

**HEALTH AND  
PHYSICAL EDUCATION**  
**Activity Book**

Standard

IX



Government of Kerala  
Department of General Education

State Council of Educational Research and Training (SCERT)  
Kerala

2019

## THE NATIONAL ANTHEM

Jana-gana-mana adhinayaka jaya he  
Bharatha-bhagya-vidhata,  
Punjab-Sindh-Gujarat-Maratha  
Dravida-Utkala-Banga  
Vindhya-Himachala-Yamuna-Ganga  
Uchchala-Jaladhi-taranga  
Tava subha name jage,  
Tava subha asisa mage,  
Gahe tava jaya gatha.  
Jana-gana-mangala-dayaka jaya he  
Bharatha-bhagya-vidhata,  
Jaya he, jaya he, jaya he,  
Jaya jaya jaya jaya he!

## PLEDGE

India is my country. All Indians are my brothers and sisters.

I love my country, and I am proud of its rich and varied heritage. I shall always strive to be worthy of it.

I shall give my parents, teachers and all elders respect, and treat everyone with courtesy.

To my country and my people, I pledge my devotion. In their well-being and prosperity alone lies my happiness.

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*Dear learners,*

*Communication, health care, etc. are the essentials of social life. Fitness and well being is fundamental to human life just as Language, Arts, Science etc. It is for the same reason that health and physical education is given careful consideration in the contemporary education system. Through Sports we gain not only a healthy state of well-being but also the culture to mingle, share and overcome challenges for advancement in life. It is by way of games and physical activities, we learn to take decisions at the right time, and lead a disciplined and healthy life. For that reason, we cannot separate Sport and Education.*

*You are tomorrow's nation builders. A healthy and progressive society is necessary to conserve the unity and integrity of any nation. We are bound to carry out this venture. Work hard to achieve it.*

*The activities of this textbook are designed focusing on such objectives. I hope you would internalise the contents of this textbook with the help of your teachers.*

*With regards,*

**Dr. J Prasad**  
Director, SCERT

# CONSTITUTION OF INDIA

## Part IV A

### FUNDAMENTAL DUTIES OF CITIZENS

#### ARTICLE 51 A

*Fundamental Duties- It shall be the duty of every citizen of India:*

- (a) to abide by the Constitution and respect its ideals and institutions, the National Flag and the National Anthem;
- (b) to cherish and follow the noble ideals which inspired our national struggle for freedom;
- (c) to uphold and protect the sovereignty, unity and integrity of India;
- (d) to defend the country and render national service when called upon to do so;
- (e) to promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women;
- (f) to value and preserve the rich heritage of our composite culture;
- (g) to protect and improve the natural environment including forests, lakes, rivers, wild life and to have compassion for living creatures;
- (h) to develop the scientific temper, humanism and the spirit of inquiry and reform;
- (i) to safeguard public property and to abjure violence;
- (j) to strive towards excellence in all spheres of individual and collective activity so that the nation constantly rises to higher levels of endeavour and achievements;
- (k) who is a parent or guardian to provide opportunities for education to his child or, as the case may be, ward between age of six and fourteen years.

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## CHILDREN'S RIGHTS

*Dear Children,*

*Wouldn't you like to know about your rights? Awareness about your rights will inspire and motivate you to ensure your protection and participation, thereby making social justice a reality. You may know that a commission for child rights is functioning in our state called the Kerala State Commission for Protection of Child Rights.*

*Let's see what your rights are:*

- Right to freedom of speech and expression.
- Right to life and liberty.
- Right to maximum survival and development.
- Right to be respected and accepted regardless of caste, creed and colour.
- Right to protection and care against physical, mental and sexual abuse.
- Right to participation.
- Protection from child labour and hazardous work.
- Protection against child marriage.
- Right to know one's culture and live accordingly.
- Protection against neglect.
- Right to free and compulsory education.
- Right to learn, rest and leisure.
- Right to parental and societal care, and protection.

### Major Responsibilities

- Protect school and public facilities.
- Observe punctuality in learning and activities of the school.
- Accept and respect school authorities, teachers, parents and fellow students.
- Readiness to accept and respect others regardless of caste, creed or colour.

*Contact Address:*



**Kerala State Commission for Protection of Child Rights**

'Sree Ganesh', T. C. 14/2036, Vanross Junction

Kerala University P. O., Thiruvananthapuram - 34, Phone : 0471 - 2326603

Email: [childrights.cpcr@kerala.gov.in](mailto:childrights.cpcr@kerala.gov.in), [rte.cpcr@kerala.gov.in](mailto:rte.cpcr@kerala.gov.in)

Website : [www.kescpcr.kerala.gov.in](http://www.kescpcr.kerala.gov.in)

**Child Helpline - 1098, Crime Stopper - 1090, Nirbhaya - 1800 425 1400**

**Kerala Police Helpline - 0471 - 3243000/44000/45000**

*Online R. T. E Monitoring : [www.nireekshana.org.in](http://www.nireekshana.org.in)*



# CARDIO-RESPIRATORY ENDURANCE THROUGH EXERCISE



Why do elders exercise everyday?

Did you notice the picture given above? Sita and her friends usually go to school by bus. On their way they could see many people involved in physical activities and games in the Gandhi Park. These activities of the people created a lot of doubts in the mind of Sita. She clears these doubts with her teacher, who vividly describes.

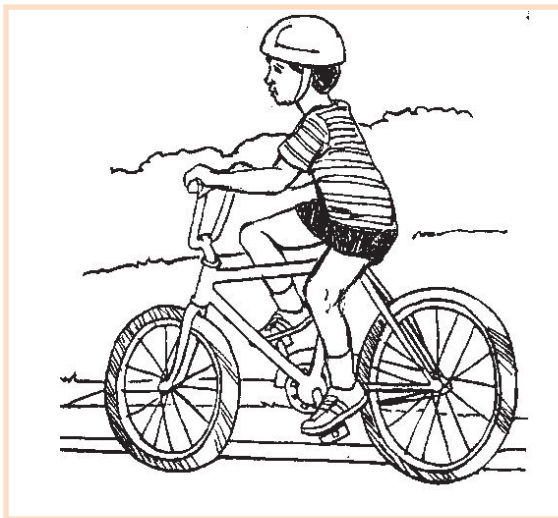
" In today's busy and mechanical world, people need to do some physical activities. To involve in intense physical activities ,we need cardio-respiratory endurance. It is because of this type of endurance that these people could involve in physical activities".

Let's find out how physical activities help us maintain cardio respiratory endurance.

- It increases the blood circulation.
- Increases the endurance capacity of respiratory muscles that controls respiratory organs thereby strengthening the process of respiration.

- Helps to improve the elasticity of the cardiac muscles.
- Increases the stability and endurance capacity of cardiac muscles.
- It improves pathways of your lungs.

Lets find out what are the activities needed to improve the functioning of Cardio Respiratory System.



*Have you ever thought of a world without air?*

*Proper functioning of the cardio-respiratory system helps to sustain life. In a normal human being, if the oxygen distribution to the brain stops for at least five minutes, it is fatal as the blood circulation stops leading to the clotting of blood. The cardio respiratory system helps to transmit oxygen to the cells and to remove  $CO_2$ .*

*The Cardio respiratory system expels the waste products formed as a result of physical activities.*

### Walking

This exercise is suitable for people of all ages. You should perform brisk walking for at least for 30- 40 minutes daily. Always wear suitable shoes. Drink plenty of water.

### Cycling

Cycling is a very effective eco friendly activity. Cycling for 20-30 minutes daily will improves cardio-respiratory endurance. Remember to wear helmets while a riding bicycle.



## Swimming

Swimming is a good exercise which improves cardio-respiratory endurance. It is good to swim 15- 20 minutes for at least three days a week.

Given below are the advantages of the above said exercises when done regularly.

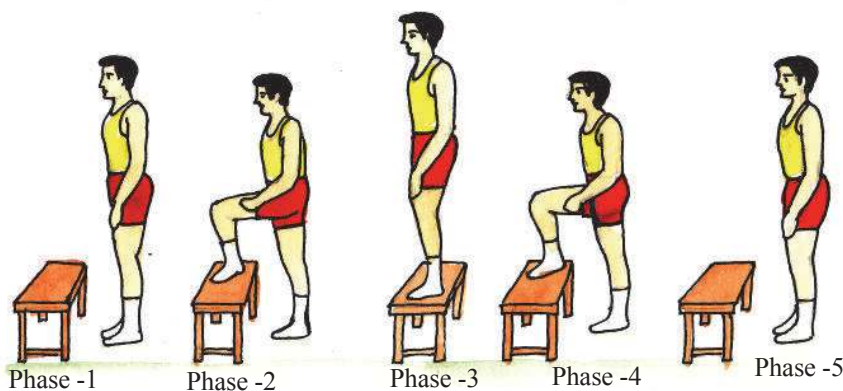
- Increases the efficiency of heart and lungs.
- Helps to maintain the body weight.
- Improves bone strength, muscle strength and flexibility of the muscles.
- Reduces fat.
- Increases the immunity.
- Reduces the mental stress.

We have learnt some facts about cardio-respiratory endurance. Now we shall engage in an activity to check it.



