
- Identify ten roles which can be interchanged and one role which cannot be interchanged.
- How will interchanging the role influence the family and society? Mention any two ways.

The teacher summarises the discussion and highlights the following points:

- There is no gender specific role other than bearing children. All other roles can be interchanged.
- Sharing roles helps to promote congenial and harmonious environment at home and outside home.

Fact Sheet

The term gender refers to the social roles assigned to men and women by the society. It is different from sex which is the biological identity of male and female, i.e., the difference between them in terms of physical features, chromosomes/genes hormone and secondary sex characteristics.

The differences between males and females are derived partly from biology, partly from the roles that men and women traditionally play in society, and partly from their beliefs and opinions.

The distinction between sex and gender has been observable in the prevailing inequalities between men and women. Women are considered subordinate to men. The moment a child is born or sex of the fetus is detected through test (amniocentesis), societal discrimination begins. The gender-based roles are

assigned by the society to males and females and these roles become stereotyped which influence all aspects of human life.

Activity

The teacher asks each child to collect at least two newspaper cuttings or clippings from old magazines and write down from their own experience or the experience of any other person, expecially girls and ladies where there has been gender discrimination. Teacher helps the class to prepare a scrap book with the clippings and also adds in the scrap book, writings of students on gender roles or gender discrimination.

Traditional social roles such as cooking, washing, cleaning and taking care of children are regarded as the responsibilities of a woman in the family. Going out for earning money, taking decisions, etc. are taken as the responsibilities of male members.

In most societies, women are considered less valuable than men. Their contribution at home, workplace and in the society are ignored or undervalued. They generally have some or no participation in decision making within or outside home, starting with the crucial decision on the size and spacing of their families. They have less access to education, fewer occupational choices and lower earning in comparison to men. Their weaker position is directly connected with perception of women as child bearers and home makers. The violation of human rights and abuses against women and girls are often found in families, where they first learn that women are inferior to men. This bias is often reinforced by customs, traditions and religion.

Sex ratio is one of the indicators of bias against women's position in our society. In India, the Constitution does not discriminate on the basis of sex, but the girl child is discriminated right from the period when she is in the womb of her mother till she grows old. Due to discrimination practices at every stage, the male-female ratio has declined. Though the sex ratio in 2011 Census has improved from 933 (2001) to 940 (2011) per 1000 males, but the sex ratio for age group of 0-6 years has gone down from 927 (2001) to 914 (2011) per 1000 males. The situation is worst in some areas. For example, the ratio is lowest in the district of Jhajjar and Mahendergarh in Haryana. This indicates that women foeticide is still being continued in our country.

Presently, our society is observing certain positive changes like more girls are being enrolled in schools, women have stepped out and are getting employment in various fields. They are becoming scientists, engineers and even aircraft-flyers. Women have joined police and the defence forces. Government policies or programmes are promoting gender equality.

Now-a-days the household responsibilities, are increasingly being shared by both males and females. This is important as most of the household chores can be shared by both as and when required. When male member joins and supports female child rearing, the quality of families including that of child rearing as well as of family life improves.

Sports and games help in promoting gender sensitivity. They inculcate a sense of discipline and cooperation amongst team mates. They get to know about each other's qualities and develop

empathy. Meeting up with men and women from various walks of life helps them develop as good human beings. Once the children develop these characteristics, they remain with them life long. This helps them in their family life, in being more considerate and cooperative and helps them overcome the mindset of gender stereotypes. As an example, the game in mixed doubles in badminton or tennis provides an excellent opportunity to players as well as viewers to learn how cooperation, understanding and teamwork provide the personal sense of achievement and helps a team to win. This is irrespective of any gender.

ASSESSMENT

Answer the following questions:

1. List two roles assigned in consonance with social customs and traditions to you which
   a. you like to perform, and
   b. which you do not like to perform. Give reasons.
2. Mention one role which only women can perform. Why?
3. Give two examples of stereotyped roles assigned to men and women.
4. Can various roles assigned to men and women be intercharged? If not, why? Give examples.
5. Why is gender stereotyping of roles harmful to the society? Write a paragraph.
6. "Games and sports are important for inculcating gender sensitivity and realising the goal of gender eguality." Write a paragraph to justify the statement.