*Swimming is an effective exercise. In case of an emergency, a skilled swimmer could save his/her own life and that of others. During the time of the flash flood that affected Kerala, a large number of lives were saved by people who knew swimming. So it is mandatory that every child should learn swimming. Shallow water bodies could be used for practicing swimming under the supervision of an expert trainer.*

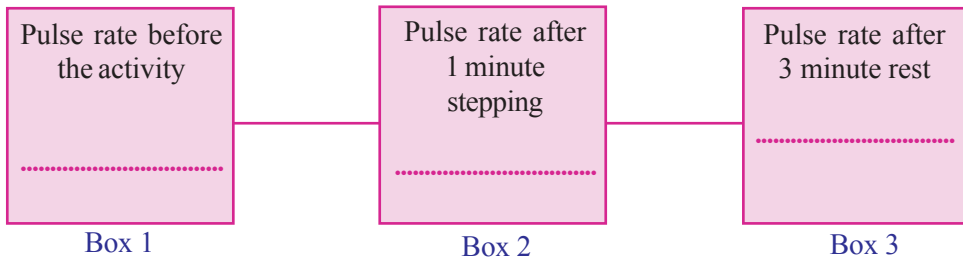
## Modified Step Test



View the picture. Look at the activities shown in every phase.

Recording your pulse before doing the activity in Box no.1,  
Perform the stopping activities as given in the picture quickly for 1

minute. Then, record your pulse in Box.2. After 3 minute rest, you take the pulse and record it in Box.3.



While doing modified step test, the pulse rate and respiratory rate increases which would come down after three minutes. For some children, it would reach to a level that had been recorded just before stepping exercise. Why this happens? Prepare a report with the help of your teacher.

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### Step exercise training

Now you have examined whether step exercise training can increase cardio-respiratory endurance. After doing step exercise for 30 seconds, rest for 2 minutes and repeat it. Do it 10 times a day. the number and time taken for the test can be adjusted according to your ability. After 30 days, do the modified step test and record the score with the help of your teacher. In the previous step test activity you have already recorded the score after resting for three minutes. If the score gained after practicing for one month is less, we can conclude that our cardio respiratory endurance has improved.

### Now listen to a conversation in a classroom.

Raju : Teacher, I have a doubt. Though Ramu and Sabu come to school by bicycle, they climb the stairs of our school with ease. However, I gasp on climbing the stairs and I get tired while playing. Why does this happen to me?



Teacher : This happens to you because you have poor cardio - respiratory endurance. You could improve this situation by doing regular exercise.

Raju : What kind of exercise will improve cardio- respiratory endurance?

Teacher : It is better to do regular and rhythmic exercises. For e.g. walking, jogging, cycling, skipping, swimming, aerobics,etc. also participate in outdoor games with your friends.

Raju : How long should I exercise?

Teacher : Your problems will get solved if you do exercise regularly at least for 30 minutes.

Raju : Could you please tell me the steps involved in doing these exercises?

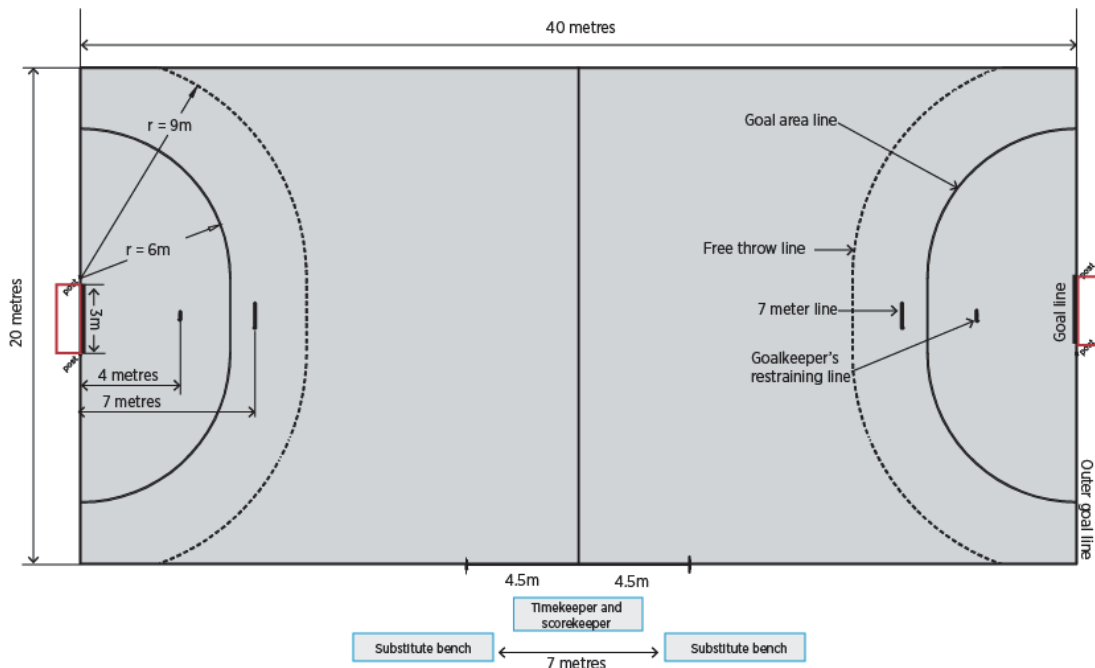
Teacher : Indeed. You can make necessary changes according to your convenience and circumstance.

### A model exercise

Days	Warming Up	Activities	Warming Down
Monday	10 minutes	Walking 30-40 minutes	5 minutes
Tuesday	10 minutes	Jogging 20-30 minutes	5 minutes
Wednesday	10 minutes	Skipping 5 Set each of 3 minutes duration ( 5 minute rest between each set)	5 minutes
Thursday	10 minutes	Jogging 20-30 minutes	5 minutes
Friday	10 minutes	Aerobics/ Zumba dance 20-30 minutes	5 minutes

You could stay healthy like Sabu and Ramu if you could do these exercises regularly for at least 30 minutes. We could also attain cardio-respiratory endurance through various games. So, let's get familiar with the game 'Handball' which requires speed, agility and endurance.

### Handball



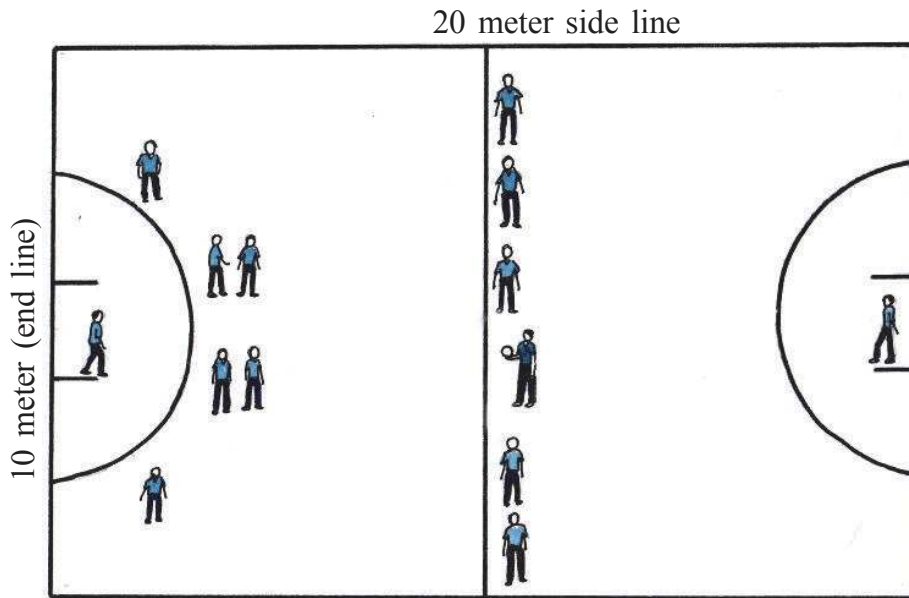
This game started in the late 19<sup>th</sup> century in Northern Europe and Germany. The first International games for men and women was played in 1925.

Handball is a team sport involving two teams of 7 players including goalkeepers. A goal is scored when the ball is thrown into the opponent's goalpost using hands. The dimension of the handball court is 40 by 20 metres. Handball was subsequently enlisted by the School Games Federation of India. Let's engage in an activity to know more about the game.

### Passing Ball

There will be a court of 20 metre long (side line) and 10 metre wide (end line) as per the pictures. There will be a midline at the centre of the court. A goal post is marked at the centre of either end line. An arc with 3 m radius is drawn in front of the goal post. After

receiving the signal from the teacher, one team starts playing from the midline and tries to shoot at the post without crossing the arc. Like wise, they could play for 15 minutes. The team which scores more goals during the fixed time wins the match. You could change the dimension of the court according to the available space.



Write your experience after playing the game 'Passing Ball'.

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### *Assessment Activities*

1. Write down the constructive changes in the improvement of Cardio- Respiratory System after undergoing regular exercise.
2. What are the exercises to improve the functioning of Cardio Respiratory System?
3. After 3 minute the increase seen in your pulse rate and amount of inhalation level after ' Modified Step Test' decreases for

some students. It decreased to the level when they started the exercises. Why did it happen? Explain.

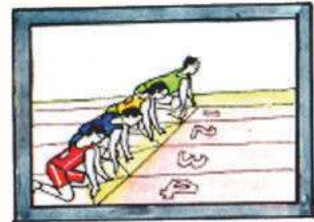
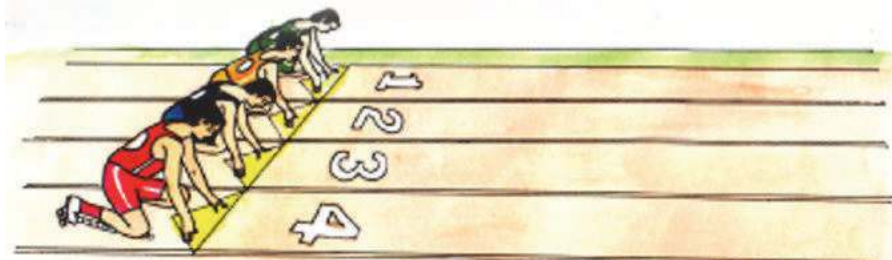
### *Extended Activities*

1. List down the various tests for cardio-respiratory endurance and exhibit it in the class.
2. Prepare a chart showing different kinds of exercises and display it in the class.





## OVERCOMING STRESS THROUGH PHYSICAL ACTIVITIES



Siju, who is the prestige of our school is participating in the Kerala State School Athletics meet, in the senior boys 100 meters race, finals. He is a promising athlete of our school and the entire village. Everyone is eagerly waiting for the results. Will Siju win the race?

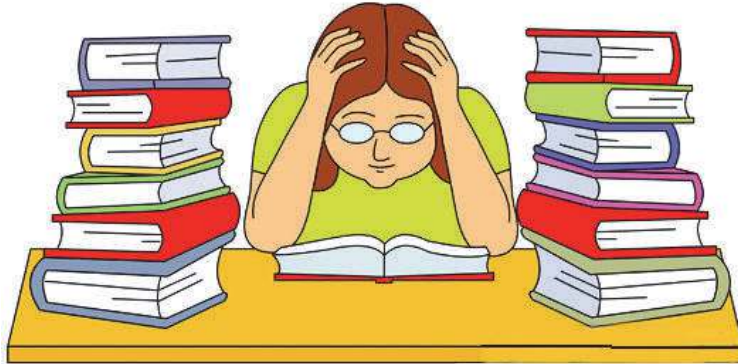
- What will be his state of mind ?
- Could Siju meet the expectations of his parents and the villagers?
- What will be the kind of feelings the teachers and students are having?

Think....discuss....

Every person watching the performance of Siju, undergoes mental stress in different ways. Friends... Have you had such experiences in life? Let's understand about Stress and Strain.

### What is Stress/ Stain?

Stress is a physical, mental, and emotional state of a person when a person faces unpleasant situation, or when a person thinks, he / she couldn't satisfactorily carry out his/her needs.



We all must have experienced tensions in our life which might have created physical or mental problems. The stress seen in children might also be because of the daily activities in which they involve. Home, school, surroundings, responses from the peer all of these can put children in stress. The hormones that help to overcome stress is triggered when a child participates in games.

Let us acquaint ourselves with some ways to reduce stress. We can now know about an exercise which gives importance to respiration and which can be done easily.

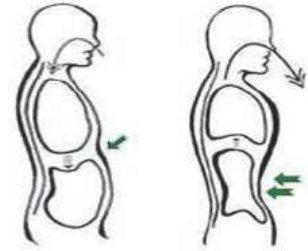
For the children to understand and practise.

1. Discuss your problems with your parents and teachers to find solutions at the right time.
2. Reduce your stress level and increase your mental and emotional capacity by engaging in games and physical activities.
3. Set aside time for recreational activities even amidst your busy schedule.
4. Follow a regular well balanced diet.
5. Set aside fixed time for your sleep.



### Deep Breathing Exercise

The steps of this exercise are given below. Attempt the exercise after comprehending the steps carefully.



1. Stand straight keeping the legs apart at shoulder width.
2. Place your hand close to the body and close your eyes.
3. Pay attention to your lower abdomen and notice that as you breathe in, you can feel your abdomen like an inflated balloon.
4. Exhale slowly to the count of three. Now, you may find your abdomen in a flat position.
5. Practise this at least for 10 minutes.

Here, we have practised an easy exercise to reduce stress. Hope you have experienced each and every stage of this exercise. Describe your experience after doing this activity.

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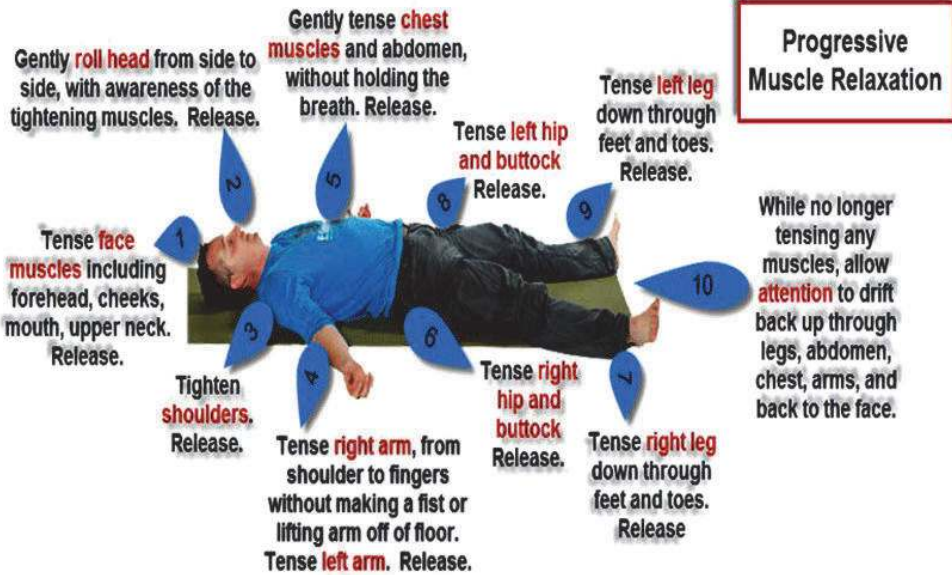
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### Progressive Muscle Relaxation – PMR

This technique is helpful for relaxing the body muscles and resume to its normal state. It also enables us to do activities with ease in the following days. Through this Muscle Relaxation Technique, we could easily manage stress. Different stages of PMR (with pictures) given below help you to relax your body from head to toe. Practise it with the help of your teacher.





Different stages of PMR

Through progressive muscle relaxation, we could reduce the level of physical strain. Mental strength is equally important as the physical strength. Now, let's acquaint ourselves with some activities that could help us manage mental strain.

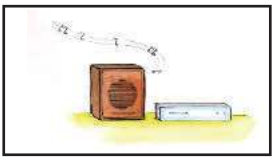
**Imagery Technique**

Imagery Technique is an ability to represent an object, event or an action using the five senses ( sight, hear, taste touch and smell). It reduces mental stress and helps to improve basic skills, concentration and self-confidence.

The following are the five kinds of imagery.



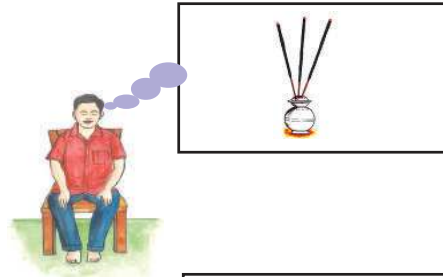
**Visual Imagery**  
It is a technique in which we close our eyes voluntarily or as per the instruction of the teacher and visualise the shape, size, colour, and designs of an object.



**Auditory Imagery**  
It is a technique in which we close our eyes voluntarily or as per the instruction of the teacher and listen to music, sound and silence in our thought. It enhances our ability to catch even feeble sounds.

### Olfactory Imagery

This imagery is related to odours, scents, or the sense of smell. It is a technique in which we close our eyes voluntarily or as per the instruction of the teacher and perceive enjoyable fragrance.



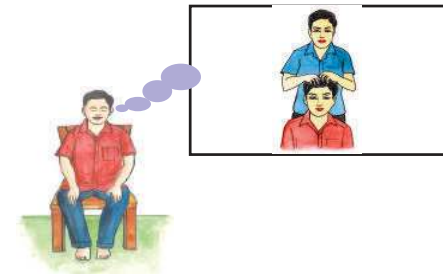
### Gustatory Imagery

This imagery is related to the sense of taste. Here, we imagine the taste of food. Whether it is sour, hot, sweet, bitter or salty.



### Tactile Imagery

This imagery is related to the sense of touch. It is the ability to imagine different physical touches.



The above said five types of imagery are associated with our sense organs viz. nose, tongue, ears, eyes and skin. They are mutually complimentary. The combined activity of the five organs stimulates our senses. Generating ideas, combining all the senses will be more beneficial.

### Instructions

- Sit in the most appropriate manner as per the instruction of your teacher. You could do these activities lying down also.
- Follow all the instructions required to perform these activities. For example you can select any suitable activities viz, going to the sea shore, different game situations, visiting a garden, etc. suitable for you.
- After every instruction given by the teacher, adequate time should be given for performing the activities.

We have now acquainted ourselves with different activities that reduces physical and mental stress. In our society, the number of people having mental stress are increasing day by day. Let's know more about certain Yoga techniques and Pranayama process that can reduce mental stress.

## International Yoga Day

The United Nations declared 21<sup>st</sup> June as International Yoga Day on December 11, 2014. It was first observed all over the world on 21<sup>st</sup> June 2015. Today, millions of people across the world observe June 21<sup>st</sup> as International Yoga Day. It is celebrated in our schools with immense zeal, every year.



## Yoga

Yoga is becoming increasingly important in the modern era as mental stress and life style diseases are on the rise. Regular practice of Yoga will result in well being of mind, body and effective resistance to diseases.

Let us acquaint ourselves with a few Yogasanas.

## Bhujangasana



Bhujangasana

Lie flat on your abdomen by raising the body up like a hooded snake.

Each and every step for practising Bhujangasana is given below. Look at the steps carefully and practise it with the help of a teacher.

### Stage 1



Lie flat on the floor by placing your forehead on the floor. (Prone lying position)

### Stage 2



Now, fold your hands at your elbows and place your palms at the side of your chest.

Stage 3



Breathe in , lift your head and chest off the floor as high as possible. Press your hips, thighs, and feet to the floor. Look upwards. Hold the position for 5 to 10 seconds.

Stage 4



Breathe out, come back prone lying position.



### Advantages

- It helps to increase the flexibility and strength of your abdomen muscles.
- It strengthens the spine and keeps it flexible.
- It promotes better lung functioning.
- It improves the functioning of digestive system and leads to better digestion.
- It resolves body pain.

Describe your experience when you practised Bhujangasana.

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### Sasangasana

Sasangam means rabbit. It resembles the position of a rabbit.

The different stages of practising Sasangasana are given below. Observe them, and practise them with the help of your teacher.



Sasangasana

Stage 1



Long sit position as seen in the picture.

Stage 2



Sit in Vajrsasana which you have practised in the previous classes.

Stage 3



Breathe in. Raise the arms upward parallel to the thighs over the heads. Elbow straight palms facing forward.

Stage 4



Breathe out. Lower your body from the trunk, and place the hands and forehead to the ground while keeping the arms straight. (Do not raise the buttocks from the ground)

Stage 5



Breathe in, raise your body back to stage 3.

Stage 6



Breathe out gently and place your hands down on the knees and return to Vajrasana posture.

Stage 7



Return to the initial long sit position

### Advantages

- Gives a good stretch to the spine and the waist.
- Strengthens body muscles.
- Improves digestion
- Better concentration.

Write down your experience while doing Sasangasana.

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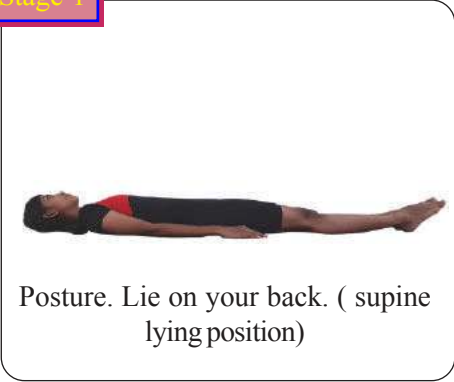
### Pavanamuktasana

'Pavana' means 'air' and Muktam means release. It helps to release the trapped digestive gas from the stomach and intestine.

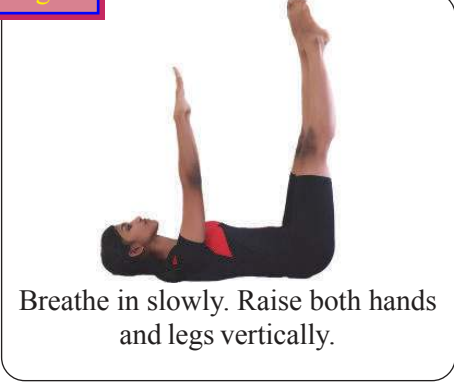
The different stages of practising Pavanamuktasana are given below. Observe them , and practice them with the help of your teacher.



**Stage 1**



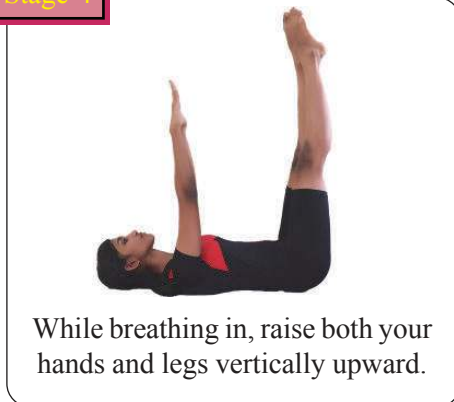
**Stage 2**



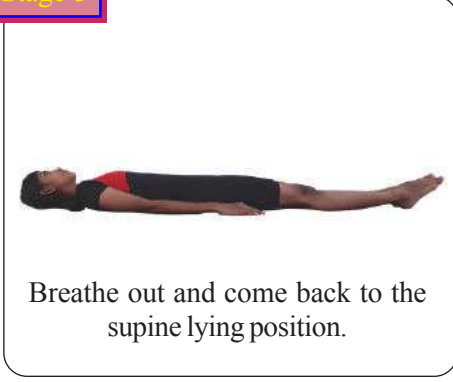
**Stage 3**



**Stage 4**



**Stage 5**





### Advantages

- Provides flexibility to the spine, strengthens and gives a good stretch to your abdominal muscles.
- Expels trapped digestive gas from the stomach.

Write down your experience while doing Pavanamuktasana.

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### Yoga Olympiad

The Government of India has decided to propogate Yoga in all the schools of the country under the initiative of National Council of Educational Research and Training (NCERT). As part of this, NCERT organises Yoga Olympiad at the national level. Talented students selected from different states can participate in the National Level Competition. The competition will be organised as part of the International Yoga Day. Boys and girls of two different categories (age 10-14) and (age 14-16) could participate in the competition. The responsibility to conduct state level Yoga Olympiad , to select the team , and to send the team to the National Olympiad vests with the respective SCERT. Every year information related to this will be send in the first week of May to all the schools of the state through the Public Education Department. Yoga Olympiad will be a great platform for the talents in schools.

### Pranayama

We do pranayama after Yogasanas, to relax our body and mind. Pranayamam helps to control the act of breathing. Let's get familiar with Anuloma Viloma Pranayama, which is one of the most important Pranayamas.

### Anuloma Viloma Pranayama

In this Pranayama breathe in through the left nostril and breathe out through the right nostril, then the order is reversed by breathing in



through the right nostril and breathing out through the left nostril

The various stages of this Pranayama are given below. Practice them carefully after a good understanding of this Pranayama.

**Stage 1**

Sukhasana. Keep your spine straight. Rest your hands on your knees as you see in the picture.

**Stage 2**

Fold the index finger and middle finger of your right hand together. Place your ring finger and little finger on the left nostril and thumb on your right nostrils, as you see in the picture.

**Stage 3**

Close the right nostril using the thumb of your right hand and slowly breathe in through the left nostril, till your lungs are full.

**Stage 4**

Close the left nostril using the ring finger and little finger and breathe out slowly and steadily through the right nostril.

**Stage 5**

Breathe in slowly and deeply through the right nostril until you feel that your lungs are full.

Close the right nostril using the thumb and breathe out slowly and deeply through the left nostril. Do it at least 7 times.

### Advantages

- Helps to increase the intake of fresh air.
- Controls the energy of the body and the mind and relieves psycho- somatic stress.

Write down your experience while doing Anuloma Viloma Pranayama.

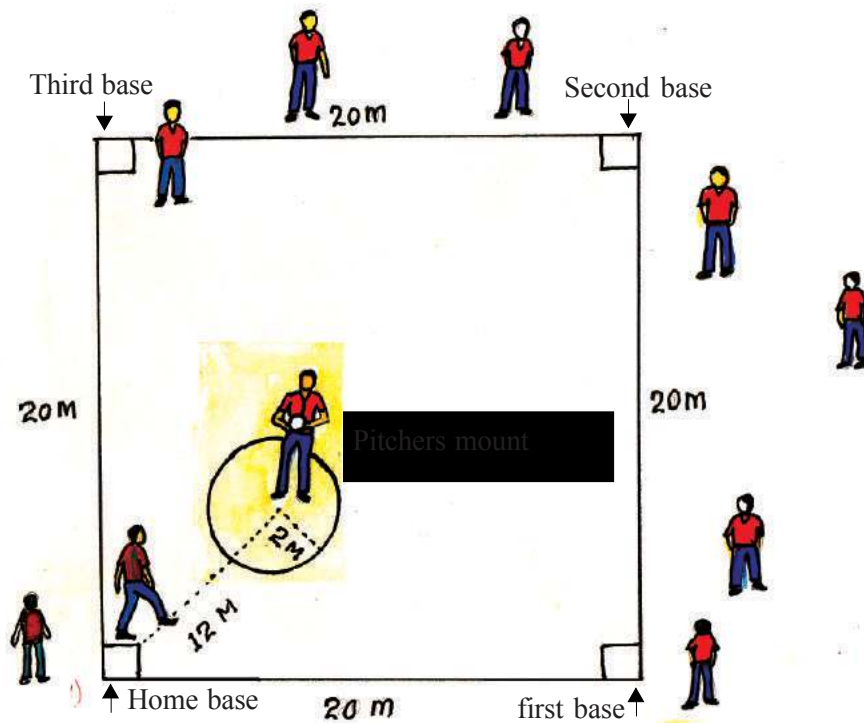
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Did you learn that games and physical activities help to reduce stress? Lets look at a game which resembles cricket.

### Leg Ball



The students form two groups of 9 each. The four sides of the square are given names such as home base, first base, second base, and third base in anti-clockwise direction. The fielding team is deployed on the ground. One member from the hitting team will stand at the home base as batter. One among the nine players who is deployed on the ground throws the ball (under arm throw pitching at the batter using a volleyball) by standing on the pitchers mount. One run can be scored if the batter hits the ball with a leg runs and reaches back the home base after covering the first, second and third base.

The batter has to run to the first base compulsorily if he hits the ball. Once he moves to the first base, the second player will come to bat. Like this, 9 batters in the team get the opportunity to bat. Batter will be declared out if any member from the opposing team collects the ball and tags the batter before he reaches the base. The batter will be declared out if he/ she is unable to hit the ball that is pitched thrice or if the fielders catch the ball that was hit by the batter without letting it bounce on the ground. If 3 players in the team are declared out, the team will lose the game. Two innings will be given for each team and the team which scores more runs will win the game.

Narrate your experience while playing Leg Ball.

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There is a popular international game similar to the leg ball that you have played. This game is quite popular in our state because of its similarity to cricket. We will learn more about the game.

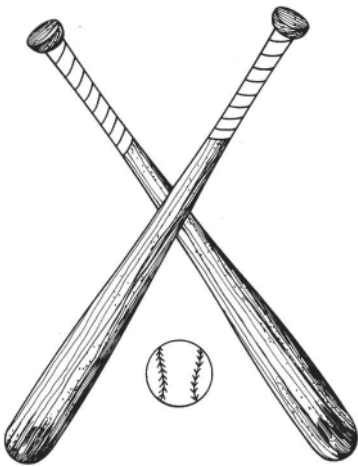


### Soft Ball

As in the game of Leg Ball, there are four bases on the in-field such as home base, first base, second base and third base. The player, standing on the pitcher plate throws the ball (under arm) to



the batter standing on the home base. If the batter who is standing on the home base hits the ball using a slugger, he must compulsorily run to the first base. The team will get a run if the batter reaches the home base after touching the first, second and third bases. As soon as the first batsman leaves the home base the second batsman enters the home base for hitting. The batsman will be declared out if he fails to hit three legal balls. The batsman while taking a run can be declared out in three instances (Catch out, Tag out, fly out). One innings will be over if three batsmen are declared out. Each team gets two innings to play. The team which gets the highest score wins the game.



Soft ball was first played in Chicago in 1887. Of the 18 member team, 9 members will play the game. In this game the players assume different role such as batter, pitcher, catcher, first base, second base, third base, short stopper, left out, center, and right out. The pitcher tries to oust the batter in the home base by pitching the ball continuously. If the hitter hits the ball outside the boundary line, he scores a home run. Along with him the players present in the other bases can get back to the home base and score more runs. The team which gets the maximum runs wins the game.

### *Assessment activities*

1. What is stress/ strain? Describe the causes for its occurrence.
2. What are the advantages of 'Progressive Muscle Relaxation'?
3. Write a note on the different types of Imagery techniques?
4. Write a note on International Yoga Day.

### *Extended Activity*

1. List down the exercises that reduce stress/strain.





## HEALTHY LIFE STYLES THROUGH PHYSICAL ACTIVITIES

An incident that happened in a village of our state is described here. The negative activities of a few wayward youngsters out of their youthful vigour always posed a constant headache to the Janamaitri police station of the village. The Sub Inspector and his team of police officers decided to bring them on the right track. On the basis of this, a wasteland overgrown with weeds, shrubs and grass was identified and these youngsters were made to clear the land. Later, a shuttle badminton court was setup and practice of badminton was started. The police insisted that these youngsters should engage in the game twice everyday morning and evening as a means of punishment



Today, the people of that locality have taken the game as a passion and the youngsters have become a permanent presence in the badminton court. It is highly appreciative that the youngsters who would otherwise have become anti social due to their unhealthy life style have now become role models for everyone. Now they are leading a healthy life. The new generation looks up to them with admiration.

This exemplary model of action was widely reported on social and visual media as a result of which similar activities were initiated in other localities as well.

You have understood this anecdote, haven't you? Write down some of the motivating activities of such kind that happened in your area. What are the morals you have learnt from these anecdotes? Describe them.

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It is possible to make life beautiful and interesting by engaging in sports and games rather than indulging in unhealthy activities.

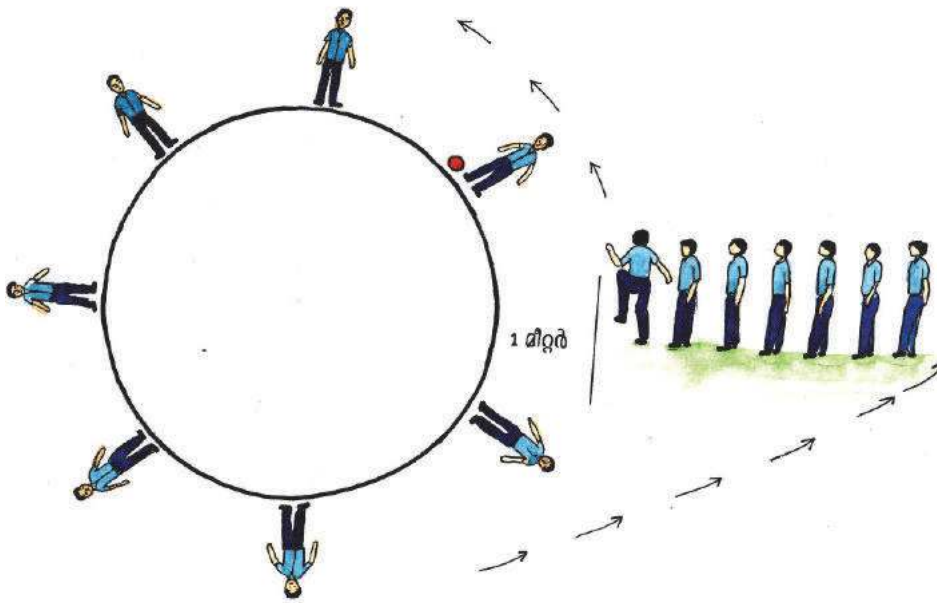
The lifestyle and luxuries of the modern world have considerably reduced physical exertion. Only a minimal amount of energy is utilised for day to day activities. The excess energy that remains in our body is termed as ‘surplus energy.’ It is necessary that this excess energy has to be utilised productively in children. Sports and games help to effectively utilise this surplus energy and maintain good health.

The British philosopher Spenser and German Philosopher Scheller conducted major studies related to surplus energy.

We shall now acquaint ourselves with a game that helps us get some benefit out of our leisure time.

### **Team running relay**

As per the instruction of the teacher, the students divide themselves into two equal groups (A and B). Team A (as shown in the picture) should stand in a circle. The teacher hands over a ball to one of the members of Team A. The members of Team B (as shown in the picture) shall stand (1 m) behind the marking line in a row. On getting instructions from the teacher, each member of Team A should pass the ball and maintain a count of each passing. At the same time, the member of Team B who is first in the row (as shown in the picture) shall run and encircle the member of Team A standing in a circle, return and stand behind the last member of his respective team. The next member of Team B will then continue the activity. The members of Team A should pass the ball and take count of each passing till all the members of Team B get a chance to run. After the fixed time, the teams interchange and the game continues. The team which makes the maximum number of passes will be declared as the winner by the teacher.



Write down your experiences on participating in the team running relay.

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There may be a number of games which are interesting and peculiar to your area. Find out and list them.

- 1.
- 2.
- 3.
- 4.

Now, we understand that we require a lot of energy to engage in physical activities. The required energy is to be obtained from the food that we eat. Nutritious food makes us healthy. The condition where one or more nutrients are not enough or too much or in wrong proportion in a diet is termed as malnutrition. Malnutrition affects our growth and development. Moreover, it affects the physical fitness of an individual. A well nourished diet is a



prerequisite for all those who are engaging in physical activities .  
A table of food items (picture given) that must be included in our regular diet is given below.



Examine the picture and identify the names of the food items.  
Besides, you may be having regional food items specific to your area. Identify those food and list them.

Names of new food items you have identified

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Look at the picture. What are the specialities of these food items?  
Although the food items look attractive, their consumption will result in serious health issues. These food items are generally known as junk food. The food items contain trans fat in large quantities and are harmful to our health. When we eat



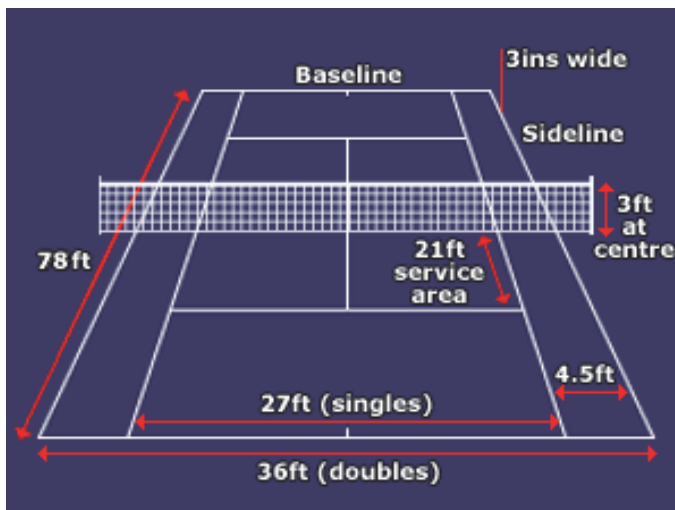
junk food, we tend to overeat as we never feel satisfied. It further leads to dangerous health issues like cardiac diseases, high blood pressure and stroke. So it is necessary that we should abstain from consuming junk food in our daily lives. We can lead a happy life if we regularly do exercise, follow a balanced diet and maintain healthy habits.

Let us acquaint ourselves with a very familiar and popular game that gained top honours for our country.

## Tennis

The game Tennis has its origin in the 12th century France. Initially the game was played using bare hands. By 16th century the palm was replaced with racket and the game earned the name Tennis. Today, Tennis has a lot of admirers all over the world. India has a privileged status in the World Tennis Map. In 1996, Leander Paes won the men's singles tennis bronze medal at the Atlanta Olympics.

## Tennis court



In olden times, Tennis was played exclusively on clay courts. Tennis is also played on Lawn and Synthetic courts. The four Grand slam(Tennis) tournaments are Wimbledon, Australian Open, US Open and French Open.



Singles, Doubles, Mixed Doubles are different categories of Tennis matches.



Clay court  
(French open)



Grass court  
(Wimbledon)



synthetic court  
(Australian open, U.S. Open)

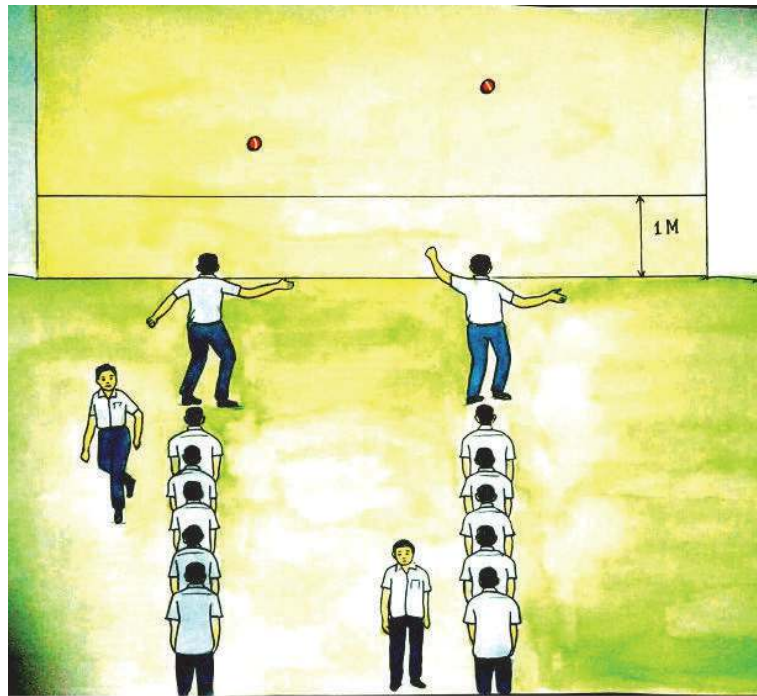
### How to play Tennis

The players stand on the opposite sides of a net and use a stringed racket to hit a ball back and forth. The game starts with a serve by one of the players. The served ball must bounce diagonally within the box. The opponent player can return the ball if it bounces within the box or otherwise it is a fault and the server will have to go for the second service. If the opponent is unable to hit the ball or if the ball is hit onto the net or if the ball is hit out of bounds, the server gains a point. The points are calculated as in the order 15, 30, 40. If there is a tie at 40 it's called a deuce. To break the tie, the player must win two points in a row to win the game. A set is said to be won if there is a margin of two games. If the score ties at 6-6, a tiebreaker is played. After a set is over, the game is repeated. To

win the entire match, one should win atleast two of the three sets or three of the five sets. The maximum number of sets in a match is five for men and three for women. Vijay Amritraj, Leander Paes, Mahesh Bhupathi, Sania Mirza, Rohan Bopanna are some of the internationally acclaimed Tennis players. We shall now get introduced to a minor game similar to Tennis.

### Hand Volley

Draw a line on the wall 1 metre high, from the ground as shown in the picture. The children should be grouped in equal numbers according to the availability of space. The first team shall line up in front of the wall. The first player should hit the ball with the hand above the one metre line. As the ball rebounds and comes to the ground, the second player should hit the ball in the same manner (Rally). After taking turns the children should come and stand at the



end of their respective rows. Each rally will be considered as a point. The number of points each team gets either continuously or within a fixed time should be recorded. Opportunities should be given to other teams as well and the team that scores the maximum points will become the winner.

### Rules

- If the ball bounces below the 1 metre line, the rally ends.
- After rebounding if the ball bounces twice on the ground the rally will come to an end.
- The ball should not be caught in the hand and thrown.

Now you must have understood the game of tennis, different surfaces on which tennis is played and important tournaments pertaining to it. These games are usually conducted in good weather

and modulate temperature. Intense heat and scorching sunlight affect the performance of the players resulting in dangerous health hazards like sunstroke. So majority of these games are conducted in moderate conditions. We shall now understand more about sunstroke.



### Sunstroke

Sunstroke is a phenomenon affecting the skin as a result of overexposure to radiation coming from the sun. Sunstroke is common among people who expose themselves too much to the intense heat of the sun. Overexposure

to heat may cause dehydration, muscle stretching, general fatigue and mild dizziness. Moreover, sunstroke affects the healthy functioning of internal organs such as brain, liver, kidneys, lungs, etc. Fever, nausea, chill, cold, etc are some of the symptoms of sunstroke.

### How to prevent sunstroke

Avoid excessive direct exposure to intense sunlight. Drink plenty of water. Wear light cotton clothes. Use sunscreen ointments. Avoid over consumption of tea and coffee during hot days. If somebody is affected by sunstroke, the first thing you have to do is to cool the body of the person. The victim has to be shifted to a shady place and the body should be covered by means of a wet cloth.

Having understood sunstroke and its consequences, you can now prepare a report of anykind of such experiences you had in your life.

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### *Assessment activities*

1. Physical activities help to nurture healthy habits in our life. Describe in your own words.
2. What is malnutrition? How does it affect health?
3. How does the regular intake of junk food adversely affect one's health?
4. What is sunstroke? What are the precautionary measures to prevent sunstroke?

### *Extended Activity*

1. Prepare a table of your diet.
2. Prepare a list of Indian tennis players who won grand slam titles.





## FOSTERING UNITY THROUGH PHYSICAL ACTIVITIES



*"We are all part of a team. We can achieve the goal only through hard work, dedication and team effort."*

Have you noted the quotation? These are the words of world renowned Argentinian footballer Lionel Messi. He is one of the world's greatest footballers with a huge number of admirers all over the world. Messi quoted these words aptly amidst a football match, and these words hold deep meaning as given below.

We know teamwork is essential for success. Sports play a vital role in catalyzing the unity and equality of people in their respective regions. Cultural exchange is also made possible through sports. Thus sports has great responsibility in creating healthy relationships at the regional, national and international levels.

Prior to Independence , various sports tournaments were organised in our country. These tournaments were aimed at integrating and nurturing regional unity, maintaining interpersonal relationships and are demonstrating the sports skills of the people. Plenty of tournaments are in existence in our country which are being conducted in a grandiose manner.

Are you familiar with this image related to the National Games conducted in Kerala in 2015. Prepare a short description of it with the help of your teacher.

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The description that you have prepared is about Ammu, the Hornbill which was the official Mascot of the 35th National Games conducted in Kerala. As understood, National games is one of the important sport events started even before the independence. The National games had played a decisive role in fostering unity and equality among the states of our country. We shall now explore more about this national event.

### National Games

National Games is a project initiated by the Olympic Association of India with a view to propagate Olympic games. Initially, it was known as Indian Olympic Games. The first National Games was organised in 1924, in Lahore, now part of Pakistan. The National games is conducted once in two years.

Kerala hosted National Games twice in 1987 and in 2015. The organisational excellence of 2015 edition added a golden feather to the cap in the sport's history of the state. It was conducted in seven districts in around 29 venues and in 33 sports categories .

In a democratic country like India, people from all walks of life participate in sports competitions. They participate in sports with real sense of sportsman spirit aiming at excellence rather than mere victory and defeat. The games village, where the sports person reside suddenly gets transformed into a venue where variety languages and cultures meet. These occasions help to reinforce the unity and integrity of our nation. National Games play a crucial role in nurturing sports talent and fostering sports culture. These competitions inspire individuals to develop a healthy mind and body by fruitfully channelising their leisure time.

#### 'Run Kerala Run'

A large number of people including the young and the aged from different walks of life participated in the marathon 'Run Kerala Run' organised at the behest of the 35th National Games. Kerala got transformed into a venue of co-existence, coordination and harmony which is highly suggestive of the immense love Keralites have towards sports. The marathon found its place in the Limca Book of Records. It has been recorded that more than 92,04,268 people participated in 7992 different centres. Sachin Tendulkar, the genius of Indian cricket also participated in the marathon.

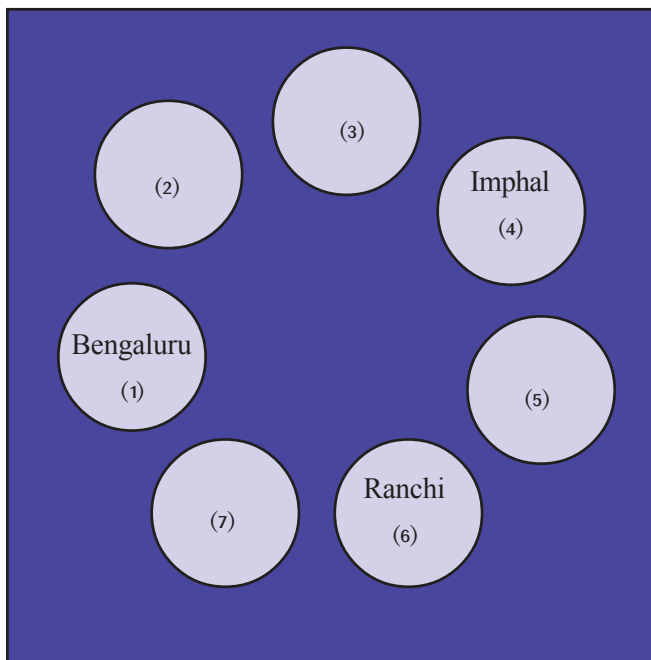


National Games are conducted in different cities of our country. Given below are the various venues where National games were conducted. Fill in the spaces with the help of your teacher.

Serial no	Year	City/State
1.	1997	Bengaluru
2.	1999	Imphal
3.	2000	.....
4.	2002	.....
5.	2007	.....
6.	2011	Ranchi
7.	2015	.....

We shall now engage in a game, making use of the names of cities given above, and for this, a play field is required. (as in the given picture)

### Seven cities



Mark the names of the cities which you have included in the table on the play field. The players should divide themselves into equal numbers and then take position on the various cities marked.

When the game begins, the players jog through the areas drawn on the play-field where the names of cities are marked. Each time,



when they enter the area, they have to call out the name of the city. When the teacher says 'stop' the players should stop jogging and stand still on the respective circle. The teacher selects a name of the city by drawing lots. The player who is standing on the respective city mentioned in the lot will not get any points. Other players will get 10 points each. The game continues till the tenth round. The player of the city who gets the maximum points will emerge as the winner.

Share your experience in words while playing the seven cities game.

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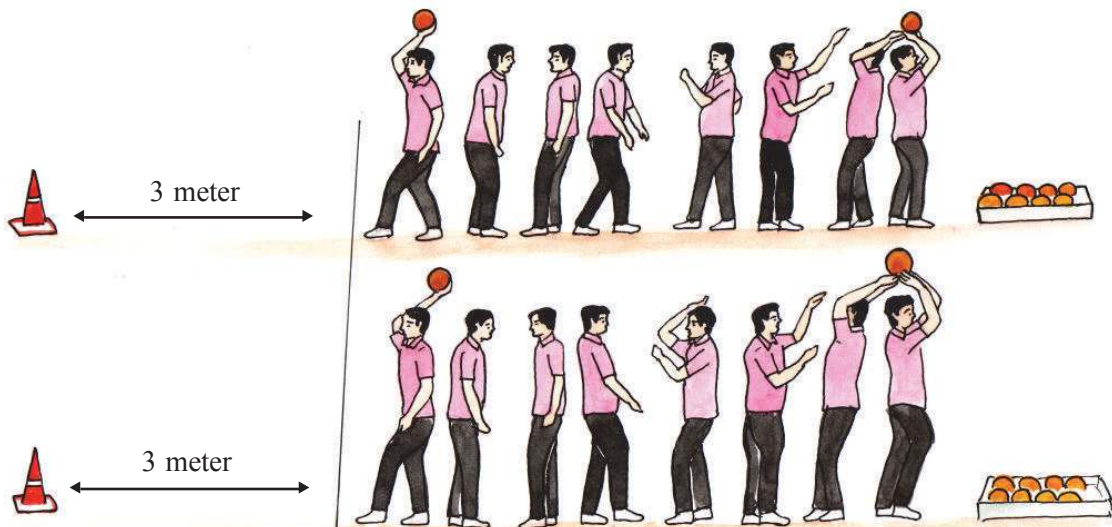
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In the 35th national games conducted in Kerala, Sajan prakash, the Malayali swimmer bagged the highest number of individual medals.

You must have understood about National Games, Run Kerala Run etc. which are notable examples of harmonious co existence, co-ordination and sense of co-operation and unity among the people of Kerala. Now we shall engage in a game.

### Pass and Shoot



Form two groups as shown in the picture. The members of the team should stand back to back one after the other. The target (cone) should be placed at 3 m distance from the last member of each team. Each team will be given 10 balls each. As per the instruction

of the teacher, the player standing in front should pass the ball quickly over his/her head. The balls thus passed by each player will be collected by the last person standing in the row and he / she should throw the ball at the target. If the ball hits the target, the team gets a point. The team which gets the highest score with in a fixed time will be declared the winner. If the ball falls down while passing, the team concerned will lose an opportunity.

What was your experience while playing the game?

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Pass and shoot is a game which showcases the essence of team coordination and harmony. Every member of the two teams plays a decisive role in scoring a goal. The fault of one player affects the overall balance of the team. Moreover, the desire to win the game invigorates the team with excitement and enthusiasm. The game further enhances friendship and cooperation among the players.

### **Award of excellence**

The village citizen forum decided to honour a ninth standard student Jincy who won gold medal in the National School Games. The Minister of Education honoured the winner, in a programme conducted at the premises of the panchayat office.



There may be a number of winners like Jincy among us. You might have seen quite a lot of receptions held to honour the State and National level winners in different fields like Art, Sport and Science. School Games Federation of India is an organisation which conducts national sports competitions to identify the winners in sports and games. We can understand in depth about the activities of School Games Federation of India (SGFI).

### **School Games Federation of India (SGFI)**

School Games Federation of India was established in 1954 with an aim to organise sports competitions at the national level, bring up an aptitude for sports among school children and develop a sports culture to engender excellence in our country. The federation conducts competitions in different sports categories at the national level. SGFI also provides opportunities to school children for participating in the international level sports competitions. In addition to promoting excellence in sports, the competitions are conducted with a view to nurture fraternity and cultural vivacity amongst school children, thereby promoting harmony and unity of our nation. SGFI is also committed to develop the character and personality of the school children through sports.

Prepare a table of participants of your school and their sports discipline at the Sub-district, District, State and National levels with the help of your teacher. Write the names of the best sports person of your school.

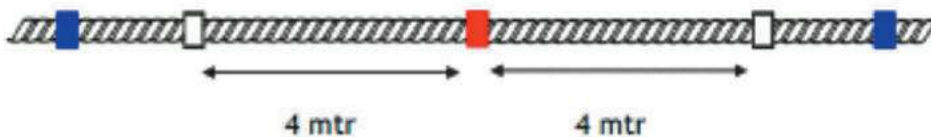
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Now you must have prepared the list of participants and their respective disciplines from the sub district level onwards. There may be familiar and unfamiliar games in the list. Tug of War is one such game in which people take part irrespective of their age. This game is also conducted in our schools as a form of entertainment. The game reinforces unity and equality. The game is quite common in certain regions and you might have watched it during different festivals. The game, initially meant for fun and entertainment has now emerged as a recognised sports item with unified rules and regulations. This sports item is conducted right from the school level onwards. We can learn more about this sports item.

## Tug of War



Tug of War is a sport that directly puts two teams against each other in a test of strength. In official competitions, two teams each with eight members participate at the same time. The competitions are categorised in different sections based on the total body weight of the team members. Only one substitute is allowed. The total body weight of the team members has to be strictly adhered to even when including a substitute. It is mandatory for the team members to wear uniform, shoes and safety equipment. The circumference of the rope used in the tug of war is 10-12.5 cms. The centre of the rope will be marked using a red ribbon. A midpoint will be marked on the ground. On either sides of the midpoint at a distance of 4 metres and 5 metres, there will be markings using ribbons of different colours. The team members should hold the rope behind the 5 metre mark. At the whistle, the two teams start pulling the rope. The team which manages to pull the 4 metre mark on the rope closest to their opponent over the central line will become the winner.



Tug of War is a widely acclaimed competitive item which is meant for fun and entertainment. It was a competition item in Olympic games from 1900 to 1920. Tug of War International Federation (TWIF) and Tug of War Federation of India (TWFI) organise competitions at National and International levels.

Now, you have learned about Tug of War. You can play the game with the help of the teacher. Tug of war can be organised by the teacher according to the convenience and facilities available at school.

Describe your experience when you participated in the Tug of War competition at school.

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When we engage in Tug of War we can sense the unity and mutual understanding of the team members. These components are very much essential for the success of a team.

### *Assessment activities*

1. Explain how sports play an important role in fostering national unity and other values?
2. Describe the history of National Games.
3. Describe the different activities of School Games Federation of India.

### *Extended Activities*

1. Make a table of international sport events like National Games that promote national integration.
2. Prepare a chart of the Olympic Medal winners of India and their respective sport events.





## NEED OF EXERCISE FOR MAINTAINING HEALTH

Have you seen the picture below? Do people engage in physical activities like this? Are you aware of the different health issues due to lack of exercise? Do you know how much time we require to spend on physical exercises?

The diseases that occur due to lack of exercise are generally termed as Hypo Kinetic diseases. Diabetes, stroke, heart ailments, obesity are some of the major diseases that belong to this category. It is very much essential that we eat nutrient rich food and engage in physical exercises to ward off various diseases. Look at the chart for a better understanding of what we have discussed above.



### Points to be noted while choosing day to day physical exercises

- Set aside at least 30 minutes for physical exercises.
- Don't skip warming up before exercising and cooling down afterwards
- Avoid strenuous physical exercises.
- Avoid exercises in case of injuries or other difficulties. Take expert opinion.
- Select physical exercises which are appropriate and scientific.
- Take light refreshment after exercise.

After reading the chart, you might have gained new information. Set aside 30-40 minutes for physical exercise every day.

Regular exercise will increase the efficiency of the internal organs. A strong and healthy heart, efficient lungs with increased capacity are examples.

Lack of regular and scientific physical exercise leads to several life style diseases. Diabetes and obesity are the two diseases that are most common due to lack of exercise.

### Diabetes

Diabetes is a state that occurs due to metabolic disorder of our body. Pancreas is the gland that regulates blood glucose in our body. The glucose level in the blood increases or decreases as a result of the imbalance in the functioning of hormones produced by pancreas. This condition is known as diabetes. Two types of diabetes are frequent Type 1 and Type 2. Type 1 diabetes is prevalent among children. Tablets are of no use in this type of diabetes. The only remedy is injection. Proper food control and physical exercise can control diabetes.

Now, we can learn about the physical exercise required for regulating type 2 diabetes. Swimming and walking are two familiar physical exercises that can control Type 2 diabetes. Find below some

of the important things that a person should consider while engaging in such physical exercises.

- A person should exercise at least five days a week for 20 -30 minutes.
- Use appropriate equipment (shoes, dress, etc).
- Take rest or consult a doctor if you feel any difficulty or uneasiness while doing exercise.

Yoga is one of the healthy practices adopted by many to maintain a healthy life style. A regular practice of Vakrasanam, Dhanurasanam, Arthamatsyandrasanam stimulates the functioning of pancreas. These asanas help to maintain the health of arteries and produce right amount of insulin.

Weight training practice, if done twice a week develops the strength and size of the muscles. It can regulate the blood sugar level. Weight training should be strictly under the supervision of an experienced trainer.

### Obesity

We all know that we get the required energy for physical activities from the food we eat. Lack of exercise and overeating results in the storage of excess energy. Excess energy accumulates as fat in our body. Obesity is a medical condition in which excess body fat accumulates to the extent that it may have a negative effect on health.

A table is given indicating the level of fat in our body. From the table, we can understand the percentage of fat proportionate to age and excess fat level in the body of a person.





Male/ Female	Age	Under weight fat (%)	Average weight fat (%)	Obese fat (%)
Male	20 - 40	7	7 - 20	above 20
	above 40	10	10 - 25	above 25
Female	20 - 40	19	19 - 40	above 40
	above 40	22	22 - 36	above 36

Hydrostatic weighing, also referred to as "underwater weighing" is an accurate and recognised method used to measure the fat level in a person's body. It is a direct application of Archimedes Principle.



Along with a controlled and nutritious diet, physical exercise also plays a clear and decisive role in controlling obesity. It is essential to engage in aerobic exercises for thirty to forty minutes for at least three days a week to control obesity. Examples of such physical exercises include aerobic dance, swimming, cycling and long distance running. The above mentioned exercises need to be systematised as per the instructions of a Physical Education Teacher.

When you engage in aerobic dance exercises, pay special attention to include warming up and cooling down activities.

Lack of exercise and nutrient rich food, deteriorates growth of tissues in the body resulting in weight loss. Weightlessness, lowers the body resistance as a result of which we fall prey to diseases.

### Body Mass Index (BMI)

You have learned BMI and ways to calculate it in the previous classes, haven't you? This is a method to ensure that our body weight is proportionate to our height. A table is given below related to BMI.

Go through table to understand BMI and your body status.

$$\text{BMI} = \frac{\text{WEIGHT(Kilogram)}}{\text{HEIGHT}^2(\text{Metre})}$$

Use the formulae of BMI given above to calculate your BMI and examine the chart and record your status.

	Status	Boys	Girls	Adults
<b>BMI</b>	Under weight	below 17.01	below 16.37	below 18.5
	Normal Weight	17.01-24.45	16.37-24.74	18.5-24.9
	Over weight	24.45-28.53	24.74-29.01	24.9-29.9
	Obese	Above 28.53	Above 29.1	Above 29.9

Source: WHO/ICMR

My BMI=.....

According to the chart my BMI status [put tick markings]

Under weight/ Normal weight/ Over weight/ Obese

Do you know how much energy is required for our day to day activities?

### Day to Day Energy requirement

The energy required for an individual's day to day activities is based on various constituents like age, gender difference, body weight, weather condition, genetic factors, health, life style, physical activities, etc. An average 1.3 kilo calorie energy is essential for 1 kilogram body weight for an hour. There may be differences on account of the amount of fat in our body. For individuals who are engaging in sports activities, an average of 8.5 kilo calorie is essential for 1 kg weight for an hour. There may be variations in accordance with the strain involved in the physical activities.

**How to calculate the energy required for day to day activities?**

Energy required for a day + Energy required for excess activities = Total energy consumed.

Now you have understood how to calculate the energy requirement. Now we can calculate the energy level required for a day proportionate to our body weight. An example has been included to make it easy for you to understand.

e.g. We shall examine the energy requirement of a child whose body weight is 40kg .

Required energy for 1 kg weight for one hour = 1.3 kilo calorie.

Energy required for one hour for 40 kg weight. =  $40 \times 1.3 = 52$  kilo calories.

Energy required for a day for 40 kg weight =  $52 \times 24 = 1248$  kilo calories.

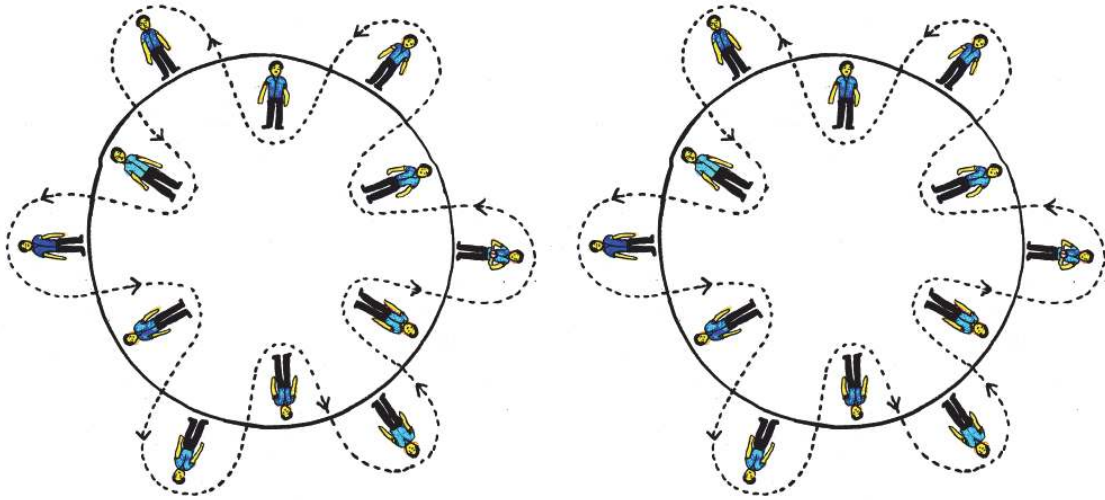
Now you may calculate the energy requirement for a day's activity proportionate to your body weight and record it below.

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Now you must have understood the excess kilo calorie of energy required if you engage in physical exercises in addition to your everyday activities. We shall now acquaint ourselves with a game which requires excess energy.

**Circle Zig Zag Relay**

According to the instruction of the teacher, the children should form two equal teams. Each team member should stand in and out of the circle alternatively, equidistant from one another. Each team gets a ball. On the signal from the teacher, the team members shall dribble the ball using their hand in a zig zag manner in between the players of their respective teams in the marked order as shown in the picture. The game continues till everyone gets a chance for dribbling.



The team which completes the dribbling in the shortest time frame abiding by the rules of the game will be declared the winner.

Now, calculate the excess energy required for 2 hours to engage in physical work or games and write them in the table.

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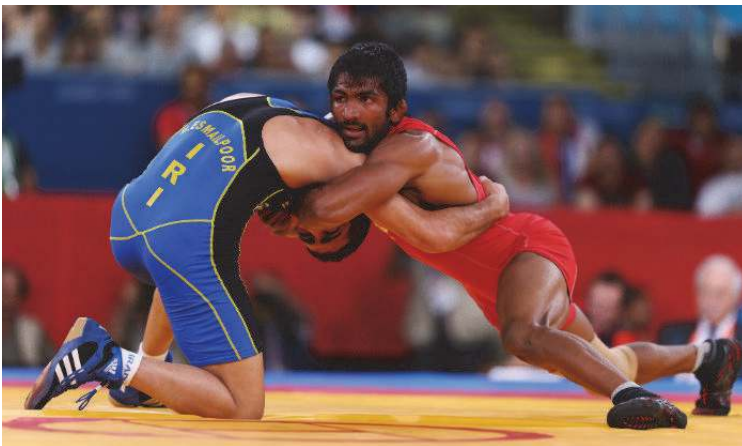
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There are various sports competitions based on body weight. The most important sport events include wrestling, boxing, taekwondo, weight lifting, etc.

### Wrestling

Wrestling is an important sport event right from the ancient Olympic games. Today, wrestling is an indispensable sport item in any world competitions.



In Kerala wrestling was formerly known as 'mallayudham'.

More than a sports item, wrestling is a good physical exercise. This exercise gives you strength and makes you confident, strong and energetic. A child who gets training in

wrestling excels in other sports items as well.

It is generally said that a good wrestler should have the strength of a good weight lifter, the agility of a gymnast, endurance of a long distance runner and intelligence and strategies of a chess player.

Wrestling matches are conducted in different groups according to the body weight. There are two different forms of wrestling matches - Greco roman and free style. The winner of the match is decided based on the points he gets. Wrestling is included as an important sports item right from school level onwards.

K D Yadav was the first Indian who got the first individual medal (bronze medal) in wrestling competitions in Olympic games. Susheelkumar, Yogeshwar Dutt, Sakshi Malik are some of the most popular names in wrestling who got recognition in Olympics and international level competitions.

### *Assessment activities*

1. Describe briefly the diseases that occur due to lack of exercise.
2. What are the important things to be noted while selecting day to day physical exercises?
3. What are the precautions that a Type 2 diabetic patient should take while engaging in physical exercises?
4. What are the different methods to prevent obesity?
5. The energy level required for day to day activities of an individual is dependent on different factors. What are they?

### *Extended Activity*

1. Prepare a note on the Indian wrestlers who won medals at the Olympic games.



### Notes

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## Notes

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## Notes

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